

Service
Service
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201T1SB/00

221T1SB/00



Service Manual

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SAFETY NOTICE

ANY PERSON ATTEMPTING TO SERVICE THIS CHASSIS MUST FAMILIARIZE HIMSELF WITH THE CHASSIS AND BE AWARE OF THE NECESSARY SAFETY PRECAUTIONS TO BE USED WHEN SERVICING ELECTRONIC EQUIPMENT CONTAINING HIGH VOLTAGES.

CAUTION: USE A SEPARATE ISOLATION TRANSFORMER FOR THIS UNIT WHEN SERVICING

REFER TO BACK COVER FOR IMPORTANT SAFETY GUIDELINES

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PHILIPS

Revision List

[illegible]

Important Safety Notice

Read and understand all instructions before you use your TV. If damage is caused by failure to follow instructions, the warranty does not apply.

Safety

- Risk of electric shock or fire!
 - Never expose the TV to rain or water. Never place liquid containers. Such as vases, near the TV. If liquids are spilt on or into the TV, disconnect the TV from the power outlet immediately. Contact Philips Consumer Care to have the TV checked before use.
 - Never place the TV, remote control or batteries near naked flames or other heat source, including direct sunlight. To prevent the spread of fire, keep candles or other flames away from the TV, remote control and batteries at all time.



- Never insert objects into the ventilation slots or other openings on the TV.
 - When the TV is swiveled ensure that no strain is exerted on the power cord. Strain on the power cord can loosen connections and cause arcing.
- Risk of short circuit or fire!
 - Never expose the remote control or batteries to rain, water or excessive heat.
 - Avoid force coming onto power plugs. Loose power plugs can cause arcing or fire.
- Risk of injury or damage to the TV!
 - Two people are required to lift and carry a TV that weights more than 25 kg.
 - When stand mounting the TV, use only the supplied stand. Secure the stand to the TV tightly. Place the TV on a flat, level surface that can support the combined weight of the TV and stand.
 - When wall mounting the TV, use only a wall mount that can support the weight of the TV. Secure the wall mount to a wall can support the combined weight of the TV and wall mount. Koninklijke Philips Electronics N.V. bears on responsibility for improper wall mounting that result in accident, injury or damage.
- Risk of injury to children! Follow these precautions to prevent the TV from toppling over and causing injury to children:
 - Never place the TV on a surface covered by a cloth or other material that can be pulled away.
 - Ensure that no part of the TV hangs over the edge of the surface.
 - Never place the TV on tall furniture (such as a bookcase) without anchoring both the furniture and TV to the wall or a suitable support
 - Educate children about the dangers of climbing on furniture to reach the TV.
- Risk of overheating! Never install the TV in a confined space. Always leave a space of at least 4 inches around the TV for ventilation. Ensure curtains or other objects never cover the ventilation slots on the TV.
- Risk of damage to the TV! Before you connect the TV to the power outlet, ensure that the power voltage matches the value printed on the back of the TV. Never connect the TV to the power outlet if the voltage is different.
- Risk of injury, fire or power cord damage! Never place the TV or any objects on the power cord.

- To easily disconnect the TV power cord from the power outlet, ensure that you have full access to the power cord at all times.
- When you disconnect the power cord, always pull the plug, never the cable.
- Disconnect the TV from the power outlet and aerial before lightning storms. During lightning storms, never touch any part of the TV, power cord or aerial cable.
- Risk of hearing damage! Avoid using earphones or headphones at high volumes or for prolonged periods of time.
- If the TV is transported in temperatures below 5°C, unpack the TV and wait until the TV temperature matches room temperature before connecting the TV to the power outlet.

Screen Care

- Avoid stationary images as much as possible. Stationary images are images that remain on-screen for extended periods of time. Examples include: on-screen menus, black bars and time displays. If you must use stationary images, reduce screen contrast and brightness to avoid screen damage.
- Unplug the TV before cleaning.
- Clean the TV and frame with a soft, damp cloth. Never use substances such as alcohol, chemicals or household cleaners on the TV.
- Risk of damage to the TV screen! Never touch, push, rub or strike the screen with any object.
- To avoid deformations and color fading, wipe off water drops as soon as possible.

Recycling



Your product is designed and manufactured with high quality materials and components, which can be recycled and reused. When you see the crossed-out wheeled bin symbol attached to a product, it means the product is covered by the European Directive 2002/96/EC:



Never dispose of your product with other household waste. Please inform yourself about the local rules on the separate collection of electrical and electronic products. The correct disposal of your old product helps prevent potentially negative consequences for the environment and human health.

Your product contains batteries covered by the European Directive 2006/66/EC, which cannot be disposed of with normal household waste.

Please inform yourself about the local rules on the separate collection of batteries. The correct disposal of batteries helps prevent potentially negative consequences for the environment and human health.

The most updated user manual on line

The contents of the user manual are subject to change. Please refer to www.philips.com/supp for the most updated user manual info reference.

1. General Specifications

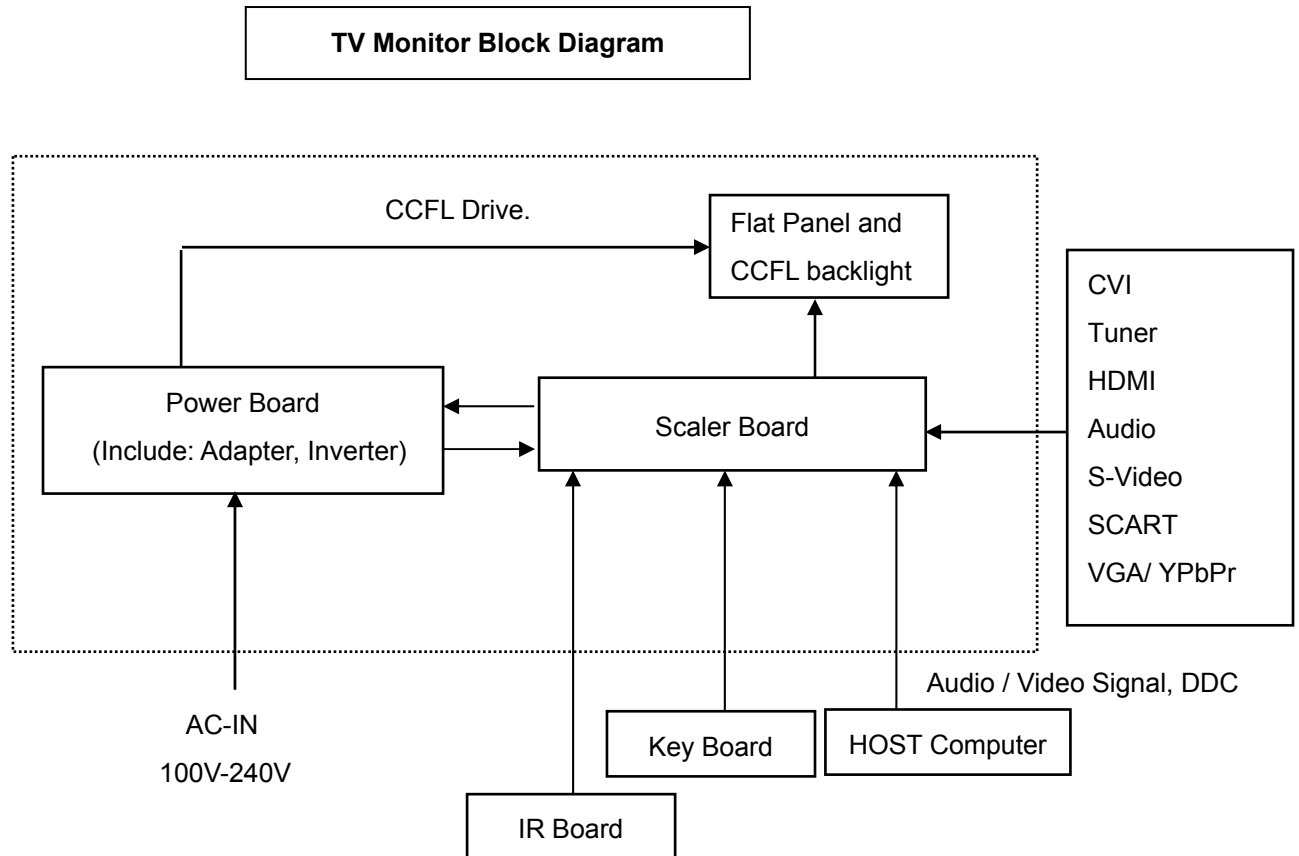
Model		201T1	221T1
Picture / Display	Aspect Ratio	16:9	
	Resolution	1600 x 900 @ 60Hz	1920 x 1080 @ 60Hz
Sound Output (RMS Watts)		3.0W x 2	
Sound Mode		Mono, Stereo, SAP (Secondary Audio Program)	
Picture Formats		Super zoom, 4:3, Movie expand 14:9, Movie expand 16:9, 16:9 subtitle, Widescreen, Auto	
Smart Mode		Personal, Vivid, Standard, Movie, Game, Power saver	
Rear Connectors		YPbPr: Component video input + Audio L/R (support 480i/p, 576i/p, 720p, 1080i/p)	
		HDMI (Ver. 1.3a HDMI, support video: 480i/p, 576i/p, 720p, 1080i/p)	
		PC IN: VGA, PC Audio IN	
		RS232 connector	
		SCART1 input / output :CVBS in/out, RGB in, S-Video in, Audio L/R in/out	
		SPDIF (digital audio) output: carrying stereo or multi-channel output.	
Side Connectors		CI slot input : PCMCIA card (5V)	
		Composite video input + Audio L/R	
		USB 4-pin Type-A connector for SW update	
Power Consumption		< 50 W	< 35W (TBD)
Off mode power		< 0.5W	
Mains Power		100~240V, 50Hz	
Ambient temperature		5 to 40 degrees Celsius	
Tuner / Reception / Transmission		Antenna input: 75 ohm coaxial (IEC75)	
		DVT: DVB Terrestrial, DVB- T MPEG4	
		TV system: DVB COFDM 2K / 8K; PAL I, B/G, D/K; SECAM B/G, D/K, L/L'	
		Video playback: NTSC, SECAM, PAL	
		Tuner Bands: Hyperband, S-channel, UHF, VHF	

Note: Product information is subject to change without notice. For detailed product information, go to www.philips.com/support.

2. TV Monitor Description

The TV monitor will contain a scaler board, a power board, an IR board and a key board. The scaler board houses the flat panel control logic, brightness control logic and DDC.

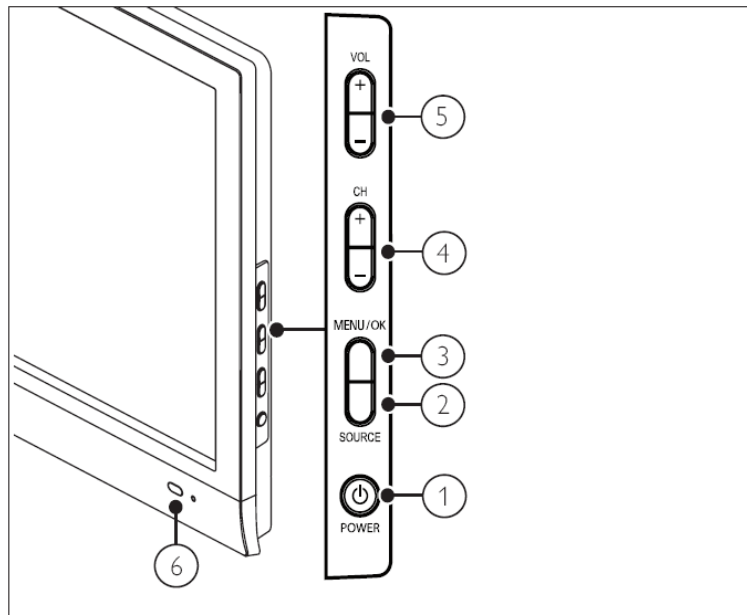
The power board will provide AC to DC Inverter voltage to drive the backlight of panel and the scaler board chips each voltage.



3. Operating Instructions

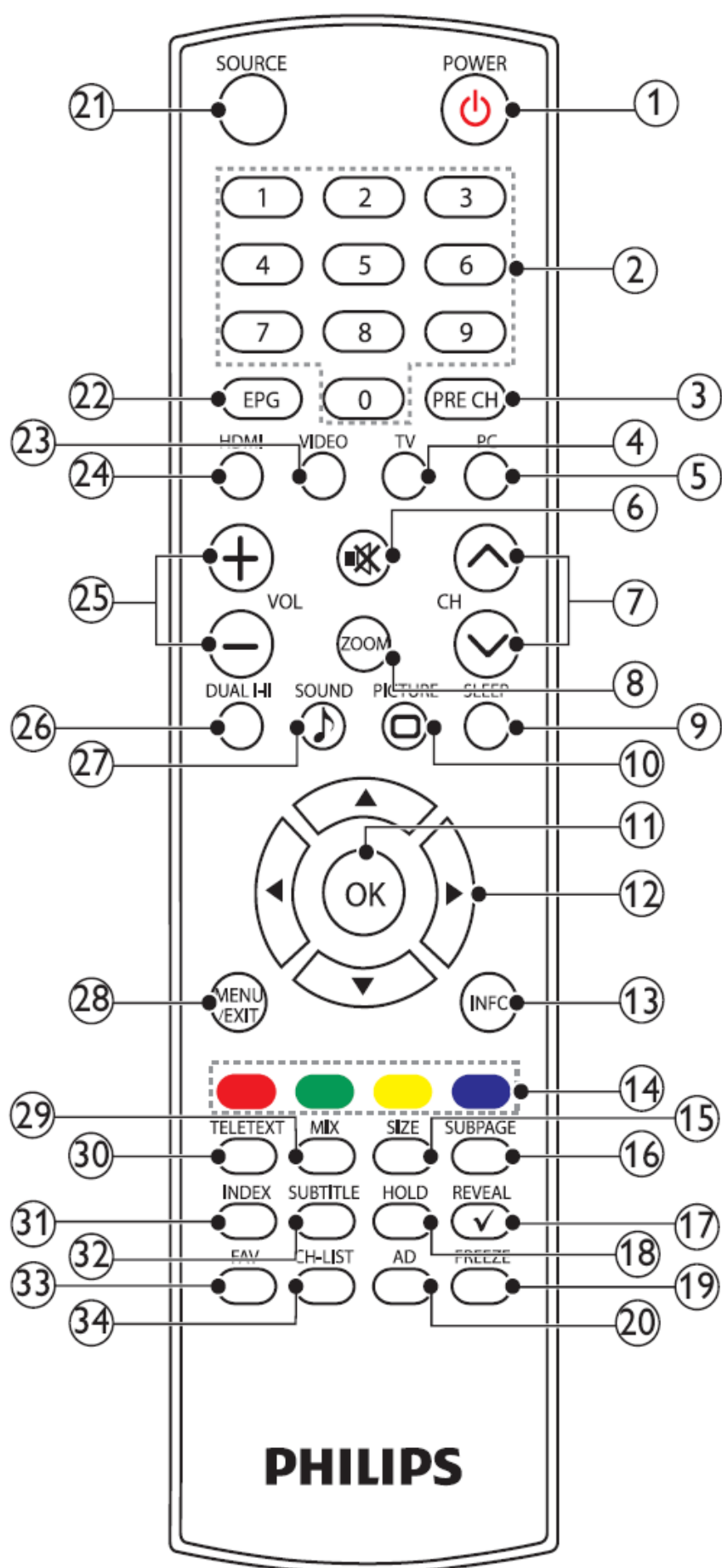
3.1 Front and side controls

Side Controls and indicators



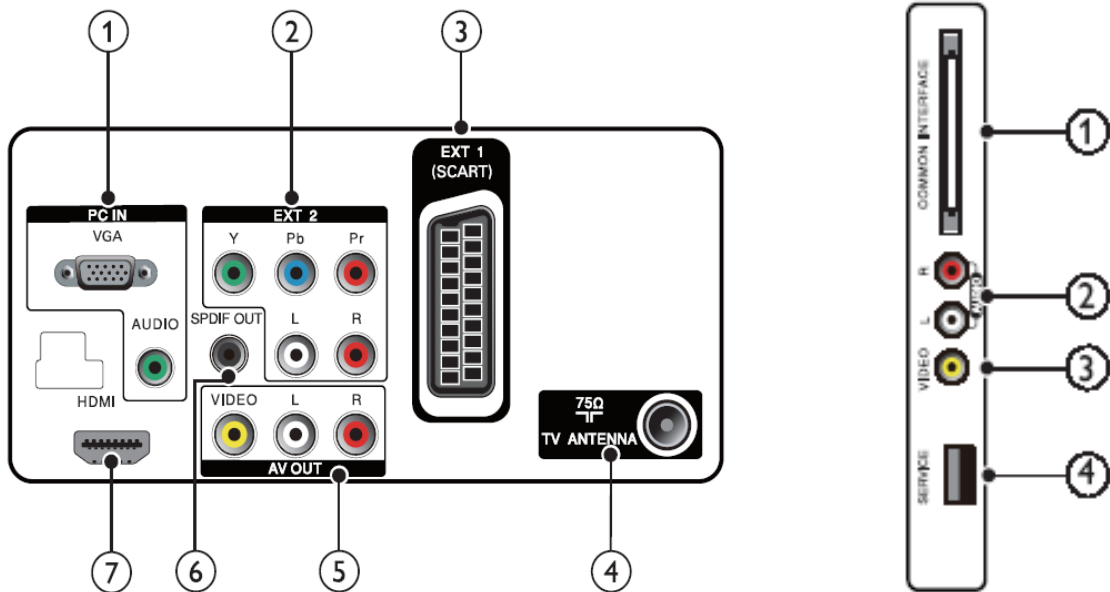
1. **POWER**: Switches the TV on or off. The TV is not powered off completely unless it is physically unplugged.
2. **SOURCE**: Selects connected devices.
3. **MENU/OK**: Displays the on-screen menu and confirms a selection in menus.
4. **CH +/-**: Switches to the next or previous channel.
5. **VOL +/-**: Increases or decreases volume.
6. **Power indicator**: Red LED: In standby mode or off. Green LED: Power on.

3.2 Remote Control



1. **(Standby-On):** Switch the TV to standby if the TV is on. Switch the TV on if the TV is in standby.
2. **0-9 (Numeric buttons):** Select a channel or setting.
3. **PRE CH:** Return to the previously viewed channel.
4. **TV:** Press to choose TV mode.
5. **PC:** Press to choose PC mode.
6.  **(Mute):** Switch the sound on or off.
7. **CH Δ / V (Channel Δ / V):** Switch to the next or previous channel.
8. **ZOOM:** Toggle among screen formats.
9. **SLEEP:** Toggle to select the preset time to switch the TV to standby mode automatically.
10.  **PICTURE:** Toggle to select the Smart Picture setting.
11. **OK:** Confirm an entry or selection and display the channel grid, when watching TV.
12. **$\blacktriangle$ $\blacktriangledown$ $\blacktriangleleft$ $\blacktriangleright$ (Navigation buttons):** Navigate through the menus.
13. **INFO:** Display or hide the information screen about the selected channel.
14. **Color buttons:** Select tasks or options.
15. **SIZE:** Toggle to change the font size in Teletext mode. (Full screen / Top half / Bottom half)
16. **SUBPAGE:** Display the sub page when the Teletext information has more than one page.
17. **REVEAL:** Reveal hidden information of Teletext.
18. **HOLD:** Toggle to stop the scrolling of pages to stop the text decoder receiving data.
19. **FREEZE:** Press to freeze the TV picture.
20. **AD (Audio Description) (For RF Digital TV only):** UK only: Enables audio commentary for the visually handicapped.
21. **SOURCE:** Select connected devices.
22. **EPG:** Switch the Electronic Program Guide On or Off.
23. **VIDEO:** Press to switch to VIDEO YPbPr /Composite /SCART mode.
24. **HDMI:** Press to switch to HDMI mode.
25. **VOL +/-:** Increase or decrease the volume.
26. **DUAL I-II:** Toggle to select mono / stereo / dual I/dual II from TV RF input.
27.  **SOUND:** Toggle to select the Smartsound Mode.
28. **MENU/EXIT:** Press to open or close the on-screen menu.
29. **MIX:** Press to overlay the Teletext page on the TV picture.
30. **TELETEXT:** Press to open or close the Teletext.
31. **INDEX:** Press to display the index page of Teletext.
32. **SUBTITLE:** In TV mode: Press to turn the subtitle on or off. In Text mode: Press to open the subtitle page.
33. **FAV:** Press to display the Favorite List.
34. **CH-LIST:** Press to display the Channel List.

3.3 Connection overview



Rear Connectors

- 1. PC IN:** Audio and video input from a computer. (see Fig-1)
- 2. EXT 2 (Y PbPr and AUDIO L/R):** Analogue audio and video input from analogue or digital devices such as DVD players or game consoles. (see Fig-2)

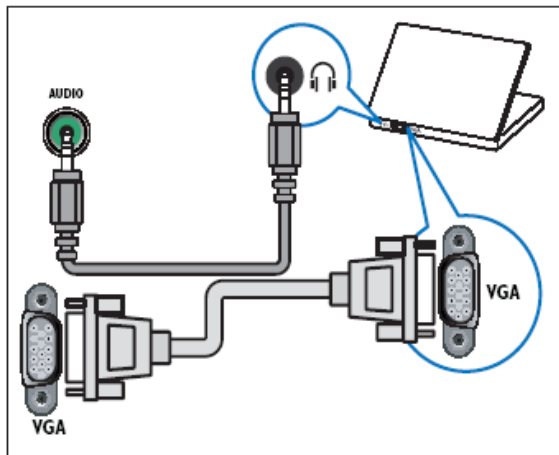


Fig- 1

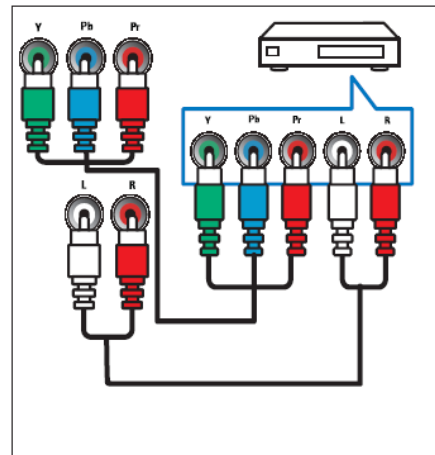


Fig- 2

3. **EXT 1 (SCART):** Analogue audio and video input from analogue or digital devices such as DVD players or game consoles. (see Fig-3)
4. **TV ANTENNA:** Signal input from an antenna, cable or satellite (see Fig-4)

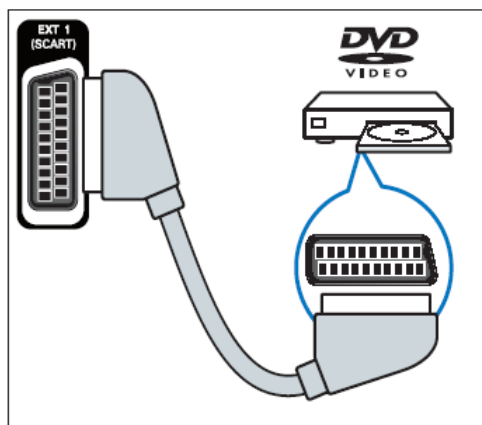


Fig- 3

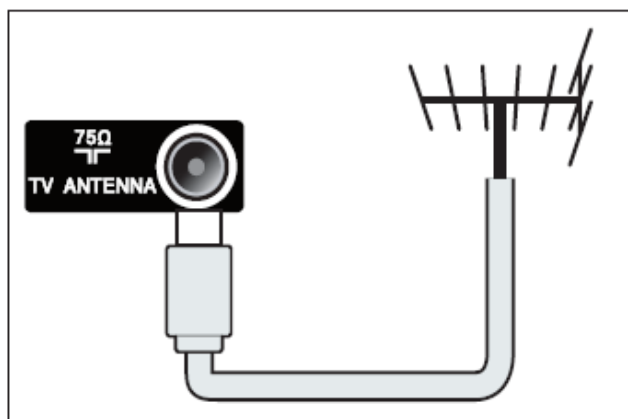


Fig- 4

5. **AV OUT (VIDEO OUT and AUDIO OUT L/R):** Audio and video output to analogue devices such as another TV or a recording device (see Fig-5)
6. **SPDIF OUT:** Digital audio output to home theatres and other digital audio systems(see Fig-6)

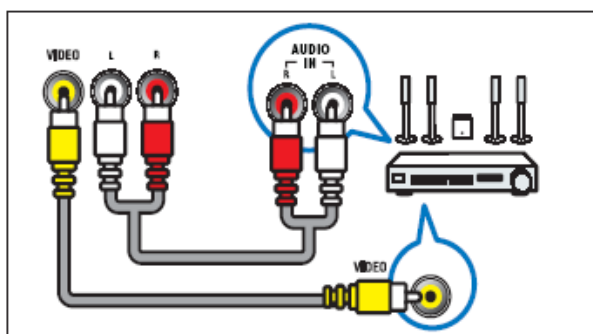


Fig- 5

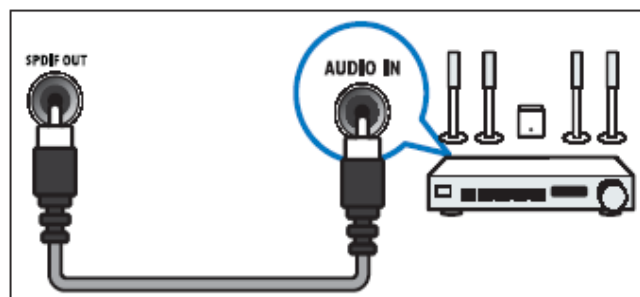


Fig- 6

7. **HDMI:** Digital audio and video input from high-definition digital devices such as Blu-ray players (see Fig-7)

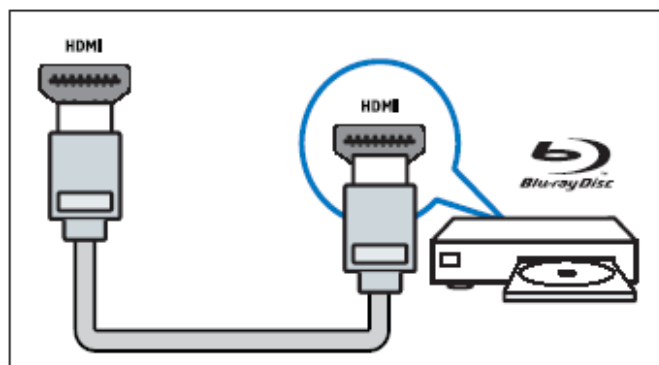


Fig- 7

Side connectors

1. **COMMON INTERFACE:** Slot for a Conditional Access Module (CAM). (see Fig-8)
2. **AUDIO L/R:** Audio input from analogue devices connected to VIDEO. (see Fig-9)

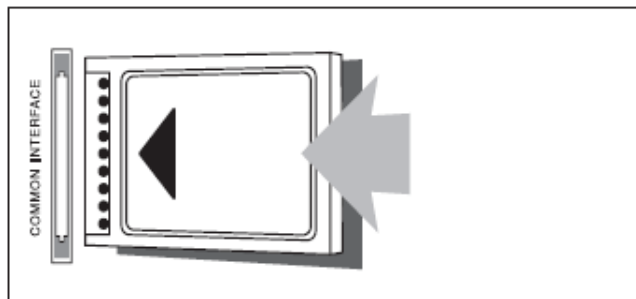


Fig- 8

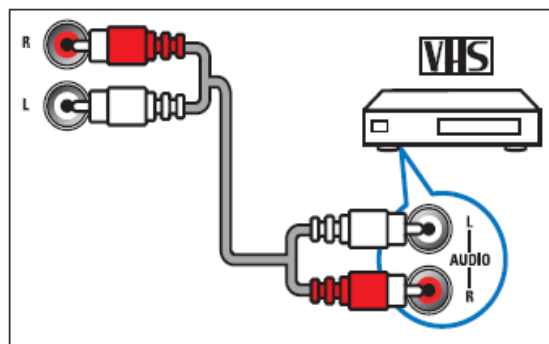


Fig- 9

3. **VIDEO:** Composite video input from analogue devices such as VCRs. (see Fig-10)
4. **SERVICE:** USB port, for upgrade firmware purpose only. (see Fig-11)

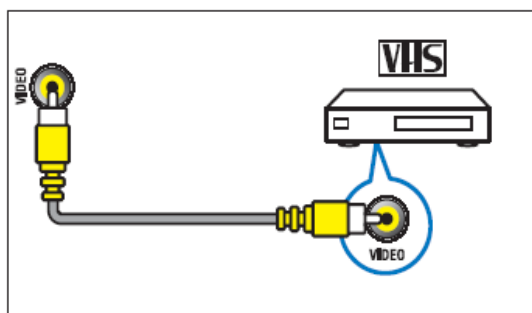


Fig- 10

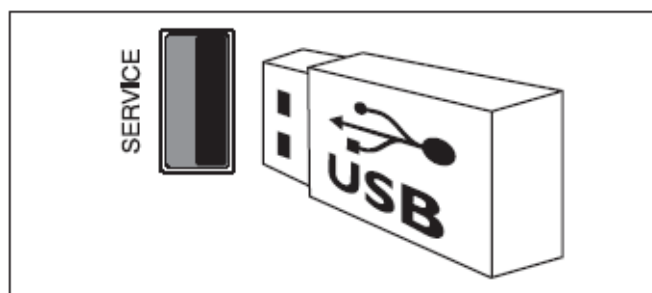


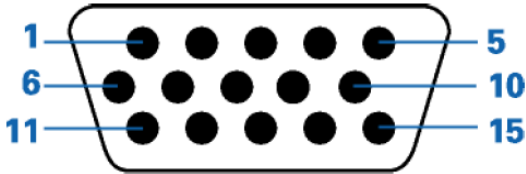
Fig- 11

4. Input/ Output Specification

4.1 Input Signal Connector

Analog Connectors

Pin No.	Description	Pin No.	Description
1.	Red	9.	+5V (Supply from PC)
2.	Green	10.	Sync GND
3.	Blue	11.	NC
4.	NC	12.	Bi-directional data(SDA)
5.	GND	13.	H-sync
6.	Red GND	14.	V-sync
7.	Green GND	15.	Data clock(SCL)
8.	Blue GND		



HDMI Connectors

Pin No.	Description	Pin No.	Description
1.	TMDS Data2+	11.	TMDS Clock Shield
2.	TMDS Data2 shield	12.	TMDS Clock-
3.	TMDS Data2-	13.	CEC
4.	TMDS Data1+	14.	Reserved (N.C. on device)
5.	TMDS Data1 shield	15.	SCL
6.	TMDS Data1-	16.	SDA
7.	TMDS Data0+	17.	DDC/CEC Ground
8.	TMDS Data0 shield	18.	+5V Power
9.	TMDS Data0-	19.	Hot Plug Detect
10.	TMDS Clock+		



4.2 Factory Preset Modes

Computer Formats

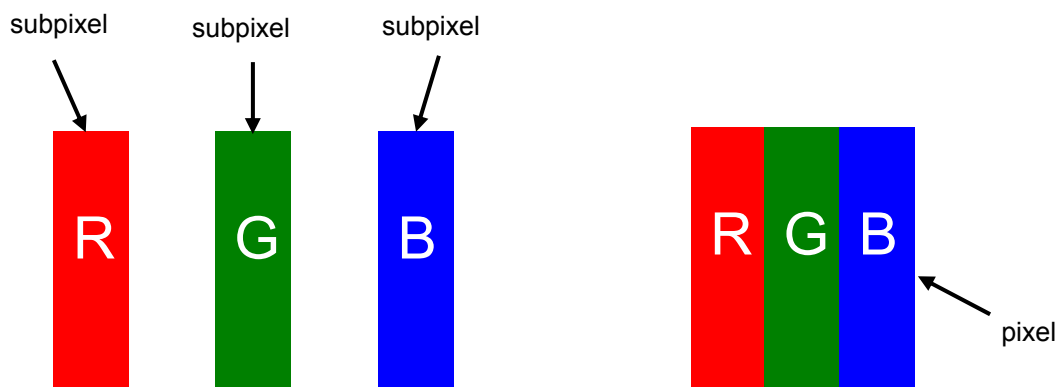
Resolution	Refresh Rate	Remark
640 x 480	60Hz	
640 x 480	75Hz	
800 x 600	60Hz	
800 x 600	75Hz	
1024 x 768	60Hz	
1024 x 768	75Hz	
1280 x 1024	60Hz	
1440 x 900	60Hz	
1600 x 900	60Hz	Only for 201T1
1680 x 1050	60H z	
1920 x 1080	60Hz_RB	Only for 221T1

Video Formats

Resolution	Refresh Rate
480i	60Hz
480p	60Hz
576i	50Hz
576i	50Hz
720p	50Hz , 60Hz
1080i	50Hz , 60Hz
1080p	50Hz , 60Hz

4.3 Pixel Defect Policy

Philips strives to deliver the highest quality products. We use some of the industry's most advanced manufacturing process and practice stringent quality control. However, pixel or sub pixel defects on the TFT LCD panels used in flat panel monitors are sometimes unavoidable. No manufacturer can guarantee that panels will be free from pixel defects, but Philips guarantees that any monitor with an unacceptable number of defects will be repaired or replaced under warranty. This notice explains the different types of pixel defects and defines acceptable defect levels for each type. In order to qualify for repair or replacement under warranty, the number of pixel defects on a TFT LCD panel must exceed these acceptable levels. For example, no more than 0.0004% of the sub pixels on a 19" XGA monitor may be defective. Furthermore, Philips sets even higher quality standard for certain types or combinations of pixel defects that are more noticeable than others. This policy is valid worldwide.



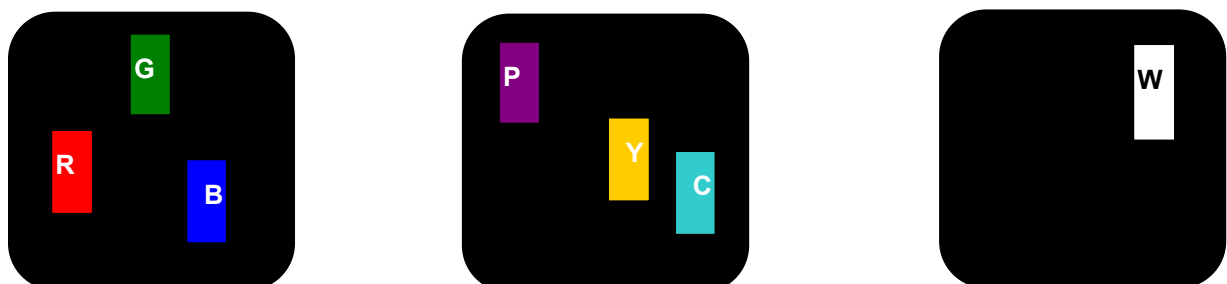
Pixels and Sub pixels

A pixel, or picture element, is composed of three sub pixels in the primary colors of red, green and blue. Many pixels together form an image. When all sub pixels of pixel are lit, the three colored sub pixels together appear as a single white pixel. When all are dark, the three colored sub pixels together appear as a signal black pixel. Other combinations of lit and dark sub appear as single pixels of other colors.

Types of Pixel Defects

Pixel and sub pixel defects appear on the screen in different ways. There are two categories of pixel defects and several types of sub pixel defects within each category.

Bright Dot Defects Bright dot defects appear as pixels or sub pixels that are always lit or 'on'. That is, a Bright dot is a sub-pixel that stands out on the screen when the monitor displays a dark pattern. There are three types of bright dot defects:



Two adjacent lit sub pixels:

- Red + Blue = Purple

- Red + Green = Yellow

- Green + Blue = Cyan (Light Blue)

Three adjacent lit sub pixels

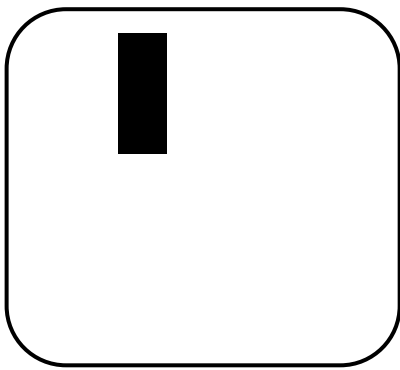
(one white pixel)

One lit red, green or blue sub pixel

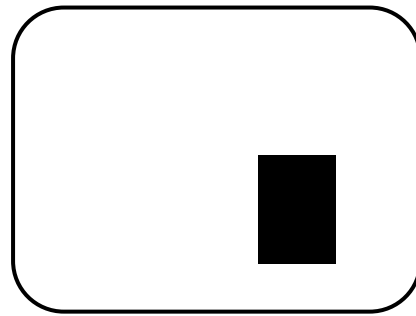


A red or blue bright dot must be more than 50 percent brighter than neighboring dots while a green bright dot is 30 percent brighter than neighboring dots.

Black Dot Defects Black dot defects appear as pixels or sub pixels that are always dark or 'off'. That is, a dark dot is a sub-pixel that stands out on the screen when the monitor displays a light pattern. There are two types of black dot defects:



One dark sub pixel



Two or three adjacent dark sub pixels

Proximity of Pixel Defects

Because pixel and sub pixels defects of the same type that are near to one another may be more noticeable, Philips also specifies tolerances for the proximity of pixel defects.

Pixel Defect Tolerances

The HP display does not have more than:

3 bright dots

5 dark dots

5 total bright and dark dots

No more than two adjacent (less than 2.5 mm edge-to-edge) defective pixels.

4.4 Failure Mode Of Panel

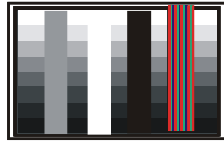
Quick reference for failure mode of LCD panel

this page presents problems that could be made by LCD panel.
It is not necessary to repair circuit board. Simply follow the mechanical instruction on this manual to eliminate failure by replace LCD panel.

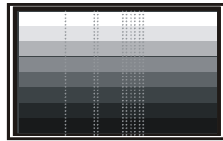
Failure description

Phenomenon

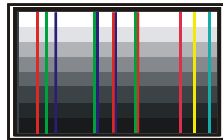
Vertical block defect



Vertical dim lines



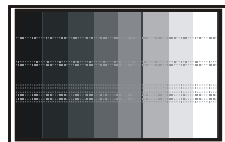
Vertical lines defect
(Always bright or dark)



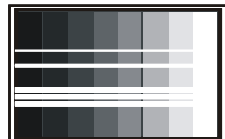
Horizontal block defect



Horizontal dim lines



Horizontal lines defect
(Always bright or dark)



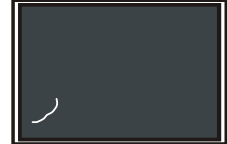
Has bright or dark pixel



Polarizer has bubbles



Polarizer has bubbles



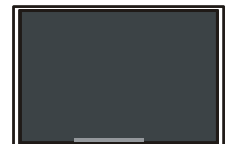
Foreign material inside polarizer. It shows liner or dot shape.



Concentric circle formed



Bottom back light of LCD is brighter than normal



Back light un-uniformity

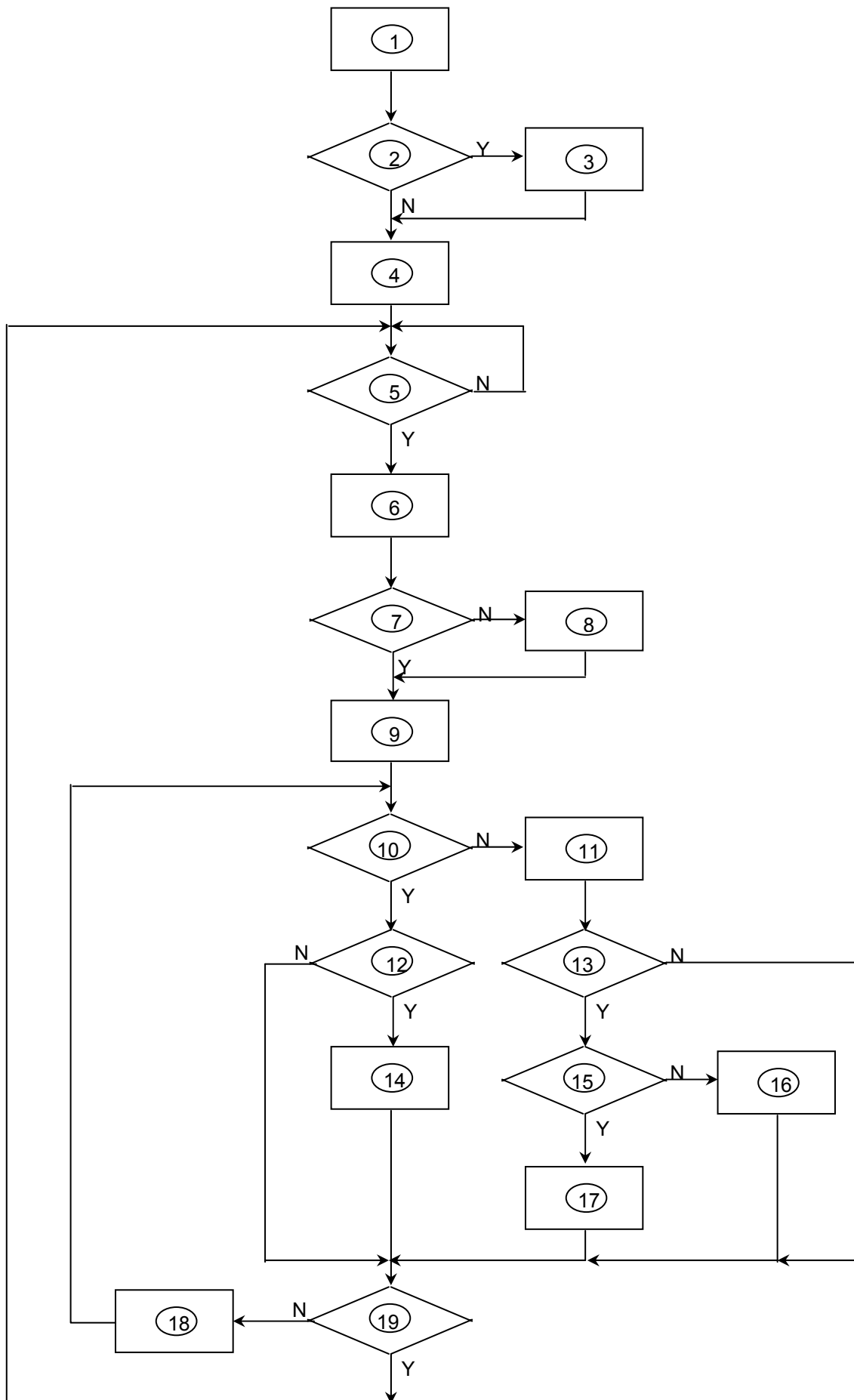


Backlight has foreign material. Black or white color, liner or circular type



5. Block Diagram

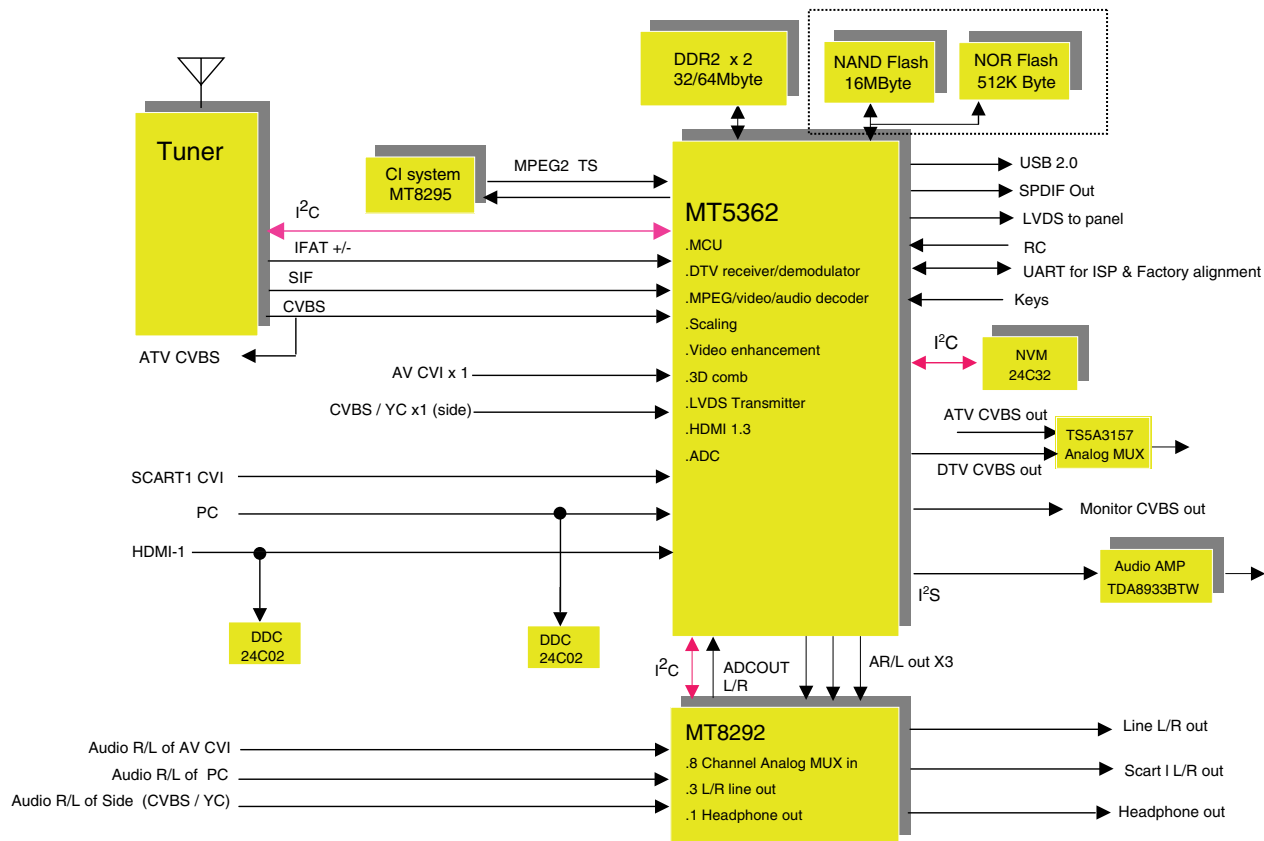
5.1 Software Flow Chat



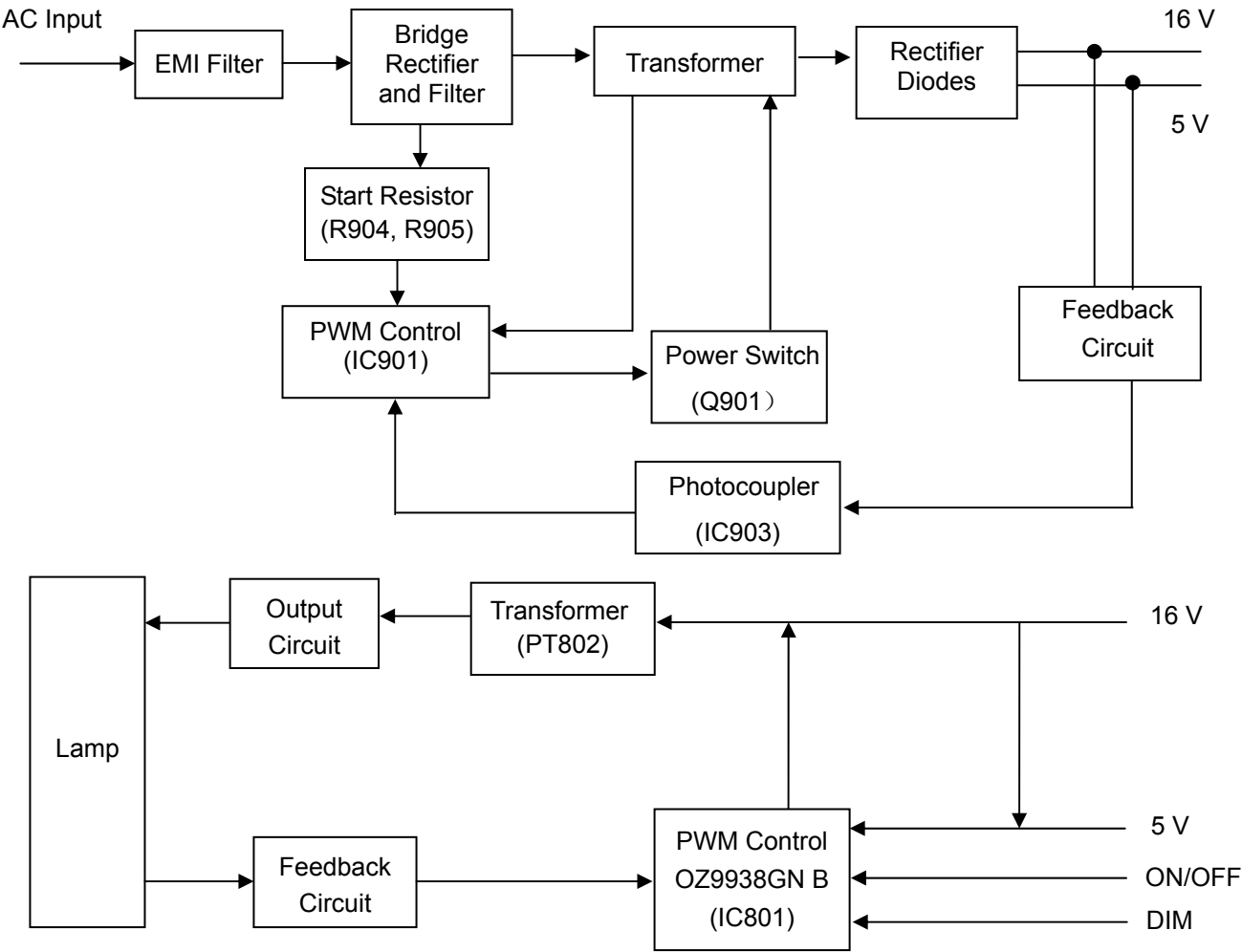
1) MCU initializes.
2) Is the EPROM blank?
3) Program the EPROM by default values.
4) Get the PWM value of brightness from EPROM.
5) Is the power key pressed?
6) Clear all global flags.
7) Are the AUTO and SELECT keys pressed?
8) Enter factory mode.
9) Save the power key status into EPROM. Turn on the LED and set it to green color. Scaler initializes
10) In standby mode?
11) Update the lifetime of back light.
12) Check the analog port, are there any signals coming?
13) Does the Scaler send out an interrupt request?
14) Wake up the Scaler.
15) Are there any signals coming from analog port?
16) Display "No connection Check Signal Cable" message. And go into standby mode after the message disappears.
17) Program the Scaler to be able to show the coming mode.
18) Process the OSD display.
19) Read the keyboard. Is the power key pressed?

5.2 Electrical Block Diagram

5.2.1 Block diagram



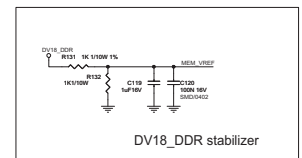
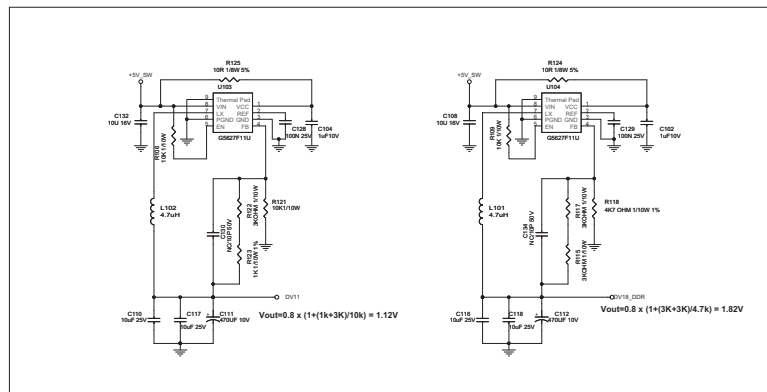
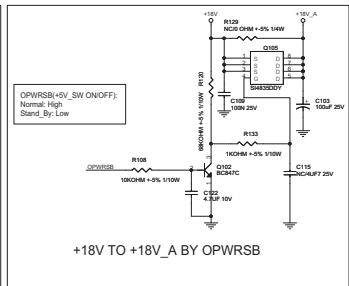
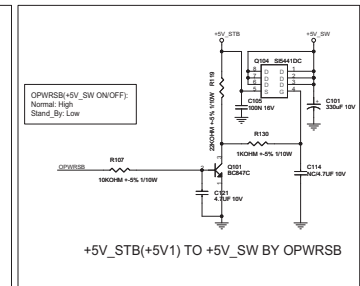
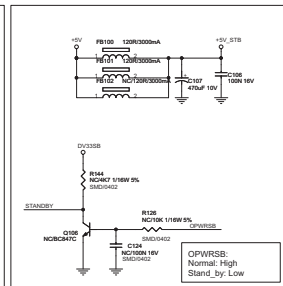
5.2.2 Power / Inverter Board



715G3292-1B

5	OP_WRSB	OP_WRSB
5	STAND_BY	STAND_BY
14	BRIGHT_ADJ	BRIGHT_ADJ
14	INVERTER_ON_OFF	INVERTER_ON_OFF
6	MEM_VREF	MEM_VREF
6	+18V_A	+18V_A

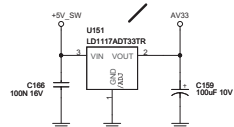
The diagram shows the DC power input section of the BAE33L LED module. It includes a 10-pin connector with pins labeled 1 through 10. Pin 1 is connected to a 5V supply. Pin 2 is connected to a 0V supply. Pin 3 is connected to a 0V supply. Pin 4 is connected to a 0V supply. Pin 5 is connected to a 0V supply. Pin 6 is connected to a 0V supply. Pin 7 is connected to a 0V supply. Pin 8 is connected to a 0V supply. Pin 9 is connected to a 0V supply. Pin 10 is connected to a 0V supply. The diagram also shows a 10-pin connector with pins labeled 1 through 10. Pin 1 is connected to a 5V supply. Pin 2 is connected to a 0V supply. Pin 3 is connected to a 0V supply. Pin 4 is connected to a 0V supply. Pin 5 is connected to a 0V supply. Pin 6 is connected to a 0V supply. Pin 7 is connected to a 0V supply. Pin 8 is connected to a 0V supply. Pin 9 is connected to a 0V supply. Pin 10 is connected to a 0V supply. The diagram also shows a 10-pin connector with pins labeled 1 through 10. Pin 1 is connected to a 5V supply. Pin 2 is connected to a 0V supply. Pin 3 is connected to a 0V supply. Pin 4 is connected to a 0V supply. Pin 5 is connected to a 0V supply. Pin 6 is connected to a 0V supply. Pin 7 is connected to a 0V supply. Pin 8 is connected to a 0V supply. Pin 9 is connected to a 0V supply. Pin 10 is connected to a 0V supply.



CN100	A1	C101	A4	C102	C3	C103	A5
C104	C2	C105	A4	C106	A3	C107	A2
C108	C2	C109	A5	C110	C1	C111	C1
C112	C3	C114	A4	C115	A5	C116	C2
C117	C1	C118	C2	C119	C5	C120	C5
C121	B3	C122	B5	C124	B2	C128	C2
C129	C3	C130	C1	C132	C1	C134	C3
D102	B1	FB100	A2	FB101	A2	FB102	A2
L101	L2	L102	C1	Q101	A3	Q102	A5
Q104	A4	Q105	A5	Q106	B2	R106	C1
R107	A3	R108	A4	R109	C2	R113	B1
R114	B1	R115	C3	R116	B1	R117	C3
R118	C3	R119	A3	R120	A5	R121	C2
R122	C1	R123	C1	R124	C3	R125	C1
R126	B2	R129	A5	R130	A4	R131	C4
R132	C4	R133	A5	R144	A2	TP101	A1
TP102	A1	TP103	A1	TP104	A1	TP105	A1

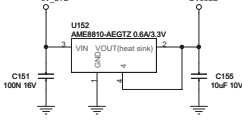
Power 2

Add Thermal Pad



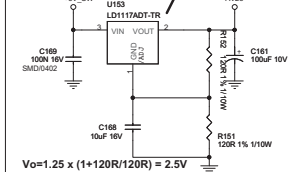
+5V_SW TO AV33

+5V_STB TO DV33SB



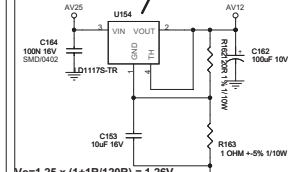
+5V_STB TO DV33SB

Add Thermal Pad



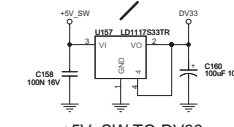
+5V_SW TO AV25

Add Thermal Pad



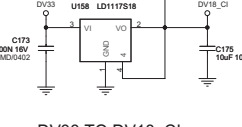
AV25 TO AV12

Add Thermal Pad

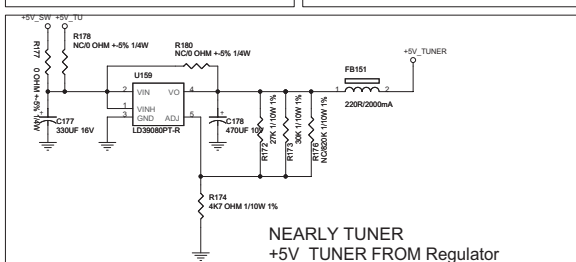


+5V_SW TO DV33

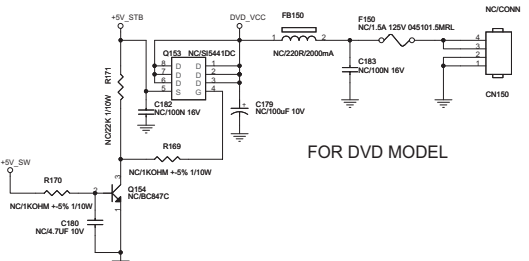
DV33 TO DV18_CI



DV33 TO DV18_CI

NEARLY TUNER
+5V_TUNER FROM Regulator

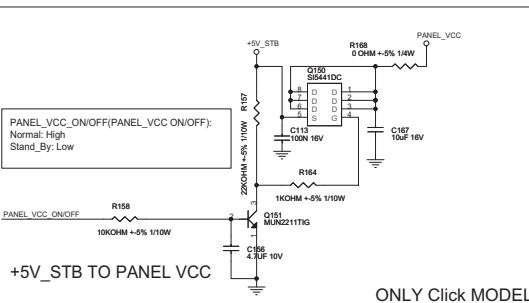
FOR DVD MODEL



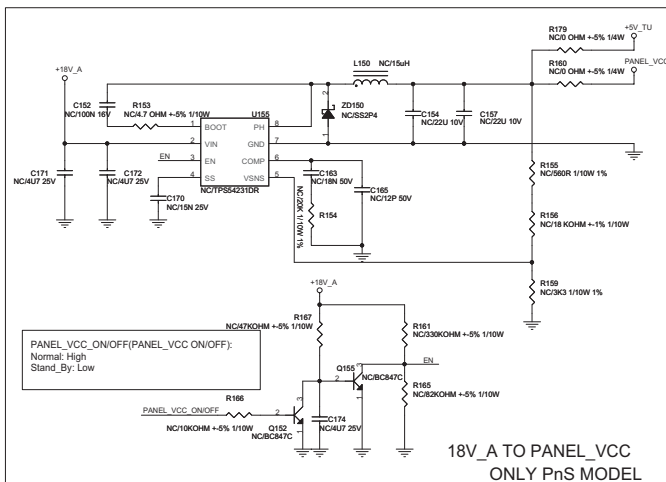
+5V_STB TO DVD_VCC

RESERVE

ONLY Click MODEL



+5V_STB TO PANEL_VCC

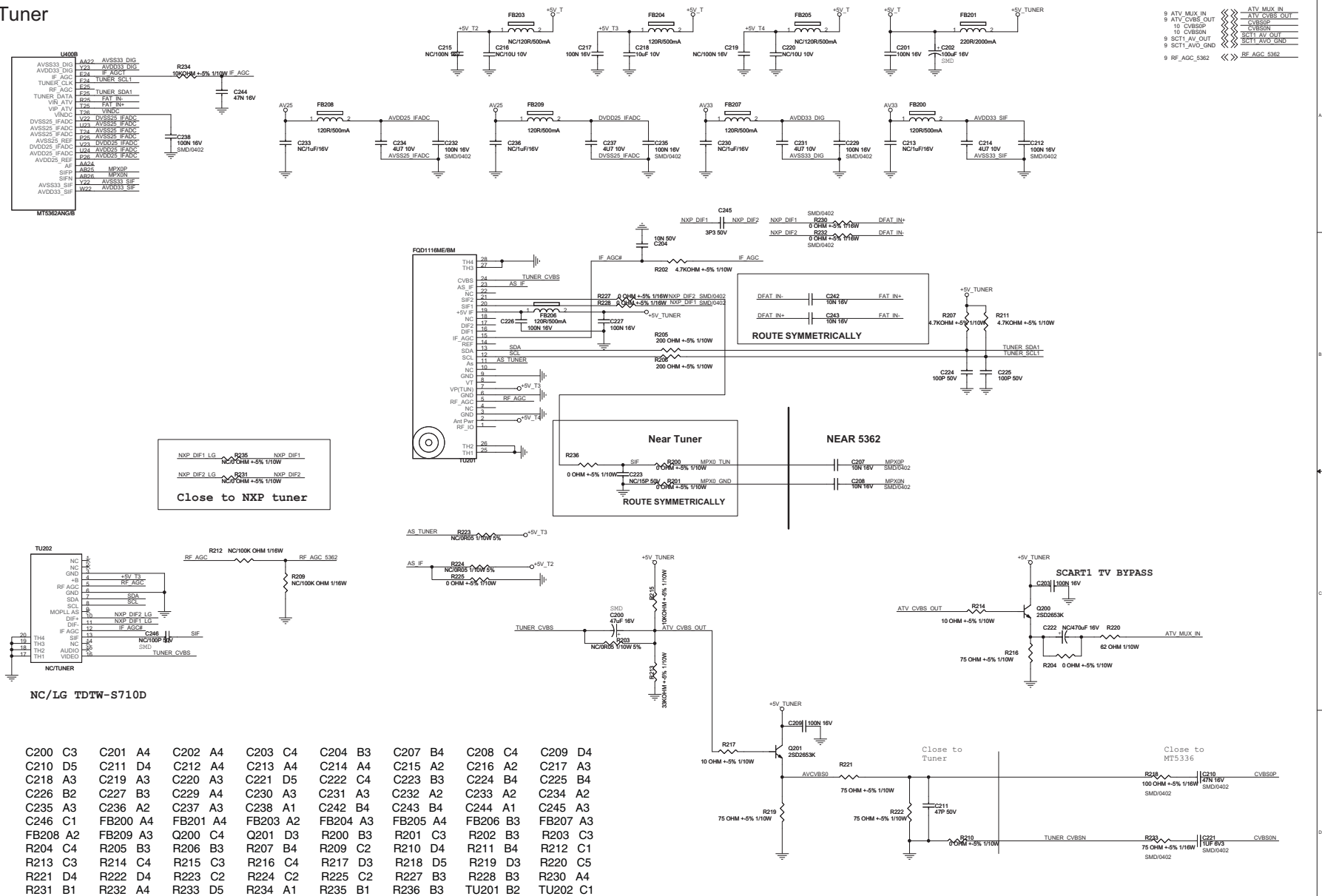
18V_A TO PANEL_VCC
ONLY PnS MODEL

5 PANEL_VCC_ON/OFF
5 OPVRESB
6 -18V_A

PANEL_VCC_ON/OFF
OPVRESB
-18V_A

CN150	B2	C113	C1
C151	A2	C152	C3
C153	A3	C154	C3
C155	A2	C156	D1
C157	C4	C158	B1
C159	A1	C160	B1
C161	A3	C162	A4
C163	C3	C164	A3
C165	C3	C166	A1
C167	C2	C168	A3
C169	A2	C170	C3
C171	C2	C172	C3
C173	B2	C174	D3
C175	B2	C177	B2
C178	B3	C179	B1
C180	C1	C182	B1
C183	B2	FB150	B1
FB151	B3	F150	B2
L150	C3	Q150	C2
Q151	D1	Q152	D3
Q153	B1	Q154	C1
Q155	D3	R151	A3
R152	A3	R153	C3
R154	C3	R155	C4
R156	C4	R157	C1
R158	D1	R159	C4
R160	C4	R161	C3
R162	A4	R163	A4
R164	C2	R165	D3
R166	D3	R167	C3
R168	C2	R169	B1
R170	C1	R171	B1
R172	B3	R173	B3
R174	B3	R175	A2
R176	B3	R177	B2
R178	B2	R179	B4
R180	B3	U151	A1
U152	A2	U153	A3
U154	A3	U155	C3
U157	B1	U158	B2
U159	B3	ZD150	C3

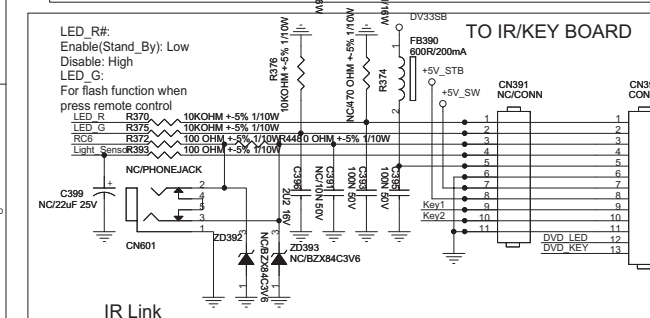
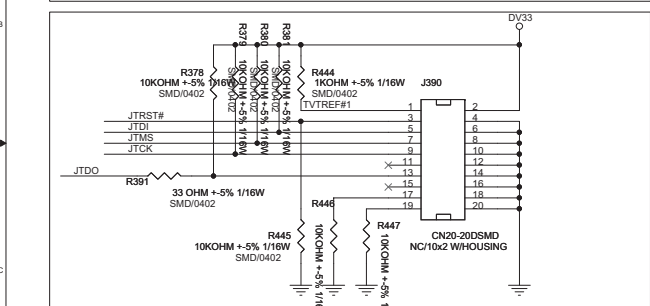
Tuner



The schematic diagram illustrates the internal circuitry of the MT3620 evaluation board. It is divided into several functional blocks:

- NEAR IC:** Contains two identical sections for NEAR IC, each featuring a USB VRT input, a USB DP/DM input, and a USB ON input. The circuit includes various capacitors (C301, C302, C303, C304, C305, C306, C307, C308, C309, C310, C311, C312, C313, C314, C315, C316, C317, C318, C319, C320, C321, C322, C323, C324, C325, C326, C327, C328, C329, C330, C331, C332, C333, C334, C335, C336, C337, C338, C339, C340, C341, C342, C343, C344, C345, C346, C347, C348, C349, C350, C351, C352, C353, C354, C355, C356, C357, C358, C359, C360, C361, C362, C363, C364, C365, C366, C367, C368, C369, C370, C371, C372, C373, C374, C375, C376, C377, C378, C379, C380, C381, C382, C383, C384, C385, C386, C387, C388, C389, C390, C391, C392, C393, C394, C395, C396, C397, C398, C399, C400, C401, C402, C403, C404, C405, C406, C407, C408, C409, C410, C411, C412, C413, C414, C415, C416, C417, C418, C419, C420, C421, C422, C423, C424, C425, C426, C427, C428, C429, C430, C431, C432, C433, C434, C435, C436, C437, C438, C439, C440, C441, C442, C443, C444, C445, C446, C447, C448, C449, C450, C451, C452, C453, C454, C455, C456, C457, C458, C459, C460, C461, C462, C463, C464, C465, C466, C467, C468, C469, C470, C471, C472, C473, C474, C475, C476, C477, C478, C479, C480, C481, C482, C483, C484, C485, C486, C487, C488, C489, C490, C491, C492, C493, C494, C495, C496, C497, C498, C499, C500, C501, C502, C503, C504, C505, C506, C507, C508, C509, C510, C511, C512, C513, C514, C515, C516, C517, C518, C519, C520, C521, C522, C523, C524, C525, C526, C527, C528, C529, C530, C531, C532, C533, C534, C535, C536, C537, C538, C539, C540, C541, C542, C543, C544, C545, C546, C547, C548, C549, C550, C551, C552, C553, C554, C555, C556, C557, C558, C559, C560, C561, C562, C563, C564, C565, C566, C567, C568, C569, C570, C571, C572, C573, C574, C575, C576, C577, C578, C579, C580, C581, C582, C583, C584, C585, C586, C587, C588, C589, C590, C591, C592, C593, C594, C595, C596, C597, C598, C599, C600, C601, C602, C603, C604, C605, C606, C607, C608, C609, C610, C611, C612, C613, C614, C615, C616, C617, C618, C619, C620, C621, C622, C623, C624, C625, C626, C627, C628, C629, C630, C631, C632, C633, C634, C635, C636, C637, C638, C639, C640, C641, C642, C643, C644, C645, C646, C647, C648, C649, C650, C651, C652, C653, C654, C655, C656, C657, C658, C659, C660, C661, C662, C663, C664, C665, C666, C667, C668, C669, C670, C671, C672, C673, C674, C675, C676, C677, C678, C679, C680, C681, C682, C683, C684, C685, C686, C687, C688, C689, C690, C691, C692, C693, C694, C695, C696, C697, C698, C699, C700, C701, C702, C703, C704, C705, C706, C707, C708, C709, C710, C711, C712, C713, C714, C715, C716, C717, C718, C719, C720, C721, C722, C723, C724, C725, C726, C727, C728, C729, C730, C731, C732, C733, C734, C735, C736, C737, C738, C739, C740, C741, C742, C743, C744, C745, C746, C747, C748, C749, C750, C751, C752, C753, C754, C755, C756, C757, C758, C759, C760, C761, C762, C763, C764, C765, C766, C767, C768, C769, C770, C771, C772, C773, C774, C775, C776, C777, C778, C779, C780, C781, C782, C783, C784, C785, C786, C787, C788, C789, C790, C791, C792, C793, C794, C795, C796, C797, C798, C799, C800, C801, C802, C803, C804, C805, C806, C807, C808, C809, C810, C811, C812, C813, C814, C815, C816, C817, C818, C819, C820, C821, C822, C823, C824, C825, C826, C827, C828, C829, C830, C831, C832, C833, C834, C835, C836, C837, C838, C839, C840, C841, C842, C843, C844, C845, C846, C847, C848, C849, C850, C851, C852, C853, C854, C855, C856, C857, C858, C859, C860, C861, C862, C863, C864, C865, C866, C867, C868, C869, C870, C871, C872, C873, C874, C875, C876, C877, C878, C879, C880, C881, C882, C883, C884, C885, C886, C887, C888, C889, C890, C891, C892, C893, C894, C895, C896, C897, C898, C899, C900, C901, C902, C903, C904, C905, C906, C907, C908, C909, C910, C911, C912, C913, C914, C915, C916, C917, C918, C919, C920, C921, C922, C923, C924, C925, C926, C927, C928, C929, C930, C931, C932, C933, C934, C935, C936, C937, C938, C939, C940, C941, C942, C943, C944, C945, C946, C947, C948, C949, C950, C951, C952, C953, C954, C955, C956, C957, C958, C959, C960, C961, C962, C963, C964, C965, C966, C967, C968, C969, C970, C971, C972, C973, C974, C975, C976, C977, C978, C979, C980, C981, C982, C983, C984, C985, C986, C987, C988, C989, C990, C991, C992, C993, C994, C995, C996, C997, C998, C999, C1000, C1001, C1002, C1003, C1004, C1005, C1006, C1007, C1008, C1009, C1010, C1011, C1012, C1013, C1014, C1015, C1016, C1017, C1018, C1019, C1020, C1021, C1022, C1023, C1024, C1025, C1026, C1027, C1028, C1029, C1030, C1031, C1032, C1033, C1034, C1035, C1036, C1037, C1038, C1039, C1040, C1041, C1042, C1043, C1044, C1045, C1046, C1047, C1048, C1049, C1050, C1051, C1052, C1053, C1054, C1055, C1056, C1057, C1058, C1059, C1060, C1061, C1062, C1063, C1064, C1065, C1066, C1067, C1068, C1069, C1070, C1071, C1072, C1073, C1074, C1075, C1

CN321 A4	CN332 C4	CN333 D2	C301 B3	C302 C4	C304 C4	C305 C5	C307 A3	C308 D5	C309 A3	C310 A3	C311 A2	C319 B1	C320 A2	C326 A3	C327 A3
C329 A4	C330 A4	C331 B4	C332 A2	C333 A3	C334 B4	C335 B4	C336 B4	D321 A4	D322 A4	D323 C4	FB302 A2	FB303 A2	FB322 A4	FB323 A3	FB324 B4
L300 C5	Q300 B3	Q301 D3	Q302 B3	R300 C1	R301 C3	R302 C3	R303 C3	R304 C3	R306 D3	R307 D3	R308 C4	R309 B3	R310 B2	R311 B2	R316 B1
R317 B1	R318 B2	R319 D3	R320 D3	R321 D2	R322 C4	R323 D2	R324 D3	R325 B2	R326 D3	R328 A1	R329 B1	R330 B2	R331 A4	R332 A4	R333 A4
R334 A1	R335 B1	R337 B3	R338 A1	R339 B4	R340 B4	R341 D3	R342 D3	R343 C2	R344 C2	R345 C2	R346 C2	TP300 B1	TP301 A1	U300 D4	U301 C4

[illegible]

U390

CS VCC
SD SCL
WP SCK
GND SI

8 7 6 5 4 3 2 1

POC09#
GPIO14
PD00

R385 NCOR05 1/16W
R442 4.7KOHM ±5% 1/16W
R365 4.7KOHM ±5% 1/16W
R383 NCOR05 1/16W
R408 4.7KOHM ±5% 1/16W

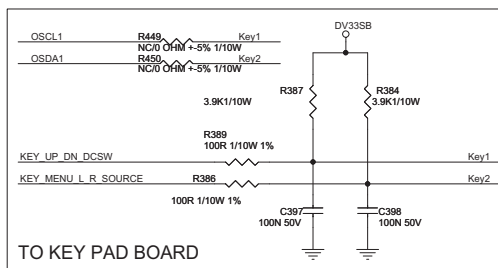
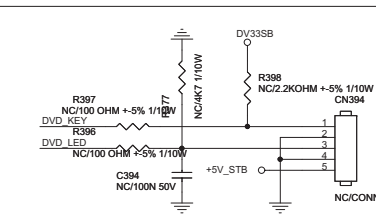
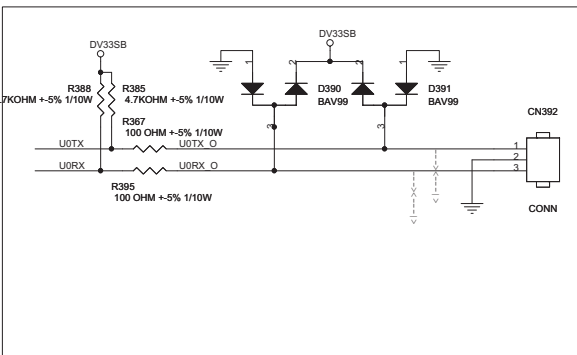
DV33Q

R333 NCOR05 1/16W
R384 4.7KOHM ±5% 1/16W
R408 4.7KOHM ±5% 1/16W

DV33Q

C390 100N 16V

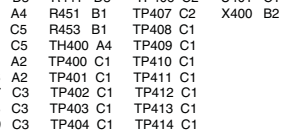
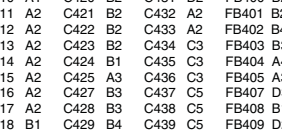
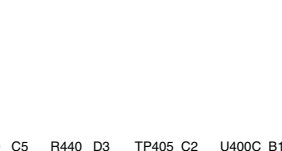
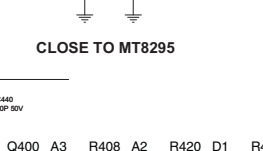
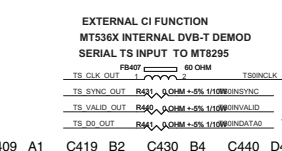
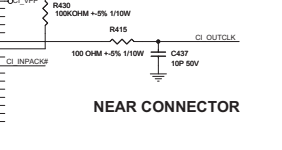
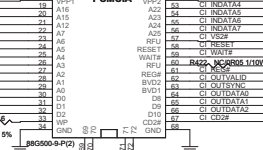
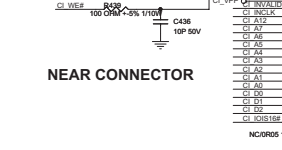
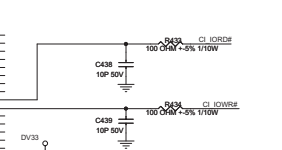
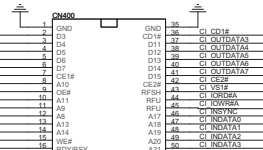
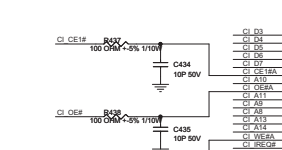
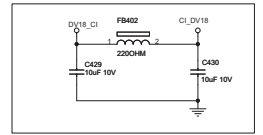
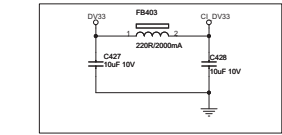
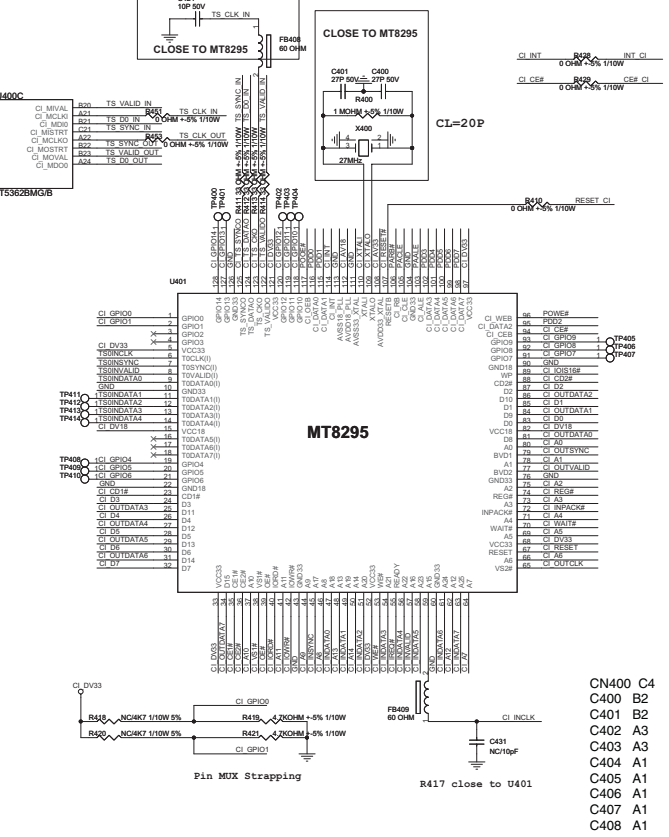
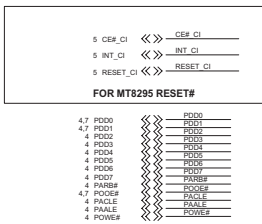
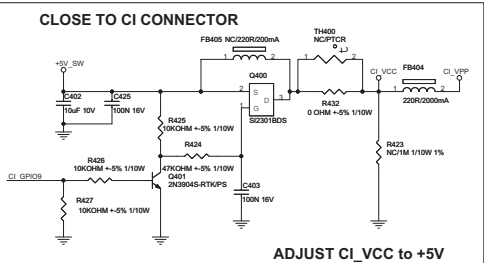
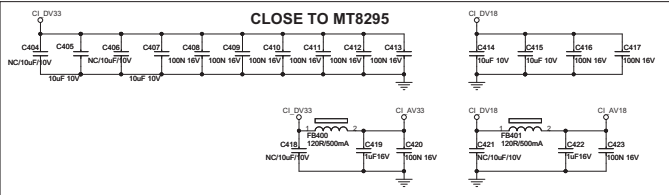
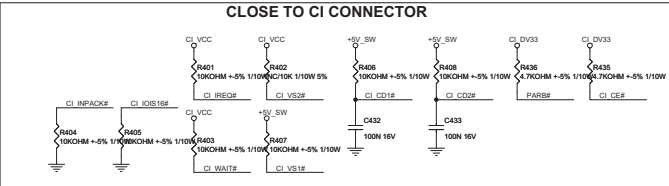
Schematic diagram of the power supply section of the OPN2931. The diagram shows a transformer with primary windings R394 (NC4K7 1/16W 5%) and R390 (4.7KOHM ±5% 1/16W) connected to SMD/0402 components. The secondary windings are connected to a network of resistors: R398 (0 OHM ±5% 1/10W) and R397 (0 OHM ±5% 1/16W) in series with R399 (0 OHM ±5% 1/10W) and R396 (0 OHM ±5% 1/16W). The output is connected to pins TP380, TP391, TP392, and TP393, which are all connected to ground.



5	KEY_MENU_L_R_SOURCE	KEY_MENU_L_R_SOURCE
5	LED_G	LED_R
4,5	LED_R	LED_R
5	KEY_UP_DCSW	KEY_UP_DN_DCSW
5,10	U0TX0	U0TX0
5	RG3	RG3
4,8	PDD0	PDD0
4,8	PDD1	PDD1
4,8	POCE#	POCE#
4	POCE#	POCE#
5	JTRST#	JTRST#
5	JTD0	JTD0
5	JTK	JTK
5	JTD1	JTD1
5	JTMS	JTMS
5	OPCTRL0	OPCTRL0
5	OPCTRL1	OPCTRL1
5	DVD_LED	DVD_LED
5	DVD_KEY	DVD_KEY
5,10	U0TX0_O	U0TX0_O
5,10	U0RX0_O	U0RX0_O
4	GPIO_14	GPIO_14
4	GPIO_15	GPIO_15
4	GPIO_16	GPIO_16
4,8	PDD2	PDD3
4,8	PDD3	PDD4
4,8	PDD4	PDD5
4,8	PDD5	PDD6
4,8	PDD6	PDD7
4,8	PDD7	PA0LE
4,8	PA0LE	PA0LE
4,8	PA0LE	POCE#
4,8	POCE#	POCE#
4	PARB#	POCE#
4	POCE#	JTRST#
5	JTRST#	LIGHT_Sensor
5	OSGL1	OSGL1
5	OSGL1	OSDA1

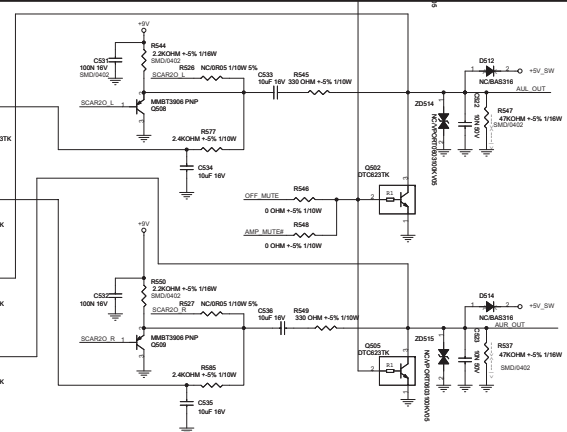
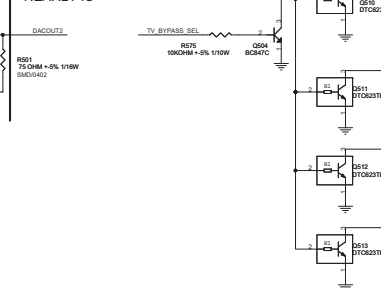
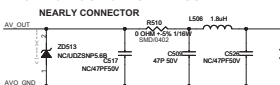
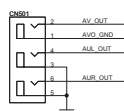
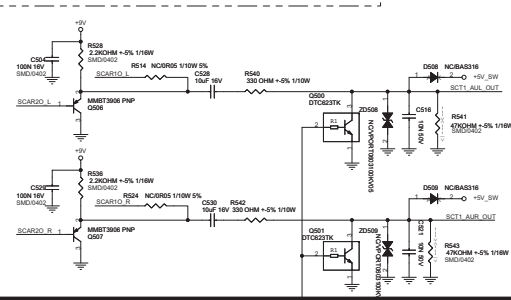
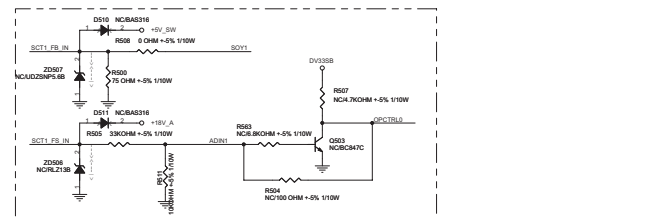
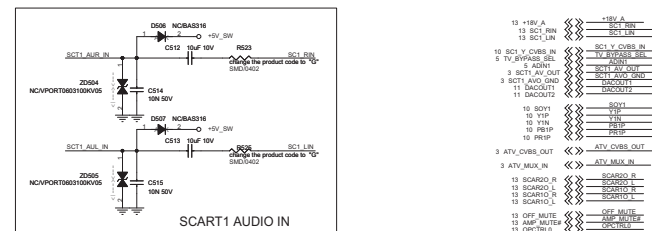
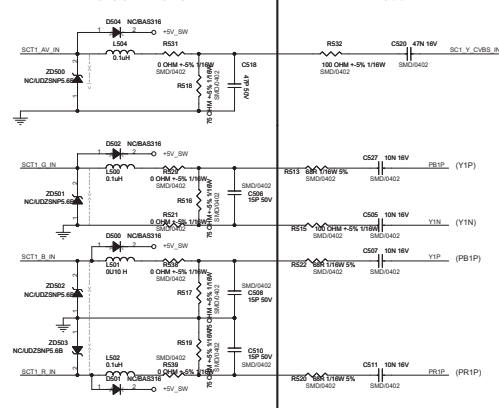
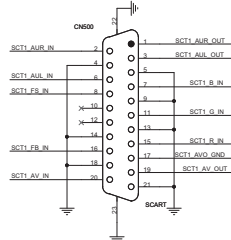
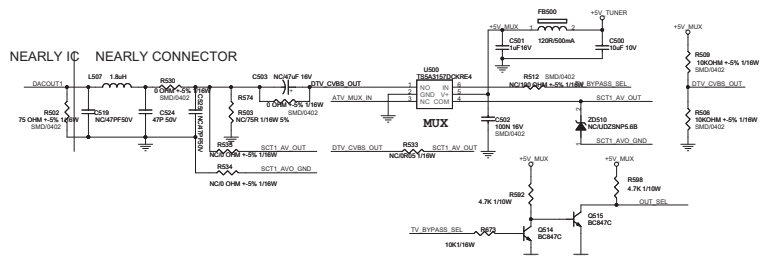
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C396 D1	C397 C4	C398 C5	C399 D1	C426 A2	D390 B3	D391 B3	FB390 C1	J390 B2	R365 A2	R366 A2	R367 C3
R368 B2	R369 B2	R370 D1	R371 A1	R372 D1	R373 A3	R374 C1	R375 D1	R376 C1	R377 A4	R378 B1	R379 B1
R380 B1	R381 B1	R382 A3	R383 A3	R384 C5	R385 B2	R386 C4	R387 C4	R388 B2	R389 C4	R390 A3	R391 C1
R393 D1	R394 A3	R395 C3	R396 B4	R397 B4	R398 A4	R409 A3	R442 A2	R443 A1	R444 B1	R445 C1	R446 C1
R447 C1	R448 D1	R449 C4	R450 C4	TP390 B3	TP391 B3	TP392 B3	TP393 B3	U390 A3	U391 A1	ZD392 D1	ZD393 D1

MT8295 / CI Card

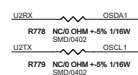
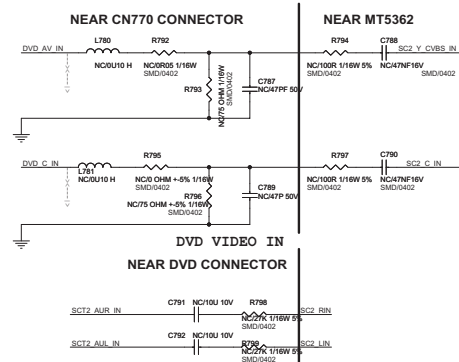
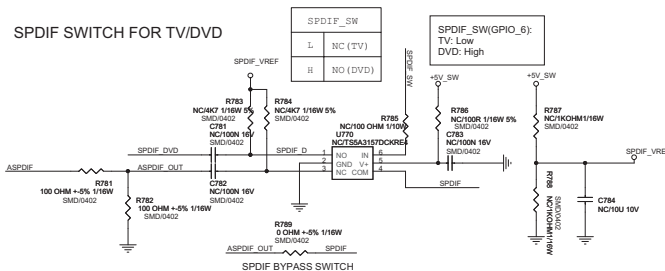
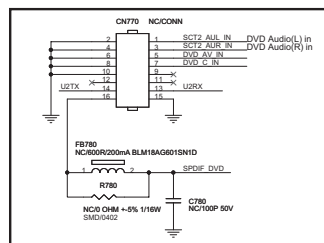
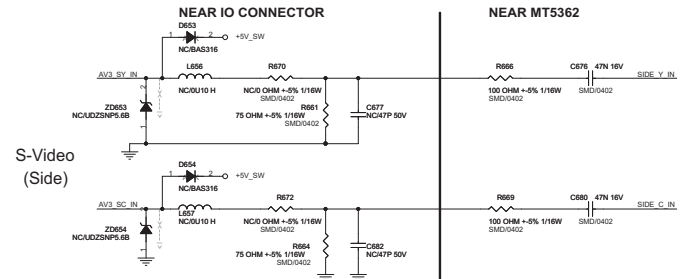
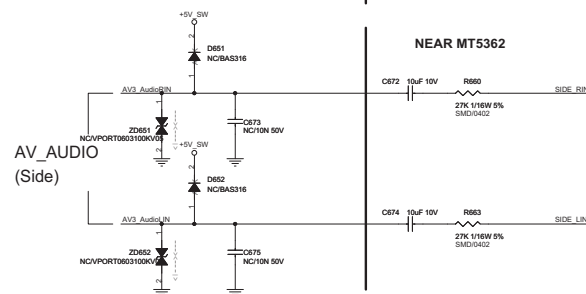
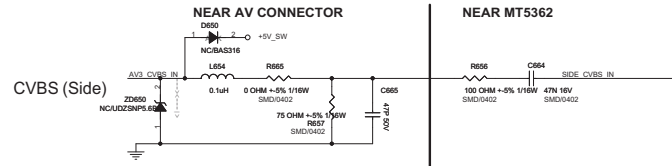
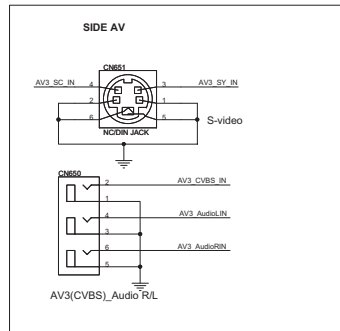
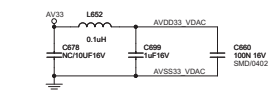


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C400 B2	C410 A1	C420 B2	C431 D2	FB400 B2	Q401 A3	R410 B2	R421 D1	R431 D3	R441 D3	TP406 C2	U401 C1
C401 B2	C411 A2	C421 B2	C432 A2	FB401 B2	Q402 B2	R411 B1	R422 C4	R432 A4	R451 B1	TP407 C2	X400 B2
C402 A3	C412 A2	C422 B2	C433 A2	FB402 B4	R401 A1	R412 B1	R423 A4	R433 C5	R453 B1	TP408 C1	
C403 A3	C413 A2	C423 B2	C434 C3	FB403 B3	R402 A1	R413 B1	R424 A3	R434 C5	TH400 A4	TP409 C1	
C404 A1	C414 A2	C424 B1	C435 C3	FB404 A4	R403 A1	R414 B1	R425 A3	R435 A2	TP400 C1	TP410 C1	
C405 A1	C415 A2	C425 A3	C436 C3	FB405 A3	R404 A1	R415 C5	R426 A3	R436 A2	TP401 C1	TP411 C1	
C406 A1	C416 A2	C426 B3	C437 C5	FB407 D3	R405 A1	R416 C4	R427 A3	R437 C3	TP402 C1	TP412 C1	
C407 A1	C417 A2	C428 B3	C438 C5	FB408 B1	R406 A2	R418 D1	R428 B2	R438 C3	TP403 C1	TP413 C1	
C408 A1	C418 B1	C429 B4	C439 C5	FB409 D2	R407 A1	R419 D1	R429 B2	R439 C3	TP404 C1	TP414 C1	

NEARLY IC NEARLY CONNECTOR

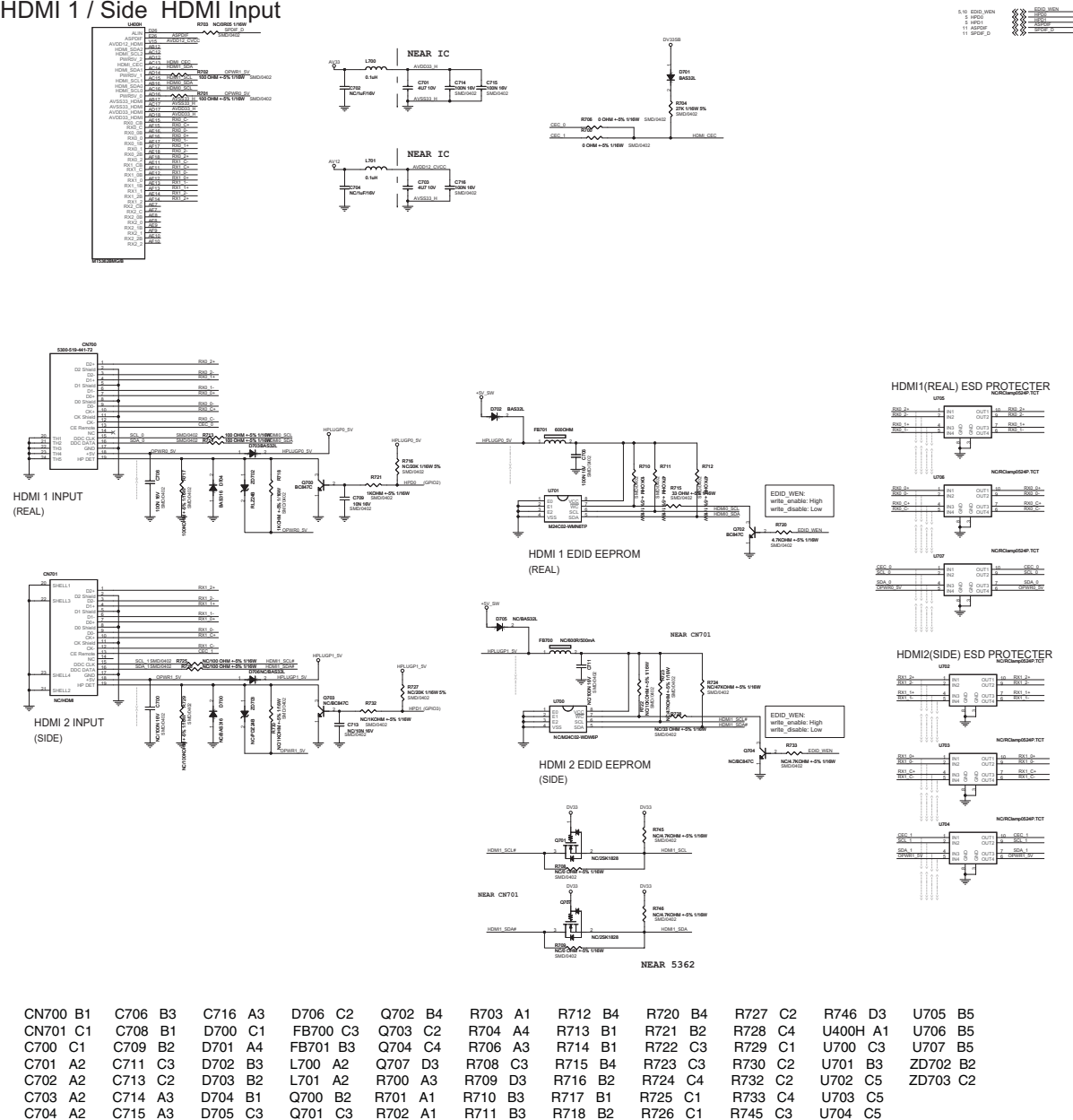


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C501	A2	R504	B4
C502	A2	R505	B4
C503	A2	R506	A3
C504	B4	R507	B4
C505	B3	R508	A4
C506	B2	R509	A3
C507	B3	R510	C2
C508	B2	R511	B4
C509	C2	R512	B2
C510	C2	R513	B2
C511	C3	R514	B5
C512	A4	R515	B3
C513	A4	R516	B2
C514	A4	R517	B2
C515	A4	R518	B2
C516	B5	R519	C2
C517	C1	R520	C3
C518	B2	R521	B2
C519	A1	R522	B3
C520	B3	R523	A4
C521	C5	R524	C4
C522	C5	R525	A4
C523	D5	R526	C4
C524	A1	R527	D4
C525	A1	R528	B4
C526	C2	R529	B2
C527	B3	R530	A1
C528	B4	R531	B2
C529	C4	R532	B3
C530	C4	R533	A2
C531	C4	R534	A1
C532	D4	R535	A1
C533	C4	R536	C4
C534	C4	R537	D5
C535	D4	R538	B2
C536	D4	R539	C2
D500	B2	R540	B4
D501	C2	R541	B5
D502	B2	R542	C4
D504	B2	R543	C5
D506	A4	R544	C4
D507	A4	R545	C4
D508	B5	R546	C4
D509	C5	R547	C5
D510	A4	R548	D4
D511	B4	R549	D4
D512	C5	R550	D4
D514	D5	R553	B4
FB500	A2	R574	A1
L500	B2	R575	C3
L501	B2	R576	C3
L502	C2	R577	C4
L504	B2	R585	D4
L506	C2	R592	A2
L507	A1	R598	A3
Q500	B4	R673	A2
Q501	C4	U500	A2
Q502	C4	ZD500	B2
Q503	B4	ZD501	B2
Q504	C3	ZD502	B2
Q505	D4	ZD503	C2
Q506	B4	ZD504	A4
Q507	C4	ZD505	A4
Q508	C4	ZD506	B3
Q509	D4	ZD507	B3
Q510	C3	ZD508	B5
Q511	D3	ZD509	C5
Q512	D3	ZD510	A2
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Q514	A2	ZD514	C5
Q515	A2	ZD515	D5
R500	B4		

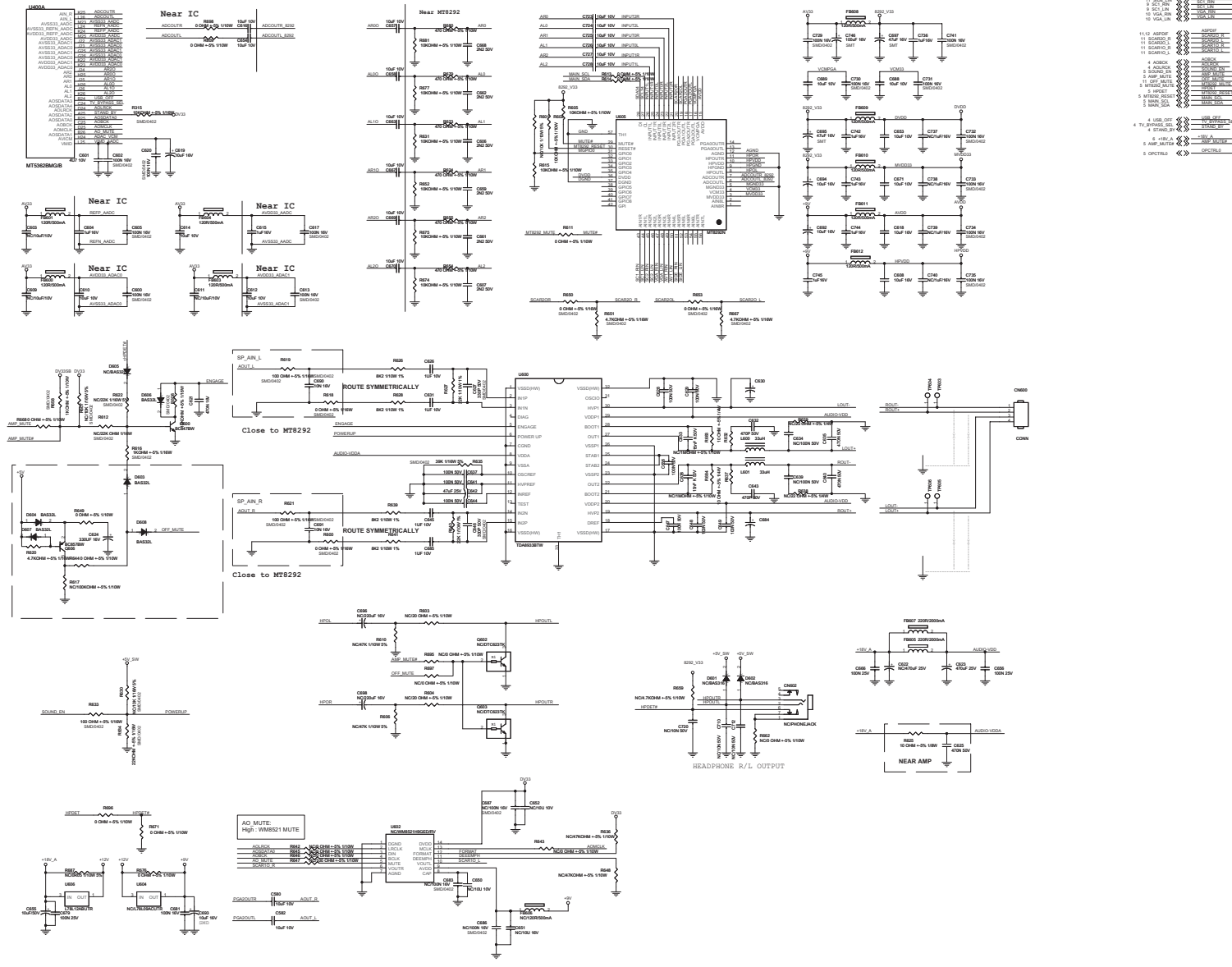
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CN670	C1	C678	A1	C788	C5	FB780	D1	R661	B4	R779	D1	R789	D2	TP607	A1
C660	A1	C680	B5	C789	C4	L652	A1	R663	B3	R780	D1	R792	C4	U400J	A1
C664	A3	C682	B4	C790	C5	L654	A2	R664	B4	R781	D2	R793	C4	U770	D3
C665	A3	C699	A1	C791	D4	L656	B4	R665	A2	R782	D2	R794	C5	ZD650	A2
C672	B3	C780	D1	C792	D4	L657	B4	R666	B5	R783	C2	R795	C4	ZD651	B2
C673	B2	C781	D2	D650	A2	L780	C4	R669	B5	R784	C2	R796	C4	ZD652	B2
C674	B3	C782	D2	D651	A2	L781	C4	R670	B4	R785	D3	R797	C5	ZD653	B4
C675	B2	C783	D3	D652	B2	R656	A3	R672	B4	R786	C3	R798	D4	ZD654	B4

HDMI 1 / Side HDMI Input



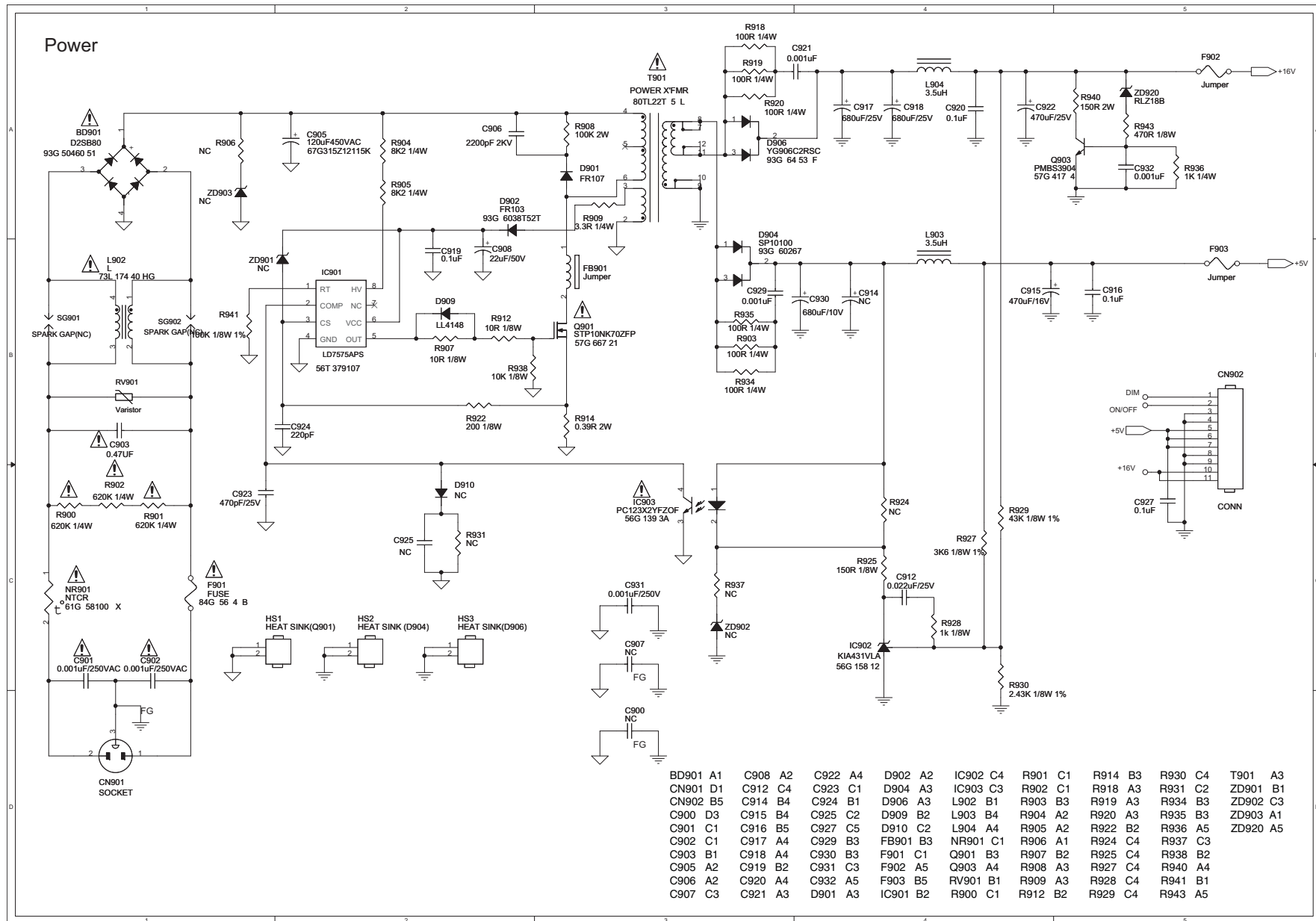
Audio AMP / Headphone out



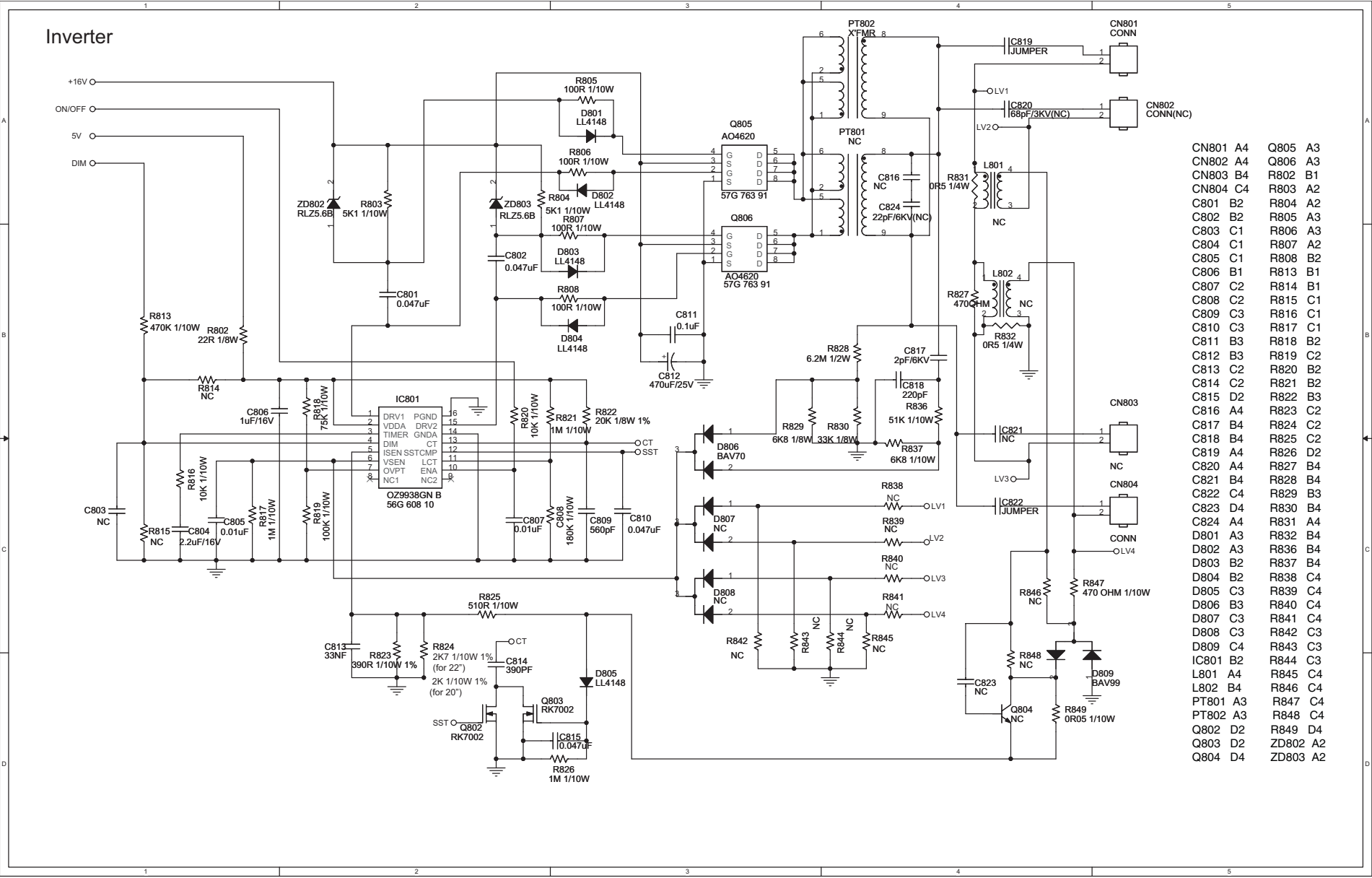
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C600	B1	C689	A4	R613	A3
C601	A1	C690	B2	R614	A3
C602	A1	C691	C2	R615	A3
C603	A1	C692	A4	R616	B1
C604	A1	C693	D1	R617	C1
C605	A1	C694	A4	R618	B2
C606	A2	C695	A4	R619	B2
C607	B2	C696	C2	R620	C1
C608	B4	C697	A4	R621	C2
C609	B1	C698	C2	R622	B1
C610	B1	C710	C3	R623	A2
C611	B1	C712	C3	R624	A2
C612	B1	C720	C3	R625	C4
C613	B2	C723	A3	R626	B2
C614	A1	C724	A3	R627	B2
C615	A1	C725	A3	R628	B2
C616	A1	C726	A3	R629	B4
C617	A2	C727	A3	R630	C1
C618	A4	C728	A3	R631	A2
C619	A1	C729	A4	R632	B3
C620	A1	C730	A4	R633	C1
C621	B1	C731	A4	R634	C1
C622	C4	C732	A4	R635	B2
C623	C4	C733	A4	R636	D3
C624	C1	C734	A4	R637	B3
C625	C4	C735	B4	R638	B4
C626	B2	C736	A4	R639	C2
C627	B2	C737	A4	R640	C2
C628	B3	C738	A4	R641	C2
C629	B3	C739	A4	R642	D2
C630	B3	C740	B4	R643	D3
C631	B2	C741	A4	R644	C1
C632	B3	C742	A4	R645	D2
C633	B3	C743	A4	R646	D2
C634	B4	C744	A4	R647	D2
C635	B4	C745	B4	R648	D3
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C638	B3	D602	C3	R651	B3
C639	B4	D603	B1	R652	A2
C640	B4	D604	C1	R653	B3
C641	B2	D605	B1	R654	B2
C642	B2	D606	B1	R655	A2
C643	B3	D607	C1	R656	B1
C644	C2	D608	C1	R659	C3
C645	C2	FB600	B1	R662	C3
C646	C2	FB601	A1	R667	B3
C647	C3	FB603	B1	R668	B1
C648	C3	FB604	A1	R671	D1
C649	C3	FB605	C4	R674	B2
C650	D2	FB606	D3	R675	A2
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C653	A4	FB609	A4	R679	A2
C654	A1	FB610	A4	R680	A2
C655	D1	FB611	A4	R681	A2
C656	C4	FB612	B4	R683	B3
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C658	A2	L601	B3	R687	D1
C659	A2	Q600	B1	R695	C2
C661	B2	Q602	C2	R696	D1
C662	A2	Q603	C2	R697	C2
C663	A2	Q606	C1	R698	A1
C666	C4	R315	A1	TP603	B4
C667	A2	R600	C2	TP604	B4
C668	A2	R601	A3	TP605	B4
C669	A2	R602	A3	TP606	B4
C670	B2	R603	C2	U400A	A1
C671	A4	R604	C2	U600	B3
C679	D1	R605	A3	U602	D2
C681	D1	R606	C2	U604	D1
C683	D2	R607	B1	U605	A3
C684	C3	R608	B1	U606	D1

6.2 Power Board

715G2783-2-7

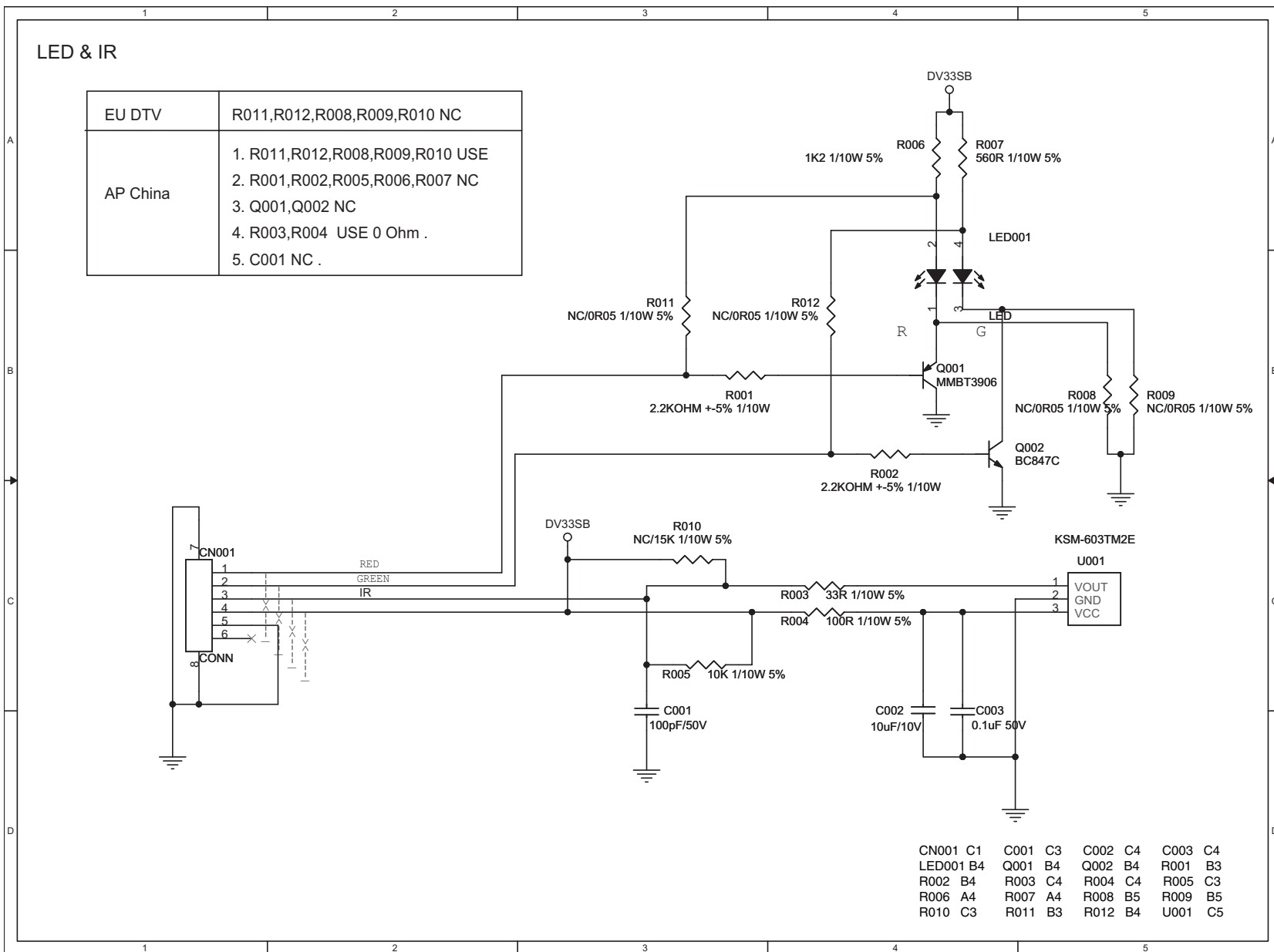


Inverter



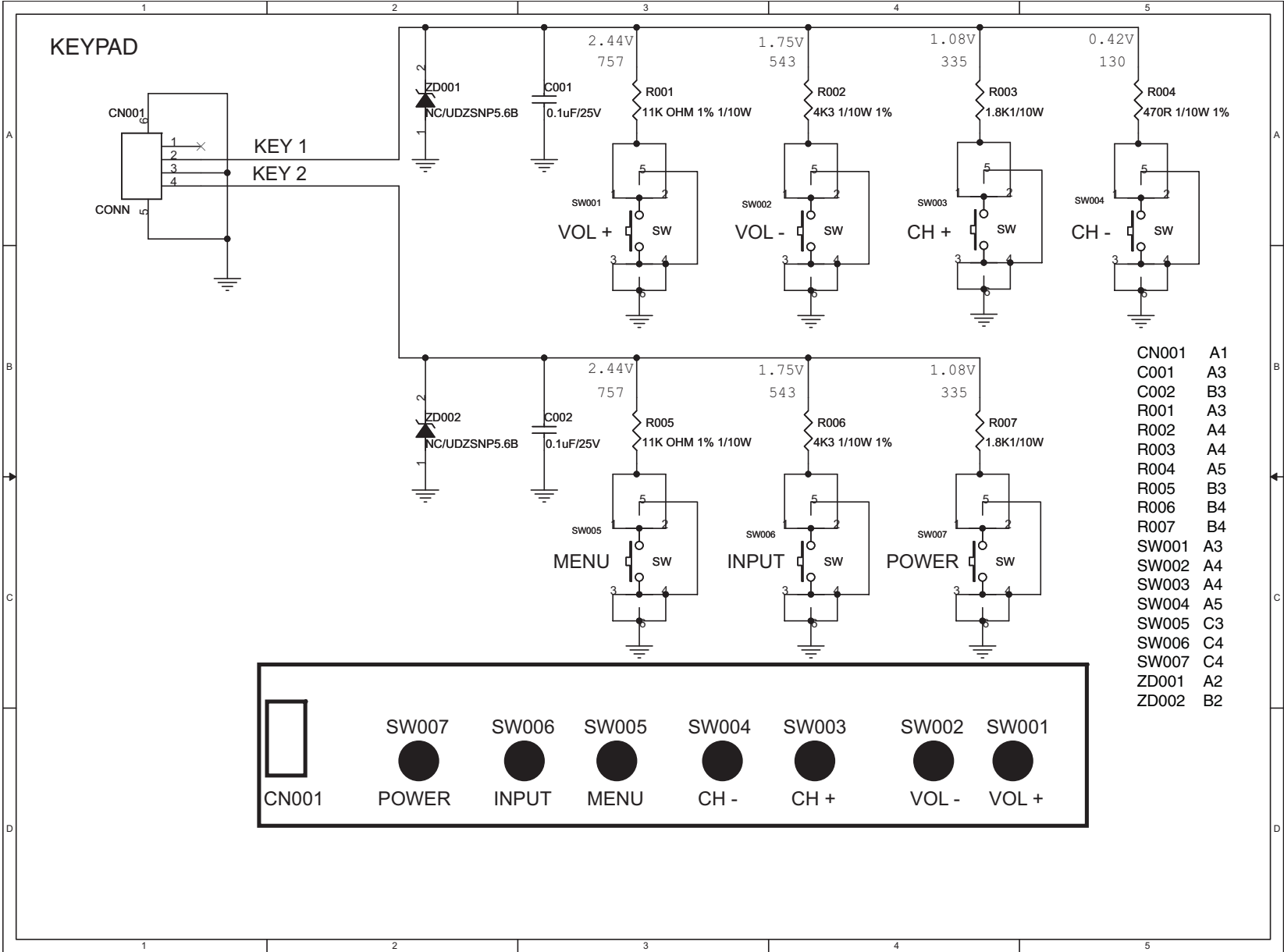
6.3 IR Board

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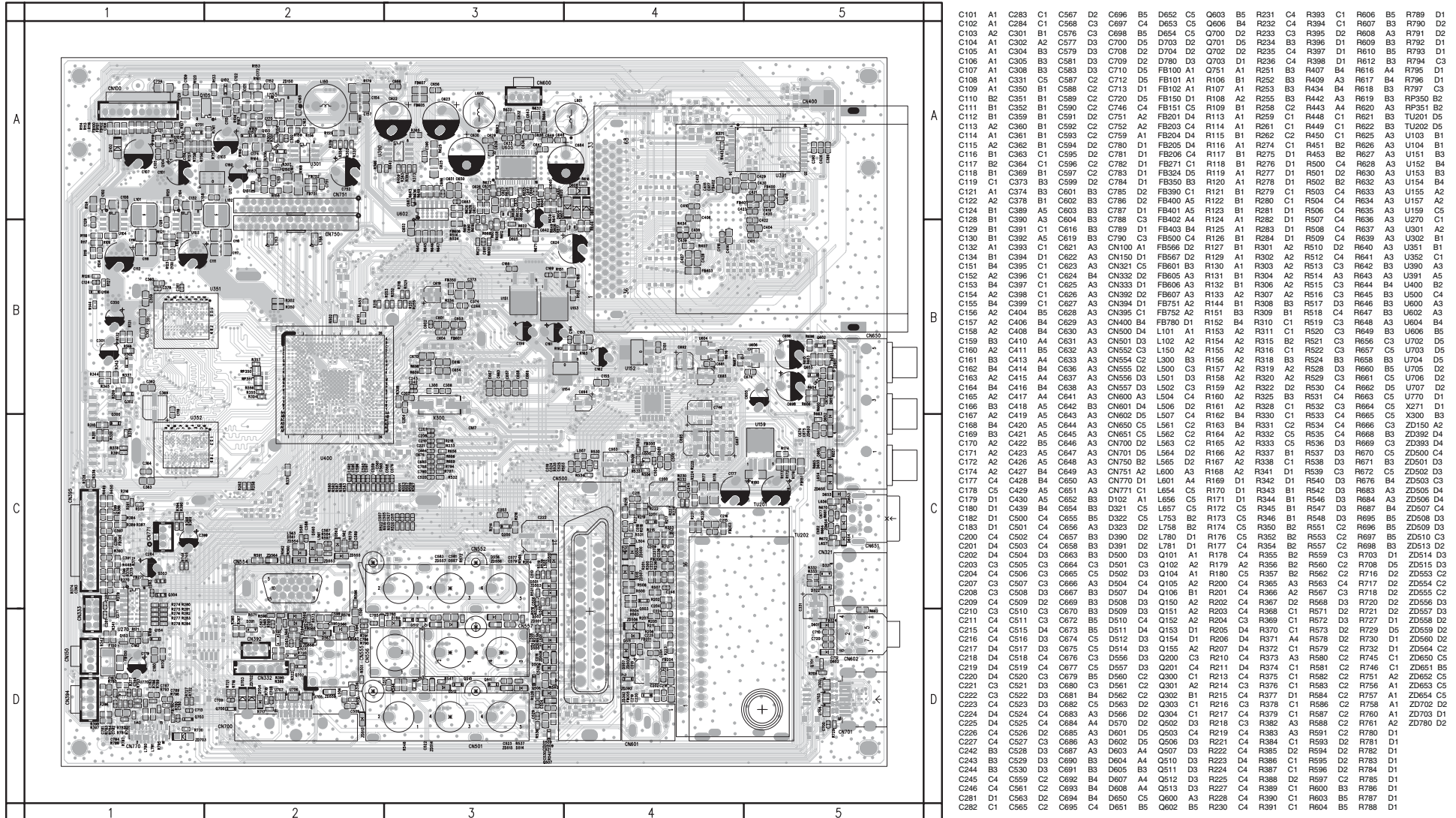


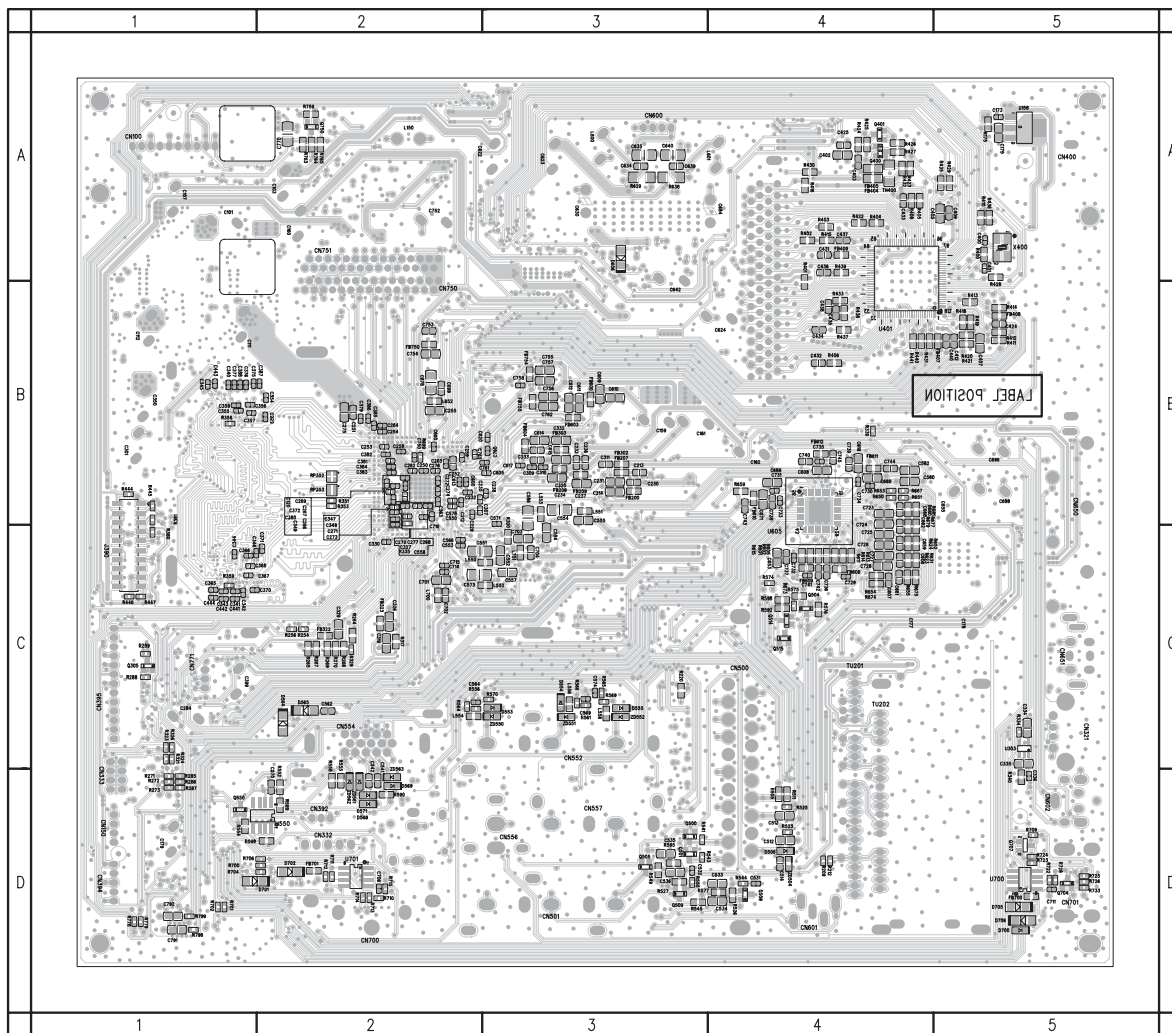
6.4 Key Board

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715G3292-1B

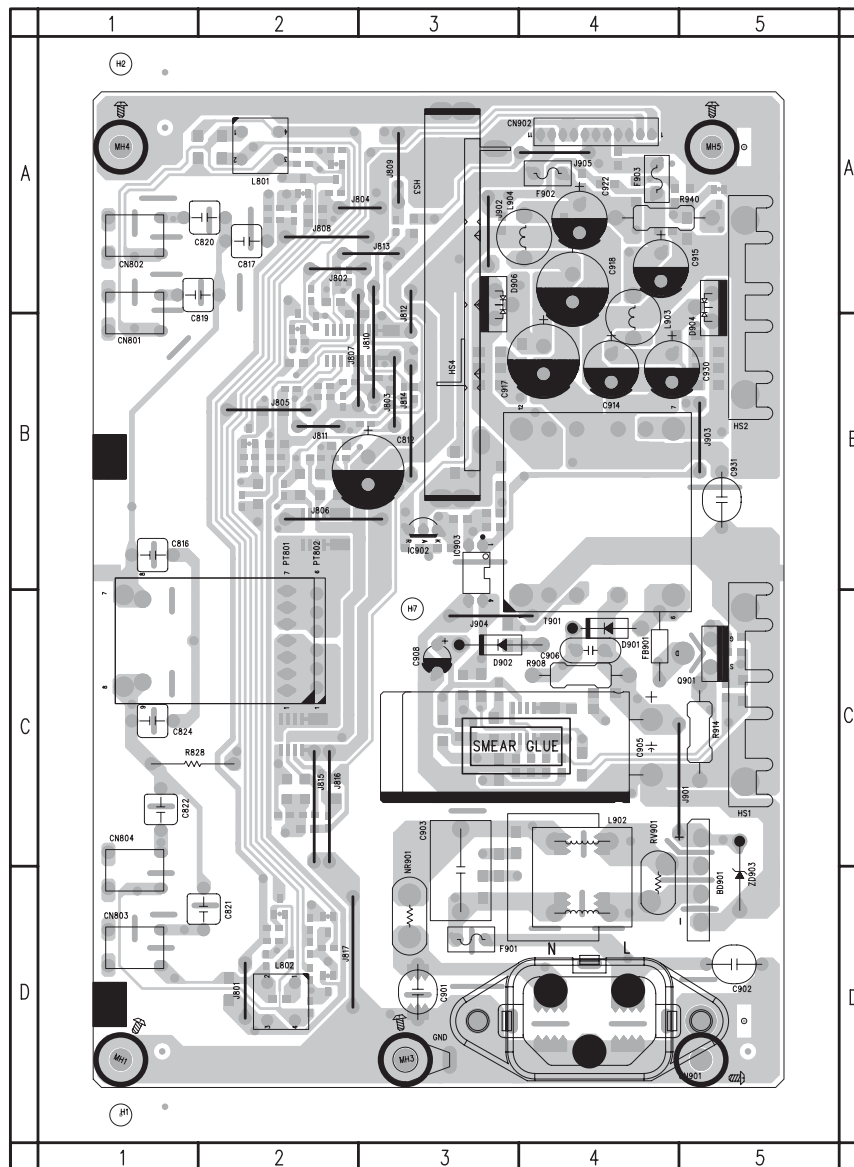




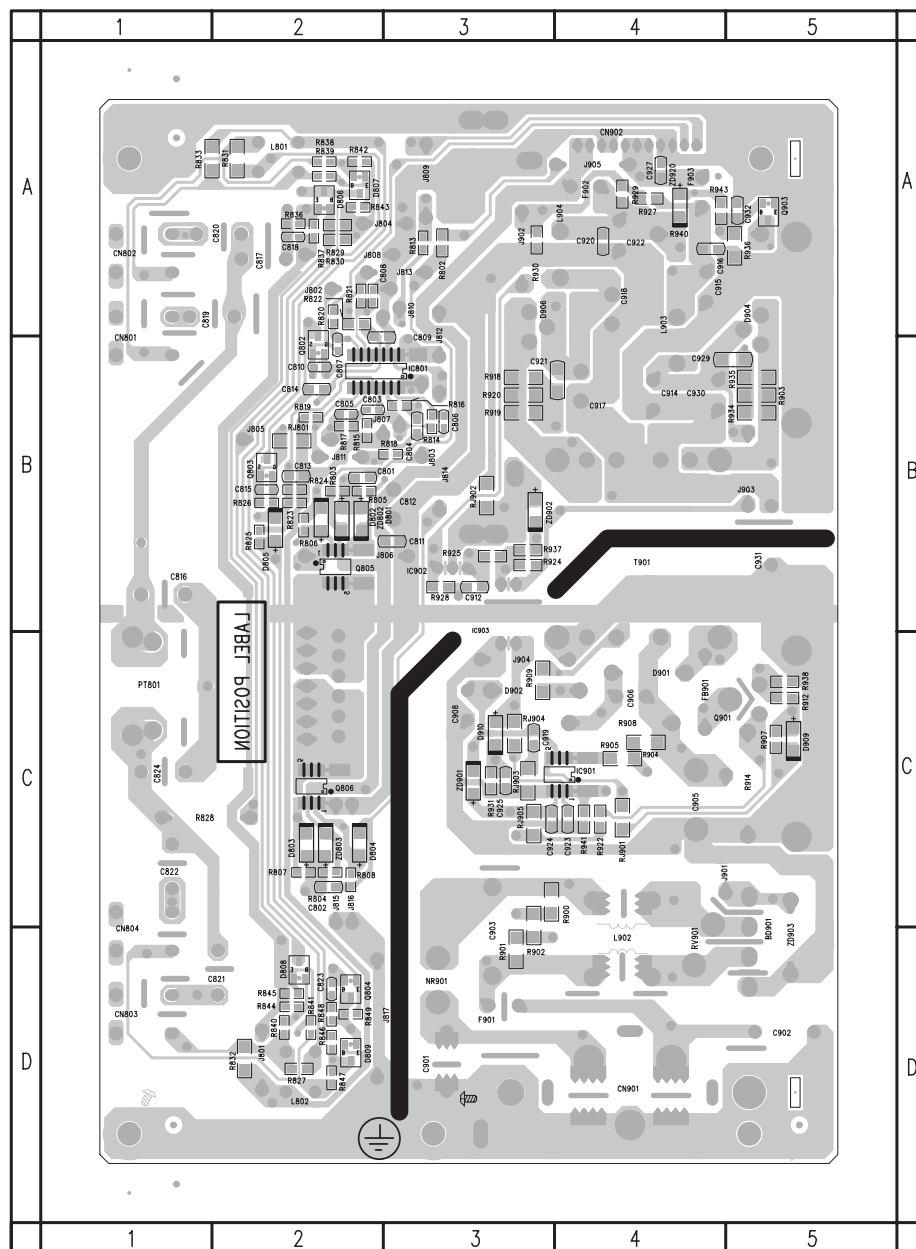
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C173	A5	C356	B1	C566	C2	C740	B4	L556	C3	R412	B5	R605	C4	TP393	C1
C175	A5	C357	B1	C569	C3	C741	C4	L558	C3	R413	B5	R611	C4	TP400	B5
C212	B2	C358	B1	C570	D2	C742	C4	L652	B2	R414	B5	R613	C4	TP401	B5
C213	B3	C365	C1	C571	C3	C743	B4	L700	C2	R415	A4	R614	C4	TP402	B5
C214	B3	C366	C1	C573	C2	C744	B4	L701	C3	R416	A4	R615	C4	TP403	B5
C229	B2	C367	C1	C574	C3	C745	B4	Q305	C1	R418	B5	R623	C4	TP404	B5
C230	B3	C368	C1	C578	B2	C750	B2	Q400	A4	R419	B5	R624	C4	TP405	A4
C231	B3	C370	C1	C580	B4	C753	B2	Q401	A4	R420	B5	R629	A3	TP406	A4
C232	B2	C371	C2	C582	B4	C754	B2	Q500	D3	R421	B5	R631	C4	TP407	A4
C233	B3	C372	B2	C584	C3	C755	B3	Q501	D3	R422	A4	R638	A3	TP408	B4
C234	B3	C375	B1	C586	B3	C756	B3	Q504	C4	R423	A4	R650	B4	TP409	B4
C235	B2	C376	B1	C600	B2	C757	B3	Q505	D3	R424	A4	R651	B4	TP410	B4
C236	B3	C377	B1	C605	B3	C758	B3	Q508	D4	R425	A4	R652	C4	TP411	B4
C237	B3	C379	B2	C606	C4	C760	B3	Q509	D3	R426	A4	R653	B4	TP412	B4
C238	B3	C380	B2	C607	C4	C761	B3	Q514	C4	R427	A4	R654	C4	TP413	B4
C250	B2	C381	B2	C608	B4	C762	B3	Q515	C4	R428	A5	R655	C4	TP414	B4
C251	B2	C382	B2	C609	B3	C763	B2	Q550	D1	R429	A5	R659	B4	TP602	C2
C252	B2	C383	B2	C610	B3	C770	A2	Q704	D5	R430	A4	R667	B4	TP603	A3
C253	B2	C384	B2	C611	B3	C791	D1	Q707	D5	R431	B4	R673	C4	TP604	A4
C254	B2	C385	B2	C612	B3	C792	D1	Q750	A2	R432	A4	R674	C4	TP605	A3
C255	B2	C386	B2	C613	B2	D506	D4	R175	A5	R433	B4	R675	C4	TP606	A3
C258	B2	C387	B2	C614	B3	D553	C3	R209	D4	R435	A5	R677	C4	TP607	C2
C259	B2	C388	B1	C615	B3	D554	C3	R212	D4	R436	A5	R679	C4	TP752	B2
C262	B2	C400	A5	C617	B3	D555	C3	R220	C3	R437	B4	R680	B4	TP753	B2
C263	B2	C401	A5	C618	B4	D564	C2	R254	C2	R438	B4	R681	B4	TP754	B2
C264	B2	C402	A4	C620	B3	D565	C2	R256	C2	R439	A4	R699	B2	TP755	A2
C265	B2	C403	A4	C634	A3	D568	D2	R264	C2	R440	B4	R700	D2	TP756	B2
C266	B2	C405	A5	C635	A3	D569	D2	R265	C2	R441	B4	R701	D1	TP757	A2
C267	B2	C407	B5	C639	A3	D571	D2	R267	C2	R444	B1	R702	D1	TP758	A2
C268	B2	C409	A5	C640	A3	D606	A3	R268	C2	R445	B1	R704	D2	TP759	B2
C269	B2	C412	B5	C653	C4	D700	D5	R269	C2	R446	C1	R706	D2	TP760	A2
C270	B2	C424	B5	C659	C4	D701	D1	R270	C2	R447	C1	R709	D5	TP761	A2
C271	B2	C425	A4	C660	B2	D702	D2	R271	D1	R505	D4	R710	D2	TP762	B2
C272	B2	C431	A4	C661	C4	D705	D5	R272	D1	R511	D4	R711	D2	TP763	B2
C273	C2	C432	B4	C662	C4	D706	D5	R273	D1	R523	D4	R712	D2	TP764	B2
C274	B2	C433	A4	C668	B4	FB200	B3	R285	D1	R525	D4	R713	D2	TP765	B2
C275	B2	C434	B4	C671	B4	FB207	B3	R286	D1	R526	D4	R714	D2	TP766	B2
C276	B2	C435	B4	C678	B2	FB208	B3	R287	D1	R527	D3	R715	D2	TP767	B2
C277	B2	C436	A4	C688	B4	FB209	B3	R288	C1	R541	D3	R722	D5	TP768	A2
C307	B2	C437	A4	C689	B4	FB302	B3	R289	C1	R543	D3	R723	D5	TP769	B2
C309	B3	C438	B4	C699	B2	FB303	B3	R300	C3	R544	D4	R724	D5	TP770	B2
C310	B3	C440	B5	C701	C2	FB322	C2	R317	C2	R545	D3	R725	D5	TP771	B2
C311	B3	C441	C1	C702	C2	FB323	C2	R321	C1	R549	D3	R726	D5	TP772	D1
C319	C2	C442	C1	C703	C3	FB404	A4	R323	C1	R550	D3	R728	D5	TP773	D1
C320	B3	C443	B1	C704	C3	FB405	A4	R324	C1	R552	D2	R733	D5	TP774	C1
C326	C2	C444	C1	C706	D2	FB407	B5	R326	C1	R554	D1	R759	A2	U158	A5
C327	B2	C512	D4	C711	D5	FB408	B5	R329	C2	R555	D2	R763	A2	U303	C5
C329	C2	C513	D4	C714	C2	FB409	A4	R334	C5	R556	C2	R764	A2	U401	B4
C330	C2	C514	D4	C715	C2	FB600	B3	R335	C2	R558	D2	R765	A2	U550	D2
C332	B3	C531	D4	C716	B2	FB603	B3	R339	B4	R561	C3	R778	D1	U605	B4
C333	B3	C532	D3	C723	B4	FB604	B3	R340	D5	R564	C2	R779	D1	U700	D5
C334	C5	C533	D4	C724	C4	FB608	C4	R351	B2	R565	C3	R798	D1	U701	D2
C335	C5	C534	D4	C725	C4	FB609	C4	R353	B2	R566	C3	R799	D1	X400	A5
C336	D5	C535	D3	C726	C4	FB610	B4	R358	B1	R569	C3	RP352	B2	ZD504	D4
C340	B1	C536	D3	C727	C4	FB611	B4	R359	C1	R570	C3	RP353	B2	ZD550	C3
C341	C1	C541	D2	C728	C4	FB612	B4	R380	C1	R574	C4	TH400	A4	ZD551	C3
C342	C1	C542	D2	C729	C4	FB700	D5	R381	B1	R575	C4	TP101	A1	ZD552	C3
C343	C1	C550	B2	C730	B4	FB701	D2	R400	A5	R576	C4	TP102	A1	ZD561	D2
C344	C1	C551	C2	C731	B4	FB750	B2	R401	B4	R577	D4	TP103	A1	ZD562	D2
C345	B1	C552	C3	C732	C4	FB754	B3	R402	A4	R585	D3	TP104	A1	ZD563	D2
C346	C1	C553	C2	C733	B4	FB755	B3	R403	A4	R589	D2	TP105	A1		
C347	B2	C554	B3	C734	B4	J390	C1	R404	A4	R590	D2	TP250	B2		
C348	B2	C555	B3	C735	B4	L550	C3	R405	A4	R592	C4	TP300	B2		
C349	B2	C557	C3	C736	C4	L551	B3	R406	B4	R598	C4	TP301	C2		
C353	B2	C558	B2	C737	C4	L552	C3	R408	A4	R599	D2	TP390	C1		
C354	B2	C562	C2	C738	B4	L553	B3	R410	A5	R601	C4	TP391	C1		

7.2 Power Board

715G2783-2-7



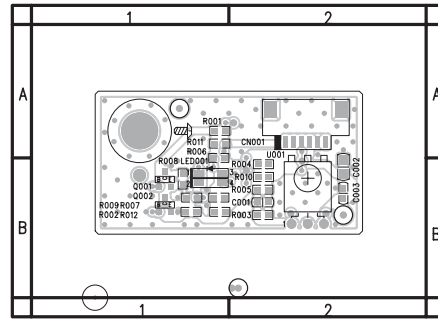
BD901	D5	J801	D2
C812	B3	J802	A3
C816	B1	J803	B3
C817	A2	J804	A3
C819	A2	J805	B2
C820	A2	J806	B2
C821	D2	J807	B3
C822	C1	J808	A2
C824	C1	J809	A3
C901	D3	J810	B3
C902	D5	J811	B2
C903	D3	J812	B3
C905	C4	J813	A2
C906	C4	J814	B3
C908	C3	J815	C2
C914	B4	J816	C2
C915	A4	J817	D2
C917	B4	J901	C5
C918	A4	J902	A3
C922	A4	J903	B5
C930	B4	J904	C4
C931	B5	J905	A4
CN801	A1	L801	A2
CN802	A1	L802	D2
CN803	D1	L902	D4
CN804	D1	L903	B4
CN901	D4	L904	A4
CN902	A4	NR901	D3
D901	C4	PT801	C2
D902	C3	PT802	C2
D904	A5	Q901	C5
D906	A3	R828	C1
F901	D3	R908	C4
F902	A4	R914	C5
F903	A4	R940	A5
FB901	C4	RV901	D4
IC902	B3	T901	B4
IC903	B3	ZD903	C5



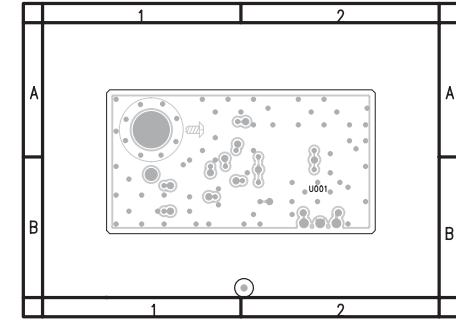
C801	B2	Q804	D2	R847	D2
C802	C2	Q805	B2	R848	D2
C803	B2	Q806	C2	R849	D2
C804	B3	Q903	A5	R900	C3
C805	B2	R802	A3	R901	D3
C806	B3	R803	B2	R902	C3
C807	B2	R804	C2	R903	B5
C808	A2	R805	B2	R904	C4
C809	B2	R806	B2	R905	C4
C810	B2	R807	C2	R907	C5
C811	B3	R808	C2	R909	C3
C813	B2	R813	A3	R912	C5
C814	B2	R814	B3	R918	B3
C815	B2	R815	B2	R919	B3
C818	A2	R816	B3	R920	B3
C823	D2	R817	B2	R922	C4
C912	B3	R818	B3	R924	B3
C916	A4	R819	B2	R925	B3
C919	C3	R820	A2	R927	A4
C920	A4	R821	A2	R928	B3
C921	B4	R822	A2	R929	A4
C923	C4	R823	B2	R930	A3
C924	C3	R824	B2	R931	C3
C925	C3	R825	B2	R934	B5
C927	A4	R826	B2	R935	B5
C929	B5	R827	D2	R936	A5
C932	A5	R829	A2	R937	B3
D801	B2	R830	A2	R938	C5
D802	B2	R831	A2	R941	C4
D803	C2	R832	D2	R943	A4
D804	C2	R833	A2	RJ801	B2
D805	B2	R836	A2	RJ901	C4
D806	A2	R837	A2	RJ902	B3
D807	A2	R838	A2	RJ903	C3
D808	D2	R839	A2	RJ904	C3
D809	D2	R840	D2	RJ905	C3
D909	C5	R841	D2	ZD802	B2
D910	C3	R842	A2	ZD803	C2
IC801	B3	R843	A2	ZD901	C3
IC901	C4	R844	D2	ZD902	B3
Q802	B2	R845	D2	ZD920	A4
Q803	B2	R846	D2		

7.3 IR Board

715G3561R01000004S

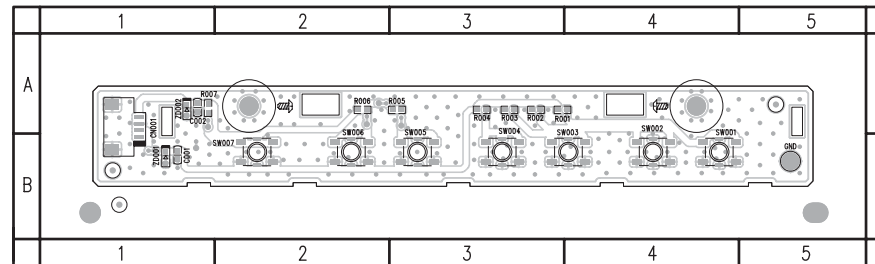


C001	B2	R004	B2
C002	B2	R005	B2
C003	B2	R006	A1
CN001	A2	R007	B1
LED001	B1	R008	B1
Q001	B1	R009	B1
Q002	B1	R010	B2
R001	A1	R011	A1
R002	B1	R012	B1
R003	B2	U001	B2

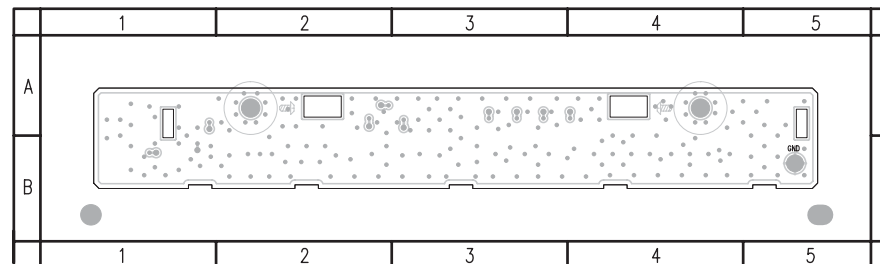


7.4 Key Board

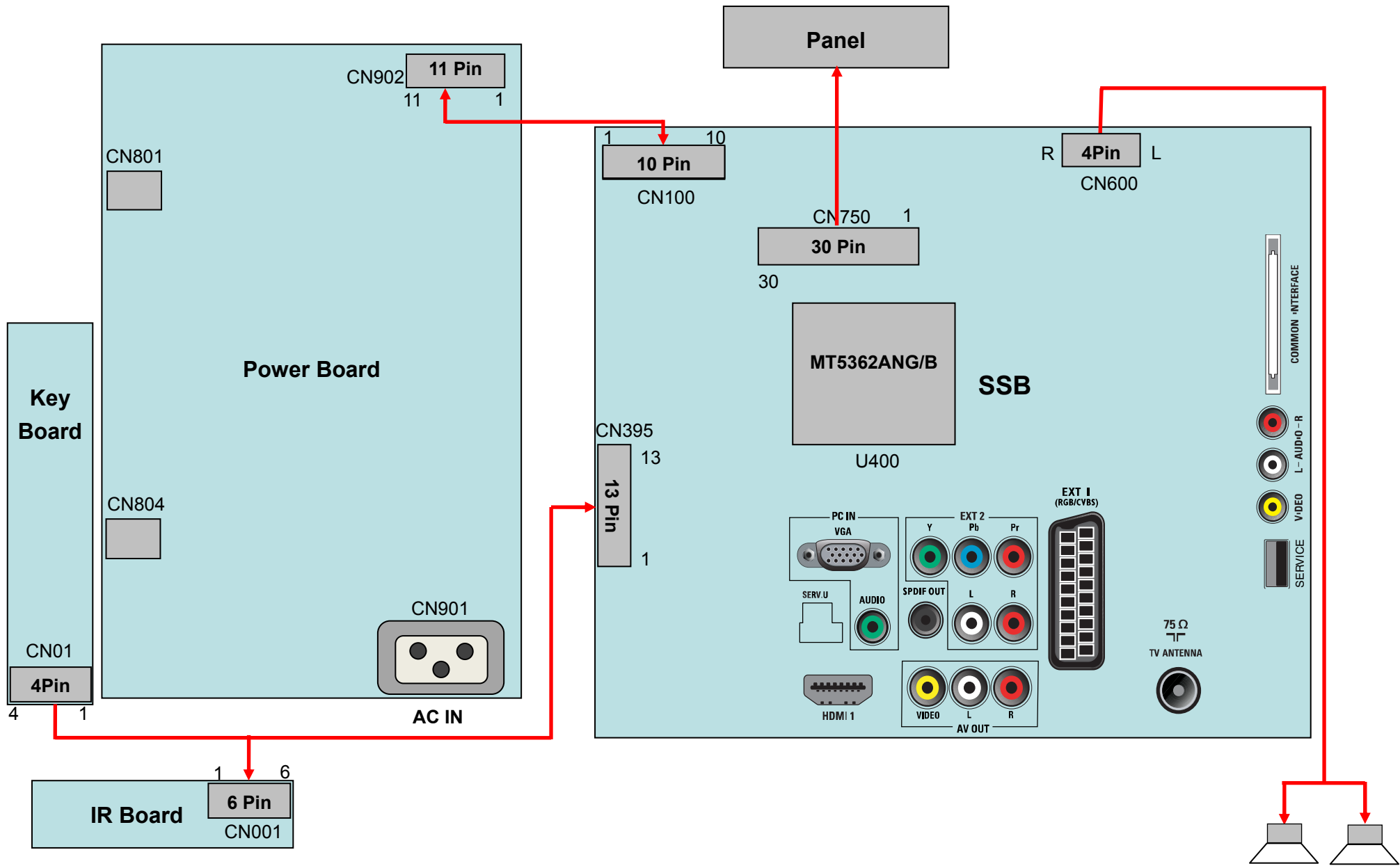
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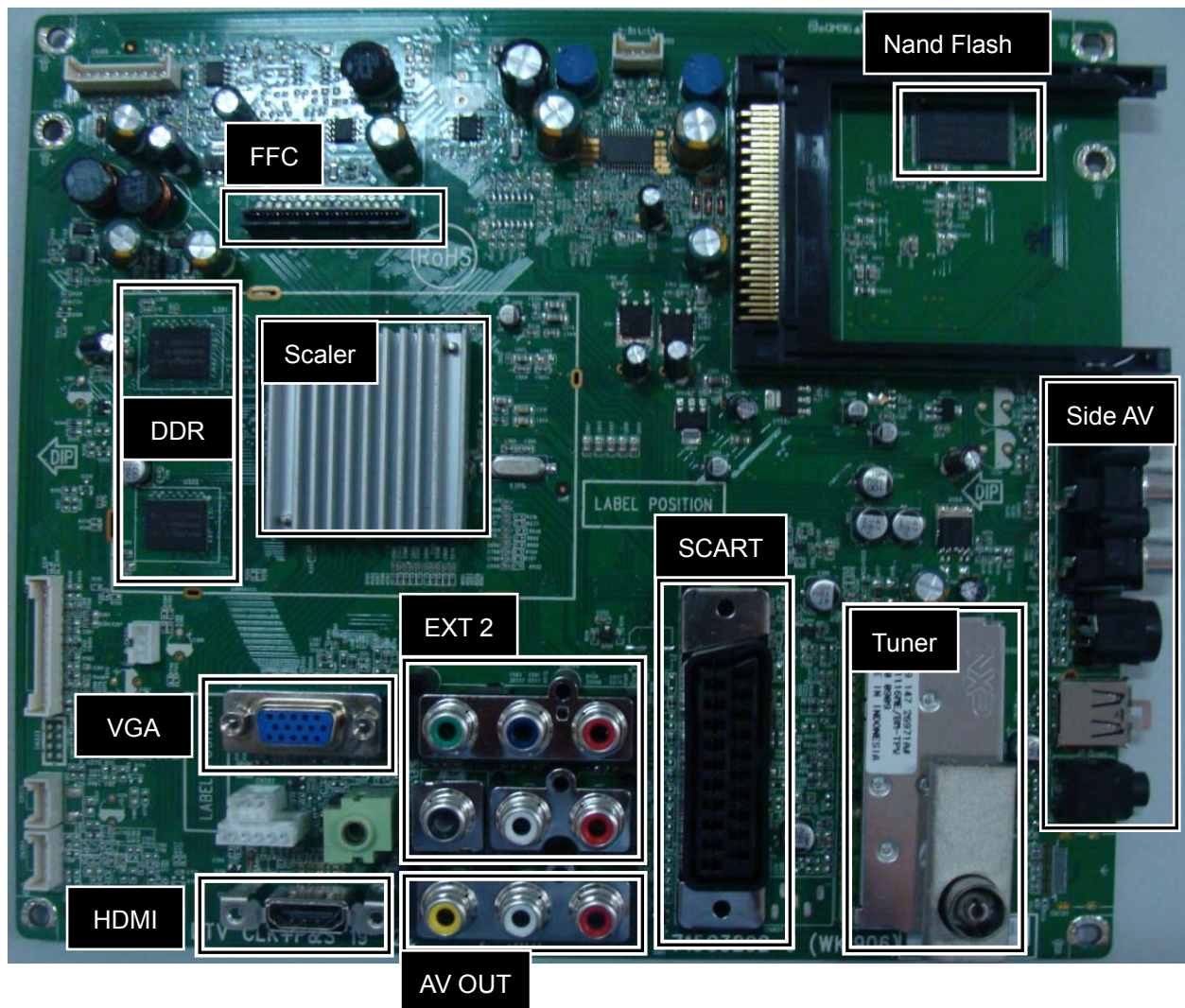
C001	B1	SW001	B5
C002	A1	SW002	B4
CN001	A1	SW003	B4
R001	A4	SW004	B3
R002	A4	SW005	B3
R003	A3	SW006	B2
R004	A3	SW007	B2
R005	A3	ZD001	B1
R006	A2	ZD002	A1
R007	A2		



8. Wiring Diagram



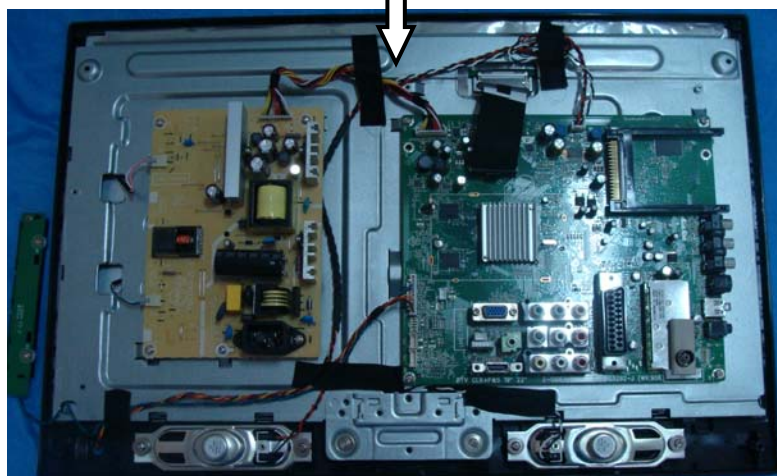
9. Scaler Board Overview



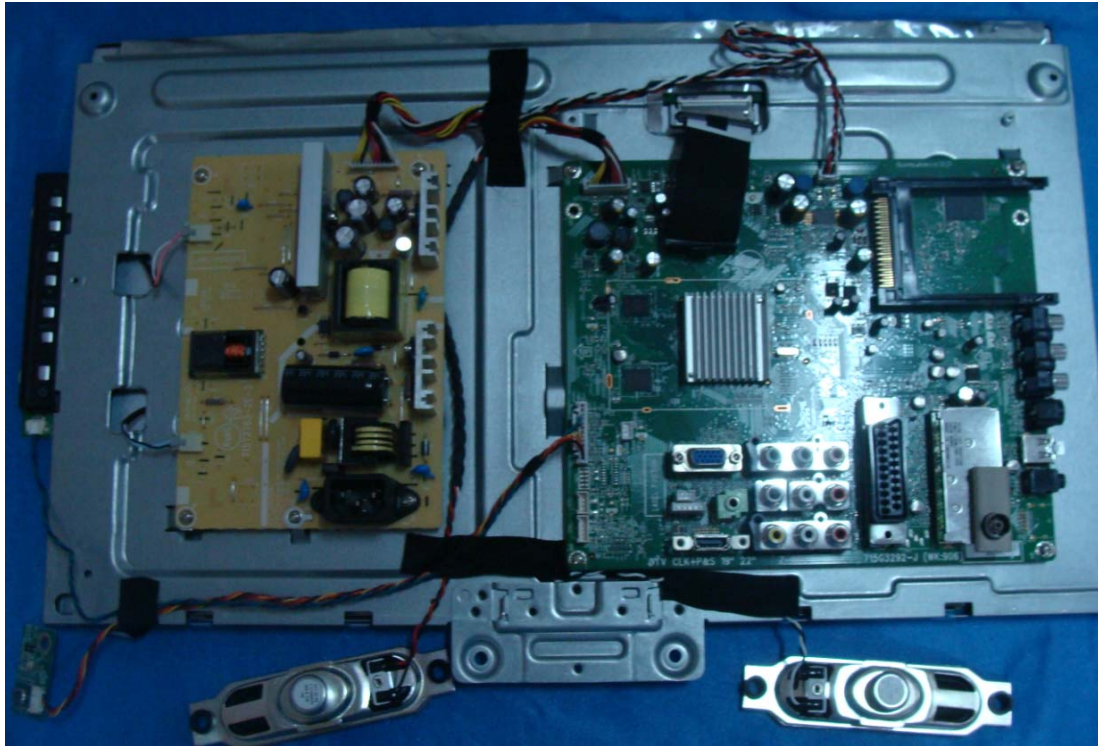
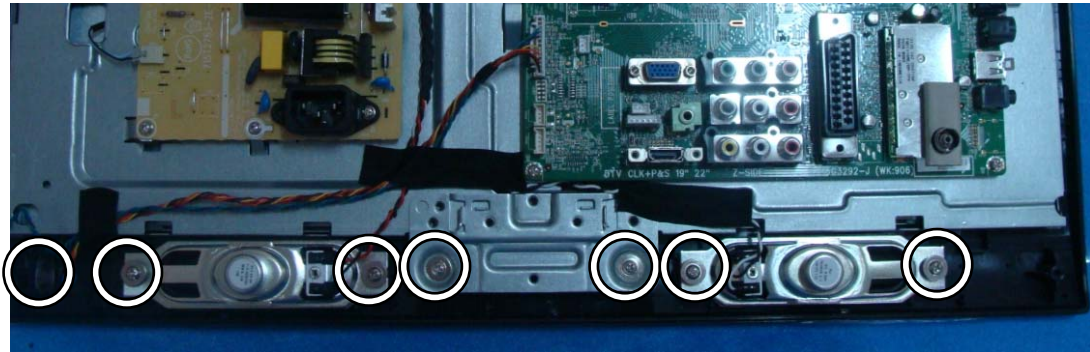
10. Mechanical Instructions

1. Carefully place the TV monitor face down on a smooth surface. Using a cross-head screwdriver unscrew **three** screws that secure the stand to the TV monitor, and firmly pull the stand from the bottom of the TV
2. Unscrew **four** screws that secure the rear cover to the TV monitor, and remove the rear cover.

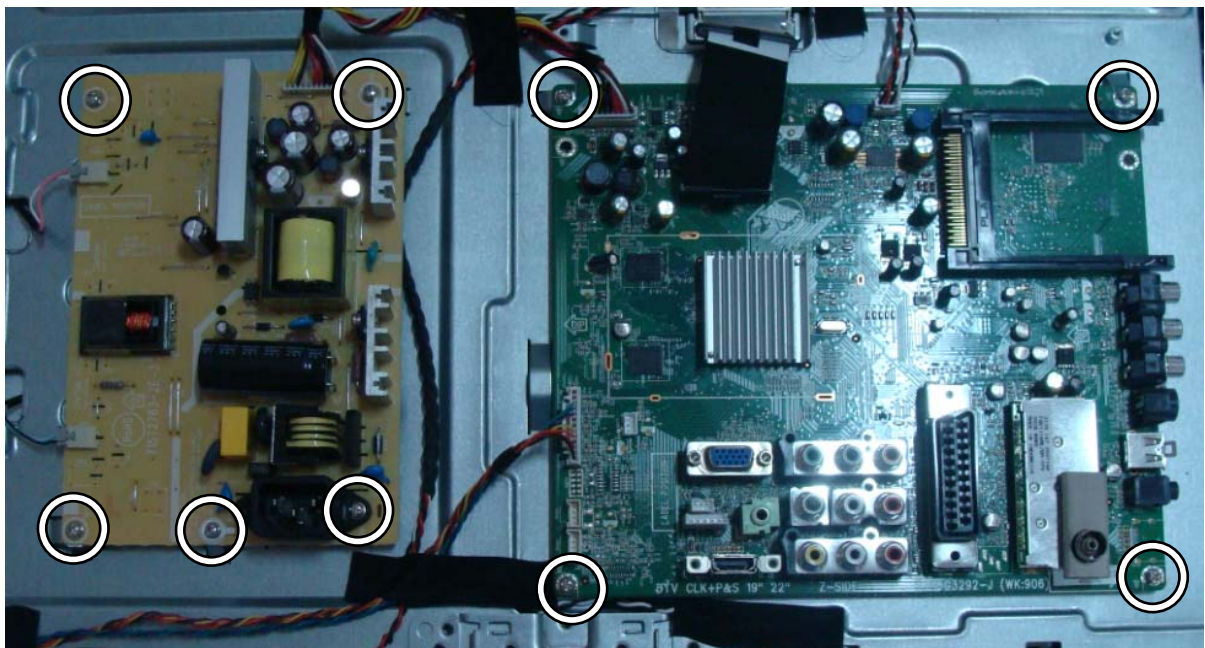
Note: Be careful to avoid scratch and injury during the process of uninstal.



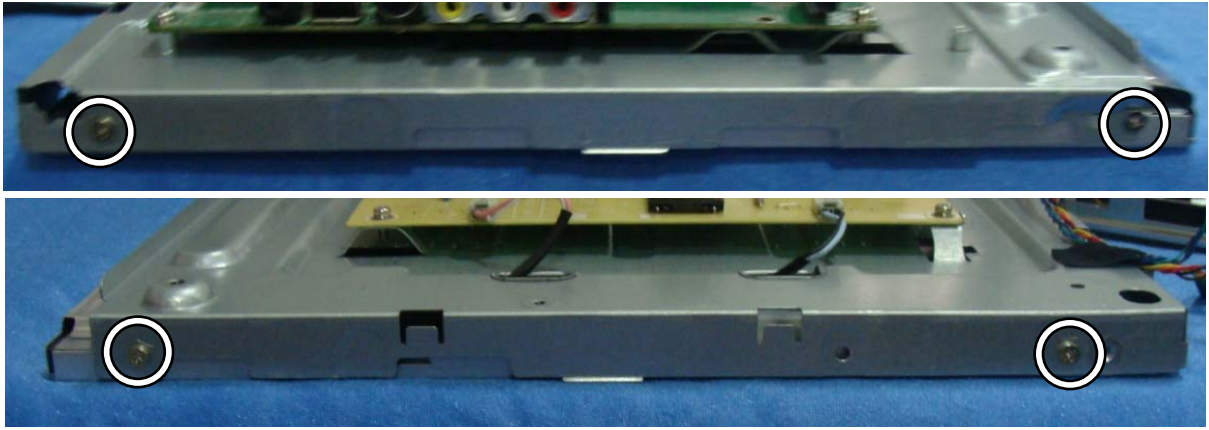
3. Unscrew the screws that secure IR board, speakers and main frame to the bezel, and remove the bezel.



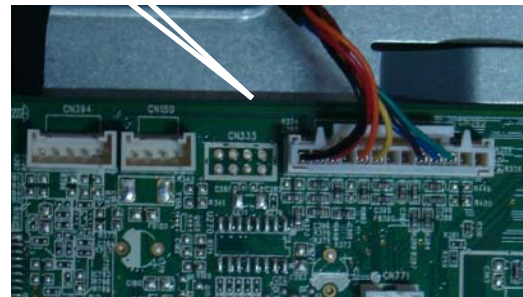
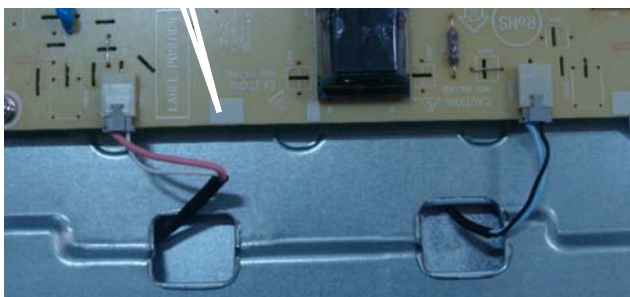
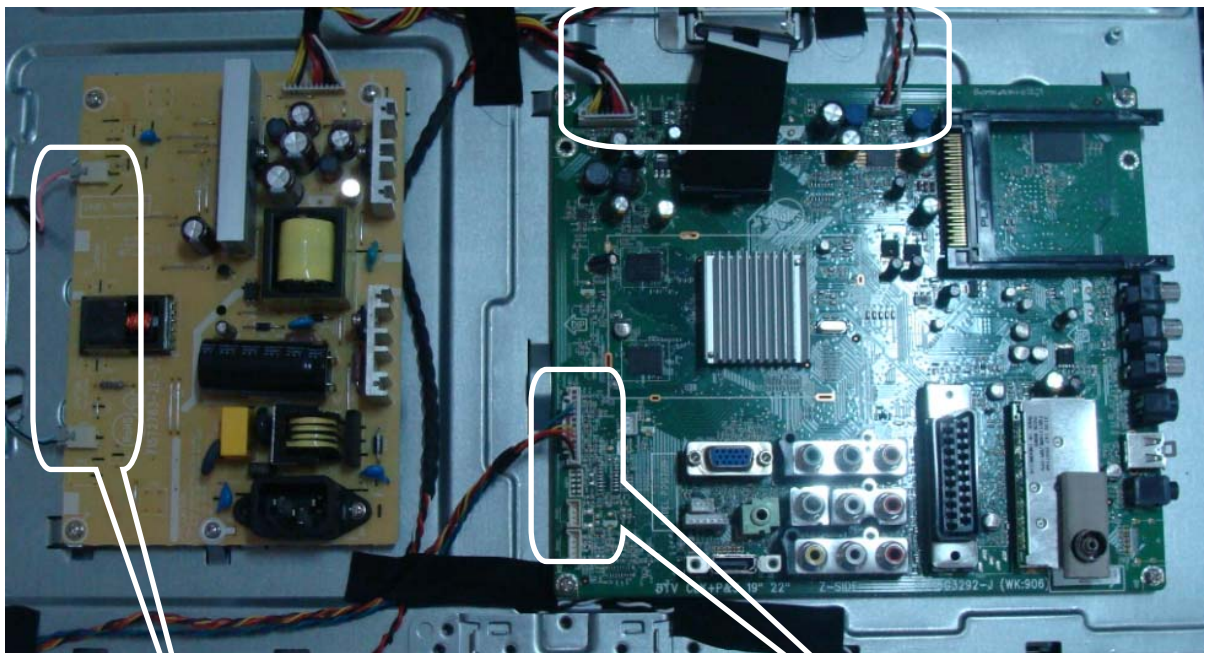
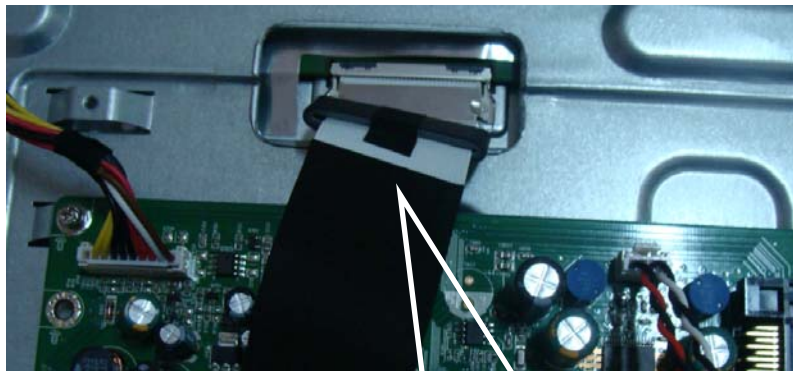
4. Remove the main frame
- A. Unscrew the screws that secure scaler board and power board to the main frame, and remove the boards.



B. Unscrew the screws that secure the main frame to the panel.



C. Disconnect the connectors.



11. Trouble Shooting

This section describes commonly encountered issues and accompanying solutions.

General TV issues

1. The TV does not switch on

- Disconnect the power cable from the power outlet. Wait for one minute then reconnect it.
- Check that the power cable is securely connected.

2. The remote control is not working properly:

- Check that the remote control batteries are correctly inserted according to the + / - orientation.
- Replace the remote control batteries if they are flat or weak.
- Clean the remote control and TV sensor lens.

3. The standby light on the TV blinks red

- Disconnect the power cable from the power outlet. Wait until the TV cools down before reconnecting the power cable. If the blinking reoccurs, contact Philips Consumer Care.

4. You forgot the code to unlock the TV lock feature

- Enter '5351'.

5. The TV menu is in the wrong language

- Change the TV menu to your preferred language.
- When turning the TV on/off/to standby, you hear a creaking sound from the TV chassis:
- No action is required. The creaking sound is normal expansion and contraction of the TV as it cools and warms up. This does not impact performance.

TV channel issues

1. Previously installed channels do not appear in the channel list:

- Check that the correct channel list is selected.

2. No digital channels were found during the installation

- Check that the TV supports DVB-T or DVB-C in your country. See the listed countries on the back of the TV.

Picture issues

1. The TV is on, but there is no picture:

- Check that the antenna is properly connected to the TV.
- Check that the correct device is selected as the TV source.

2. There is sound but no picture:

- Check that the picture settings are correctly set.

3. There is poor TV reception from an antenna connection:

- Check that the antenna is properly connected to the TV.
- Loud speakers, unearthed audio devices, neon lights, high buildings and other large objects can influence reception quality. If possible, try to improve the reception quality by changing the antenna direction or moving devices away from the TV.
- If reception on only one channel is poor, fine tune this channel.

4. There is poor picture quality from connected devices:

- Check that the devices are connected properly.
- Check that the picture settings are correctly set.

5. The TV did not save your picture settings:

- Check that the TV location is set to the home setting. This mode offers you the flexibility to change and save settings.

6. The picture does not fit the screen; it is too big or too small:

- Try using a different picture format.

7. The picture position is incorrect:

- Picture signals from some devices may not fit the screen correctly. Check the signal output of the device.

Sound issues**1. There is a picture but no sound from the TV:**

Note: If no audio signal is detected, the TV automatically switches the audio output off — this does not indicate malfunction.

- Check that all cables are properly connected.
- Check that the volume is not set to 0.
- Check that the sound is not muted.

2. There is a picture but the sound quality is poor:

- Check that the sound settings are correctly set.

3. There is a picture but sound comes from one speaker only:

- Verify that sound balance is set to the centre.

HDMI connection issues**There are problems with HDMI devices:**

- Note that HDCP support can delay the time taken for a TV to display content from a HDMI device.
- If the TV does not recognize the HDMI device and no pictures are displayed, try switching the source from one device to another and back again.
- If there are intermittent sound disruptions, check that output settings from the HDMI device are correct.

- If a HDMI-to-DVI adaptor or HDMI to •DVI cable is used, check that an additional or AUDIO IN (mini-jack only).

Computer connection issues

The computer display on the TV is not stable:

- Check that a supported resolution and refresh rate is selected on the computer.
- Set the TV picture format to unscaled.

Contact us

If you cannot resolve your problem, refer to the FAQs for this TV at www.philips.com/support.

If the problem remains unresolved, contact Philips Consumer Care in your country as listed in this User Manual.



Warning:

Do not attempt to repair the TV yourself. This •may cause severe injury, irreparable damage to your TV or void your warranty.



Note:

Make a note of your TV model and serial •number before you contact Philips. These numbers are printed on the back of the TV and on the packaging

12. ISP Instruction

For the procedure you will require:

1. A personal computer with web browsing capability.
2. An archive utility that supports the ZIP-format (e.g. WinZip for Windows or StuffIt for Mac OS).
3. Preferably empty USB memory stick.

Note: Only FAT/DOS-formatted portable memory is supported.

Software upgrades procedure

1. Decompress the ZIP-file and copy the file **upgrade.pkg** to the root directory of the USB portable memory
2. Power off your TV and remove all memory devices.
3. Insert the USB portable memory that contains the software upgrade.



4. Switch on your TV with the power switch at the right side of the TV.
5. At startup the TV will scan the USB portable memory until it finds the update content. The TV will automatically go to the upgrade mode. The light will flash. After a few seconds it will display the status of the upgrade procedure.



6. When the software upgrade was successful, remove the USB portable memory (not supplied) and restart your TV with the power switch  at the right side of the TV.
7. Press the MENU button, and then press Number key 1→9→9→9 on the remote control to enter the factory mode, and check the software version.

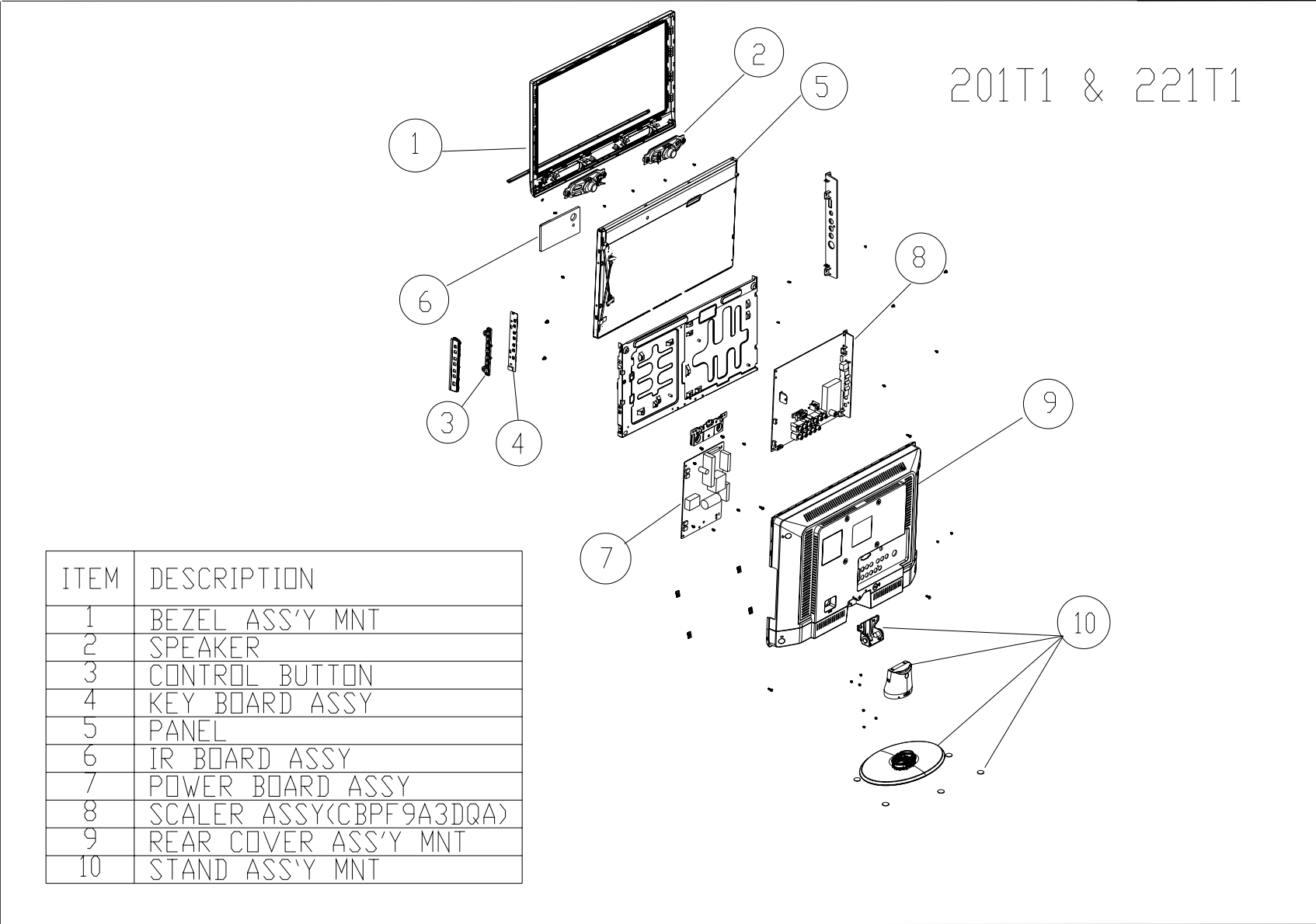
13. White Balance, Luminance Adjustment

It is not necessary to adjust the white balance of this set.

Into Factory mode

Press the MENU button, and then press Number key 1→9→ 9→9 on the remote control to enter the factory mode.

14. Monitor Exploded View



15. Recommended & Spare Parts List

201T1SB/00

Item	Location	PCM Codes	Description	Remark
1	FQ101	705TQ934A05	BEZEL ASS'Y	CMO
1	FQ101	705TQ934A02	BEZEL ASS'Y	SEC
2	E07801	078G 520 2 Y	SPEAKER 6 OHM 5.5W 750/600mm 125X32mm	
3	FQ405	Q33T0331BDY 1L0100	KEY BUTTON	
4	FQ004	KEPF9QP1	KEY BOARD ASSY	
5	E750	750TVM200O1211M0PH	PANEL M200O1-L02 C1 TW CMO	
5	E750	750TVM200O1212M0PH	PANEL M200O1-L02 C1 NB CMO	
5	E750	750TVS200KT311M0PH	PANEL LTM200KT03 KR SEC	
5	E750	750TVS200KT312M0PH	PANEL LTM200KT03 SZ SEC	
6	FQ007	IRPF9QP1	IR BOARD ASSY	
7	FQ003	PWTV9A41EQX8	POWER BOARD ASSY	
8	FQ002	756TQ9CB 5B001	SCALER ASSY(CBPF92LBQP)	CMO
8	FQ002	756TQ9CB 5B002	SCALER ASSY(CBPF92LBQP)	SEC
9	FQ102	705TQ934A06	Rear COVER ASS'Y	CMO
9	FQ102	705TQ934A03	Rear COVER ASS'Y	SEC
10	FQ103	705TQ934A04	STAND ASS'Y	
	E08904	089G 17356X553	AUDIO CABLE	
	E08902	089G 728CAA 2G	SIGNAL CABLE	
	FQ304	089G179W30NH16	FFC CABLE 30PIN P1.0 190MM	
	FQ301	089G404A18N IS	POWER CORD	
	FQ404	098GRABDWNTPHJ	REMOTE CONTROL PHILIPS	
	FQ205	705GQ9CS087	CUSHION ASSY	
	FQ202	Q44GA076813 1A	20 LCD TV CARTON	
	IC903	056G 139 3A	IC PC123Y22FZ0F	
	PT802	080GL24T 23 DN	X'FMR 68uH TK.2005Y.101 VOC	
	T901	080TL22T 5 L	X'FMR 530uH PT-009527-3	
	IC901	056G 379107	IC LD7575A PS SOP-8	
	IC801	056G 608 10	IC OZ9938GN-B SOIC-16	
	IC902	056G 158 12	KIA431A-AT/P TO-92	
	F901	084G 56 4 B	FUSE 4A 250V	
	FQ002	756TQ9CB 5B001	SCALER ASSY(CBPF92LBQP)	

	U390	100TPKMA001BT1	FLASH ASSY(056G1133949)	
	U301	100TPKMA003BT1	MCU ASSY(056G113353A)	CMO
	U301	100TPKSA001BT1	MCU ASSY(056G113353A)	SEC
	U701	100TPKMAA01BTE	EEPROM ASSY(056G1133 34)	
	U550	100TPKMAV01BTE	EEPROM ASSY(056G1133 34)	
	U158	056G 1331PH	IC LD1117S18 SOT-223	
	U157	056G 1334PH	IC LD1117S33TR SOT-223	
	U154	056G 133905	IC LD1117S-TR SOT223	
	U400	056G 562936	IC MT5362ANG/B PBGA-470	
	U152	056G 563129	IC AME8810-AEGTZ 0.6A/3.3V SOT-223	
	U351	056G 615918	IC NT5TU32M16CG-BD BGA-84	
	U352	056G 615918	IC NT5TU32M16CG-BD BGA-84	
	U606	056T 133907	IC L78L12ABUTR SOT-89	
	U159	056T 563949	IC LD39080PT-R PPAK	
	U153	056T 563951	IC LD1117ADT-TR DPAK	
	U151	056T 563958	IC LD1117ADT33TR DPAK	
	U605	056T 593 34	IC MT8292 QFN-48	
	U600	056T 616912	IC TDA8933BTW HTSSOP32	
	U500	056T 623904	IC TS5A3157DCKR SC70	
	U303	056T 665918	IC STMP52171STR SOT23-5L	
	U401	056T1126 40	IC MT8295AE LQFP-128	
	U302	056G 643 35	IC MAX809STRG 2.93V SOT23-3	
	U103	056G 379 92	IC G5627F11U SOP-8(FD)	
	U104	056G 379 92	IC G5627F11U SOP-8(FD)	
	X400	093T 22S921 C	CRYSTAL 27MHz 20P SMD-5.0x3.2	
	X300	093T 22S922 C	CRYSTAL 54MHz 10P SMD-49	
	U001	056T 627 33 1	IR 37.9KHZ KSM-603TM2E	

Item	Location	PCM Codes	Description	Remark
1	FQ101	705TQ934C66	BEZEL ASS'Y MNT	
2	E07801	078G 520 2 Y	SPEAKER 6 OHM 5.5W 750/600mm 125X32mm	
3	FQ405	Q33T0331BDY 1L0100	KEY BUTTON	
4	FQ004	KEPF9QP1	KEY BOARD ASSY	
5	E750	750TVC215FA312M0PH	PANEL CLAA215FA03 000 WJ CPT	
5	E750	750TVC215FA313M0PH	PANEL CLAA215FA03 000 FZ CPT	
5	E750	750TVC215FA322M0PH	PANEL CLAA215FA03 011 WJ CPT	
5	E750	750TVC215FA323M0PH	PANEL CLAA215FA03 011 FZ CPT	
6	FQ007	IRPF9QP1	IR BOARD ASSY	
7	FQ003	PWTV9B41LQXA	POWER BOARD ASSY	
8	FQ002	756TQ9CB 5B003	SCALER ASSY(CBPF92LBQP)	
9	FQ102	705TQ934C67	REAR COVER ASS'Y MNT	
10	FQ103	705TQ934C76	STAND ASS'Y	
	E08904	089G 17356X553	AUDIO CABLE	
	E08902	089G 728CAA 2G	SIGNAL CABLE	
	FQ304	089G179J30NH15	FFC CABLE 30PIN P1.0 130MM	
	FQ301	089G404A18N IS	POWER CORD	
	FQ404	098GRABDWNTPHJ	REMOTE CONTROL PHILIPS	
	FQ205	705GQ9CS086	CUSHION ASSY	
	FQ202	Q44GC116813 1A	21.5 TV MONITOR CARTON	
	IC903	056G 139 3A	IC PC123Y22FZ0F	
	PT802	080GL24T 23 DN	X'FMR 68uH TK.2005Y.101 VOC	
	T901	080TL22T 5 L	X'FMR 530uH PT-009527-3	
	IC901	056G 379107	IC LD7575A PS SOP-8	
	IC801	056G 608 10	IC OZ9938GN-B SOIC-16	
	IC902	056G 158 12	KIA431A-AT/P TO-92	
	F901	084G 56 4 B	FUSE 4A 250V	
	U301	100TPKCC002BT1	MCU ASSY(056G113353A)	
	U701	100TPKCCA01BTE	EEPROM ASSY(056G1133 34)	
	U550	100TPKCCV01BTE	EEPROM ASSY(056G1133 34)	
	U390	100TPKMA001BT1	FLASH ASSY(056G1133949)	
	U158	056G 1331PH	IC LD1117S18 SOT-223	

	U157	056G 1334PH	IC LD1117S33TR SOT-223	
	U154	056G 133905	IC LD1117S-TR SOT223	
	U400	056G 562936	IC MT5362ANG/B PBGA-470	
	U152	056G 563129	IC AME8810-AEGTZ 0.6A/3.3V SOT-223	
	U351	056G 615918	IC NT5TU32M16CG-BD BGA-84	
	U352	056G 615918	IC NT5TU32M16CG-BD BGA-84	
	U159	056T 563949	IC LD39080PT-R PPAK	
	U153	056T 563951	IC LD1117ADT-TR DPAK	
	U151	056T 563958	IC LD1117ADT33TR DPAK	
	U605	056T 593 34	IC MT8292 QFN-48	
	U600	056T 616912	IC TDA8933BTW HTSSOP32	
	U500	056T 623904	IC TS5A3157DCKR SC70	
	U303	056T 665918	IC STMP52171STR SOT23-5L	
	U401	056T1126 40	IC MT8295AE LQFP-128	
	U302	056G 643 35	IC MAX809STRG 2.93V SOT23-3	
	U103	056G 379 92	IC G5627F11U SOP-8(FD)	
	U104	056G 379 92	IC G5627F11U SOP-8(FD)	
	X400	093T 22S921 C	CRYSTAL 27MHz 20P SMD-5.0x3.2	
	X300	093T 22S922 C	CRYSTAL 54MHz 10P SMD-49	
	U001	056T 627 33 1	IR 37.9KHZ KSM-603TM2E	

Service Kit

Description	Part No.	Picture
ISP Tool	715GT080-A	

16. General Product Specification

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1. Instruction

1.1 Purpose

The purpose of the PID is to get a common understanding between the supplier and the Philips OTS business team on the product of requirements of LCD TV-monitor. The document serves as a basis for the product design of LCD TV-monitor.

1.2 Scope

This specification describes the feature and performance of the LCD TV-monitor set, which includes PC video connector for monitor application and a RF tuner receiving PAL / SECAM off the air or from the cable and AV connectors for multiple video format inputs.

Product name	201T1	221T1
Manufacturer ID	PHL	PHL
Product ID	C040	C041

2. General Description

1.1 Product Perspective

Reception

- DVB - T H.264 (MPEG-4) and analog hybrid TV platform.
- DVB – T compliance with DVB D – Book (UK), E – Book (Pan – EU), Italian DGTVi, Scandivia NorDig.
- Supports the European conditional access system “Common Interface”. This allows for the controlled descrambling of scrambled digital services (DTV only).
- Supports MHEG – 5 UK Profile 1.06 for UK D – Tick logo (DTV only)
- Fulfill “Boxer TV” for NorDig and DTG for Sweden and UK market (DTV only) – Applied by Philips.
- SmartDTV for Italy.
- P AL B/G D/K I, SECAM B/G D/K L/L’ TV tuning system for EU/UK

Features:

- Wide screen of 16:9 aspect ratio, 1600 x 900 display pixels 20”W HD +LCD color TV (**for 201T1**)
- Wide screen of 16:9 aspect ratio, 1920 x 1080 display pixels 20” FHD LCD color TV (**for 221T1**)
- Universal power supply, stand-by power < 0.5 W and DC off power <0.5 W.
- DPM power management for PC mode
- VESA standard wall mount

Connectivity:

- Support components video, composite video and audio input.
- Full SCART input (R/G/B, CVBS, S-Video, CVBS out)
- Support HDMI Ver.1.3a. with HDCP, audio included (meet EIA-861B standard)
- Support PC modes via VGA D-sub and HDMI connector
- Multi-system PAL, NTSC playback
- Match the EICTA HD interoperability requirements for “HD ready” logo 
- YPbPr can support up to 1080P and HDMI can support up to 1080p. (Both should also support down to and including 480i/576i)

Easy of use

- User-friendly OSD menu
- User-friendly remote controller
- Software upgrade should be done through OAD, / USB connector.

1.2 Product Range

CTV	Destination	Mains Cord
201T1	Eastern / Western Europe, UK	Follow Philips's SKU
221T1	Eastern / Western Europe, UK	Follow Philips's SKU

1.3 Display Panel

For M200O1-L02 (for 201T1)

CMO 20" inch panel

Panel Model	: M200O1-L02
Active Area	: 20 inch (442.8 (H) x 249.075 (V)) diagonal
Outline Dimension	: 462.8 mm (H) x 272 mm (V) x 10.4 mm (D)
Pixel Pitch	: 0.2768 (H) x 0.2768 (V)
Pixel Format	: 1600 x 900 (HD+), pixels RGB strip arrangement
Color Depth	: 6-bit +Hi-FRC, 16.7M colors
Luminance	: 250 cd/m ²
Backlight	: 2 CCFL
Response Time	: 5 msec (G to G average)
View Angle	: 170 (H) / 160 (V) (CR $\geq$ 10) TN technology
Contrast Ratio	: 1000:1 (typ.)
Life Time	: 50.000 hrs

For LTM200KT03 (for 201T1)

SAMSUNG 20" inch panel

Panel Model	: LTM200KT03
Active Area	: 20 inch (442.8 (H) x 249.075 (V)) diagonal
Outline Dimension	: 462.8 mm (H) x 272 mm (V) x 17.5 mm (D)
Pixel Pitch	: 0.2768 (H) x 0.2768 (V)
Pixel Format	: 1600 x 900 (HD+), pixels RGB strip arrangement
Color Depth	: 6-bit +Hi-FRC, 16.7M colors
Luminance	: 250 cd/m ²
Backlight	: 2 CCFL
Response Time	: 5 msec (G to G average)
View Angle	: 170 (H) / 160 (V) (CR $\geq$ 10) TN technology
Contrast Ratio	: 1000:1 (typ.)
Life Time	: 50.000 hrs

For CLAA215FA03 (for 221T1)

CPT 21.5" inch panel

Panel Model	: CLAA215FA03
Active Area	: 21.5 inch (476.64 (H) x 268.11 (V)) diagonal
Outline Dimension	: 495.6 mm (H) x 292.2 mm (V) x 12.5 mm (D)
Pixel Pitch	: 0.24825 (H) x 0.24825 (V)
Pixel Format	: 1920 x 1080 (WXGA), pixels RGB strip arrangement
Color Depth	: 6-bit +Hi-FRC, 16.7M colors
Luminance	: 250 cd/m ²
Backlight	: 2 CCFL
Response Time	: 5 msec (G to G average)
View Angle	: 170 (H) / 160 (V) (CR $\geq$ 10) TN technology
Contrast Ratio	: 1000:1 (typ.)
Life Time	: 50.000 hrs

For LTM215HT01 (for 221T1)

SANSUNG 21.5" inch panel

Panel Model	: LTM215HT01
Active Area	: 21.5 inch (476.64 (H) x 268.11 (V)) diagonal
Outline Dimension	: 495.6 mm (H) x 292.2 mm (V) x 17.5 mm (D)
Pixel Pitch	: 0.24825 (H) x 0.24825 (V)
Pixel Format	: 1920 x 1080 (WXGA), pixels RGB strip arrangement
Color Depth	: 6-bit +Hi-FRC, 16.7M colors
Luminance	: 250 cd/m ²
Backlight	: 2 CCFL
Response Time	: 5 msec (G to G average)
View Angle	: 160 (H) / 160 (V) (CR $\geq$ 10) TN technology
Contrast Ratio	: 1000:1 (typ.)
Life Time	: 50.000 hrs

3. Function Requirements

All performance requirements are defined under "Standard Testing Conditions", unless otherwise specified.

Standard Testing Conditions

- Warm up time : ≥ 30 min.
- Ambient temperature : 0°C ~ 40 °C
- Ambient light : 400 ~ 600 lux.
- Relative humidity : 25% ~ 75%
- Barometric pressure : 860 mbar ~ 1013 mbar
- Dark room conditions : < 1 lux. For optical measurements

The RF tuning system and video performance should fulfill Philips torture room test and field test requirements.

3.1 Power

3.1.1 Power Supply Features

- AC line voltage range : 90V AC ~ 264V AC
- AC line frequency range : 50 / 60 Hz $\pm$ 3 Hz
- DC tact switch : minimal power consumption when switch off
- Inrush current : < 40A at 240V AC when cold start
- Leakage current : < 0.5 mA at 240V AC
- Power factor correction : According to EN61000-3-2

3.1.2 Power Consumption

	201T1	221T1
• Normal on	<50 Watt	: < 35W (TBD)
• Standby - (Remote Control key)	: <0.5 W, RC standby mode + RED LED	
• Power off – (Power key for keypad)	: <0.5 W, RC standby mode + LED OFF	

3.1.3 Power Mode

- Power off mode The mains plug is not connected or the power supply is switched off. The system has no power available.
- Standby mode The TV signal processing hardware is switched off. The micro- controller is operating and waiting for a command.
- TV mode The LCD display is switched on. The TV set is turned to a channel or external source. The micro-controller is processing all incoming signals and commands and also controls the TV hardware.
- PC mode The system is display PC video input.
- PC sleep mode The system is the same as standby mode as there is no PC video when system is in PC mode
- TV wake up keys On RC & top/side key control - “Standby” or “Program +/-” or “SOURCE” is pressed.
(for **201T1**)
On RC – “Standby” or “Program + /-” or “SOURCE” is pressed. On top / side key control – “Program + / -” or “Menu” key is toggled.(for **221T1**)

3.1.4 Monitor DPM / TV Standby

- DPM The monitor enters DPM off (sleep) mode when no H & V syncs or one of H-Sync / V-sync input is absent. “No Video Input” message appears before entering DPM mode. A delay of 30 seconds before entering the power saving state is required to avoid misunderstanding of display resolution and timing mode changes.
- Recovery from DPM Power & function recover when both H & V syncs are detected.
- Standby The TV enters “TV standby mode” when it is turned off by RC “Standby / Power” key or SLEEP TIMER functions is activated or no TV signal input for 30 seconds.
- Recover from Standby Power & function recovers when RC & Top key control “Standby” or “Program +/-” or “SOURCE” is pressed.(for **201T1**)
Power & function recovers when RC “any digit key from 0~9” or “Standby” or

“Program +/-” or “SOURCE” is pressed. Top key control “Menu” or “Program +/-” key is toggled. (for 221T1)

3.2 Reception

3.2.1 RF Signal Requirements

- DTV RF input system (DTV only)
 - Frequency range VHF: 174 to 230MHz, UHF: 470 to 862 MHz
 - Modulation COFDM
 - Input impedance 75Ohm
 - Constellation QPSK, 16 –QAM, 64 – QAM, Hierarchical modulation (for 201T1)
QPSK, 16 –QAM, Hierarchical modulation (for 221T1)
 - Tuner Bandwidth 7 MHz and 8 MHz
 - FFT Mode 2 K / 8 K
 - Guard Interval 1/4, 1/8, 1/16 or 1/32
 - FEC code rate 1/2, 2/3, 3/4, 5/6 or 7/8
- The iDTV shall be able to find all DVB-T modulated multiplexes whose center frequencies, F are located +/-500Khz on a grid:(for Europe)
 - For 7 and 8 MHz bandwidth: $F = 7 \cdot N + 2.5 \text{ MHz}$, where $N: 15 \leq N \leq 32$
 - For 8 MHz bandwidth: $F = 8 \cdot M + 2 \text{ MHz}$, where $13 \leq M \leq 28$ and $59 \leq M \leq 107$. And on the grid: (for Italy)

Frequency Plan	Start Frequency [kHz.]	Start	End	Bandwidth
FRANCE_VHF	178750	1	6	8000
ITALY_VHF*	177500	1	7	7000

* Not Arithmetic

#define ITALY_VHF

```
{ 7, 7, {{ 1, 177500, 7000, 'D' }, \
{ 2, 186000, 7000, 'E' }, \
{ 3, 194500, 7000, 'F' }, \
{ 4, 203500, 7000, 'G' }, \
{ 5, 212500, 7000, 'H' }, \
{ 6, 219500, 7000, 'H1' }, \
{ 7, 226500, 7000, 'H2' } }
```

And on the grid: (for Australia)

In the DVB-T profile, the iDTV supports, besides the European Grid, Australian grid. There, the center frequency F is located +/- 500 KHz on a grid:

For VHF: $F = N \cdot 7 + 2.5$; for $25 \leq N \leq 32$

For UHF: $F = N \cdot 7 + 4.5$; for $72 \leq N \leq 114$

- ATV RF input system Aerial or cable via RF connector supports PAL B/G, D/K, I and SECAM B/G, D/K, L/ L'. Channel Coverage:

Band	Analog channels, Picture Carrier (MHz)	Digital Channels, Center Frequency (MHz)
Low Band	45.25 – 154.25	51.00-156.500
Mid Band	161.25 – 439.25	162.00-442.00
High Band	447.25 – 858.25	450.00-858.00

Intermediate Frequencies:

For Europe set:

System	Picture (MHz)	Chroma (MHz)	Sound 1 (MHz)	Sound 2 (MHz)	NICAM (MHz)
B, G	39.875	35.445	34.375	34.135	34.025
L	39.875	35.445	33.375	-	34.025
L'	33.625	38.055	40.125	-	39.525
D, K	39.875	35.445	33.375	-	34.025
I	39.875	35.445	33.875	-	33.323

- TV RF input level

10mV (80dBuV) typical, terminated with input impedance of 75Ω

- Transient response: < 250 ns
- Sound (5.5MHz) suppression: > 55dB.
- Chroma (4.43MHz) suppression: > 25dB.
- Y/C separation: > 20dB.

Tuner sensitivity $\geq$ 25 dBuV, no skipping of channels & signals

- DTV input system DVB-T (EN 300 744 V1.5.1) supports MPEG-2 ISO/IEC 13818 MP@ML transport stream up to 25Mbps (DTV Only)
- DTV Middleware MHEG5 profile 1.06 (optional for target market) (DTV only)
- Parental Control Respect the age setting sent in the transmission. If the parental rating is higher than the current setting, then the channel is blocked until a pin code is entered.
- Install How to search through the services. Order them, and update over time: See 4.4
- Zapping Let the user to step through the available services and select the required service. Zapping also includes the actual steps for tuning to another channel. It performs activities such as blanking audio and video, setting the right frequency, retrieving the actual channel content from the PSI/SI tables (if a digital channel is selected). It also enables selection of the right virtual channel to be decoded (depending on the language setting, for example) and also unblinking of video/audio. The selector has to dynamically react to any changes in the active transport stream – such as a change in the rating of the currently running virtual channel from the transport stream or even the actual disappearance of the selected virtual channel. The underlying software therefore notifies it of any such changes. (DTV only)
- EPG - 8 days Have an EPG covering at least 8 days of data, extracted from DVB-EIT. (DTV only)
- EPG – Now/Next EPG should cover the Now and Next data, extracted from DVB-EIT. (DTV only)
- Over-the-Air Download Shall be capable of automatically detecting any new relevant software release in any transmitted multiplexes through OAD. Shall be capable of processing software releases carried by transport streams complied with ISO / IEC 13818-1 in accordance with ETSI TS 101 154, D-Book for UK and DVB SSU simple profile. Any software upgrade (over the air) requires authentication: to make sure that it will only load an image approved by Philips. (for example using SHA-2) (DTV only)
- DVB Subtitles Supports to display subtitles which broadcasted via DVB or reinserted TXT. ETSI EN 300 743 V1.3.1 (2006-11) (DTV only)

- Auto-assign Channel Numbers (LCN) Support Logical Channel Number (LCN) for automatic assignment of preset numbers. (DTV only, country dependent), specifically including D-Book, E-Book, Nordig and DGTVi variants.)
- Audio Descriptor Supports Audio Descriptor for UK (DTV only)

3.2.2 TELETEXT

- 100 pages Teletext system with Favorite page list.
- Teletext level 1.5
- FLOF
- TOP and TOP overview menu
- 16:9 format
- 3 types of Text display mode - Text Page, Hold, Mix, Reveal.
- Text time
- Wide Screen Signaling Bit (WSSB)
- Supports DVB Teletext (DTV only)
- AFD support as specified in ETSI TS 101 154 V1.7.1 (2005-06), implemented in line with D-Book and E-Book. (DTV only)

WSS Video Aspect Ratio	For 4:3 Set	For Wide Screen Set
(0001) full format 4:3	Customer setting	Customer setting
(1000) box 14:9 centre	Customer setting	Movie Expand 14:9
(0100) box 14:9 top	Customer setting	Movie Expand 14:9
(0111) shoot & protect 14:9 centre (full format 4:3)	Customer setting	Movie Expand 14:9
(1101) box 16:9 centre	Customer setting	Movie Expand 16:10 (9)
(0010) box 16:9 top	Customer setting	SUBTITLE ZOOM
(1110) full format 16:9	Customer setting	WIDESCREEN
(1011) box >16:9	Customer setting	Movie Expand 16:10 (9)

(AFD) Video Aspect Ratio	For 4:3 Set	For Wide Screen Set
(1001) full format 4:3	Customer setting	Customer setting
(1011) box 14:9 centre	Customer setting	Movie Expand 14:9
(0011) box 14:9 top	Customer setting	Movie Expand 14:9
(1101) shoot & protect 14:9 centre (full format 4:3)	Customer setting	Movie Expand 14:9
(1010) box 16:9 centre	Customer setting	Movie Expand 16:10 (9)
(0010) box 16:9 top	Customer setting	SUBTITLE ZOOM
(1010) full frame 16:9	Customer setting	WIDESCREEN
(0100) box >16:9	Customer setting	Movie Expand 16:10 (9)

Sequence header	Active Format Description	WSS	
source aspect ratio	value	code (bits 0-3)	description
4:3	1001	0001	full format 4:3
	1011	1000	box 14:9 centre
	0011	0100	box 14:9 top
	1010	1101	box 16:9 centre
	0010	0010	box 16:9 top
	0100	1011	box > 16:9 centre
	1101	0111	full format 4:3 (shoot and protect 14:9 centre)
16:9	1010	1110	full format 16:9 (anamorphic)

3.2.2.1 RC function keys

Device Address / Function Code		Function Name	Function Description
08	SOURCE	Standby (Power)	Switches the set to "Standby".
01	Power	External 1 (Source)	To activate the external 1 connector for the peripheral connected to it or to activate the peripheral connected to the selected system mode.
15	1	TXT-submode (Teletext)	To switch to the TXT mode or a toggle function between TXT and TV mode.
16	2	PIP On/Off (Dual Screen)	Displays within a main picture the image of a second video source in a defined format on a defined spot.
17	3	TV-TEXT/Subtitle (Subtitle)	TV-TEXT displays the broadcasted picture and teletext page together on screen. Subtitle gives a selection of subtitle pages in Antiope or gives a selection of different languages within Satellite broadcasting.
19	4	Movie Expand (Format)	With a TV-screen size of 16: 9 a 4:3 signal transmission will be expand to the 16: 9 format in different ways depending on the type of set. If a 'Zoom +/-' function is present the expanded or compressed picture format will be set to 'Normal'.
1A	5	Red	In TXT: the page indicated by the red prompt will be displayed. In Menu: One of the items with the same color will be executed.
1B	6	Green	In TXT: the page indicated by the green prompt will be displayed. In Menu: One of the items with the same color will be executed.
1D	7	Yellow	In TXT: the page indicated with the yellow prompt will be displayed. In Menu: one of the items indicated with the same color will be executed.
1E	8	Cyan	In TXT: the page indicated by the cyan prompt will be displayed. In Menu: one of the items with the same color will be executed.
1F	9	EPG (Guide)	EPG(Electronic Program Guide) makes it possible, interact if with the set top box, to do program selection, to make a program list, etc.
58	EPG	Display (Info)	Displays user information on screen (video oriented set types) or local display (audio or local display oriented set types)
41	0	Step Up (+)	Depending on a chosen command e.g. Menu, Actuator, Movie Expand, the respective Cursor, Actuator, and Movie, will be stepped upwards.
44	PRE CH	Step Left	Depending on the chosen command e.g. Menu, Actuator, the respective Cursor, and Actuator will be stepped leftwards.
06	HDMI	Acknowledge (OK)	Executes a by the cursor chosen menu function.

47	YPbPr	Step Right	Depending on the chosen command e.g. Menu, Actuator, the respective Cursor, Actuator, will be stepped rightwards.
05	VIDEO	Step Down (-)	Depending on the chosen command e.g. Menu, Actuator, Movie Expand, the respective Cursor, Actuator, Movie will be stepped downwards.
45	PC	Menu On (Menu) (Exit)	Opens the "Menu" function and displays it on the screen and/or local display.
0C	▲	DIGITAL OPTION (Option)	By pressing this button you will be able to toggle to the digital option available at that time. Depending on digital source and standard.
	Vol		
04	Mute	Volume Up (+)	Increases the volume setting, device oriented. Within multi-address RC-transmitters two Master volume functions have to be present too, one with destination 00 (TV) and the other with destination 16 (P-A).
18	▲	Mute / Demute	Toggle function between an actual volume setting and a minimum (or defined) volume setting, device oriented. Within multi-address RC-transmitters one Master Mute/Demute functions have to be present too, with destination 00 (TV). For audio no Master Mute/Demute function is created due to the absence of this function within the destination 16 (P-A).
	CH		
10	▼	Next (P+)	Steps to the next e.g. track, music, photo, option, etc. of the chosen play state or option-submode, if continuous pressed continuously.
	Vol		
14	ZOOM	Volume Down (-)	Decreases the volume setting, destination oriented. Within multi-address RC-transmitters two Master Volume functions have to be present too, one with destination 00 (TV) and the other with destination 16 (P-A).
1C	▼	Previous (P-)	Steps to the previous e.g. track, photo, music, options, etc. of a chosen play state or option-submode, if continuous pressed continuously.
	CH		
40	DUAL	Digit 0~9	Digit entry for: Function 0~9.
09	AUDIO	Stop (MHEG Cancel)	Stops all the actions needed to reproduce a picture and/or sound from a barrier, the set still remains active.
03	VIDEO	Previous Program (P<P)	Switches the tuner to the last viewed program/channel.
13	SLEEP		
0B	▲		
49	◀		
0D	OK		
4A	▶		
0A	MENU/EXIT		
0F	▼		
02	INFO		
4C			
4D			

4E			
4F			
50	TELETEXT		
51	MIX		
52	SIZE		
4B	SUBPAGE		
54	INDEX		
55	SUBTITLE		
56	HOLD		
57	REVEAL		
5B	FAV		
5A	CH-LIST		
0E	AD		
12	RREEZE		

3.3 External Interface

3.3.1 Video Signal Requirements

- CVBS Input 1000mVpp (including 300 mV sync level), terminated with input impedance of 75Ω.
- S-Video Input Y: 1000mVpp, C: 300mVpp, terminated with input impedance of 75Ω.
- Component Video Input Y: 1000mVpp, PbPr: ±350mVpp, terminated with input impedance of 75Ω. 480i/p, 576i/p, 720p, 1080i/p signal handling capability.
- HD Ready  HD ready logo required.
Display engine:
➤ The minimum native resolution of the display (e.g. LCD, PDP) or display engine (e.g. DLP) is 720 physical lines in wide aspect ratio.
Video Interfaces:
➤ The display device accepts HD input via:
◆ Analog YPbPr. “HD ready” displays support analog YPbPr as a HD input format to allow full compatibility with today's HD video sources in the market. Support of the YPbPr signal should be through common industry standard connectors directly on the HD ready display or through an adaptor easily accessible to the consumer; and:
➤ DVI or HDMI HD capable inputs accept the following HD video formats:
◆ 1280x720 @ 50 and 60Hz progressive scan (“720p”)
◆ 1920x1080 @ 50 and 60Hz interlaced (“1080i”)
➤ The DVI or HDMI input supports copy protection (HDCP).

- SCART

Full SCART, including CVBS in/out, RGB/Sync, audio L/R in/out. Pin 8, the function-switching pin, carries a signal from the source that indicates the type of video present, 0V means no signal, or internal bypass +6V means a widescreen (16:9) signal +12V means a normal (4:3) signal.

Define SCART behavior:

Connect the external equipment SCART out jack to SCART in jack by using a SCART cable.

Provide SCART first function.

- In **TV** input source, connect the SCART cable and signal, will auto change to SCART input.
- If connect another SCART cable and have signal, will auto change to last SCART input?
- If SCART cable is connect and have signal, power off and power on, the TV set will auto change to SCART input when the previous input source is TV.
- SCART1 & SCART2 out detail behavior please see below table:

TV Source	Screen Display Source	SCART Out	AV Out
ATV	ATV	ATV	ATV
	CVBS	CVBS	CVBS
	HDMI / VGA / Component	-- / -- / Component	-- / -- / Component
DTV	DTV	DTV	DTV
	CVBS	CVBS	CVBS
	HDMI / VGA / Component	-- / -- / Component	-- / -- / Component

SCART1 input will auto detect CVBS / S-Video / RGB signal.

- If previous input source is TV, plug in SCART cable and have signal will change to SCART input (teletext will be turn off simultaneously), plug out SCART cable will return to TV input source.
- If User connect CANAL+ device with TV set by SCART source (the one bundled with tuner), switch to an analog channel that is CANAL+ channel. The channel number will be shown in the OSD banner.
- If CANAL+ device connect to SCART and the device should power on, when user switch to an analog channel, If the channel is NOT a CANAL+ channel, the source is still from "tuner", so the output is clear.
- If CANAL+ device does NOT connect to SCART, or not power ON, when user switch to an analog channel, if the channel is a CANAL+ channel, the video will be scrambled.

- HDMI Input Compliance with HDMI Specification 1.3a. 480i/p, 576i/p, 720p, 1080i/p signal handling capability.

TMDS channel:

- Carries audio, video and auxiliary data.
- Signaling method: According to HDMI Ver.1.3a specification. (Type A HDMI).
- Video pixel rate: 25 MHz to 165 MHz (Type A)
- Pixel encodings: RGB 4:4:4, YCbCr 4:2:2, YCbCr 4:4:4.
- Audio sample rates: 32 KHz, 44.1 kHz, 48 KHz, Audio channels: up to 2.

DDC channel:

- Allows source to interrogate capabilities of sink.
- I²C signaling with 100 kHz clock.
- E-EDID data structure according to EIA/CEA-861B and VESA Enhanced EDID.

Content protection:

➤ According to High-Definition Content Protection (HDCP) Specification 1.10

- Common Interface Complies with version 1: EN50221 ETSI TS 101 699, V1.1.1 (1991-11) and [R206-001F] (DTV only)
- No Signal Input While no signal at external inputs, screen goes blue before entering standby mode.

3.3.1.1 HDMI CEC

Compliant with HDMI Ver.1.3a CEC

- One-Touch-Play Device can switch on the television (when in standby) and switch to the relevant HDMI source. Allows a device to be played and become the active source with a single button press.
- Routing Control This feature is used to control the routing of the HDMI network, by controlling CEC Switches. In general whenever a device starts being streamed to the TV
- System Standby Enables the user to switch all devices to standby with one button press
- System Information Allow devices to automatically use the same OSD and Menu language settings as the TV and also for a TV to discover the current language when it is being installed.
- Give Device Power Status The message is used to determine the current power status of a target device. The target device responds with a message containing the Power Status operand.

3.3.2 Audio Signal Requirements

- Audio input - Sensitivity 500mVrms, the amplifier outputs full power when the input level reaches 500mVrms, terminated with input impedance of $>10k\Omega$.
- Headphone output N.A.
- Amplifier output 2 x 3Wrms, with T.H.D. $< 10\%$
- SPDIF output Carrying stereo or multi-channel output (DTV tuner digital audio or HDMI digital audio loop through)

3.3.3 PC Signal Requirements

- Pixel rate capability 160 MHz for ATV, 160 MHz for DTV
- Sync input TTL level, separate H / V sync only, “+” or “-” polarity, terminated with $\geq 2.2k\Omega$ impedance
- Horizontal frequency 30 ~ 83 KHz
- Vertical frequency 56 ~ 76 Hz
- PC analog RGB level 0 ~ 700 mV linear, positive polarity, terminated with 75Ω impedance
- I²C DDC signal DDC serial Data & Clock, DDC components are connected to both monitor Vcc and DDC +5V (from PC via video cable), that the PC can read the DDC data also when the monitor is powered off. To prevent current feedback into PC, blocking diodes are required at monitor side.
- Preset video timings Follow VESA timing mode up to panel native resolution. Preset video timings,

- Audio input
- No signal input
- PC timing

size and centering have been pre-aligned in factory according to specifications.

Sensitivity 500mVrms, the amplifier outputs full power when the input level reaches 500mVrms, terminated with impedance >10kΩ

While no signal at external inputs or signal cable not connected, screen goes black with message "No Video Input" for 30 seconds before going to DPM mode

For 201T1

Support Timing	Factory Preset Timing	Resolution			Pixel Rate (MHz)	Horizontal (KHz)	Vertical (Hz)
*		DOS		640x350/70	25.18	31.47	70.09
*		DOS		720x400/70	28.32	31.47	70.09
*	*	DMT	4:3	640x480/60	25.18	31.47	59.94
*		MAC		640x480/67	30.24	35.00	66.67
*		DMT	4:3	640x480/72	31.50	37.86	72.81
*	*	DMT	4:3	640x480/75	31.50	37.50	75.00
*		DMT	4:3	800x600/56	36.00	35.16	56.25
*	*	DMT	4:3	800x600/60	40.00	37.88	60.32
*		DMT	4:3	800x600/72	50.00	48.08	72.19
*	*	DMT	4:3	800x600/75	49.50	46.88	75.00
*		MAC		832x624/75	57.28	47.73	74.55
*	*	DMT	4:3	1024x768/60	65.00	48.36	60.00
*		DMT	4:3	1024x768/70	75.00	56.48	70.07
*	*	DMT	4:3	1024x768/75	78.75	60.02	75.03
*		DMT		1152x864/75	108.00	67.50	75.00
*		MAC		1152x870/75	100.00	68.68	75.06
*		SUN		1152x900/66	92.94	61.80	65.95
*		SUN		1152x900/76	105.56	71.71	76.05
*		CVT	16:9	1280x720/60	74.50	44.77	59.86
*		CVT	16:9	1280x720/75	95.75	56.46	74.78
*		CVT	15:9	1280x768/60	79.50	47.78	59.87
*		CVT	15:9	1280x768/75	102.25	60.29	74.89
*		CVT		1280x800/60	83.50	49.70	59.81
*		CVT		1280x800/75	106.50	62.80	74.93
*		DMT	4:3	1280x960/60	108.00	60.00	60.00
*		DMT	5:4	1280x1024/60	108.00	63.89	60.02
*		SUN	5:4	1280x1024/66	117.00	71.70	67.00
*		DMT	5:4	1280x1024/75	135.00	79.98	75.03
*		SUN	5:4	1280x1024/76	138.01	81.10	76.00
*		DMT	16:9	1360x768/60	85.50	47.71	60.02
*		CVT	16:9	1360x768/75	109.00	60.29	74.89
*	*	VDMTREV		1600x900/60	108.00	60.00	60.00
32	7						

For 221T1

Support Timing	Factory Preset Timing	Resolution			Pixel Rate (MHz)	Horizontal (KHz)	Vertical (Hz)
*		DOS		640x350/70	25.18	31.47	70.09
*		DOS		720x400/70	28.32	31.47	70.09
*	*	DMT	4:3	640x480/60	25.18	31.47	59.94
*		MAC		640x480/67	30.24	35.00	66.67
*		DMT	4:3	640x480/72	31.50	37.86	72.81
*	*	DMT	4:3	640x480/75	31.50	37.50	75.00
*		DMT	4:3	800x600/56	36.00	35.16	56.25
*	*	DMT	4:3	800x600/60	40.00	37.88	60.32
*		DMT	4:3	800x600/72	50.00	48.08	72.19
*	*	DMT	4:3	800x600/75	49.50	46.88	75.00
*		MAC		832x624/75	57.28	47.73	74.55
*	*	DMT	4:3	1024x768/60	65.00	48.36	60.00
*		DMT	4:3	1024x768/70	75.00	56.48	70.07
*	*	DMT	4:3	1024x768/75	78.75	60.02	75.03
*		DMT		1152x864/75	108.00	67.50	75.00
*		MAC		1152x870/75	100.00	68.68	75.06
*		SUN		1152x900/66	92.94	61.80	65.95
*		SUN		1152x900/76	105.56	71.71	76.05
*		CVT	16:9	1280x720/60	74.50	44.77	59.86
*		CVT	16:9	1280x720/75	95.75	56.46	74.78
*		CVT	15:9	1280x768/60	79.50	47.78	59.87
*		CVT	15:9	1280x768/75	102.25	60.29	74.89
*		CVT		1280x800/60	83.50	49.70	59.81
*		CVT		1280x800/75	106.50	62.80	74.93
*		DMT	4:3	1280x960/60	108.00	60.00	60.00
*	*	DMT	5:4	1280x1024/60	108.00	63.89	60.02
*		SUN	5:4	1280x1024/66	117.00	71.70	67.00
*		DMT	5:4	1280x1024/75	135.00	79.98	75.03
*		SUN	5:4	1280x1024/76	138.01	81.10	76.00
*		DMT	16:9	1360x768/60	85.50	47.71	60.02
*		CVT	16:9	1360x768/75	109.00	60.29	74.89
*		CVT		1440x900/60_RB	88.75	55.47	59.90
*	*	CVT		1440x900/60	106.50	55.94	59.89
*		CVT		1440x900/75	136.75	70.64	74.98
*		DMT	4:3	1600x1200/60	162.00	75.00	60.00
*		CVT	16:10	1680x1050/60_RB	119.00	64.67	59.88
*	*	CVT	16:10	1680x1050/60	146.25	65.29	59.95
*		CVT	16:9	1920x1080/60_RB	138.50	66.59	59.93
*		CVT	16:10	1920x1200/60_RB	154.00	74.04	59.95
*	*	CVT	16:9	1920x1080/60_RB	148.50	67.50	60.00
40	10						

Extra (Video) Timing Table List:

Support Timing	Preset Timing	Resolution		Pixel Rate (MHz)	Horizontal (KHz)	Vertical (Hz)
*		60Hz	480i			
*			480p			
*			720p			
*			1080i			
*			1080p			
*		50Hz	576i			
*			576p			
*			720p			
*			1080i			
*			1080p			
10	0					

PC Ambiguous specification

For 201T1 1600x900 panel:

640×350 @70Hz DOS	Ambiguous group 0 (Default 720x400 @ 70Hz)
720×400 @70Hz DOS	
1024×768 @60Hz	Ambiguous group 1 (Default 1024x768@60Hz)
1280×768 @60Hz	
1360×768 @60Hz	
1024×768 @75Hz	Ambiguous group 2 (Default 1024x768@75Hz)
1280×768 @75Hz	
1360×768 @75Hz	

For 221T1 1920x1080 panel:

640×350 @70Hz DOS	Ambiguous group 0 (Default 720x400 @ 70Hz)
720×400 @70Hz DOS	
1024×768 @60Hz	Ambiguous group 1 (Default 1024x768@60Hz)
1280×768 @60Hz	
1360×768 @60Hz	
1024×768 @75Hz	Ambiguous group 2 (Default 1024x768@75Hz)
1280×768 @75Hz	
1360×768 @75Hz	

Note:

1. If current timing at the ambiguous group , user need to select the prefer timing at Menu -> Picture -> Advanced Video -> Resolution
2. At the first time user change to one of the ambiguous timing, TV will perform the auto-config. After that, only if user select their prefer timing, TV will perform the auto-config. Otherwise, TV will use the previous user selected timing when user change timing and will not perform the auto-config

3.3.3.1 DDC Channel

- E-EDID data structure according to VESA Enhanced EDID 1.3 (and EIA/CEA-861B for HDMI).
- Allows source to interrogate capabilities of the Monitor & TV.
- Separate EDID for VGA input and HDMI input.

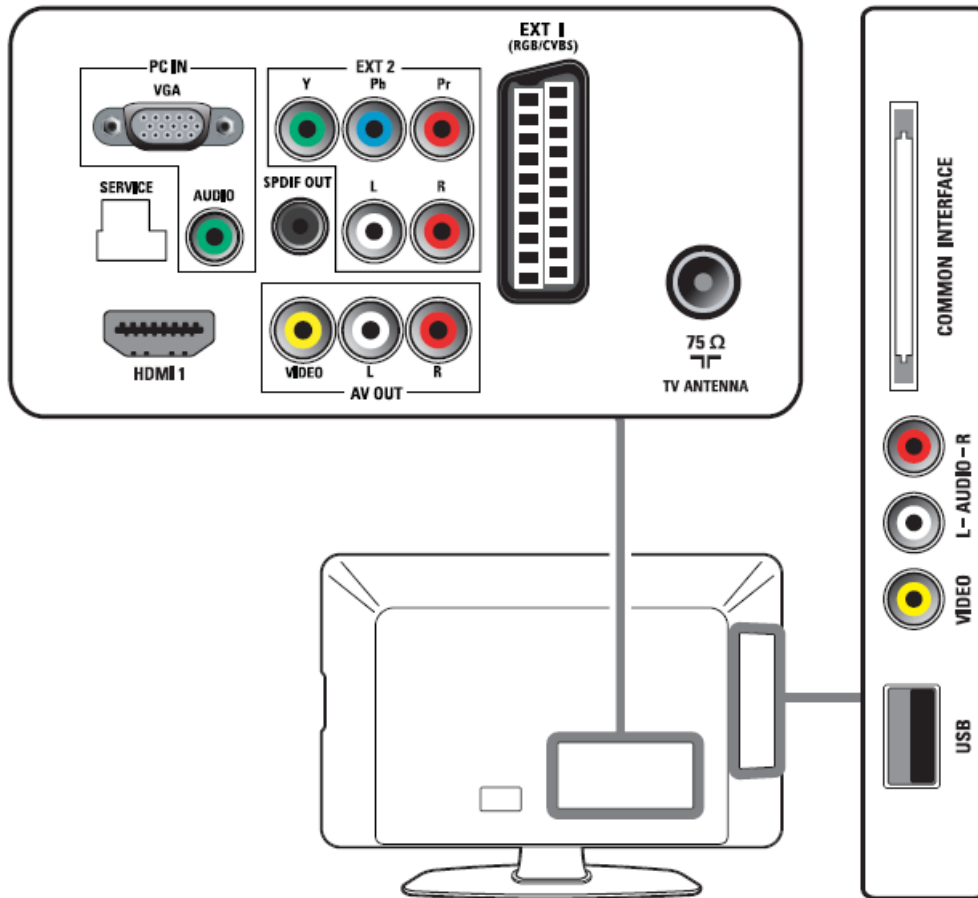
Data for EDID & .inf file

1	User visible strings on .inf file	Philips 201T (20 inch WIDE LCD MONITOR 201T1)
2	Manufacturer ID (EDID data)	PHL
3	Product ID, "xxxx" 4 codes	MSB(byte 12): C0
		LSB (byte 11): 40
4	maximum resolution	1600 x 900
5	Horizontal Frequency Range	30~83 KHz
6	Vertical Frequency Range	56~76Hz
7	Monitor Name (13 characters max.)	Philips 201T

1	User visible strings on .inf file	Philips 221T (22inch WIDE LCD MONITOR 221T1)
2	Manufacturer ID (EDID data)	PHL
3	Product ID, "xxxx" 4 codes	MSB(byte 12): C0
		LSB (byte 11): 41
4	maximum resolution	1920 x 1080
5	Horizontal Frequency Range	30~83 KHz
6	Vertical Frequency Range	56~76Hz
7	Monitor Name (13 characters max.)	Philips 221T

3.3.4 I / O Connectors

I / O at rear



3.3.4.1 Rear connectors:

- Component Video In & Audio L/R In (YPbPr)
- SCART1 input / output (CVBS in/out, RGB in, S-video in, Audio L/R in/out)
- SPDIF (digital audio) output
- Coaxial aerial I/P (TV input)– Europe type (75 Ω)
- PC VGA In (D-SUB)
- PC Audio In
- HDMI1 in (TV digital interface support HDCP) with digital audio or with PC audio jack.
- RS232 connector (for service)
- Video OUT: TV output with audio line out.

3.3.4.2 Side connectors on scaler board:

- CVBS in (Cinch)
- Audio L/R in (Cinch)
- CI slot input: PCMCIA card (5V)
- USB 4-pin Type-A connector for SW update (only uses flash drive)

3.3.5 Miscellaneous

VGA Pin assignment

PIN No.	SIGNAL
1	Red
2	Green
3	Blue
4	NC
5	GND
6	Red GND
7	Green GND
8	Blue GND
9	+5V (Supply from PC)
10	Sync GND
11	NC
12	Bi-directional data(SDA)
13	H-sync
14	V-sync
15	Data clock(SCL)

HDMI Pin assignment

PIN No.	SIGNAL
1	TMDS Data2+
2	TMDS Data2 shield
3	TMDS Data2-
4	TMDS Data1+
5	TMDS Data1 shield
6	TMDS Data1-
7	TMDS Data0+
8	TMDS Data0 shield
9	TMDS Data0-
10	TMDS Clock+
11	TMDS Clock Shield
12	TMDS Clock-
13	CEC
14	Reserved (N.C. on device)
15	SCL
16	SDA
17	DDC/CEC Ground
18	+5V Power
19	Hot Plug Detect

PIN No.	SIGNAL
1	Audio output right
2	Audio input right
3	Audio output left
4	GND(audio)
5	GND(blue)
6	Audio input left
7	Blue input
8	Switch signal input (Fast Blanking)
9	GND(green)
10	N.C.
11	Green input
12	N.C.
13	GND(red)
14	GND(blanking)
15	Red input
16	RGB switching control
17	GND(video input & output)
18	GND(RGB switching control)
19	Video output(composite)
20	Video input(composite)
21	Common ground

3.4 Visual performance

3.4.1 Front of screen performance

- Peak brightness Per panel spec, brightness & contrast controls are at 100%
- Luminance uniformity Per panel spec.
- Chromatic uniformity Per panel spec.
- Luminance variation Per panel spec.
- TV video color Smart picture at “Standard” with 75% video level full white pattern, The color temperature at the screen center should be:

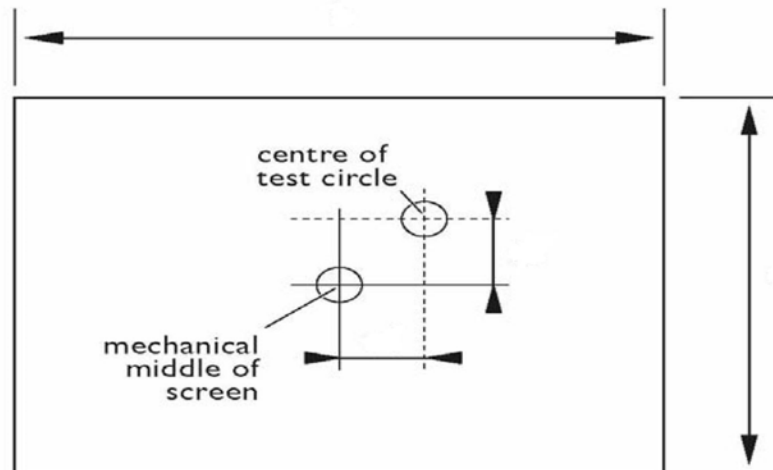
	<i>Normal</i>	<i>Warm</i>	<i>Cool</i>	
CCT	8000° K	6500° K	9300 ° K (only for 201T)	11000° K (only for 221T)
X	0.296 ±.02	0.314 ±.02	0.283 ±.02	0.278 ±.02
Y	0.299 ±.02	0.319 ±.02	0.297 ±.02	0.278 ±.02

Note: (for 201T1)

1. Use Minolta CA-210 for color coordinates and luminance check.
2. Luminance > 200 cd/m² in the center of the screen when Brightness control at 100; contrast control at 100 and “Warm” color temperature in PC source.

- Picture centering

H & V $\leq 0.5\%$. (for TV, 480i/p, 576i/p, 720p, 1080i/p)



- Over scan

3% vertically and horizontally for TV & AV.

0% (fit to screen) for PC mode vertically and horizontally.

- Residual image

Recover < 2 min. after burn in the checkerboard image for 2 hours.

- Contouring

Minimum contouring visible.

- Dimming backlight

Range from 11 to 100% for DCR setting, DCR =15000 (min), DCR =30000:1 (max.) in Dimming current <2mA (**for 201T1**)

range from 11 to 100% for DCR setting, DCR=12500(min.) ,

DCR=25000:1(max.) in Dimming current <2mA (**for 221T1**)

3.4.2 Picture Quality

Picture control handles the initialization of the video parameters and the recall of the video personal preferences. Some video parameters can also be changed via the picture sub menu.

All video inputs must have independent picture settings for fine tuning their PQ.

PQ should be fine even at 50dB RF signal.

Per video input source has itself own pre-setting values included Smart Picture, Smart Sound and Picture Format.

Pre-setting values must follow the input source change.

- | | |
|------------------------|--|
| • De-interlace | 3D for ATV, 3D MA (monitor adaptive) for DTV |
| • Y/C separation | 3D comb filter for ATV, 3D comb filter for DTV |
| • Film mode supports | Automatic 3:2/2:2 detect and 3:2/2:2 pull down |
| • Skin tone correction | Yes |
| • Blue stretch | Yes |
| • Green enhance | Yes |
| • Black extension | Yes |

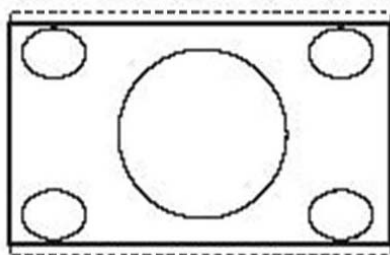
3.4.2.1 Smart setting in TV / AV modes

There are 5 sets of pre-setting: Personal, Vivid, Standard, Movie, and Power saver.

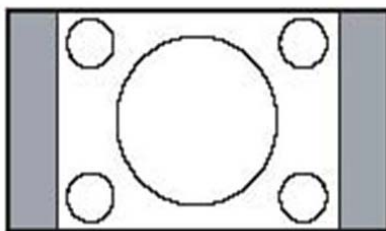
Personal settings can be altered by users.

3.4.2.2 Picture Format

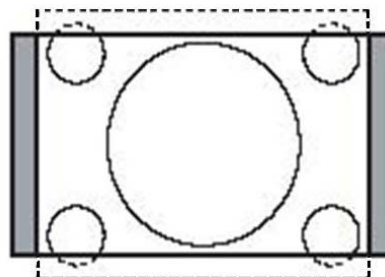
There are 7 picture formats: Normal 4:3, Zoom 1 (Movie Expand 14:9), Zoom 2 (Movie Expand 16:9), Super Zoom, Subtitle Zoom and Wide, Auto.



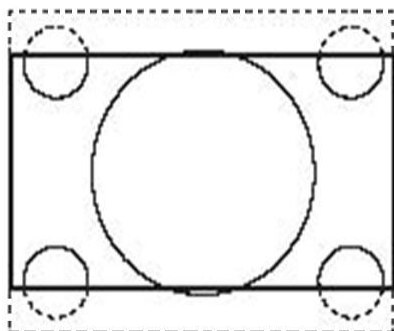
Super Zoom



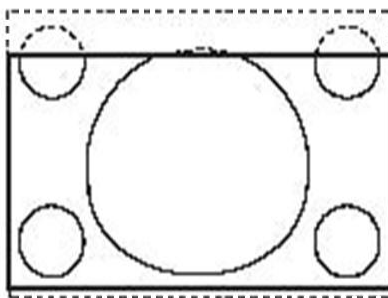
Normal (4:3)



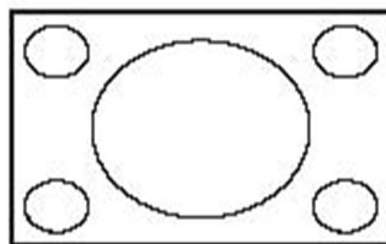
Zoom1 (Movie Expand 14:9)



Zoom2 (Movie Expand 16:9)



Subtitle Zoom



Wide

3.5 Audio Performance

Audio should be audible even no video signal is presented for all sources except PC.

For the sake of stereo, proper segment of R / L speakers is needed to make sure correct R / L channel separation.

Audio control handles the initialization of the audio parameters and the recall of the audio last status. Some audio parameters can be also changed via the sound submenu.

Treble, bass are used for tone control.

3.5.1 DTV Audio Codec

3.5.1.1 Required Decoders (Reference ETSI TS 101 154 V1.7.1 (2005-06). Section 6.1)

Support ISO / IEC 11172-3

Layer I and Layer II

Single channel:

Joint stereo

Stereo

Support ISO / IEC 13818-3

Multi-channel audio: decode the part

ISO / IEC 11172-3

Layer I and Layer II

Stereo

3.5.2 Sound Mode

Sound mode selections:

Press DUAL I / II key to set up bilingual program / MTS system. The function is to provide multi-channel TV sound. MTS can receive dual, stereo, SAP (Secondary Audio Program), or Mono sound. SAP feature permits the TV station to broadcast other information, such as audio in another language. With dual sound, you can enjoy the main sound (normal program soundtrack) and the second language at the same time.

✧ Choose the available sound mode for channels that is preset by TV broadcasting station.

Source	Detected Sound System	Current/Display Sound Mode	New/Next Sound Mode
Front-end	2CS Mono	Mono	Mono
	2CS Stereo	Mono (forced)	Stereo
		Stereo	Mono (forced)
	2CS Dual	Dual I	Dual II
		Dual II	Dual I
	NICAM Mono	NICAM Mono	FM/AM Mono
		FM/AM Mono	NICAM Mono
	NICAM Stereo	NICAM Stereo	FM/AM Mono (forced)
		FM/AM Mono (forced)	NICAM Stereo
	NICAM Dual	NICAM Dual I	NICAM Dual II
		NICAM Dual II	FM/AM Mono (forced)
		FM/AM Mono(forced) (option)	NICAM Dual I

The icon text “Mono” should show in red on screen when with mono (forced) is selected.

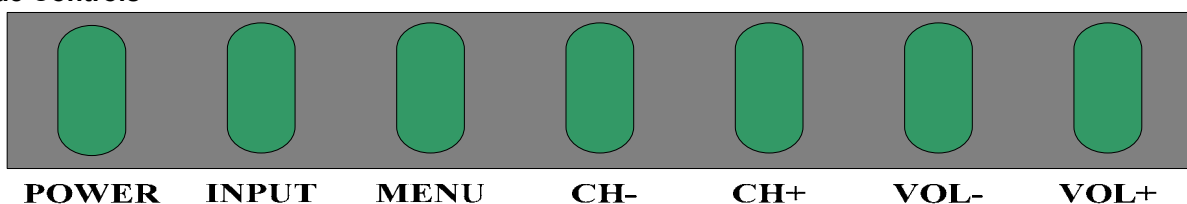
3.5.3 Sound Related Requirements

- Volume control Should be gradual change of sound level from zero to maximum output
- Soft mute A short and gradual increase of the sound to prevent the pop sound during AC plug in/out, standby on/off, channel change, mute on/off
- Lip Sync To synchronise sound with video due to delay in video decoding
- AVL To stabilize the TV audio input level in the case of over/under-modulated signal from non-standard broadcast transmission

4 User Interface Specification

TV controls can be reached via top control keypads or remote control

4.1 Side Controls



Key	TV/video mode
Source	Select Input Source
Menu	Enter /Exit OSD menu
“+” (Volume)	Menu Navigate Right/Increase/Volume up
“-” (Volume)	Menu Navigate Left/Decrease/Volume down
“+” (Channel)	Menu Navigate Up/Channel up
“-” (Channel)	Menu Navigate Down/Channel Down
Power	Power ON /OFF

- Access main menu by pressing “MENU” key.
- Access input source by pressing “INPUT” key.
- Navigate to and select function via Program “+ / -” keys, and Volume “+ / -” keys. Then adjust using up/down functionality.
- Any local keyboard press will wake-up the TV set from ‘Standby’ mode (ABO – any button ON)
- Power switch to switch off the set to minimal power consumption.

4.2 Front Controls

LED Indicator: 4 State

Status	LED behavior
Normal on	Green
DC Switch off	Red
RC Switch off / Standby	Red
RC receiving	Blink Green

RC sensor: Receiver for TV control

Operation Angle	RC operational distance
0° (for H & V)	≥ 8m
30° (for H & V)	≥ 6m
45° (for H only)	≥ 4m

4.3 OSD Menu

- 25 languages: Bulgarian, Croatian, Czech, Danish, Dutch, English, Finnish, French, Gaelic, German, Greek, Hungarian, Italian, Norwegian, Polish, Portuguese, Rumanian, Russian, Serbian, Slovak, Slovenian, Spanish, Swedish, Turkish, Ukrainian.

- OSD tree: As defined

Source: TV / YPbPr / CVBS / SACART / PC / HDMI					
10 Items (Default at vivid mode)	TV/YPbPr / CVBS / SACART / HDMI				
Smart Picture (Video Timing)	Personal	Standard	Vivid	Movie	Eco
Brightness	45	45	45	45	45
Contrast	55	50	55	50	50
Color	70	50	70	60	50
Tint	0	0	0	0	0
Sharpness	3	2	3	2	2
Color Temperature	Cool	Cool	Cool	Cool	Cool
Advanced Control					
Noise Reduction (Low / Medium / High)	High	High	High	High	High
Flash Tone	On	Off	On	On	Off
Backlight	100	100	100	85	60
Smart Contrast	Off	Off	Off	Off	Off
			Default		
6 Items (Default at Personal mode)	PC				
PC Timing (VGA & HDMI)	Personal	Standard	Vivid	Movie	Eco
Brightness (Backlight)	100				
Contrast	50				
Color Temperature	Warm				
Advanced Video					
Smart Contrast	Off				
Resolution					
	Default				
11 Items (Default at Personal mode)	TV / YPbPr / CVBS / SACART / PC / HDMI				
Sound Mode (Video Timing & PC Timing)	Personal	Music	Speech		
Equalizer 120Hz	0	0	-6		
Equalizer 500Hz	0	-3	-4		
Equalizer 1.5KHz	0	-6	6		
Equalizer 5KHz	0	-4	6		
Equalizer 10KHz	0	6	-6		

Balance	0	0	0		
Virtual Surround	Off	Off	Off		
TV Speaker	On	On	On		
Digital Audio out	PCM	PCM	PCM		
SPDIF Delay	0	0	0		
AVL	Off	Off	Off		
		Default			

5 Non Function Requirements

5.1 Default and Initial Control Values

- Initial value: Settings when the set turns on from standby.
- Default value: Out of box settings.
- Factory reset to default: Settings when “Factory Reset” in menu is selected.

Control		Initial Value	Default Value	Factory Reset to Default
Smart settings		Last status	Home: Standard	Yes (Personal settings back to default too)
Audio	Volume	Last status	20	Yes
	AVL	Last status	Off	Yes
	Incredible Surround	Last status	Off	Yes
	Dual I/II (EU)	Last status per channel	Stereo	
	User mute	Last status	Off	Yes
Video	PC Brightness	Last status	100	Yes
	PC Contrast	Last status	50	Yes
	PC Color Temp.	Last status	Cool	Yes
	PC picture format	Last status	Full Screen	Yes
	PC Picture Manual adj. Phase Clock Horizontal Vertical	Last status	TBD	Yes
Source selection	Selected source	Last status	TV	
Program	Program	Last status	Lowest program	
Lock	Lock	Last status	Off	

5.2 Time Out

Summary of Time-out values:

Description	Value
Menu	20s.
Install menu and its subsequent submenus	No Timeout
Menu to restore last viewed item highlighted	20s.
All OSD	5s
AV source display (without AV source input)	5s.
Digit entry for change channel	1.5s for ATV, 2s for DTV
Digit entry (General)	5s
No sync display in PC mode	30s

5.3 Last Status

A variable can be classified as “last status” variable. This means if the variable is changed it may take up to 3 seconds before the variable is stored in NVM. This automatic storage mechanism is not operational when the TV set is in Factory mode.

5.3.1 Audio Last Status

Region	Audio Last Status
EU	Volume, Balance, Equalizer, Virtual Surround, AVL, Mute, Smart Sound.

5.3.2 Video Last Status

Region	Video Last Status
ALL	Last tuned Channel, Alternate Channel, Brightness, Color, Contrast, Sharpness, Tint, Color Temperature, NR, and Smart Picture.

5.3.3 Channel Tables

See PATS document

5.3.4 Customer Service Menu (CSM)

Based on generic service requirements for OEM (D04.1) + study of data-sheets

Hot Key is defined: (MENU+062596)

Customer service menu 1
1: Set Type → (e.g. 221T1SB/00) to be retrieved out of production-data
2: Production code → 14 digit production-code to be retrieved per set to be written in NVM./EEPROM
3: Key(HDCP) – HDMI → information whether HDCP - key is valid
4: NVM-naming: panel type

6 Accessories

6.1 Cables

• Power cord	EU /UK, length: 1.8m + / - 50mm
• SCART cable (option)	N.A.
• DVI cable	N.A.
• VGA interface cable (option)	Yes, Length: 1.8 m + / - 50mm
• RCA R / L audio cable (option)	N.A.
• S-video cable (option)	N.A.
• AV cable (option)	N.A.
• Mini jack stereo cable (option)	N.A.
• YPbPr cable (option)	N.A.

6.2 Remote Control

Batteries included.

6.3 DFU

Paper DFU / Czech, Danish, Dutch, English, Finnish, French, German, Greek, Hungarian, Italian, Norwegian, Polish, Portuguese, Russian, Slovak, Spanish, Swedish, Turkish.

6.4 Quick User Guide

Paper QUG Czech, Danish, Dutch, English, Finnish, French, German, Greek, Hungarian, Italian, Norwegian, Polish, Portuguese, Russian, Slovak, Spanish, Swedish, Turkish.

6.5 Warranty card

Philips warranty card

7 Mechanical

7.1 Cosmetic

Philips ID

7.2 Mechanical Data Files

ProE files required, with architecture in part and assembly from vendor.

7.3 Location of Philips Logo

Per Philips make-up sheet

7.4 Location of Icons

Per Philips make-up sheet

7.5 Color for Resin / Paint

Per Philips make-up sheet

7.6 GAP between Panel and Front Bezel

< 1.2 (typ.) mm

7.7 Slant on Front Bezel

≤ 4.0 mm

7.8 First Enclosure Request

Shielding cover should fulfill international standard

7.9 Resins

- RoHS requirements.
- WEEE requirements
- Resin type / selection refer to “ Plastic-Philips Pool monitor”

7.10 Paint Used

- RoHS requirements.
- WEEE requirements.
- If new painting type need to implement, refer to UN-D 1235

7.11 Plastic Mold Tooling

- Tooling to be designed to minimize cosmetic defects induced by molding process (sink, blush, weld lines, gate marks, ejector marks, etc.). Reference to “TYV 61-90007”.
- Painting to cover up cosmetic defects due to molding is strongly discouraged.
- China RoHS mark requested.
- Design of a separated room on front cabinet by using wall, rib, sponge...etc. for ensuing both speaker enclosure (RH/LH) is segregated

7.12 Plastics Flammability

- All Plastics to be Flame Retardant UL 94- HB or Better.
- All major plastic parts (bezel, back cover, base) is better to be molded from same resin

7.13 Texture/Glossing of Housing

- The texture area and texture no should follow Philips make-up sheet.
- The exterior surfaces shall have a uniform texture.
- Philips must approve the mold texturing.
- Detail document for texture refer to UAN-D 249 and UN-D 600.
- Glossy surface ≥ 80 gloss units.

7.14 Base Tilt / Swivel Range

- Tilt $-5^{\circ} +2/-0^{\circ}$ (forward) $+20^{\circ} +0^{\circ}/-2^{\circ}$ (backward)
- Swivel Range Nil
- Base Range Should be directly disassembled from main body, so as for easy install the set to wall mount.
- Tip over 10° minimum in worst case, base dimension designed so that ID and tip over requirements can be met

7.15 Movement of Unit with Base

- Base must have non-marring, non-staining feet.
- Unit must tilt up and down with no “Stick / Slip”.
- Base must provide sufficient friction to hold unit in desired position after adjusting tilt.

7.16 Kensington Lock

- Must meet Kensington_slot spec “TYE-M0004”
- MMD request metal plate in Kensington hole.

7.17 Wall Mount Method

- VESA standard 100mm x 100mm

7.18 Label

- Regulatory label / Carton label should follow Philips requirement.
- China RoHS label.
- Detail document refer to Philips Engineering Reference Book.

7.19 Product Dimension / Weight

Refer to final approved SHT 191 / SHT 560

- Unit dimension (with stand) -
- Packed unit dimension (carton) -
- Net weight -
- Gross weight -

7.20 Transportation

Transportation standards refer to UAN-D 1534 / 00 / 01 / 02.

7.20.1 Transportation packages

- Packaging and wrapping shall be sufficient to protect the product against damage or loss during shipment from the supplier to the destination specified in the purchase order. All packaging materials are subject to test and evaluation per UAN-D 1534/00/01, UAN-D636 and UN-D 1400.
- General pallet requirement refer to [wood packaging reqs SBMT-ISBM15-16-03-06.pdf](#).
- The cushion material shall be constructed using EPS material.
- The doggy hole is requested.

7.20.2 Transportation test

- The overall testes refer to UAN-D 1534/00/01/02.
- Vibration, drop test should be performed at ambient temperature (20°C to 23°C) and relative humidity (40% to 65%).

7.20.3 Transportation test procedures

- The overall testes refer to UAN-D 1534/00/01/02.
- Package test
 1. Random Vibration test
 2. Drop test
 3. Cold Drop test (for design reference)
- Un-package test
 1. Half sine shock test (non operation)

7.21 Pallet / Container Loading

Refer to Philips approved SHT 191 / SHT 560.

Transportation standards refer to TYE- M0002, UAN- D1534 and UAW-0309.

Request by transportation items:

- Air shipment -
- Sea container 20'(pallet/slip sheet) -
- Sea container 40'(pallet/slip sheet) -
- Sea container 40' High Cube (pallet/slip sheet) -
- Land 45' Truck and Trailer (800 x 1200 mm pallet) for EU.
- Land 45' Truck and Trailer (800 x 1200 mm pallet) for UK.
- Truck shipment.

Stacking request in different transportation for all regions except EU / UK (SHT 560)

- Air shipment
- 20'/40'/40'HQ container loading
- Truck shipment

Stacking request in different transportation for EU / UK (SHT 560)

- Land 45' Truck and Trailer (800 x 1200 mm pallet) for EU.
- Land 45' Truck and Trailer (800 x 1200 mm pallet) for UK.

8 Reliability / Environment

8.1 MTBF prediction

>100k hours (excluding Panel)

8.2 Demonstration MTBF

>75k hours with 90% confidence level at CR (excluding Panel)

8.3 Temperature

- Operating (guaranteed performance according to spec requirements): 0 to 40 degree
- Storage - -20 to 60 °C
- Shipping - -40 to 65 °C

8.4 Humidity

- Operating (non-condensing) - 20 to 70%
- Storage (non-condensing) - 5 to 95%
- Shipping (non-condensing) - 5 to 95%

8.5 Altitude

- Operating - 0 to 2000m
- Storage - 0 to 9000m
- Shipping - 0 to 9000m

8.6 Air pressure

- Operating - 795 to 1013 mbar
- Storage - 300 to 1013 mbar
- Shipping - 300 to 1013 mbar

8.7 Environmental test

- Cold test (-25 degree, 96 hours)
- Damp heat steady state (40 degree, 95% RH, 96 hours)
- Dry heat test (70 degree, 96 hours)

9 Regulatory Compliance

9.1 Worldwide Regulatory

Per requirements

COUNTRY (NSO)	DOMAIN	SAFETY / EMC / ERGONOMICS / STANDARDS	DOCUMENTS	REFERENCE LOGO	APPLICANT	Mandatory	Leadtime (D=sample ready)
INTERNATIONAL	Sa	IEC60065/A1: national differences of all countries	CB Report and CB certificate		Supplier apply but Philips is the holder	Yes	D+6 weeks
EUROPE	Sa	European Low Voltage Directives 73/23/EEC and 93/68/EEC, 2006/95/EC	Declaration of Conformity		Philips	Yes	D+8 weeks
EUROPE	E	European Electromagnetic Compatibility Directive 89/336/EEC amended by the directive 93/68/EEC, 2007/108/EC. EN 55022:1998 +A1,A2 Class B EN 55024: 1998 +A1, A2 EN 61000-3-2: 2000 EN 61000-3-3:1995+A1(2001),4-2,4-3 and 4-4 EN55013: 2001 EN55020 :2002	Declaration of Conformity and Full EMC/CE test report		Supplier	Yes	D+8 wees
EUROPE	O	EN 50049 (SCART)	Certificate of Conformity and/or test report		Supplier	Yes	TPV provide report only
RUSSIA	Sa	IEC60065/A1: national differences of all countries	GOST certificate		Philips	Yes	D+12 weeks

RUSSIA	E	EN 55022:1998 +A1,A2 Class B EN 55024: 1998 +A1, A2 EN 61000-3-2: 2000 EN 61000-3-3:1995+A1(2001), 4-2, 4-3 and 4-4 EN55013: 2001 EN55020 :2002	GOST certificate		Philips		D+12 weeks
Switzerland	Sa	IEC60065/A1: national differences of all countries	S+ PZ1 certificate		Supplier	Optional	D+14 weeks
Switzerland	E	EN 55022:1998 +A1,A2 Class B EN 55024: 1998 +A1, A2 EN 61000-3-2: 2000 EN 61000-3-3:1995+A1(2001), 4-2, 4-3 and 4-4 EN55013: 2001 EN55020 :2002	S+ PZ1 certificate				
Switzerland	O	EMF EN 62311	Certificate of Conformity and/or test report		Supplier		D+8 weeks
Eastern Europe	Sa	IEC60065/A1: national differences of all countries	Certificate of Conformity		Philips	Yes	by Philips
Eastern Europe	E	EN 55022:1998 +A1,A2 Class B EN 55024: 1998 +A1, A2 EN 61000-3-2: 2000 EN 61000-3-3:1995+A1(2001), 4-2, 4-3 and 4-4 EN55013: 2001 EN55020 :2002	Certificate of Conformity		Philips		by Philips

Italy	Sa	IEC60065/A1: national differences of all countries	Certificate of Conformity		Supplier		D+12 weeks
Italy	E	EN 55022:1998 +A1,A2 Class B EN 55024: 1998 +A1, A2 EN 61000-3-2: 2000 EN 61000-3-3:1995+A1(2001), 4-2, 4-3 and 4-4 EN55013: 2001 EN55020 :2002	Certificate of Conformity	MINISTERO P.T XXXXXX/XXX XXX/X/X (D.M.26.3.92)	Supplier	Yes	D+12 weeks
	O	WEEE	WEEE report and /or declaration		Philips but supplier need provide WEEE report and /or declaration	Yes	
UK (DTG)	O		Certification	digital  This logo does not on rating label	Supplier (?)	Yes	

Sweden (Boxer)	O		Certification	 This logo does not on rating label	Supplier (?)	Yes	
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Sa = Safely

E = Electromagnetic Compatibility

O = Other which including recycling, energy saving ergonomics

Remark:

2. All documents and samples provide by supplier even applicant by Philips
3. HDMI has to connect PC and pass EMC test
4. TV EMC test need to conduct in accredited lab which certificated documents need get approval by Philips NSO in France and MMD Taiwan
5. Both portrait and landscape function if provide then need to be tested in safely / EMC
6. Philips's own CB report and it has to be readied after DTV exit 4 weeks.
7. Even Philips is applicant: suppliers need fill in approbation start date which based on supplier all documents and samples ready and ship / e-mail to Philips and / or Philips NSO
8. To Switzerland each approbation cost need about 3000 CHF, it charge to supplier
9. The set and AC adapter (if provide) have to meet California Energy Commission requirements. To AC adapter has to meet table U-2 (power efficiency IV) effective January 1, 2008
10. All approbation responsibility by supplier to even approbation need Philips Local NSO to support to get it then approbation samples, shipping cost, test fee and approbation fee have to pay by supplier.
11. Based on our sales region all mandatory approbations need to apply even current without listing in our approbation plan.
12. AC adapter if provide then based on our sales region to do all mandatory approbations in advance.

9.2 EMC Requirements

Supplier DVT EMI test result must be submitted prior to DVT samples delivery, and PVT EMI test result must be submitted again prior to PVT samples delivery, which also has to meet Philips' immunity testing specification.

9.3 RoHS

Restriction on the use of certain hazardous substances

Lead, Cadmium, Mercury, Hexavalent Chromium, Polybrominated Biphenyl (PBB) and Polybrominated Biphenyl Ether (PBDE) (flame retardant).

9.4 WEEE

Producer (Philips) responsible for retailer takes back schemes and recycling.

--System implemented.

--Collection and recycle targets.

9.5 Ongoing Regulatory

There's a possibility

TELEVISION/MONITOR SAFETY GUIDELINES FOR THE PROFESSIONAL SERVICE TECHNICIAN

Safety Checks

After the original service problem has been corrected, a complete safety check should be made. Be sure to check over the entire set, not just the areas where you have worked. Some previous service may have left an unsafe condition, which could be unknowingly passed on to your customer. Be sure to check all of the following:

Fire and Shock Hazard

1. Be sure all components are positioned in such a way as to avoid the possibility of adjacent component shorts. This is especially important on those chassis which are transported to and from the service shop.
2. Never release a repaired unit unless all protective devices such as insulators, barriers, covers, strain reliefs, and other hardware have been installed in accordance with the original design.
3. Soldering and wiring must be inspected to locate possible cold solder joints, solder splashes, sharp solder points, frayed leads, pinched leads, or damaged insulation (including the ac cord). Be certain to remove loose solder balls and all other loose foreign particles.
4. Check across-the-line components and other components for physical evidence of damage or deterioration and replace if necessary. Follow original layout, lead length, and dress.
5. No lead or component should touch a receiving tube or a resistor rated at 1 watt or more. Lead tension around protruding metal surfaces or edges must be avoided.
6. Critical components having special safety characteristics are identified with an asterisk by the Ref. No. in the parts list and enclosed within a broken line * (where several critical components are grouped in one area) along with the safety symbols on the schematic diagrams and/or exploded views.
7. When servicing any unit, always use a separate isolation transformer for the chassis. Failure to use a separate isolation transformer may expose you to possible shock hazard, and may cause damage to servicing instruments.
8. Many electronic products use a polarized ac line cord (one wide pin on the plug.) Defeating this safety feature may create a potential hazard to the service and the user. Extension cords which do not incorporate the polarizing feature should never be used.
9. After reassembly of the unit, always perform a leakage test or resistance test from the line cord to all exposed metal parts of the cabinet. Also check all metal control shafts (with knobs removed), antenna terminals, handles, screws, etc. to be sure the unit may be safely operated without danger of electrical shock.

* Broken line

Implosion

1. All picture tubes used in current model receivers are equipped with an integral implosion system. Care should always be used, and safety glasses worn, whenever handling any picture tube. Avoid scratching or otherwise damaging the picture tube during installation.
2. Use only replacement tubes specified by the manufacturer.

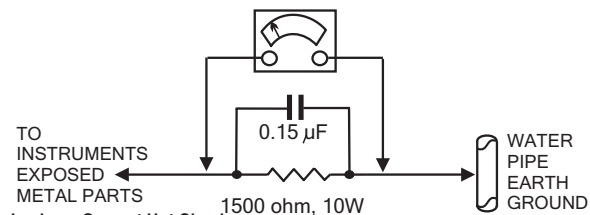
X-radiation

1. Be sure procedures and instructions to all your service personnel cover the subject of X-radiation. Potential sources of X-rays in TV receivers are the picture tube and the high voltage circuits. The basic precaution which must be exercised is to keep the high voltage at the factory recommended level.
2. To avoid possible exposure to X-radiation and electrical shock, only the manufacturer's specified anode connectors must be used.
3. It is essential that the service technician has an accurate HV meter available at all times. The calibration of this meter should be checked periodically against a reference standard.
4. When the HV circuitry is operating properly there is no possibility of an X-radiation problem. High voltage should always be kept at the manufacturer's rated value—no higher—for optimum performance. Every time a color set is serviced, the brightness should be run up and down while monitoring the HV with a meter to be certain that the HV is regulated correctly and does not exceed the specified value. We suggest that you and your technicians review test procedures so that HV and HV regulation are always checked as a standard servicing procedure, and the reason for this prudent routine is clearly understood by everyone. It is important to use an accurate and reliable HV meter. It is recommended that the HV recorded on each customer's invoice, which will demonstrate a proper concern for the customer's safety.
5. When troubleshooting and making test measurements in a receiver with a problem of excessive high voltage, reduce the line voltage by means of a Variac to bring the HV into acceptable limits while troubleshooting. Do not operate the chassis longer than necessary to locate the cause of the excessive HV.

6. New picture tubes are specifically designed to withstand higher operating voltages without creating undesirable X-radiation. It is strongly recommended that any shop test fixture which is to be used with the new higher voltage chassis be equipped with one of the new type tubes designed for this service. Addition of a permanently connected HV meter to the shop test fixture is advisable. The CRT types used in these new sets should never be replaced with any other types, as this may result in excessive X-radiation.
7. It is essential to use the specified picture tube to avoid a possible X-radiation problem.
8. Most TV receivers contain some type of emergency "Hold Down" circuit to prevent HV from rising to excessive levels in the presence of a failure mode. These various circuits should be understood by all technicians servicing them, especially since many hold down circuits are inoperative as long as the receiver performs normally.

Leakage Current Cold Check

1. Unplug the ac line cord and connect a jumper between the two prongs of the plug.
2. Turn on the power switch.
3. Measure the resistance value between the jumpered ac plug and all exposed cabinet parts of the receiver, such as screw heads, antennas, and control shafts. When the exposed metallic part has a return path to the chassis, the reading should be between 1 megohm and 5.2 megohms. When the exposed metal does not have a return path to the chassis, the reading must be infinity. Remove the jumper from the ac line cord.

**Leakage Current Hot Check**

1. Do not use an isolation transformer for this test. Plug the completely reassembled receiver directly into the ac outlet.
2. Connect a 1.5k, 10w resistor paralleled by a 0.15µf. capacitor between each exposed metallic cabinet part and a good earth ground such as a water pipe, as shown above.
3. Use an ac voltmeter with at least 5000 ohms volt sensitivity to measure the potential across the resistor.
4. The potential at any point should not exceed 0.75 volts. A leakage current tester may be used to make this test; leakage current must not exceed 0.5 milliamps. If a measurement is outside of the specified limits, there is a possibility of shock hazard. The receiver should be repaired and rechecked before returning it to the customer.
5. Repeat the above procedure with the ac plug reversed. (Note: An ac adapter is necessary when a polarized plug is used. Do not defeat the polarizing feature of the plug.)

Picture Tube Replacement

The primary source of X-radiation in this television receiver is the picture tube. The picture tube utilized in this chassis is specially constructed to limit X-radiation emissions. For continued X-radiation protection, the replacement tube must be the same type as the original, including suffix letter, or a Philips approved type.

Parts Replacement

Many electrical and mechanical parts in Philips television sets have special safety related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. The use of a substitute part which does not have the same safety characteristics as the Philips recommended replacement part shown in this service manual may create shock, fire, or other hazards.

WARNING: Before removing the CRT anode cap, turn the unit **OFF** and short the HIGH VOLTAGE to the CRT DAG ground.
SERVICE NOTE: The CRT DAG is not at chassis ground.