

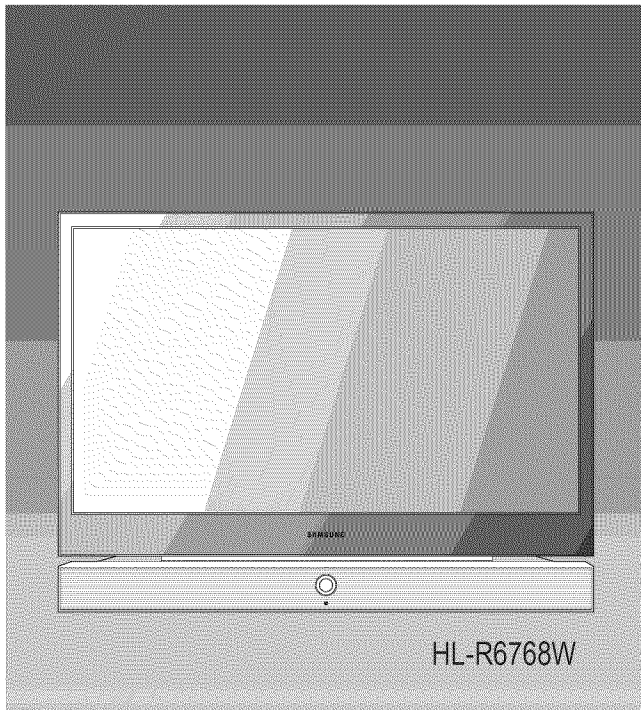


DLP TV

Chassis : L65A(N)_Excalibur
Basic Model : HLR5078WX/XAA
Model : HLR6768WX/XAA (HL-R6768W)

SERVICE Manual

DLP TV



FEATURES

- HD Built in TV
- NTSC/ATSC/QAM Tuner Embedded
- AV network system (Anynet, D-Net)
- TV Guide On Screen™ system (Gemstar EPG)
- Digital Audio output (OPTICAL) jack
- Cable CARD™ slot
- Firmware upgrade by USB Port

Table of Contents

Chapter 1 Precaution

■ 1-1 Safety Precautions	1-1
■ 1-2 Servicing Precautions	1-3
■ 1-3 Static Electricity Precautions	1-4
■ 1-4 Installation Precautions	1-5

Chapter 2 Product Specification

■ 2-1 Product Features	2-1
■ 2-2 Key Features	2-2
■ 2-3 Specifications Analysis	2-4
■ 2-4 Accessories	2-5

Chapter 3 Alignment & Adjustment

■ 3-1 Service Instruction	3-1
■ 3-2 How to Access Service Mode	3-2
■ 3-3 Factory Data	3-3
■ 3-4 Service Adjustment	3-15
■ 3-5 Software Upgrade	3-18
■ 3-6 Replacements & Calibration	3-19

Chapter 4 Exploded View & Part List

■ 4-1 HLR6768WX/XAA	4-1
■ 4-2 L680 Engine Ass'y	4-2

Chapter 5 Electrical Part List

■ 5-1 HLR6768WX/XAA Service Item	5-1
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Chapter 6 Troubleshooting

■ 6-1 Checkpoints by Error Mode	6-1
■ 6-2 Troubleshooting Procedures by Error Modes	6-7
■ 6-3 Troubleshooting Procedures by ASS'Y	6-8

Chapter 7 Block Diagram

■ 7-1 Overall Block Diagram	7-1
■ 7-2 Partial Block Diagram	7-2

Chapter 8 Wiring Diagram

■ 8-1 Overall Wiring	8-1
■ 8-2 Connection between Analog and Digital Board	8-2

Chapter 9 PCB Diagram

■ 9-1 Power Board	9-1
■ 9-2 Digital Board	9-3
■ 9-3 Analog Board	9-6
■ 9-4 DMD Board	9-9

Chapter 10 Schematic Diagram

■ 10-1 Analog Board	10-1
■ 10-2 Digital Board	10-10
■ 10-3 DMD	10-28
■ 10-4 Power	10-39
■ 10-5 Detect	10-40
■ 10-6 Power LED	10-41
■ 10-7 RMC	10-42

Chapter 11 Operation Instruction & Installation

■ 11-1 Product Features and Functions	11-1
■ 11-2 New Features	11-5

Chapter 12 Disassembly & Reassembly

■ 12-1 Overall Disassembly & Reassembly	12-1
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Chapter 13 Circuit Description

■ 13-1 Overall Block Description	13-1
■ 13-2 Partial Block Description	13-2
■ 13-3 New Circuit Description	13-7

Chapter 14 Reference Information

■ 14-1 Other issues related to other products	14-1
■ 14-2 Technical Terms	14-3

1. Precaution

To avoid possible damages or electric shocks or exposure to radiation, follow the instructions below with regard to safety, installation, service and ESD.

1-1 Safety Precautions

1. Make sure all protective devices are properly installed including non-metallic handles and compartment covers when installing or re-installing the chassis or chassis assemblies.
2. Make sure that no gaps exist between the cabinets for children to insert their fingers in to prevent children from receiving electric shocks.

Errors may occur when the resistance is below $1.0\text{ M}\Omega$ or over $5.2\text{ M}\Omega$.

In these cases, make sure that the device is repaired before sending it back to the customer.

3. Check for Electricity Leakage (Figure 1-1)
Warning: Do not use an insulated transformer for checking the leakage. Use only those current leakage testers or mirroring systems that comply with ANSIC 101.1 and the Underwriter Laboratory's specifications (UL1410, 59.7).

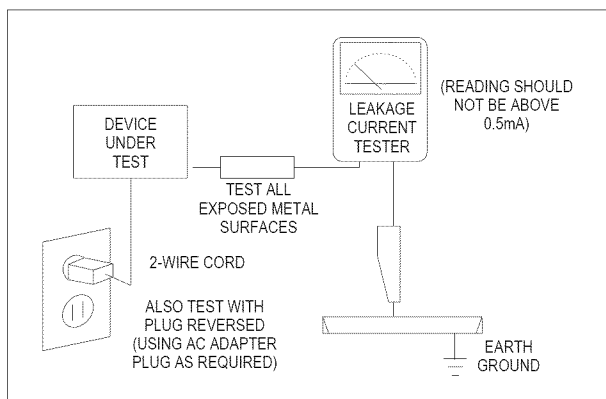


Fig. 1-1 AC Leakage Test

4. A high voltage is maintained within the specified limits using safety parts, calibration and tolerances. When voltage exceeds the specified limits, check each special part.

5. Warning for Engineering Changes:
Never make any changes or additions to the circuit design or the internal part for this product.
Ex: Do not add any audio or video accessory connectors. This might cause physical damage.
Furthermore, any changes or additions to the original design/engineering will invalidate the warranty.
6. Warning - Hot Chassis:
Some TV chassis are directly connected to one end of the AC power cord for electrical reasons.
Without insulated transformers, the product can only be repaired safely when the chassis is connected to the earthed end of the AC power source.



To make sure the AC power cord is properly connected, follow the instructions below. Use the voltmeter to measure the voltage between the chassis and the earthed ground. If the measurement is over 1.0V, unplug the AC power cord and change the polarity before re-inserting it. Measure the voltage between the chassis and the ground again.

7. Some TV chassis are shipped with an additional secondary grounding system. The secondary system is adjacent to the AC power line. These two grounding systems are separated in the circuit using an unbreakable/unchangeable insulation material.
8. When any parts, material or wiring appear overheated or damaged, replace them with new regular ones immediately. When any damage or overheating is detected, correct this immediately and make a regular check of possible errors.
9. Check for the original shape of the lead, especially that of the antenna wiring, any sharp edges, the AC power and the high voltage power. Carefully check if the wiring is too tight, incorrectly placed or loose. Never change the space between the part and the printed circuit board. Check the AC power cord for possible damages. Keep the part or the lead away from any heat-emitting materials.

Precaution

10. Safety Indication:

Some electrical circuits or device related materials require special attention to their safety features, which cannot be viewed by the naked eye. If an original part is replaced with another irregular one, the safety or protective features will be lost even if the new one has a higher voltage or more watts.

Critical safety parts should be bracketed with ( ). Use only regular parts for replacements (in particular, flame resistance and dielectric strength specifications). Irregular parts or materials may cause electric shock or fire.

11. Pay additional attention to the current leakage as the voltage between the power board and the ballast is 220 to 440v, i.e. very high.
And also beware of possible electric shock from the primary power source.

1-2 Servicing Precautions

Warning 1: First carefully read the "Safety Instruction" in this service manual.

When there is a conflict between the service and the safety instructions, follow the safety instruction at all times.

Warning 2: Any electrolytic capacitor with the wrong polarity will explode.

1. The service instructions are printed on the cabinet, and should be followed by any service personnel.
2. Make sure to unplug the AC power cord from the power source before starting any repairs.
 - (a) Remove or re-install parts or assemblies.
 - (b) Disconnect the electric plug or connector, if any.
 - (c) Connect the test part in parallel with the electrolytic capacitor.
3. Some parts are placed at a higher position than the printed board. Insulated tubes or tapes are used for this purpose. The internal wiring is clamped using buckles to avoid contact with heat emitting parts. These parts are installed back to their original position.
4. After the repair, make sure to check if the screws, parts or cables are properly installed. Make sure no damage is caused to the repaired part and its surroundings.
5. Check for insulation between the blade of the AC plug and that of any conductive materials (i.e. the metal panel, input terminal, earphone jack, etc).
6. Insulation Check Process: Unplug the power cord from the AC source and turn the switch on. Connect the insulating resistance meter (500v) to the AC plug blade.

The insulating resistance between the blade of the AC plug and that of the conductive material should be more than 1 M Ω .
7. Any B+ interlock should not be damaged. If the metal heat sink is not properly installed, no connection to the AC power should be made.
8. Make sure the grounding lead of the tester is connected to the chassis ground before connecting to the positive lead. The ground lead of the tester should be removed last.
9. Beware of risks of any current leakage coming into contact with the high-capacity capacitor.
10. The sharp edges of the metal material may cause physical damage, so ensure wearing protective gloves during the repair.

1-3 Static Electricity Precautions

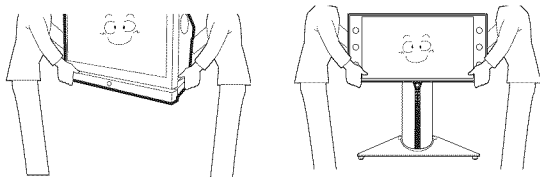
1. Some semi-conductive ("solid state") devices are vulnerable to static electricity. These devices are known as ESD. ESD includes the integrated circuit and the field effect transistor. To avoid any materials damage from electrostatic shock, follow the instructions described below.
2. Remove any static electricity from your body by connecting the earth ground before handling any semi-conductive parts or ass'ys. Alternatively, wear a dischargeable wrist-belt.
(Make sure to remove any static electricity before connecting the power source - this is a safety instruction for avoiding electric shock)
3. Remove the ESD ass'y and place it on a conductive surface such as aluminum foil to prevent accumulating static electricity.
4. Do not use any Freon-based chemicals. Such chemicals will generate static electricity that causes damage to the ESD.
5. Use only grounded-tip irons for soldering purposes.
6. Use only anti-static solder removal devices. Most solder removal devices do not support an anti-static feature. A solder removal device without an anti-static feature can store enough static electricity to cause damage to the ESD.
7. Do not remove the ESD from the protective box until the replacement is ready. Most ESD replacements are covered with lead, which will cause a short to the entire unit due to the conductive foam, aluminum foil or other conductive materials.
8. Remove the protective material from the ESD replacement lead immediately after connecting it to the chassis or circuit ass'y.
9. Take extreme caution in handling any uncovered ESD replacements. Actions such as brushing clothes or lifting your leg from the carpet floor can generate enough static electricity to damage the ESD.

CAUTION

These servicing instructions are for use by qualified service personnel only.
To reduce the risk of electric shock do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

1-4 Installation Precautions

1. For safety reasons, more than two people are required for carrying the product.



2. Keep the power cord away from any heat emitting devices, as a melted covering may cause fire or electric shock.
3. When installing the product, make sure to keep it away from the wall (more than 10cm/4 inches) for ventilation purposes.
Poor ventilation may cause an increase in the internal temperature of the product, resulting in a shortened component life and degraded performance.
4. Bend the external antenna cable when connecting it to the product. This is a measure to protect it from being exposed to moisture. Otherwise, it may cause a fire or electric shock.
5. Make sure to turn the power off and unplug the power cord from the outlet before repositioning the product. Also check the antenna cable or the external connectors if they are fully unplugged. Damage to the cord may cause fire or electric shock.
6. Keep the antenna far away from any high-voltage cables and install it firmly. Contact with the high-voltage cable or the antenna falling over may cause fire or electric shock.
7. When connecting the RF antenna, check for a DTV receiving system and install a separate DTV reception antenna for areas with no DTV signal.
8. Check the basics of the screen test.
- Image position/size, Tilt adjustment, Actuator activation

2. Product Specification

2-1 Product Features

Block	Specification	Major IC	Remark
DMD	- Panel Resolution : 1920x1080	xHD3 DMD Panel	
RF	- Integrated HDTV Tuner (NTSC/ATSC/QAM TUNER Embedded)	ATI NXT2004, QAMLink	
Power	- Input Voltage : AC120V - Stand-By : under 25W	Stand-by (KA1M0565)	
Video	- DNIe4- NTSC, ATSC- HDMI,PC - 3D Comb filter	ADV7401, ATI X226B, uD64083	
Sound	- speaker : 20W x 2 - Trusurround XT, Dolby Digital	MSP4440	
Cabinet	- L6 Design		

■ Chip Description

- ATI x226B : Xilleon 226 is the most advanced and highly integrated component for digital set-top boxes, information appliances, and televisions. Xilleon 226 provides dual-stream high-definition decode and display, an assortment of peripheral device controllers, and an embedded microprocessor.
- ADV7401 : The ADV7402 is an integrated video decoder that automatically indicates and converts High Definition or Standard Definition analog baseband television signal into a 4:2:2 component digital video data stream compatible with 20/16-bit or 10/8-Bit CCIR601/CCIR656 outputs for standard definition & SMPTE293M/296M/274M & ITU-R.BT1358 for High definition. All RGB graphics signals are output as 30-bit 4:4:4 RGB or 20-bit 4:2:2 YCrCb.
- MSP4440 : The MSP 44x0G family of single-chip Multi standard Sound Processors covers the sound processing of all analog TV-Standards worldwide, as well as the NICAM digital sound standards.
- ATI NXT2004 : The NXT2004 is a VSB/QAM receiver designed to operate in both the ATSC terrestrial and cable TV environments. The device is intended for use in set-top applications, PC based applications and DTV systems. For VSB or QAM channels the NXT2004 samples a 44 MHz IF signal, and presents MPEG data packets at the output.
- QAMLink : The BCM3125 combines an in-band 256-QAM receiver, an out-of-band QPSK receiver, a 4/16-QAM transmitter and tuner interface functions.
- uPD64083 : uPD64083 realizes a high precision Y/C separation and a noise reduction by the three-dimension signal processing for NTSC signal.

2-2 Key Features

Model	HL-R5668W	HL-R6168W	HL-R6768W
Voltage	AC 110 - 120V~	AC 110 - 120V~	AC 110 - 120V~
Frequency of Operation	60Hz	60Hz	60Hz
Power Consumption	230 watts	230 watts	230 watts
Dimensions (W x D x H)	52.36 x 15.30 x 37.86 inches 1330 x 388.5 x 961.7 mm	56.93 x 18.37 x 41.59 inches 1446 x 466.5 x 1056.5 mm	62.36 x 19.76 x 45.06 inches 1584 x 502 x 1144.5 mm
Weight	38.5 Kg / 84.77 lbs	45 Kg / 99.21 lbs	49.8 Kg / 109.79 lbs

■ H/W Configuration

- DMD Panel : 0.85" (1920 x1080p, TI)
- 1 Optical Engine for the Panel : Slim and Cost-effective
- Color Wheel : R/G/B Color Implementation
- Lamp : 120W : 56", 61", 67"
- 2 NTSC/ATSC/QAM Tuners : NTSC/DTV Reception, Gemstar EPG & IR Transmitter
- Support HDMI Interface : Adopts DVI/HDMI systems for digital HDs including STB.
- DNle4 : High quality image implementation
- AnyNet Feature : An enhanced interface for various external devices
- USB Interface : Use the USB interface for service purposes (S/W Upgrade)

■ S/W Configuration

- MCU : Built-in 300 MHz MIPS X226B CPU
- 4-Layered Architecture : Device Driver/OS/Hardware Abstraction/Application
- OSD : 32Bit True Color Graphics OSD
- Enhanced system stability by separating the DTV control and the application control systems into multi-processes.

■ Picture

- DMD Panel
 - * Panel Size : 0.85"
 - * Panel Resolution : 1920 x 1080
- Tuner : Integrated HDTV Tuner (NTSC/ATSC/QAM TUNER Embedded)
- Display Format : 1920 x 1080

■ Sound

- Sound System : TruSurround XT,Dolby Digital
- Amp/Channel : 2 Channel Digital Amp
- Speaker System & Output(RMS)
 - * Main L/R : 15W + 15W
 - * Sound (RMS) : 15W + 15W

■ In/Out Terminals

- Rear : 2 RF In, 3 CVBS In, 3 S-VHS In, 2 Component In, 1 PC D-SUB In,
2 HDMI In(DVI Comportable With Adaptive Jack Only), 1 Anynet port, 2 IEEE1394, 1 Gemstar IR out, 1 Optical audio,
1 POD Card slot, 1 RS-232C port

■ Feature

- Component Interface (480i/480p/720p/1080i, Y/Pb/Pr)
- Digital Interface : HDMI
- Graphic Interface : PC
- Language : English/French/Spanish
- PIP : HD/SD PIP
- Picture Size : 4:3/16:9/Zoom1/Zoom2/Panorama
- V-CHIP
- Closed Caption
- Sleep Timer : 180 Min.
- Anynet Interface
- IEEE1394
- Optical sound output
- Gemstar IR output
- POD
- RS-232C

■ Remocon

- TM76A







■ Power Supply

- 120V

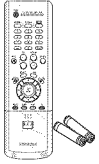
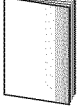





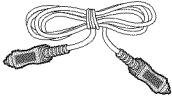
■ PIP Settings (X : PIP doesn't operate, △ : PIP operate and swap doesn't operate, ○ : PIP and swap operate)

Main \ Sub	ATSC	QAM	NTSC	AV1	AV2	AV3	S-Video1	S-Video2	S-Video3	Component1	Component2	HDMI	PC	D-Net
ATSC	X	X	X	X	X	X	X	X	X	X	X	X	X	▲
QAM	X	X	X	X	X	X	X	X	X	X	X	X	X	▲
NTSC	▲	▲	○	○	○	○	○	○	○	○	○	▲	X	▲
AV1	▲	▲	○	X	○	○	○	○	○	○	○	▲	X	▲
AV2	▲	▲	○	○	X	○	○	○	○	○	○	▲	X	▲
AV3	▲	▲	○	○	○	X	○	○	○	○	○	▲	X	▲
S-Video1	▲	▲	○	○	○	○	X	○	○	○	○	▲	X	▲
S-Video2	▲	▲	○	○	○	○	○	X	○	○	○	▲	X	▲
S-Video3	▲	▲	○	○	○	○	○	○	X	○	○	▲	X	▲
Component1	▲	▲	○	○	○	○	○	○	○	X	○	▲	X	X
Component2	▲	▲	○	○	○	○	○	○	○	○	X	▲	X	X

2-3 Specifications Analysis

Model		HL-R5078W	HL-R5668W	HL-R6168W	HL-R6768W	HL-R5087W	HL-R5688W
Design							
Picture	Display Device	DLP	DLP	DLP	DLP	DLP	DLP
	Built-in Tuner	ATSC, NTSC	ATSC, NTSC	ATSC, NTSC	ATSC, NTSC	ATSC, NTSC	ATSC, NTSC
	Display Format	1080i, 720p, 480p, 480i	1080i, 720p, 480p, 480i	1080i, 720p, 480p, 480i	1080i, 720p, 480p, 480i	1080i, 720p, 480p, 480i	1080p, 1080i, 720p, 480p, 480i
	Screen Size	50 inch	56 inch	61 inch	67 inch	50 inch	56 inch
	Aspect ratio	16:9	16:9	16:9	16:9	16:9	16:9
	Progressive scan	Yes	Yes	Yes	Yes	Yes	Yes
	Digital Comb Filter	3D Comb	3D Comb	3D Comb	3D Comb	3D Comb	3D Comb
	First Surface Mirror	Yes	Yes	Yes	Yes	Yes	Yes
	Brightness	800cd/m ²	600cd/m ²	500cd/m ²	500cd/m ²	800cd/m ²	800cd/m ²
	Contrast	10000:1	10000:1	10000:1	10000:1	2500:1	10000:1
	Color Wheel Size/Bearing	7segment/65 φ , Air Bearing	7segment/65 φ , Air Bearing	7segment/65 φ , Air Bearing	7segment/65 φ , Air Bearing	7segment/65 φ , Air Bearing	7segment/65 φ , Air Bearing
	Anti-glare Sun Screen	Yes	Yes	Yes	Yes	Yes	Yes
	Screen Pitch	0.098mm	0.098mm	0.098mm	0.098mm	0.098mm	0.098mm
	Image enhancer	DN1e4	DN1e4	DN1e4	DN1e4	DN1e3	DN1e4
	DMD	xHD3	xHD3	xHD3	xHD3	xHD2	xHD3
Audio	Base/Tremble/Balance	No	No	No	No	No	No
	Equalizer	5 Band	5 Band	5 Band	5 Band	5 Band	5 Band
	Auto Volume Leveler	Yes	Yes	Yes	Yes	Yes	Yes
	Surround Sound	TruSurround XT Dolby Digital	TruSurround XT Dolby Digital	TruSurround XT Dolby Digital	TruSurround XT Dolby Digital	TruSurround XT Dolby Digital	TruSurround XT Dolby Digital
	Speaker system	2 Way 4 Speaker	2 Way 4 Speaker	2 Way 4 Speaker	2 Way 4 Speaker	2 Way 4 Speaker	2 Way 4 Speaker
Output Power	15Wx2	15Wx2	15Wx2	15Wx2	15Wx2	15Wx2	
Features	2-Tuner Split-Screen PIP	Yes(HD/SD/QAM)	Yes(HD/SD/QAM)	Yes(HD/SD/QAM)	Yes(HD/SD/QAM)	Yes(HD/SD)	Yes(HD/SD/QAM)
	Split-screen Side-by-Side	Yes	Yes	Yes	Yes	Yes	Yes
	MTS with dbx Noise Reduction/SAP	Yes	Yes	Yes	Yes	Yes	Yes
	Still Picture	Yes	Yes	Yes	Yes	Yes	Yes
Connections	Plug & Play	Yes	Yes	Yes	Yes	Yes	Yes
	EPG	Gemstar EPG	Gemstar EPG	Gemstar EPG	Gemstar EPG	Gemstar EPG	Gemstar EPG
	Anynet	Yes	Yes	Yes	Yes	Yes	Yes
	S-Video In	Rear 2/Side 1	Rear 2/Side 1	Rear 2/Side 1	Rear 2/Side 1	Rear 2	Rear 2
	HDTV Component Video Input (Y, Pb, Pr) 1080i/480P/480i	Rear 2	Rear 2	Rear 2	Rear 2	Rear 2	Rear 2
	PC	Yes	Yes	Yes	Yes	No	No
	HDMI	Yes	Yes	Yes	Yes	Yes	Yes
Digital Sound	Optical 1	Optical 1	Optical 1	Optical 1	Optical 1	Optical 1	

2-4 Accessories

Accessories	Item	Item code	Remark	
Supplied Accessories		Remocon Alkaline Battery	BP59-00071B 4301-000103	Samsung Service center
		Manual	BP68-00520A	
		ANYNET cable	BN39-00518B	
		G-Link Cable	MD96-00036A	
Accessories that can be purchased additionally		Video Cable / Audio Cable	-	Internal shopping mall
		Antenna Cable	-	
		Component Cable	-	
		Optical Cable	-	

3. Alignment & Adjustment

3-1 Service Instruction

■ Check items listed after changing each

Replaced Items	Check Items	S/W Version	Front LCD	Index Delay	Actuator Gain	V-Position H-Position	CCA	Board LED	Tilt Focus
Digital Board		●		●	●	●	●		
Analog Board			●					●	
Power Board			●					●	●
Optical Engine			●	●	●	●	●		●
DMD Board					●				●
Lamp			●						
Color Wheel				●			●		
Front LED Assy			●						
Actuator Subdetector Board			●						

1. Software version check :

After Entering the Service mode, Check the list below

* S/W Notation

"T_EXCAAUSO_00XX" indicates "EXCALIBUR BASIC MODEL USA, ver. 0001".

T_EXCAAUSO_00XX
 2005_XX_XX
 T-DTVUCOM5-00XX
 T-XMENAUSO_00XX

2. Front Information Window check : See page 6-7.

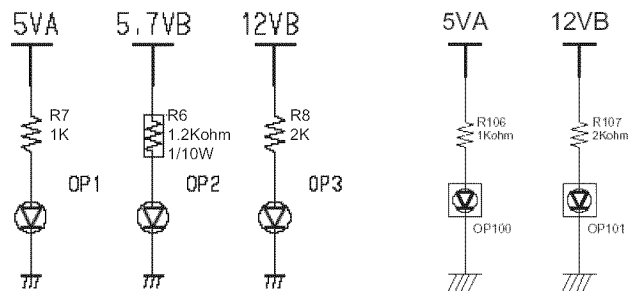
3. Index Delay adjustment : See page 3-15.

4. Actuator Gain adjustment : See page 3-17.

5. Vertical / Horizontal Position adjustment : See page 3-15.

6. CCA : See page 3-16.

7. Board LED check : Check all the LED are turned on.
 (In the Analog, Detect Board)



Power Check Indicator LED
(Analog Board)

Power Check Indicator LED
(Detect Board)

8. Tilt/Focus adjustment : See page 3-19.

3-2 How to Access Service Mode

1. Turn off the power to put the unit into the STAND-BY mode.
2. In order to enter the Service Mode, Press "Mute" → "1" → "8" → "2" → "POWER" button on the Remote Control.
In case entry into SERVICE MODE is unsuccessful, repeat the procedures above.
3. Initial DISPLAY State in times of Service Mode Switch overs

DDP1011(L8)
DNle
ADV7401(M)
ADV7401(S)
Xilleon226
uPD64083
MSP4440
CCA(ON)
Cinema CCA
SP Actuator
ESP
GM1601
CHECKSUM
OPTION
SERVICE

T_EXCAAUSO_00XX
2005_XX_XX
T-DTVUCOM5-00XX
T-XMENAUS0_00XX

4. Buttons operations within Service Mode

MENU	Full Menu Display / Move to Parent Menu
Direction keys ▲ / ▼	Item Selection by Moving the Cursor
Direction keys ◀ / ▶	Data Increase/Decrease for the Selected Item
Source	Cycles through the active input source that are connected to the unit

3-3 Factory Data

★ The underlined are items applied during the service adjustment. None of the others should be adjusted.

1. DDP1011

No	Item	Range	Default	Remark
1	V-Position	0 ~ 60	30	Screen upper and lower adjustment
2	H-Position	0 ~ 120	60	Screen left and right adjustments
3	LAMP Sync Type	Pulse/Pass	Pulse	Pulse(P), Pass(T)
4	INDEX DELAY	0 ~ 1023	166	Synchronizes the base position of the color wheel with the corresponding color signal. This is critical to the natural color display. If the index delay is not properly set, even the correct CCA coordinates will not help when displaying natural colors.
5	SEQ SELECT	-	0X05	Sequence Selection
6	V-FLIP	Normal/Flip	Flip	Vertical Flip Operation
7	H-FLIP	Normal/Flip	Flip	Horizontal Flip Operation
8	Gamma	0 ~ 15	2	Gamma Table Selection
9	SLR	0 ~ 1	OFF	SLR Funcion On/Off
10	DMD_BIAS	0 ~ 4	E	DMD Bias pin voltage selection
11	Lamp Boost	0 ~ 63	20	Lamp Boost value selection
12	Lamp Sync Delay	0 ~ 4095	0/120	Lamp Sync delay value selection
13	FPGA		xHD3	xHD3/xHD4 selection
14	Lamp Watt		132W	120W/132W
15	Lamp Select		Philips	Philips, Osram, Ushio
16	Test Pattern		0	This displays the built-in pattern of the DDP1011 chip. DDP1011 drives the DMD panel, so displaying this pattern means there is no error in the DDP1011 projection function and the panel itself.

2. DNle

No	Item	Range	Default	Remark
1	Test Pattern		0	Test pattern selection
2	NR	-	-	
3	SNI_PROC_CEA	ON/OFF	ON	
4	SNI_PROC_CEP	ON/OFF	OFF	
5	SNI_PROC_DEP	ON/OFF	ON	
6	SNI_PROC_DCE	ON/OFF	ON	
7	SNI_PROC_CCS	ON/OFF	ON	
8	SNI_PROC_BWS	ON/OFF	ON	
9	SNI_PROC_PCC	ON/OFF	ON	
10	SNI_PROC_WTC	ON/OFF	ON	
11	SNI_PROC_CTE	ON/OFF	OFF	
12	SNI_PROC_CVD	ON/OFF	OFF	
13	SNI_PROC_OUTP	ON/OFF	ON	
14	CUTOFF	0~255	32	
15	UPPER	0~255	240	
16	LCE_GAIN	0~255	0	
17	ALPHAL	0~255	170	
18	ALPHAU	0~255	170	
19	DCE_ALPHA	0~255	50	
20	B_RATIO		12000	Low level information for the minimum value
21	W_RATIO		6000	High level information for the minimum value
22	BLACK_TILT	0~255	90	Black Stretch Area
23	WHITE_TILT	0~255	240	White Stretch Area
24	GAIN_X1	0~63	70	Gain of horizontal high frequency region
25	GAIN_X2	0~63	35	Gain of horizontal middle frequency region
26	GAIN_Y1	0~63	10	Gain of vertical high frequency region
27	GAIN_Y2	0~63	10	Gain of vertical middle frequency region
28	SUP_LIFT_SEL	ON/OFF	OFF	
29	EXT_SEL	ON/OFF	OFF	
30	BOOL_SUPP_SELX1	ON/OFF	ON	
31	BOOL_SUPP_SELX2	ON/OFF	ON	
32	BOOL_SUPP_SELY1	ON/OFF	OFF	
33	BOOL_SUPP_SELY2	ON/OFF	OFF	
34	BOOL_ENH_SEL	ON/OFF	ON	
35	LOG_MODE	ON/OFF	ON	
36	R_MR	-	60	
37	CORING_ON	ON/OFF	ON	
38	RTH1	0~31	0	
39	RTH2	0~31	3	

No	Item	Range	Default	Remark
40	NDON	ON/OFF	ON	
41	M_CCT_FAC	0~1022	75	
42	SCALE_ALPHA	0~255	224	
43	WB_RED_C_COEFF	0~255	128	
44	WB_GRN_C_COEFF	0~255	128	
45	WB_BLU_C_COEFF	0~255	128	
46	WB_RED_B_COEFF	0~1023	512	
47	WB_GRN_B_COEFF	0~1023	512	
48	WB_BLU_B_COEFF	0~1023	512	
49	R_Coring_TH1		3	
50	R_Coring_TH2		3	
51	R_Coring_TH3		3	
52	R_Coring_TH4		3	
53	H_FILTER1	0~11	0	
54	H_FILTER2	0~10	0	
55	V_FILTER1	0~4	0	
56	V_FILTER2	0~3	0	
57	Sub Color		53	
58	DNle On/Off		OFF	
59	Sub Contrast	50~150	105	Brightness adjustment for the high-light parts of the screen
60	Contrast Offset		5	
61	Sub Brightness		235	Brightness adjustment for the low-light parts of the screen

3. ADV7401(M)

No	Item	Range	Default	Remark
1	AUTO COLOR			Auto Color function execution
2	SOG_SYNC_LEV			Embedded Sync Trigger Level
3	AGC_TIM			AGC Time Constant Selection
4	GAIN_MAN			ON,OFF Manual Gain Control Enable
5	A_GAIN			Manual Gain Value for Channel A
6	B_GAIN			Manual Gain Value for Channel B
7	C_GAIN			Manual Gain Value for Channel C
8	A_OFFSET			Channel A Offset
9	B_OFFSET			Channel B Offset
10	C_OFFSET			Channel C Offset
11	YPM		64	Y Peaking Filter Mode
12	YSFM		1	Y Shaping Filter Mode
13	WYSFM		19	Wide Band TY Shaping Filter Mode
14	CSFM		0	C Shaping Filter Mode
15	Contrast		128	Contrast Adjust
16	Brightness		128	Brightness Adjust
17	Hue		128	Hue Adjust
18	CKILLTHR		3	Colour Kill Threshold
19	SD_OFF_Cb		128	SD Offset Cb Channel
20	SD_OFF_Cr		128	SD Offset Cr Channel
21	SD_SAT_Cb		125	Saturation Cr Channel
22	SD_SAT_Cr		125	Saturation Cb Channel
23	IFFILTSEL		3	IF Filter Select
24	LTA		0	Luma Timing Adjust
25	CTA		2	Chroma Timing Adjust
26	DNR_TH1		0	DNR Noise Threshold
27	DCT		0	Digital Clamp Timing
28	LAGC		0	Luma Automatic Gain Control
29	LAGT		3	Luma Automatic Gain Timing
30	LMG		1184	Luma Manual Gain
31	CAGC		2	Chroma Automatic Gain Control
32	CAGT		3	Chroma Automatic Gain Timing
33	CMG		2458	Chroma Manual Gain
34	CTI_AB_EN		ON	ON,OFF Chroma Transient Improvement Alpha Blend Enable
35	CTI_AB		3	Chroma Transient Improvement Alpha Blend

No	Item	Range	Default	Remark
36	CTI_C_TH		8	CTI Chroma Threshold
37	NSFSEL		0	Split Filter Selection NTSC
38	CTAPSN		2	Chroma Comb Taps NTSC
39	CCMN		0	Chroma Comb mode NTSC
40	YCMN		0	Luna Comb Mode NTSC
41	HSSLICE			
42	VSSLICE			
43	DLL_PH		0	
44	ST_NOISE			Sample Phase Adjustment
45	ALIAS_FILTER_EN		OFF	
46	DNR-TH2			

4. ADV7401(S)

No	Item	Range	Default	Remark
1	AUTO COLOR			Auto Color function execution
2	SOG_SYNC_LEV	0~31	11	Embedded Sync Trigger Level
3	AGC_TIM	0~7	0	AGC Time Constant Selection
4	GAIN_MAN		ON	ON,OFF Manual Gain Control Enable
5	A_GAIN	0~1024	275	Manual Gain Value for Channel A
6	B_GAIN	0~1024	287	Manual Gain Value for Channel B
7	G_GAIN	0~1024	287	Manual Gain Value for Channel C
8	A_OFFSET	0~1024	0	Channel A Offset
9	B_OFFSET	0~1024	512	Channel B Offset
10	C_OFFSET	0~1024	512	Channel C Offset
11	YPM	0~255	64	Y Peaking Filter Mode
12	YSFM	0~32	1	Y Shaping Filter Mode
13	WYSFM	0~32	19	Wide Band TY Shaping Filter Mode
14	CSFM	0~7	0	C Shaping Filter Mode
15	Contrast	0~255	128	Contrast Adjust
16	Brightness	0~255	128	Brightness Adjust
17	Hue	0~255	128	Hue Adjust
18	CKILLTHR	0~7	5	Colour Kill Threshold
19	SD_OFF_Cb	0~255	128	SD Offset Cb Channel
20	SD_OFF_Cr	0~255	128	SD Offset Cr Channel
21	SD_SAT_Cb	0~255	125	Saturation Cr Channel
22	SD_SAT_Cr	0~255	125	Saturation Cb Channel
23	IFFILTSEL	0~7	3	IF Filter Select
24	LTA	0~3	0	Luma Timing Adjust
25	CTA	0~7	3	Chroma Timing Adjust
26	DNR_TH1	0~255	0	DNR Noise Threshold
27	DCT	0~3	0	Digital Clamp Timing
28	LAGC	0~7	0	Luma Automatic Gain Control
29	LAGT	0~3	3	Luma Automatic Gain Timing
30	LMG	0~4096	1064	Luma Manual Gain
31	CAGC	0~7	2	Chroma Automatic Gain Control
32	CAGT	0~3	3	Chroma Automatic Gain Timing
33	CMG	0~4096	2458	Chroma Manual Gain
34	CTI_AB_EN		ON	ON,OFF Chroma Transient Improvement Alpha Blend Enable
35	CTI_AB	0~3	3	Chroma Transient Improvement Alpha Blend

No	Item	Range	Default	Remark
36	CTI_C_TH	0~255	8	CTI Chroma Threshold
37	NSFSEL	0~3	0	Split Filter Selection NTSC
38	CTAPSN	0~3	2	Chroma Comb Taps NTSC
39	CCMN	0~7	0	Chroma Comb mode NTSC
40	YCMN	0~7	0	Luna Comb Mode NTSC
41	HSSLICE			
42	VSSLICE			
43	DLL_PH			
44	ST_NOISE		0xFFFF	Sample Phase Adjustment
45	ALIAS_FILTER_EN		OFF	
46	DNR-TH2			

5. Xilleon226

No	Item	Range	Default	Remark
1	Main/Sub		Main	
2	Y/UV	Y/UV	Y	
3	H Filter		gh121a	
4	V Filter		128v05f	
5	226 TEST PATT			

6. Upd64083

No	Item	Range	Default	Remark
1	DYCOR	0~15	2	DY detection coring level
2	DYGAIN	0~15	9	DY detection gain
3	DCCOR	0~15	3	DC detection coring level
4	DCGAIN	0~15	6	DC detection gain
5	YHCOR	0~15	1	Y output high frequency component coring
6	CDELAY	0~15	4	C signal output delay
7	YPFT	0~15	3	YPFT adjustment
8	YCFG	0~15	7	YCFG adjustment

7. MSP4440

No	Item	Range	Default	Remark
1	MDB Effect	0~127	56	Micronas Dynamic Bass
2	SRS Dialog	0~127	50	SRS Dialog clarity adjustment
3	PLL			Pilot low adjustment
4	PLH			Pilot high adjustment

8. CCA

No	Item	Range	Default	Remark
1	CCA	On/Off	ON	CCA On/Off Selection
2	Red-x	0~32768	640	Red-x adjustment
3	Red-y	0~32768	340	Red-y adjustment
4	Red-Y	0~32768	86	Red-Y adjustment
5	Green-x	0~32768	300	Green-x adjustment
6	Green-y	0~32768	620	Green-y adjustment
7	Green-Y	0~32768	300	Green-Y adjustment
8	Blue-x	0~32768	150	Blue-x adjustment
9	Blue-y	0~32768	60	Blue-y adjustment
10	Blue-Y	0~32768	53	Blue-Y adjustment
11	White-x	0~32768	291	White-x adjustment
12	White-y	0~32768	300	White-y adjustment
13	White-Y	0~32768	439	White-Y adjustment
14	WB Spread			Spread CCA value to all mode
15	Move HDMI			Move to the HDMI Mode
16	DRedX		640	Target Red X value for CCA
17	DRedY		340	Target Red Y value for CCA
18	DGreenX		300	Target Green X value for CCA
19	DGreenY		620	Target Green Y value for CCA
20	DBlueX		150	Target Blue X value for CCA
21	DBlueY		60	Target Blue Y value for CCA
22	DCyanX		205	Target Cyan X value for CCA
23	DCyanY		270	Target Cyan Y value for CCA
24	DMagentaX		290	Target Magenta X value for CCA
25	DMagentaY		140	Target Magenta Y value for CCA
26	DYellowX		425	Target Yellow X value for CCA
27	DYellowY		515	Target Yellow Y value for CCA
28	[COOL2] DWhiteX		264	
29	[COOL2] DWhiteY		267	
30	[COOL1] DWhiteX		269	
31	[COOL1] DWhiteY		274	
32	[NORMAL] DWhiteX		285	
33	[NORMAL] DWhiteY		293	
34	[WARM1] DWhiteX		291	
35	[WARM1] DWhiteY		300	
36	[WARM2] DWhiteX		313	
37	[WARM2] DWhiteY		329	

9. Cinema CCA

No	Item	Range	Default	Remark
1	DRedX		640	Target Red X value for CCA
2	DRedY		340	Target Red Y value for CCA
3	DGreenX		300	Target Green X value for CCA
4	DGreenY		620	Target Green Y value for CCA
5	DBlueX		150	Target Blue X value for CCA
6	DBlueY		60	Target Blue Y value for CCA
7	DCyanX		205	Target Cyan X value for CCA
8	DCyanY		270	Target Cyan Y value for CCA
9	DMagentaX		290	Target Magenta X value for CCA
10	DMagentaY		140	Target Magenta Y value for CCA
11	DYellowX		425	Target Yellow X value for CCA
12	DYellowY		515	Target Yellow Y value for CCA
13	D-White-X		313	Target White X value for CCA
14	D-White-Y		329	Target White Y value for CCA

10. SP Actuator

No	Item	Range	Default	Remark
1	Actuator Gain [Patt1]	0~175	95	Actuator Gain adjustment
2	Actuator Gain [Patt2]	0~175	95	Actuator Gain adjustment
3	Actuator ON/OFF		ON	Actuator On/Off selection
4	DB ON/OFF	ON/OFF	ON	
5	DB Gain	0~3	1	
6	DB Aperture	MIN/MAX		
7	DB Gain	0~255	0	

11. ESP(Enhance Smooth Picture)
 xHD3/xHD4 Option(This model is not used.)

12. GM1601

No	Item	Range	Default	Remark
1	ADC_RED_GAIN		128	
2	ADC_GRN_GAIN		128	
3	ADC_BLU_GAIN		128	
4	ADC_RED_OFFSET		50	
5	ADC_GRN_OFFSET		50	
6	ADC_BLU_OFFSET		50	
7	MADI_QUANT_TH0		4	
8	MADI_QUANT_TH1		7	
9	MADI_QUANT_TH2		64	
10	GAMMA_CONTROL		OFF	
11	AUTO_COLOR		OFF	
12	TEST_PATTERN		0	
13	SP_AMP		0	
14	SP_PERIOD		0	

13. OPTION

No	Item	Range	Default	Remark
1	Lamp Clear			Initialize lamp usage time. Lamp Life is set to zero
2	User Reset			All user settings are set to default
3	WB Reset		OFF	Initialize the White Balance value
4	EER Reset			Clear the EEPROM
5	Lamp Life			Lamp on time counter
6	AUTO POWER		ON	The sets turns on automatically when the power cord is plugged in
7	DNle Demo	ON/OFF	ON	DNle Demo function selection
8	Lamp Control	Dynamic/Normal	Dynamic	Dynamic, Always
9	MUTE TIME		400ms	Time which the screen will be black while switching channels
10	EDID WRITE			
11	DDC Protection	ON/OFF	OFF	DDC write ON/OFF selection
12	LNA Default	Auto/OFF	Auto	LNA setting OFF/Auto selection
13	PROTECT		ON	Protection ON/OFF selection
14	WATCH DOG		OFF	Watch Dog ON/OFF selection
15	WD COUNT		0	Count for Watch Dog event
16	DEBUG MODE	ATI226/GM1601	ATI226	
17	DSUB MODE		RS232	
18	BUS STOP		OFF	
19	DIGITAL→DMD			To trans the CCA data form DIGITAL to DMD
20	DMD→DIGITAL			To trans the CCA data form DMD to DIGITAL

14. SERVICE

No	Item	Range	Default	Remark
1	<u>V-Position</u>	0 ~ 60	30	Screen upper and lower adjustment
2	<u>H-Position</u>	0 ~ 120	60	Screen left and right adjustments
3	LAMP SYNC			
4	<u>Actuator Gain [Patt1]</u>	0~175	95	Actuator Gain adjustment
5	<u>Actuator Gain [Patt2]</u>	0~175	95	Actuator Gain adjustment
6	<u>INDEX DELAY</u>	0 ~ 1023	173	Index delay adjustment
7	<u>FPGA</u>		xHD3	xHD3/xHD4 selection
8	<u>Lamp Watt</u>		132W	
9	<u>Lamp Select</u>		Philips	
10	AUTO COLOR		OFF	Auto Color function execution
11	<u>CCA</u>			CCA menu
12	<u>Lamp Clear</u>			Initialize Lamp usage time
13	<u>User Reset</u>			All user settings are set to default

3-4 Service Adjustment

3-4-1 Vertical / Horizontal Position Adjustment

1. Turn off the power to put the unit into the STAND-BY mode.
 2. In order to enter the Service Mode, Press "Mute" → "1" → "8" → "2" → "POWER" buttons on the Remote Control.
 3. Select "Service" on the first display of the Service mode menu.
 4. Select the V-position for vertical positioning and H-position for horizontal positioning by using the ▲ ▼ (Up & Down) buttons. Press the ◀ ▶ (Left or Right) buttons to adjust the screen position.
- ※ Do not set the V-position value to 34 or 35. (Setting to these values will cause horizontal lines on the right side of the screen.)

3-4-2 INDEX DELAY Adjustment

1. Turn off the power to put the unit into the STAND-BY mode.
2. In order to enter the Service Mode, Press "Mute" → "1" → "8" → "2" → "POWER" buttons on the Remote Control.
3. Select "Service" on the first display of the Service mode menu.
4. Press the ▲ ▼ (Up or Down) button to move to INDEX DELAY, then press ENTER to select.
5. The INDEX DELAY setup screen (with a red bar at the bottom of the screen) will be displayed.
6. Press the ◀ ▶ (Left or Right) buttons to adjust. Check the red color at the bottom of the screen at its minimum and maximum values of changing from red to magenta, then adjust to the mean value.

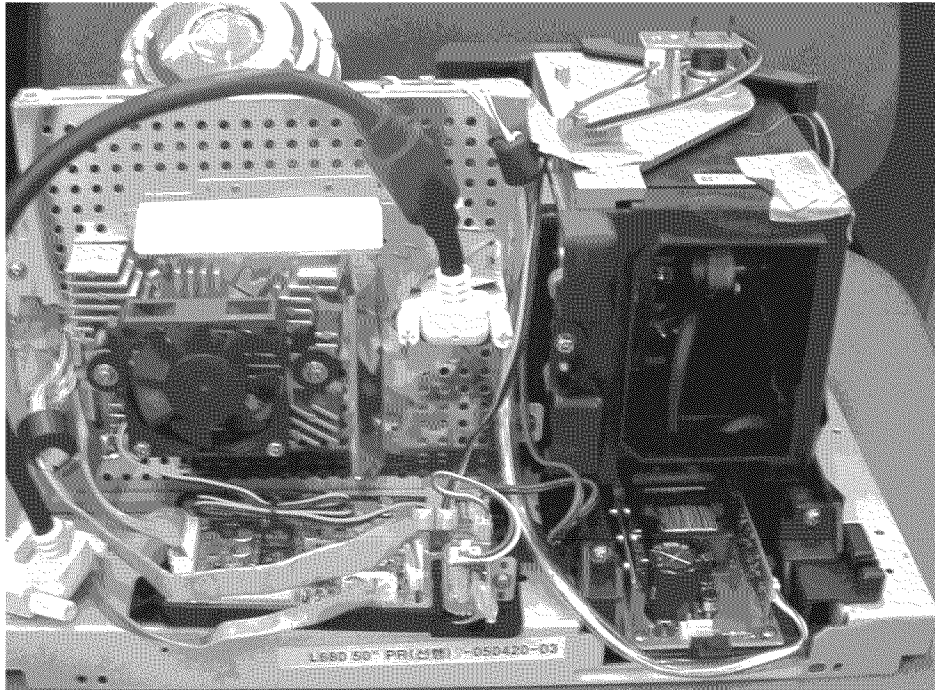
3-4-3 CCA Adjustment Service Methods

: CCA Adjustment is needed after changing a light engine, digital board or Color Wheel.

- CCA : In DLP TV, even the same RGB color may differ depending on the light engine. CCA (Color Coordinate Adjustment) corrects the color to achieve the color accuracy. CCA performs color correction after measuring and inputting the current light engine's data on actual color coordinates for displayed Red, Green, Blue, and White color patterns, using color coordinate measuring equipment.

At this moment, color correction is performed on the basis of previously inputted Desired Color Coordinates and Measured Color Coordinates.

1. Condition of the Service Engine



2. CCA Service Procedures

To execute CCA adjustment , perform the following steps :

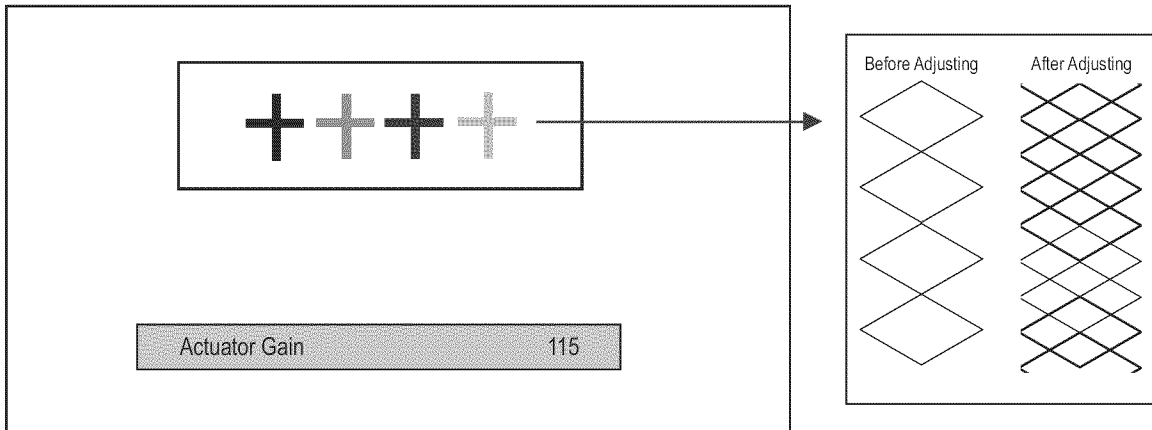
- 1) Turn off the power to put the unit into the STAND-BY mode.
 - 2) In order to enter the Service Mode, Press "Mute" → "1" → "8" → "2" → "POWER" buttons on the Remote Control.
 - 3) From the Factory Service Mode Menu, select OPTION > DMD → DIGITAL. (This is for getting the cca data of new engine.)
 - 3-1) After Light Engine is changed
 - select OPTION > DMD → DIGITAL
 - 3-2) After Digital PCB is changed
 - select OPTION > DMD → DIGITAL
 - 3-3) After DMD PCB is changed
 - select OPTION > DIGITAL → DMD
 - 3-4) After color wheel is changed
 - select DDP1011 > INDEX DELAY
- (You can only adjust the INDEX DELAY. You can't adjust the CCA without CCA equipment(CA210).)

3-4-4 ACTUATOR GAIN Adjustment

1. Before Adjustment

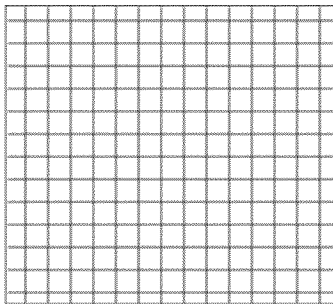
- 1) Turn off the power to put the unit into the STAND-BY mode.
- 2) In order to enter the Service Mode, Press "Mute" → "1" → "8" → "2" → "POWER" button on the Remote Control.
- 3) Select "Service" on the first display of the Service mode menu.
- 4) Press the ▲ ▼ (Up or Down) button to move to ACTUATOR GAIN1,2, then press ENTER to select.

- Actuator Gain1 : In case of controlling with Cross Pattern.



- Actuator Gain2 : In case of controlling with Crosshatch Pattern.

CROSSHATCH PATTERN

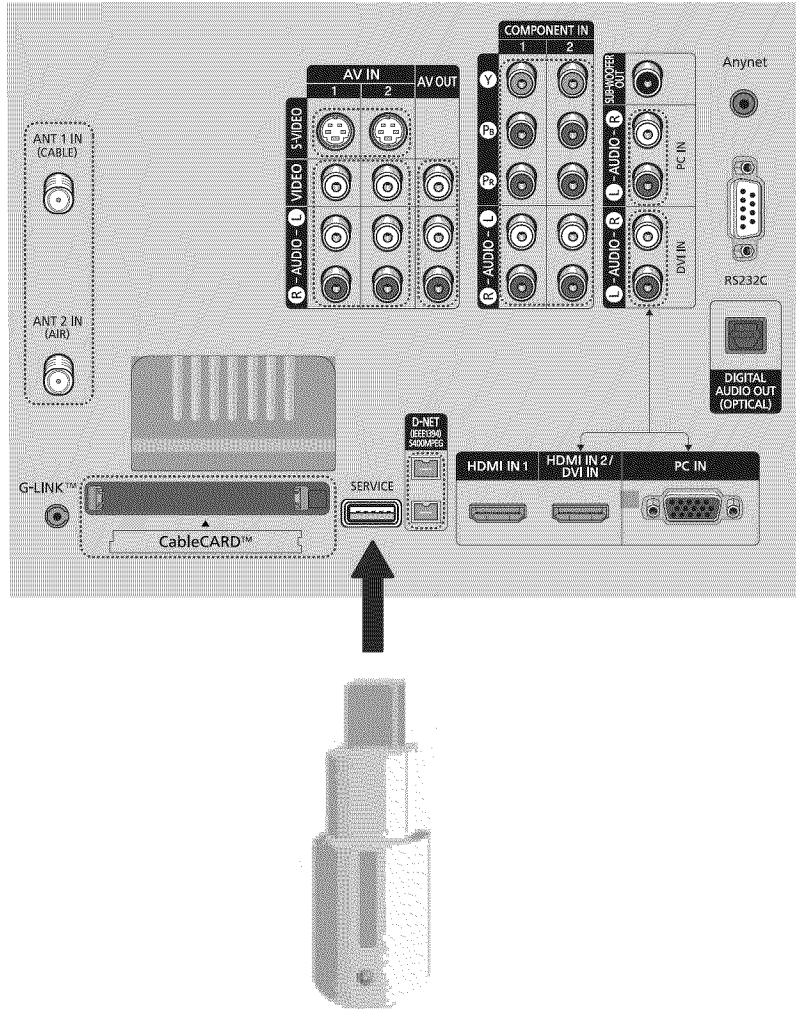


CAUTION: GAIN2 is just controlled by your eye because control value doesn't appear in picture.

2. Making Adjustments

- 1) As shown in the picture above, change the actuator values to eliminate saw tooth shapes.
 - To fine tune, increase the data value ensuring that you get the center between the starting and ending points of the disappearing saw tooth shape.

3-5 Software Upgrade



1. Prepare the USB memory stick with the built-in firmware.
2. While the TV is off, insert the USB stick into the SERVICE terminal.
3. When turning on the TV, there should be a long beeping tone and the firmware download process should start. If there is no sound from the TV, turn it off and then on again.
4. When the download is complete, there will be another long beeping tone and the TV will go into standby mode.

※ Check for the Firmware Version

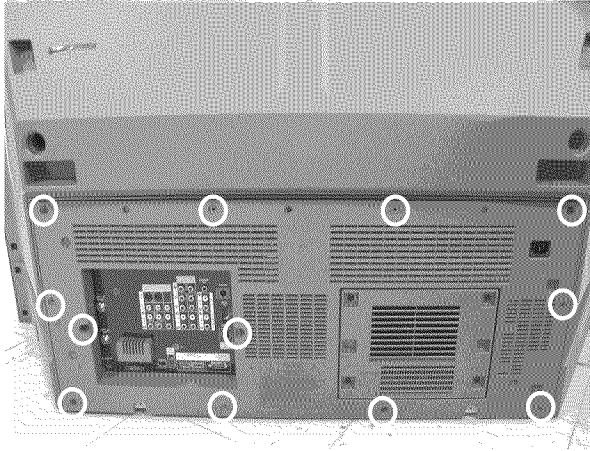
- 1) Turn off the power to put the unit into the STAND-BY mode.
- 2) In order to enter the Service Mode, Press "Mute" → "1" → "8" → "2" → "POWER" buttons on the Remote Control.
- 3) In case entry into SERVICE MODE is unsuccessful, repeat steps 1 and 2 directly above.
- 4) You can check the firmware version at the bottom of the Factory menu.

T_EXCAAUSO_00XX
 2005_XX_XX
 T-DTVUCOM5-00XX
 T-XMENAUSO_00XX

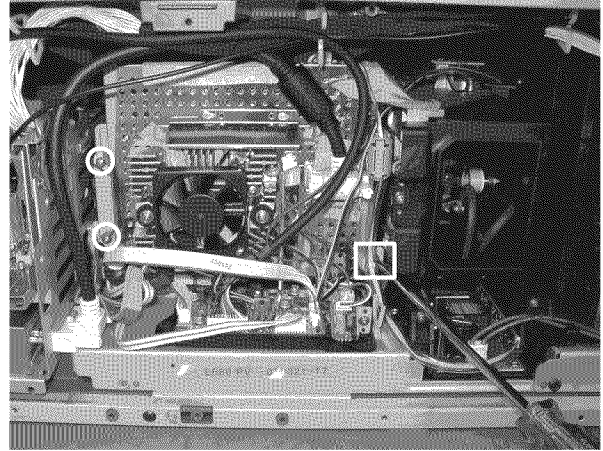
3-6 Replacements & Calibration

3-6-1 Tilt the Screen

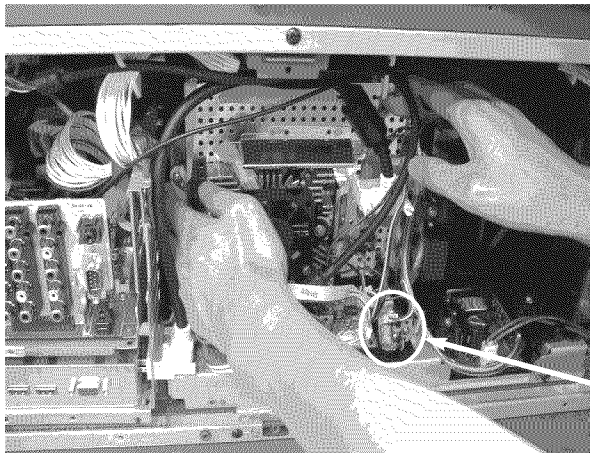
1. Remove the 12 point screws. Remove the Bottom cover.
Fix the safety switch on the right with tape so that the set can be turned on after removing the bottom cover.
: TH,B,M4.L15,BLK,SWRCH18A



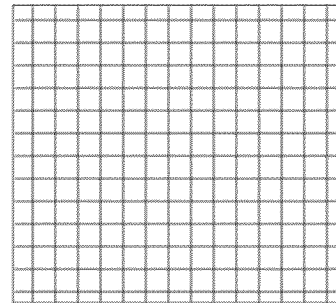
2. Remove the 3 points screws.
 - * Left 2 points screws
: PWH,S,M3,L8,ZPC(YEL),SWRCH18A
 - * Right 1 points screw
: PWH,S,M3,L7,ZPC(YEL),SWRCH18A



3. Turn off the power to put the unit into the STAND-BY mode.
In order to enter the Service Mode, Press "Mute" → "1" → "8" → "2" → "POWER" buttons on the Remote Control.
Select "DDP1011(L8)" on the first display of the Service Mode menu. Press the ▲ ▼ (Up or Down) buttons, then press ENTER to select. Press the ► (Right) button until you see the CROSSHATCH PATTERN.
Then, adjust the screen position, by holding both of the upper corners of the DMD board.



CROSSHATCH PATTERN

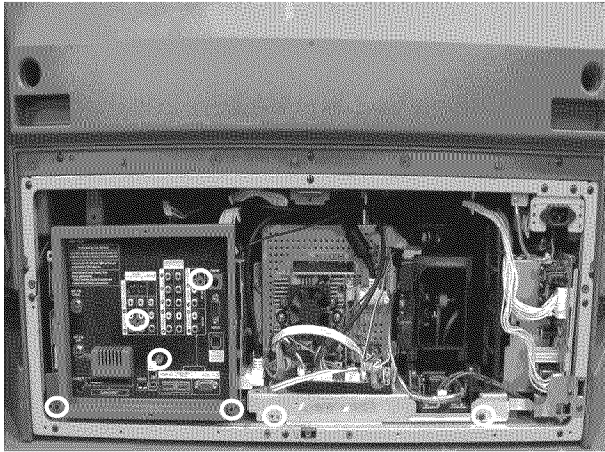


Fix the safety switch on the right with tape so that the set can be turned on after removing the bottom cover.

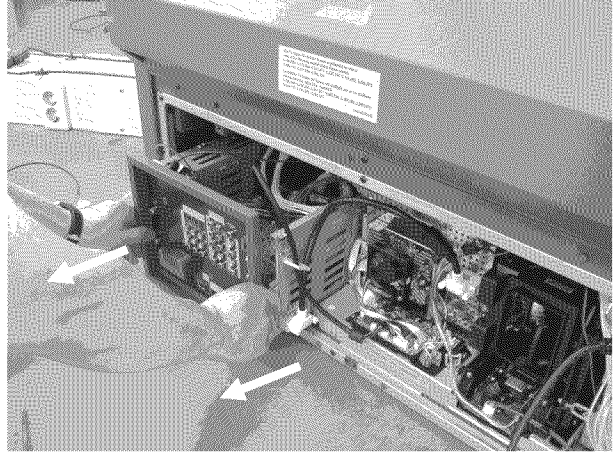
- ※ Even when those screws are removed, the board does not separate it can be moved within the adjustable range because there are spring screws at the center holding it.
- ※ When adjusting the screen, it is better for two people to work together.
One person should adjust the picture position while the other person looks at the screen.
- ※ The movement direction of the board and the picture are opposite.
 - When the board is lifted upward, the screen descends down.
 - When it is tilted to the left, the screen tilts to the right.
- ※ When the picture adjustment is completed:
First, tighten the two screws on the left of the DMD board and then slowly tighten the one screw on the bottom right.
Be careful not to touch the board while tightening the screws.
(When using an electric-powered screwdriver, be careful that the torque is not too high.)

3-6-2 Align the Focus

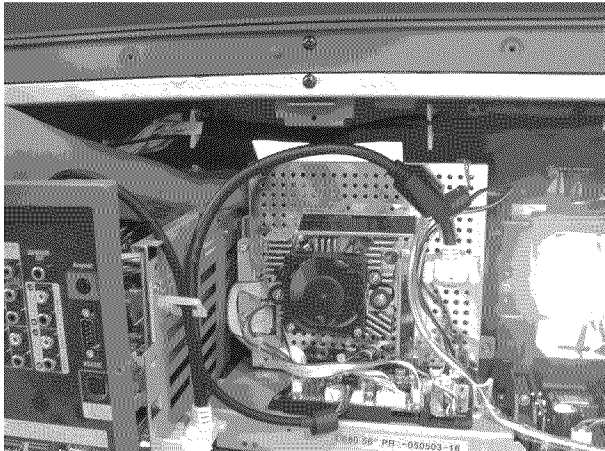
1. Remove the 7 screws.
: TH,B,M4.L15,BLK,SWRCH18A



2. Pull out the holder Chassis

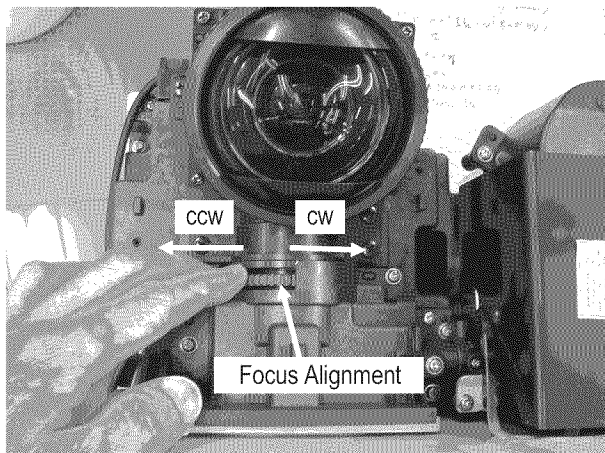


3. Adjust the Lens Focus

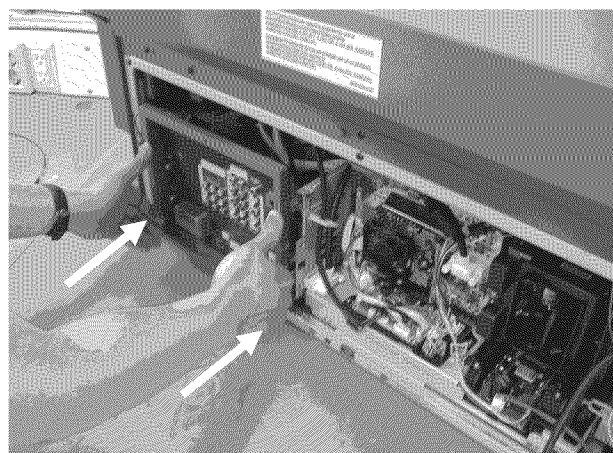


- 1) Input a Crosshatch pattern or enter service mode and use the internal generated patterns.
- 2) Adjust the focus alignment dial of the Projection Lens Clockwise or Counter Clockwise (See picture in step 4) until the picture is clear.
- 3) Since the alignment is done from the rear use a mirror or a second person to confirm the adjustment is complete.

4. Adjust the Lens focus.



5. Insert Engine Ass'y with accuracy.

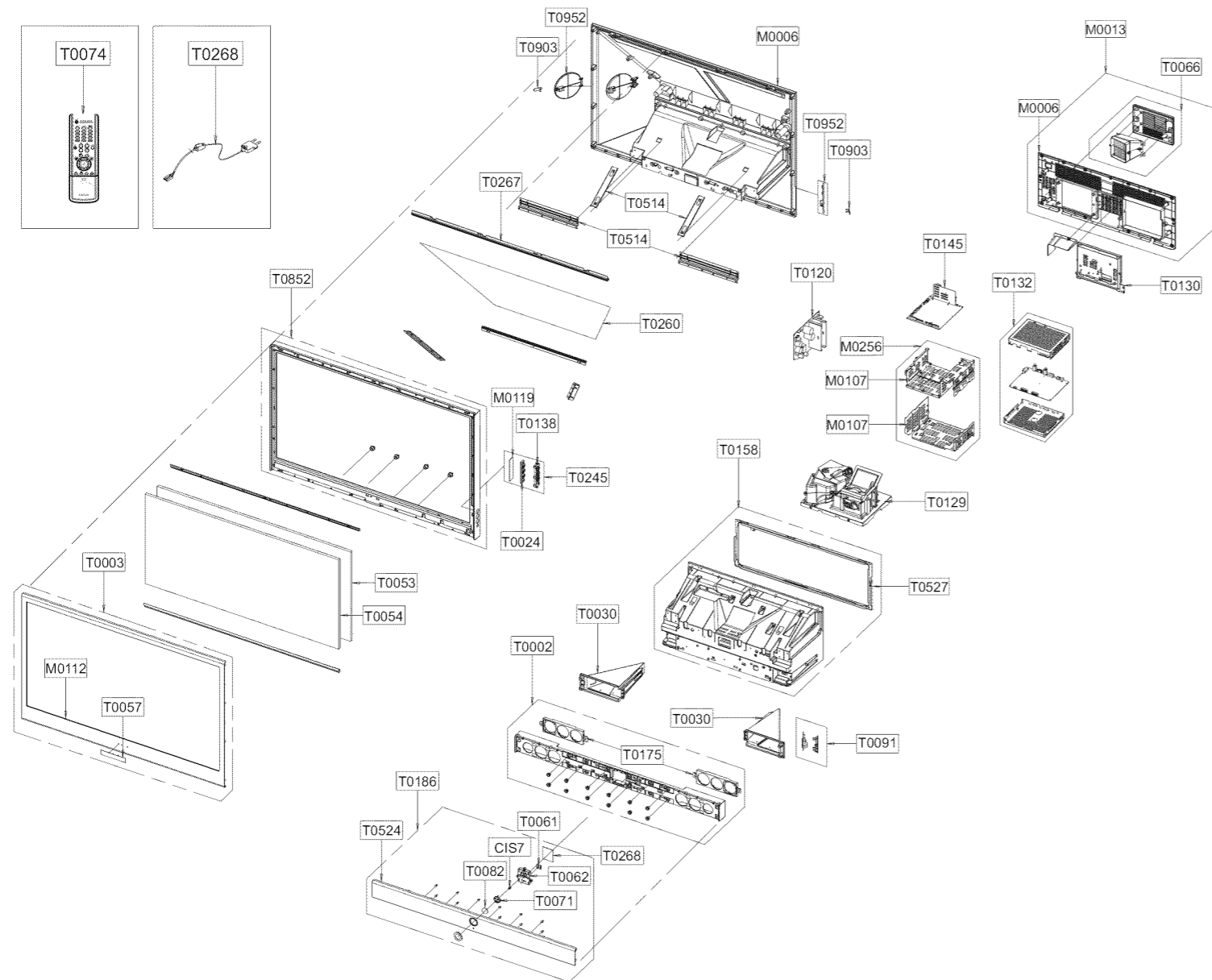


4. Exploded View & Part List

4-1 HLR6768WX/XAA

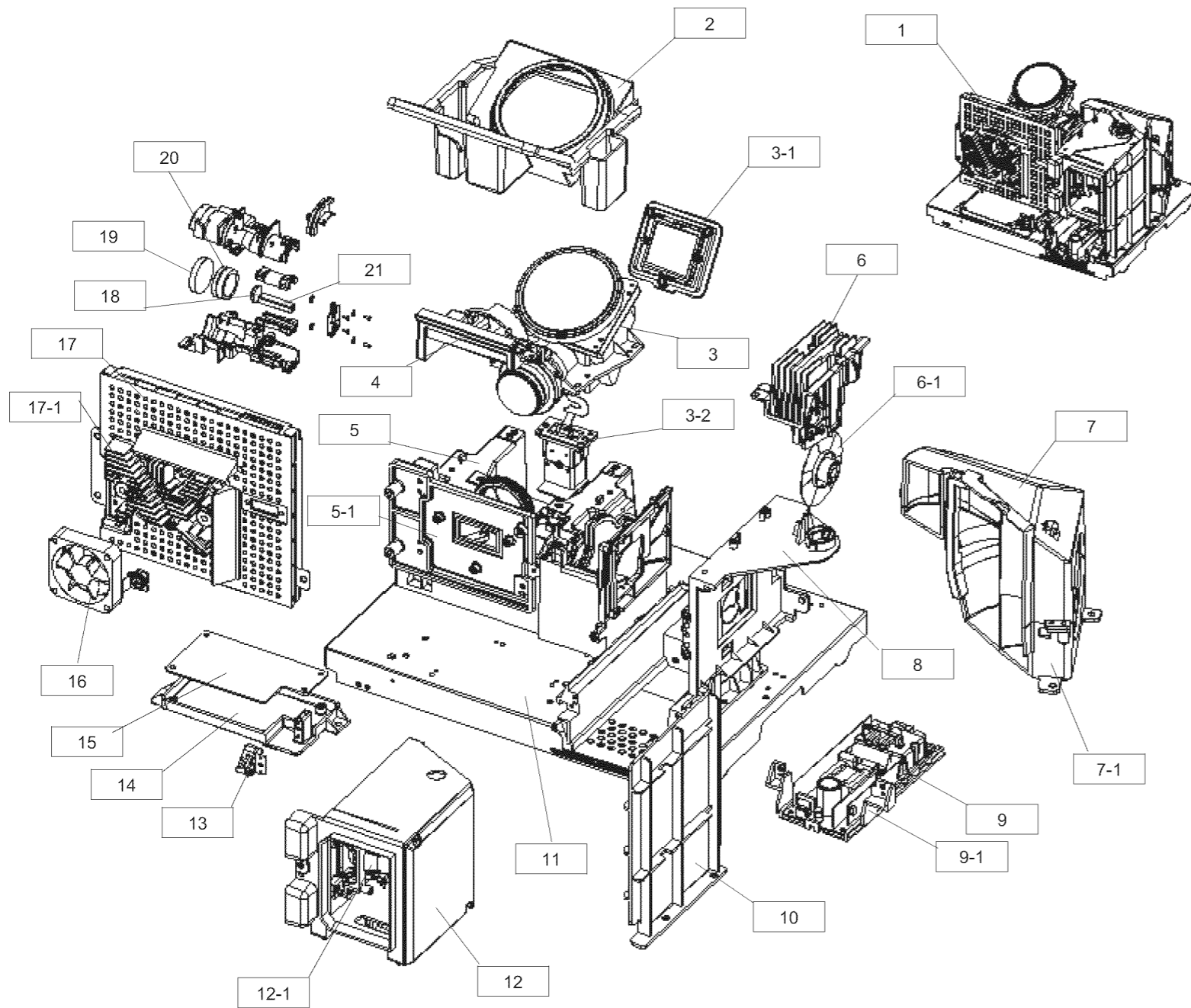
You can search for the updated part code through ITSELF web site.

URL: <http://itself.sec.samsung.co.kr>



Loc.No.	Code No.	Description	Specification	Q'ty	SA/SNA	Remark
CIS7	AA61-60003J	SPRING ETC-CS	-,SUS304,-,OD6,N7,OD6,-,	1	S.NA	
M0006	BP63-00431A	COVER-REAR	67L6,HIPS,HB,GRAY,TOP	1	S.A	
M0006	BP63-00401A	COVER-REAR BOTTOM	50L6,HIPS,V0,GRAY	1	S.NA	
M0013	BP96-00938C	ASSY COVER P-REAR BOTTOM	L6,HIPS V0,GR50	1	S.A	
M0107	BP61-00892A	BRACKET-PCB	50L3,SECC,T1.0,NTR,TOP(BUILT	1	S.NA	
M0107	BP61-00893A	BRACKET-PCB	50L3,SECC,T1.0,NTR,BOT(BUILT	1	S.NA	
M0112	BP63-00429D	COVER-FRONT	67L6,HIPS,HB,BLK,BKM1326R1,S	1	S.NA	
M0119	BP41-00124B	PCB CONTROL	HLP5063W,FR-4,2L,A,1.6T,245	1	S.NA	
M0256	BP96-00849F	ASSY BRACKET P-MAIN PCB	L3,L6,L7,SECC,T1	1	S.A	
T0002	BP96-01024A	ASSY COVER P-FRONT BOTTOM	67L6,HIPS,HB,G	1	S.A	
T0003	BP96-01030D	ASSY COVER P-FRONT	67L6,SEA(L65A),HIPS,H	1	S.A	
T0024	BP64-00384B	KNOB-FAMILY	L6,ABS,HB,GRAY,SVM-3012	1	S.NA	
T0030	BP96-01027B	ASSY COVER P-SIDE	67L6,HIPS,HB,GR503,LEF	1	S.NA	
T0030	BP96-01028B	ASSY COVER P-SIDE	67L6,HIPS,HB,GR503,RIG	1	S.NA	
T0053	BP67-00187A	SCREEN FRESNEL	67W,1524*875,T2.0	1	S.A	
T0054	BP67-00186A	SCREEN LENTI	67W,1524*875,T2.1	1	S.A	
T0057	BP64-00179A	BADGE-BRAND	ALL,AL,T1.5,83,14,BLK,SILIV	1	S.NA	
T0061	BP64-00385A	WINDOW-REMOCON	50L3,PC,VIOLET	1	S.NA	
T0062	BP61-00530A	HOLDER-POWER	50L3,HIPS HB,GRAY	1	S.NA	
T0066	BP96-00535E	ASSY COVER P-DUCT	L6,HIPS HB,GRY	1	S.NA	
T0071	BP64-00382A	INDICATOR-LED	50L3,ABS CLEAR (LG)	1	S.NA	
T0074	BP59-00071B	REMOCON	HURRICANE, TM76A,200*54*30,ZILOG	1	S.A	
T0082	BP64-00309B	WINDOW LED	50L3,ACRYL,2.0, half-mirror,SE	1	S.NA	
T0091	BP94-01713A	ASSY PCB MISC-AV SIDE	HLR6768WX/XAA,L65	1	S.NA	
T0120	BP94-02215B	ASSY PCB POWER	HLR5067,HURRICANE,L64B,11	1	S.A	
T0129	BP96-01198D	ASSY ENGINE P-DLP	67L8,PHILIPS 132W,E22,	1	S.A	
T0130	BP96-01061A	ASSY COVER P-TERMINAL BOARD	50L8,HIPS V0	1	S.NA	
T0132	BP94-02229A	ASSY PCB MISC-DIGITAL	HLR5078(L8),L65A,E	1	S.A	
T0138	BP64-00383B	KNOB-HOLDER	L6,ABS,HB,GRAY,SVM3012	1	S.NA	
T0145	BP94-02228A	ASSY PCB MISC-ANALOG	HLR5078(L),L65A,EXC	1	S.A	
T0158	BP96-00937C	ASSY COVER P-MAIN	L6 ALL,HIPS, V0,GR503	1	S.A	
T0175	BP96-01278A	ASSY SPEAKER P	8ohm,L6(DLP)_VE,15W	2	S.A	
T0186	BP96-01025B	ASSY COVER P-GRILLE	67L6,HIPS,HB,GR503,S	1	S.NA	
T0245	BP94-01714A	ASSY PCB MISC-KEY CONTROL	HLR6768WX/XAA,	1	S.NA	
T0260	BP67-00215A	MIRROR-FRONT	Front mirror 67",glass,1510	1	S.A	
T0267	BP61-00938A	BRACKET-MIRROR TOP	67L6,AL6063 EXTR	1	S.NA	
T0268	BP94-01758D	ASSY PCB MISC-RMC LED	HLR6768WX/XAA,L65A	1	S.NA	
T0268	3903-000144	CBF-POWER CORD	DT,US,BP3/Y,U(IEC C13-RA)	1	S.A	
T0514	BP61-00916A	BRACKET-SUPPORT	67L6,SECC-1,T1.2,NTR,BAC	2	S.NA	
T0514	BP61-00918A	BRACKET-SUPPORT	61L6,SECC-1,T1.6,NTR	2	S.NA	
T0524	BP63-00433A	COVER-GRILLE	67L6,HIPS,HB,GR503,SV012P	1	S.NA	
T0527	BP61-01045A	BRACKET-COVER	L6,SECC-1,T1.2,NTR,BOTTOM	1	S.NA	
T0852	BP96-01026B	ASSY COVER P-MIDDLE	67L6,HIPS,HB,GR503,S	1	S.NA	
T0903	BP61-00528A	HOLDER-DUST	50L3,HIPS HB,GRAY	2	S.NA	
T0952	BP63-00294B	COVER DUST-ASSY	L6,HIPS,HB,GRAY	2	S.NA	

4-2 L680 Engine Ass'y



L680 Engine Exploded View List						
No.	Loc. No.	Code No.	Description	Specification	Q'ty	SA/SNA
1	T0129	BP96-01198A	ASSY ENGINE P-DLP	50L8,PHILIPS 120W,E22	1	S.A
2		BP63-00522A	COVER-P-J LENS	L680,ABS,T2.5	1	S.N.A
3		BP67-00222A	LENS-P/J-ASSY	Excalibur,GLASS,NTR,FOV=93	1	S.N.A
3-1		BP64-00548A	GLASS-ACTUATOR	EXCALIBUR,MIRROR,39,34,VC	1	S.N.A
3-2		BP96-00984A	ASSY DYNAMIC BLACK P-SEM	Dynamic Black,S	1	S.N.A
4		BP63-00520A	COVER-MIRROR	L680,PC G/F20,T2.5	1	S.N.A
5		BP61-01033A	BASE-ENGINE	L680,PPS G/F30,T3.0	1	S.N.A
5-1		BP61-01037A	BASE-ENGINE	L680,MG D/C,T3.0,TOP	1	S.N.A
6		BP96-01103A	ASSY COLOR WHEEL P	L6,SERVICE	1	S.A
6-1	T0593	BP64-00475A	GLASS-COLOR WHEEL	65mm NDF,FLOAT GLASS,T	1	S.N.A
7	T0530	BP63-00510A	COVER-LAMP	SVP-50L6HR,PPS G/F30,T2.5	1	S.N.A
7-1		BP63-00517A	COVER-DUCT BOT	SVP-50L6HR,PC G/F20,T3.0	1	S.N.A
8		BP61-00726A	HOUSING-LAMP,BOTTOM 23	SVP-50L3HR,AL D/	1	S.N.A
9	T0049	BP47-00021A	LAMP-BALLAST	EUC 120 P/H11,120W,130mm ca	1	S.A
9-1		BP61-00728A	HOLDER-BALLAST 23	SVP-50L3HR,PC G/F20	1	S.N.A
10	T0530	BP63-00537A	COVER-LAMP	HURRICANE 720P,PC	1	S.N.A
11		BP61-01014A	BRACKET-ENGINE BASE	SVP-50L6HR,SECC,T1.6	1	S.N.A
12		BP96-01073A	ASSY LAMP P	L6,L8(L620,L680),~ 61",Philips 120W	1	S.A
12-1		BP47-00018A	LAMP	UHP 100W/120W 1.0,E22,65*70	1	S.N.A
13		BP91-00775A	ASSY MISC-DETECTOR S/W	HLP5063WX/XAA,L62	1	S.N.A
14		BP61-01116A	HOLDER-INTERFACE	L680,ABS,T2.5,BLACK	1	S.N.A
15		BP94-02230B	ASSY PCB S-DETECTOR-B/D	HLR5078(L8),EXCA	1	S.N.A
16	T0286	BP31-00011A	FAN-DC	AD0612LB-D72GL,P.B.T UL94-Vo,Wire	1	S.A
17	T0027	BP94-02230A	ASSY PCB S-DMD	HLR5078(L8),EXCALIBUR,L65	1	S.N.A
17-1		BP61-01043A	BRACKET-COOLER	L680,AL D/C,T4.0	1	S.N.A
18	T0134	BP67-00218A	MIRROR-LIGHT TUNNEL	Excalibur,GLASS,5.7*	1	S.N.A
19		BP67-00219A	LENS-ILL-E1	Excalibur,NBFD13,NTR,R1:INF,	1	S.N.A
20		BP67-00220A	LENS-ILL E2/E3	Excalibur,FD60,BACED5,NTR	1	S.N.A
21		BP67-00221A	LENS-ILL E4	Excalibur,BACED5,NTR,R1:57.6	1	S.N.A

5. Electrical Part List

5-1 HLR6768WX/XAA Service Item

You can search for the updated part code through ITSELF web site.

URL:<http://itself.sec.samsung.co.kr>

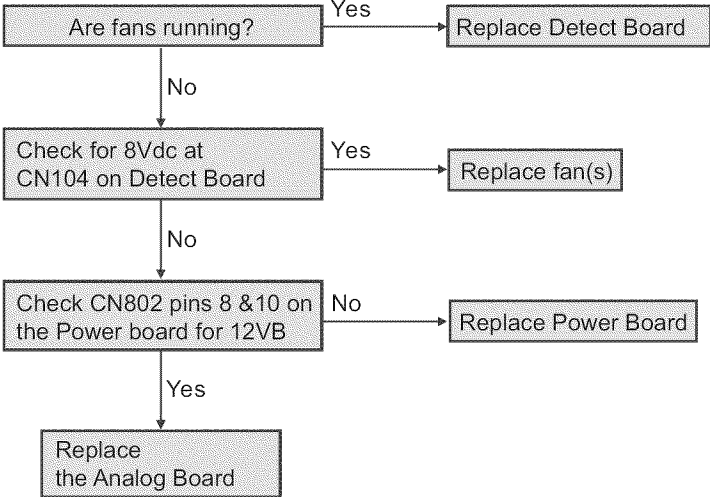
Loc. No.	Code No.	Description	Specification	Q'ty	SA/SNA	Remark
M0003	BP96-00990A	ASSY COVER P-STAND	61L6,HIPS,HB,GR503,SV	1	S.A	
M0013	BP96-00938C	ASSY COVER P-REAR BOTTOM	L6,HIPS V0,GR50	1	S.A	
M0018	BP97-00954A	ASSY MICOM	L65A,29DL32,T_SCALER_0083,050	1	S.A	
M0114	BP39-00205A	CBF SIGNAL	X-MEN,24/24P,UL20276,400mm,UL	1	S.A	
T0002	BP96-01024A	ASSY COVER P-FRONT BOTTOM	67L6,HIPS,HB,G	1	S.A	
T0003	BP96-01030D	ASSY COVER P-FRONT	67L6,SEA(L65A),HIPS,H	1	S.A	
T0049	BP47-00022A	LAMP-BALLAST	EUC 132d P/31,132W,130mm ca	1	S.A	
T0053	BP67-00187A	SCREEN FRESNEL	67W,1524*875,T2.0	1	S.A	
T0054	BP67-00186A	SCREEN LENTI	67W,1524*875,T2.1	1	S.A	
T0074	BP59-00071B	REMOCON	HURRICANE, TM76A,200*54*30,ZILOG	1	S.A	
T0120	BP94-02215B	ASSY PCB POWER	HLR5067,HURRICANE,L64B,11	1	S.A	
T0128	BN39-00518B	CBF SIGNAL-STEREO	SVP-50L3HR,1P,UL2464#2	1	S.A	
T0129	BP96-01198D	ASSY ENGINE P-DLP	67L8,PHILIPS 132W,E22,	1	S.A	
T0132	BP94-02229A	ASSY PCB MISC-DIGITAL	HLR5078(L8),L65A,E	1	S.A	
T0145	BP94-02228A	ASSY PCB MISC-ANALOG	HLR5078(L),L65A,EXC	1	S.A	
T0175	BP96-01278A	ASSY SPEAKER P	8ohm,L6(DLP)_VE,15W	2	S.A	
T0703	BP96-01315A	ASSY DMD BOARD P	L8 Philips,DMD BOARD,SE	1	S.A	
T0888	BP96-01099A	ASSY LAMP P	L6,L8 (L620,L680),67 INCH ~,	1	S.A	
T0889	BP96-01103A	ASSY COLOR WHEEL P	L6,SERVICE	1	S.A	

6. Troubleshooting

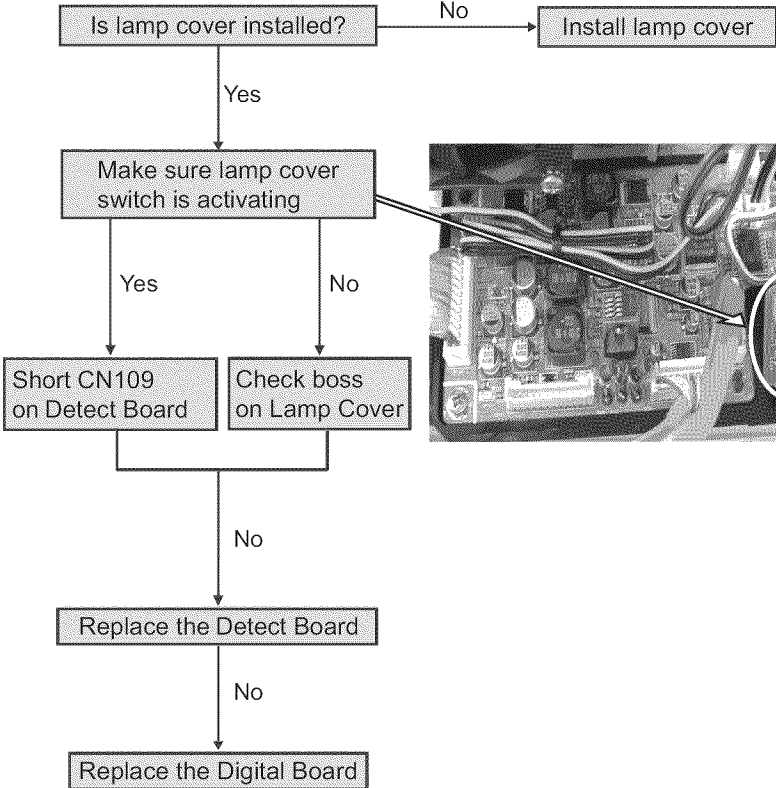
6-1 Checkpoints by Error Mode

- 1. Power Light: Check the master switch (ON/OFF) and the fuse to see if they are operating.
- 2. LED Blinking: See the basic LED checklist in 6-2-1.

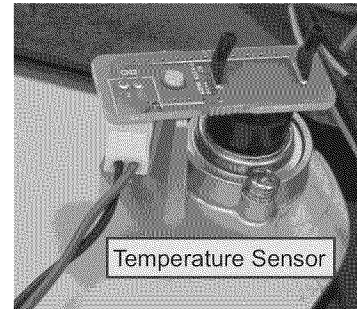
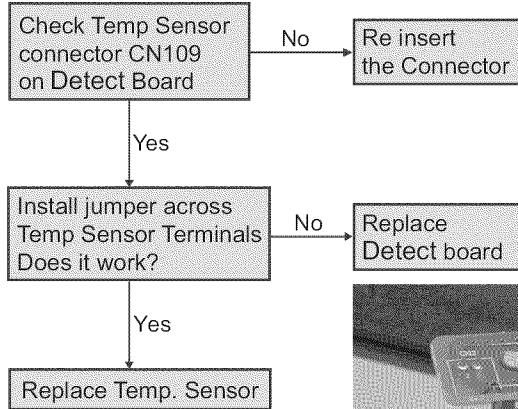
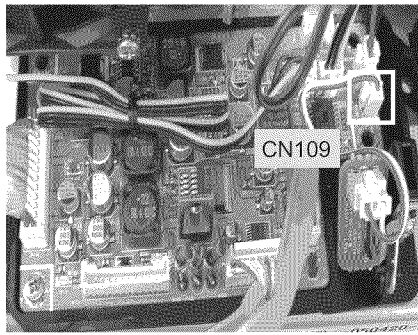
< Blinking Temp & Timer LED >



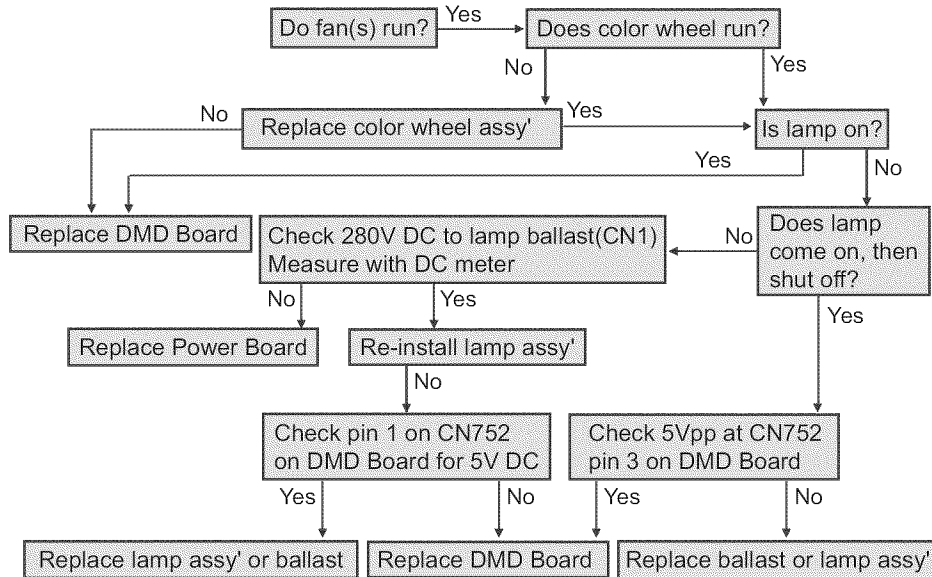
< Blinking Lamp and Temp LEDs >



< Blinking Temp LED >



A blinking lamp LED is the most common failure indication. It can be caused by no lamp, no color wheel, no fan(s), or other defective components.



3. Noise:

Internal noise may be caused by a foreign substance on the fan or driving device.

For a DLP TV, the lamp fan, DMD board fan and color wheel are vulnerable to noise. Sometimes the connector wire around the lamp or DMD fan makes contact with the fan, while the color wheel is protected inside the module and cannot make contact with any nearby wires. However the color wheel sensor or the drive motor may cause noise by making contact with the color wheel.

As the color wheel uses an air bearing system, it has a very slight possibility of creating internal noise.

When irregular noise occurs for no particular reason, check the inside of the TV for any foreign substances.

The DLP projection TV may cause noise as the physical screen is empty inside, causing a resonance to a particular frequency.

Thus a low vibration is not a malfunction.

Any 'creaking' noise is mostly from the structure of the device itself. A short, harsh noise may occur from a distortion or malformation due to thermal expansion between the metal joints, screws and loaded parts, respectively. Any intermittent 'creaking' noise can be removed by loosening the screws.

4. A black screen with the lamp on: Replace the DMD board.

5. Line Pattern: Regular line patterns occur vertically or horizontally: Replace the DMD board.

6. Voice Distortion: Replace the analog board.

7. Outside Light: This is not a product malfunction, but a possible installation or human error. This occurs when the projected light from the surrounding illumination reflects onto the screen. This disappears as the TV starts operating and the TV lamp gets brighter. However, you can avoid outside light by changing the position of the TV or the installation angle.

Decreasing the illumination or changing the indoor lighting may work.

8. Screen Flip-over:

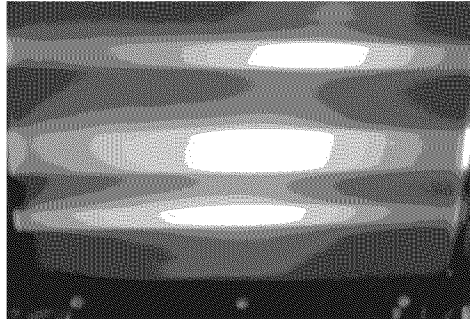
Enter Factory mode in DDP1011 and perform H-Flip (flip horizontally) and V-Flip (flip vertically).

The screen will flip over horizontally or vertically.

9. Other Screen Errors:



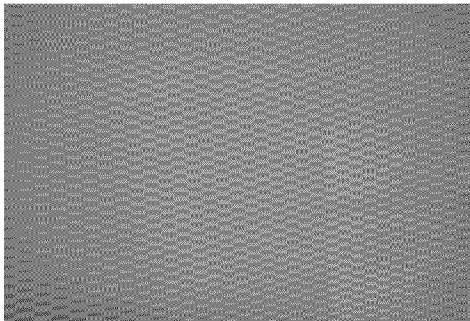
- ▶ 40 Vertical lines 16 pixels wide:
DDP1011 or BGA, DMD panel interference.
→ Replace the DMD board



- ▶ Horizontal Bar or No Raster:
Error in DDP1011 or the DMP panel.
→ Replace the DMD board



- ▶ Dotted Vertical Bar:
Error in Rambus Dram(IC 403) or the soldering
→ Replace the DMD board



- ▶ Beehive mosaic patterns all over the screen:
Error in the LVDS Receiver (IC 601) or the soldering
The H sync signals are not transferred to DDP1011.
→ Replace the DMD board.

6-1-1 Video Circuit Error Checking

■ Basics:

- The DDP1011 on the DMD board has a feature to display internal test patterns.
- DN1e, which is an end port in the digital board, has a feature to display internal test patterns.
- The analog board sends signals to ADV7401 on the digital board.
- The analog board is the first output and the digital board is the second one, followed by DMD, which is the final one.

■ Diagnosis By Module

1. Access Service Mode

(In Standby mode, press "Mute", "1", "8", "2" and "Power" to turn the screen on and enter service mode)

2. Check if there is an error in the DMD board

DDP1011 → TEST PATTERN → Press the right arrow key:

Options of FULL WHITE, BLACK, RED, GREEN and BLUE PATTERN are displayed on the screen.

If "Pattern" does not appear, this is a DMD board error.

3. Check if there is an error in the digital board before the DMD.

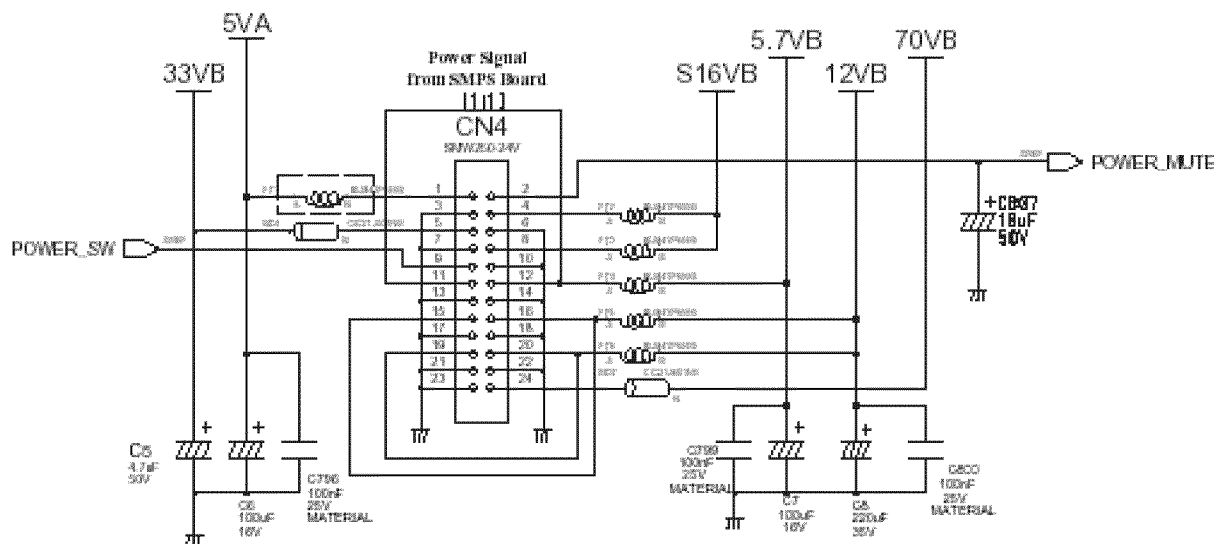
When the DMD board has been determined to be error free based on the test patterns:

FACTORY MODE → DN1e → TEST PATTERN normal display: no error in the digital board.

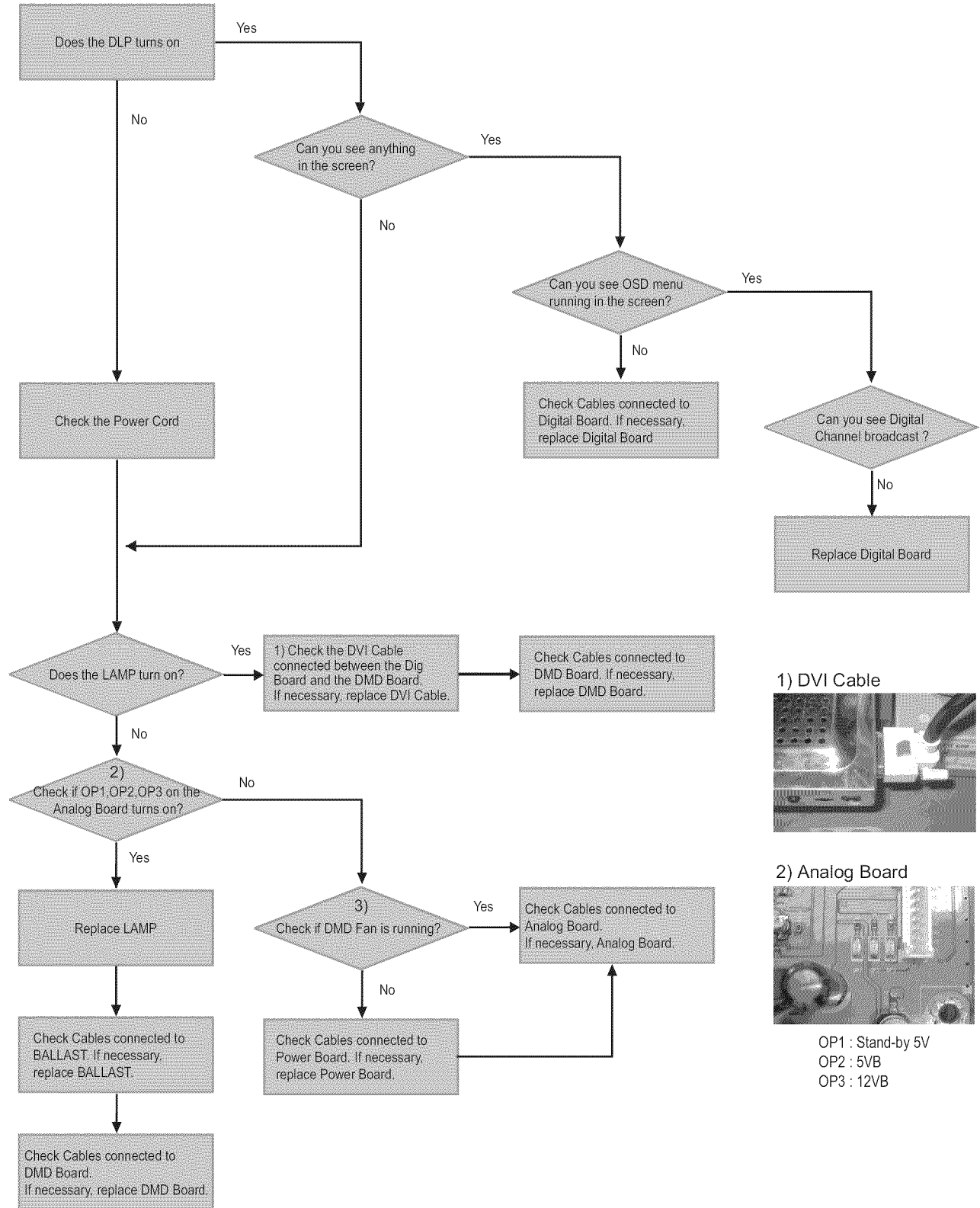
If "Pattern" does not appear, you have to check a Analog board first, and check a DMD Board second, next check a Digital Board.

4. Check if there is an error in the Analog Board.

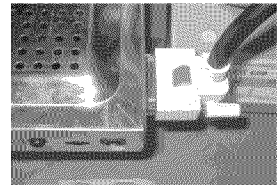
Check for a power signal from the analog to the digital boards. (See the circuit diagram below).



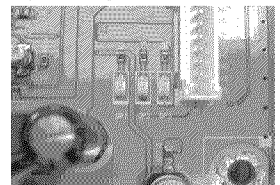
6-1-2 Flow Chart for Malfunction



1) DVI Cable



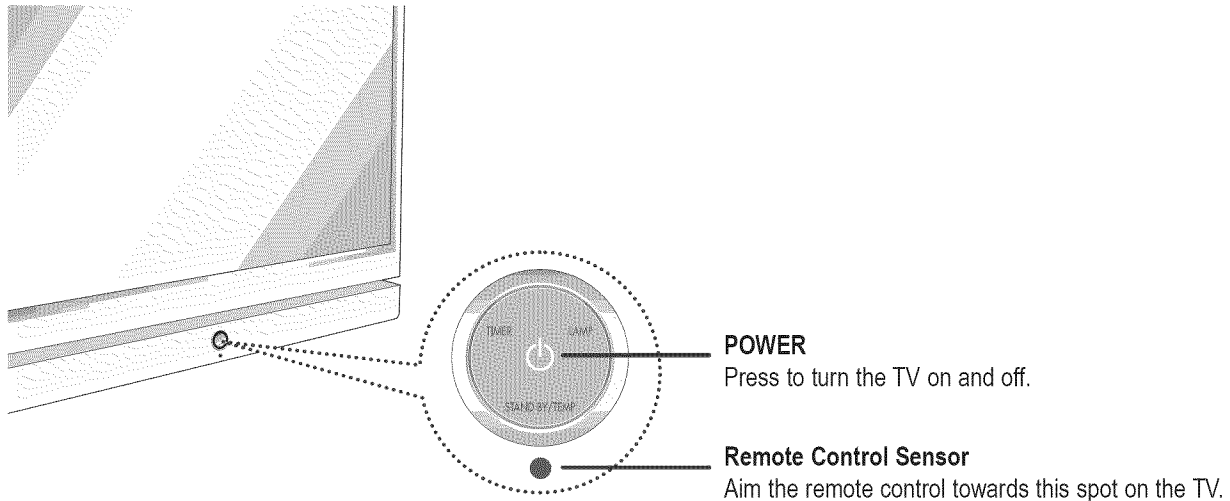
2) Analog Board



OP1 : Stand-by 5V
OP2 : 5VB
OP3 : 12VB

6-2 Troubleshooting Procedures by Error Modes

6-2-1 Installation & Connection



- : Light is On
- ◐ : Light is Blinking
- : Light is Off

TIMER	LAMP	STAND BY/TEMP	Indication
○	○	●	Standby state.
○	◐	○	The picture will automatically appear in about 15 seconds.
●	◐	○	Auto Timer ON/OFF has been set and the set will automatically be turned on in about 25 seconds.
◐	○	◐	A cooling fan inside the set is not operating normally.
○	◐	◐	Lamp cover on rear of the set is not properly shut.
○	○	◐	Check if the ventilation hole on the rear of the set is blocked, because if the inner temperature is too high, the power will shut off.
◐	◐	◐	Lamp may be defective.

- * It takes about 30 seconds for the TV to warm up, so normal brightness may not appear immediately.
- * The TV has a fan to keep the inside lamp from overheating. You'll occasionally hear it working.

6-2-2 Protect Status

1. When the rear cover is opened

A sensor detects when the rear cover is opened and turns the set off and then into Standby mode.

If you close the cover or fix the switch, you can turn the set on by pressing the Power button on the unit or the remote control. The set will then operate normally.

2. When the temperature sensor operates

When the set is overheated, the internal temperature sensor turns the set off and the set goes to Standby mode.

When the internal temperature of the set returns to a normal range(95℃), turn the power on by pressing the Power button on the unit or the remote control. The set will then operate normally.

3. Attempting to turn the lamp on fails repeatedly

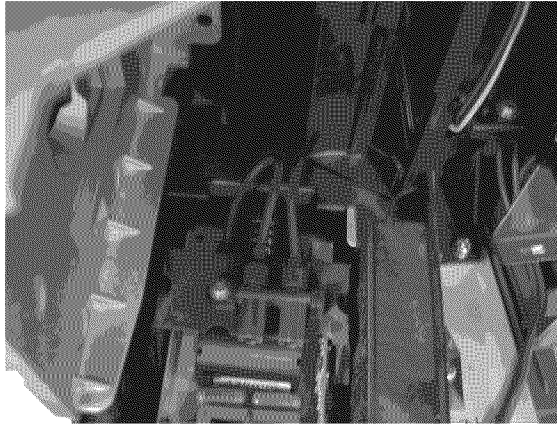
If turning the lamp on fails, the set automatically tries turning the lamp on 3 times. If all attempts fail, all LED's on the front panel will blink. Check the lamp and the ballast and replace them, if necessary.

6-3 Troubleshooting Procedures by ASS'Y

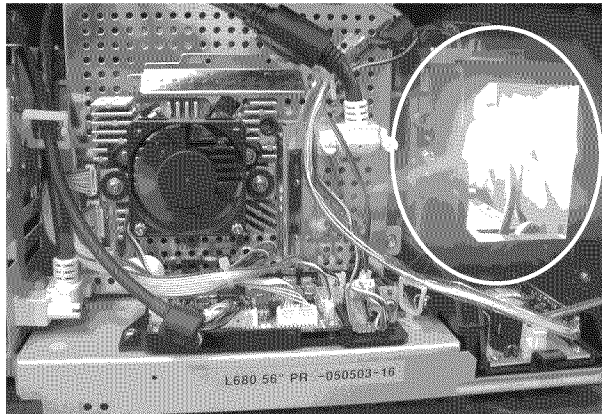
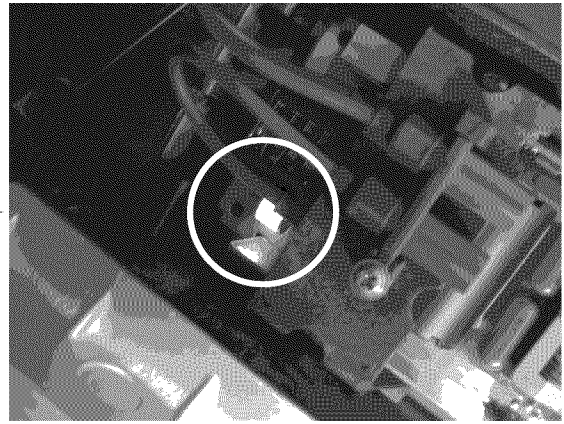
6-3-1 Check Lamp & Ballast

1. When the lamp is not on, check if there is anything wrong with the ballast.

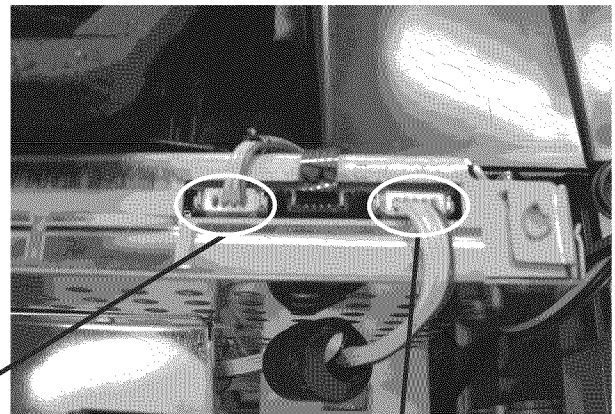
Remove the lamp. Fix the safety switch on the right with tape and turn on the power. Check to see if a blue flame starts igniting in the arc gap inside the ballast momentarily during start-up. There is no problem with the ballast if there is a flame. When the ballast has no error, replace the lamp.



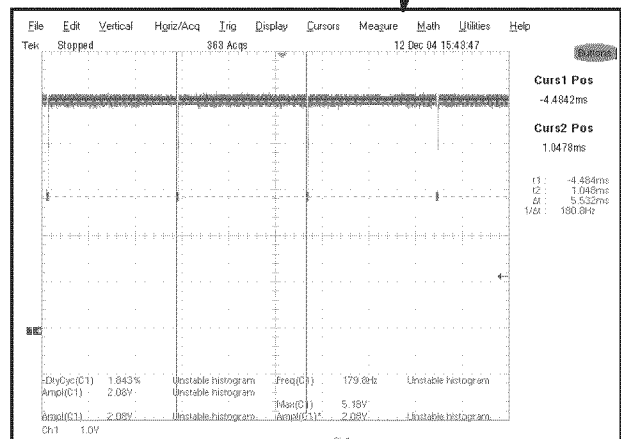
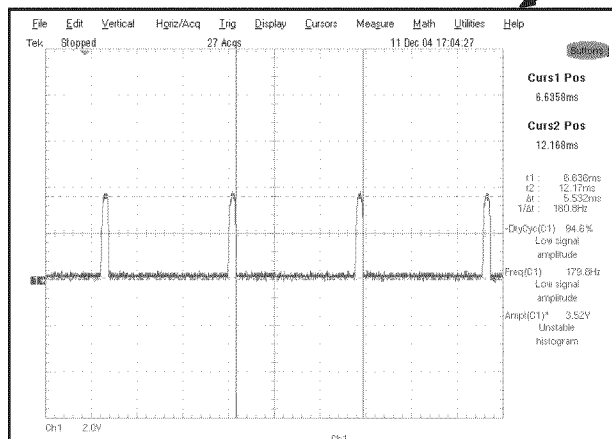
A blue flame occurs momentarily during start-up.



3.5V 180Hz

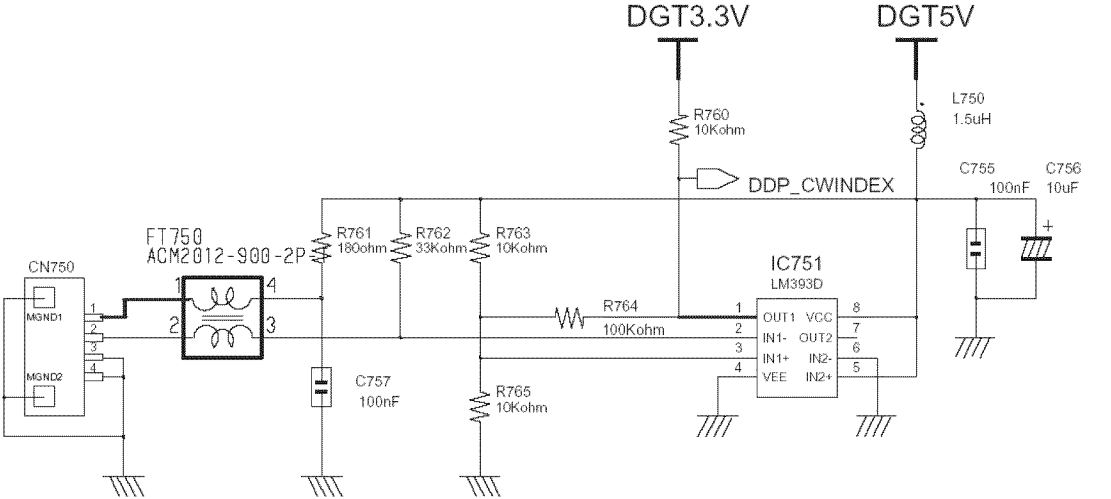


5V 180Hz

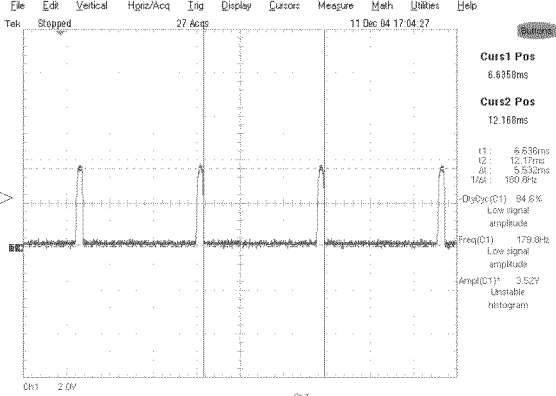
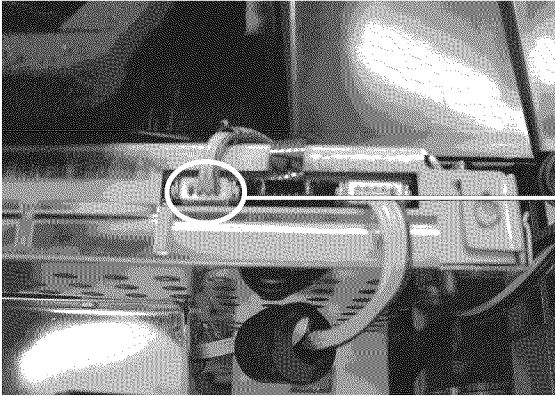


6-3-2 When the lamp and the ballast are normal but the lamp does not turn on or turns off right after quickly lighting up

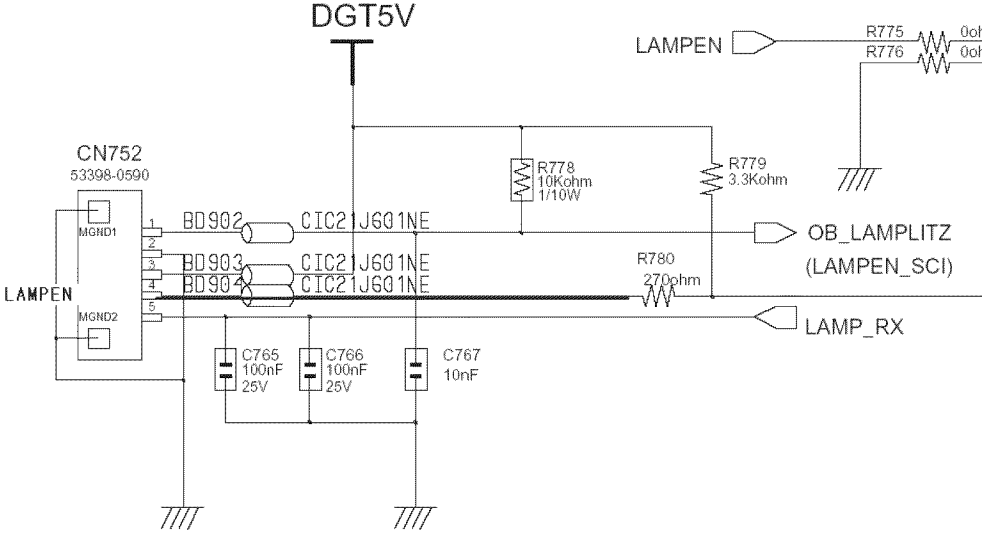
1. Check the color wheel
 Check if the color wheel is running. + Check the DMD board and the ballast for the signals.
 Check the second CN503 pin for input signals. When 3.5V, 180Hz is output, the color wheel is operating normally.



3.5V 180Hz

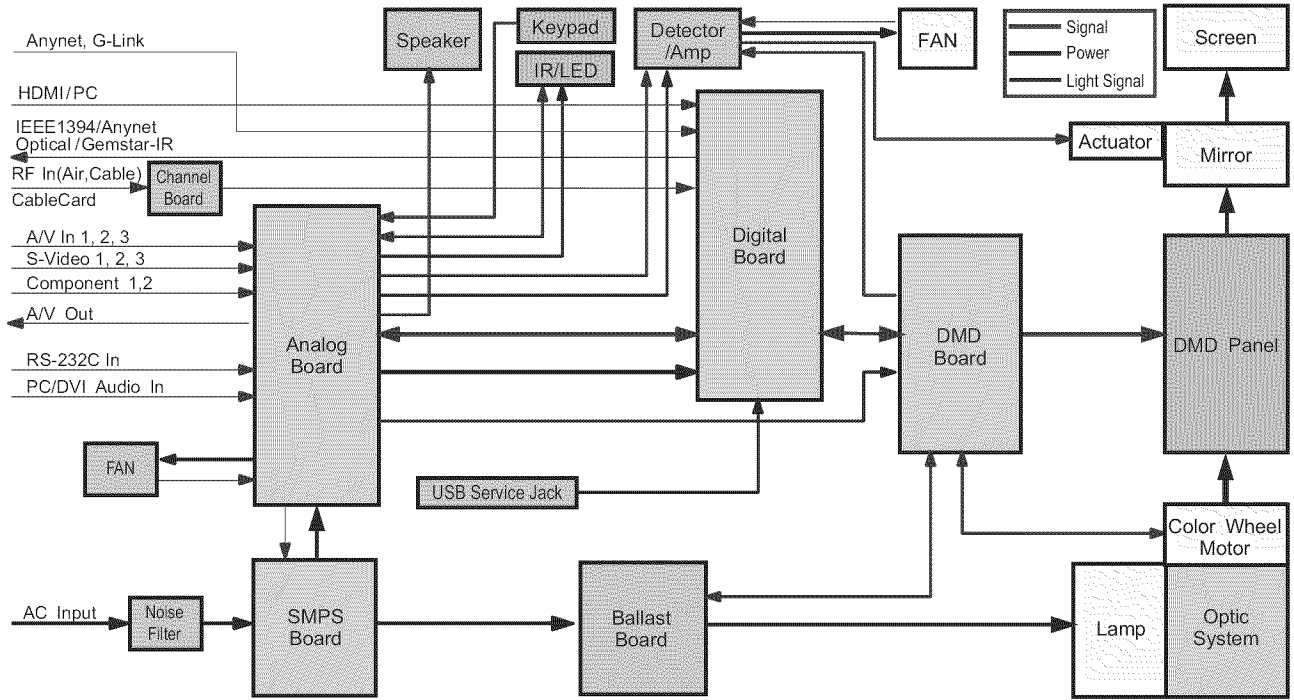


※ DMD Board Check Diagram



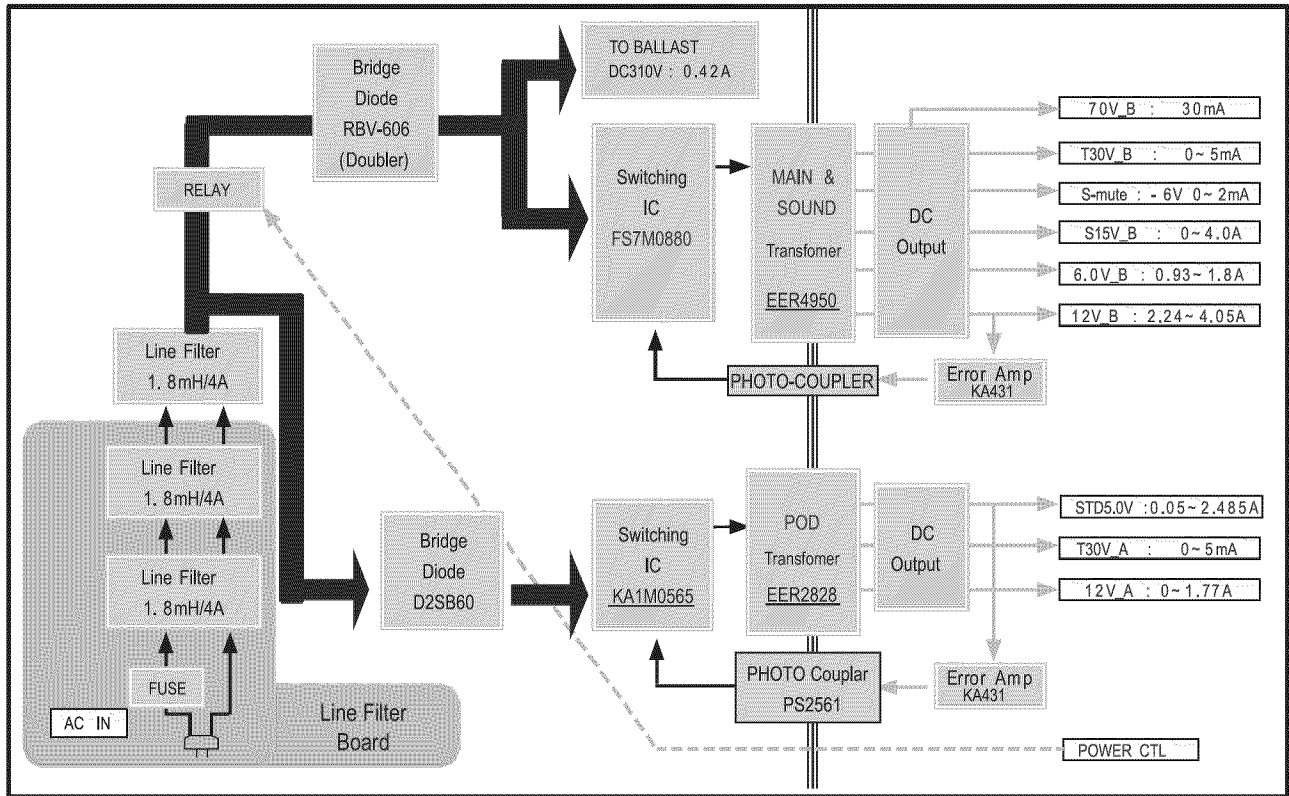
7. Block Diagram

7-1 Overall Block Diagram

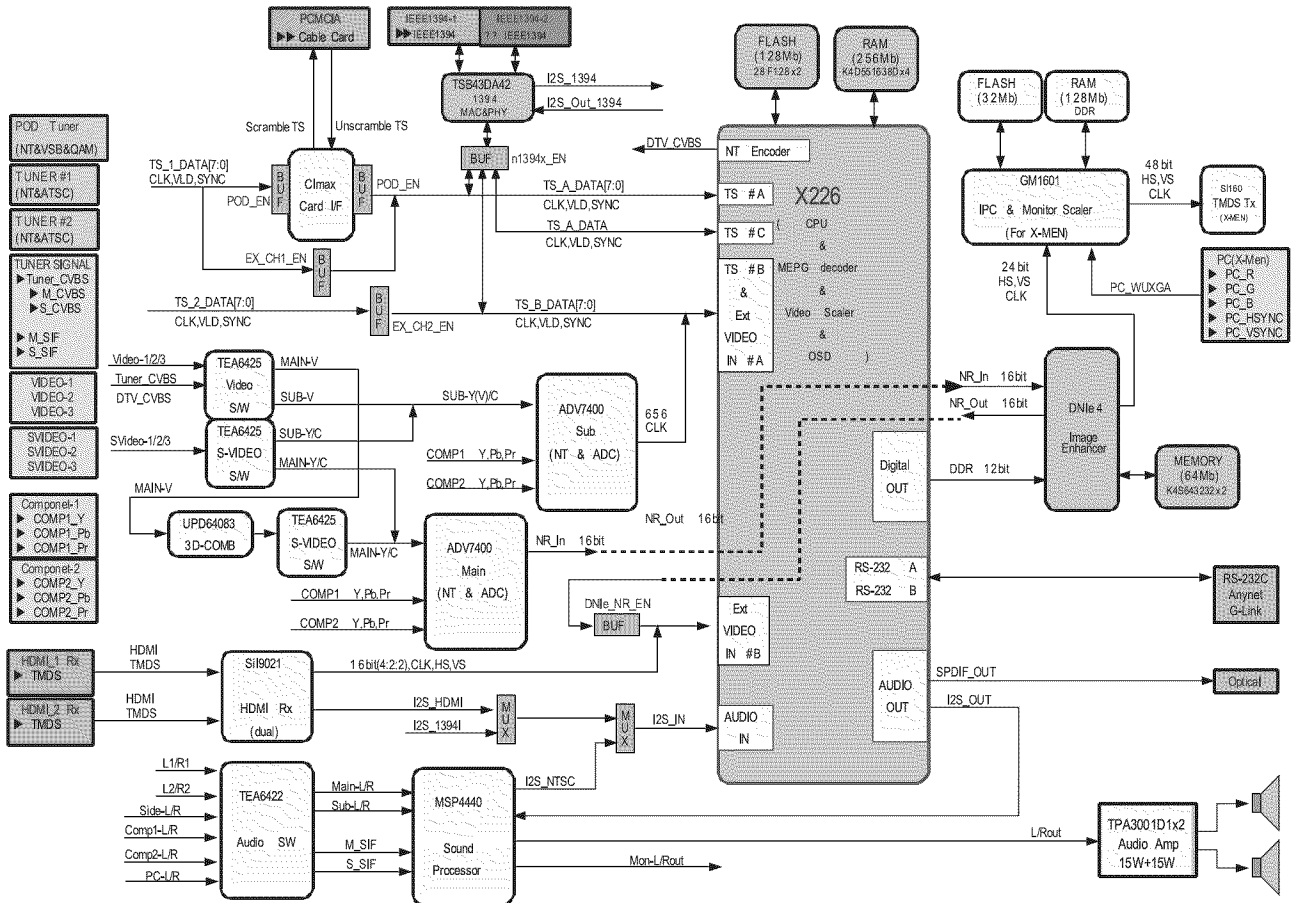


7-2 Partial Block Diagram

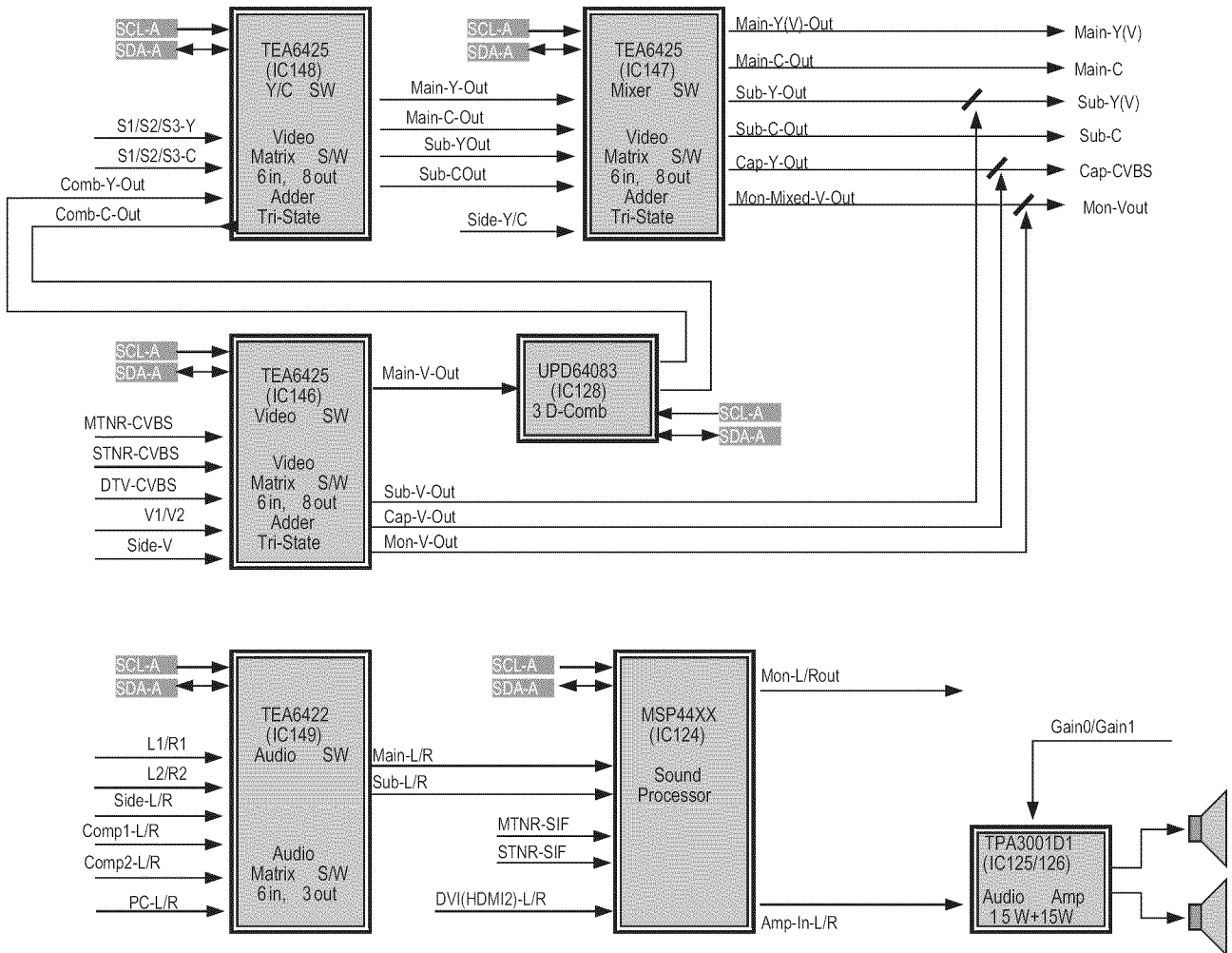
7-2-1 Power Board Block Diagram



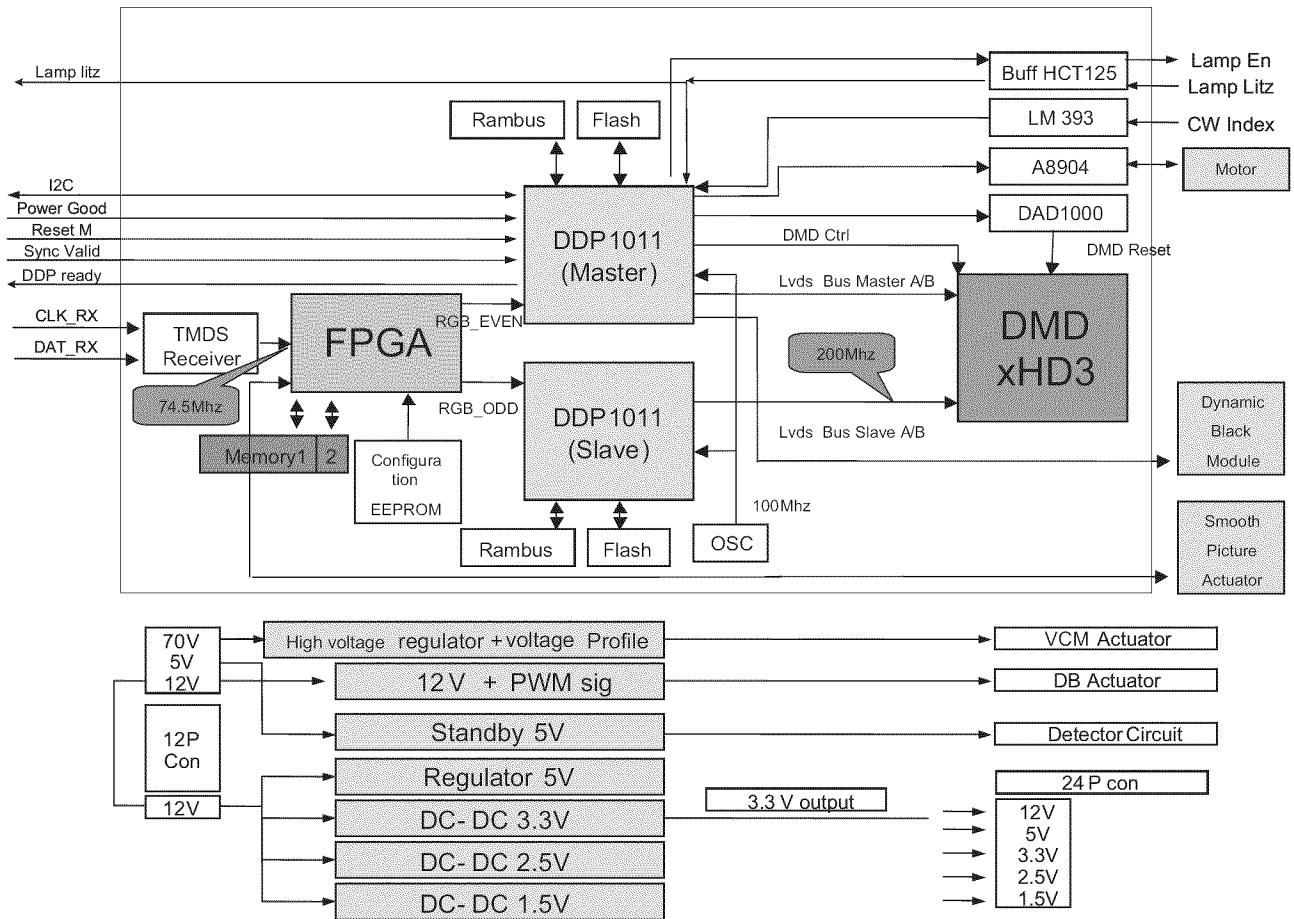
7-2-2 Digital Board Block Diagram

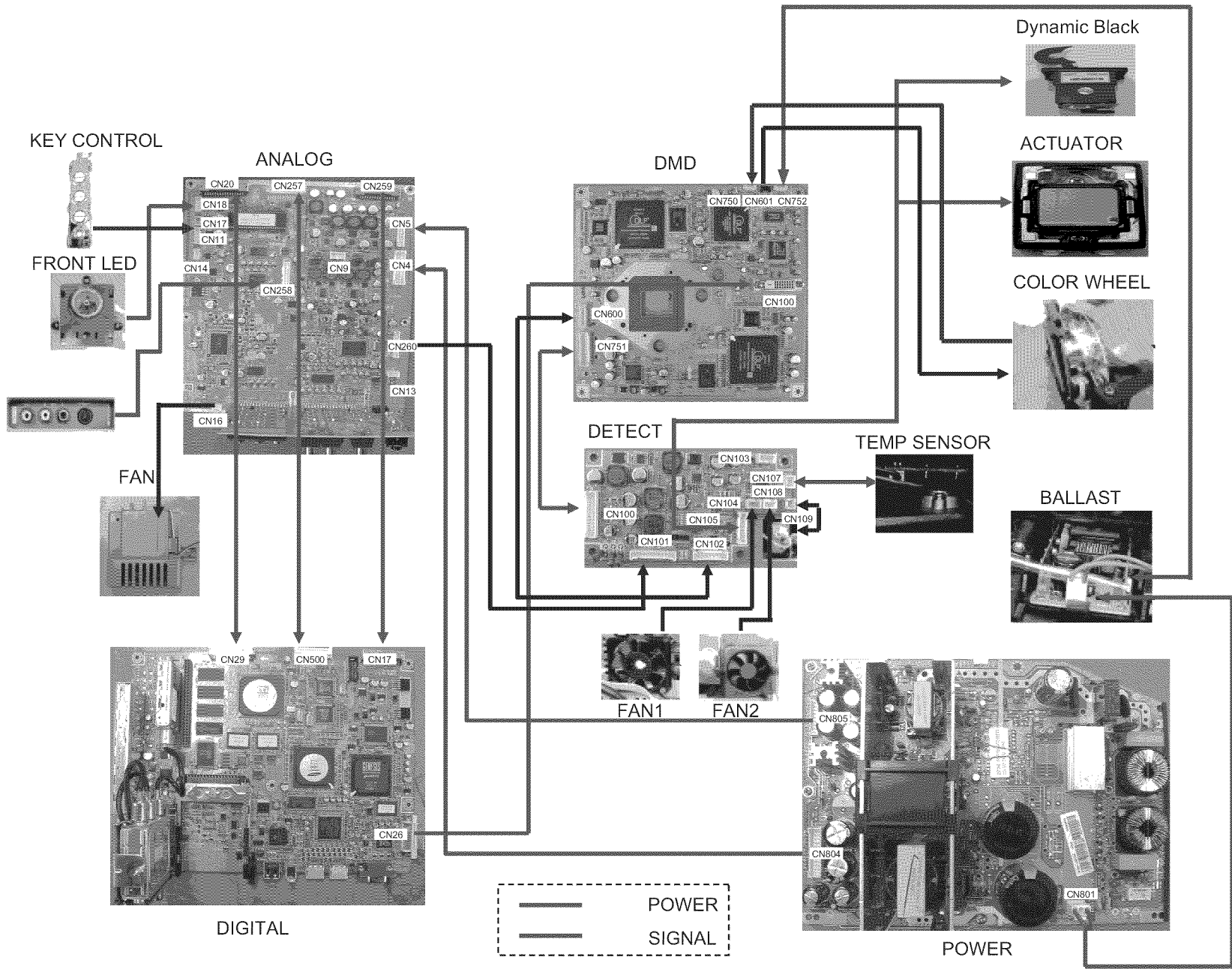


7-2-3 Analog Board Block Diagram



7-2-4 DMD Board Block Diagram





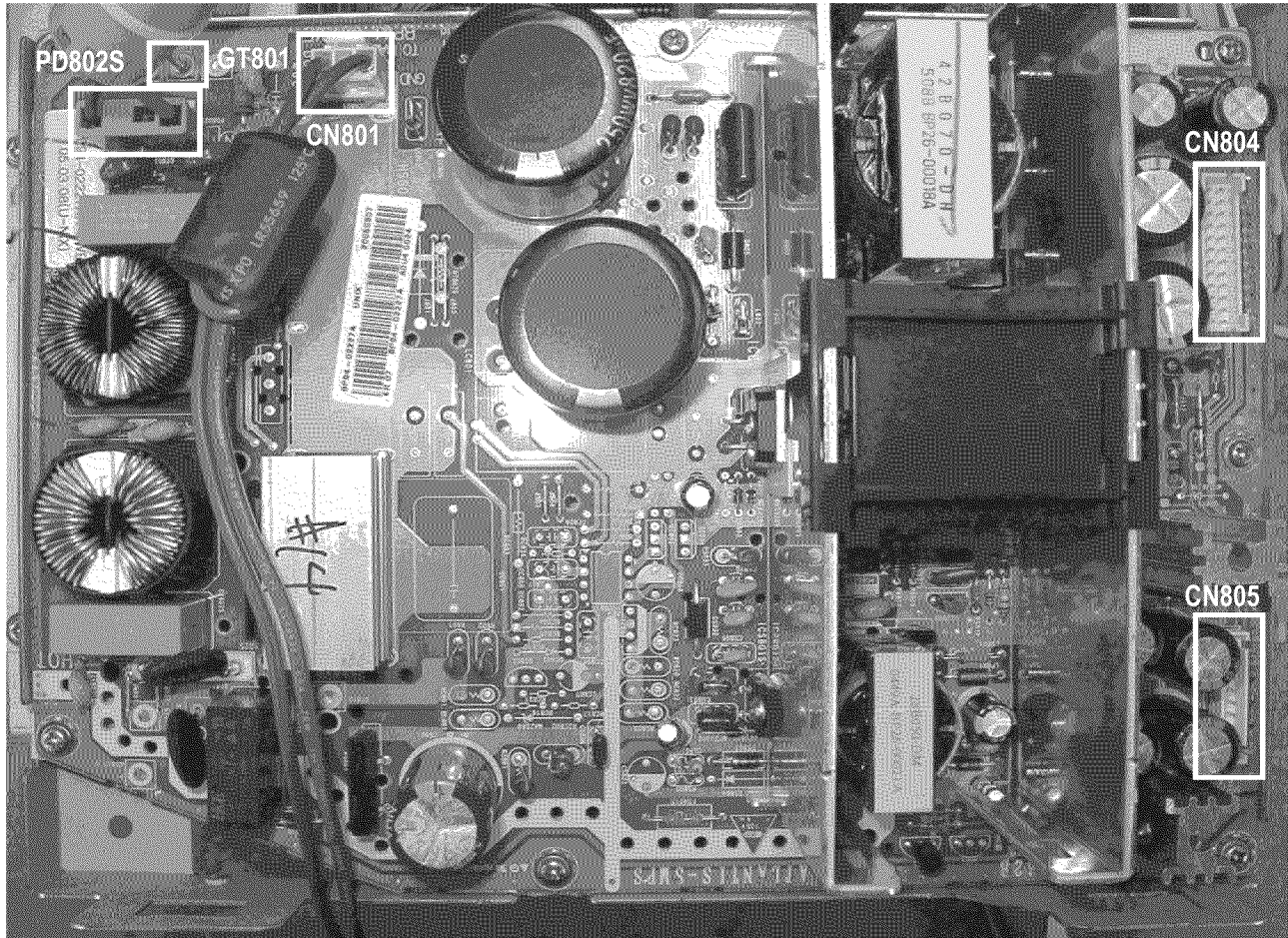
8-1 Overall Wiring

8. Wiring Diagram

9. PCB Diagram

9-1 Power Board

9-1-1 Assy Power Board



■ DC Power Supply

(Supplies DC power to the analog PCB. The analog board is responsible for the power supply to the digital/DMD board.)

9-1-2 Names & Roles of Key Parts

- * CN801 : Supplies power (DC220-400v) to the ballast
- * GT801 : Anti-lightning wire connected to the digital board. The anti-lightning wire should be installed for safety purposes.
- * PD802S : Inlet type of terminal that is connected to the AC power cable.

9-1-3 Power Board Connector Pin

CN805

Connecting Power to Analog Board

Pin No.	Pin Name
1	STD 5V
2	GND
3	STD 5V
4	GND
5	12VA
6	GND
7	12VA
8	GND
9	33VA
10	POD-SW

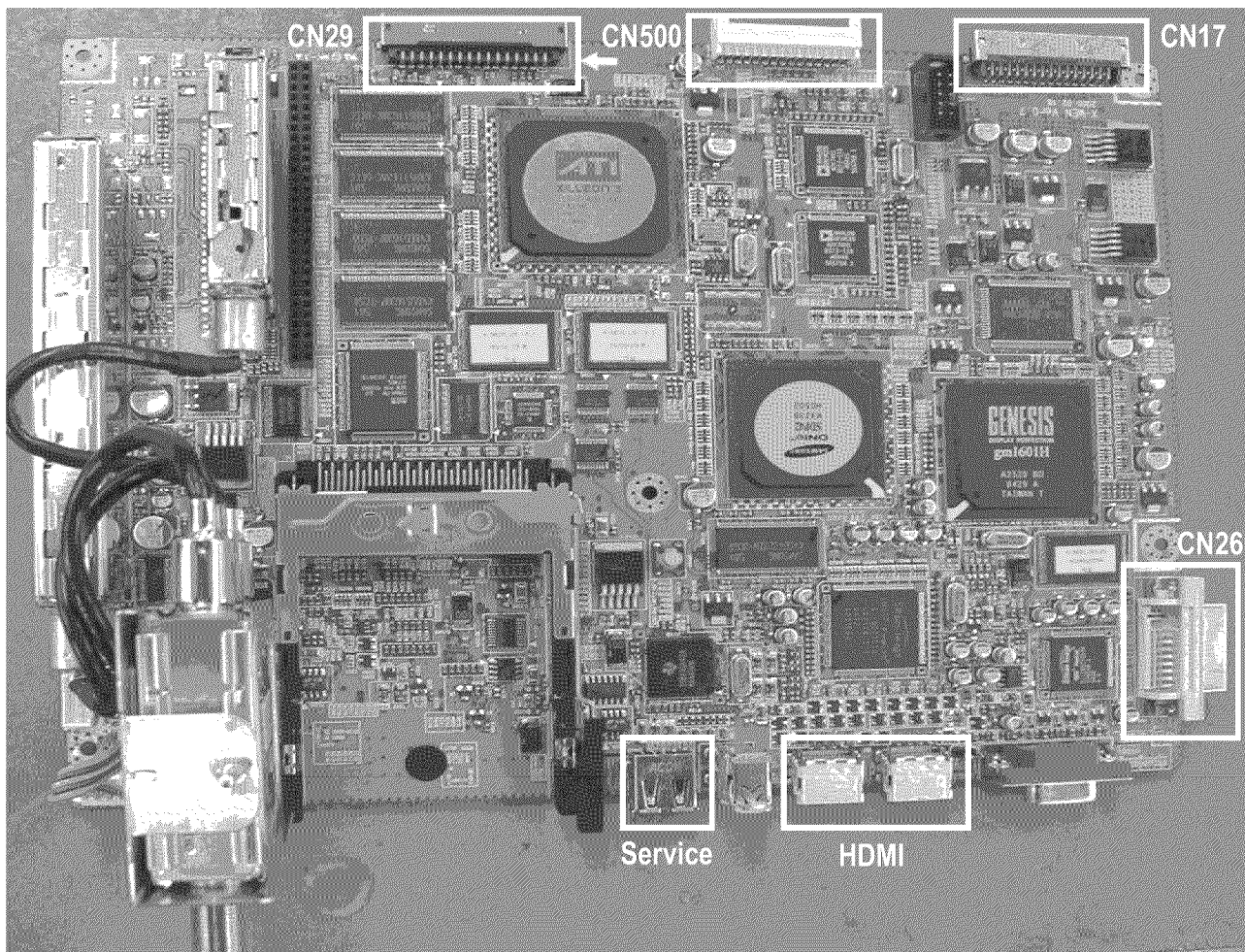
CN804

Connecting Power to Analog Board

Pin Name	PIN No.		Pin Name
STD 5V	1	2	S-MUTE
GND	3	4	S14.5V
33V	5	6	GND
GND	7	8	S14.5V
POWER-SW	9	10	GND
5.5VB	11	12	5.5VB
GND	13	14	GND
12VB	15	16	12VB
GND	17	18	GND
12VB	19	20	12VB
GND	21	22	GND
GND	23	24	80VB

9-2 Digital Board

9-2-1 Assy Digital Board



- All Digital Video Processing
- OSD / Menu
- Reset Switch (Reset to the CPU)
- Connected with POD channel Board.

9-2-2 Names & Roles of Key Parts

* CableCard :

CableCARD is a nationwide standard system that allows your local cable TV provider to supply you with an access card customized to your account. This card allows the TV to receive, decode and unscramble the premium digital channels included in your cable TV subscription without the use of a cable box.

* High Definition Multimedia Interface :

The HDMI™ (High Definition Multimedia Interface) supports uncompressed standard and high definition digital video formats and existing digital multi-channel audio formats.

* G-Link :

This jack is used by the TV Guide On screen system of the TV to control external analog devices such as VCRs, cable boxes, satellite receivers.

* D-Net(IEEE1394) :

These jacks allow the TV to connect to external IEEE 1394 digital products by means of a single cable.

9-2-3 Digital Board Connector Pin

CN17

Pin Name (Built-In)	PIN No.		Pin Name (Built-In)
MD2.3V	1	2	B33V
GND	3	4	GND
MD2.3V	5	6	MD2.3V
GND	7	8	GND
D2.5V	9	10	D2.5V
GND	11	12	GND
D4.7V	13	14	D2.5V
GND	15	16	GND
D4.7V	17	18	D4.7V
GND	19	20	GND
MD5.7V	21	22	MD5.7V
GND	23	24	GND
5VA	25	26	5VA
GND	27	28	GND
D5.7V	29	30	MD9V

CN500

Pin Name (Built-In)	PIN No.		Pin Name (Built-In)
MAIN_Y	1	2	GND
MAIN_C	3	4	GND
SUB_Y_V	5	6	GND
SUB_C	7	8	GND
COMP1_Y	9	10	GND
COMP1_Pb	11	12	GND
COMP1_Pr	13	14	GND
COMP2_Y	15	16	GND
COMP2_Pb	17	18	GND
COMP2_Pr	19	20	GND
MTNR_CVBS	21	22	GND
MTNR_SIF	23	24	GND
STNR_CVBS	25	26	GND
STNR_SIF	27	28	GND
DTV_CVBS	29	30	GND

CN29

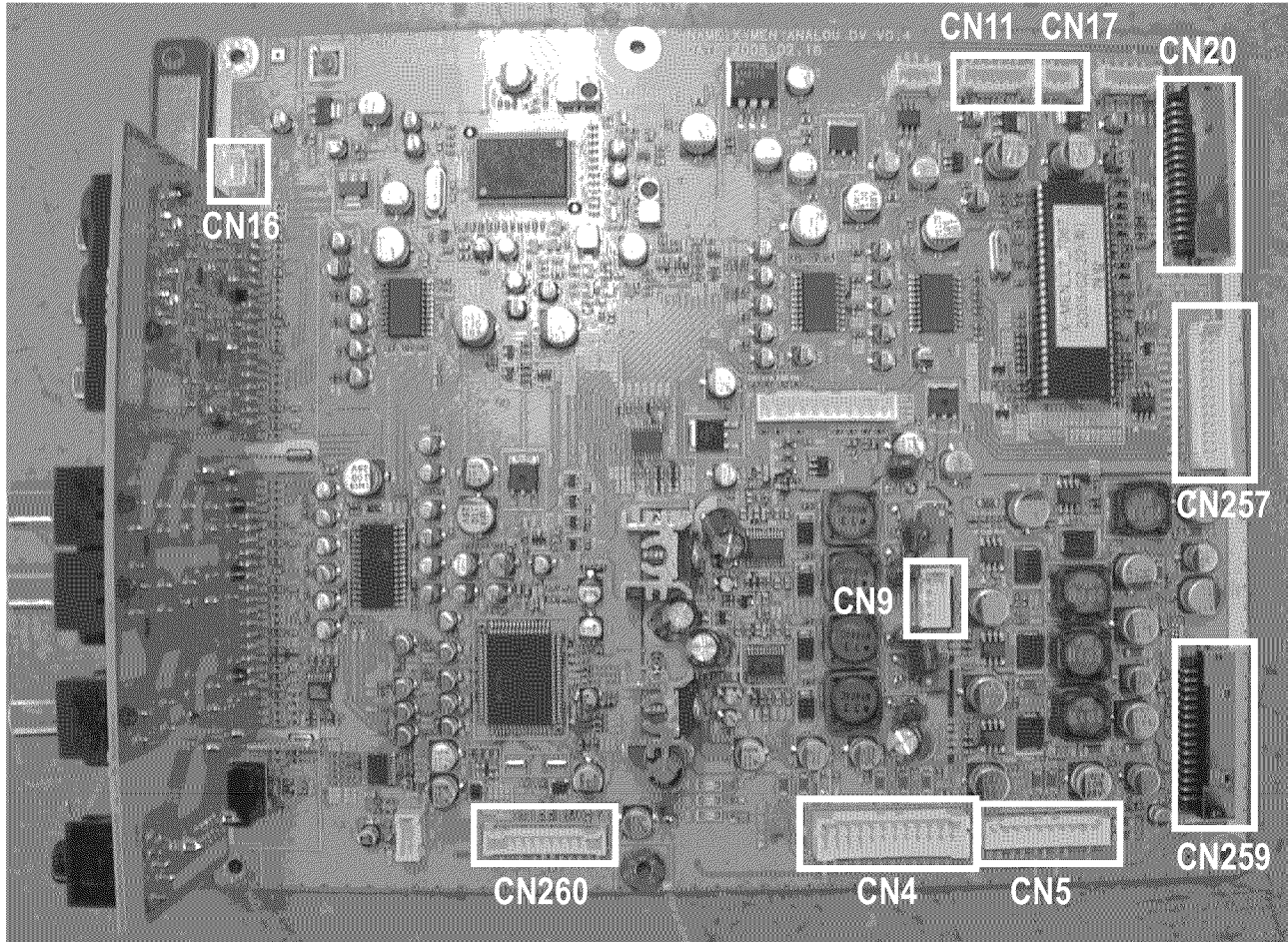
Pin Name (Built-In)	PIN No.		Pin Name (Built-In)
RS232_TxD	1	2	MICOM_TxD
RS232_RxD	3	4	MICOM_RxD
GND	5	6	GND
ANYNET_TxD	7	8	SDA_A
ANYNET_RxD	9	10	SCL_A
GND	11	12	GND
SPDIF_ATI	13	14	nRESET_S
GND	15	16	nRESET_ANALOG
I2S_CLK_NTSC	17	18	LAMP_ERROR
GND	19	20	DDP_READY
I2S_DATA_NTSC	21	22	PWRGOOD
I2S_WS_NTSC	23	24	GND
I2S_CLK_ATI	25	26	nDEBUG_EN
GND	27	28	nRESET_CPU
I2S_DATA_ATI	29	30	nRESET_DRV
I2S_WS_ATI	31	32	DLP_SYNCVAL

CN26

PIN No.	Pin Name	PIN No.	Pin Name	PIN No.	Pin Name
1	TMDS_TX0+	9	TMDS_TX1+	17	TMDS_TX2+
2	TMDS_TX0-	10	TMDS_TX1-	18	TMDS_TX2-
3	GND	11	GND	19	GND
4	TMDS_TXC+	12	NC	20	SYNCVAL
5	TMDS_TXC-	13	NC	21	nRESET_DRV
6	SCL_PANEL	14	NC	22	GND
7	SDA_PANEL	15	LAMP_TXn_1	23	DDP_READY
8	NC	16	LAMP_RX	24	POWERGOOD

9-3 Analog Board

9-3-1 Assy Analog Board



- Distributes supply voltage from the Power Board to Digital Board and DMD Board.
- Transfers Turn-on Command to Digital and Power Board.
- Encompasses the majority of the Audio Circuit
- Analog Video Switching / Processing
- Analog Audio Switching / Processing
- 3D Comb Processing

9-3-2 Names & Roles of Key Parts

- * CN260 : Connected to the detect board
- * CN4, CN5 : Connected to the power board - receives the second power source generated on the power board.
- * CN259 : Sends the power source from the analog to the digital board.
- * CN20 : This is a control signal terminal that connects between the analog and digital boards.
- * CN257 : This is an AV signal terminal that connects between the analog and digital boards.

9-3-3 Analog Board Connector Pin

CN259

Pin Name (Built-In)	PIN No.		Pin Name (Built-In)
MD2.3V	1	2	B33V
GND	3	4	GND
MD2.3V	5	6	MD2.3V
GND	7	8	GND
D2.5V	9	10	D2.5V
GND	11	12	GND
D4.7V	13	14	D2.5V
GND	15	16	GND
D4.7V	17	18	D4.7V
GND	19	20	GND
MD5.7V	21	22	MD5.7V
GND	23	24	GND
5VA	25	26	5VA
GND	27	28	GND
D5.7V	29	30	MD9V

CN257

Pin Name (Built-In)	PIN No.		Pin Name (Built-In)
MAIN_Y	1	2	GND
MAIN_C	3	4	GND
SUB_Y_V	5	6	GND
SUB_C	7	8	GND
COMP1_Y	9	10	GND
COMP1_Pb	11	12	GND
COMP1_Pr	13	14	GND
COMP2_Y	15	16	GND
COMP2_Pb	17	18	GND
COMP2_Pr	19	20	GND
MTNR_CVBS	21	22	GND
MTNR_SIF	23	24	GND
STNR_CVBS	25	26	GND
STNR_SIF	27	28	GND
DTV_CVBS	29	30	GND

CN20

Pin Name (Built-In)	PIN No.		Pin Name (Built-In)
RS232_TxD	1	2	MICOM_TxD
RS232_RxD	3	4	MICOM_RxD
GND	5	6	GND
ANYNET_TxD	7	8	SDA_A
ANYNET_RxD	9	10	SCL_A
GND	11	12	GND
SPDIF_ATI	13	14	nRESET_S
GND	15	16	nRESET_ANALOG
I2S_CLK_NTSC	17	18	LAMP_ERROR
GND	19	20	DDP_READY
I2S_DATA_NTSC	21	22	PWRGOOD
I2S_WS_NTSC	23	24	GND
I2S_CLK_ATI	25	26	nDEBUG_EN
GND	27	28	nRESET_CPU
I2S_DATA_ATI	29	30	nRESET_DRV
I2S_WS_ATI	31	32	DLP_SYNCVAL

CN4

Pin Name	PIN No.		Pin Name
5VA	1	2	POWER_MUTE
GND	3	4	S16VB
33VB	5	6	GND
GND	7	8	S16VB
POWER_SW	9	10	GND
5.7VB	11	12	5.7VB
GND	13	14	GND
12VB	15	16	12VB
GND	17	18	GND
12VB	19	20	12VB
GND	21	22	GND
GND	23	24	70VB

CN5

Pin No.	Pin Name
1	5VA
2	GND
3	5VA
4	GND
5	12VA
6	GND
7	12VA
8	GND
9	NC
10	POD_SW

CN9

Connecting and transmitting Audio signal to Speaker

Pin No.	Pin Name
1	GND
2	L-OUT
3	GND
4	L-OUT

CN11

Connecting front LED indicators

Pin No.	Pin Name
1	LED1
2	KEY1
3	KEY2
4	SDA_M1
5	SCL_M1
6	12VB
7	GND

CN16

Connecting the Power and Control Signal to the POD Fan

Pin No.	Pin Name
1	FAN_ERROR
2	GND
3	8VA_FAN

CN17

Connecting the IR signal

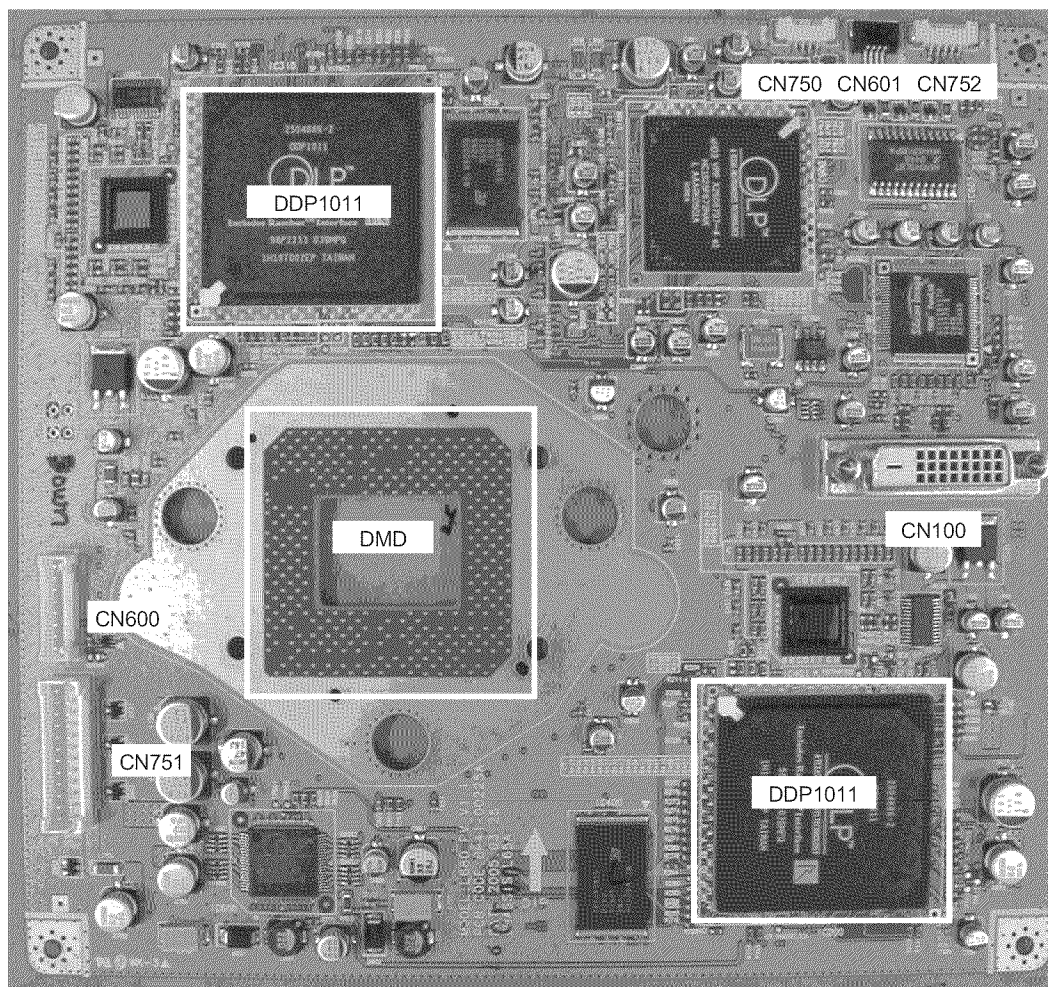
Pin No.	Pin Name
1	IR
2	GND
3	5VA

CN260

Pin No.	Pin Name
1	GND
2	GND
3	12VB
4	12VB
5	GND
6	SDA_M1
7	SCL_M1
8	GND
9	5VA
10	GND
11	70VB
12	GND

9-4 DMD Board

9-4-1 Assy DMD Board



- Controls the lamp (ON/OFF)
- Drives the color wheel motor
- Drives the panel
- Controls the sensors

9-5-2 Names & Roles of Key Parts

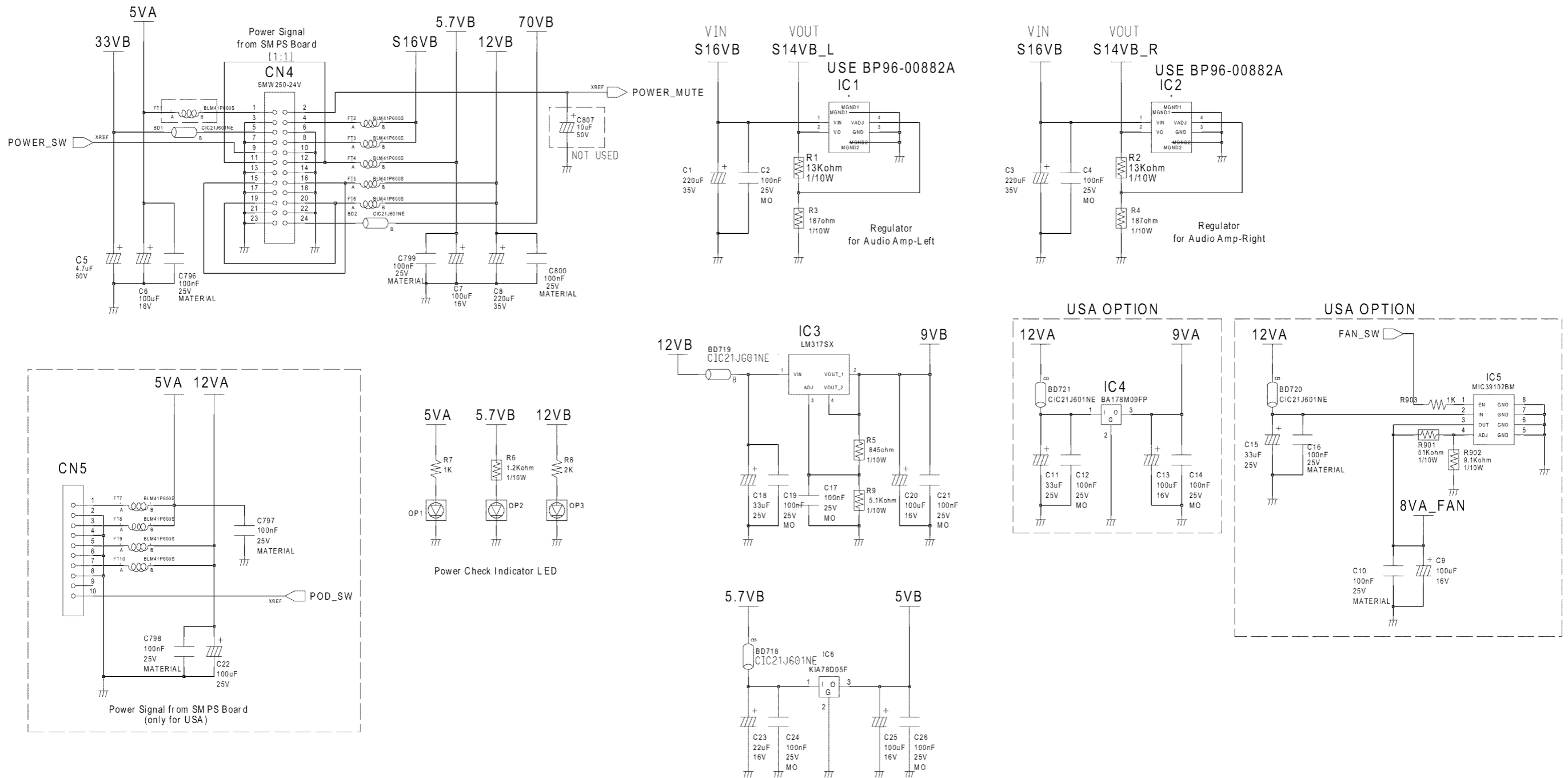
- * CN751 : This receives the power source from the detect board and communicates with the I2C.
- * CN601 : This sends a 60Hz signal to the detect board.
- * CN600 : This supplies the power to drive the color wheel.
- * CN750 : This receives the color wheel rotating signals.
- * CN752 : This sends signals to the ballast.
- * CN100 : The DVI cable terminal. This receives the image data from the digital board.
- * DMD PANEL : This is protected with a heat sink and fixtures.
- * DDP1011 : This processes the DMD drive and the signals.

10. Schematic Diagram

10-1 Analog Board

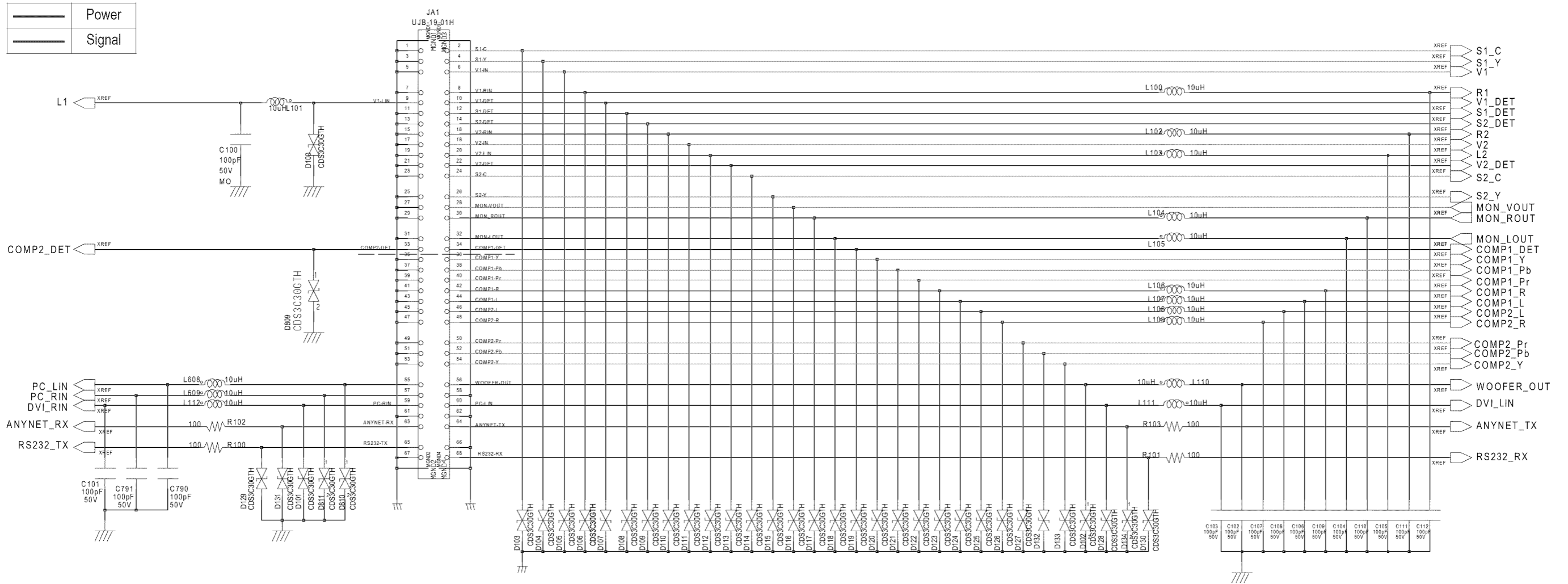
10-1-1 PowerSignal

This Document can not be used without Samsung's authorization.

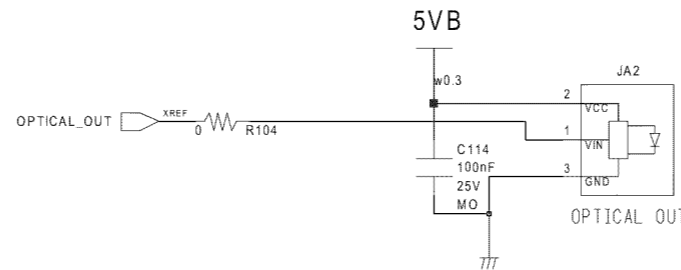
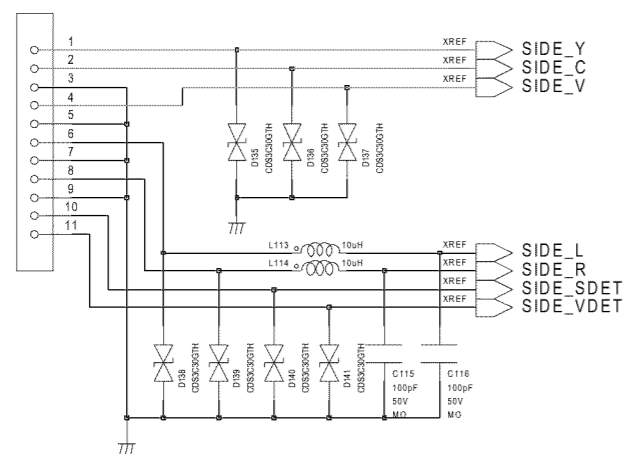


10-1-2 AV_Input

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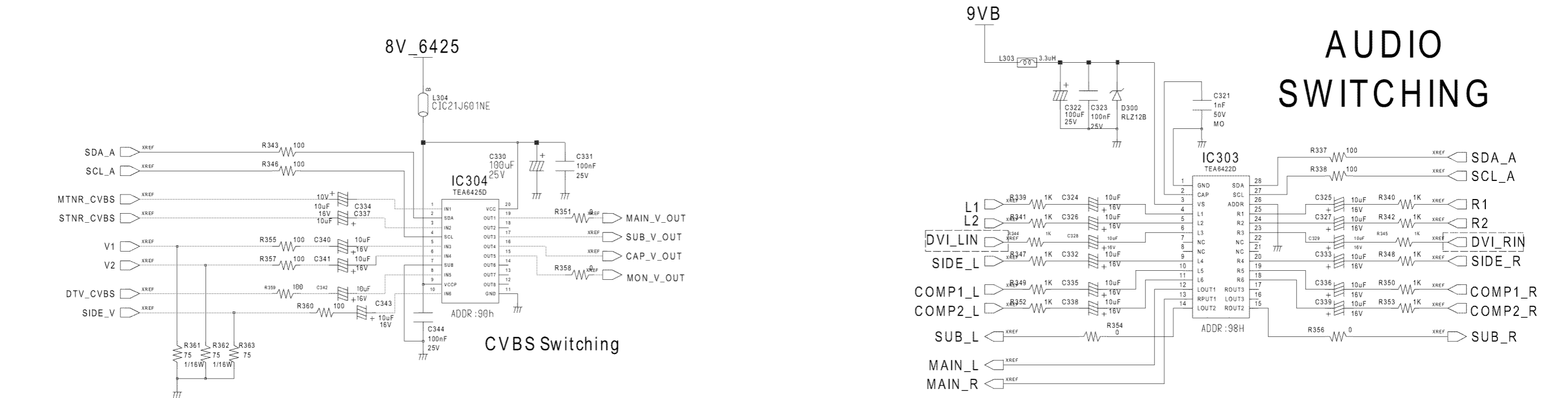
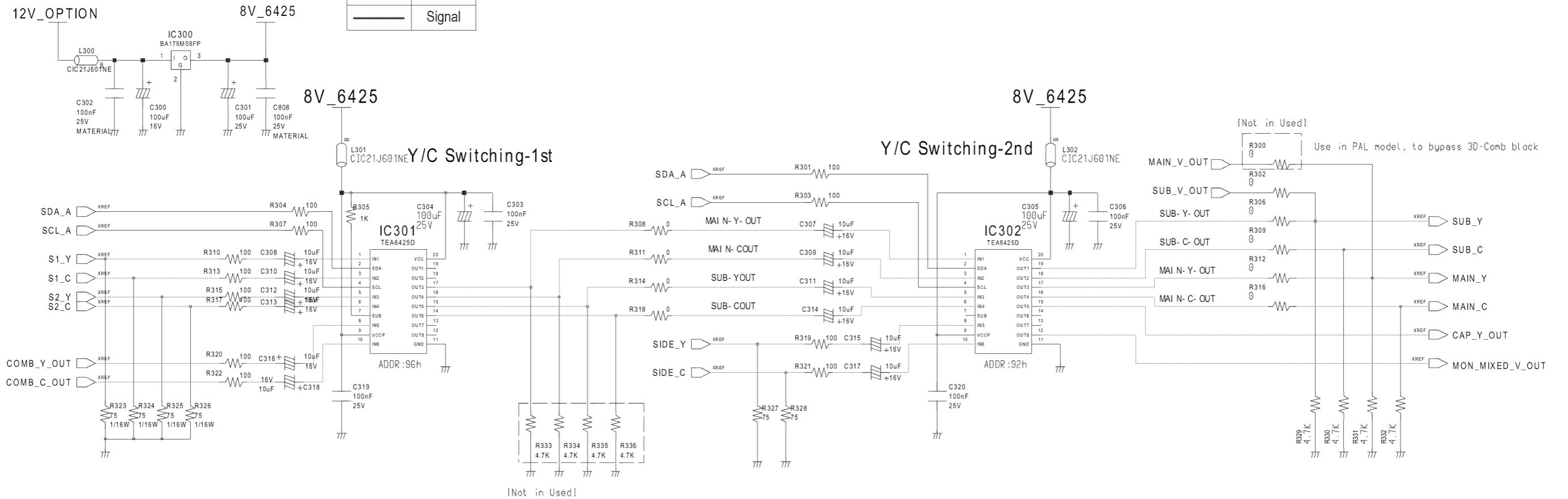
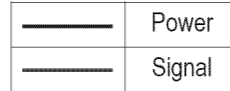


From Side AV Board Assy CN258





10-1-3 AV_Switching

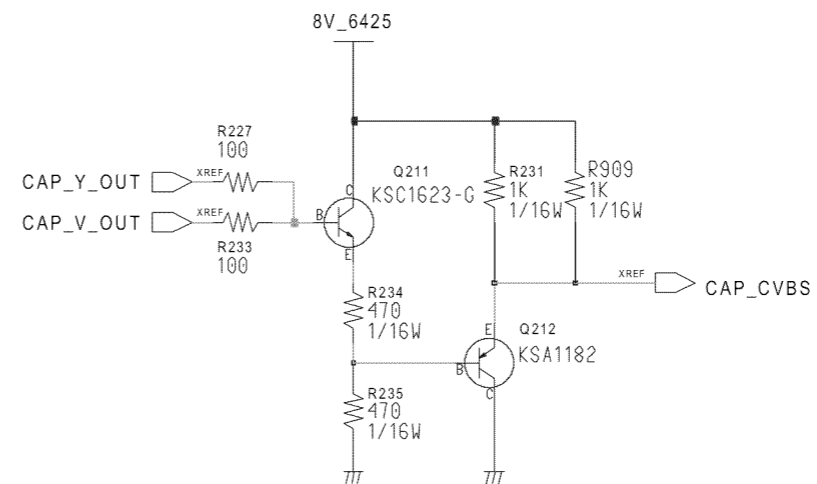
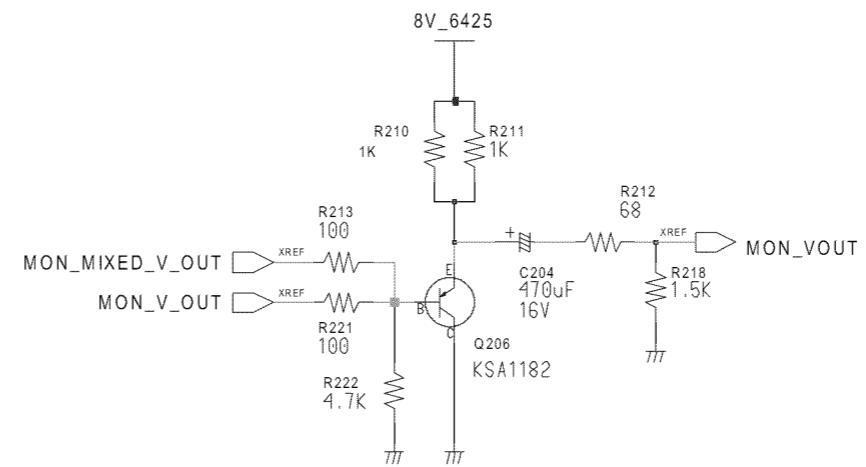
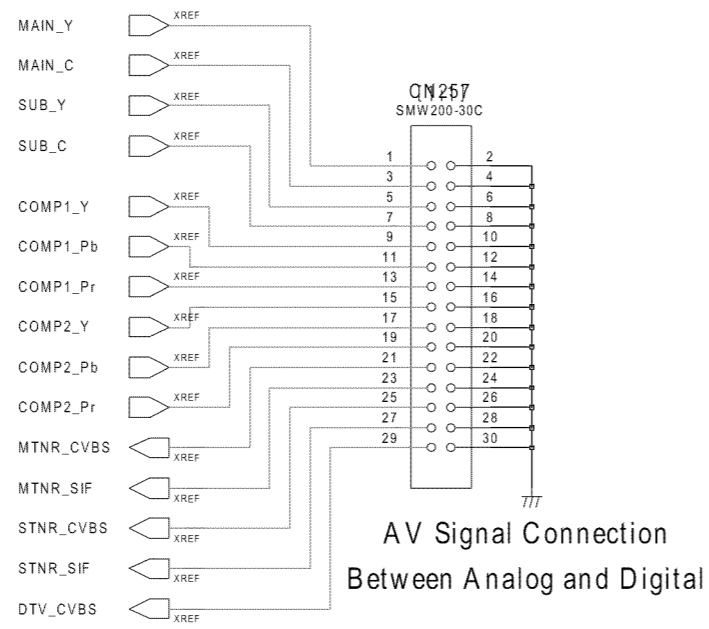
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10-1-4 Input_Buffer



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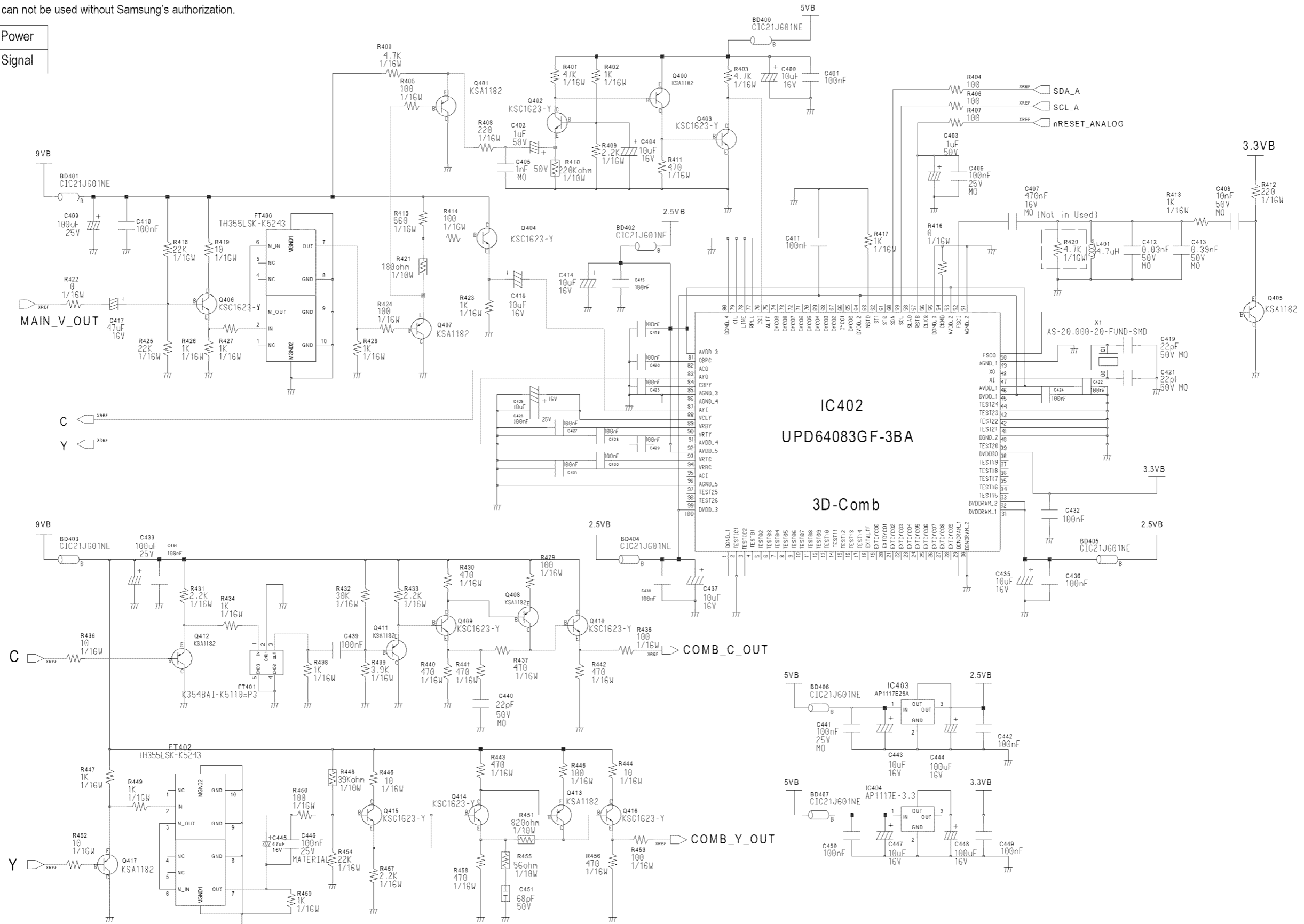
	Power
	Signal



10-1-5 3D_Comb



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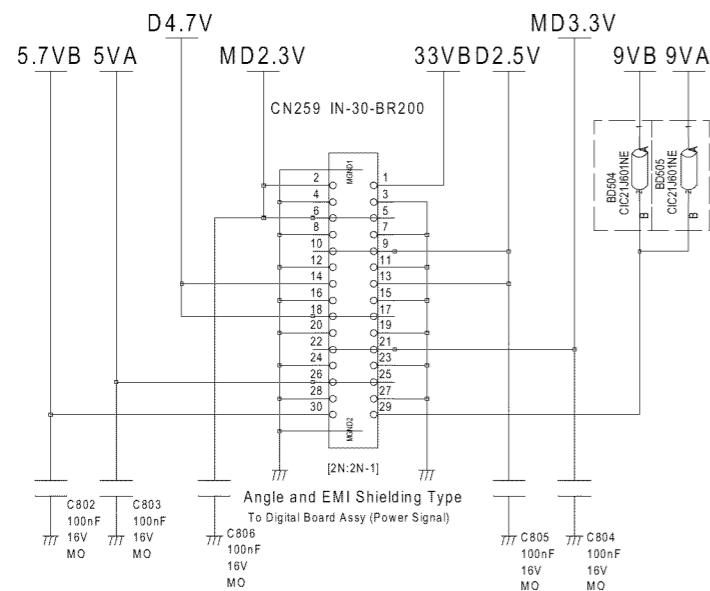
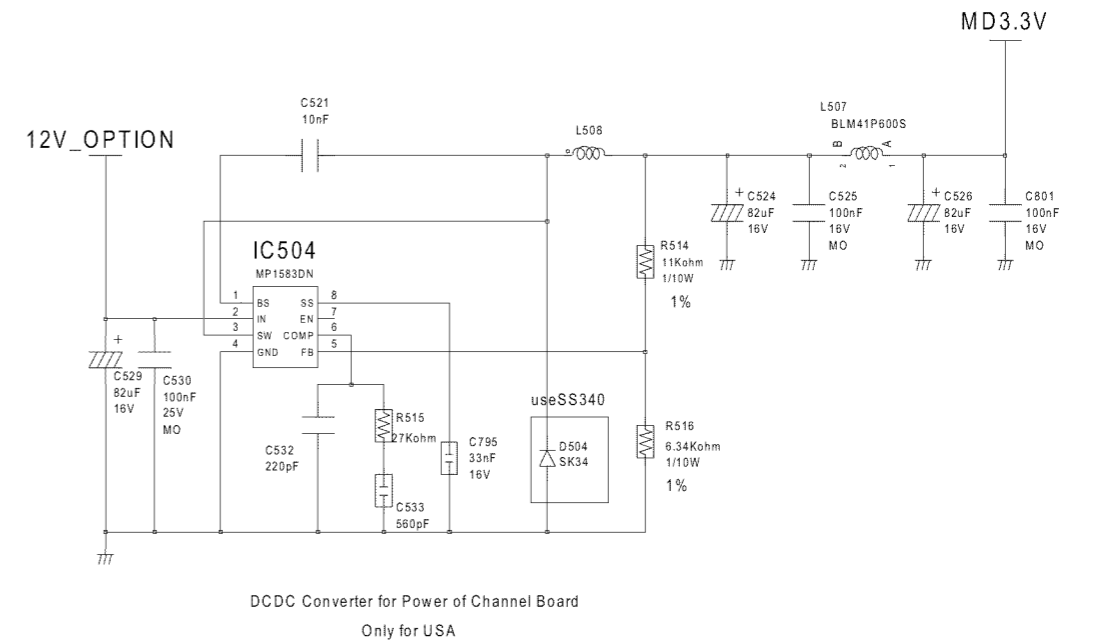
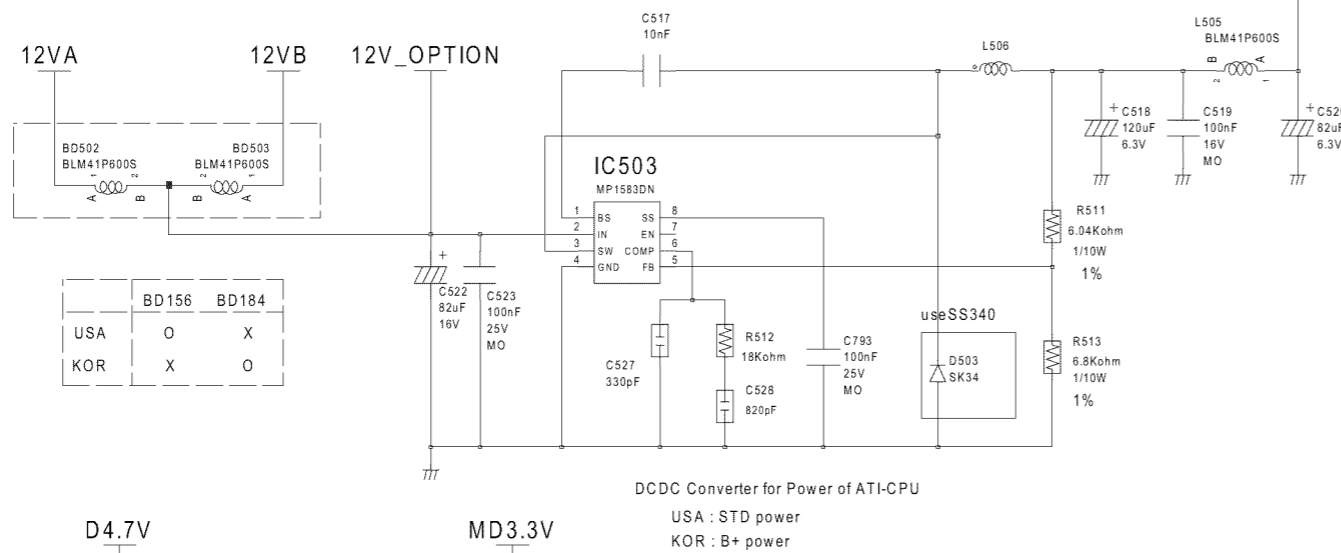
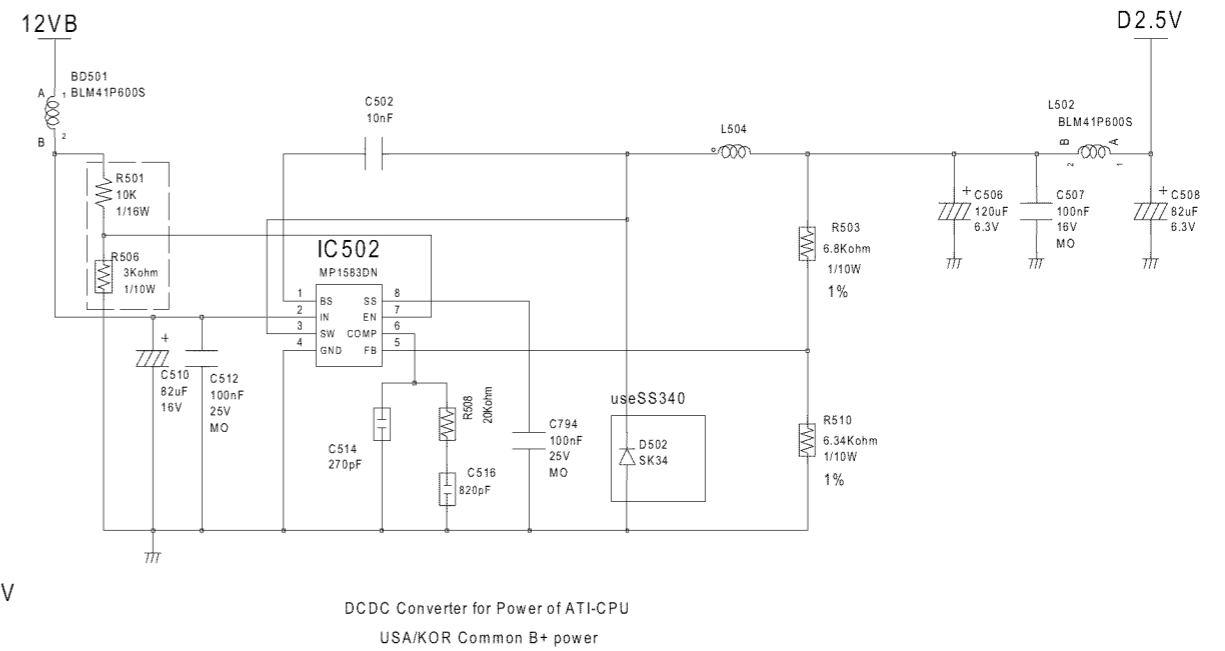
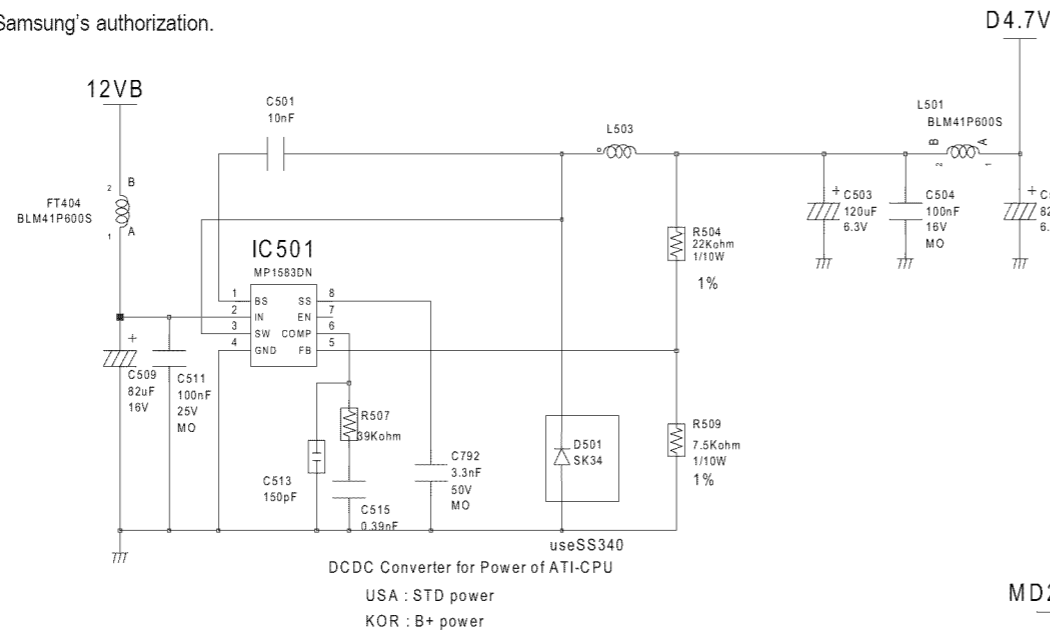
	Power
	Signal



10-1-6 DC-DC



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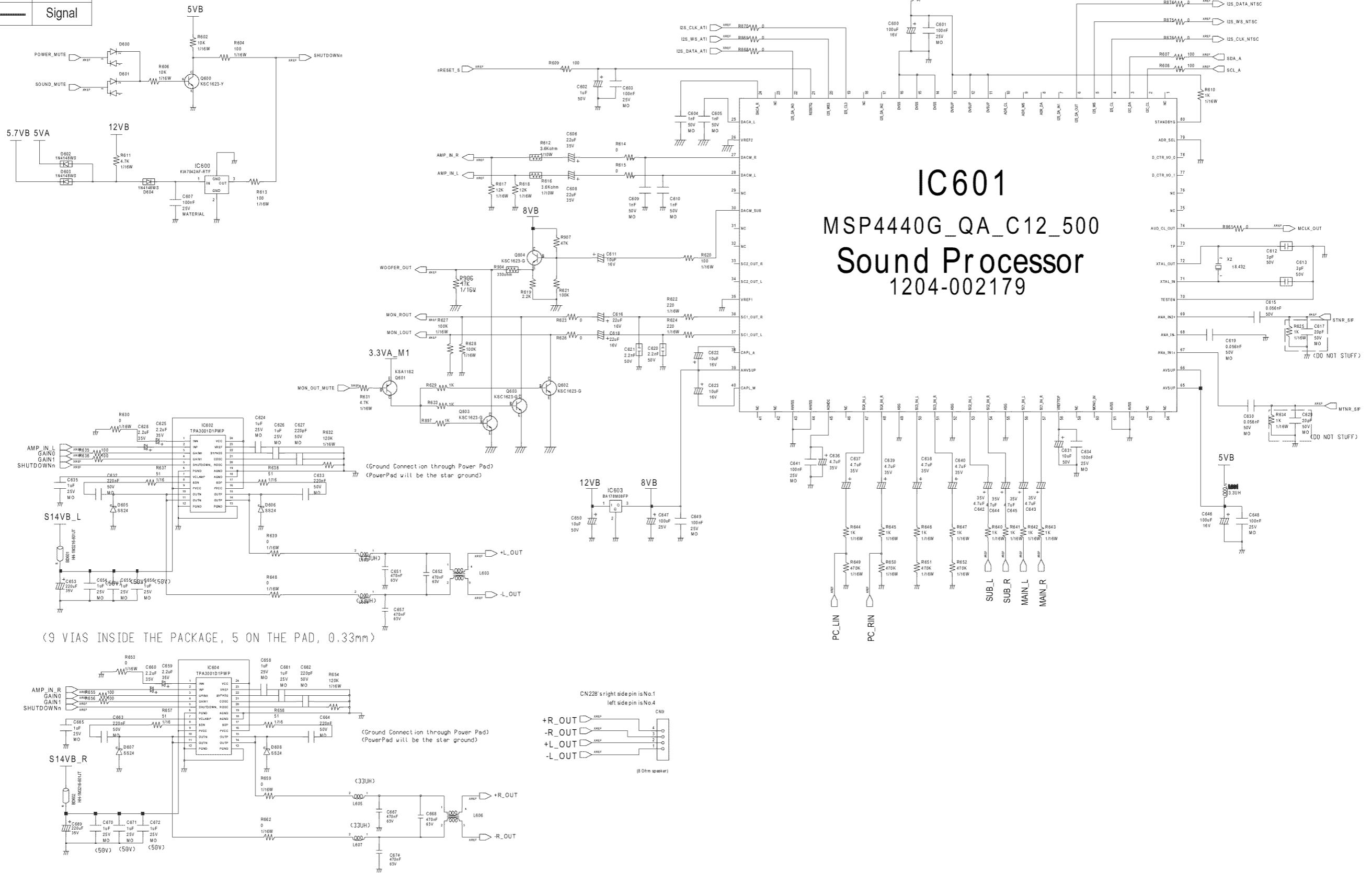
	Power
	Signal



10-1-7 Sound Processor/Amp

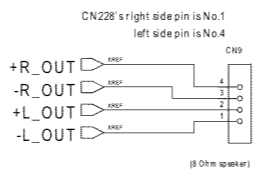
This Document can not be used without Samsung's authorization.

	Power
	Signal



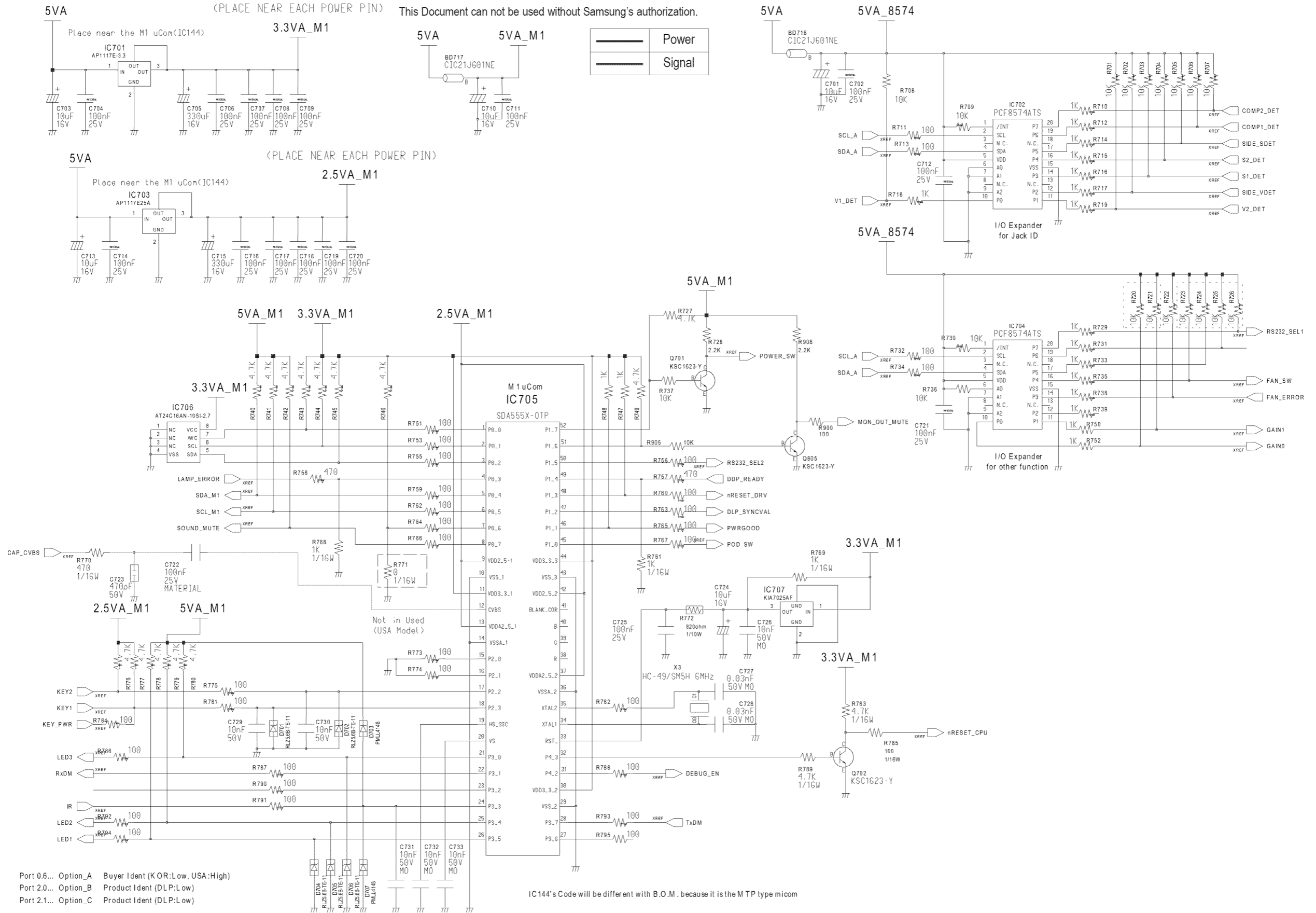
IC601
MSP4440G_QA_C12_500
Sound Processor
1204-002179

(9 VIAS INSIDE THE PACKAGE, 5 ON THE PAD, 0.33mm)



10-1-8 M1_PCF8574_UART

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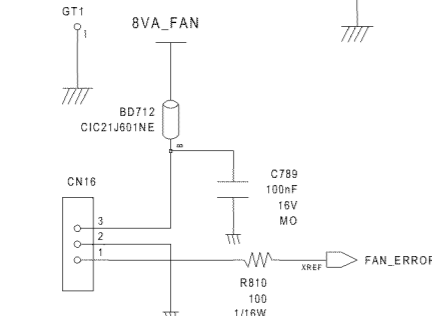
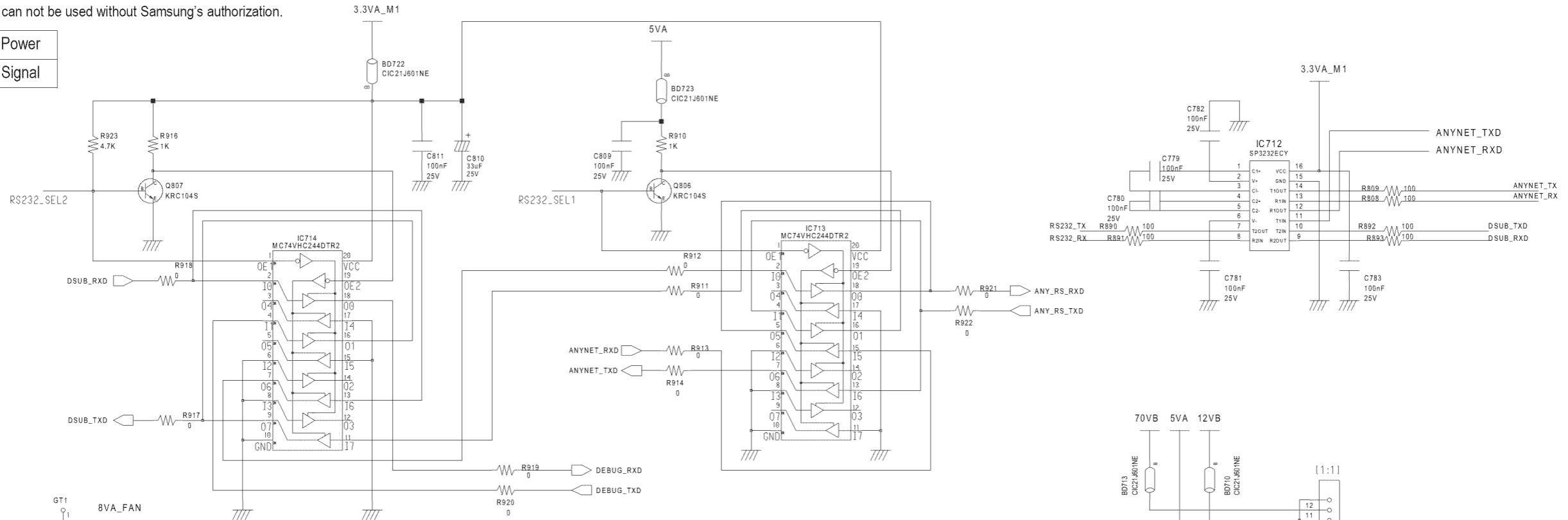
Port 0.6... Option_A Buyer Ident (KOR:Low, USA:High)
 Port 2.0... Option_B Product Ident (DLP:Low)
 Port 2.1... Option_C Product Ident (DLP:Low)

IC144's Code will be different with B.O.M. because it is the M TP type micom

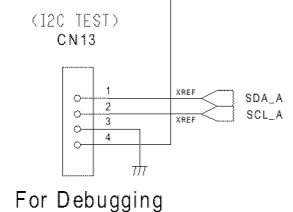
10-1-9 Signal Connection

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	Power
	Signal



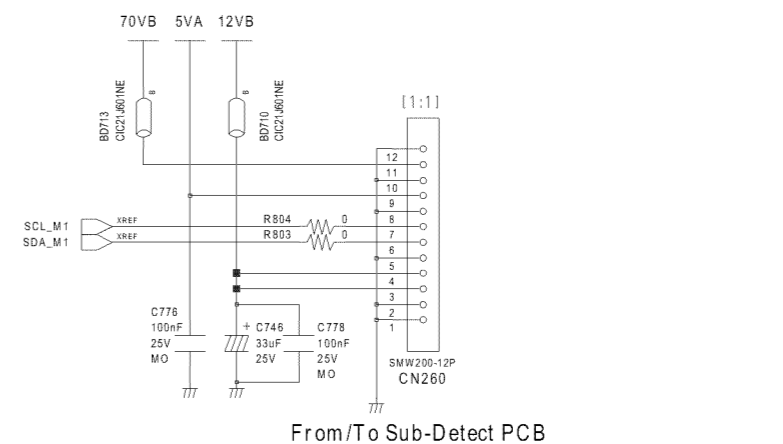
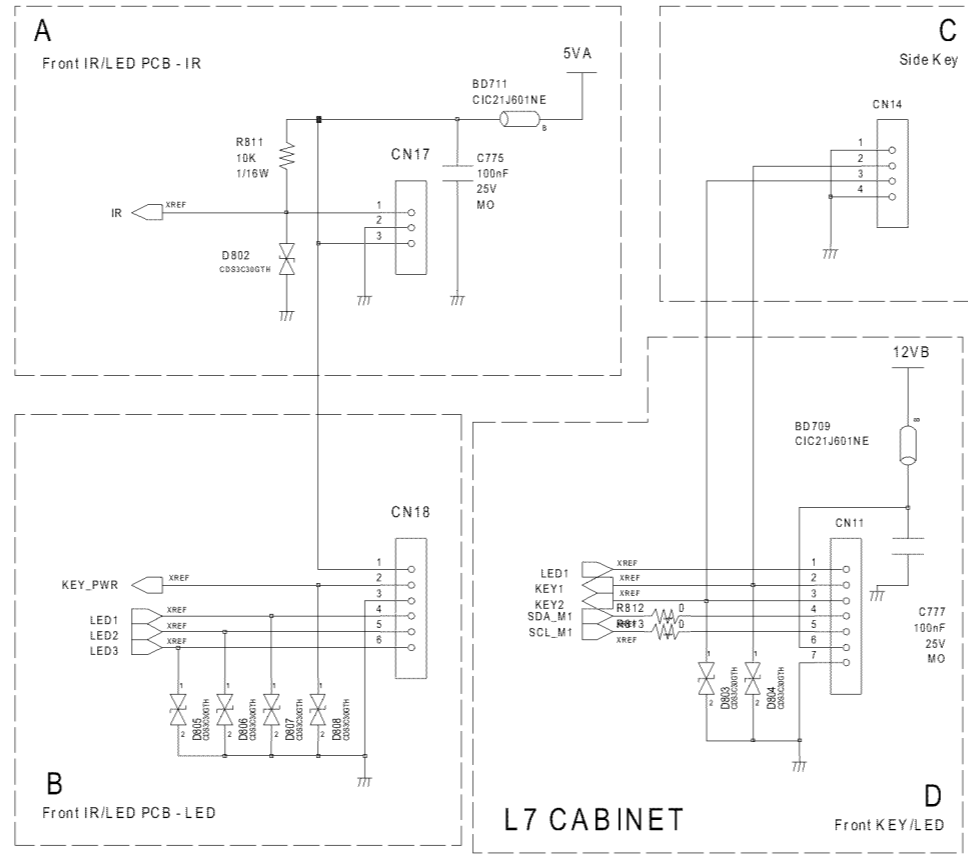
CableCARD Cooling FAN 5VA



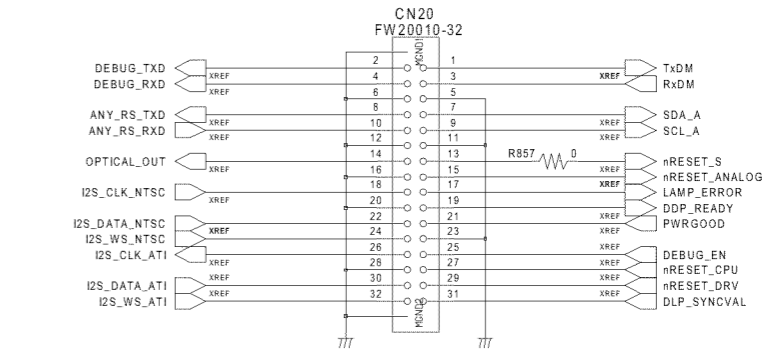
For Debugging

A	B	C	D
1. IR	1. 5VA	1. GND	1. LED1
2. GND	2. KEY-PWR	2. KEY1	2. KEY1
3. 5VA	3. GND	3. KEY2	3. KEY2
4. LED1	4. GND	4. GND	4. SDA-M 1
5. LED2			5. SCL-M 1
6. LED3			6. 5VB
			7. GND

Used as follows...
 L3 : A+B, C
 L5 : A, B, C
 L7 : A, D





From/To Sub-Detect PCB

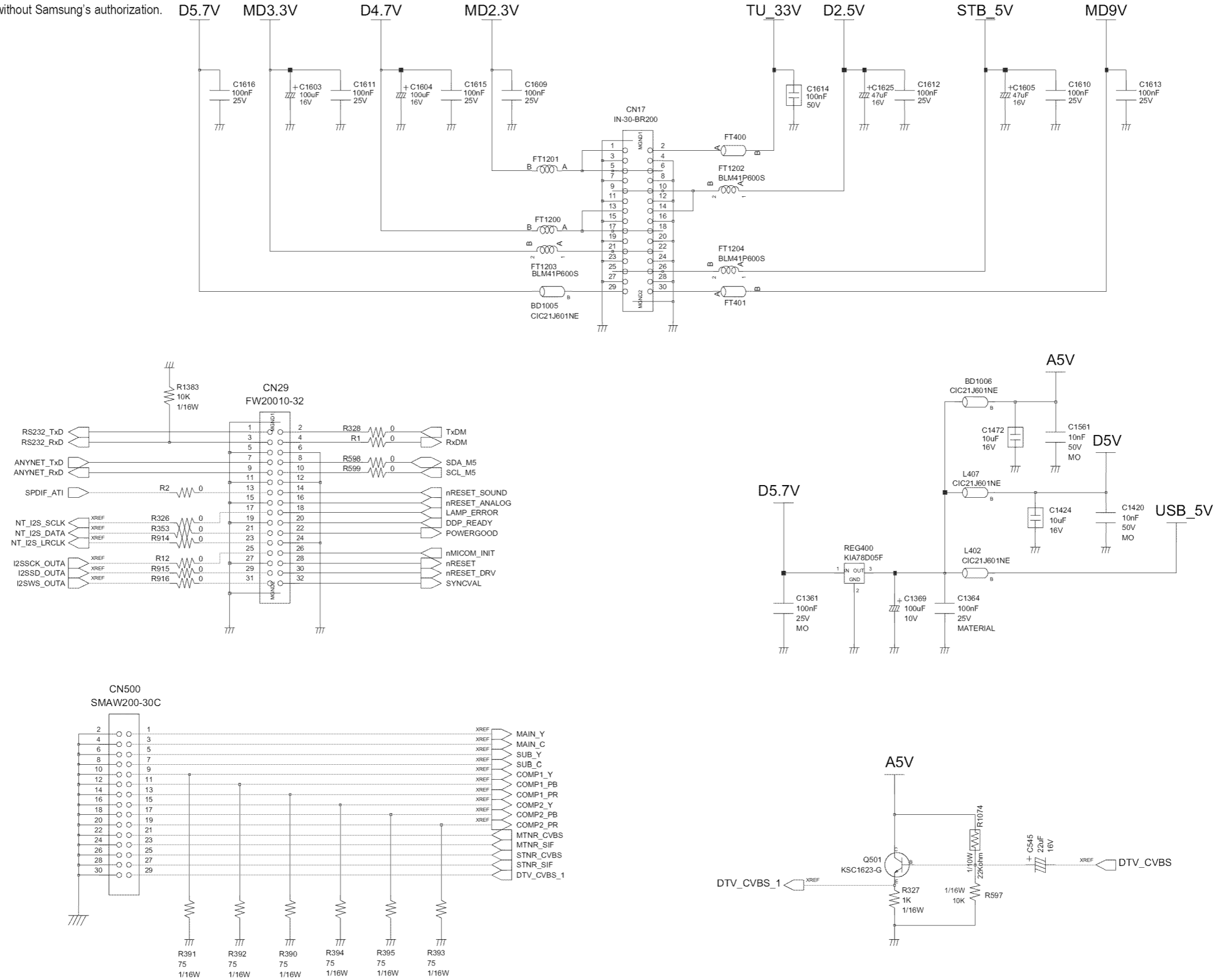


10-2 Digital Board

10-2-1 Digital-1



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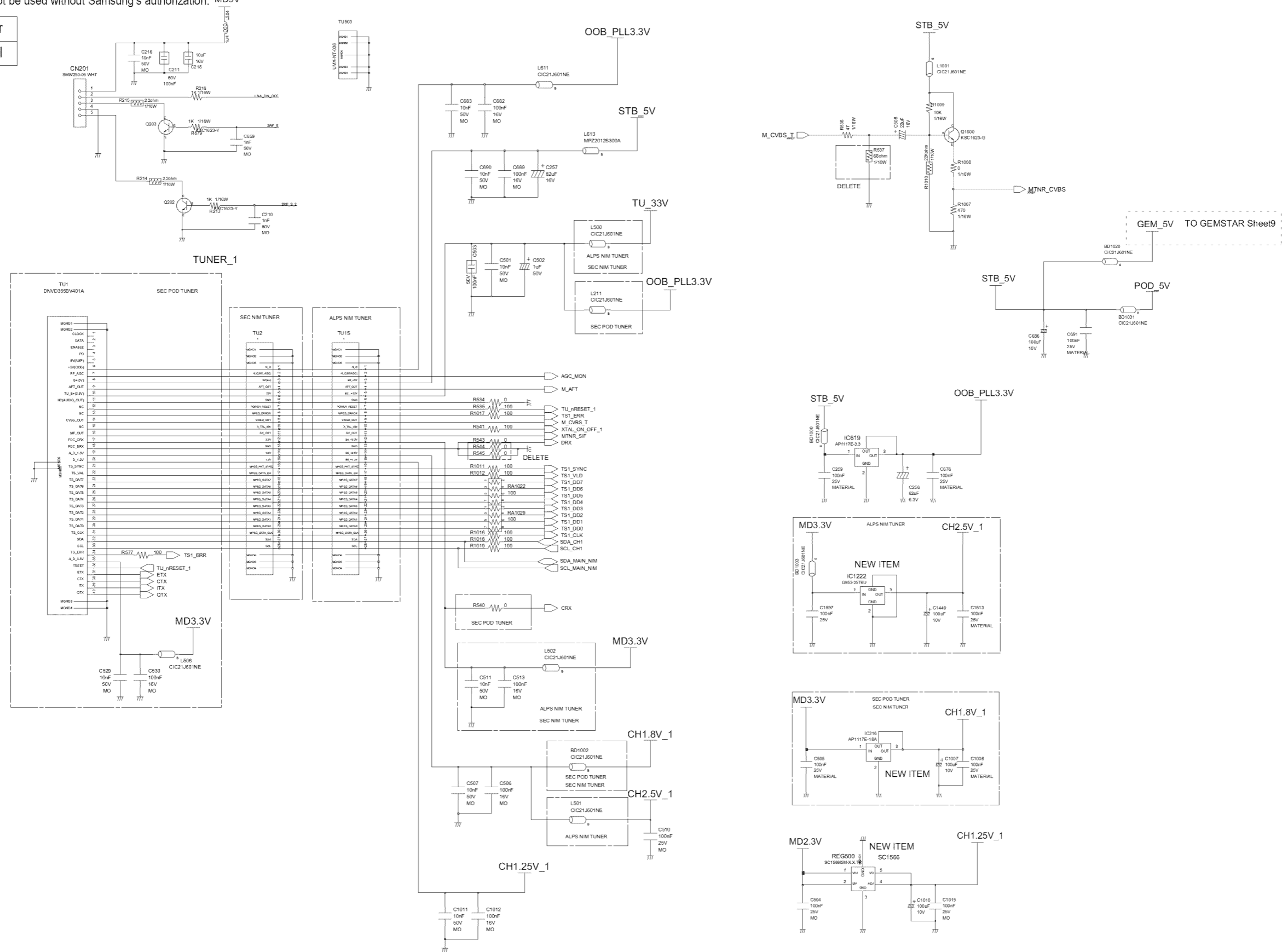
	Power
	Signal



10-2-2 Digital-2

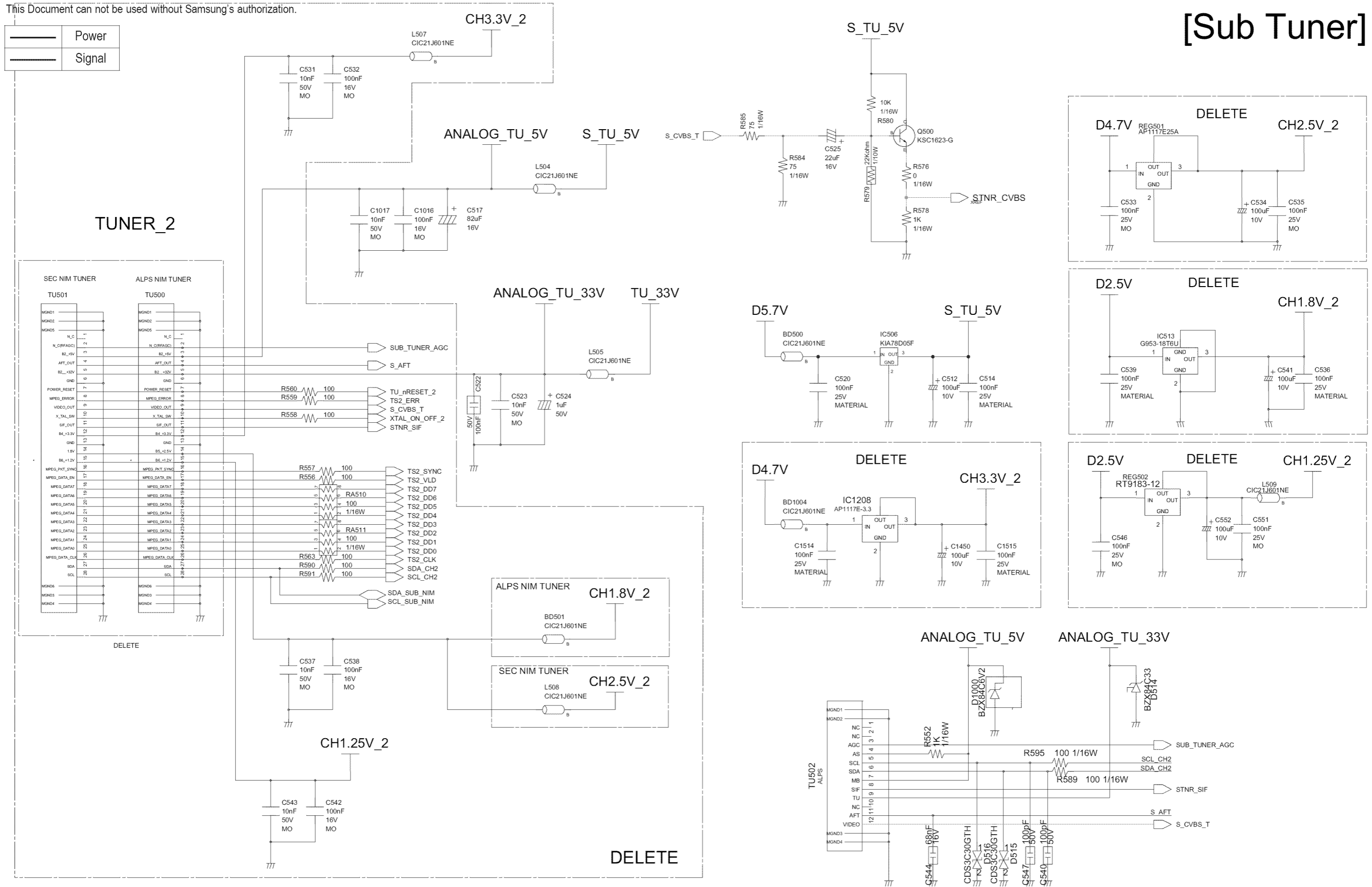
This Document can not be used without Samsung's authorization. MD9V

	Power
	Signal



10-2-3 Digital-3



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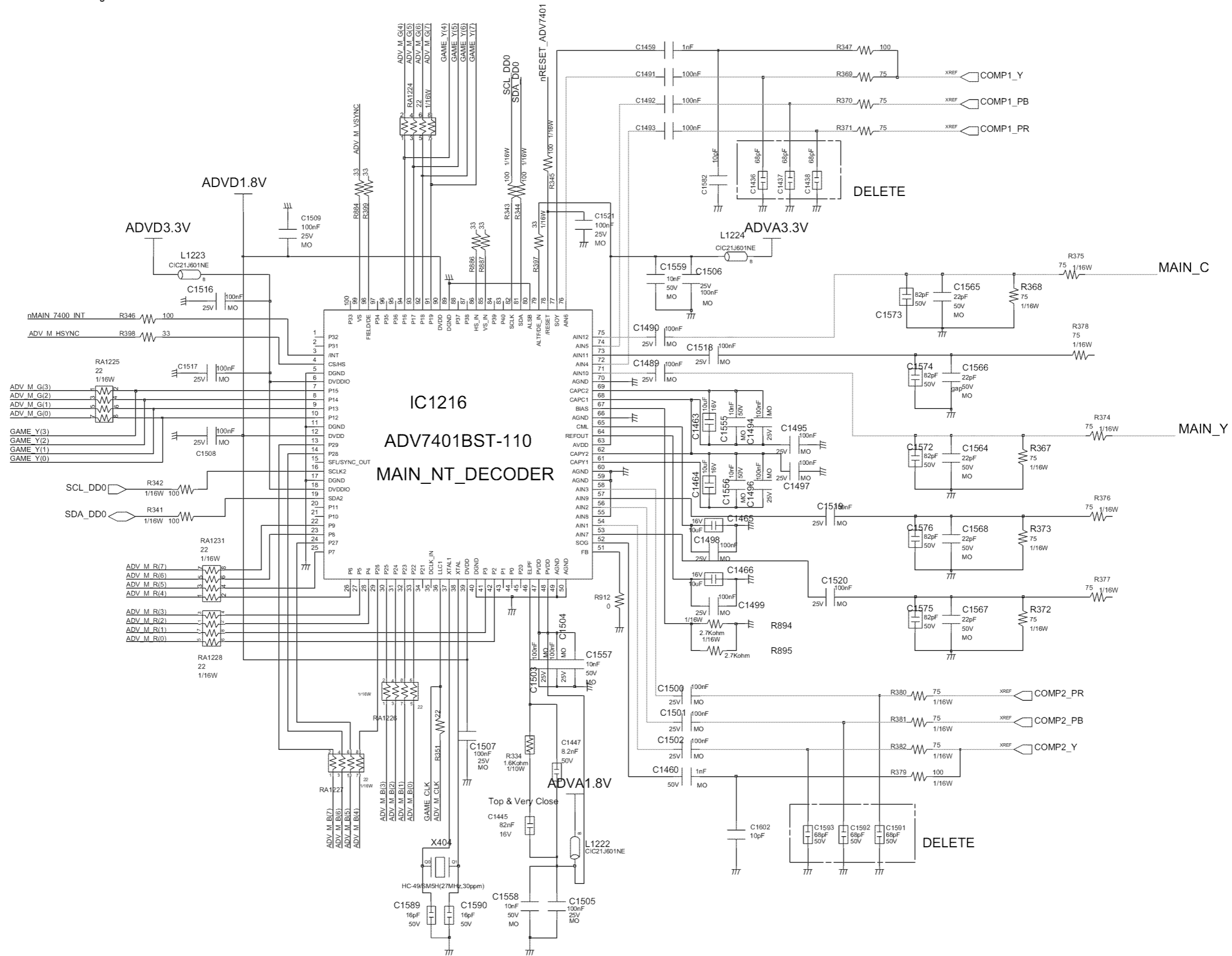


[Sub Tuner]

10-2-4 Digital-4

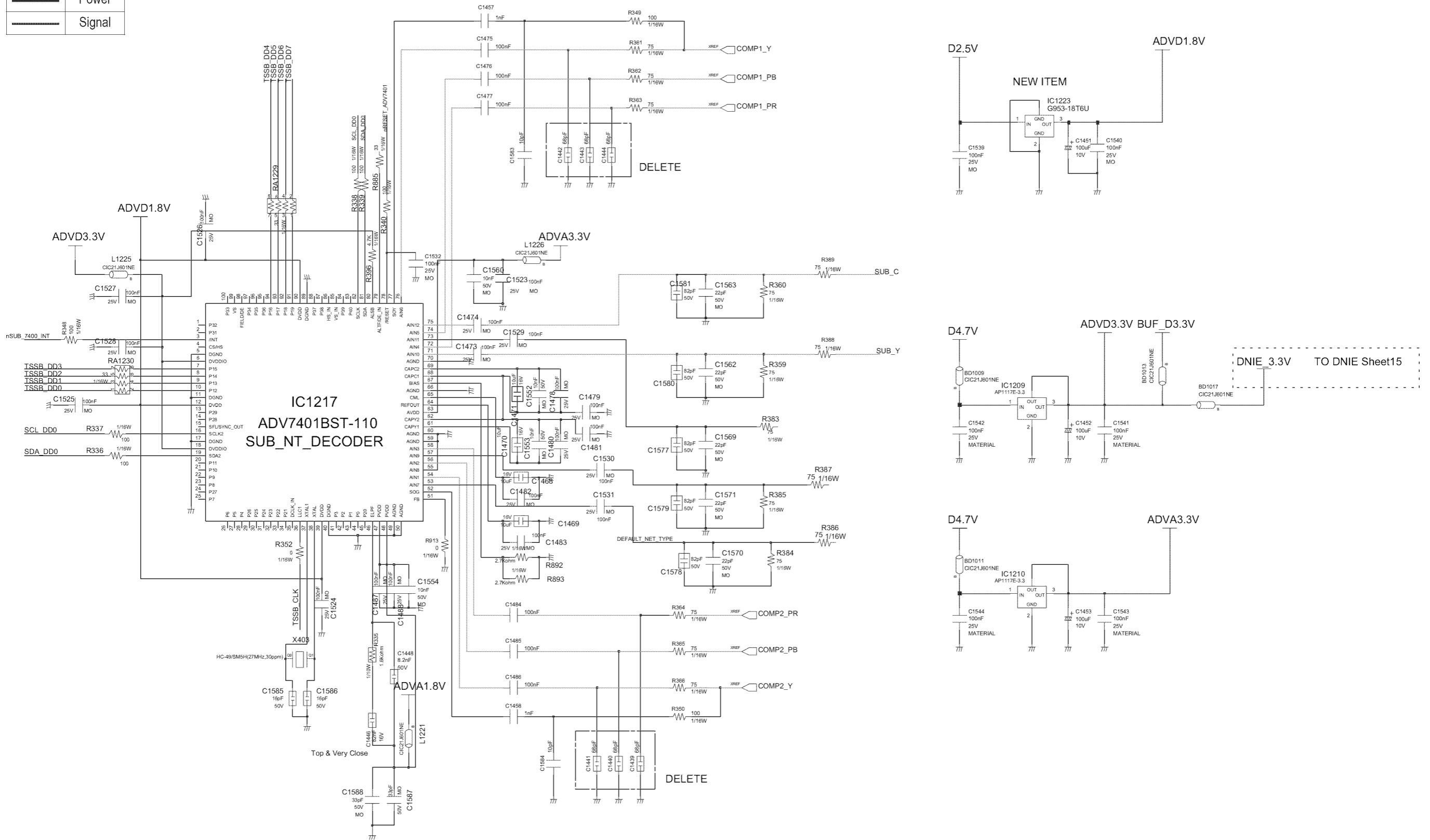
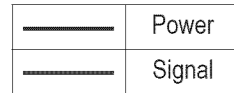
This Document can not be used without Samsung's authorization.

	Power
	Signal



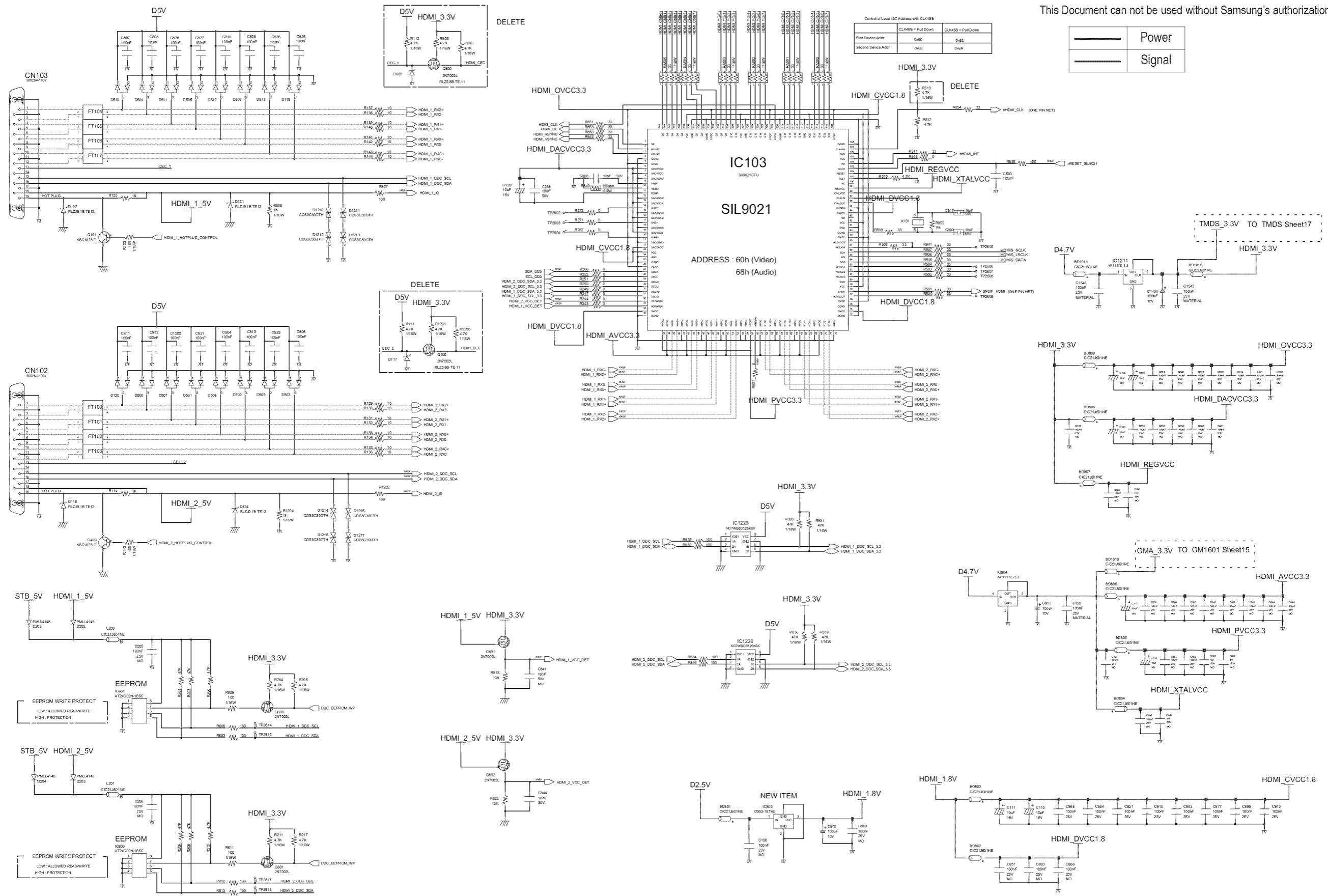
10-2-5 Digital-5

This Document can not be used without Samsung's authorization.





10-2-6 Digital-6

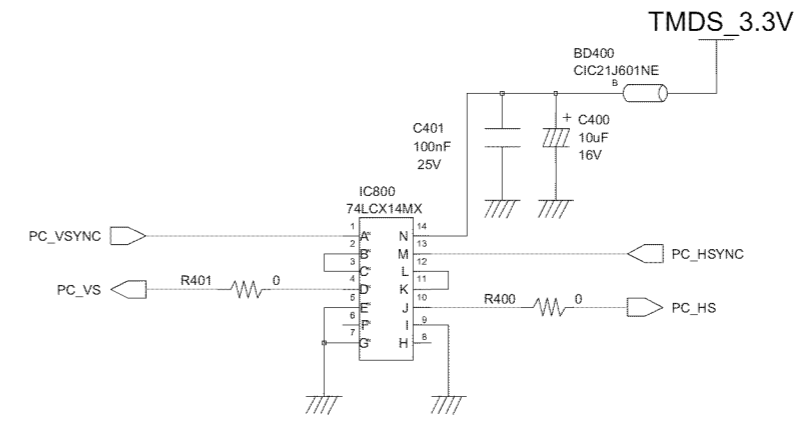
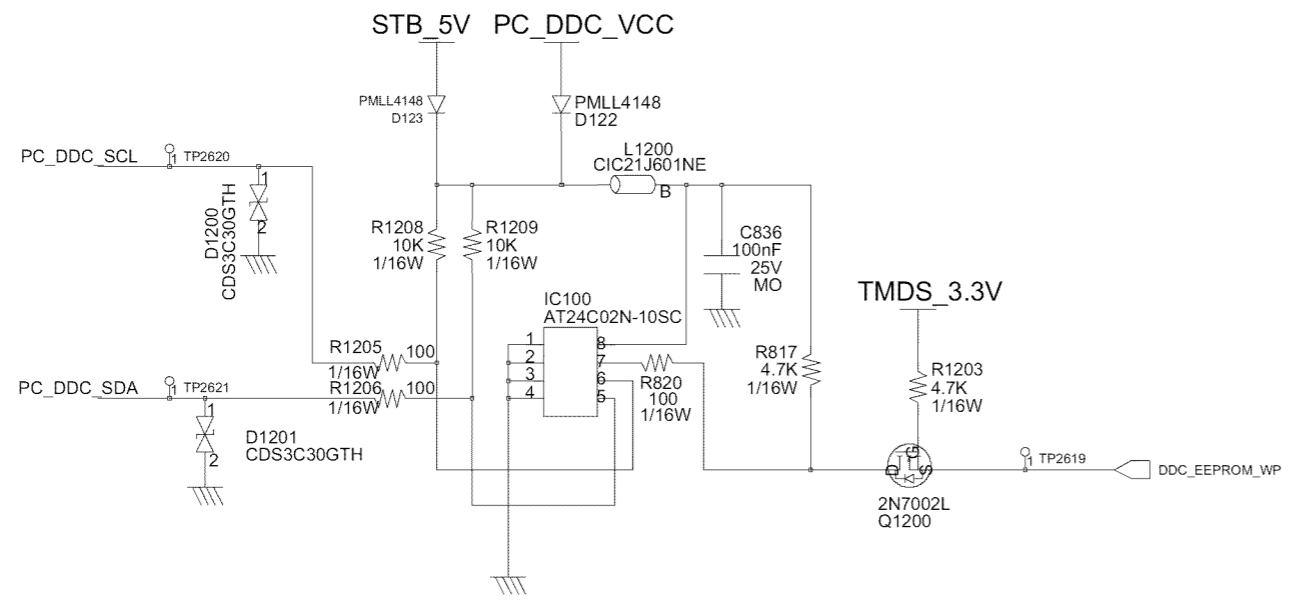
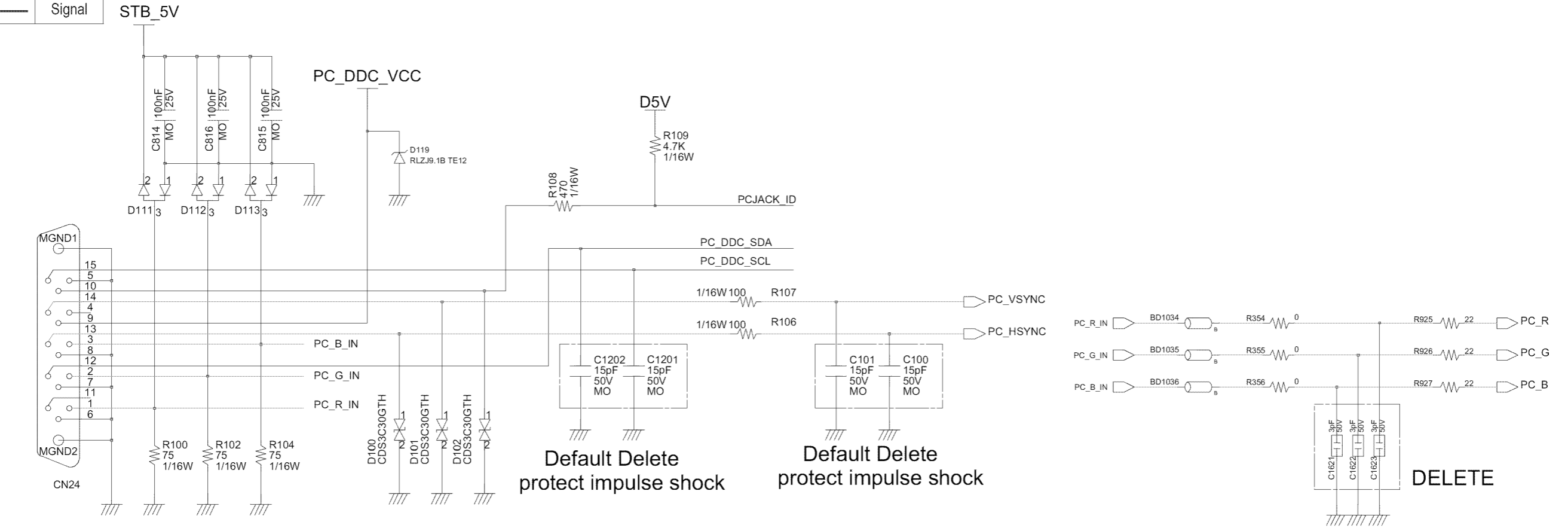
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10-2-7 Digital-7

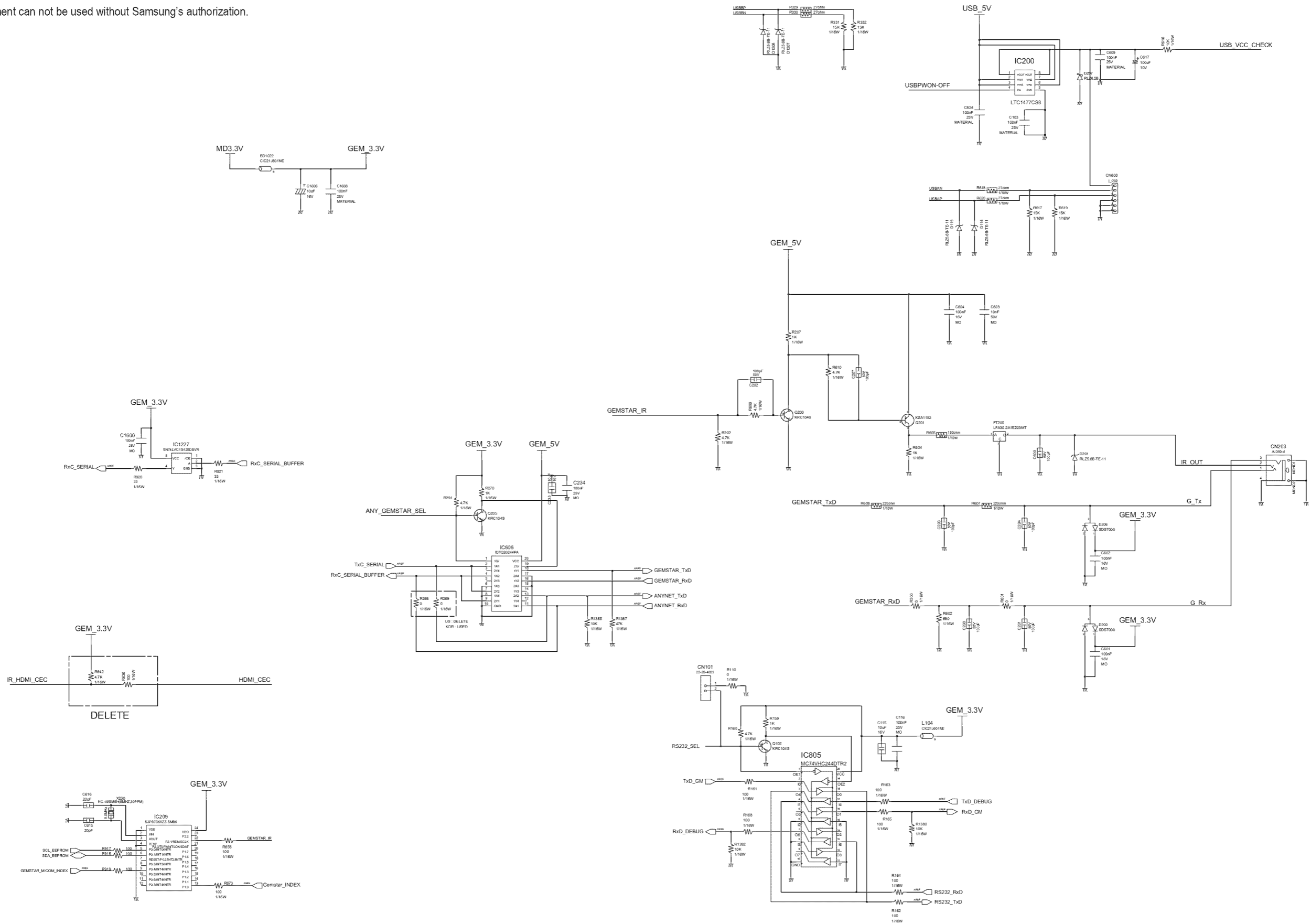
This Document can not be used without Samsung's authorization.

	Power
	Signal



10-2-8 Digital-8

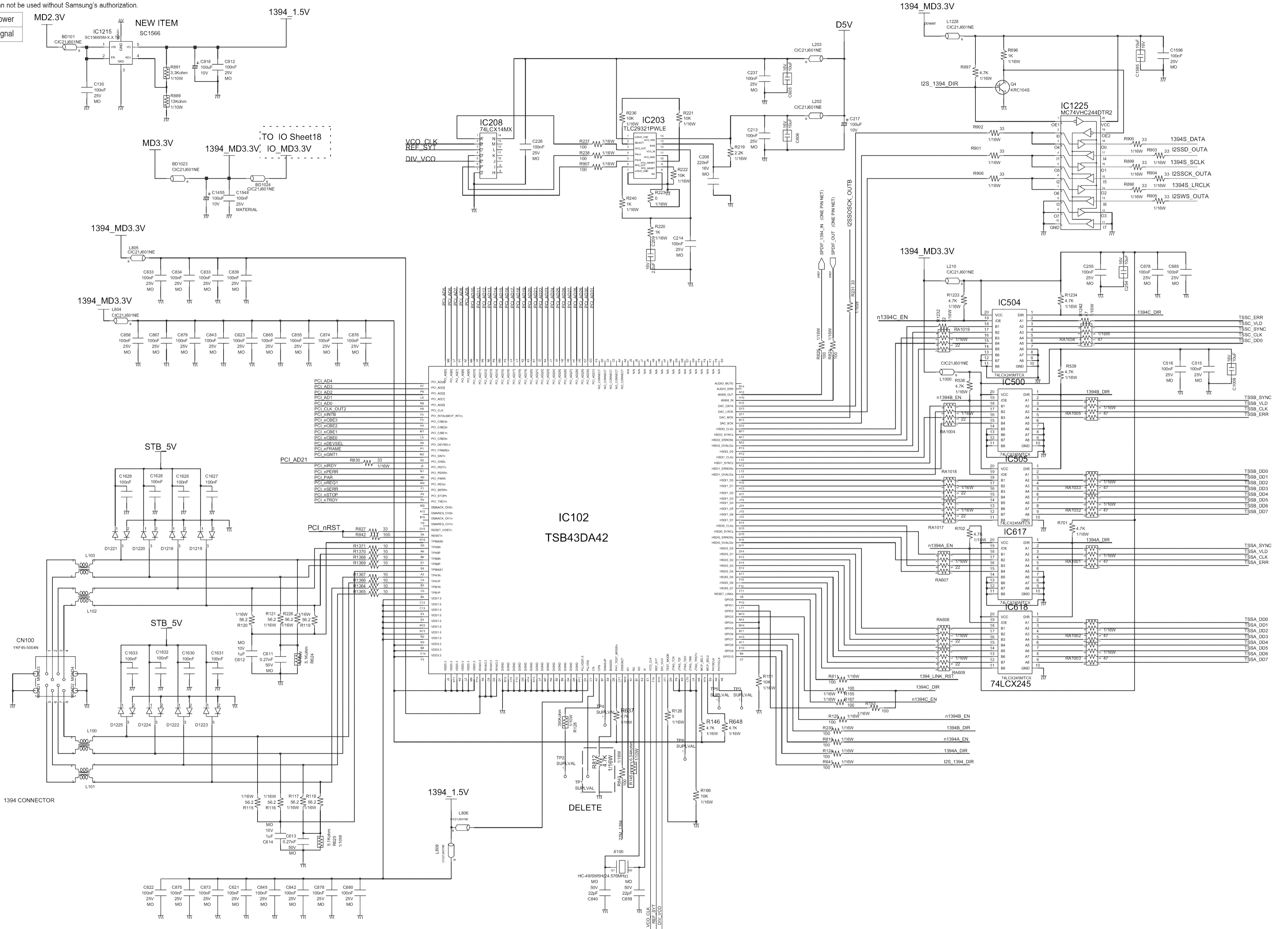
This Document can not be used without Samsung's authorization.



10-2-9 Digital-9

This Document can not be used without Samsung's authorization.

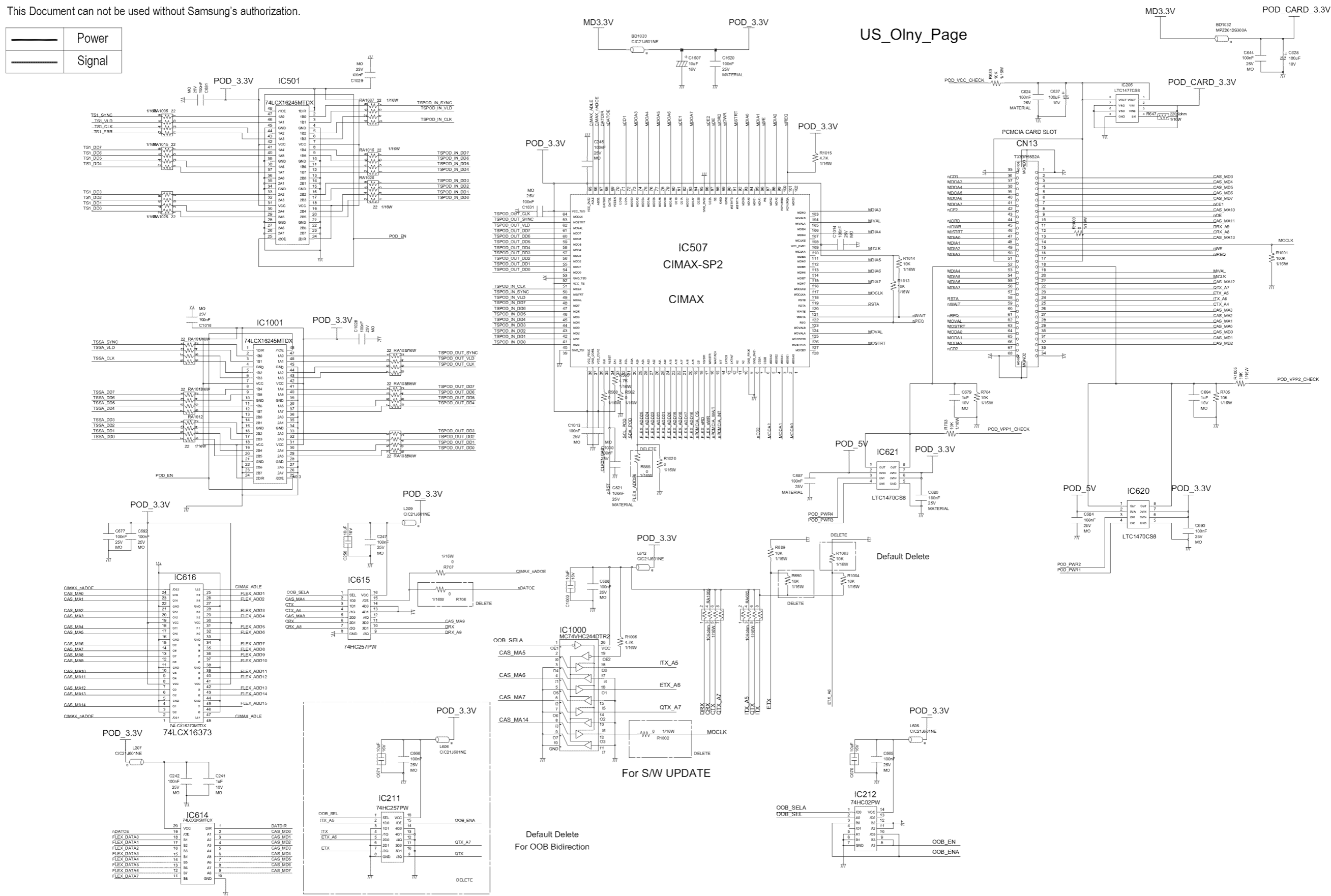
	Power
	Signal



10-2-10 Digital-10

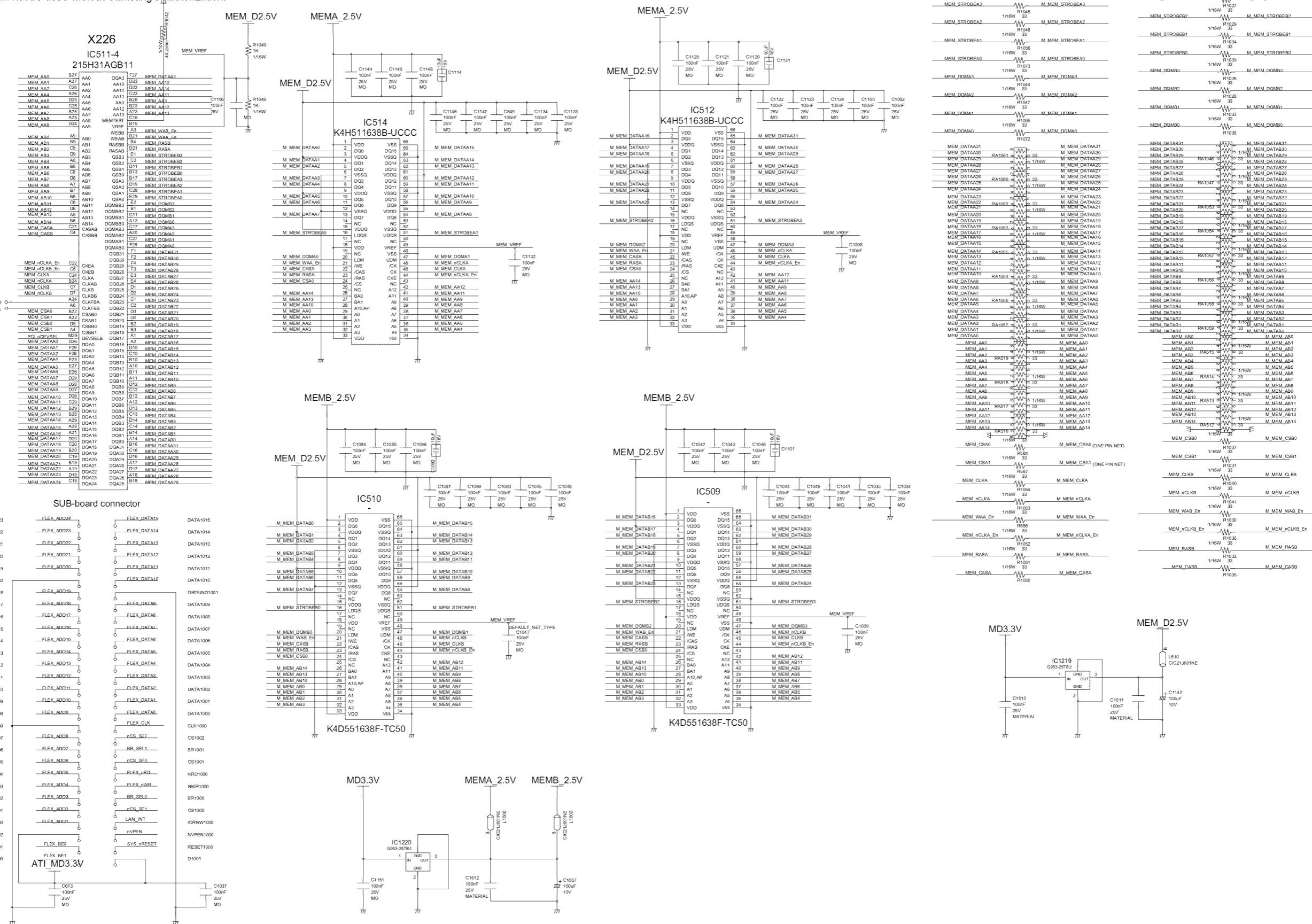
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— Power
— Signal



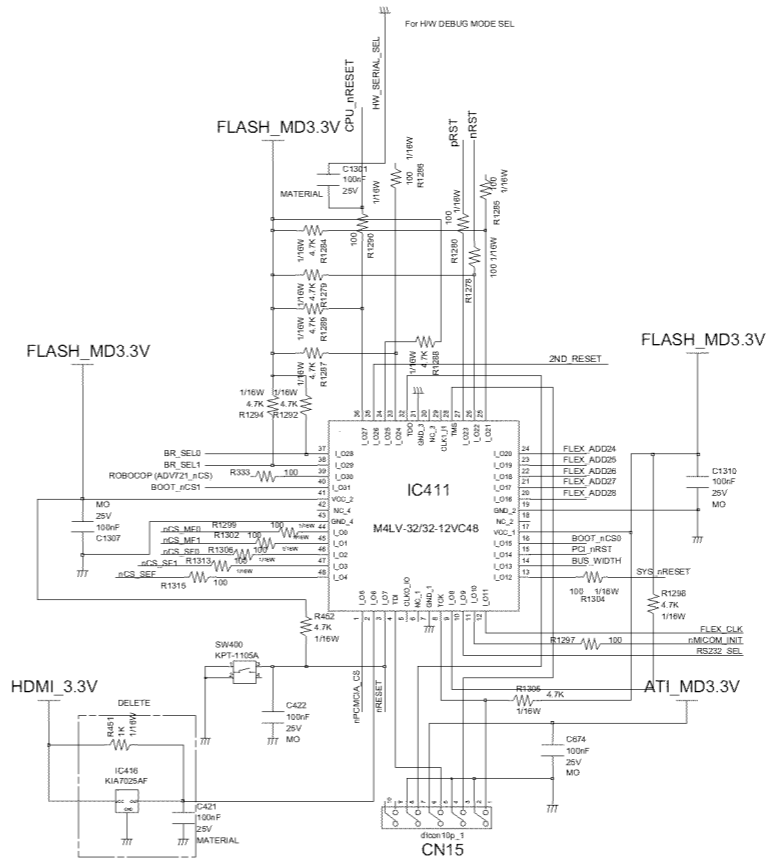
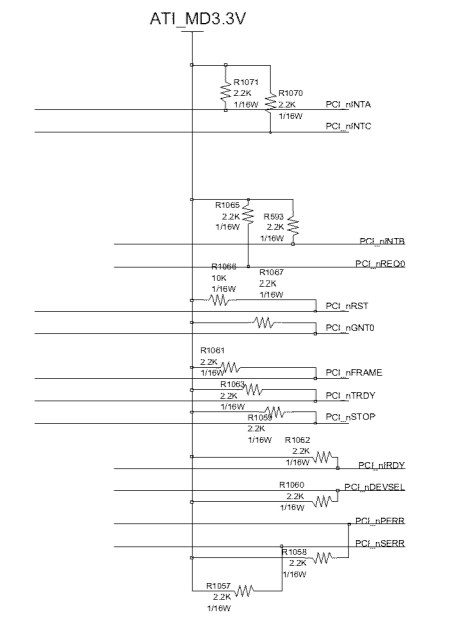
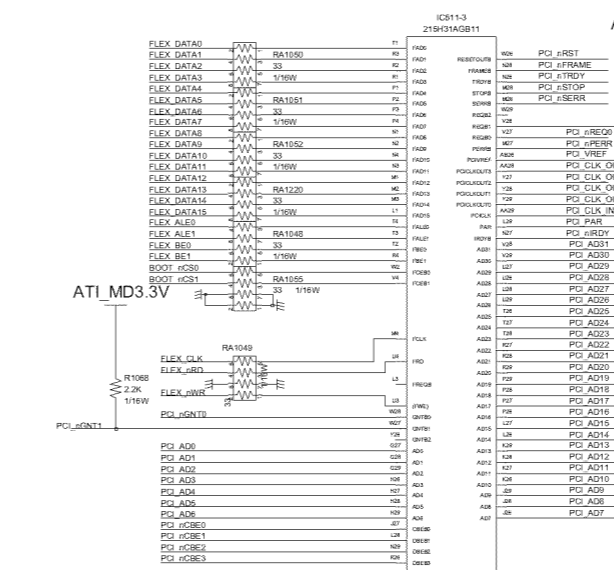
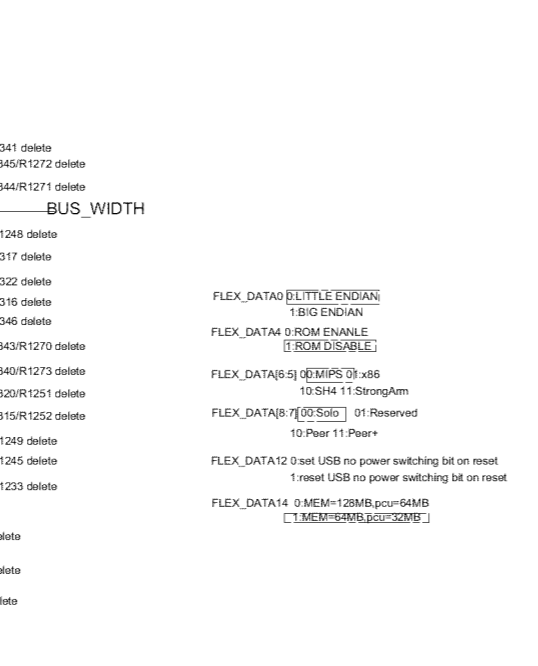
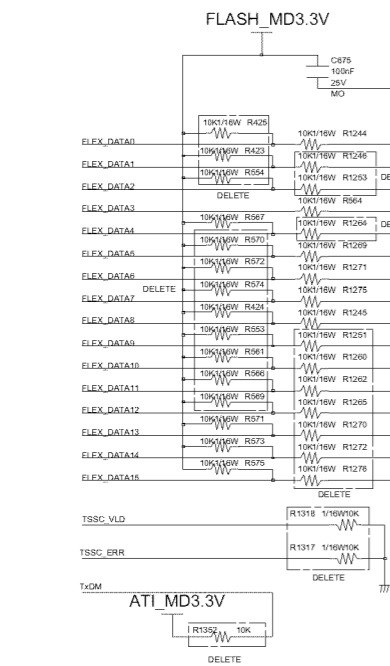
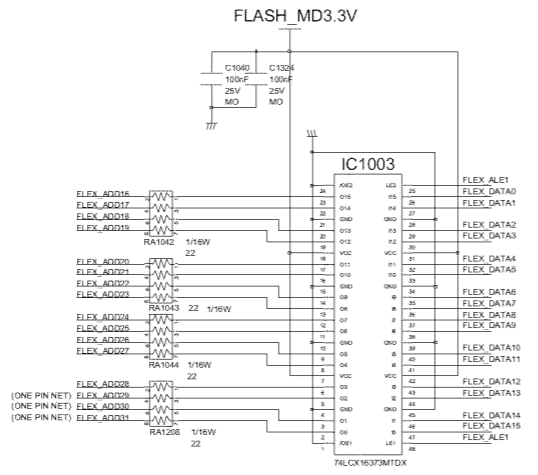
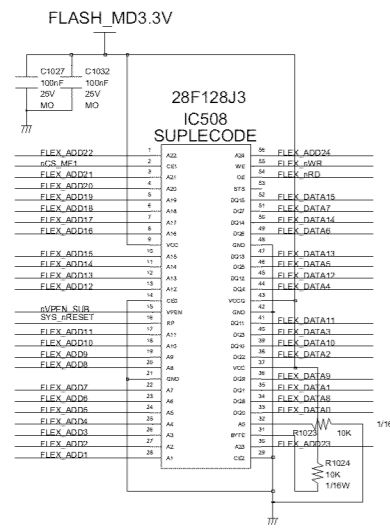
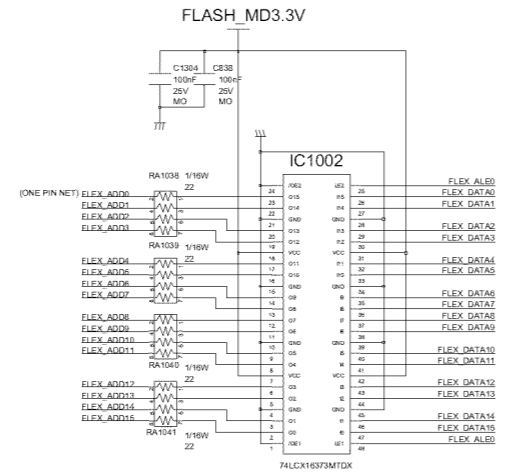
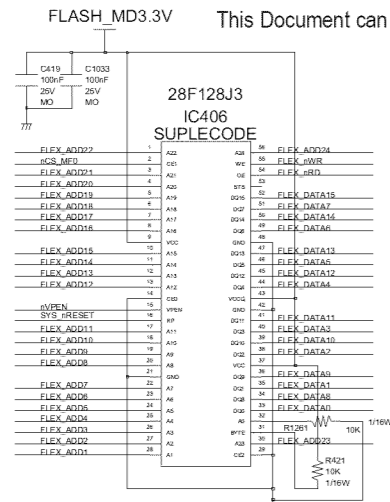
10-2-11 Digital-11

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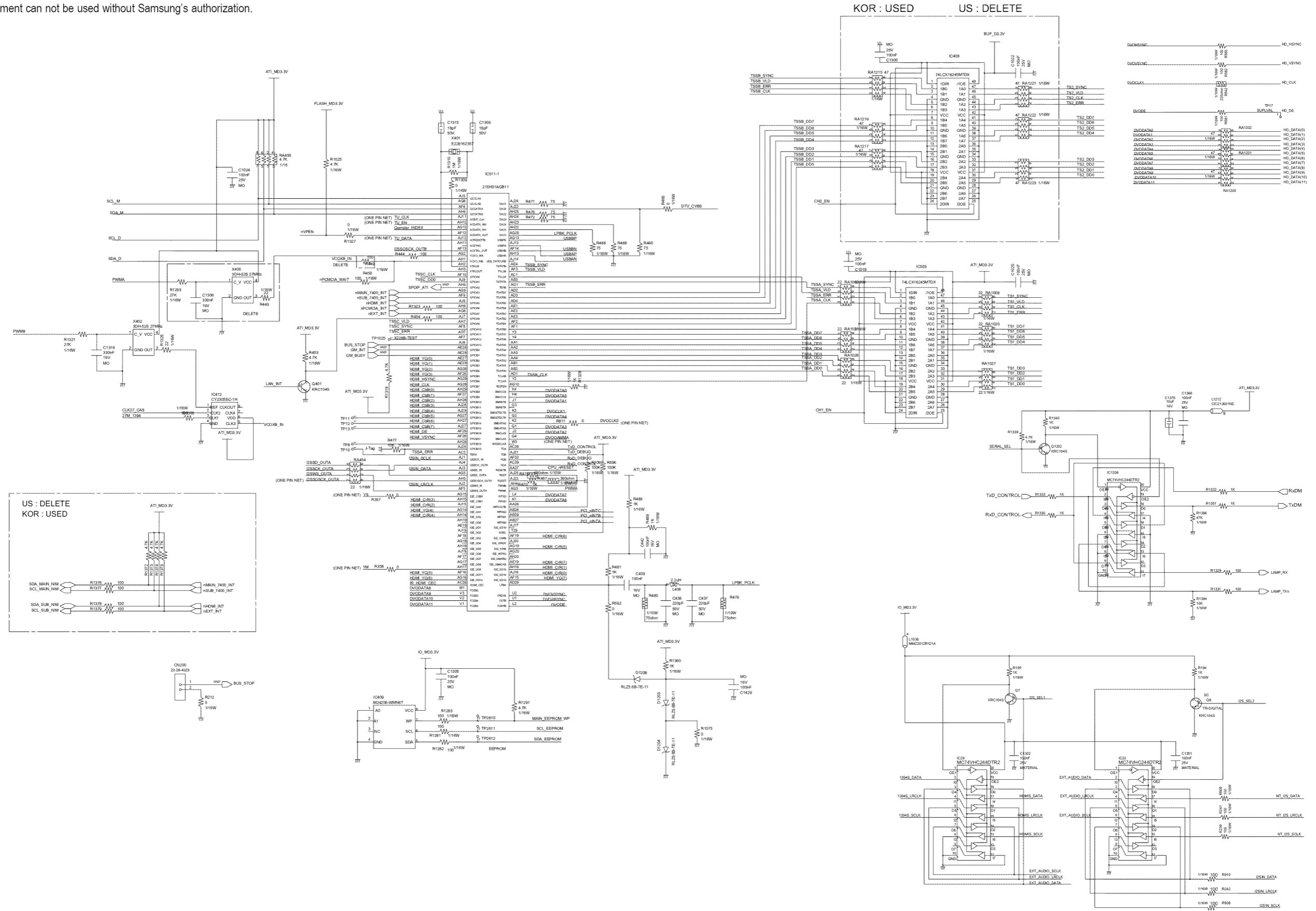
10-2-12 Digital-12

FLASH_MD3.3V This Document can not be used without Samsung's authorization.





10-2-13 Digital-13

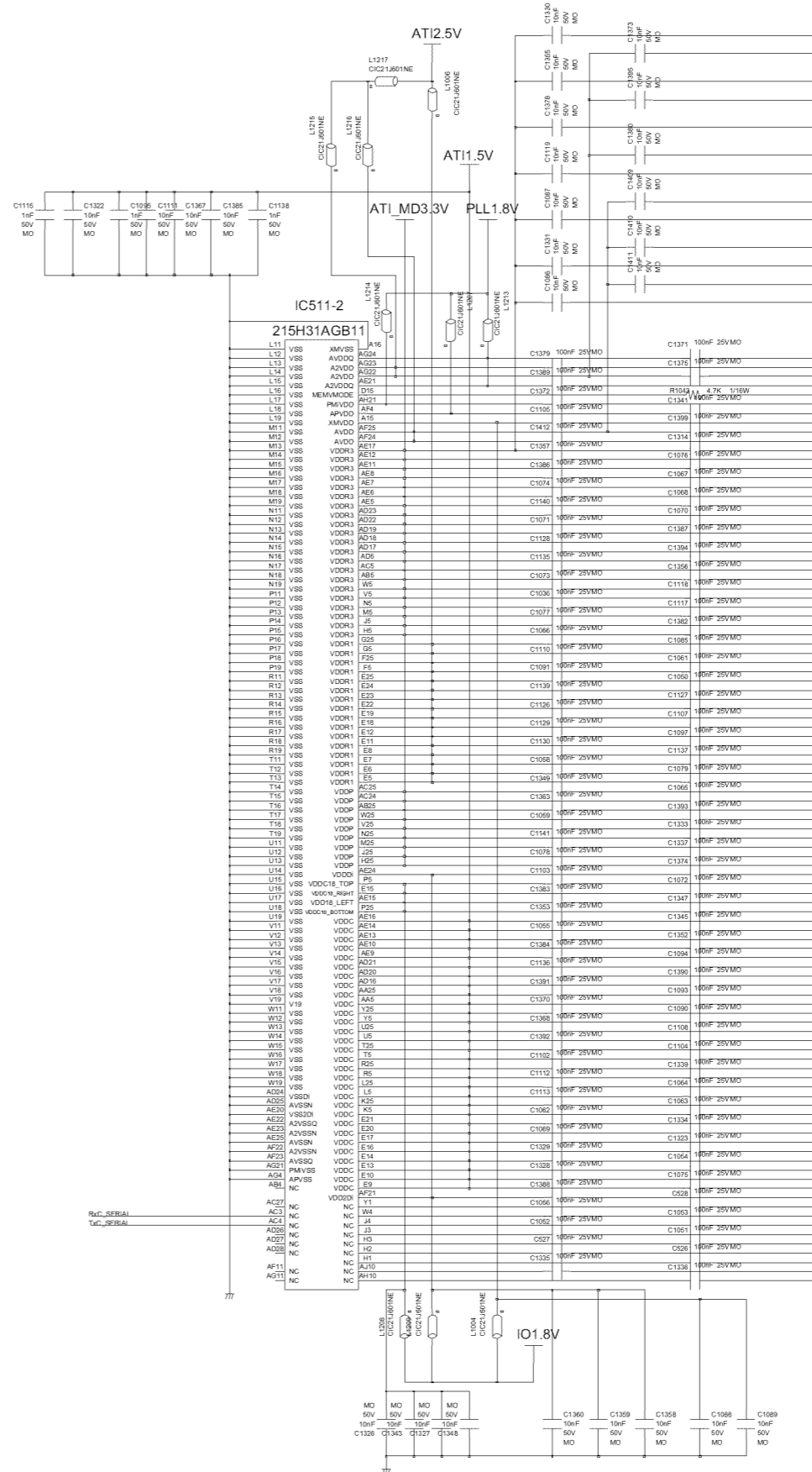
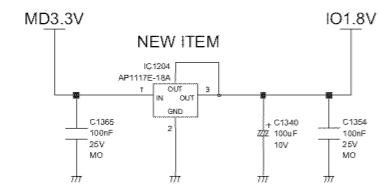
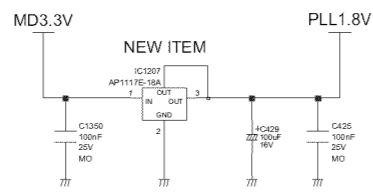
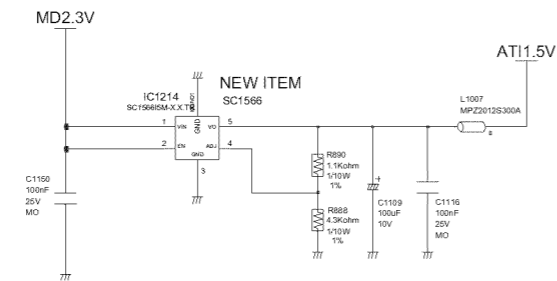
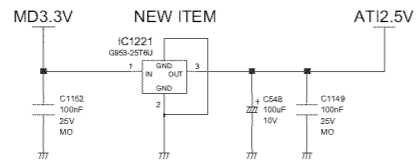
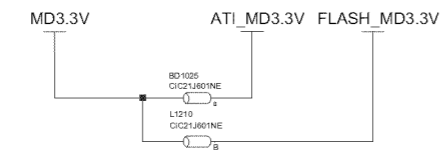
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10-2-14 Digital-14

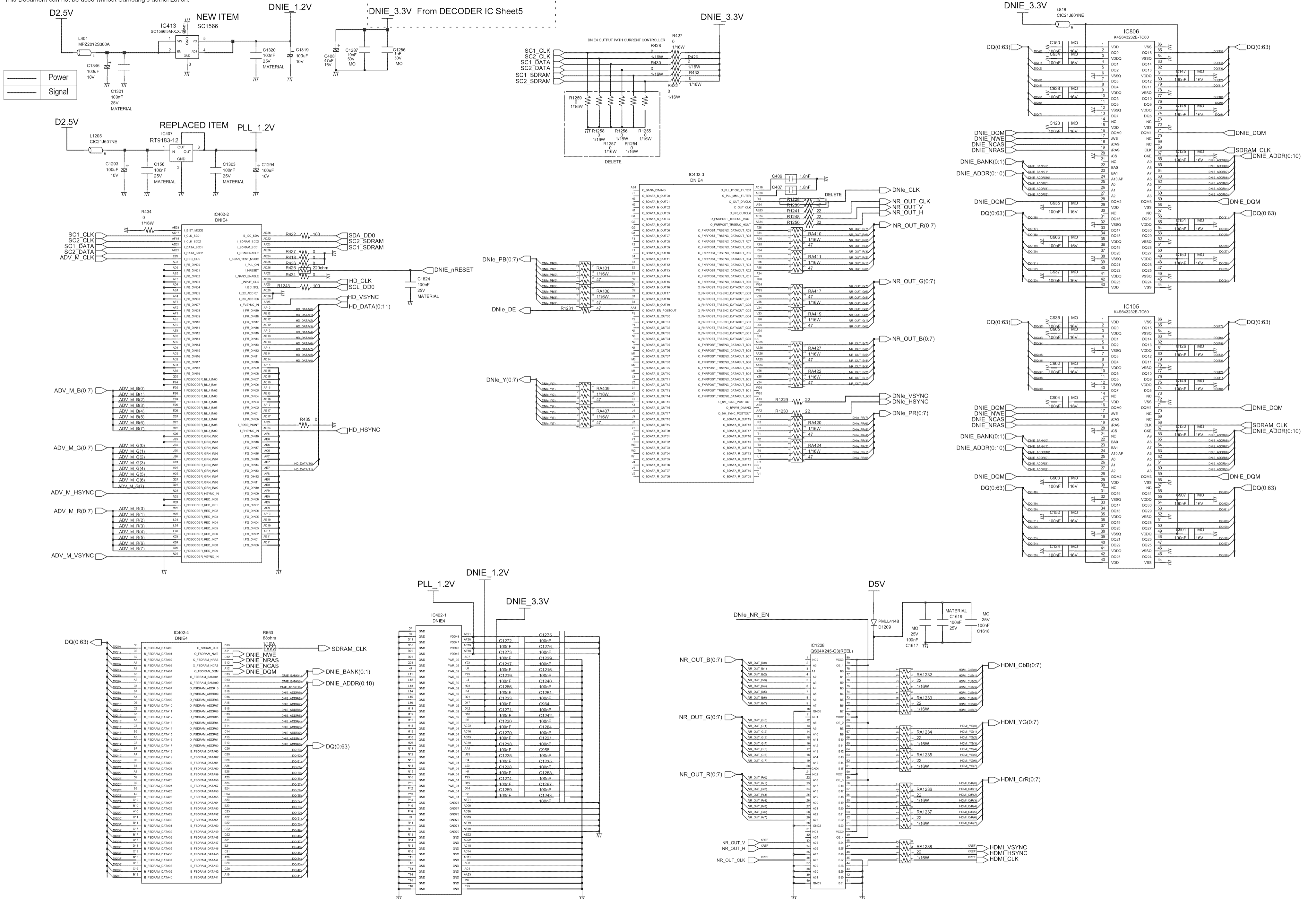
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	Power
	Signal



10-2-15 Digital-15

This Document can not be used without Samsung's authorization.

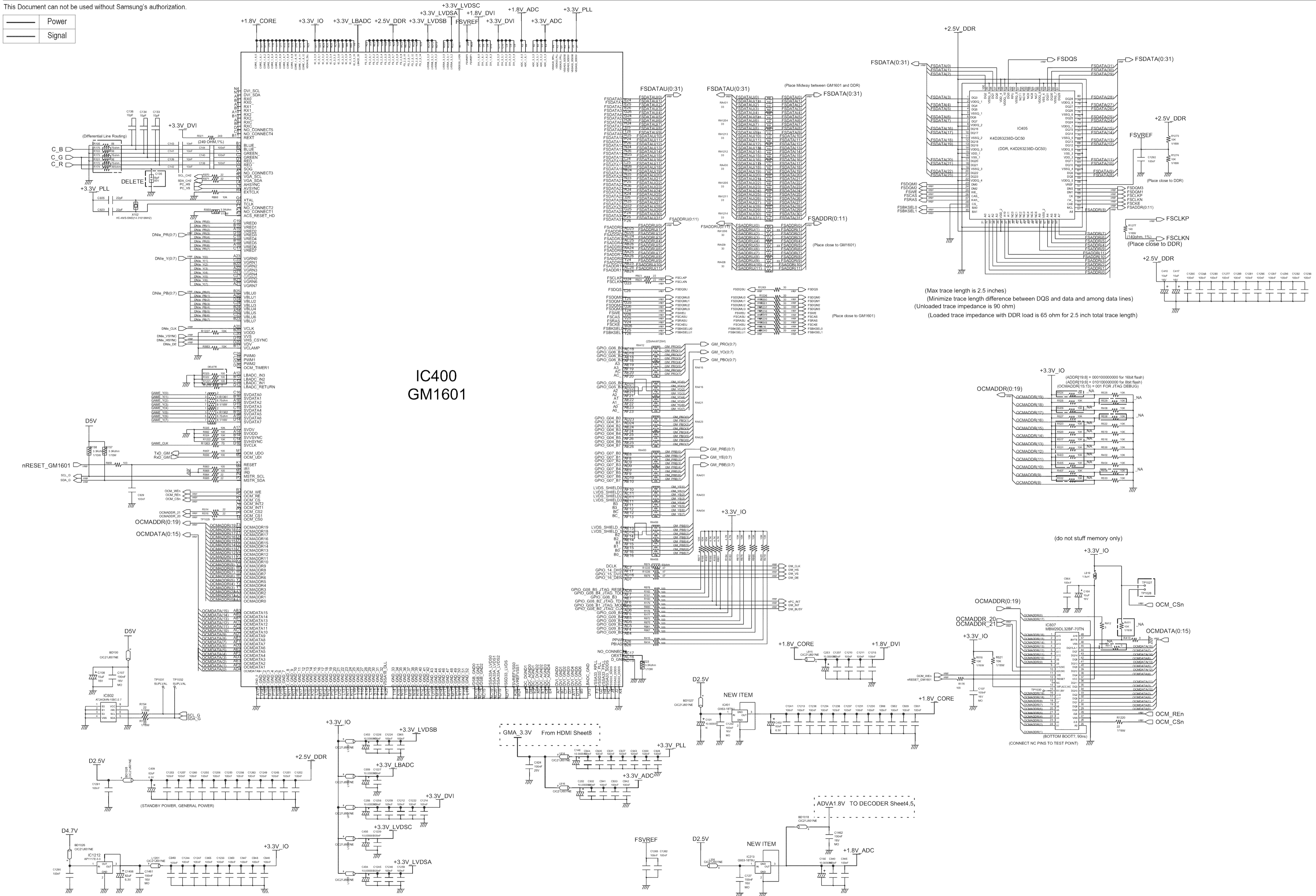


Schematic Diagram

10-2-16 Digital-16

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	Power
	Signal



IC400
GM1601



(Max trace length is 2.5 inches)
(Minimize trace length difference between DQS and data and among data lines)
(Unloaded trace impedance is 90 ohm)
(Loaded trace impedance with DDR load is 65 ohm for 2.5 inch total trace length)

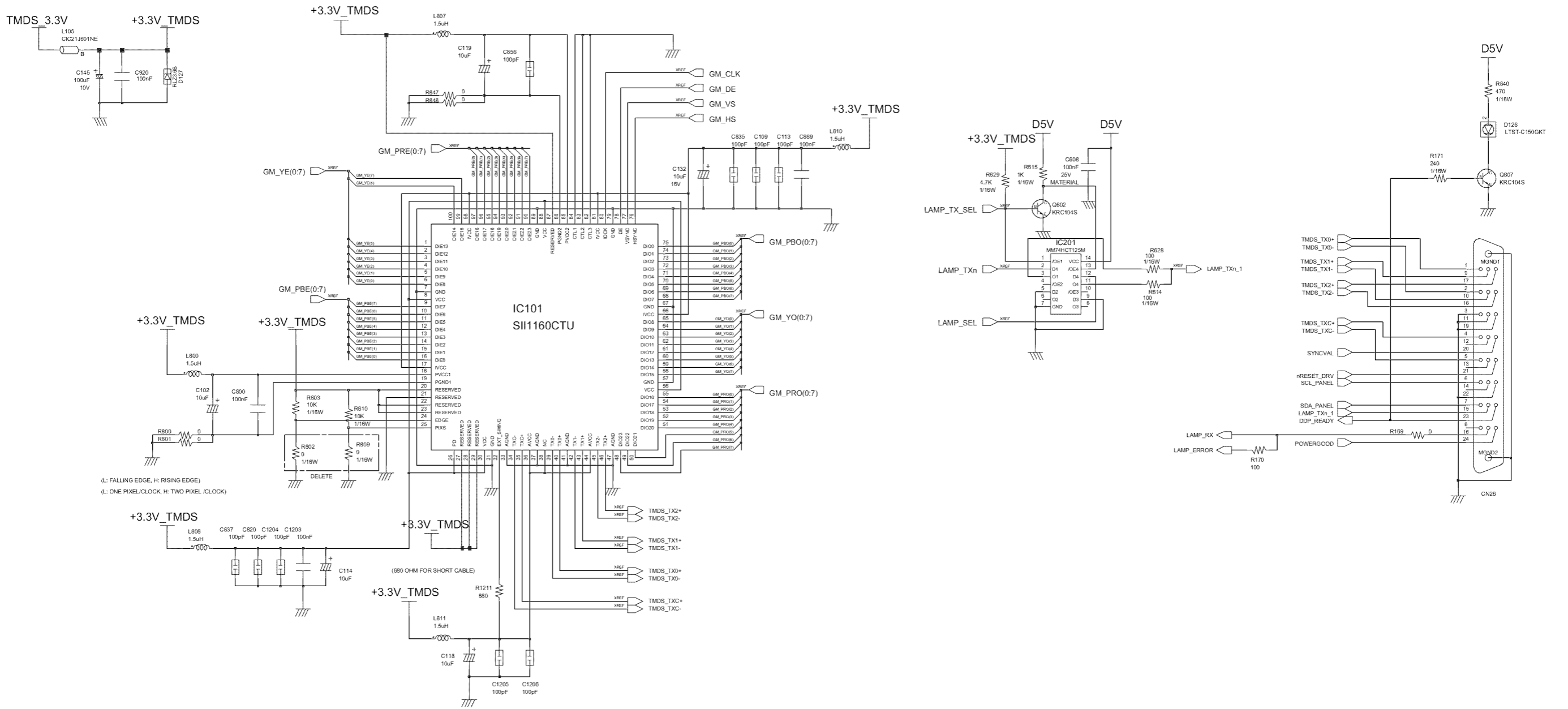
(do not stuff memory only)

(CONNECT NC PINS TO TEST POINT)

10-2-17 Digital-17

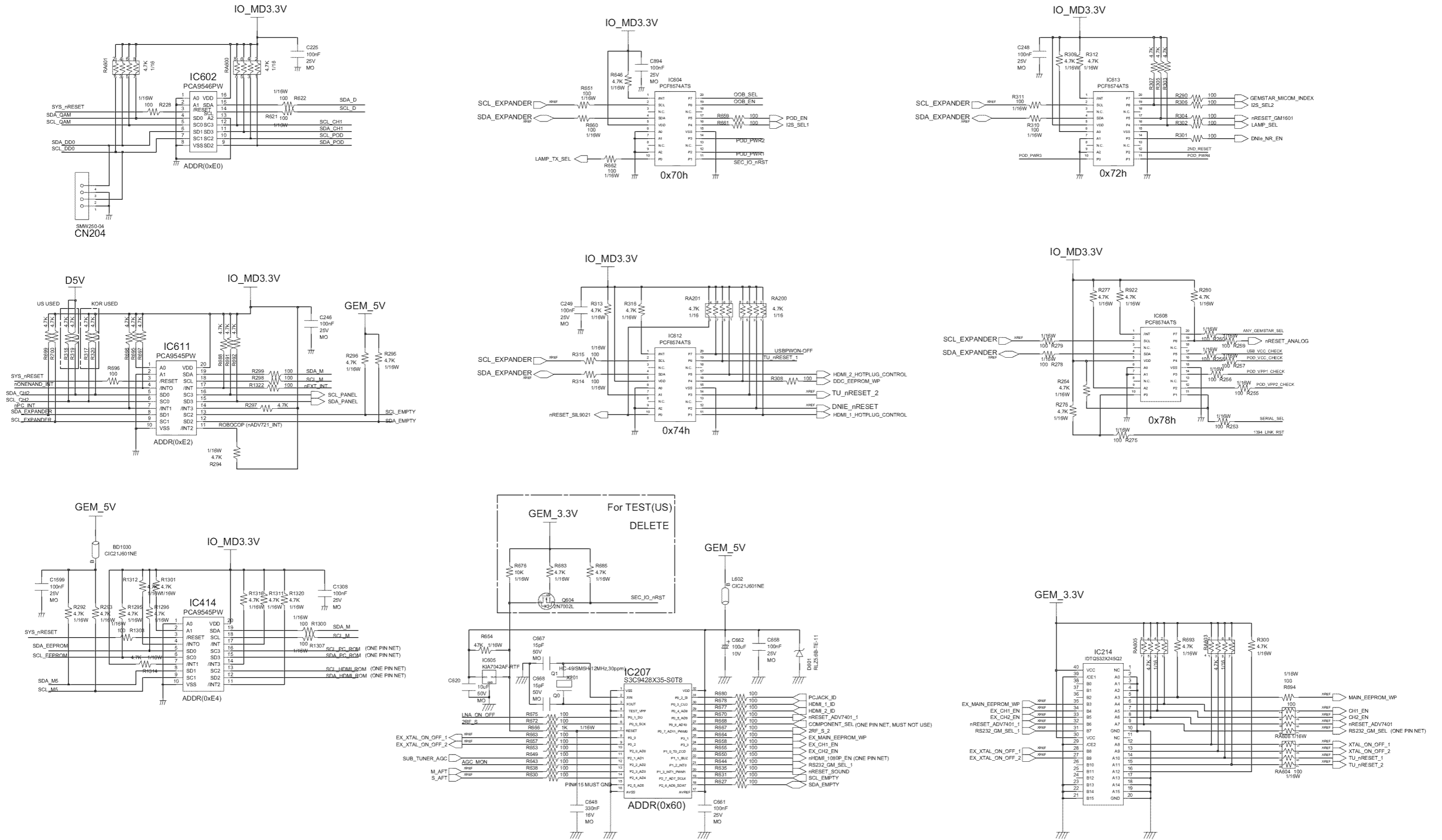
This Document can not be used without Samsung's authorization.

	Power
	Signal



10-2-18 Digital-18

This Document can not be used without Samsung's authorization.

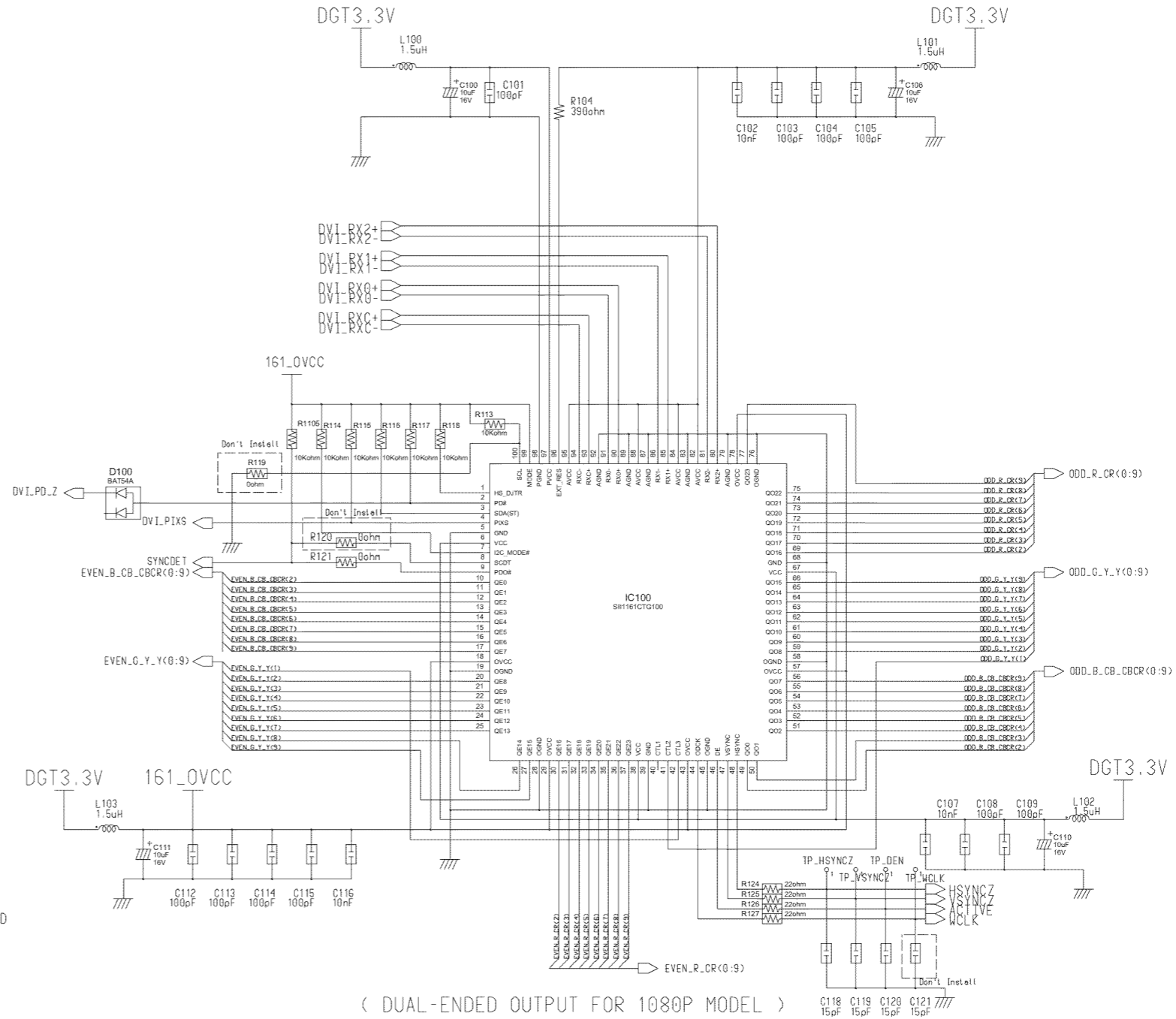
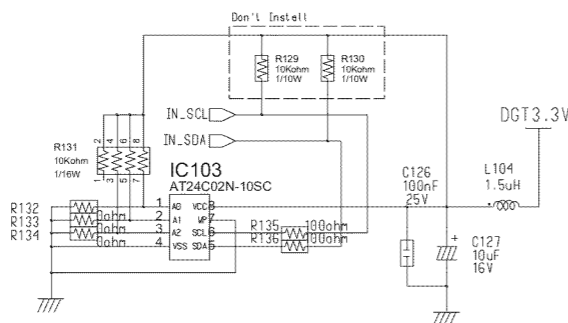
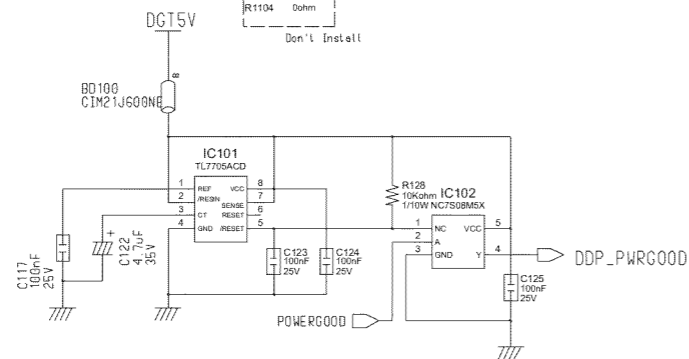
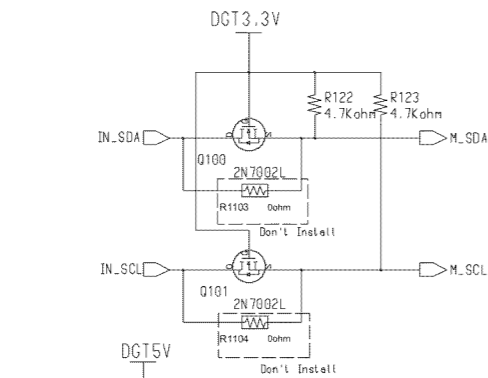
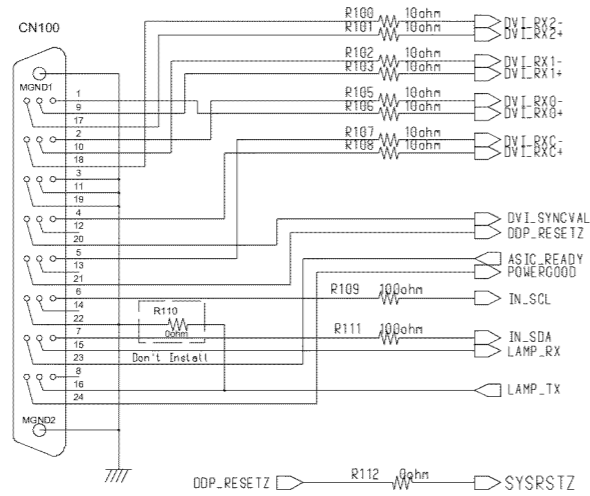


10-3 DMD Board

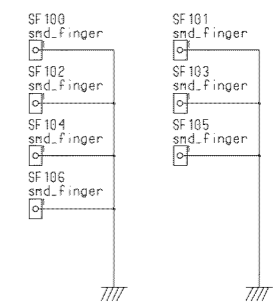
10-3-1 DMD-1

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INPUT DVI pin mapping changed (2004.11.30)

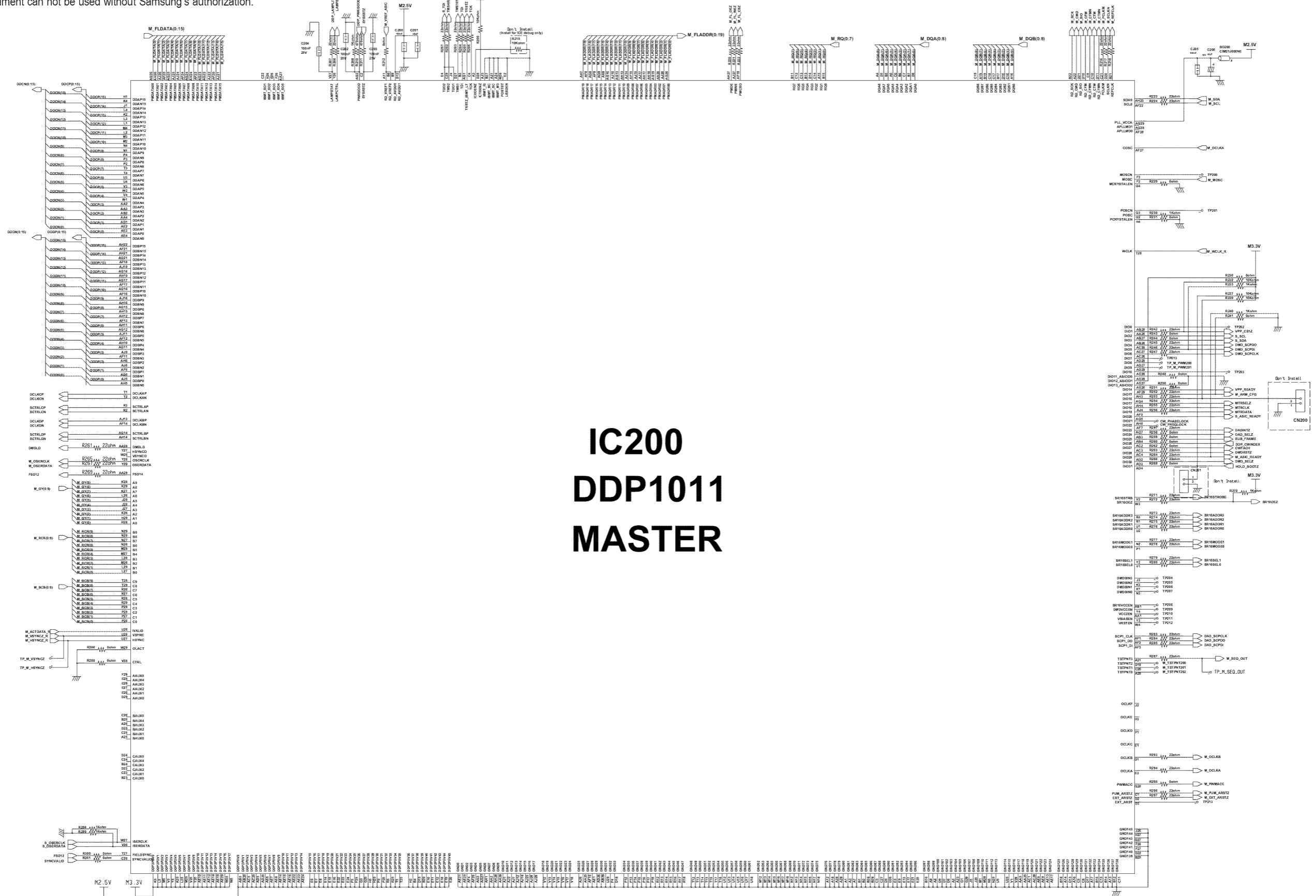


(DUAL-ENDED OUTPUT FOR 1080P MODEL)



10-3-2 DMD-2

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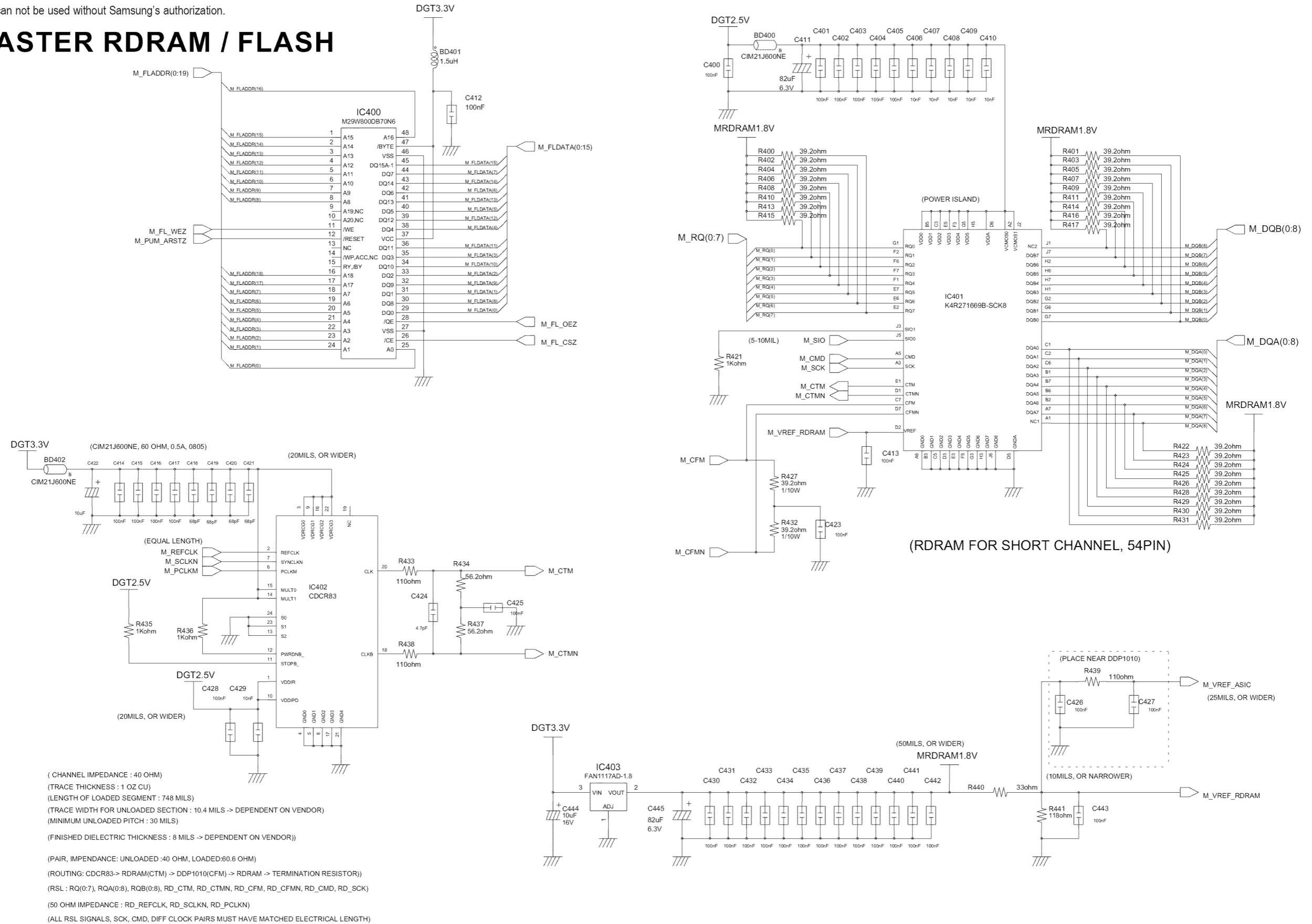


IC200 DDP1011 MASTER

10-3-4 DMD-4

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MASTER RDRAM / FLASH

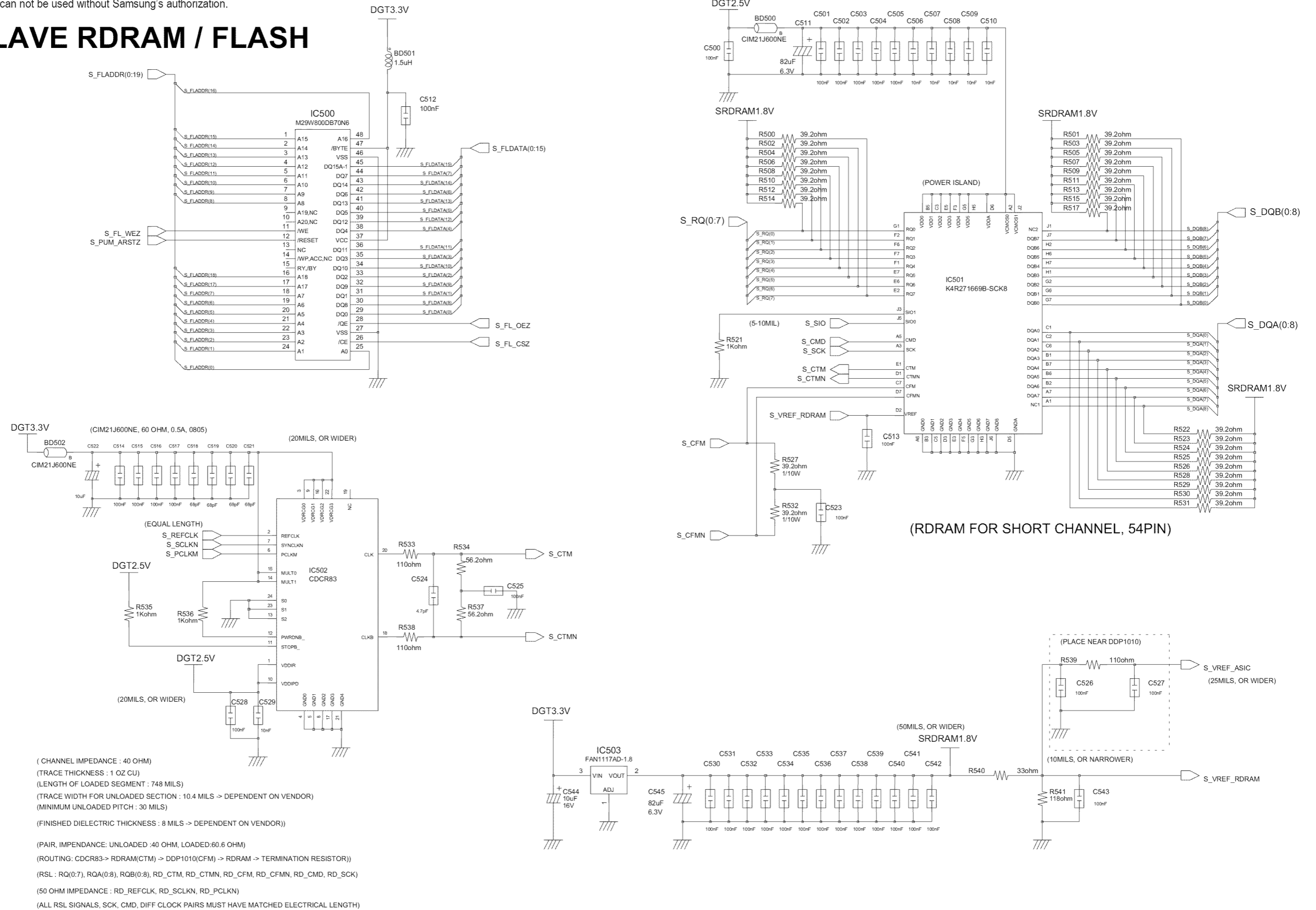


(CHANNEL IMPEDANCE : 40 OHM)
 (TRACE THICKNESS : 1 OZ CU)
 (LENGTH OF LOADED SEGMENT : 748 MILS)
 (TRACE WIDTH FOR UNLOADED SECTION : 10.4 MILS -> DEPENDENT ON VENDOR)
 (MINIMUM UNLOADED PITCH : 30 MILS)
 (FINISHED DIELECTRIC THICKNESS : 8 MILS -> DEPENDENT ON VENDOR)
 (PAIR, IMPEDANCE: UNLOADED :40 OHM, LOADED:60.6 OHM)
 (ROUTING: CDCR83-> RDRAM(CTM) -> DDP1010(CFM) -> RDRAM -> TERMINATION RESISTOR)
 (RSL : RQ(0:7), RQA(0:8), RQB(0:8), RD_CTM, RD_CTMN, RD_CFM, RD_CFMN, RD_CMD, RD_SCK)
 (50 OHM IMPEDANCE : RD_REFCLK, RD_SCLKN, RD_PCLKN)
 (ALL RSL SIGNALS, SCK, CMD, DIFF CLOCK PAIRS MUST HAVE MATCHED ELECTRICAL LENGTH)

10-3-5 DMD-5

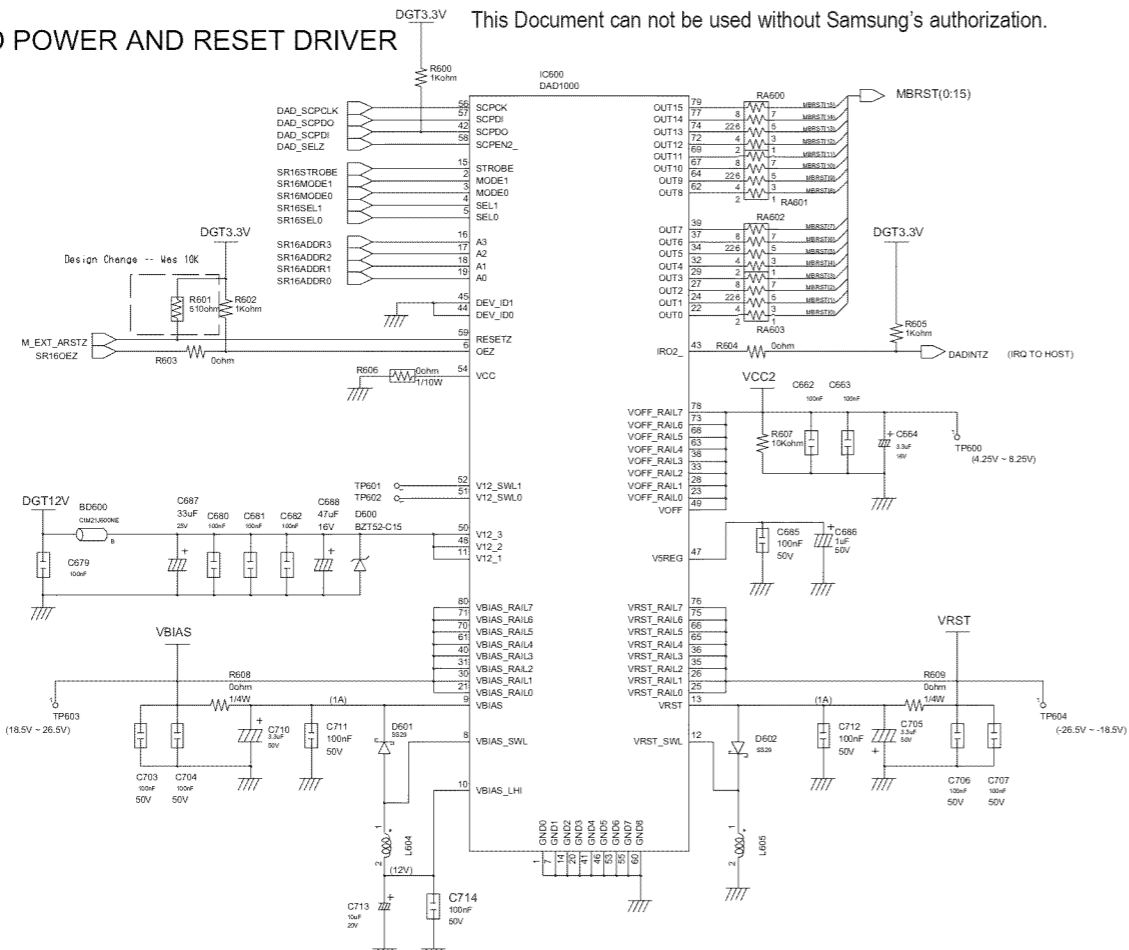
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SLAVE RDRAM / FLASH

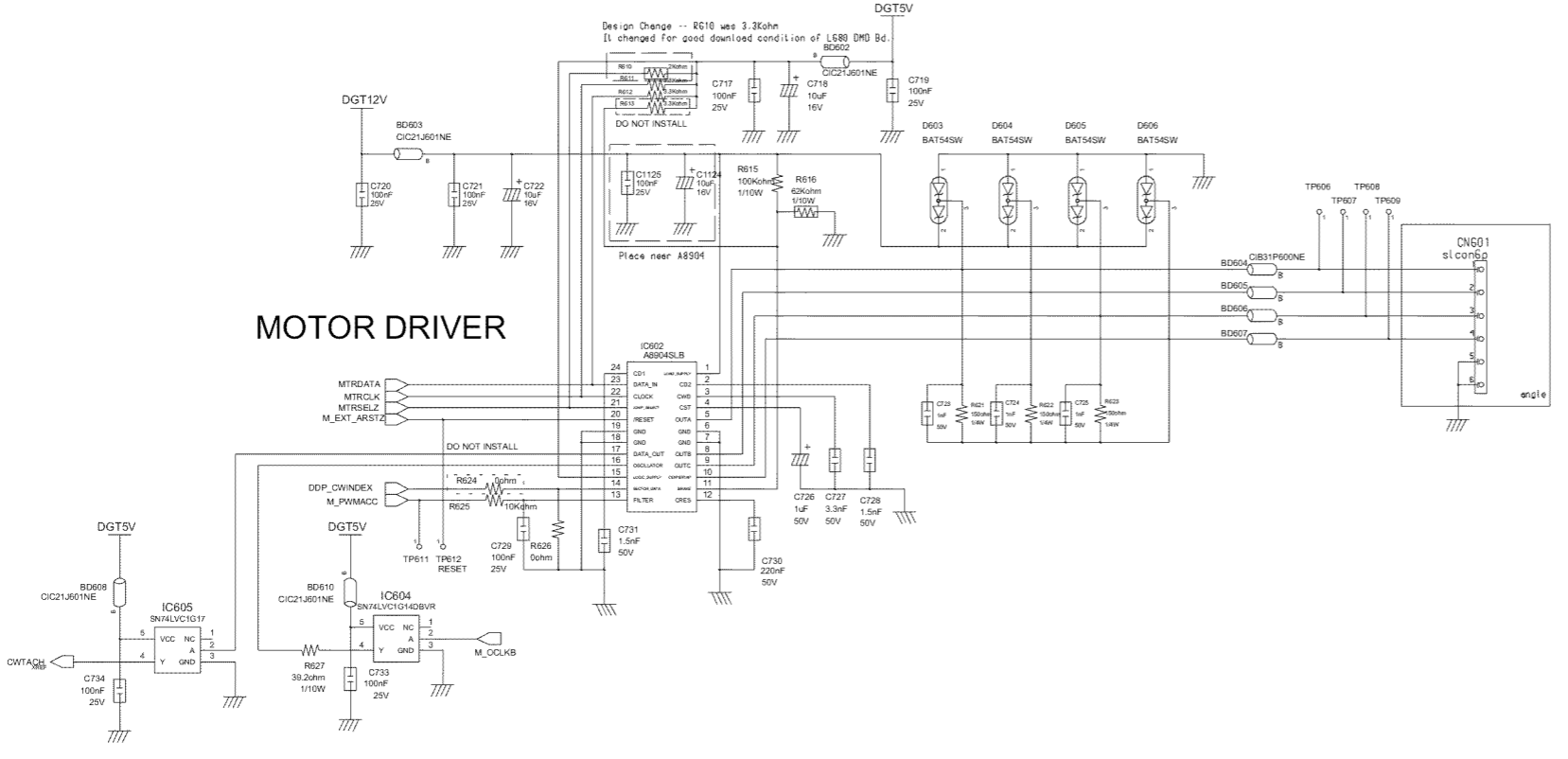


(CHANNEL IMPEDANCE : 40 OHM)
 (TRACE THICKNESS : 1 OZ CU)
 (LENGTH OF LOADED SEGMENT : 748 MILS)
 (TRACE WIDTH FOR UNLOADED SECTION : 10.4 MILS -> DEPENDENT ON VENDOR)
 (MINIMUM UNLOADED PITCH : 30 MILS)
 (FINISHED DIELECTRIC THICKNESS : 8 MILS -> DEPENDENT ON VENDOR)
 (PAIR, IMPEDANCE: UNLOADED :40 OHM, LOADED:60.6 OHM)
 (ROUTING: CDCR83-> RDRAM(CTM) -> DDP1010(CFM) -> RDRAM -> TERMINATION RESISTOR)
 (RSL : RQ(0:7), RQA(0:8), RQB(0:8), RD_CTM, RD_CTMN, RD_CFM, RD_CFMN, RD_CMD, RD_SCK)
 (50 OHM IMPEDANCE : RD_REFCLK, RD_SCLKN, RD_PCLKN)
 (ALL RSL SIGNALS, SCK, CMD, DIFF CLOCK PAIRS MUST HAVE MATCHED ELECTRICAL LENGTH)

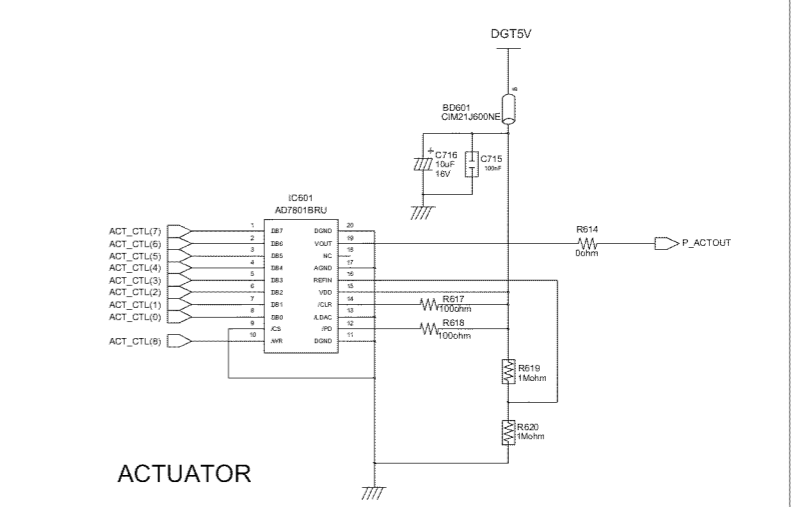
DMD POWER AND RESET DRIVER



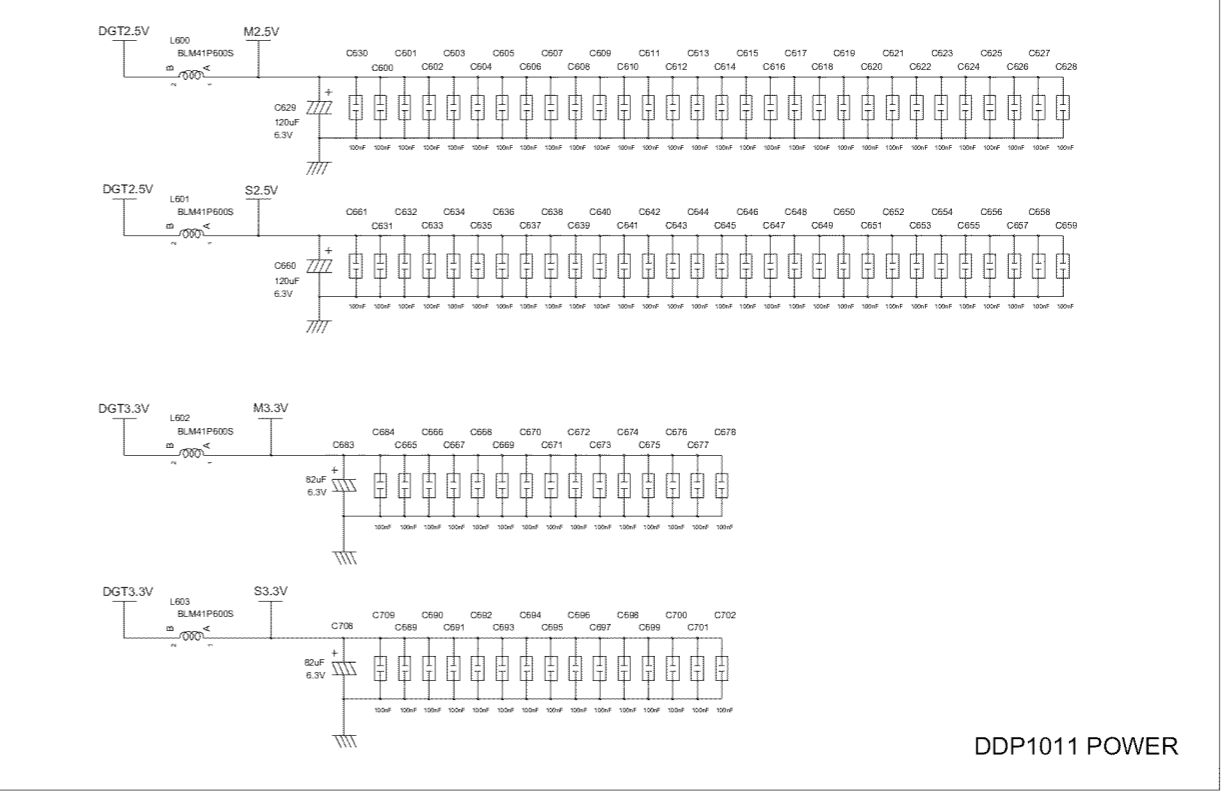
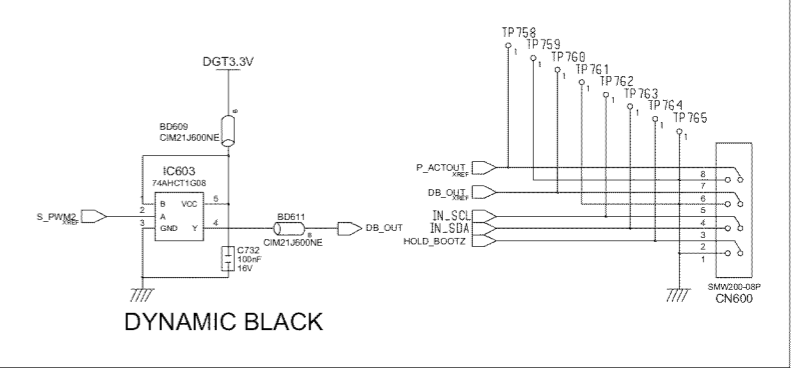
MOTOR DRIVER



ACTUATOR



DYNAMIC BLACK

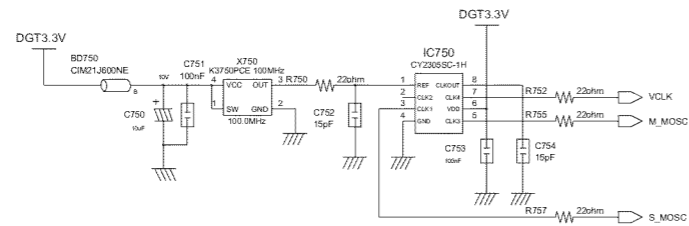


DDP1011 POWER

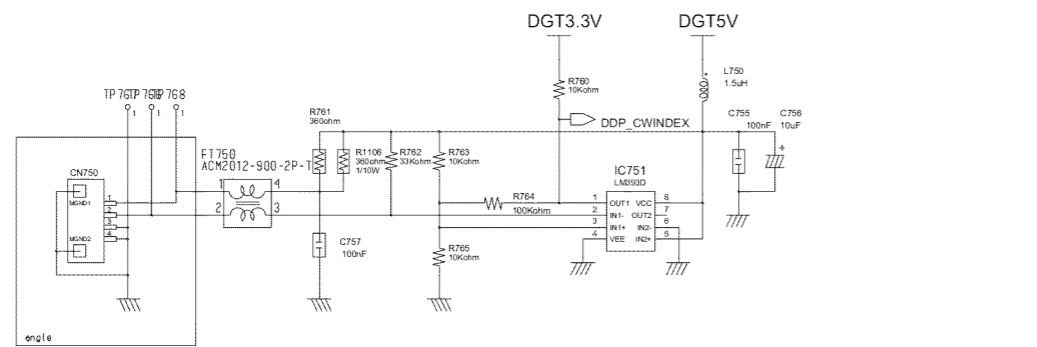
10-3-7 DMD-7

This Document can not be used without Samsung's authorization.

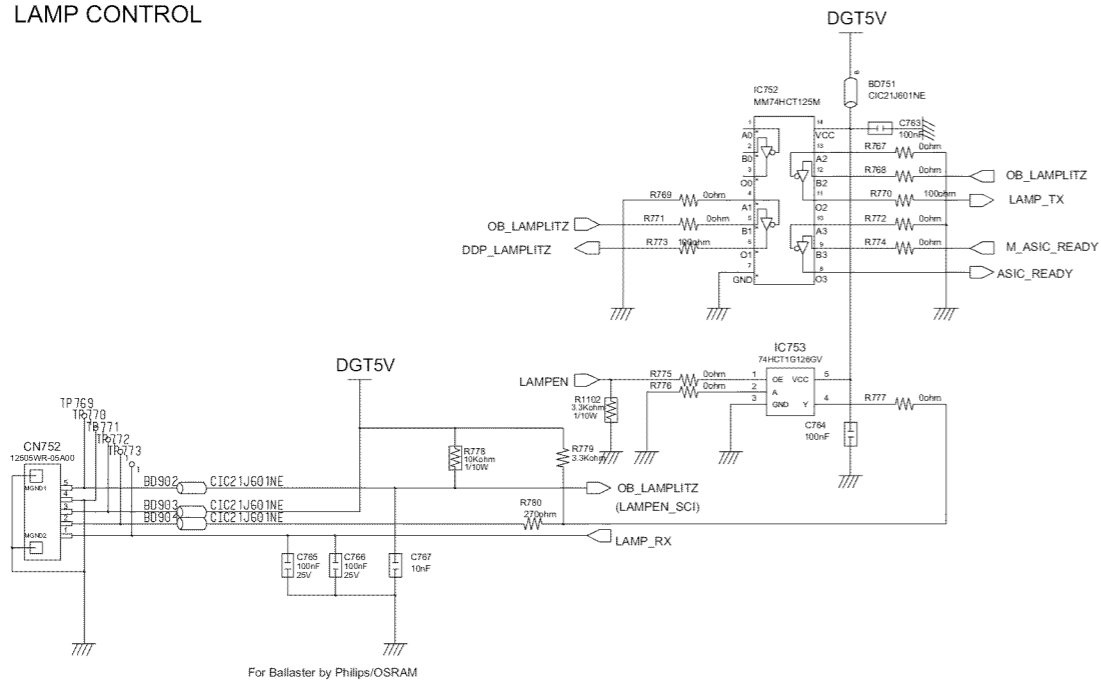
OSCILLATOR CLOCK



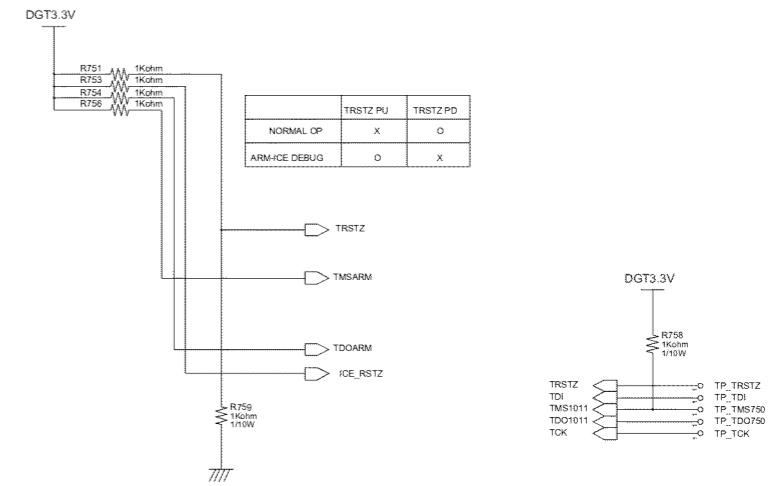
COLOR WHEEL SENSOR DETECTION



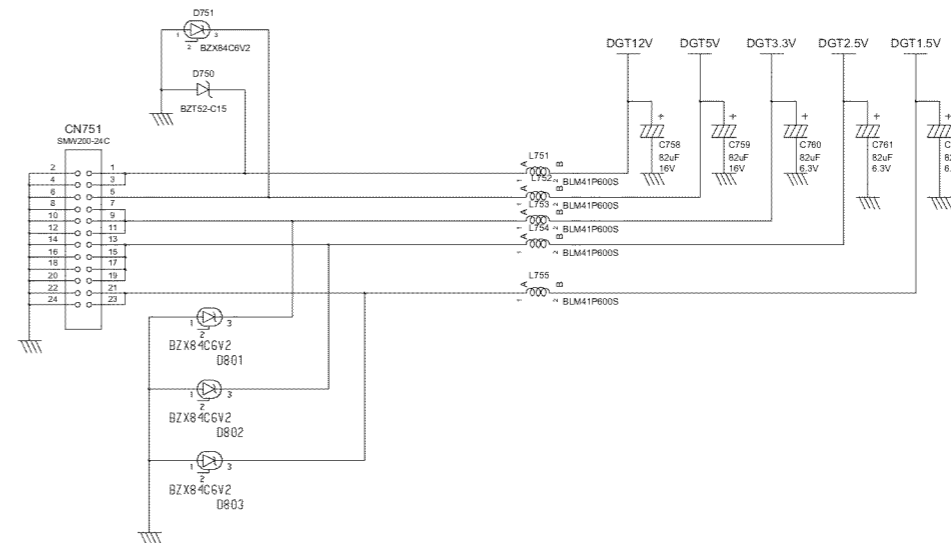
LAMP CONTROL



ARM ICE I/F

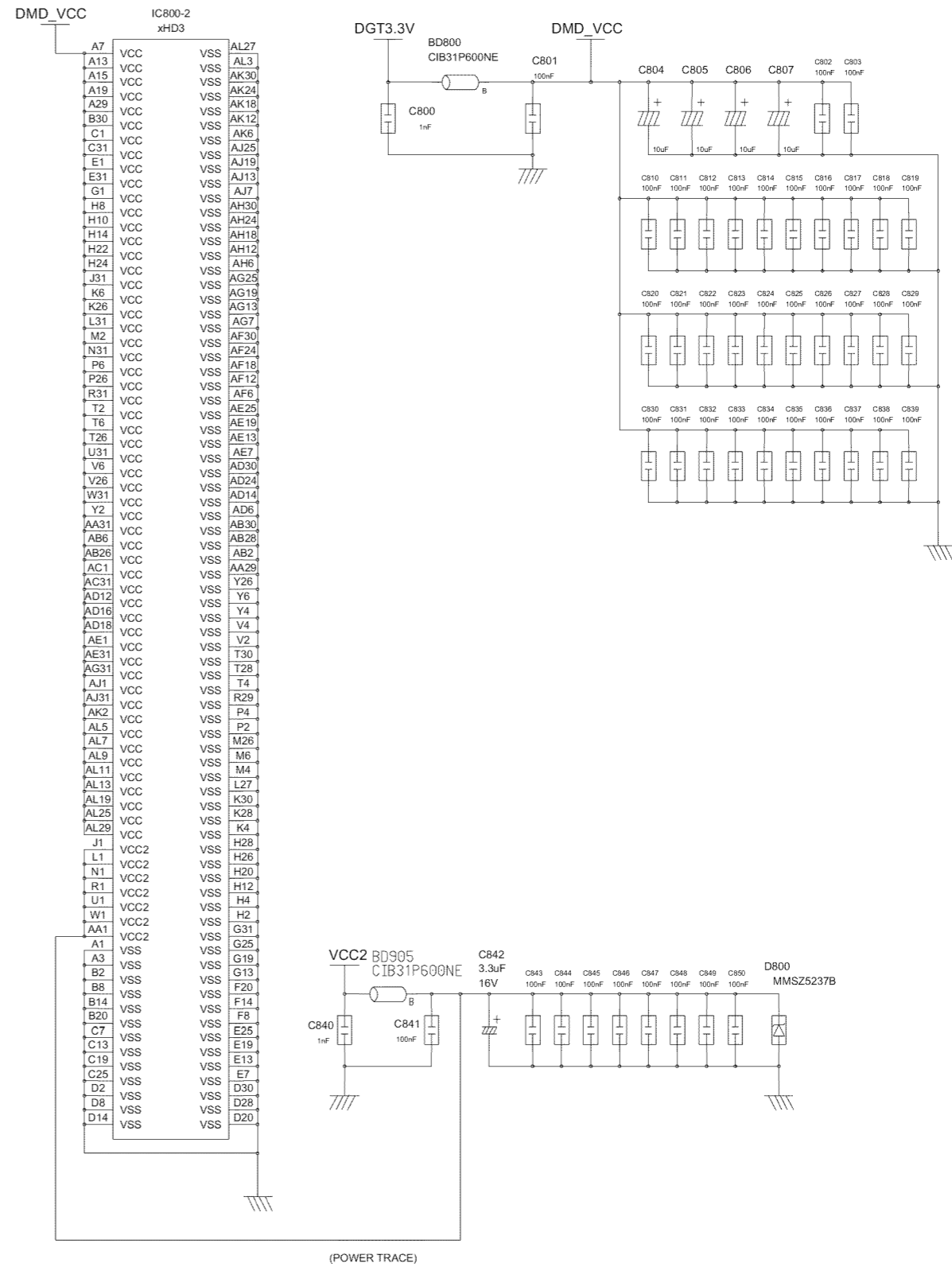
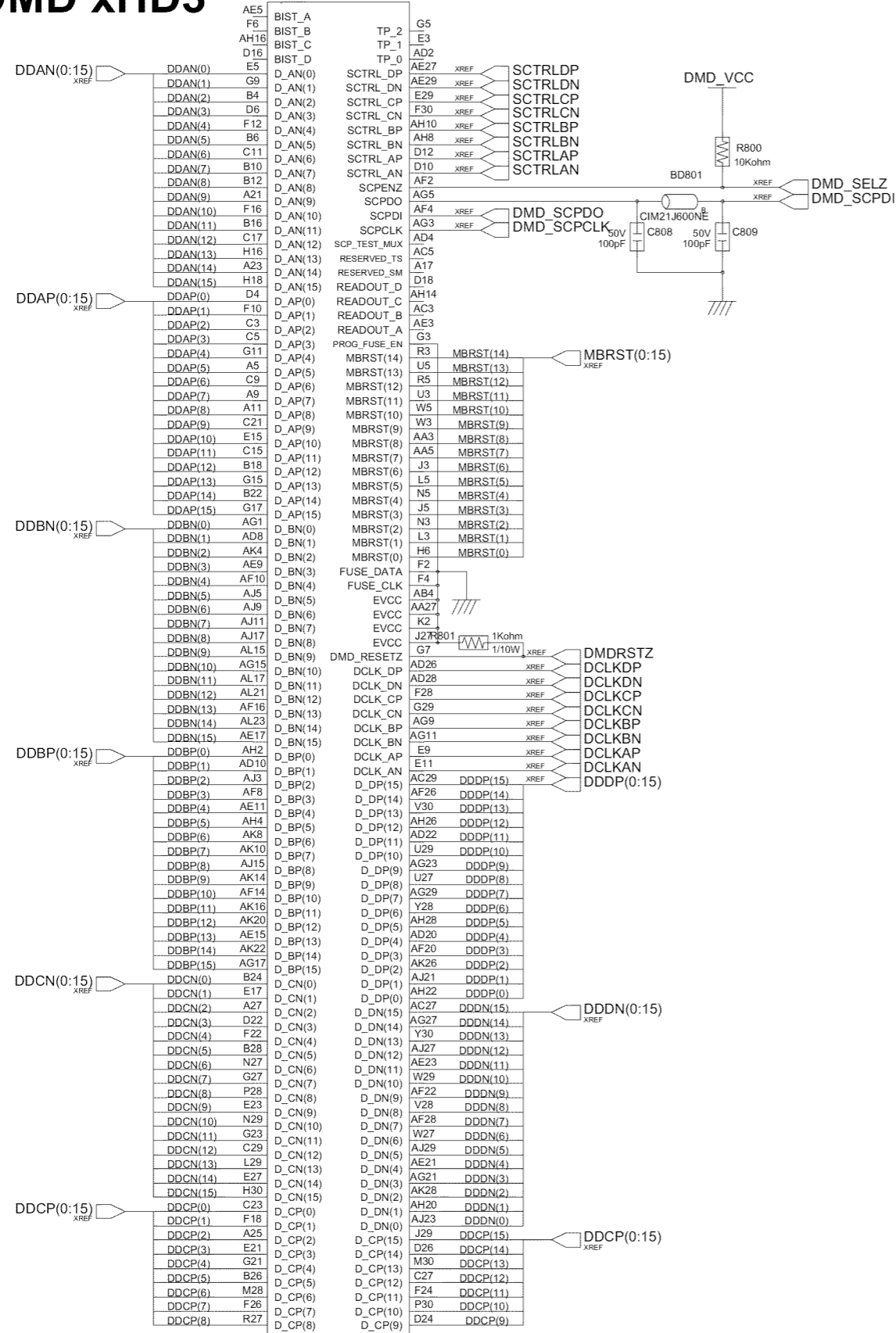


Main Power



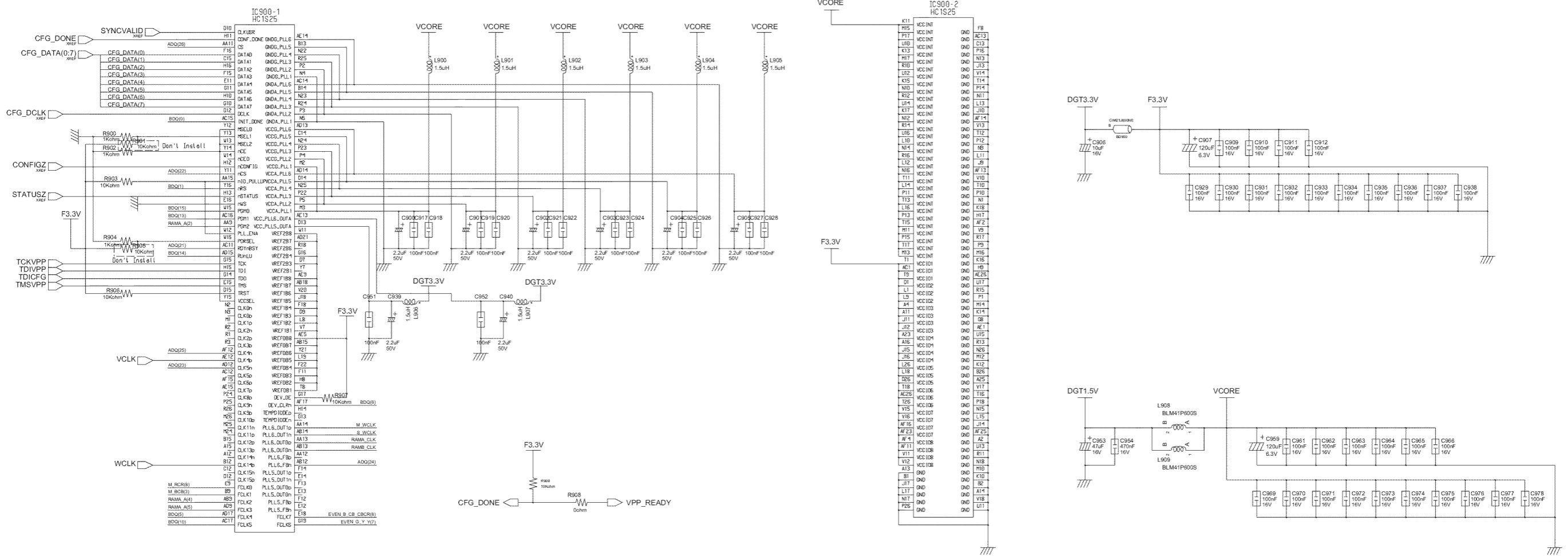
DMD xHD3

IC800-1 xHD3 This Document can not be used without Samsung's authorization.



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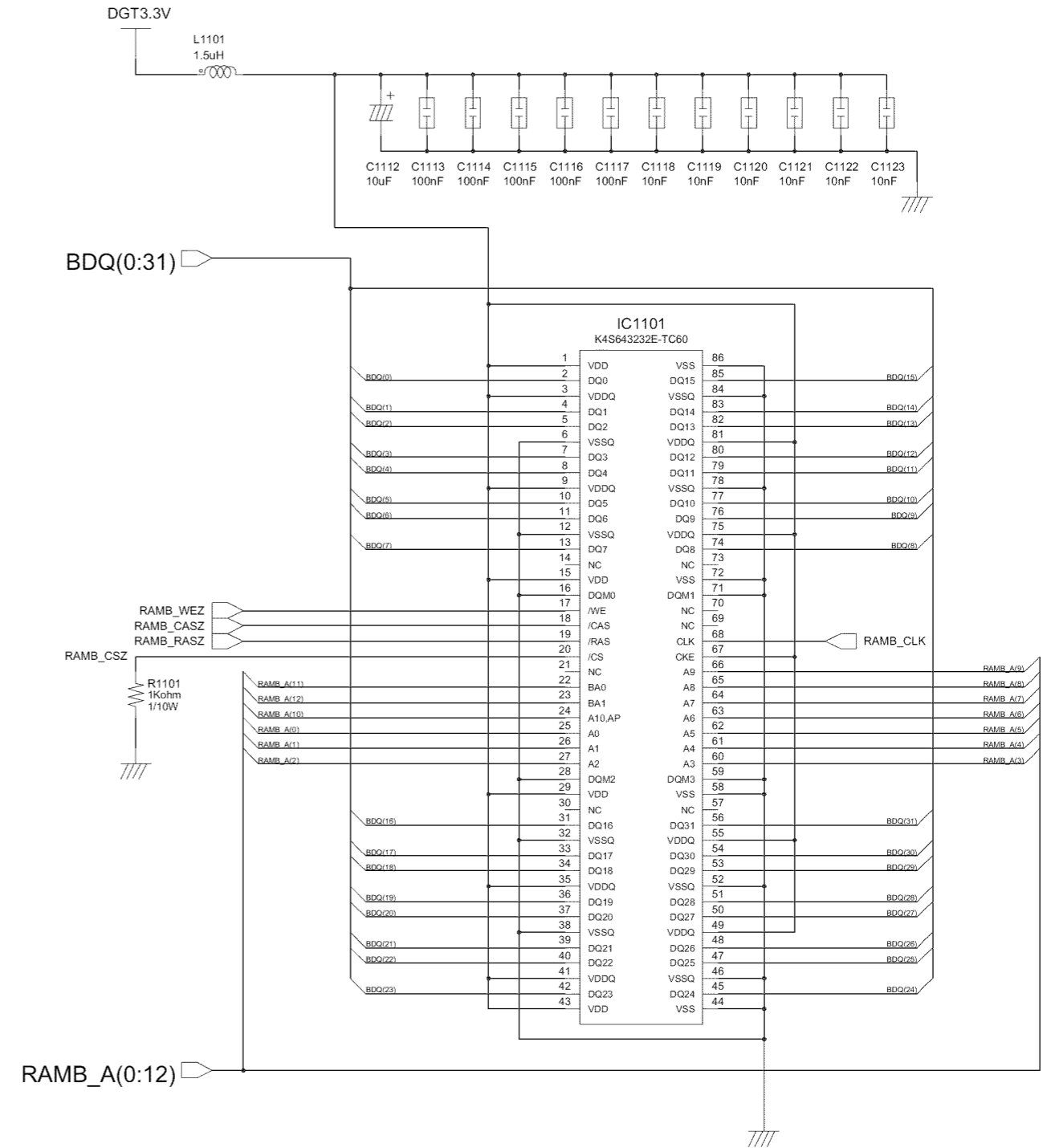
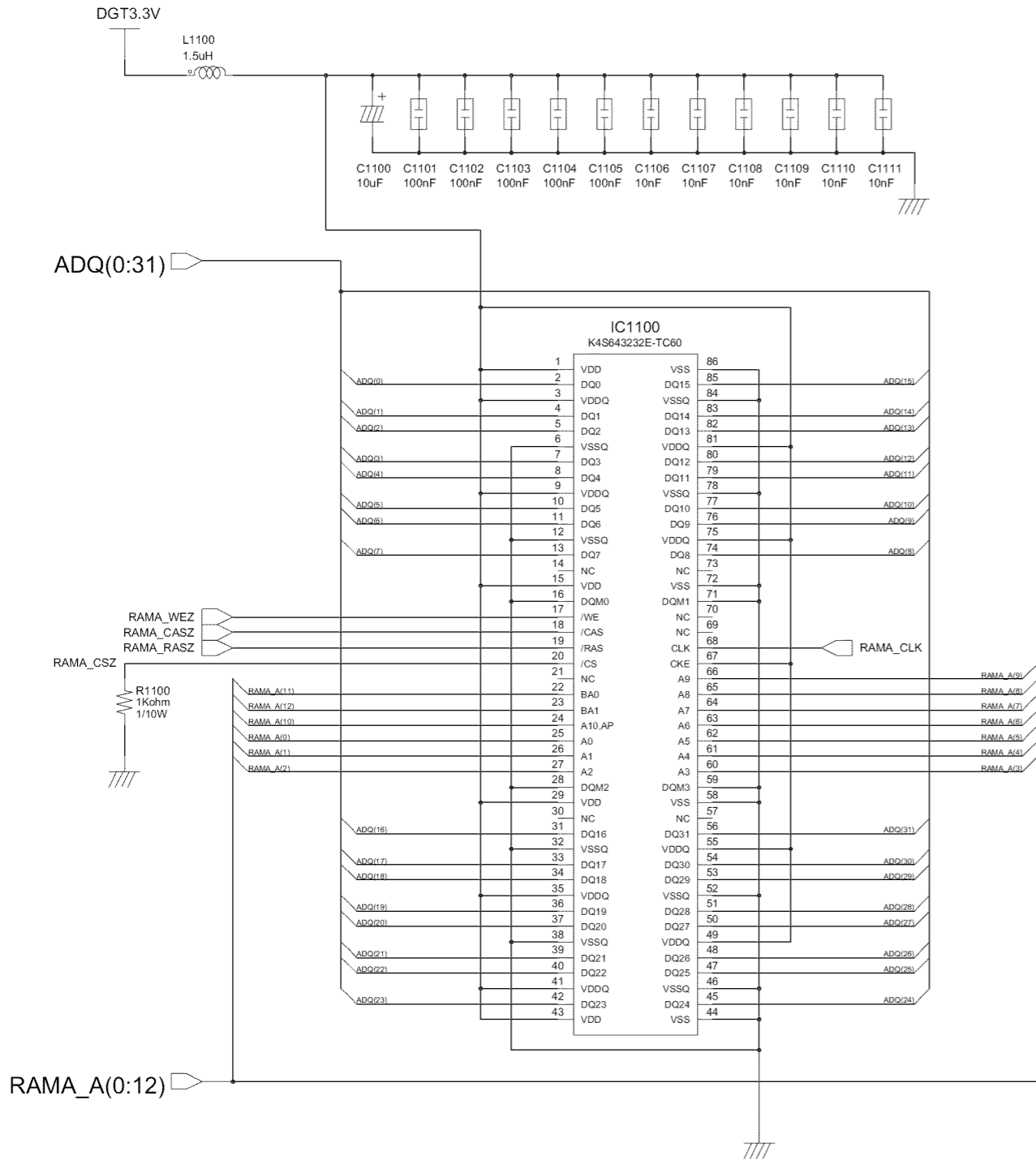
FPGA CFG / POWER



10-3-11 DMD-11

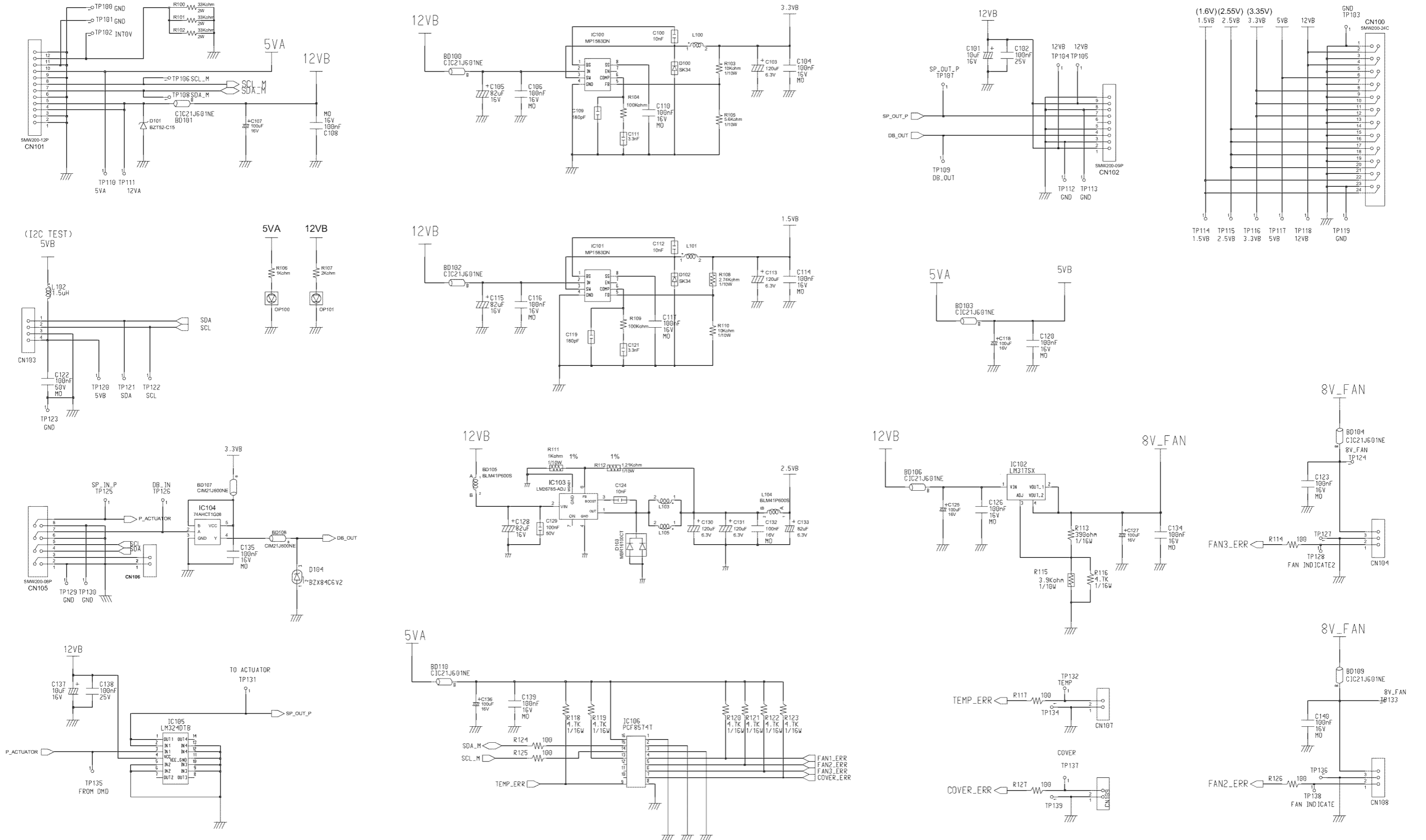
This Document can not be used without Samsung's authorization.

SDRAM



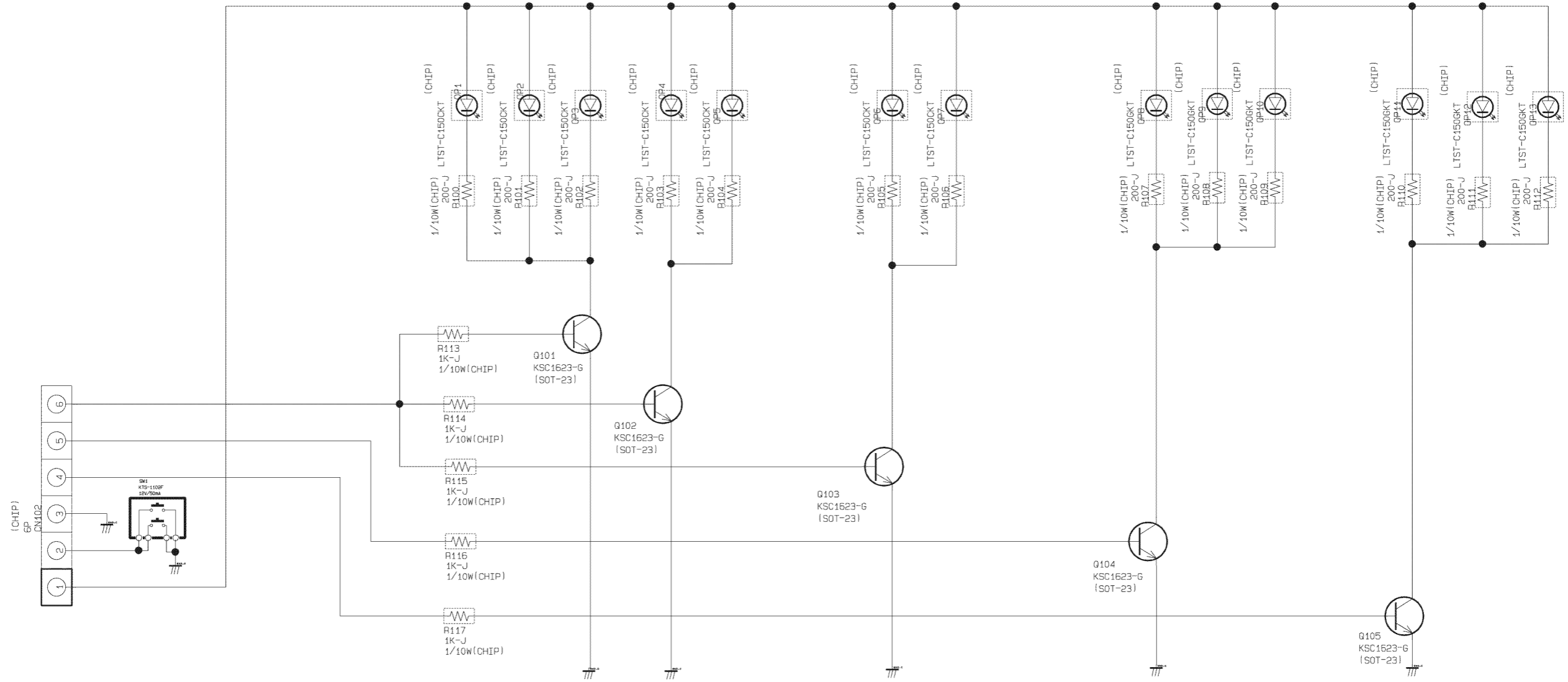
10-5 Detect

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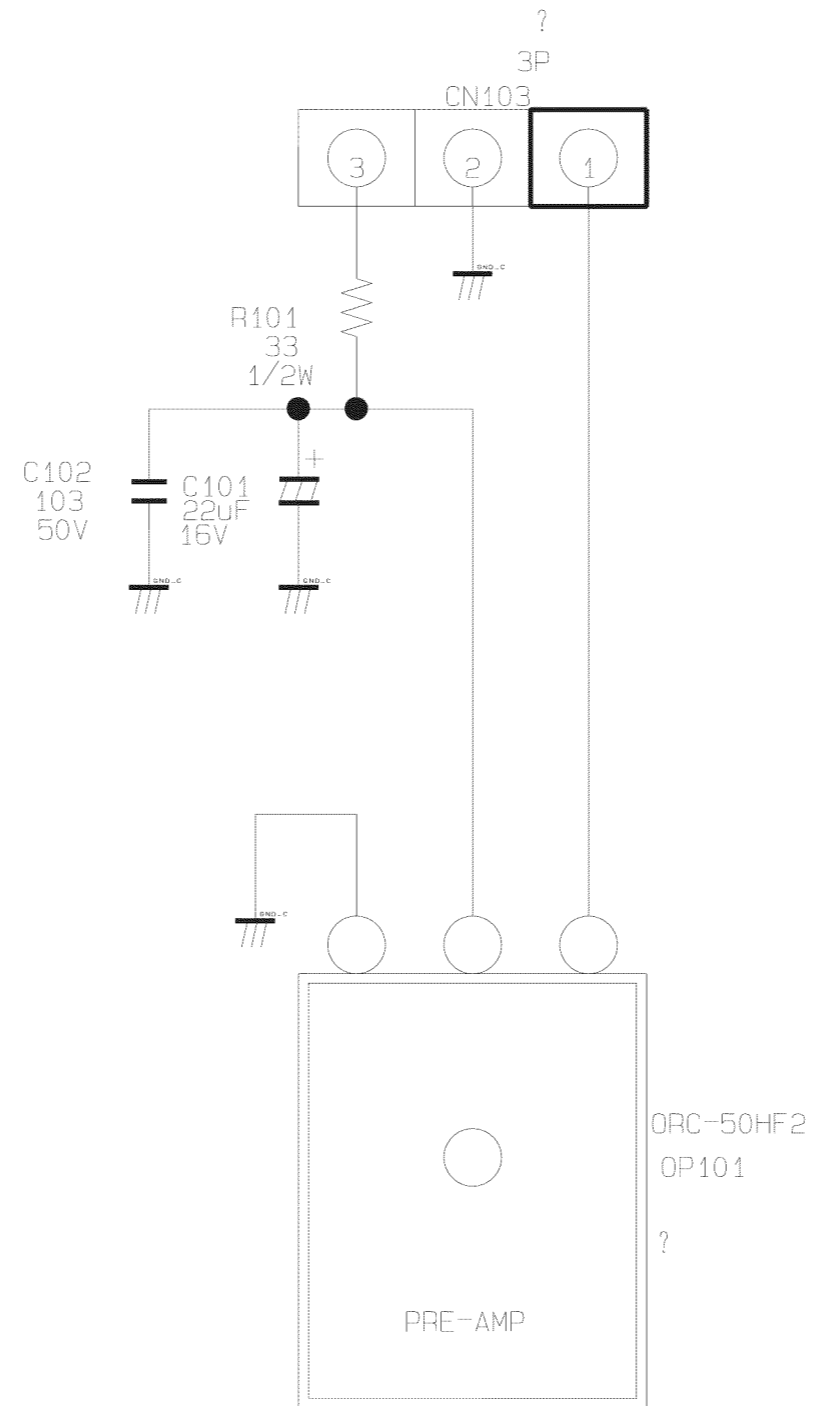
10-6 Power LED

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10-7 RMC

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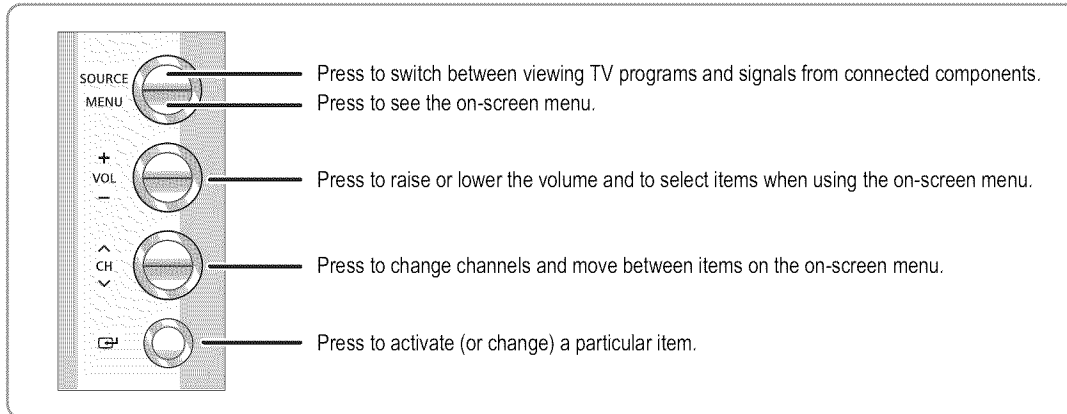


11. Operation Instruction & Installation

11-1 Product Features and Functions

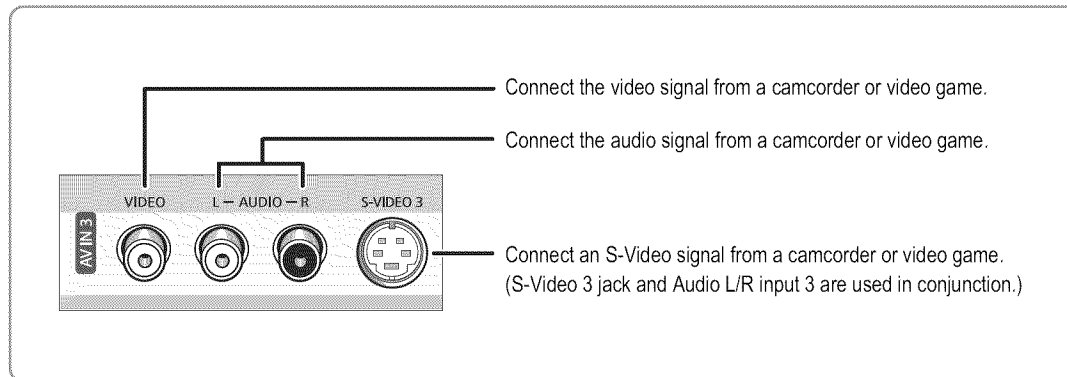
11-1-1 Right side buttons

The buttons on the right side panel control your TV's basic features, including the on-screen menu system. To use the more advanced features, you must use the remote control.



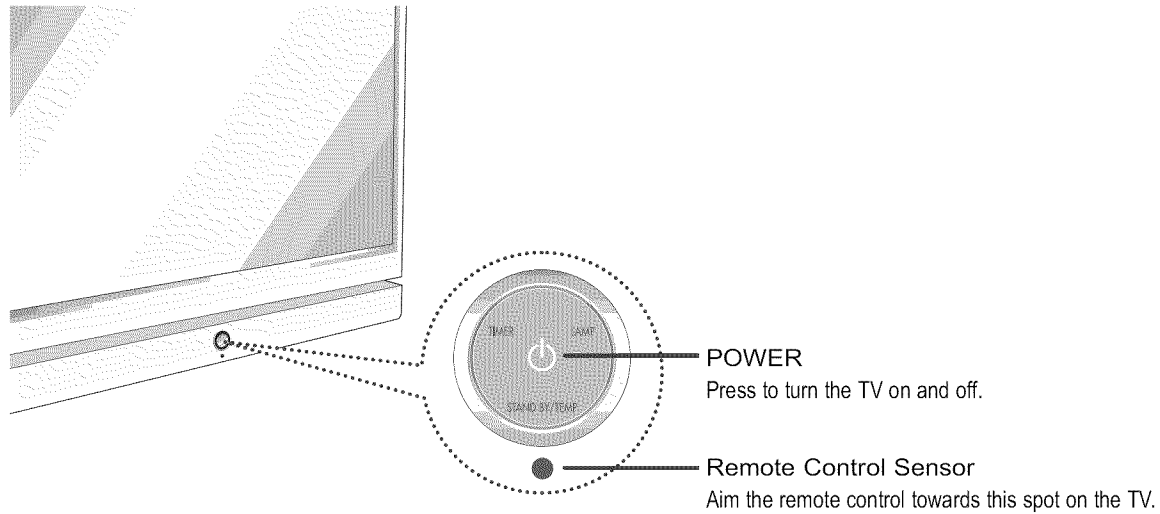
11-1-2 Side Panel Jacks

Use the right side panel jacks to connect a component that is used only occasionally (a camcorder or video game, for example).



11-1-3 Front Panel LED Indicators

The three lights on the front panel indicate the status of your TV.



Indicator Light Key

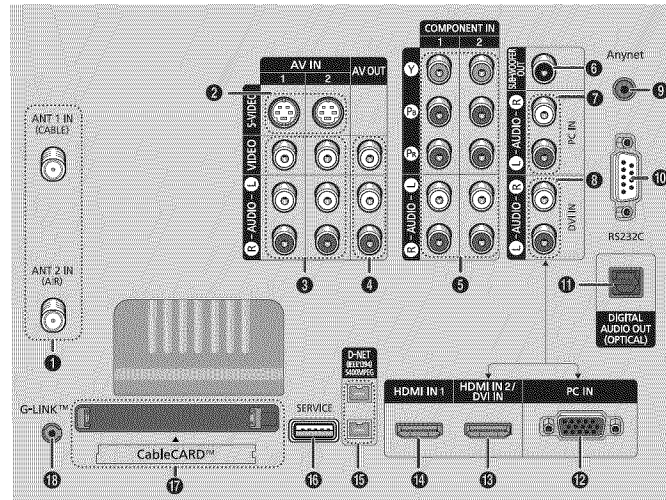
- : Light is On
- ◐ : Light is Blinking
- : Light is Off

TIMER	LAMP	STAND BY/TEMP	Indication
○	○	●	Standby state.
○	◐	○	The picture will automatically appear in about 15 seconds.
●	◐	○	Auto Timer ON/OFF has been set and the set will automatically be turned on in about 25 seconds.
◐	○	◐	A cooling fan inside the set is not operating normally.
○	◐	◐	Lamp cover on the rear of the set is not properly shut.
○	○	◐	Check if the ventilation hole on the rear of the set is blocked, because if the inner temperature is too high, the power will shut off.
◐	◐	◐	Lamp may be defective.

- It takes about 30 seconds for the TV to warm up, so normal brightness may not appear immediately.
- The TV has a fan to keep the inside lamp from overheating. You'll occasionally hear it working.

11-1-4 Rear Panel Jacks

Use the rear panel jacks to connect components such as a VCR. You can connect different components such as VCRs, Set-Top Box and a DVD player etc., because there are two sets of video input jacks and two sets of component video input jacks on the rear panel of your TV. For more information, see "Connections".

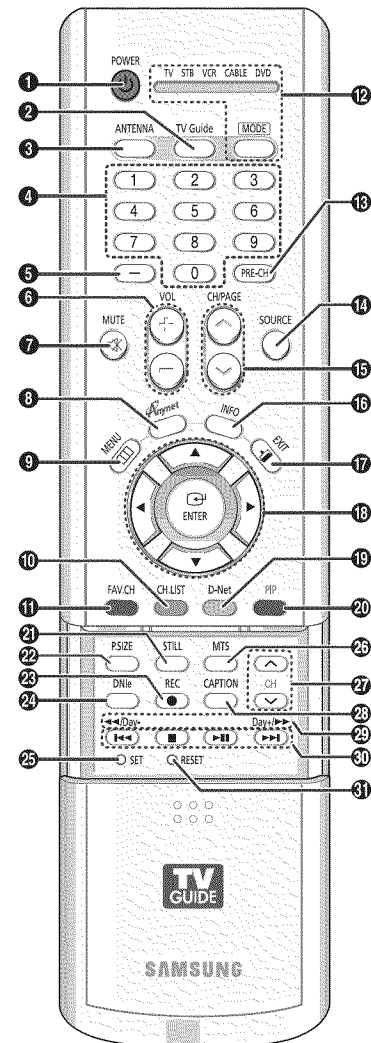


- 1 ANTENNA terminals
Two independent cables or antennas can be connected to these terminals. Use "ANT 1 IN (CABLE)" and "ANT 2 IN (AIR)" terminals to receive a signal from VHF/UHF antennas or your cable system.
- 2 S-VIDEO INPUT jacks
Connects an S-Video signal from an S-VHS VCR or DVD player.
- 3 VIDEO/AUDIO INPUT jacks
Connect video/audio signals from external sources, such as VCR or DVD players.
- 4 VIDEO/AUDIO OUTPUT jacks
Sends video/audio signals from the TV to an external source, such as a VCR. These jacks are available only in RF, Video and S-Video modes.
- 5 COMPONENT1, 2 jacks (Y, Pb, Pr, AUDIO L/R)
Use these jacks to connect the component video/audio signals from a DVD player or a Set-Top Box.
- 6 SUB-WOOFER OUT jack
Connect to an active SUB-WOOFER.
- 7 PC AUDIO INPUT jacks
Connect these to the audio output jacks on your PC.
- 8 HDMI 2/DVI IN (AUDIO L/R)
Connect to the DVI audio output jack of an external device.
- 9 Anynet
Please refer to the Anynet Owner's Instruction. This jack is for connecting to other Samsung Anynet-enabled devices.
- 10 RS232C
Connect to a computer for reading and loading data information.
- 11 DIGITAL AUDIO OUT (OPTICAL) jack
Connect to a Digital Audio Component.
- 12 PC VIDEO INPUT jack
Connect these to the video output jack on your PC.
- 13 HDMI (High Definition Multimedia Interface)/ DVI INPUT jack (HDMI IN 2/DVI IN)
Connect to the HDMI jack of a device with HDMI output. These inputs can also be used as a DVI connection with separate analog audio inputs. An optional HDMI/DVI cable will be necessary to make this connection. When using the optional HDMI/DVI adapter, the DVI analog audio inputs on your TV allow you to receive left and right audio from your DVI device. (Not compatible with PC)
- 14 HDMI (High Definition Multimedia Interface) INPUT jacks (HDMI IN 1)
Connect to the HDMI jack of a device with HDMI output. (Not compatible with PC)
- 15 D-Net (IEEE1394) S400 MPEG
Connect to external IEEE1394 digital products such as digital VCRs and camcorders. Two jacks are provided for this purpose, which allow for a high degree of flexibility for connecting your D-Net controlled system.
- 16 SERVICE
This jack is for software upgrades.
- 17 CableCARD™
Insert the CableCARD into the slot.
- 18 G-LINK™
Connect the IR controller cable to the G-LINK™ terminal on your TV.

11-1-5 Remote Control

You can use the remote control up to about 23 feet from the TV. When using the remote control, always point it directly at the TV. You can also use your remote control to operate your VCR, Cable box, DVD player or Samsung Set-Top Box.

- | | |
|---|---|
| 1. POWER
Turns the TV on and off. | 17. EXIT
Press to exit the menu. |
| 2. TV Guide
Press to display the TV Guide On Screen™ Interactive Program Guide (IPG). (Refer to TV Guide On Screen™ manual.) | 18. ▲, ▼, ◀, ▶, ENTER
Press to select highlight up, down, left, or right. While using the on-screen menus, press the ENTER to activate (or change) a particular item. |
| 3. ANTENNA
Press to select "AIR" or "CABLE". | 19. D-Net
Runs the D-Net view function. |
| 4. CHANNEL NUMBER
Press to directly tune to a particular channel. | 20. PIP (Picture In Picture)
Displays the available channels in sequence. (These buttons change channels in the PIP window only.)
PIP : When in the TV Guide On Screen, toggles the state between locked and unlocked in the Video Window. |
| 5. -
Press to select additional channels (digital and analog) being broadcast by the same station. For example, to select channel "54-3", press "54", then press "-" and "3". | 21. STILL
Press to pause the current screen. |
| 6. VOL +, VOL -
Press to increase or decrease the volume. | 22. P.SIZE
Press to change the screen size. |
| 7. MUTE
Press to mute the TV sound. | 23. REC
Records a program in the TV Guide On Screen™. |
| 8. Anynet
Runs the Anynet view functions and sets up Anynet devices. | 24. DNiE (Digital Natural Image engine)
Activates DNiE Demo mode. |
| 9. MENU
Displays the main on-screen menu. | 25. SET
Used during set up of this remote control, so that it will work compatibly with other devices (Set-Top box, VCR, Cable box, DVD, etc.) |
| 10. CH.LIST
Displays the channel list. | 26. MTS (Multichannel Television Stereo)
Press to choose Stereo, Mono or SAP (Secondary Audio Program). |
| 11. FAV.CH (Favorite Channel)
Press to switch between your favorite channels. | 27. PIP Controls
CH ^ / v ; Press to displays the available channels in sequence. (These buttons change channels in the PIP window only.) |
| 12. MODE
Selects a target device to be controlled by the Samsung remote control (i.e., TV, STB, VCR, CABLE, or DVD). | 28. CAPTION
Controls the caption decoder. |
| 13. PRE-CH
Tunes to the previous channel. | 29. ◀◀/Day-, Day+ /▶▶
Moves forward or backwards in 24 hour increments in the Listings Grid in TV Guide On Screen™. |
| 14. SOURCE
Press to display all of the available video sources (i.e., TV, Set-Top Box, VCR, DVD, DTV, PC). | 30. VCR/DVD Controls
Controls VCR or DVD functions: Rewind, Stop, Play/Pause, Fast Forward. |
| 15. CH/PAGE ^ / v
Press to change channels. Moves from one set of screen information to the next in the TV Guide On Screen™. | |
| 16. INFO
Press to display information on the TV screen. | |



31. **RESET**
If your remote control is not functioning properly, take out the batteries and press the reset button for about 2~3 seconds. Re-insert the batteries and try using the remote control again.

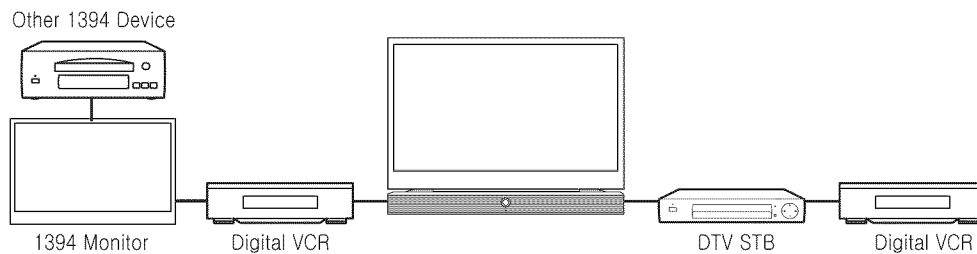
11-2 New Features

11-2-1 D-Net(IEEE1394)

D-Net(IEEE1394) is a cross-platform implementation of the high-speed serial data bus -- defined by the IEEE 1394-1995, IEEE 1394a-2000, and IEEE 1394b standards -- that can move large amounts of data between computers and peripheral devices. It features simplified cabling, hot swapping, and transfer speeds of up to 3.2 gigabits per second (on machines that support 1394b).

Major manufacturers of multimedia devices have been adopting the D-Net(IEEE1394) technology.

D-Net(IEEE1394) speeds up the movement of multimedia data and large files and enables easy connection of digital consumer products -- including, digital video tapes, digital video disks, set-top boxes.



■ Key Features

- Real Time Audio/Video Transmission(MPEG-2, ...)
- High speed Data Transmission
 - 1394 upto 400Mbps
 - 1394.b upto 3.2 Gbps
- Hot Plug & Play
- AVC, CMP, EIA775, CEA931, 5C, ...
- Variety of Compatible devices :DTV, STB, DVHS, AVHDD, MPEG Camcorder, ...
- Copy protection

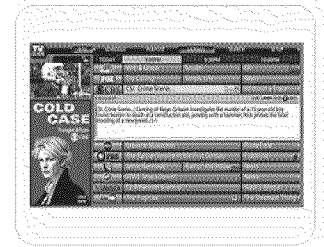
11-2-2 TV Guide On Screen

TV Guide On Screen is an interactive program guide that is built directly into consumer electronics products, including DLP, plasma and LCD televisions, personal video recorders and recordable DVD players.

The guide offers interactive on-screen program listings that enable viewers to quickly and easily navigate, sort, select, and schedule television programming for viewing and recording, all with simple remote control commands.

TV Guide On Screen's patented technology delivers continuously updated program listings to users, regardless of whether they receive their television signal via cable or over-the-air broadcast. TV Guide On Screen works by simply plugging in the television or recording device and activating the guide through an express set-up process.

The guide requires no subscription or special connection and is available at no cost to the consumer.



■ Key Features

- Listings Service:

Displays eight days of viewers' local program listings and descriptions for broadcast and cable;

Viewers can tune to any program, schedule a program to record, or set a reminder, with the press of a button;

The Video Window lets viewers monitor the last channel tuned while viewing program listings, or preview channels as they page through listings;

Color-coded program genres help viewers quickly identify movies, sports, and children's programming.

- Search Feature:

Viewers can search for programs by categories such as HDTV, movies, sports or children's shows. Within categories, viewers can sort by show type, such as baseball or football.

Viewers can sort alphabetically, or by a key word such as a show title or a starring actor.

- One-touch Recording:

To record, viewers simply highlight a program title and then press a button on the remote control. TV Guide On Screen will automatically record the program;

Programs may be set to record one time or every time they air;

TV Guide On Screen is a critical component of the recordable devices into which it is built. A week's worth of listings and powerful sorting and recording features make advanced recording simple

- Reminder Feature:

Viewers may set reminders to ensure they never miss their favorite shows;

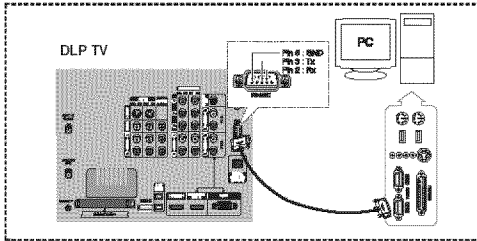
Reminders can even be set to automatically turn on the TV when a show begins.

11-2-3 CableCARD

A small PCMCIA device, not working by itself, designed to run specialized tasks in association with a DCR TV, such as a conditional access sub system or to provide resources required by an application but not provided directly by the host.

11-2-4 RS-232C

Connect the DLP DTU using the serial port.



- ⚠ Do not disconnect or connect the RS-232C cable while the Computer or the DLP TV is operating. It may cause serious damage to the Computer or the DLP TV.
- ⚠ If the PC is not properly configured, the RS-232C connection may not work properly. For further details, refer to the Computer's product documentation.

Serial Port Settings (Select Standard RS232)

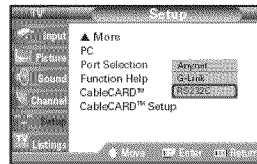
Specification	RS-232C
Bit Rate	19200 bps
Data Bits	8 bits
Parity	None
Stop Bits	1 bit
Flow Control	None

DLP DTU Menu Configuration

Since Anynet, G-Link and RS232C share a serial port, you have to select RS232C from the menu for the following communication.

Menu Setting Procedures

Select Setup → Port Selection → RS232C



Serial Communication Protocol

Command Packet Structure [7 bytes]

0x08	0x22	Cmd1	Cmd2	Cmd3	Value	CS
------	------	------	------	------	-------	----

- ◆ A command packet consists of 7 bytes in total.
- ◆ The two bytes 0x08 and 0x22 signify that the packet is for serial communication.
- ◆ The following 4 bytes represent a pre-defined command that can be defined by the user.
- ◆ The last byte is the checksum which checks the validity of the current packet.

Header [2 Byte]: Pre-defined values fixed to 0x08 and 0x22.

Cmd1 [1 Byte]: The first value of the code defined in the command list (Hexadecimal)

Cmd2 [1 Byte]: The second value of the code defined in the command list (Hexadecimal)

Cmd3 [1 Byte]: The third value of the code defined in the command list (Hexadecimal)

Value [1 Byte]: Input parameter for the command (Default: 0) (Hexadecimal)

CS [1 Byte]: Checksum (the 2's complement of the sum of all the values except for the CS value.)

Response Packet Structure [3 Bytes]

◆ Success			◆ Fail		
0x03	0x0C	0xF1	0x03	0x0C	0xFF

When the received packet from an external device has a valid value, a Success packet is sent. Otherwise, a Fail packet is sent.

A Fail packet is sent if:

- ◆ The received packet length is not equal to 7 bytes.
- ◆ The 2 byte packet header value is not equal to 0x08, 0x22.
- ◆ The check sum is incorrect.

Failure detection by an external device

An external device classifies the packet as Fail if it does not receive a Success packet within 100ms.

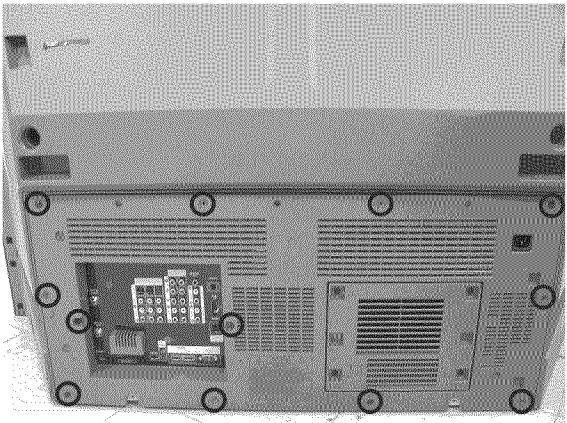
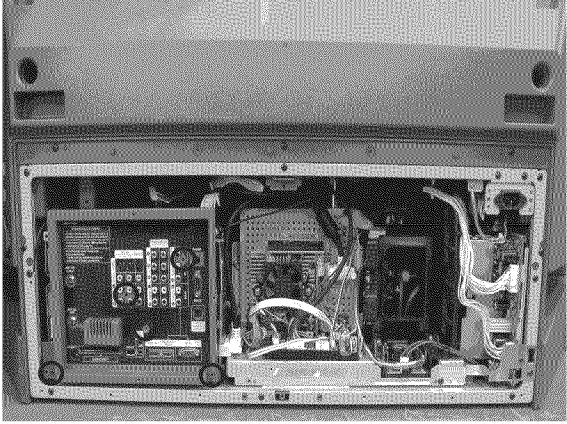
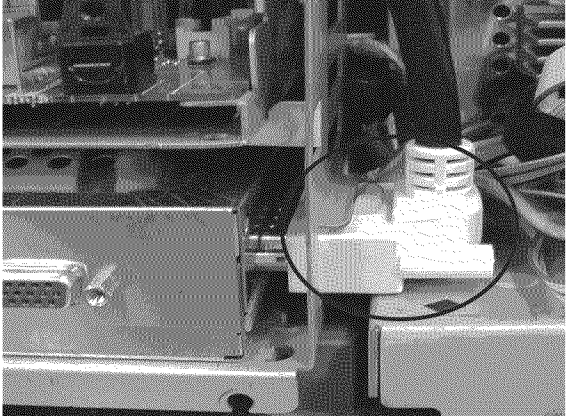
Communication Sequence

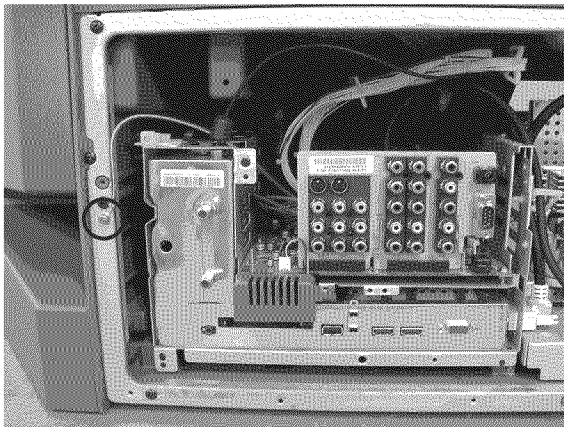
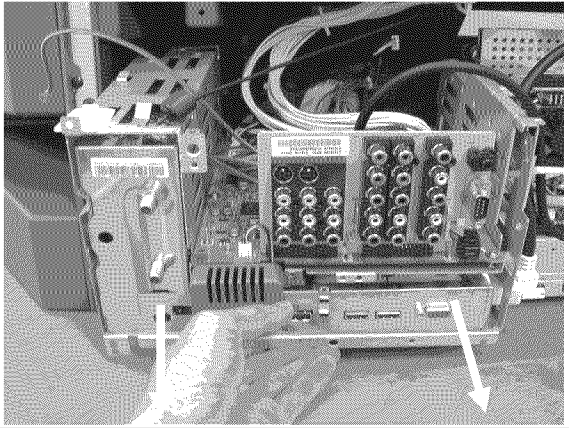
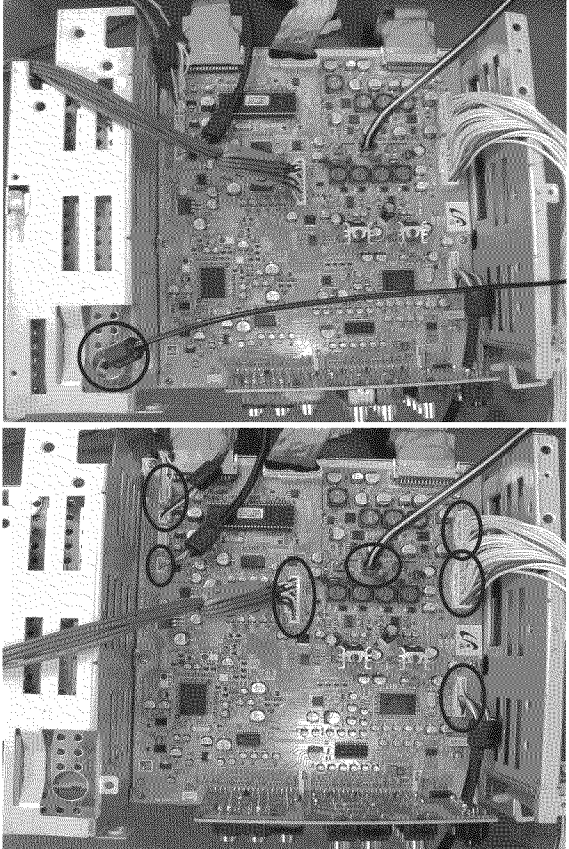
- ◆ PC
Creates a command packet and sends it through RS232C.
- ◆ DLP DTU
Receives a packet and parses the packet.
Determines whether it is a success or fail, and transmits the Ack packet to the PC.
Controls the DLP DTU with the parsed command.
- ◆ PC
Waits for the Ack packet.
Prepares the next command, if a Success packet arrives immediately.

12. Disassembly & Reassembly

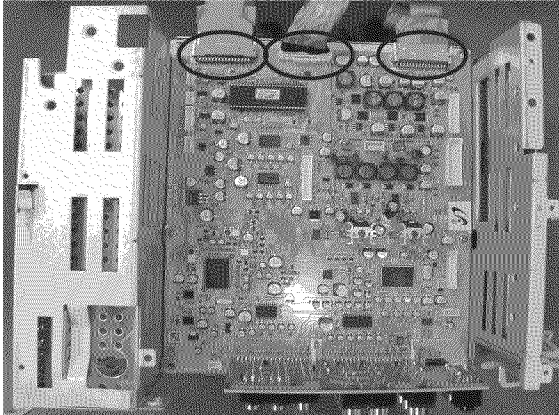
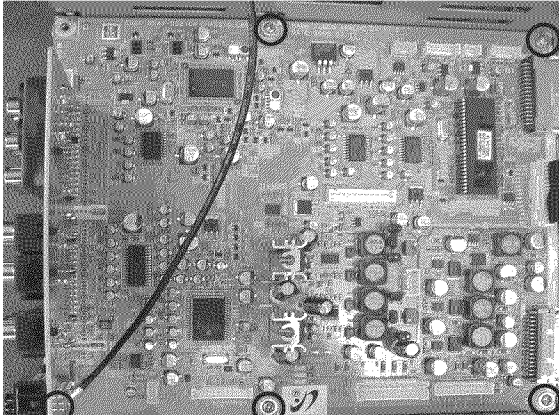
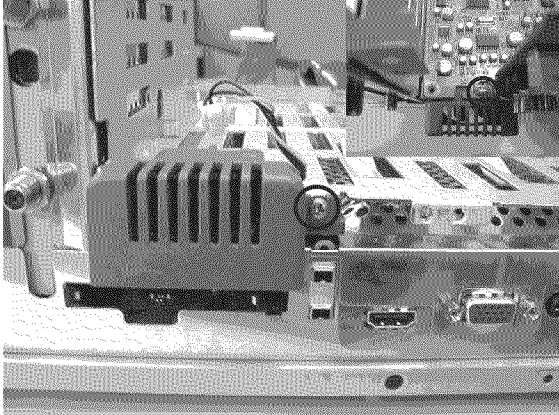
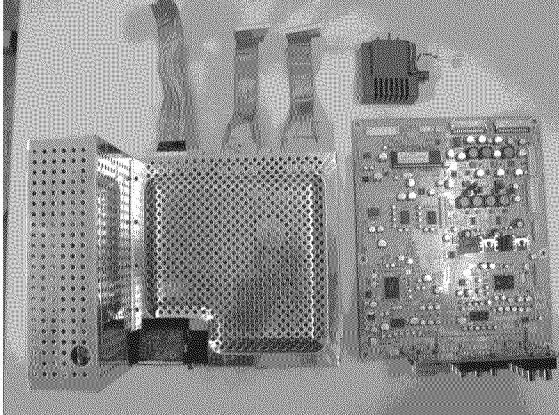
12-1 Overall Disassembly & Reassembly

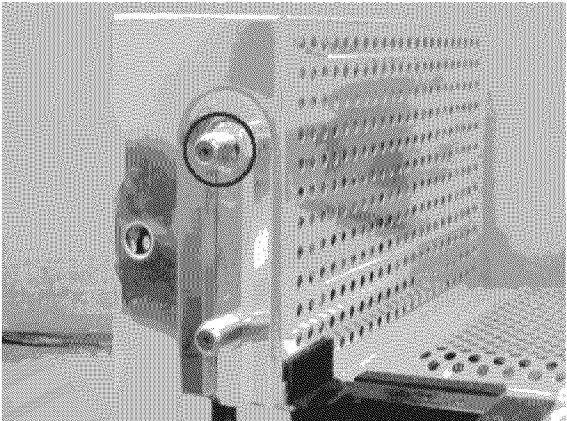
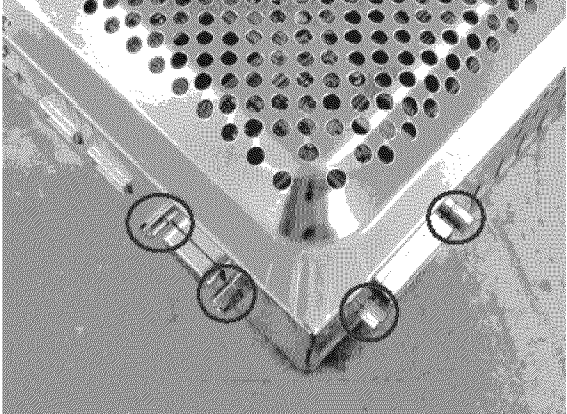
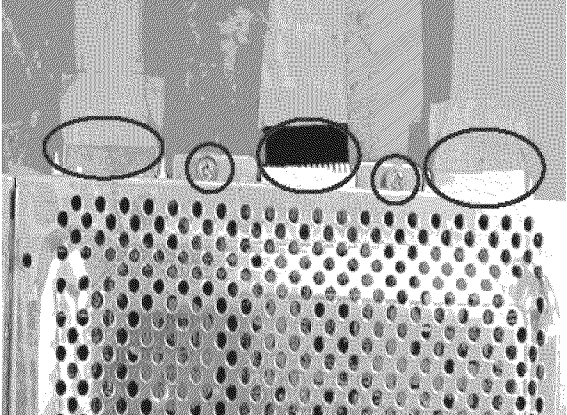
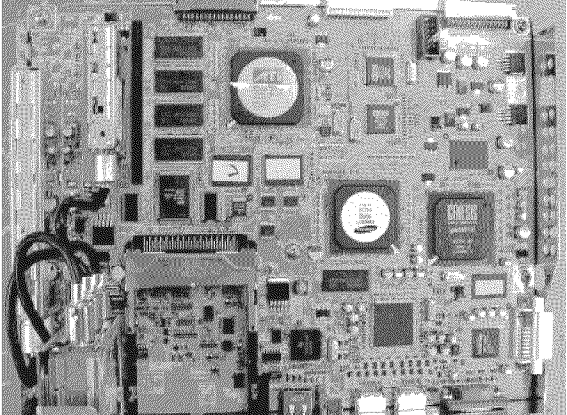
12-1-1 Separation of the back cover and the chassis

Part Name	Description	Description Photo
Back Cover	① Remove 12 screws to remove the back bottom cover. : TH,B,M4.L15,BLK,SWRCH18A	
Terminal Board	① Remove 5 screws to remove the Terminal Board. * The 3 Terminal Board Screws : TH,B,M4.L15,BLK,SWRCH18A * The 3 Jack Screws : RH,B,M4,L15,ZPC(BLK),SWRCH18	
DVI cable	① Separate the DVI cable. ⚠ : The DVI screw is made of soft plastic and may easily break when applying excessive force through a screw driver. Ensure that extreme caution is taken when loosening the screw.	

Part Name	Description	Description Photo
Terminal Board	① Remove the screw. : WSP,PH,+ ,M4,L12,ZPC(YEL),SM10C	
Holder Chassis	① Pull out the holder Chassis.	
Analog Board	① Seperate the Gt-wires. ② Seperate the cables.	

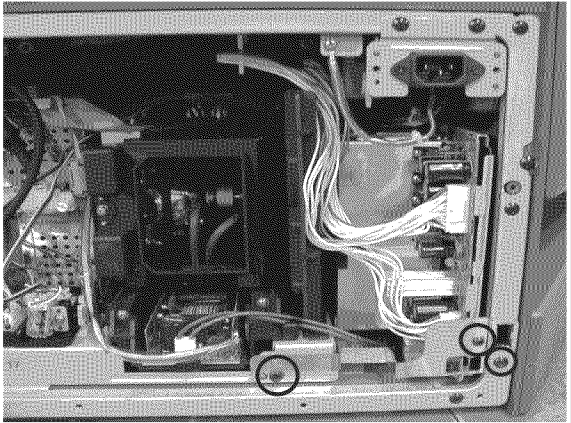
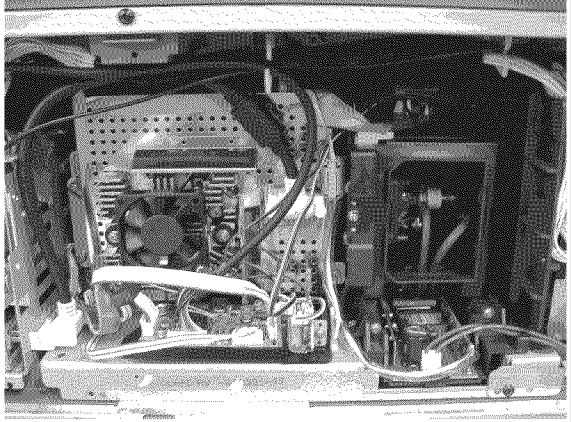
12-1-2 Separation of the Analog and Digital Board

Part Name	Description	Description Photo
Analog Board	<p>① Separate the cables.</p> <p>⚠ : The 30 pin shield cable should be removed by holding the two lock ends of the cable, as failing to do so, could damage the connector.</p>	
	<p>① Remove the 5 screws and separate Fan cable(CN275). Detach Analog board from Assy. : PWH,B,M3,L10,ZPC(YEL),SWRCH18A</p>	
Fan	<p>① Remove both the connector and the screws before removing the fan. Then remove the fan from the holder chassis. : PWH,B,M3,L10,ZPC(YEL),SWRCH18A</p>	
Analog Board/ Digital Board/ Fan	<p>① Analog, Digital Board and Fan.</p>	

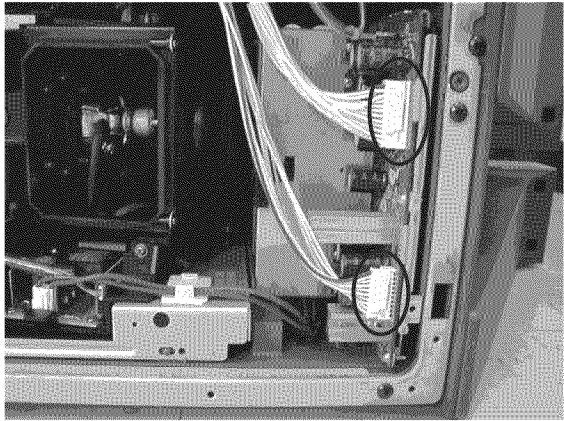
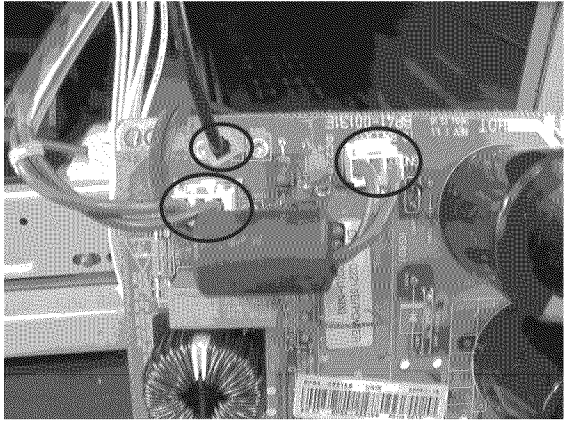
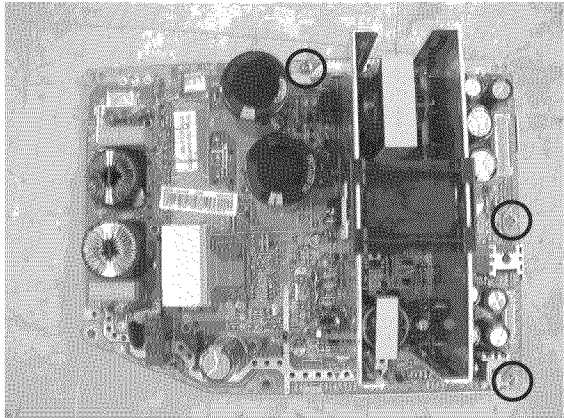
Part Name	Description	Description Photo
Digital Board	<p>① Use the long-nosed pliers to remove the hex nut. Nut-Hexagon : -,M3/8X32,ZPC(WHT),MBSBD</p> <p>⚠ : The standoffs can easily break if excessive force is applied. Use extreme caution when removing and replacing.</p>	
	<p>① Remove 2 standoffs from the DVI connector. StandOff : M3,L5,Ni PLT,SUM24L,#4-40</p> <p>② Remove 2 standoffs from the PC connector.</p>	
	<p>① Remove the screws and cables. : PWH,B,M3,L10,ZPC(YEL),SWRCH18A</p> <p>⚠ : The 30 pin shield cable should be removed by holding the two lock ends of the cable, as failing to do so, could damage the connector.</p>	
	<p>① After Removing the Top Shield Case.</p> <p>⚠ : Use the two lock holes on either side of the shield case when removing it.</p>	

Part Name	Description	Description Photo
Digital Board	① Remove the screws before removing the shield case at the bottom. : PWH,B,M3,L10,ZPC(YEL),SWRCH18A	
	① Digital Board.	

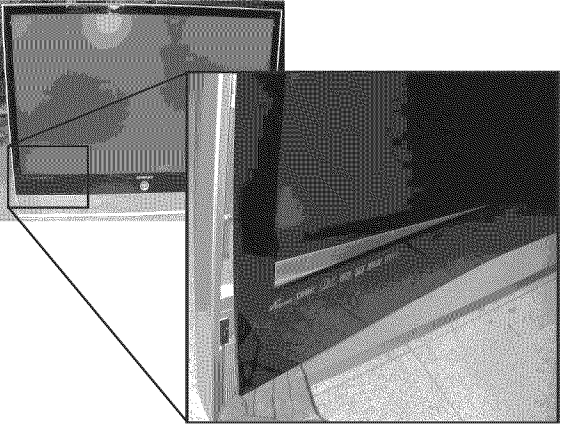
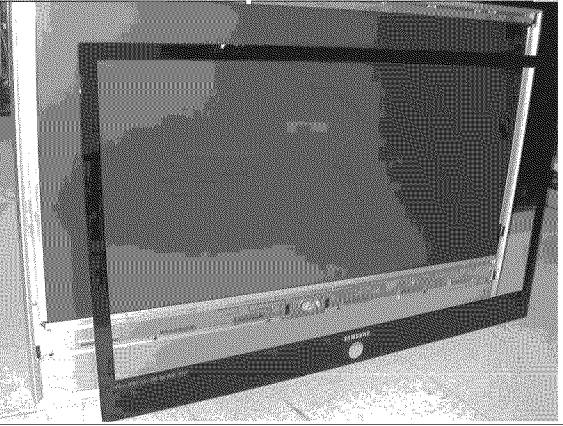
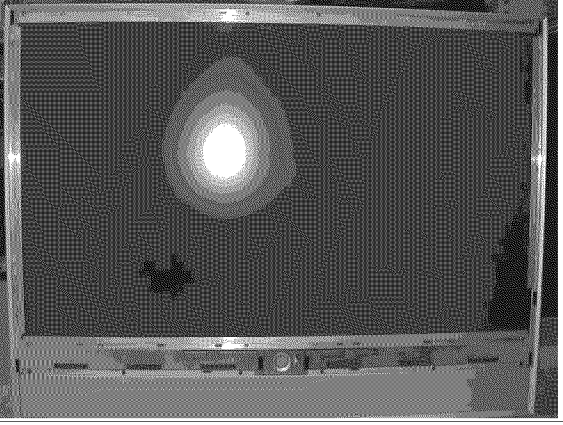
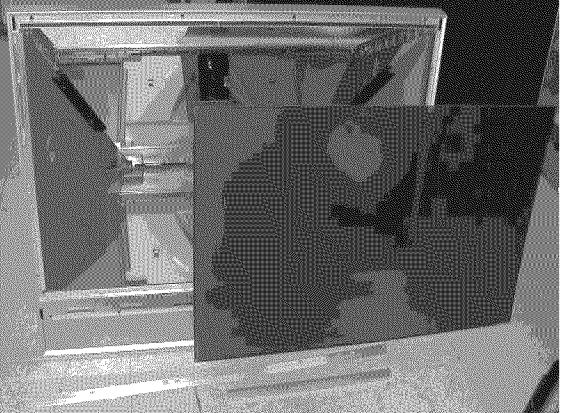
12-1-3 Separation of the optical engine

Part Name	Description	Description Photo
Optical Engine	<p>① Remove the three screws to remove the bracket. : TH,B,M4.L15,BLK,SWRCH18A</p> <p>② The connector from the Power Supply to the Ballast has to be removed before the Light Engine can be taken out of the unit.</p>	
	<p>① Remove the engine by pulling it out of the cabinet.</p> <p>⚠ : Be careful when removing the Light Engine as it may get caught up by the upper cable of the case.</p>	

12-1-4 Separation of the Power Board

Part Name	Description	Description Photo
Power Board	<p>① Separate the cables.</p>	
	<p>① Remove the power board carefully before disconnecting the cables.</p> <p>⚠ Notice: Wear gloves when handling the power board as there may be some remaining electrical charge in the capacitors. Specifically, avoid touching any part of the capacitors.</p>	
	<p>① After removing the screws, separate the bottom power bracket. : PWH,B,M3,L10,ZPC(YEL),SWRCH18A</p>	

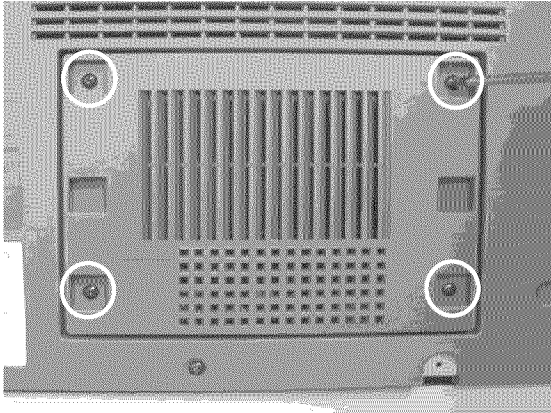
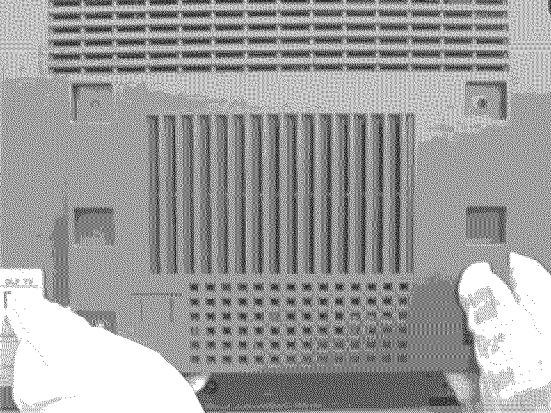
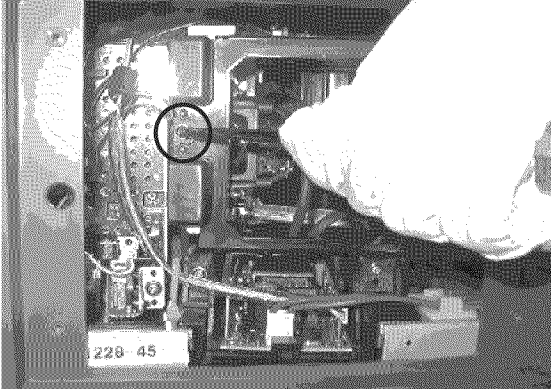
12-1-5 Screen Remove

Part Name	Description	Description Photo
Cover-Front	<p>① Cover-Front's lower department pull to fore-end and remove.</p> <p>⚠ : There is no Screw conclusion place.</p>	
	<p>① State that Cover-Front is detached.</p>	
Brkt-Screen, Top / Brkt-Screen, Right	<p>① Separate Brkt-Screen, Top and Right after remove 6 screws indicating in picture. : TH M4,L12,YELLOW.</p>	
Screen	<p>① Separate Screen.</p>	

12-1-6 Lamp Replacement

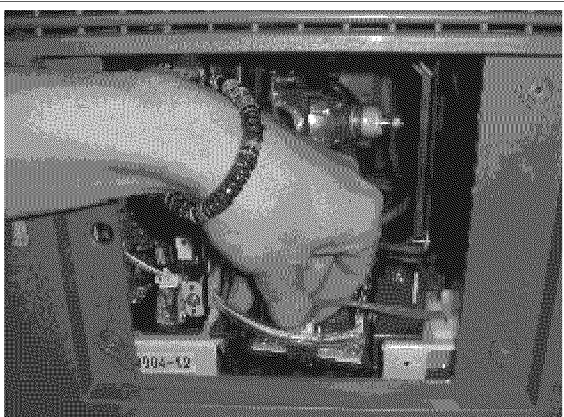
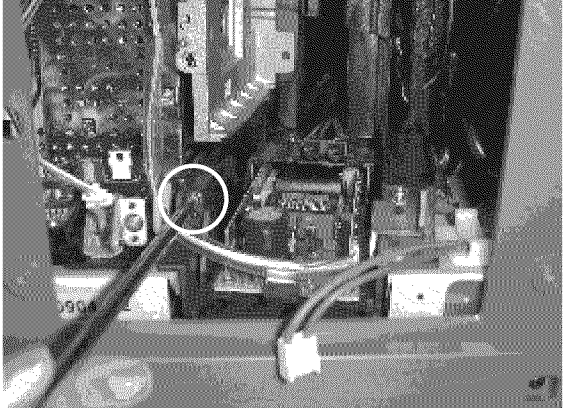
⚠ Notice

1. Replace with the correct code numbered lamp to avoid damage to the TV.
2. Turn the power off and wait for 30 minutes before replacing the lamp as it will be hot.
3. Do not touch the glass part of the lamp with your bare hands nor insert any foreign object inside the cover as it may cause poor screen quality, electric shock or fire.
4. Do not place the old lamp near flammable objects or within the reach of children.
5. Be sure to connect this TV directly to an AC wall outlet. If the TV's AC plug is connected to a cable box or other source, it will not allow for proper cool down time.

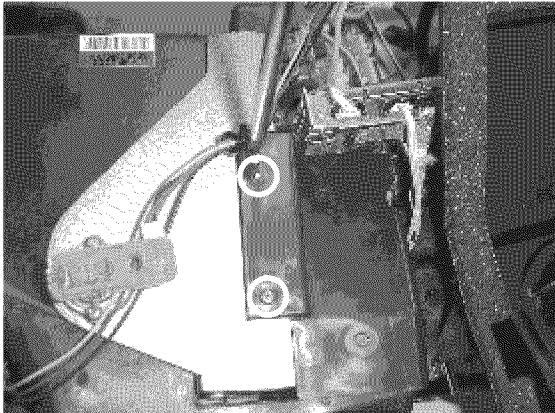
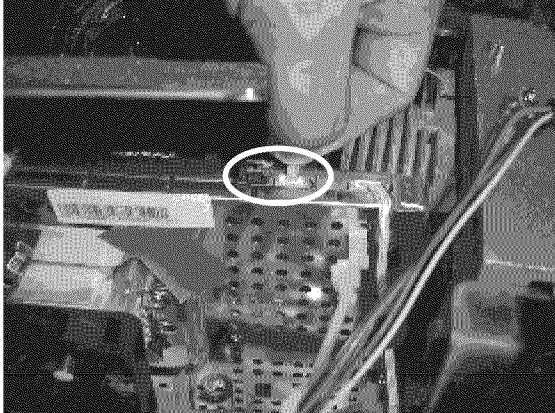
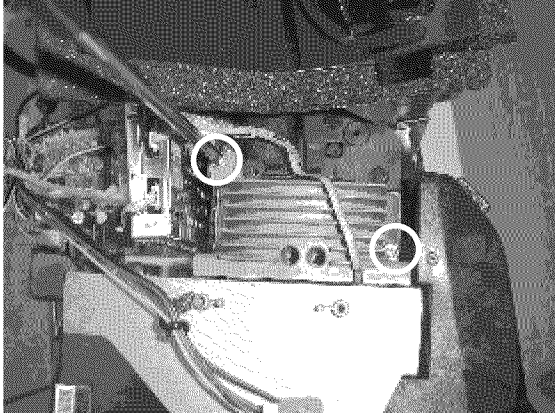
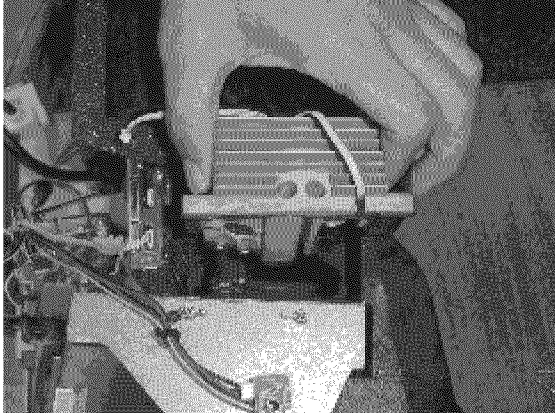
Part Name	Description	Description Photo
Lamp	① Unplug the TV, then use a screwdriver to remove the 4 screws. : WSP,PH,+,M4,L12,ZPC(YEL),SM10C	
	① Remove the Lamp cover.	
	① Loosen the screw securing the Lamp by using a screwdriver. : WSP,PH,+,M4,L12,ZPC(YEL),SM10C	

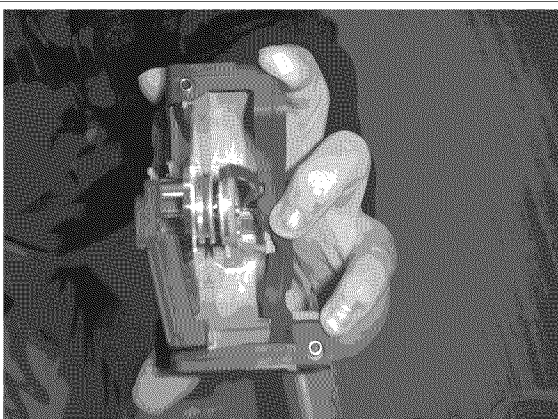
Part Name	Description	Description Photo
Lamp	<p>① Separate the Lamp from the engine by holding the handle and pulling it out.</p> <p>② To reinstall the Lamp, follow these steps in reverse order.</p>	 <p>The 'Description Photo' column contains two sequential images. The top image shows a person's hands pulling a rectangular lamp assembly out of a dark engine compartment. The bottom image shows the lamp assembly being held out, revealing its internal components. A black arrow points downwards from the top image to the bottom image, indicating the sequence of the disassembly process.</p>

12-1-7 Ballast Replacement

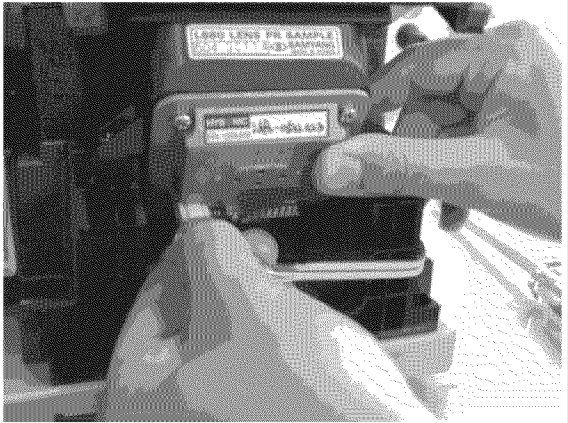
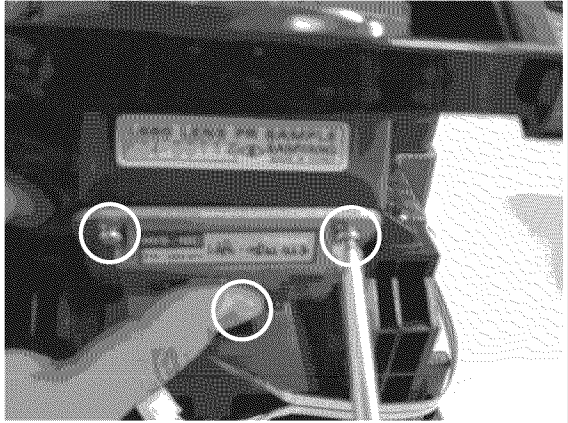
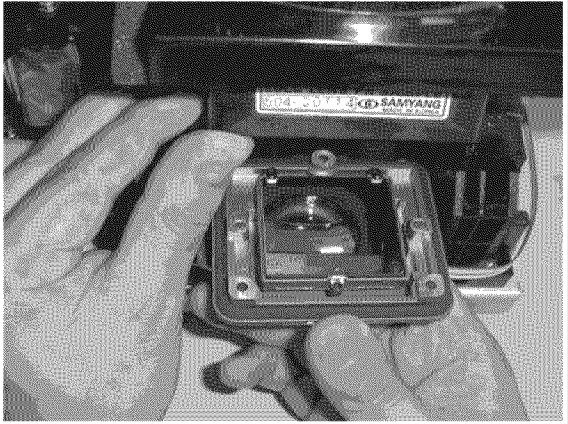
Part Name	Description	Description Photo
Ballast Board	<p>① Remove the lamp, referring to lamp replacement.(12-8page) Remove the ballast power cable.</p>	
	<p>① Remove the Ballast SCI cable.</p>	
	<p>① Remove the two screws at the Holder Ballast. : PWH,+ ,B,M3,L10,ZPC(YEL),SWRCH18A,-</p>	
	<p>① Pull out the Ballast assembly. ② Replace it with a new one and re-assemble it in the reverse order.</p>	

12-1-8 Color Wheel Ass'y Replacement

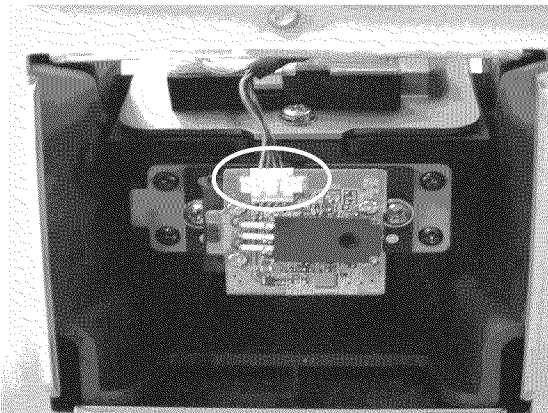
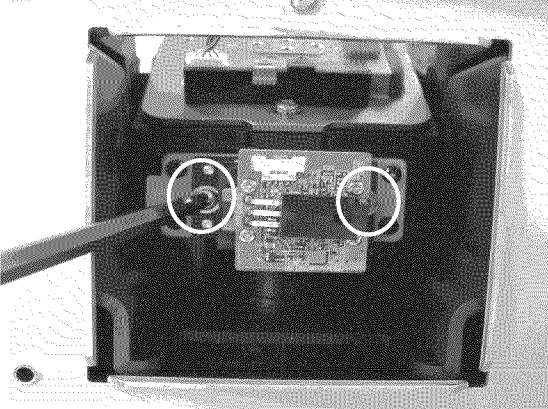
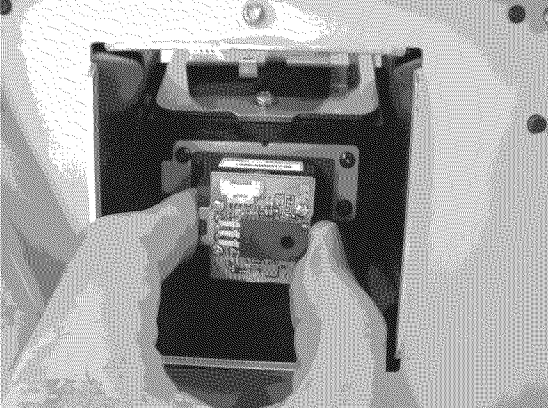

Part Name	Description	Description Photo
Color Wheel	① Remove 2 screws to remove the color wheel cover. : WSP,PH,+,M3,L8,ZPC(YEL),SW	
	① Remove two cables at the DMD Board.	
	① Remove 2 screws. : PWH,+,B,M3,L10,ZPC(YEL),SWRCH18A,-	
	① Disassemble the color wheel assembly.	

Part Name	Description	Description Photo
Color Wheel	<p>① Replace it with a new color wheel and rubber assembly.</p> <p>⚠ Notice : Never touch the color wheel. Touch only the cover assembly.</p>	 A black and white photograph showing a person's hands wearing nitrile gloves. The hands are holding a complex mechanical assembly, which is the color wheel and rubber assembly mentioned in the text. The assembly consists of several metal and plastic components, including a central wheel-like part and various housing pieces. The person is holding it from the sides, showing its internal structure.

12-1-9 Actuator(Smooth Picture) Replacement

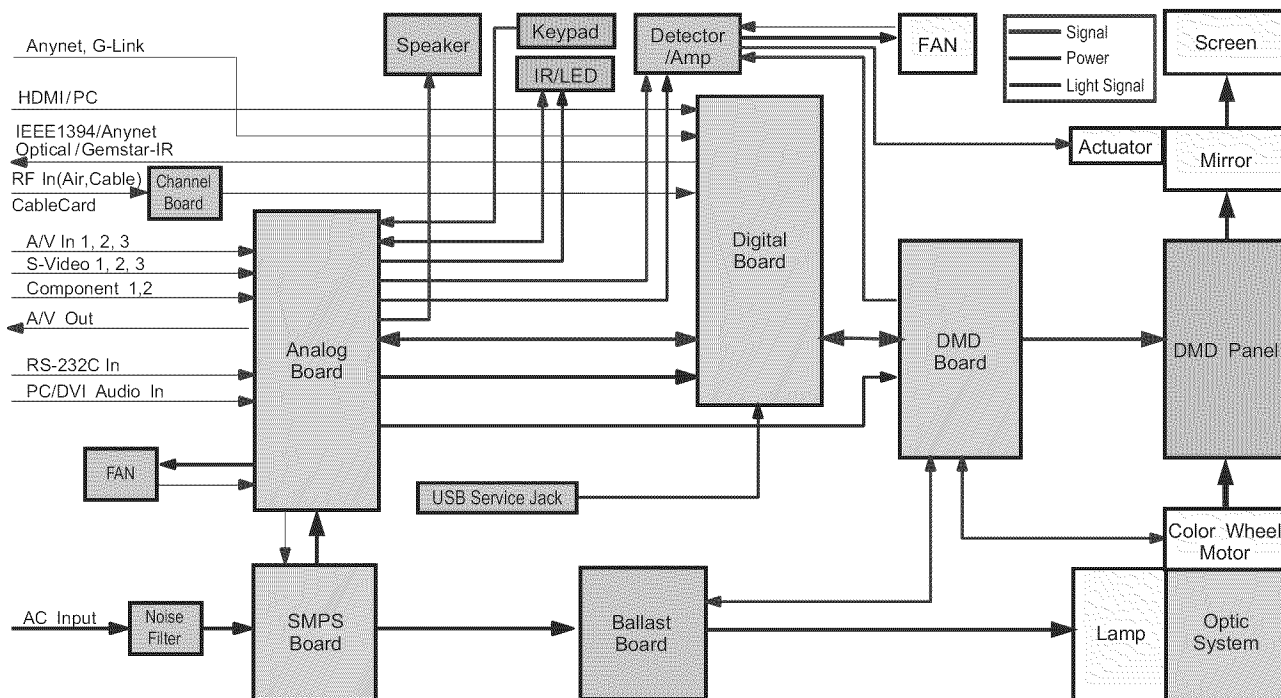
Part Name	Description	Description Photo
Actuator	<p>① Remove the cable at the Actuator.</p>	
	<p>① Remove screws(3ea) at the Actuator cover. : BH,+,M3,L16,ZPC(YEL),SWRCH</p>	
	<p>① Replace it with a new actuator.</p>	

12-1-10 Dynamic Black Replacement

Part Name	Description	Description Photo
Dynamic Black	<p>① Remove the at the cable.</p>	
	<p>① Remove screw(2ea). : WSP,BH,+ ,M3,L16,ZPC(YEL),SWRCH</p>	
	<p>① Disassembly Dynamic Black assembly.</p>	
	<p>① Replace it with new Dynamic Black assembly.</p>	

13. Circuit Description

13-1 Overall Block Description



The DLP TV is largely divided into: Power part, Engine part and Analog + Digital parts.

The ass'y that consists of the DMD board, Detect (Actuator) board, lamp, ballast and optical devices is called the Engine.

The analog + digital board parts receive the AV signals to output voice signals and process the remote control signals.

The engine part displays the video data on the screen, which is generated in the analog + digital boards.

The AV signals are input through the analog and digital boards. ADV7400 processes the MUX and decoding while X226 B processes the CPU functions, MPEG and I2S.

Finally, the improved DNle image is sent to the DMD engine board.

The final data by DNle is processed in DDP1011 of the DMD board to display the image on the DMD panel. This image is created by the light of the lamp through the color wheel which is enlarged and projected onto the screen.

This is the DLP of the L7 or L8 type that the actuator operates additionally during this process.

The power terminal generates the DC power needed for the product and sends it to the analog board. The analog board supplies the power to the digital and DMD boards.

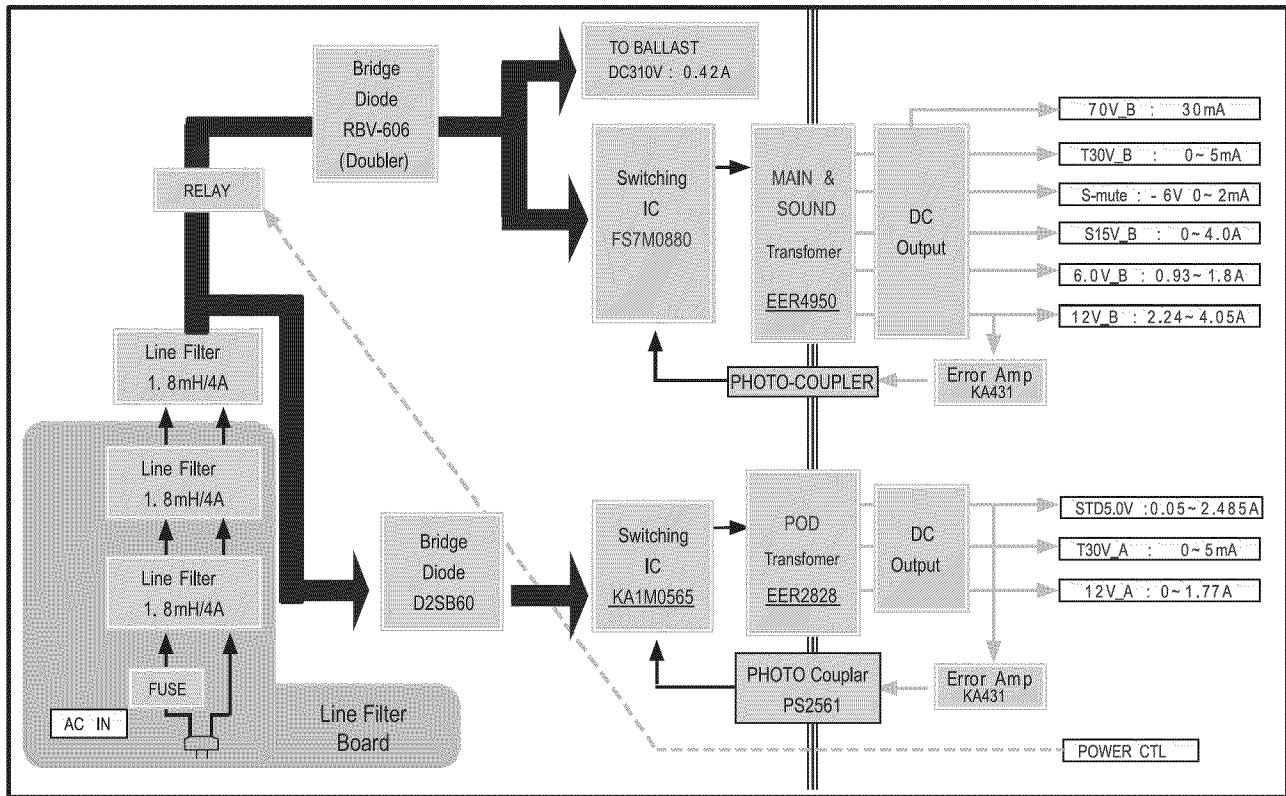
In the meantime, the power source board supplies DC220V - 400V directly to the ballast in order to light the lamp.

The ballast is like a stabilizer for lighting the lamp.

The ultimate purpose of the TV set is to project an image onto the screen and output the voice signals synchronized with the image. And based on the DMD panel used, a 1-panel TV requires a color wheel while a 3-panel TV does not. The HD3 panel needs an actuator while the HD2 does not. However, the drive mechanism and the overall block structure of the two panels are the same.

13-2 Partial Block Description

13-2-1 Power Board Block Description



1. What is SMPS?

This is an acronym for Switching Mode Power Supply and this is responsible for receiving AC input voltage (Line frequency: 50HZ~60HZ) and supplying insulated DC output.

2. SMPS Components

- 1) Standby Power: A combination of ICS801 (SWITCHING IC) and TS801S (TRANS) that supplies STAND-BY 5V for operating the Micom.
- 2) Multi Power: The voltage supplied when the power is turned on.
It is a combination of IC801S and T801S that supplies various voltages including D12V, A6.5V, S14.5V, T30V and A65V.

3. SMPS Operation

- 1) SMPS System: Uses Fly-Back technology for both standby and multi power.
- 2) Operation: Fly-Back is one of the most popular power-supply systems and uses less power than 200W as well as being the cheapest of all multi output SMPS systems.

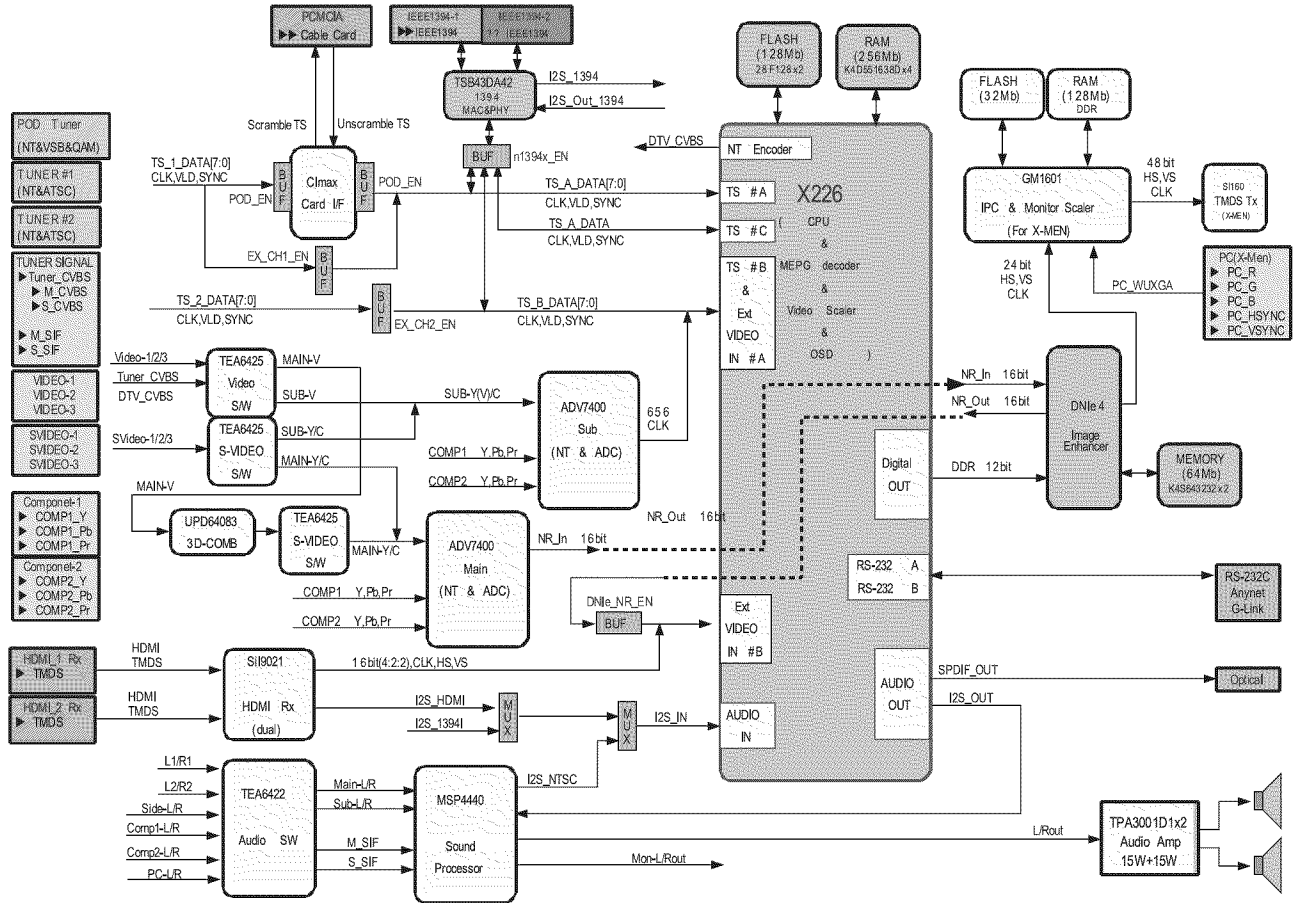
Let's have a look at how it operates...

- a. Converts AC input into DC (HOT) (rectifies to DS801 before smoothing to CS801)
- b. The converted DC voltage is high, especially compared to ground, so touching it will cause electric shock.
Use T801S (Trans) to insulate the secondary voltage and take advantage of the PWM operations of T801S and IC801S to induce it.
- c. The secondary induced voltage is a dozen-KHZ square wave power, which goes through the smoothing cap (CS822) to be generated in the standby 5V.
- d. Multi power also operates the same way.

4. Input&Output voltage

- 1) Input voltage
 - * America(AC120V) - OPTION
 - * Korea(AC220V) - OPTION
 - * The others(AC100V~AC240V) - OPTION
- 2) Output voltage
 - * D12V / 2.5A - 12V , 3.3V , 1.8V : For signal processing
 - * A6.5V / 1A - For driving the tuner
 - * S14.5V / 4A -For driving sound processor
 - * T30V / 5mA - For driving the tuner
 - * A65V / 30mA - For driving the actuator

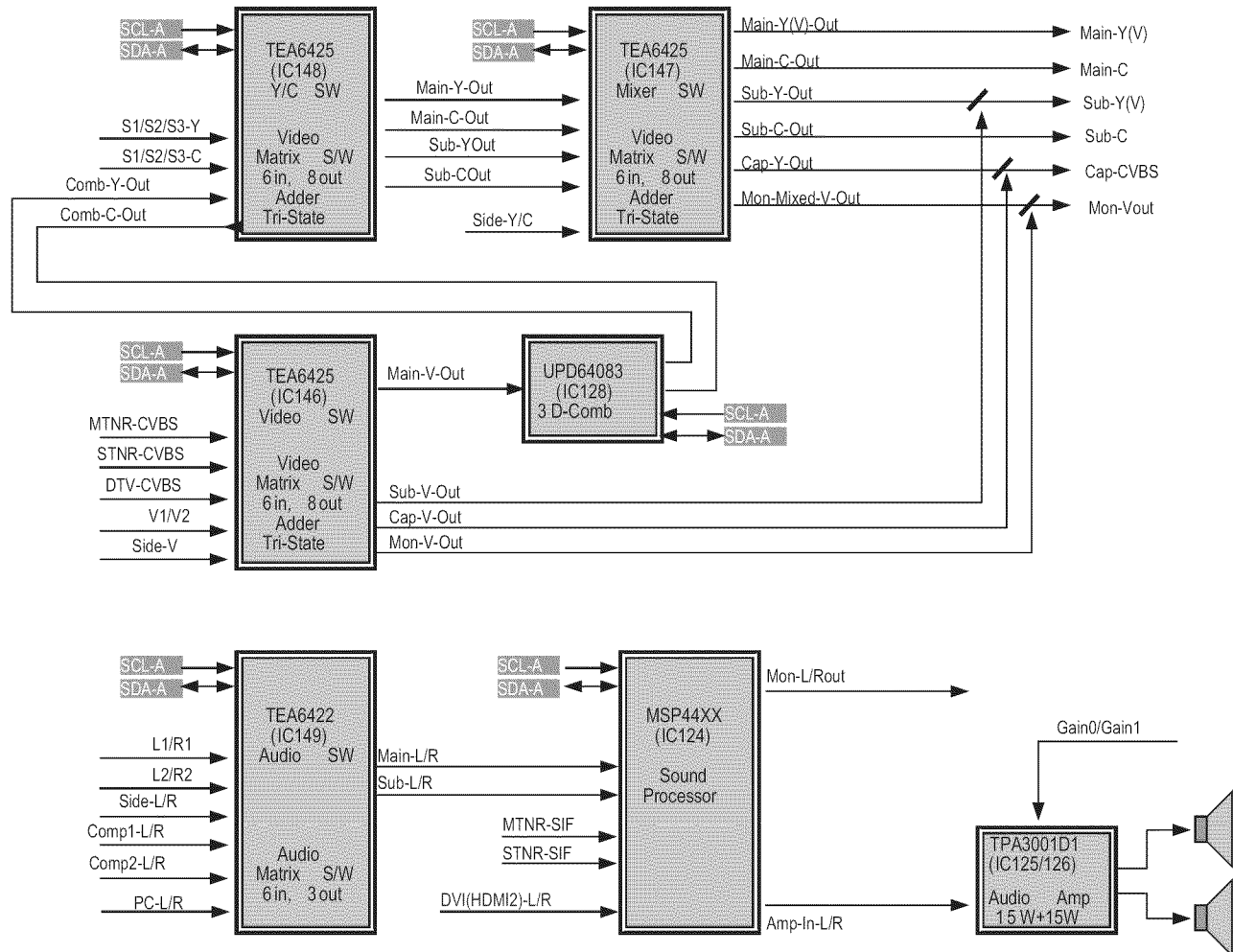
13-2-2 Digital Board Block Description



- ADV7400: Analog YPBPR, CVBS, Y/C(SUPER), Input MUXING and Video Decoding
- X226: CPU, + MPEG Decoder, Audio signals transferred to MSP of the analog board by I2S
- DNIe: Uses a noise-filtering and picture quality improvement algorithm to implement natural colors.
- Tuner: Two HD tuners, each taking the role of the analog tuner.
- HDMI: Receives one input signal and transfers it to X226 in 24 bits.
- Others: Anynet implementation, Optical Power Port, USB Update Port (not available for MP3)

The L8HD digital board contains two HD tuners to implement analog as well as digital signals from air/cable broadcasting. It decodes Y PB PR CVBS, Y/C(SUPER) and HDMI inputs using ADV7401 and silicon chips, which are transferred to X226 (ATI), a combination of the main CPU and the MPEG decoder. All video/audio inputs are transferred to X226 for digital processing and all video output goes through DNIe to the DLP DMD board. Audio signals are transferred to the MSP chip of the analog board using I2S and are emitted through the speaker. It also has an Anynet port, a 5.1 channel optical port and a USB port for a S/W update.

13-2-3 Analog Board Block Description



■ Analog Video Signal Processing

■ Select Sound/Video

One is selected from multiple inputs by the switching ID. MICOM decides which port is used for output.

For broadcasting signals, sub-outputs are transferred in CVBS and, the main outputs in Y/C through the 3D Comb, to the digital board.

Sound signals are selected by the switching IC, of which only one input is transferred to the speaker.

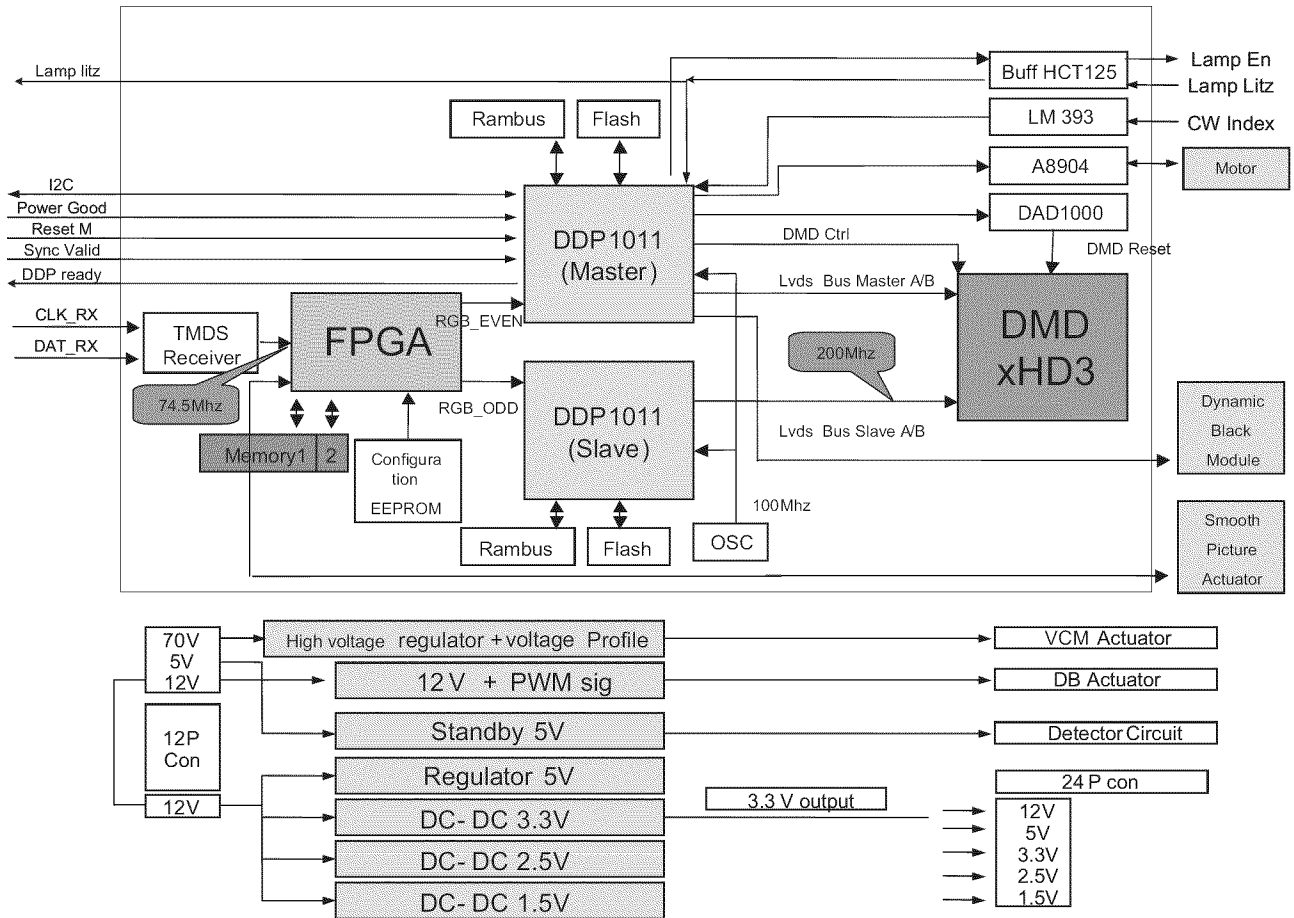
■ Detection Signal Flow

When each port is connected to a signal cable, the detection signal is "low" and can be checked by Micom scanning.

■ Y/C Separation

The 3D Comb filter divides RF CVBS signals into Y/C before being transferred to the digital board.

13-2-4 DMD Board Block Description



- Controls the lamp (ON/OFF)
- Drives the color wheel motor
- Drives the panel
- Controls the sensors

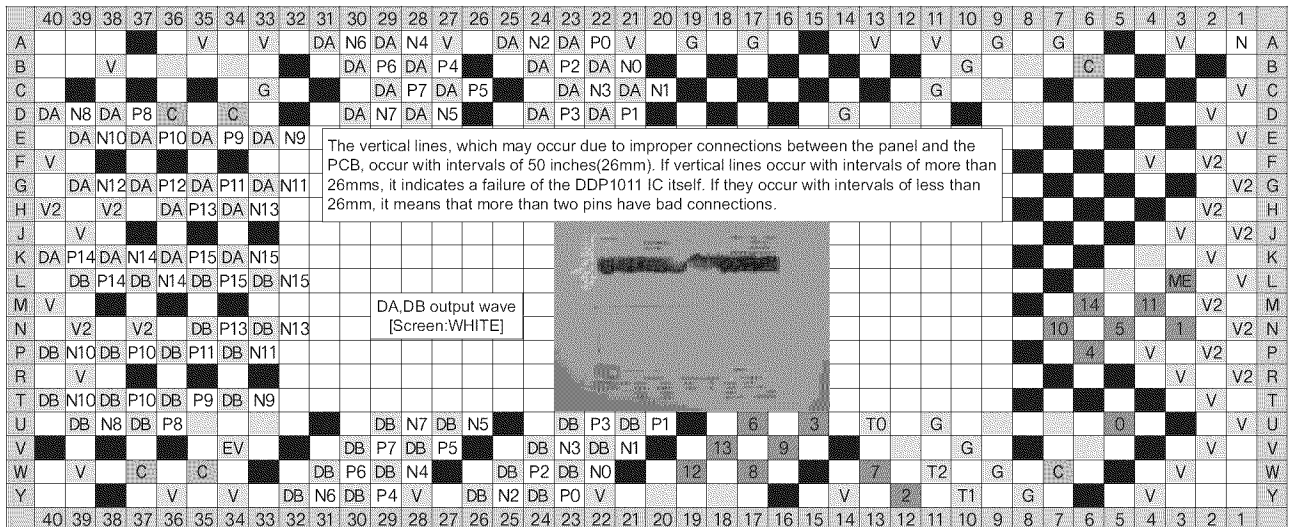
13-3 New Circuit Description

13-3-1 Output Voltage States of the DMD Board Parts

LOC	Characteristics	
BD904	LAMP EN	High from DDP1011
BD902	LAMP LITZ	High(5V) before the lamp turns on, Low(0V) when the lamp turns on

13-3-2 DMD Panel Pin Terminal Characteristics Diagram

※ Remove the heat sink attached to the DMD Board and tighten the screws in four places and then inspect the characteristics of each pin terminal.




Pin Name	Description	Pin Name	Description
V	Voltage : 3.3V	T	Test Point
V2	VCC2 : 8V	ME	Mirror Bias Extra
DA	A Channel Data Bus [When measured, there should be a waveform]	C	Clock
DB	B Channel Data Bus [When measured, there should be a waveform]	P#	A,B Channel Positive
NO.	MBRST# (Mirror Bias Rest) 26V	N#	A,B Channel Negative
G	The part from the present position to the GND (The black part is also a GND.)		

13-3-3 Description of Terminal Characteristics

Pin Name	Description
SCTRL_BN/P	B channel LVDS serial control
DCLK_BN/P	B channel LVDS CLOCK
SCPDI	SERIAL CONTROL DATA INPUT
SCPDO	SERIAL CONTROL DATA OUTPUT
SCPENB	SERIAL CONTROL ENABLE
SCPCK	SERIAL CONTROL CLOCK
DMD RESETB	DMD LOGIC RESET
MBRST(14:0)	MIRROR BIAS RESET
MBRST_EXTRA	UNUSED MIRROR BIAS RESET
SCR_CLR	TEST CLEAR PINS(NORMAL GND)
READOUTA(1:0)	A-CHANNEL SERIAL DATA OUT DURING SPAM READ TEST OPERATION
READOUTB(1:0)	B-CHANNEL SERIAL DATA OUT DURING SPAM READ TEST OPERATION
TP(2:0)	MANUFACTURING TEST POINT(NO CONNECTED DURING NORMAL CPERATION)
RSV_A(4:0)/RSV_B(4:0)	RESERVED PINS(NORMAL:GND)
EVCC	REFERENCE VOLTAGE DURING SPAM READ TEST OPERATION(NORMAL GND)
VCC2	MIRROR ELECTRODE VOLTAGE(7.3V)
VCC	LOGIC SUPPLY
VSS	LOGIC GROUND

13-3-4 Engine Failure Inspection Flow Chart for the DMD Board

No.	Description	Key Point	Remark
1	1) When the power cord is plugged in, 2) DC220V~410V(typical 300V) is automatically supplied to the ballast.	Check whether the DC220V~410V(typical 300V) power is supplied to the ballast.	
2	1) When the power key is pressed via the remote control, the micom of the analog board outputs high (5V) PWR signals. 2) The power board operates normally. 5V and 12V are supplied to the DMD CN105 terminal.	Check whether 5V and 12V are supplied to the CN105 terminal.	* 12V must be supplied to operate the motor.
3	1) The MTR Reset signal is supplied to the R161 terminal of the motor IC101 from the micom on the digital board and then the motor starts to drive. 2) If the color wheel rotates for a certain time and then stops, check whether the color wheel sensor is normal. (Check the waveform on the No.2 terminal below CN102.) 	After the set is powered on, check whether 5V is detected on pin No.49 of IC101. → After a while, the sound generated by the rotating color wheel is heard.	* If 5V is not detected, the motor will not operate.
4	1) Check whether the signal (SCI: START CONTROL INPUT) that turns on lamp #2 of CN109 on the DMD board is high (5V).	Check whether CN109 #2 signal is 5V.	* When SCI is high (5V), the lamp litz of CN109 is low (0V). * CN109 #2 terminal voltage changes to pulse wave form 14 seconds after (for 50 inch TV) the time that the voltage is 5V.
5	1) Method for checking whether the DDP1010 IC RESET is normal.	If the voltage between R254 and R255 is 3V, it is normal.	* When about 4 seconds have passed after changing to pulse waveform, the screens are displayed on the set.

13-3-5 IC Line Up

1. Power Board

Items	Descriptions	Remarks
Main SMPS	FS7M0880, Fairchild	IC-PWM Controller ; Main Power
Stand-by SMPS [America]	KA1M0565, Fairchild	IC-PWM Controller ; Stand-by Power
Stand-by SMPS [Korea]	KA5M0165, Fairchild	IC-PWM Controller ; Stand-by Power

2. Digital Board

Items	Descriptions	Remarks
MPEG2 Decoder	X226B	CPU(MIPS), TS Demux, MPEG2 Decoder, Format converter, Deinterlacer, Scaler, USB
analog Decoder, ADC	ADV7401	Video Processor, ADC
HDMI Receiver	sil9021	Digital Receiver for HDMI with HDCP
COMPONENT S/W	BA7657	COMPONENT S/W, H/V Sync S/W
Video Enhance	SDP32 SAMSUNG	RGB Processor
Program ROM	28F128 x 2	32M(1M x 16) x 2, Nor-Type Flash Memory
Frame Buffer	192MB DDR, 64M ,Samsung	Frame Memory
TMD5 Transmitter	sil160	sil160CT100
IEEE1394	JEDI(TSB43DA42A)	IEEE1394 Interface
Gemstar EPG	Yamu MICOM(3P8OB5X)	IR Blaster

3. Analog Board

Items	Descriptions	Remarks
Video Switch	TEA6425, SGS-Thomson	Video Switch IC for TV *3
Audio Switch	TEA6422, SGS-Thomson	Audio Switch IC for TV
3D-Comb	uD64083, NEC	3 Dimensional Y/C Separation LSI
Sound Module	MSP4440, Micronas	Multistandard Sound Processor With TruSurround XT
Sound AMP	TPA3001D, TI	1 Channel Digital Audio Power Amplifier *2
Micom	SDA55xx, Micronas	Micro Controller

4. DMD Board

Items	Descriptions	Remarks
DMD Driver	DDP1011, TI	DLP Data Processor
Reset, Power	DAD1000, TI	DMD Power and Reset Driver
Motor Controller	A8904, Allegro	12V VCM/Spindle Pre-Driver
Frame Buffer	K4R271669, Samsung	128M(246K x 16 x 32B), Rambus DRAM
Clock Generator	CDCR83, TI	Direct Rambus Clock Generator
Program ROM	M29W800BT, ST	8M(1M x 8 or 512K x 16), Flash Memory
Actuator Driver	Cyclone, Altera	Frame Extractor 60Hz(1 frame) → 120Hz(1/2 frame)
LVDS Receiver	THC63LVD104, Thine	LVDS Digital Receiver, 75MHz

14. Reference Information

14-1 Other issues related to other products

Problem	Descriptions
A fixed screen can cause permanent damage to the TV Braun tube.	Braun, PDP and LCD TVs can all be damaged. When a still image is displayed in a sequence, this can leave stains or after-images due to the characteristics of the panel. However, the DLP TV has the advantage that no stains or after-images are left on the screen. The DLP TV has mirror pixels on the DMD panel that project the beam onto the screen, in which the mirror is a digital representation of 0s and 1s, leaving no trace of light. The mirror returns to a blank state so that no stains or after-images are left.
Confusion between the ANYNET Port and the SERVICE Jack Port	The SAMSUNG SKY500N model has both an ANYNET port and a SERVICE jack port. Because the shape of the ANYNET port on the DLP TV is the same as that of the SERVICE jack port of the SKY500N, it fails to turn the TV off after a connection has been reported. The ANYNET port uses an RS232 port called Phone Jack, and the SERVICE jack port also uses the RS232 port. However, you must not connect the SERVICE port and the ANYNET port. Check if the port is the ANYNET port or the SERVICE port before connecting the port. Even if the TV cannot be turned on after connecting, the TV will turn on if you disconnect the connection.
Length of DVI Cable / PC RGB Cable	<p>- A too long DVI cable may cause a malfunction or degradation of the visual quality due to an attenuation of the signal. There is no recommendation for the cable length at present. In general, although a cable length of up to 5 meters should work, please check if video is properly displayed on the screen after connecting. If you think the length of the cable is longer than for normal use, check the visual quality of the video on the screen and shorten the length, if necessary.</p> <p>- This also applies to the PC RGB (D-Sub) cable. When the length of the cable is longer than for normal use, video may not be displayed on the screen. In this case, shorten the cable length.</p>
When a digitally distributed TV user receives HD-rated broadcasts:	The digital distributed TV (Ready Technique) can render HD sources as HD-rated. However, you need to install a set-top box for this purpose. The digital TV alone cannot render HD broadcasting as HD-rated. Install the formal set-top box for HD broadcasts.
When a digital distributed TV user selects normal size (4:3) to receive SD-rated digital broadcasts:	The digitally distributed TV (Ready Technique) renders any broadcasting service as SD-rated. However, when connected to a set-top box, the digital TV renders HD broadcasts as HD-rated and renders SD as SD-rated. The screen size is scaled to 4:3.
When a digitally built-in TV user receives SD (air) broadcasting:	The digitally integrated TV ("built-in" type) renders SD broadcasting as SD-rated. This can be understood easily. Even a high-resolution TV cannot improve a low resolution picture into high quality. In contrast, an SD-rated TV cannot represent HD broadcasting as HD because the resolution of the TV is lower than the original.
When selecting a picture size of 4:3 in connection with a computer or a multimedia device:	The representation capability of SD or HD-rated depend entirely on the TV set. The HD TV can render HD broadcasting as HD-rated only when it receives HD sources. In the meantime, the HD TV renders SD as SD-rated when it receives SD sources. The picture size has nothing to do with the resolution; TV models like SVP-XXL3HD or SVP-XXL6HD have a size adjustment feature to 16:9, 4:3, Panorama, Zoom1, Zoom2 and Auto Wide. This is about the aspect ratio of the top and bottom boundaries to the overall screen and users can select their preference.

■ SD/HD broadcasts and the TV's display capability are related

1. A digital broadcast should be transmitted in wide screen (an aspect ratio of 16:9) HD. If the broadcasting station converts a conventional program created in normal screen (aspect ratio of 4:3) into a digital signal and broadcasts the signal, the left and right of the picture will not be displayed.

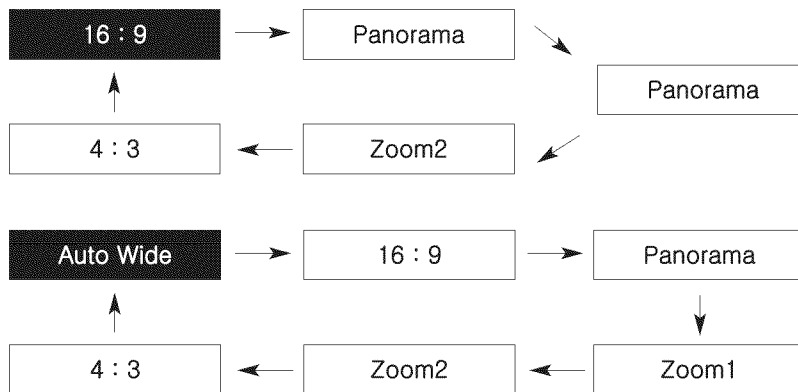
This symptom also appears in other manufacturer's TV's. The three appliance companies are trying to resolve the problem through the Ministry of Information and Communication.

- * When watching an SD (normal) broadcast through a Digital (Wide) TV (480P normal broadcast)
- * When watching an SD (normal) broadcast through a Digital Ready (Wide) TV (Using a set-top-box)
- * When watching an analog (normal) broadcast through a wide TV
(When watching a broadcast after changing the aspect ratio of the TV from 16:9 (wide screen) to 4:3)

2. When watching a DVD title or video tape in wide screen (21:9) through a wide (16:9) TV, watching video from a computer or game console by selecting the aspect ratio to 4:3, or watching video from a DVD, VCR, computer or game console through a wide TV by selecting the aspect ratio to normal (4:3) or wide (21:9), the left and right, or top and bottom of the picture will not be displayed.

This symptom appears in other manufacturer's TV's. The three appliance companies are trying to resolve the problem through the Ministry of Information and Communication.

■ Changing the Order of the Picture Size for 16:9 Display Devices



■ Changing the Order of the Picture Size for DTV 1080i/720p Sources



■ Restrictions

1. When you want to change the picture size in PIP 'ON', you must turn the PIP off before changing the size. However, you can change the main picture size even in PIP ON for products with no restrictions.
2. When the picture size is not Normal (4:3 for 4:3 display devices, 16:9 for 16:9 display devices) and you turn PIP on, the picture size is changed to Normal. However, you can turn PIP on without changing the picture size for products with no restrictions.
3. In the OSD notation for the picture size, 16:9 is represented as "Wide" instead of "16:9" for devices other than with 16:9 displays.
Ex: For LCD 15:9 devices, "Wide" is displayed on the OSD instead of "16:9".
4. The picture size can be changed even in the blue screen.
However, the picture size should be controlled by the product specifications if the change is impossible due to hardware restrictions.

14-2 Technical Terms

PIP (Picture In Picture)

A feature to enable two video images being displayed on one screen at the same time. For instance, you can see the TV channel and the video image at the same time.

Digital Broadcasting

The ATSC (Advanced Television Systems Committee) signals that the station digitalizes before transferring the audio/video signals.

Mono

A sound system that transmits voice signals in only one channel. It is hard to experience a 3D effect but can be run with one speaker.

LNA (Low Noise Amplifier)

This uses satellite technologies to amplify weak signals for improved quality even in poor reception areas.

Stereo

A sound system that transmits voice signals in two channels. This implements 3D effects by transmitting to both speakers (left/right).

Analog Broadcasting

The conventional system in which the station transfers the audio/video signals in NTSC formats.

Antenna Terminal

A terminal which the TV antenna is connected to. A round coaxial cable is connected to this terminal, which is usually used to watch air broadcasts.

English Captions (Subtitle)

A feature to provide English captions or character information services, which the user can use to study English using AFKN broadcasting or video tapes marked with "CC".

Audio/Video Terminal

The old 3- or 4-channel TV with no AV terminal has a low quality issue for video tape. The problem can be resolved using an AV terminal that separates the audio and video signals. The video terminal is in yellow; the audio terminal is divided in two, white for left and red for right.

External Source

This includes sources from the video recorder, DTV set-top box and DVD player, (anything but the TV).

DVI-I Cable

One of the DVI cables that can transfer both digital and analog signals.

Satellite Broadcasting

This uses a satellite system to support a maximum of 100 channels including air services and provides high quality pictures anywhere in the country, even in poor reception areas. A set-top box (unbundled) is required to watch satellite broadcasting.

Closed Broadcasting

Other than VHF and UHF, this includes movies, entertainment and educational programs broadcast by hotels or schools. This is different from cable broadcasting.

Multiplexing

Two languages are provided at the same time when broadcasting foreign movies, dramas and news programs. You can choose either a native or foreign language, or choose both at the same time.

Component Terminal (Green, Blue, Red)

This provides maximum quality by dividing the contrast signals before transferring.

Cable Broadcasting

Compared to air broadcasting, it uses the cable system to transfer the signals. You should subscribe to a local cable broadcasting company and install a separate receiver.

Tuner

A device used to select a particular frequency from the TV set or the radio receiver.

Anynet

An AV networking system of Samsung's various AV devices, which enables the user to conveniently control AV devices using the TV.

DVD (Digital Versatile Disc)

This is a CD-sized, high storage disk that can store multimedia data including videos, games and audio applications using MPEG-2 compression technology.

DVI (Digital Visual Interface) Terminal

This is a digital signaling standard.

This uses TMDS to reduce the signal loss rate for sharper images.

DVI-D Cable

One of the DVI cables that can only transfer digital signals.

HDMI (High Definition Multimedia Interface)

An interface into which the digital signals as well as the high quality image data can be connected with one cable. There is no need to compress the bit rate.

S-video Terminal

This is, called "Super-video", divided into video and color signals for sharper image display.

VHF/UHF

VHF refers to the 2 - 13 channel system; UHF indicates the 14 - 69 channel system.



ELECTRONICS

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