LCD TV SERVICE MANUAL

Model list

KDL32AT23U
KDL37AT23U
KDL42AT23U

KONKA GROUP CO,LTD.
Digital Flat Display Division

IMPORTANT SERVICE SAFETY INFORMATION

Operating the receiver outside of its cabinet or with its back removed involves a shock hazard. Those who are thoroughly familiar with precautions necessary when working on high voltage equipment should only perform work on these models.

Exercise care when servicing this chassis with power applied. if carelessly contacted, can cause serious shock or result in damage to the chassis. Maintain interconnecting ground lead connections between chassis, escutcheon, picture tube dag and tuner when operating chassis.

When it is necessary to make measurements or tests with AC power applied to the receiver chassis, an Isolation Transformer must be used as a safety precaution and to prevent possible damage to transistors. The Isolation Transformer should be connected between the TV line cord plug and the AC power outlet.

It is important to maintain specified values of all components and anywhere else in the received that could cause a rise in operating supply voltages. No changes should be made to the original design of the receiver.

Components shown in the shaded areas on the schematic diagram and/or identified by in the replacement parts list should be replaced only with exact factory recommended replacement parts. The use of unauthorized substitute parts man creates may create shock, fire, or other hazards.

Before returning the receiver to the user, perform the following safety checks:

1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the receiver.
2. Replace all protective devices such as non-metallic control knobs, insulating fish papers, cabinet backs, adjustment and compartment covers of shields, isolation resistor-capacitor networks, mechanical insulators etc.
3. To be sure that not shock hazard exists, a check for the presence of leakage current should be made at each exposed metal part having a return path to the chassis (antenna, cabinet metal, screw heads knobs and/or shafts, escutcheon, etc.) in the following manner.

Plug the AC line cord directly into a 220V/110V, AC receptacle. (Do not use an Isolation Transformer during these checks.) All checks must be repeated with the AC line cord plug connection reversed. (If necessary, a non-polarized adapter plug must be used only for the purpose of completing these checks.)

PLEASE READ BEFORE ATTEMPTING SERVICE

1. Use an Isolation Transformer when performing any service on this chassis.
2. Never disconnect any leads while receiver is in operation.
3. Disconnect all power before attempting any repairs.
4. Do not short any position of the circuit while the power is on.
5. For safety reasons, replace components any with identical replacement parts (SEE PARTS LIST).
6. Before alignment, warm up the TV for at least 30 minutes.
7. When removing a PCB or related component, after unfastening or changing a wire, be sure to put the wire back in its original position.
8. Inferior silicon grease can damage IC's and transistors. When replacing IC's and transistors, use only specified silicon grease. Remove all old silicon when applying new silicon.

A. SPECIFICATION

Color System : NTSC_M、ATSC/Free QAM
Sound System : BTSC/SAP
Frequency range: Antenna(2~69)、Cable(2~135)
Audio output power 10%THD 10W X 2
Antenna Impedance 75Ω(Unbalance)
Power Consumption 180W(32”)，200W(37”),290W(42”)
Power Supply : AC~110-240V, 60Hz

item	Port list
1	RF ANTENNA & Cable
2	Scart Composite
3	Scart S_VIDEO
4	Y(CVBS)、Cb/Pb、Cr/Pr
5	VGA
6	HDMI
7	SPDIF(OUT)
8	AC Input

ADJUSTMENT MANUAL

Ⅰ. TEST NOTE

1. Please follow the pointed test steps and choose the right test equipment to conduct adjustment, otherwise good effect of Unit could not be obtained. The unit should be warmed up for 30 minutes before adjustment and every parameter should be adjusted repeatedly till the optimum value obtained, the pointed voltage value should be ensured during test to get satisfied test result.
2. Test environment
   1) Temperature ： 15°C-35°C
   2) Relative Humidity: 45-75%
   3) Air pressure: 86-106Kpa

3 Test equipments（The following equipment should be calibrated before testing）
   1) Computer 1 set
   2) Multi-meter (VICTOR VC9801) 1 set
   3) Video Signal Generator (Chroma Model 2227/2327) 1 set
   4) Color Analyzer (Chroma Model 7120) 1 set
   5) TV Video Signal Generator (FLUKE PM54200) 1 set
   6) ATSC signal Generator (SFU) 1 set

4 Factory mode adjustment
   4.1 Enter factory mode adjustment

Using the remote control, press INPUT button once first , then press “2580” digital keys , and you can see manufacture menu on the LCD panel.

4.2 factory menu operation method

Press the “ . ” key to select the page. Press the “▽△” to select the item you desired change, and press the “< >” to set the value.

4.3 exit the factory menu

Press “Exit” to exit the factory menu , the value you have changed will be save automatically.

4.4 White calibration adjustment

1 Receive black or white signal under AV or PC mode, adjusting brightness and contrast to set the brightness to 15Nit in dark area and 90 Nit in bright area.

2 Adjust white balance. Press “ . ” button to select the page adjusting White calibration , Press the “▽△” to select the item you desired change, and press the “< >” to set the values as follow.

Red Offset 1000
Green Offset 1000
Blue Offset 1000

3 Then adjusting “Red gain、Green gain、Blue gain” to adjust the chromaticity coordinates of black and white to fit the requirement.

ITEM / Program Menu.		Equipments	Requirements	Procedure and SPEC
1.	M/B Voltage confirmation	Digital Multimeter		Connect Power to check if Power LED displays the green light.
2.	Update FLASH	PC Debug Tool		
3.	Update HDMI EEPROM	PC,ALL-11 Debug Tool、HDMI Cable		

4.	TV mode check	Factory TV Signal or TV Signal Generator	Out NTSC Signal	1.Enter User menu, Check if the pictureis normal, no Signal background is blue . no Signal is would several minutes enter standby state. 2. Check Auto Scearch / Management、etc is right or not.
5.	VIDEO check	DVD Video Cable	Play DVD Set DVD to interlaced output	Screen is clear and fluent, Audio checks if the output is normal。
6.	Y,Cb,Cr(480I)	DVD Component Cable 720p/1080i DVD Player	Play DVD Set DVD to interlaced output（Y,Cb,Cr）	Screen is clear and fluent, Audio checks if the output is normal。
7.	Y,Pb,Pr SDTV: 480P HDTV: 720p/1080i	HDTV Receiver ATSC HDTV Tuner Component Cable	Play DVD SDTV/HDTV (Y,Pr,Pb)	Screen is clear and fluent, Audio checks if the output is normal。
8.	VGA INPUT	PC VGA Cable TV BOX D-SUB Cable	PC Mode	Apiece Mode.Screen is clear and fluent。
9.	HDMI check	SAMSUNG DVD-HD948 Gdbbk DVD （ or HDMIofDVD） HDMI Cable	HDMI Mode	1.Select “SOURC”Eand Select “HDMI” 2.Apiece Mode:Screen is clear and fluent, Audio checks if the output is normal。
10.	HDCP check	Gdbbk DVD （ or HDMIofDVD） HDMI Cabl VGA859		Select “SOURCE”and Select “HDMI” check Signal Generator output HDMI/HDCP Signal, checks if the output is”PASS”
11.	remote control function check	PC、DVD Pattern Generator TV Signal Generator HDTV Player	TV or play DVD IN	Check if the apiece mode function normal。

Key IC list

Item	P/N	Type	Circuit No.	Qty.
1	19006050	SVPEX-52	U9	1
2	19005519	HIDTV-EX8060	U15	1
3	19006052	HY5DU561622ETP	U16,U17	2
4	19005461	HY5DU281622ET	U501,U502	2
5	19006051	JS28F640P30B85	U20	1
6	19005530	RTL8139D	U24	1
8	19005522	SIL9011	U11	1
10	19005910	MSP4440	N705	1

Trouble Shooting

Preparing to bring-up the System

Step1:Check if there is any power (12V, 5V, 5VSB, 3.3V, 2.5V, 1.8V, …) shortage before power up refer to circuit diagram.

Step2:Turn on power supply and measure all power levels: 12V, 5V, 5VSB, 3.3V, 2.5V, and 1.8V refer to circuit diagram.

Step3: Measure all clock signals
14.318 MHz(Y4)
RTC 32.768 KHz crystal is sine wave with 0.5V P-P(Y3).

27 MHz crystal(Y5)
33 MHz_OSC (Y9) is a square wave and is critical for system reliability.

Step4: Measure EX(52)_RST, HiDTV_RST, PCI_RST, , and VCCH_RST.
VCCH_RST(IR), should be equally delayed for about 1 second after power up.
EX_RST should have about 230 ms, and HiDTV_RST should have about 240 ms delay after power up.

Step5: Check if Boot ROM CS#, OE# , D0..D7, A0, A1, A2, ….pins toggle or not.
If not, HiDTV to Boot ROM traces maybe open or short. It is most likely that the HiDTV BGA chip was not mounted correctly.

Step6: Plug in the UART connector, and check if there is any message that shows up on the terminal screen.

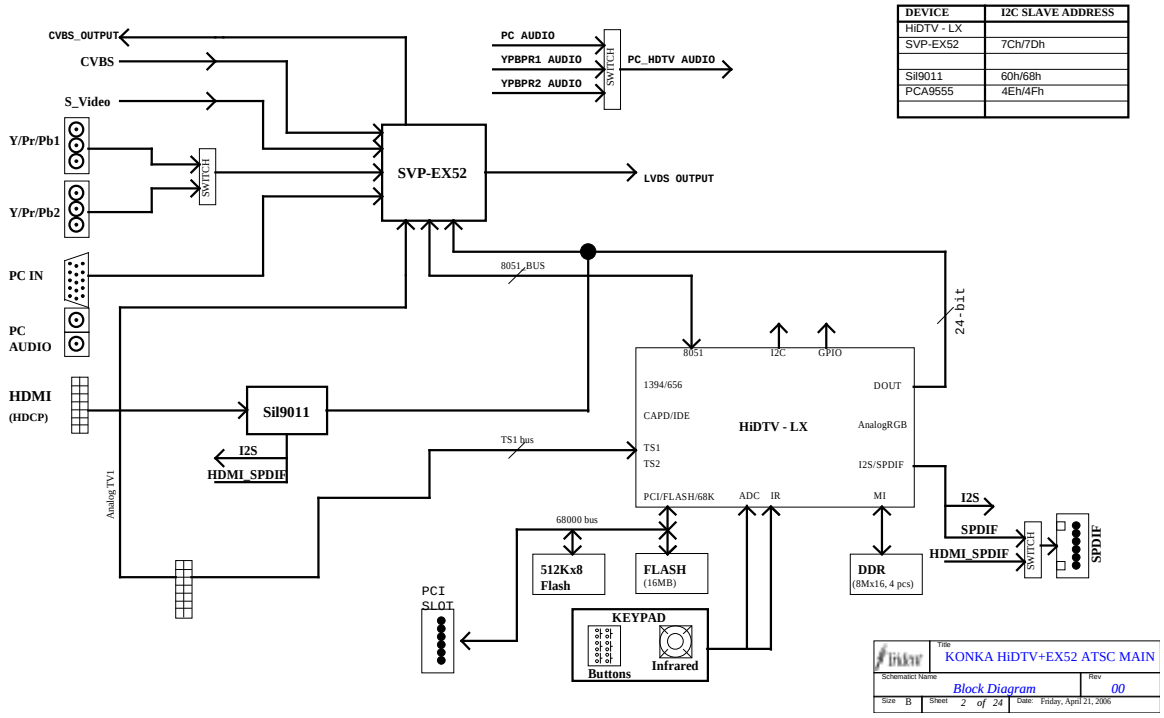
Step7: Logic analyzer is a very powerful and required tool to debug microprocessor based systems.
HP 16500C(100 MHz state, 500 MHz timing) should be good enough to serve the HiDTV debugging purpose.
Additional laboratory demonstrations will be arranged if necessary.

Step8: Check flash programming reliability.
Check all video inputs and signal quality.
Check DDR memory reliability.
Check power ON/OFF, cold/warm reset stability.
Check the low voltage(1.7 V)/high temperature (40 degree C) environment test.

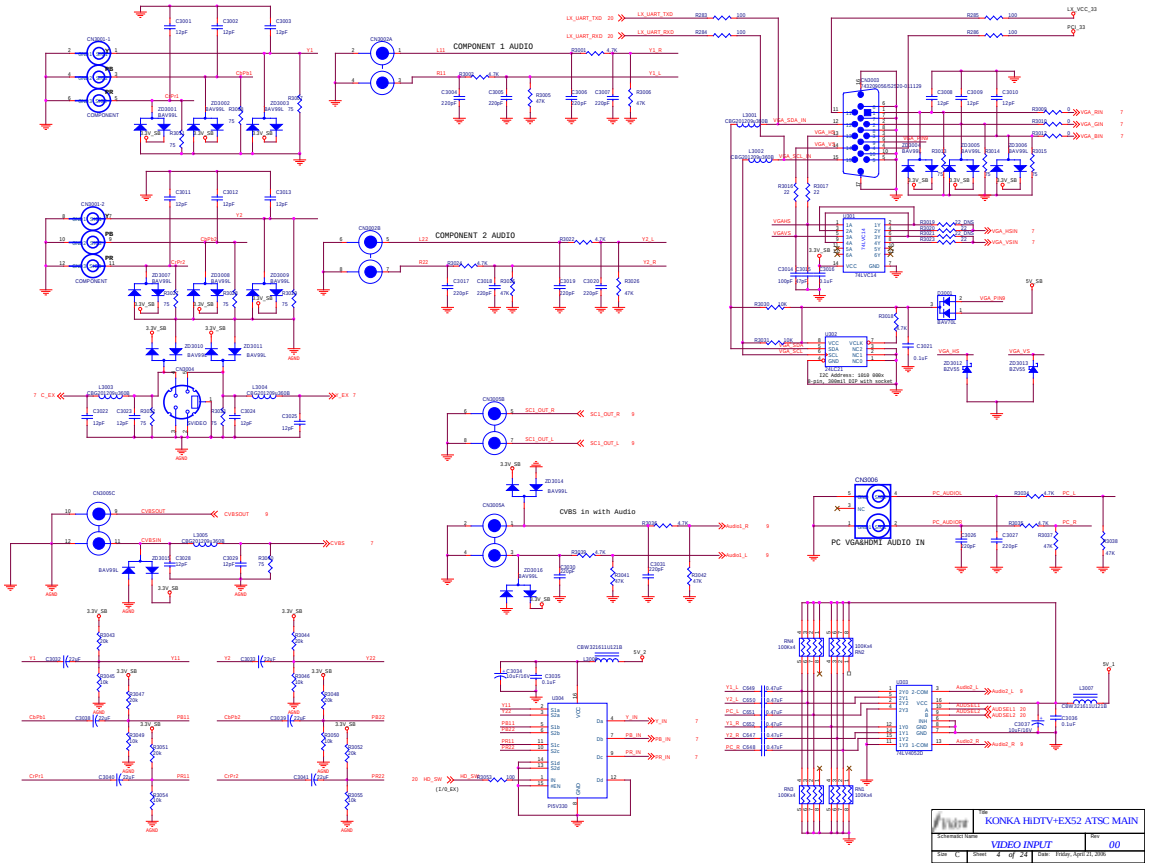
The circuit diagram

HDA005A Board Block Diagram

DEVICE	I2C SLAVE ADDRESS
HiDTV - LX	
SVP-EX52	7Ch/7Dh
Sil9011	60h/68h
PCA9555	4Eh/4Fh



Title	KONKA HiDTV+EX52 ATSC MAIN	
Schematict Name	*Block Diagram*	Rev *00*
Size B	Sheet *2* of *24*	Date: Friday, April 21, 2006



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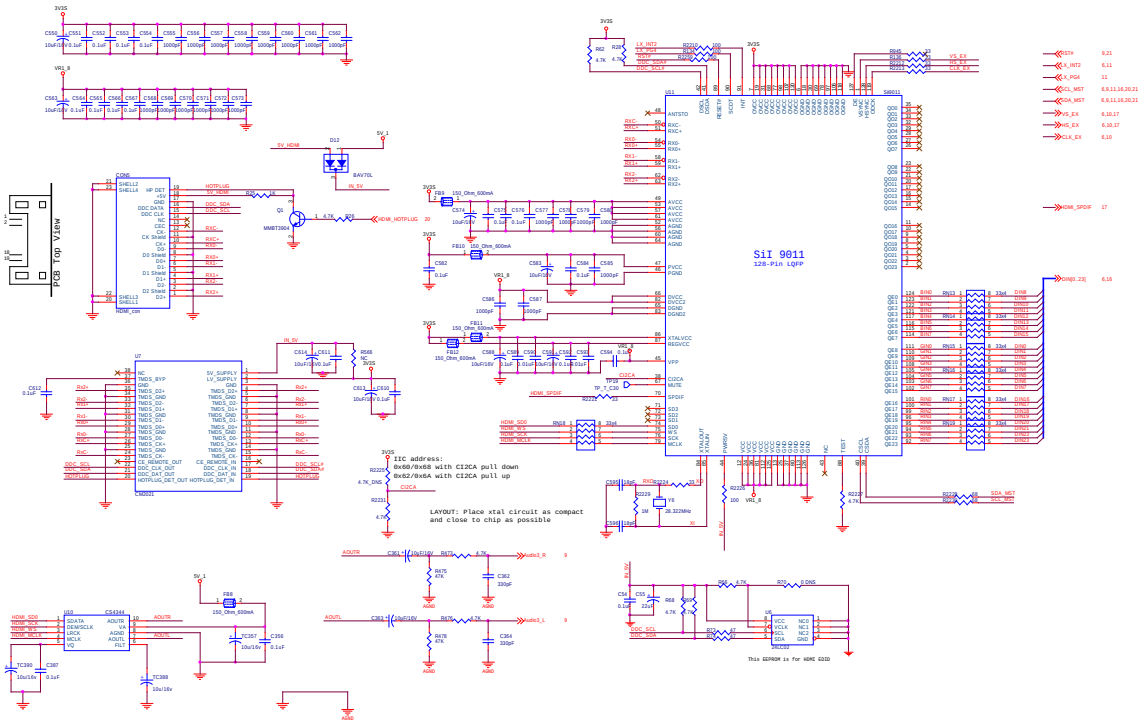
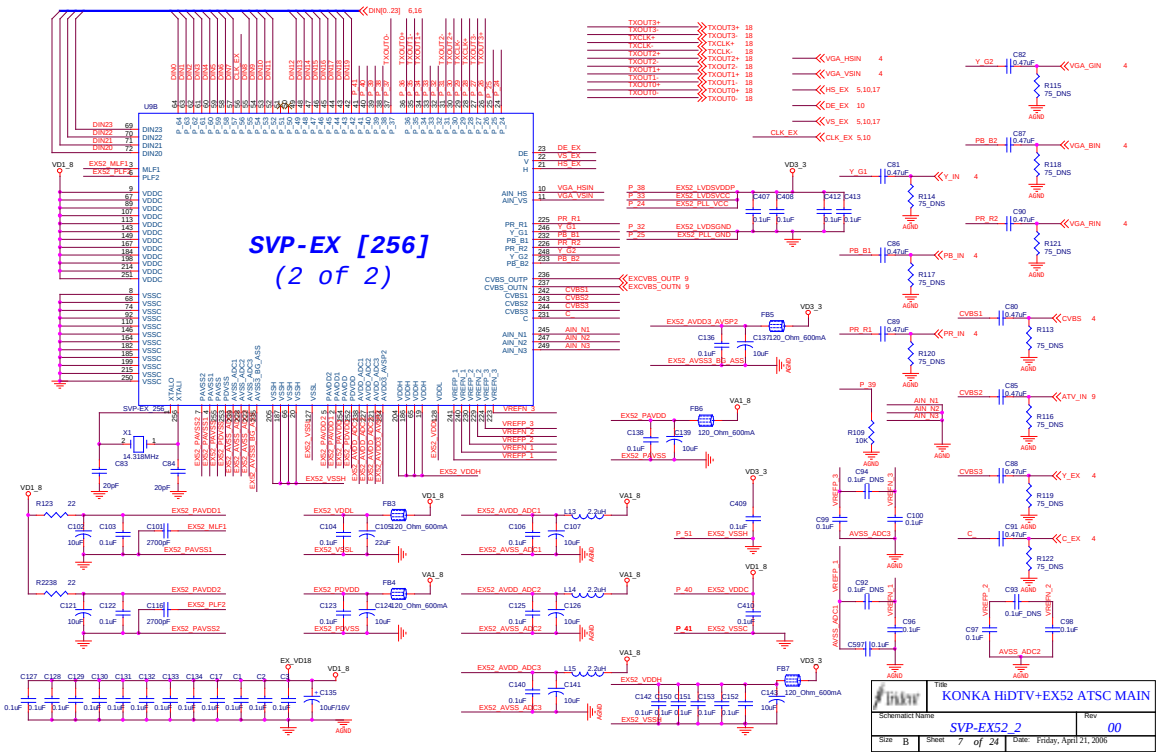
Schematict Name	*VIDEO INPUT*	Rev *00*
Size C	Sheet *4* of *24*	Date: Friday, April 21, 2006



Title: KONKA HiDTV+EX52 ATSC MAIN		
Schematict Name: Sil9011		Rev: 00
Size: C	Sheet: 5 of 24	Date: Friday, April 21, 2006



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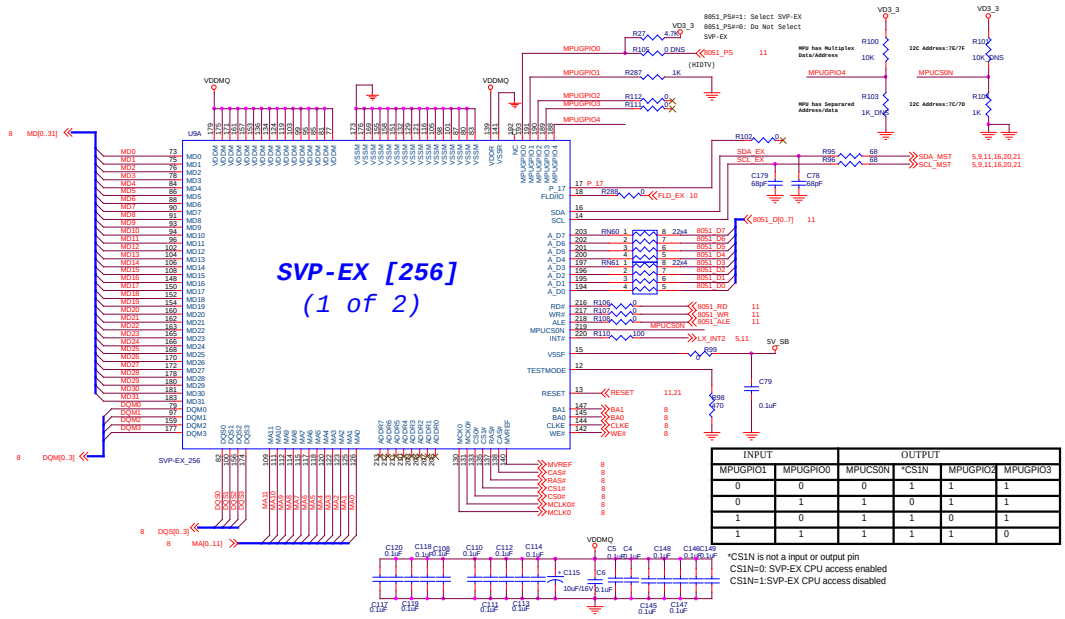
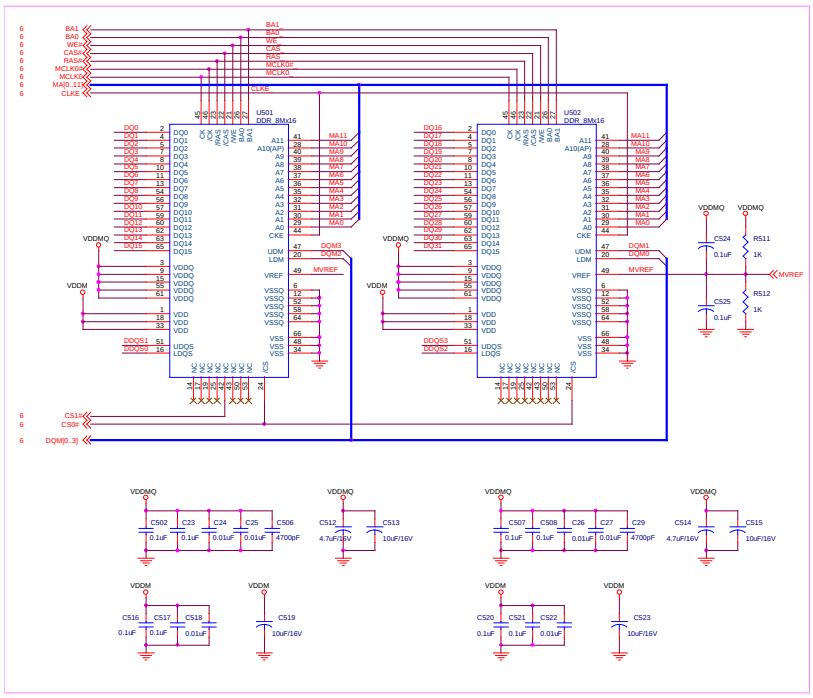
Schematict Name: SVP-EX52_2		Rev: 00
Size: B	Sheet: 7 of 24	Date: Friday, April 21, 2006

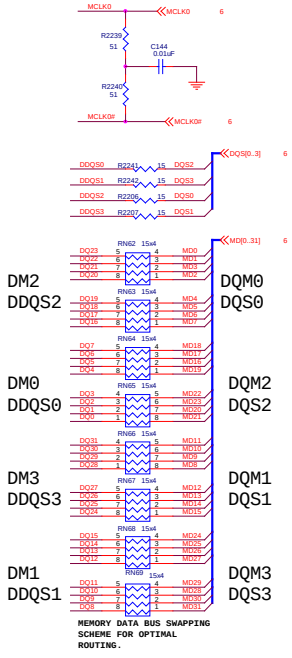


INPUT		OUTPUT			
MPUGPIO1	MPUGPIO0	MPUCS0N	*CS1N	MPUGPIO2	MPUGPIO3
0	0	0	1	1	1
0	1	1	0	1	1
1	0	1	1	0	1
1	1	1	1	1	0

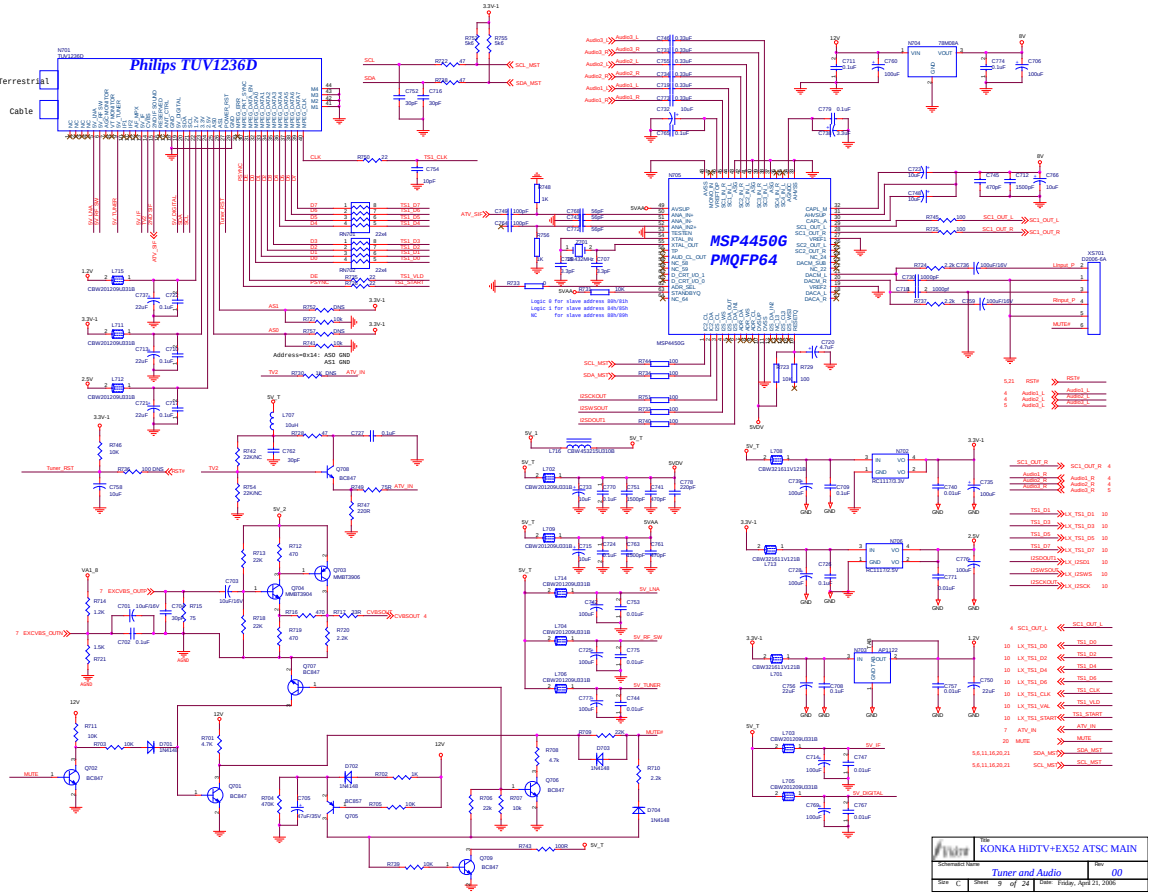
*CS1N is not a input or output pin
CS1N=0: SVP-EX CPU access enabled
CS1N=1:SVP-EX CPU access disabled

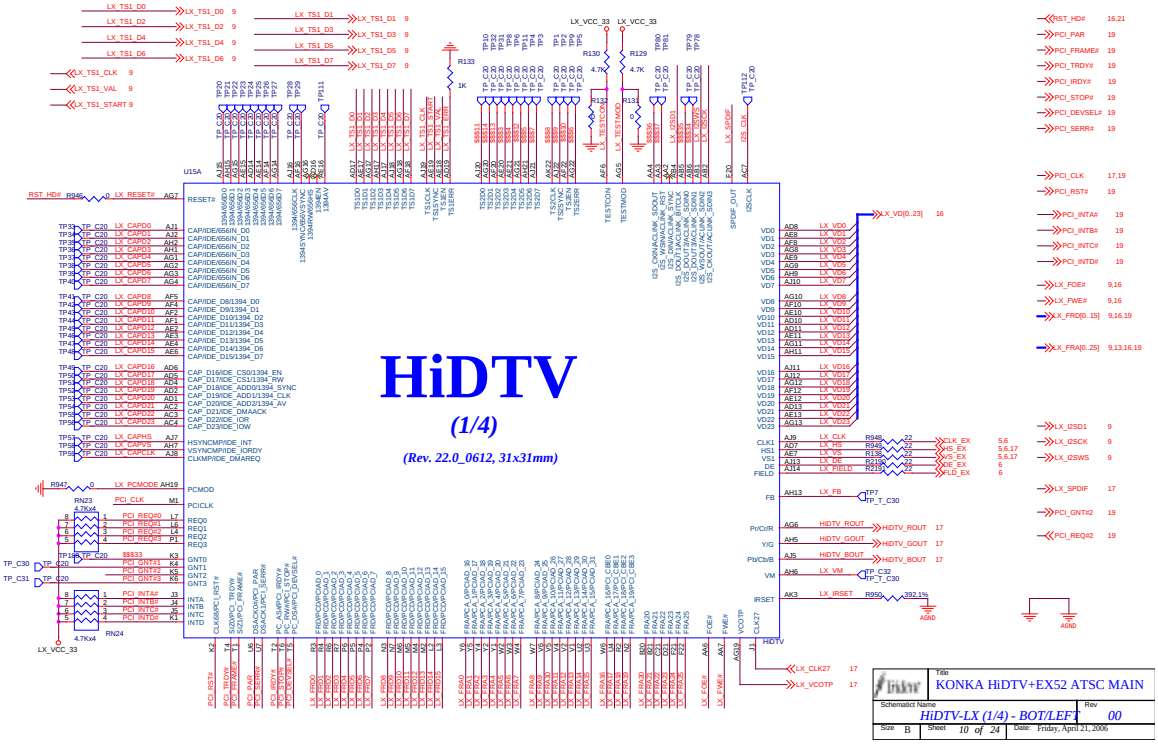
Title	KONKA HiDTV+EX52 ATSC MAIN
Schematict Name	SVP-EX52_1
Rev	00
Size	B
Sheet	6 of 24
Date	Friday, April 21, 2006

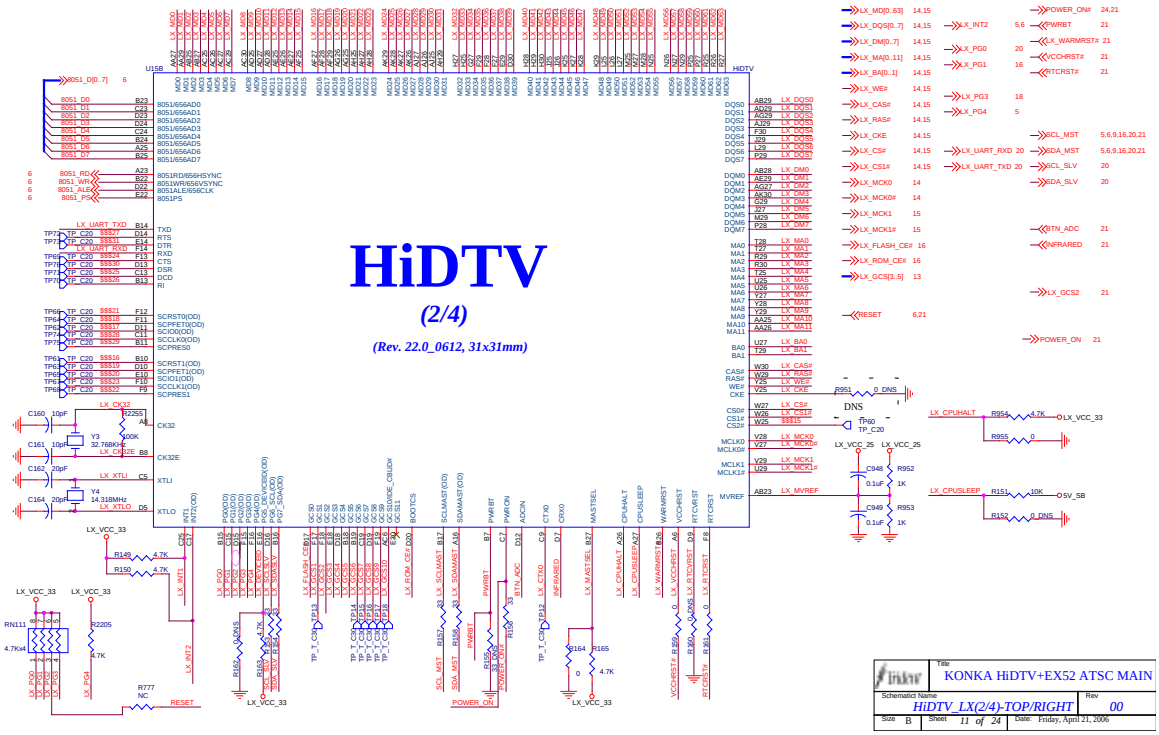


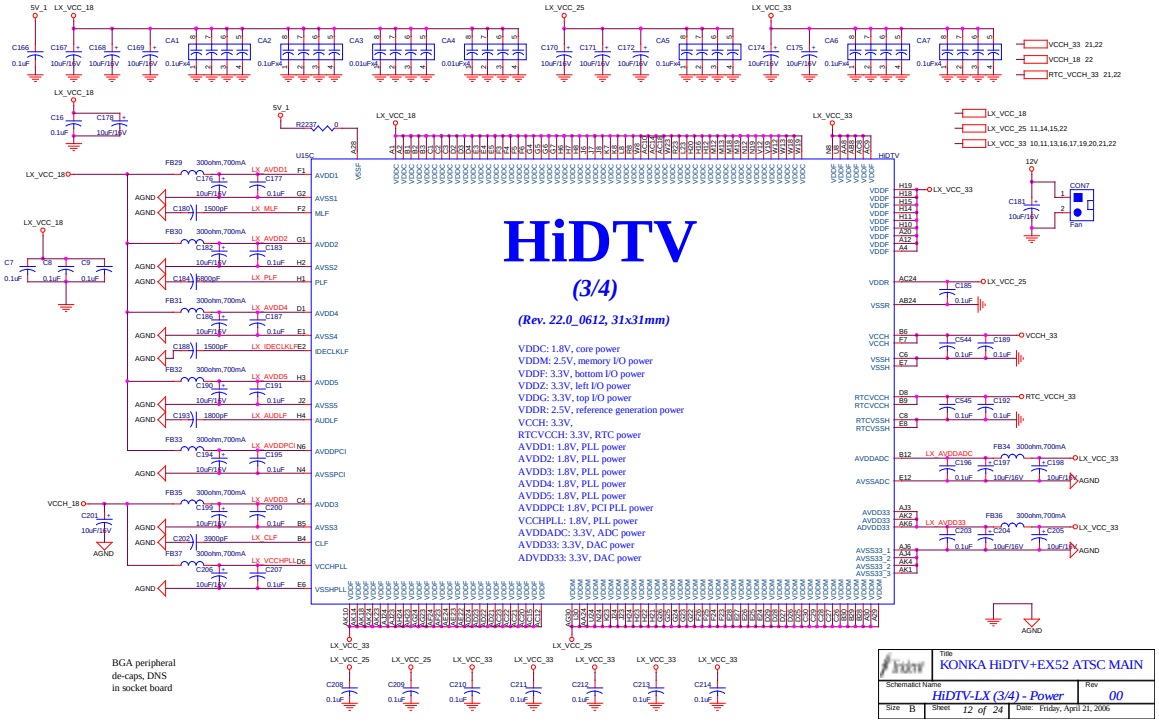


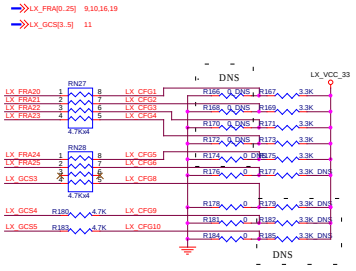
Title	KONKA HiDTV+EX52 ATSC MAIN
Schematict Name	SVP-EX52_4Mx32_DDR
Rev	00
Size	B
Sheet	8 of 24
Date	Friday, April 21, 2006





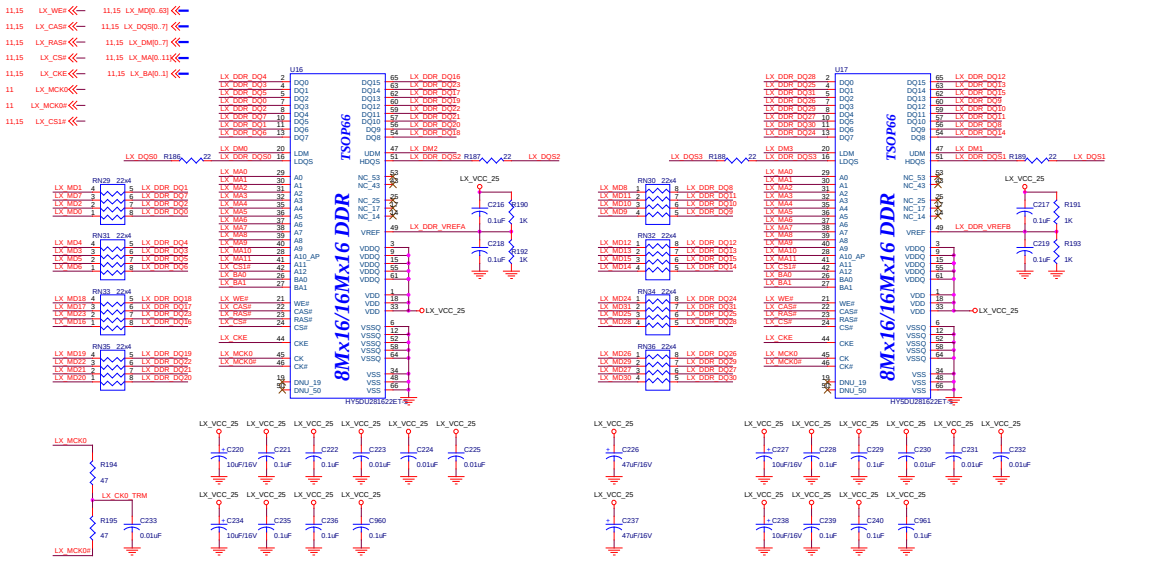




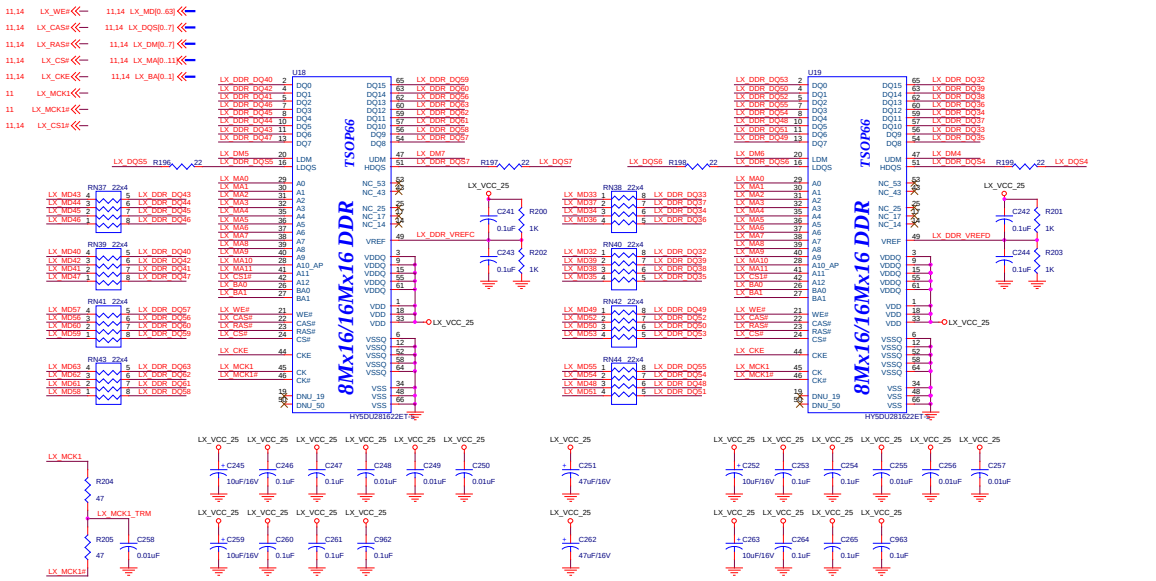


No	PIN	Configure Pin	Description	Setting
1	FRA20	PIN_REG_DDR	For UMAC type configure	
2	FRA21	PIN_REG_TYPE0		
3	FRA22	PIN_REG_TYPE1		
4	FRA23	PIN_REG_TYPE2		
5	FRA24	PIN_REG8051EN		
6	FRA25	ROMSIZ0	Data Bus Width	1: 16-bit Data Bus (Flash Bootup) 0: 8-bit Data Bus (EEPROM Bootup)
7	GCS2	CONM_SN		1: SIave; 0: Master
8	GCS3	ENDIAN_SEL[0]	MIPS ENDIAN Mode	Default: 2'b00
9	GCS4	ENDIAN_SEL[1]		
10	GCS5	M68K_PCI_SEL	M68K/PCI select	1: M68K/Flash; 0: PCI/Flash

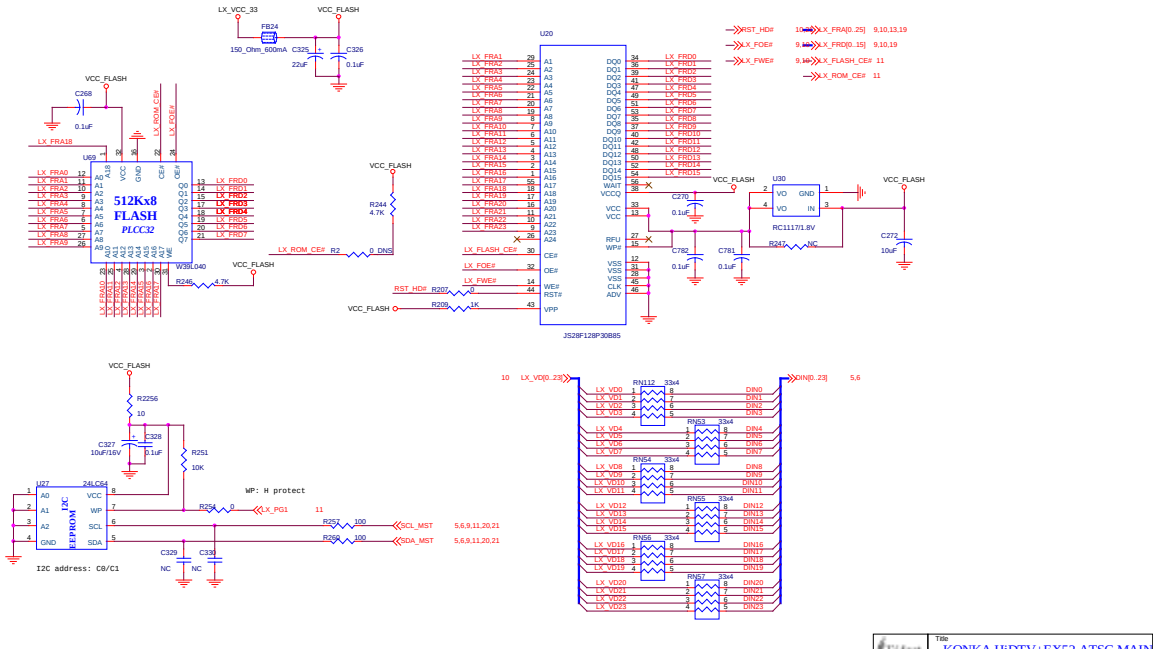
Title	KONKA HiDTV+EX52 ATSC MAIN	
Schematict Name	HiDTV-LX (4/4) - GND, Configure	Rev 00
Size B	Sheet 13 of 24	Date: Friday, April 21, 2006



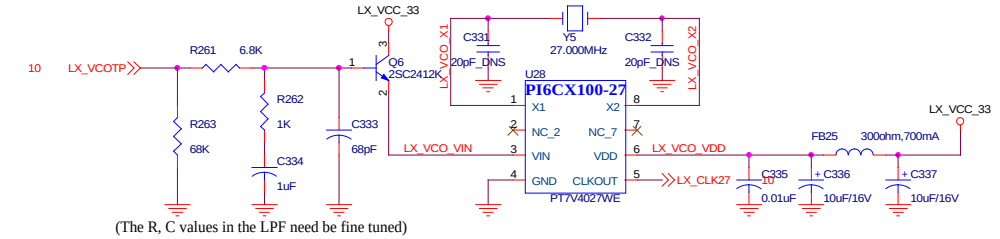
Title	KONKA HiDTV+EX52 ATSC MAIN	
Schematict Name	HiDTV_LX DDR(1/2)	Rev 00
Size B	Sheet 14 of 24	Date: Friday, April 21, 2006



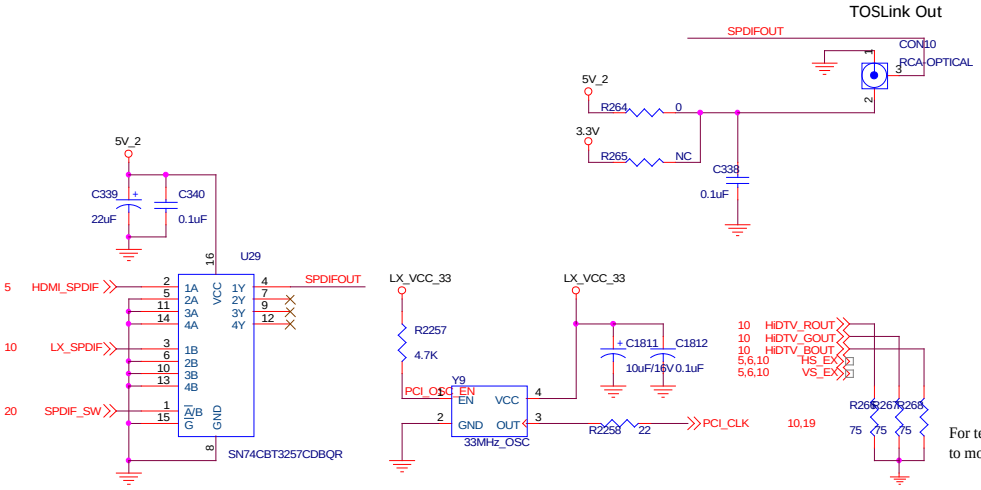
Title	KONKA HiDTV+EX52 ATSC MAIN	
Schematic Name	HiDTV_LX DDR(2/2)	Rev 00
Size B	Sheet 15 of 24	Date: Friday, April 21, 2006



Title	KONKA HiDTV+EX52 ATSC MAIN	
Schematic Name	HiDTV_LX ROM Flash	Rev 00
Size B	Sheet 16 of 24	Date: Friday, April 21, 2006

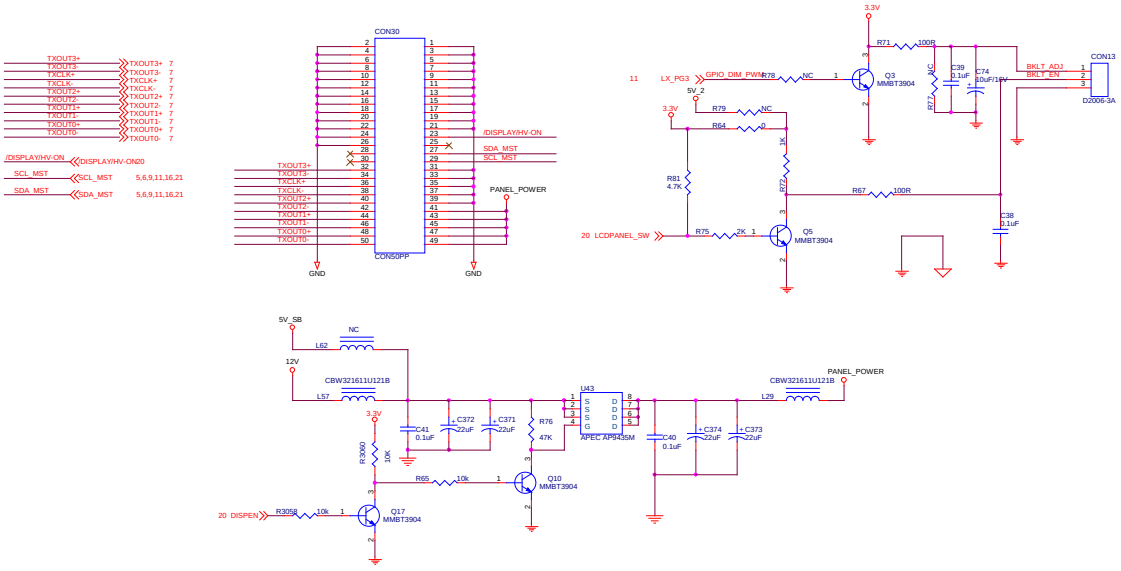


(The R, C values in the LPF need be fine tuned)

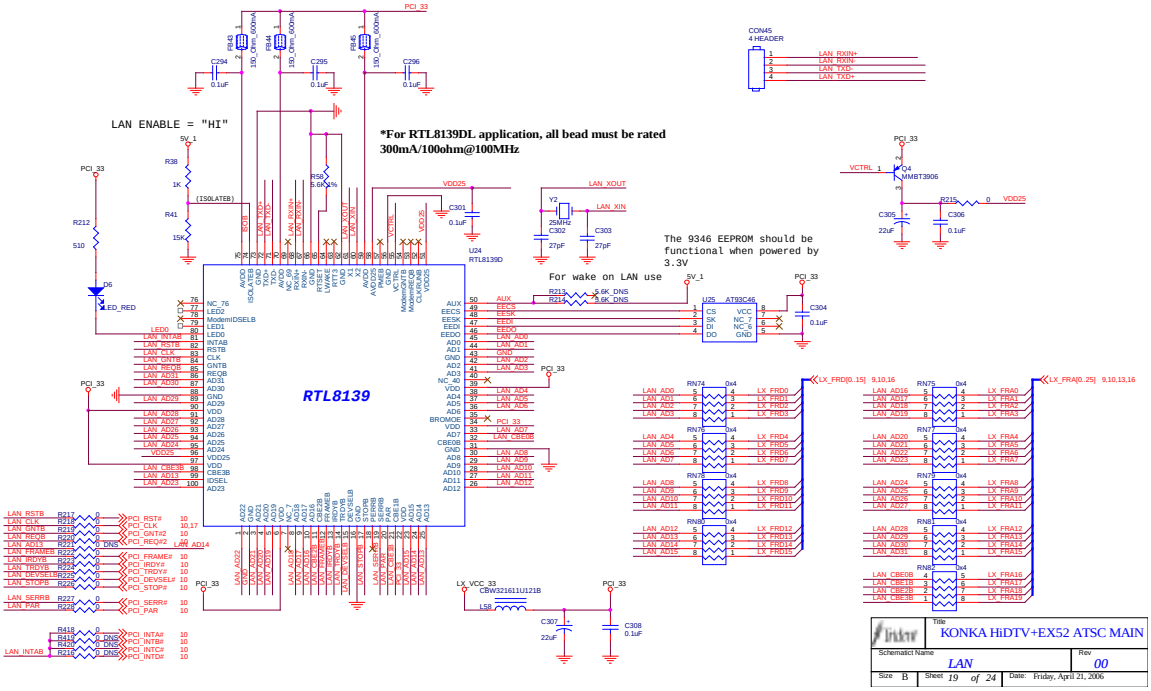


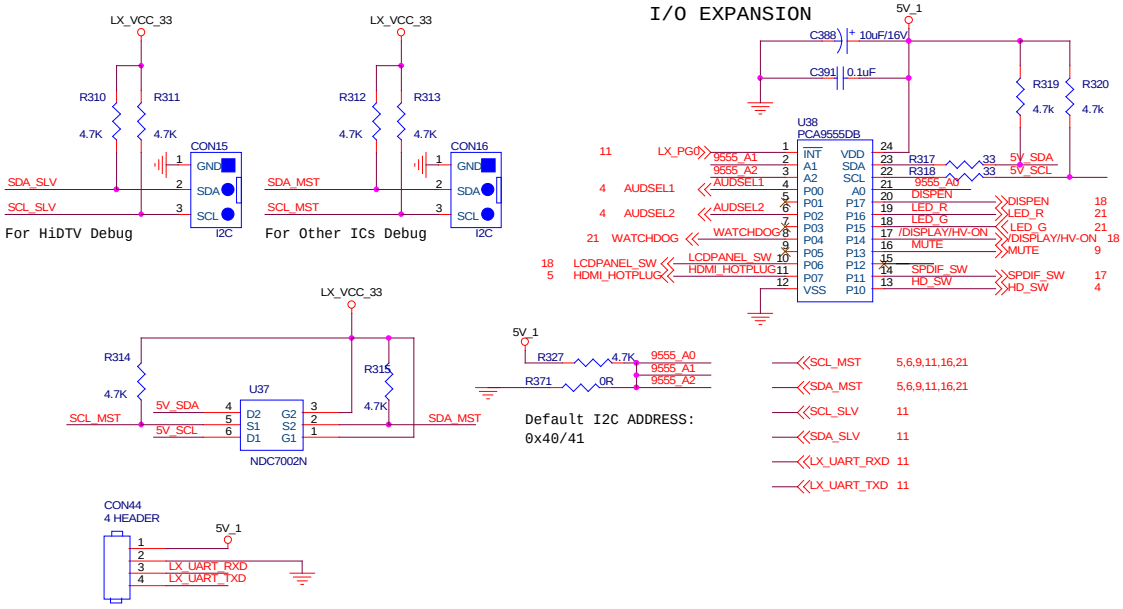
For test
to monitor HiDTV output

Trident	Title: KONKA HiDTV+EX52 ATSC MAIN	
Schematict Name: *VCO, SPDIF*		Rev: *00*
Size: A	Sheet: *17 of 24*	Date: Friday, April 21, 2006

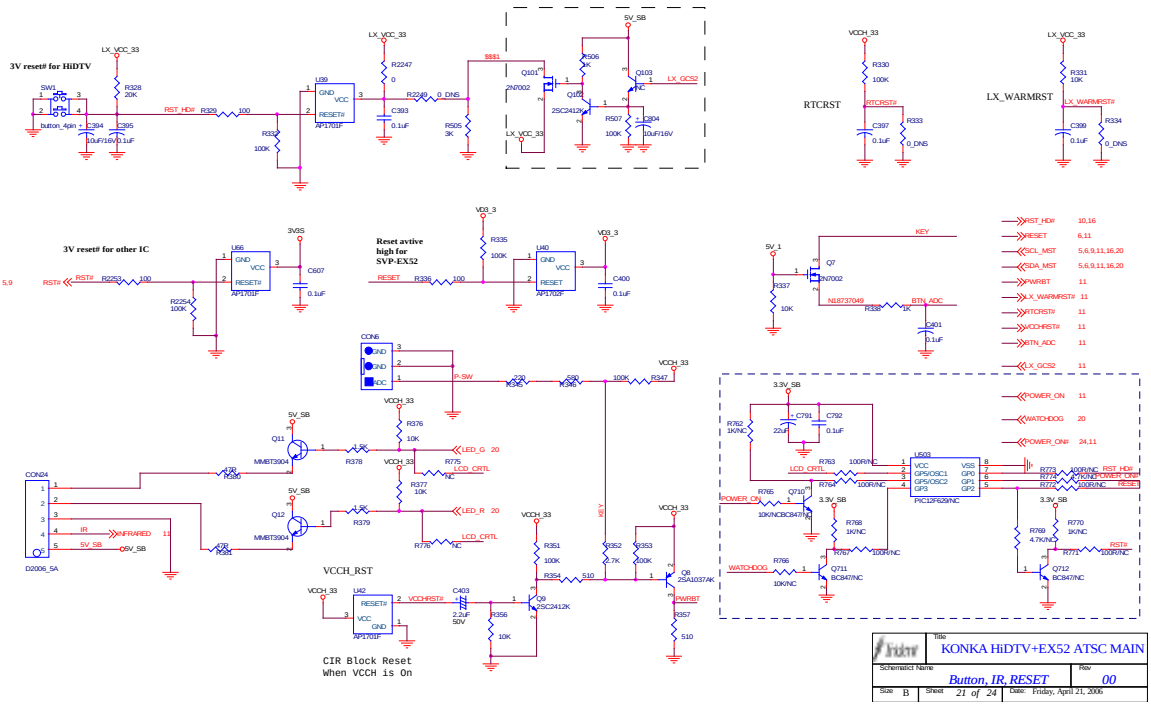


Trident	Title: KONKA HiDTV+EX52 ATSC MAIN	
Schematict Name: *LVDS OUTPUT*		Rev: *00*
Size: B	Sheet: *18 of 24*	Date: Friday, April 21, 2006

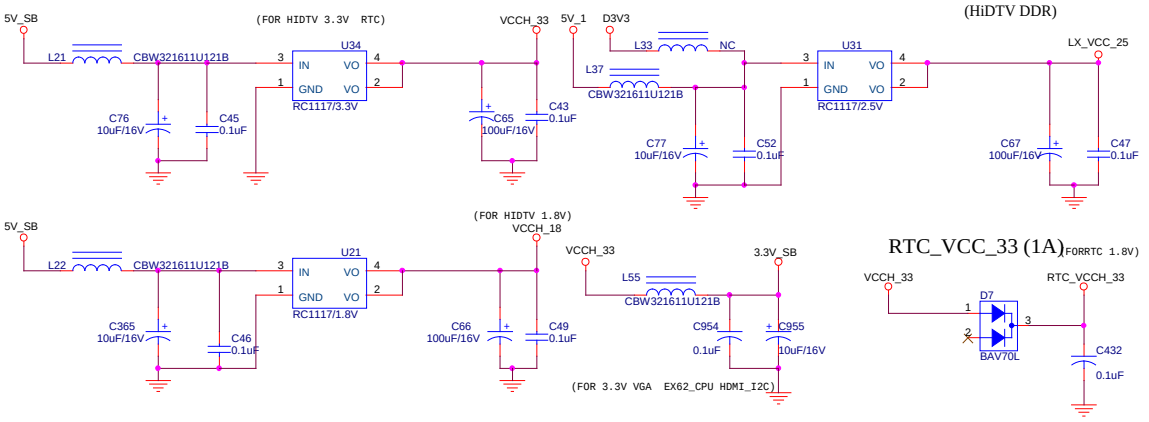




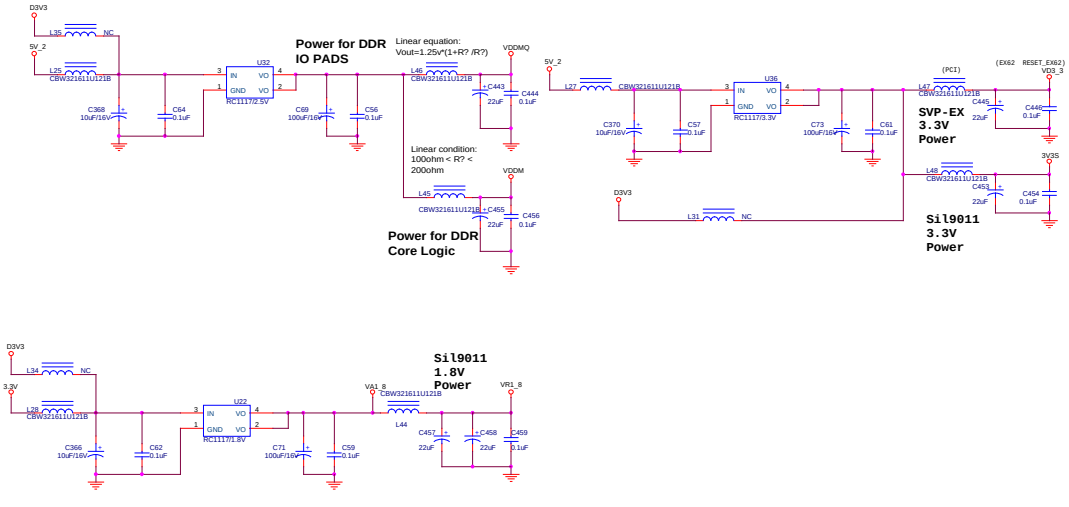
Trident	Title	KONKA HiDTV+EX52 ATSC MAIN
Schematict Name	I2C,RS232,GPIO	Rev 00
Size A	Sheet 20 of 24	Date: Friday, April 21, 2006



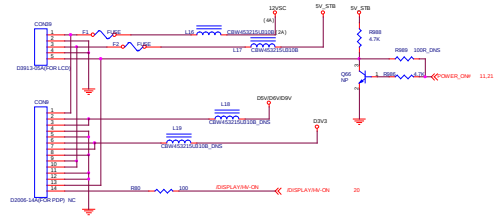
Trident	Title	KONKA HiDTV+EX52 ATSC MAIN
Schematict Name	Button, IR, RESET	Rev 00
Size B	Sheet 21 of 24	Date: Friday, April 21, 2006

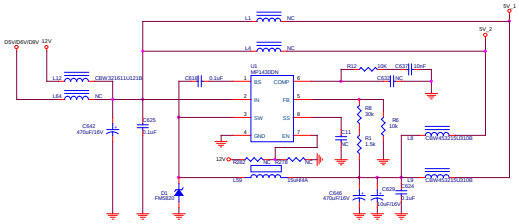


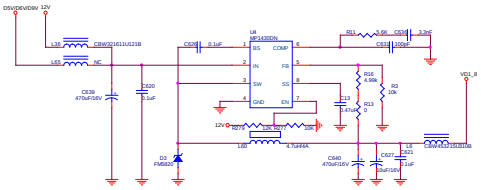
Trident	Title: KONKA HiDTV+EX52 ATSC MAIN	
Schematic Name: Power Supply - 1		Rev: 00
Size: A	Sheet 22 of 24	Date: Friday, April 21, 2006

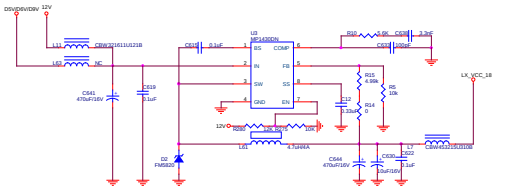


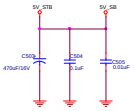
Trident	Title: KONKA HiDTV+EX52 ATSC MAIN	
Schematic Name: Power Supply - 2		Rev: 00
Size: B	Sheet 23 of 24	Date: Friday, April 21, 2006

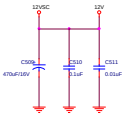












	Title: KONKA HiDTV+EX52 ATSC MAIN	
Schematic Name: Power Supply - 3		Rev: 00
Size: C	Sheet: 24 of 24	Date: Friday, April 21, 2006