

Settop-Box

Service Manual

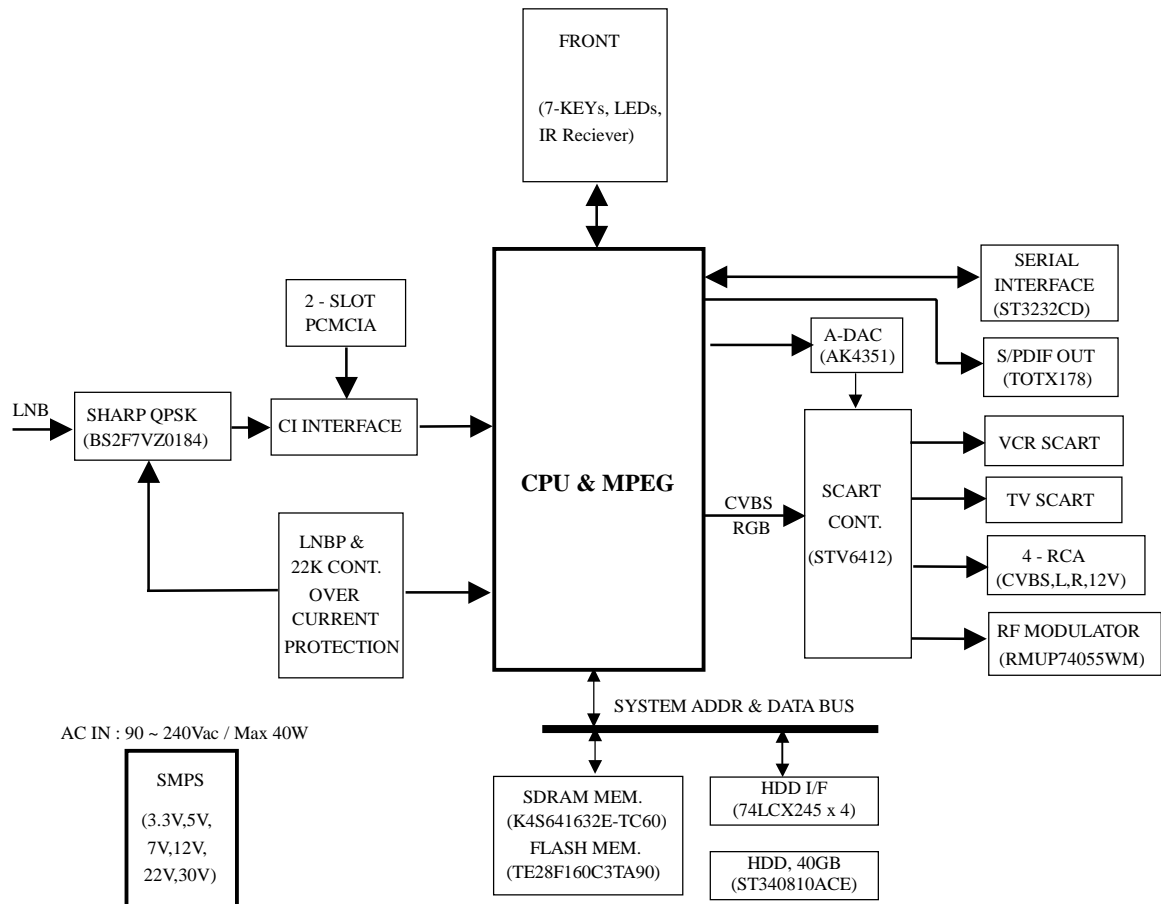
Model : SRT4356PVR

STRONG

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1. BLOCK DIAGRAM



2. Features

- HDD Record & Play
- DVB Common Interface (Viaccess, , Irdeto, Nagra Vision, Conax, CryptoWorks, AlphaCrypt etc)
- Easy Graphic MENU Interface
- RS232C Port for Updating Control Software and Additional Service
- Supports DiSEqC1.0/DiSEqC 1.2, 13/18V, 0/12V, 0/22KHz Tone
- 2-SCART(TV,VCR) Connectors & 1-RCA(CVBS,L,R)
- Multi-language Function (Menu, Audio)
- Last Channel Memory
- OSD: Transparency & Blending, 256 Palette Colors
- 7 Front Panel Buttons & IR Remote Controller User Interface
- Editing Functions(TV or Radio Channel, Channel Name, PID, Transponder Name)
- EPG for On Screen Channel Information
- Channels Memory for Multi-satellite
- 3 Operation Modes(Digital TV, Digital Radio, Favorite)
- Receives QPSK Satellite Broadcasting RF Signal and Decodes the Digitally Encoded Signal
- Digital Tuner with Loop-through
- SCPC/MCPC Receivable from C/KU-band Satellite
- Wide Symbol Rate 2~45 Mbps & 950~2150 MHz input Frequency
- MPEG-2 Main Profile at Main Level
- Teletext Supported by VBI
- 4900 Channels Memory
- Max. 12 Characters of Channel Name Length
- PLL RF Modulator UHF 21~69 with PAL BG/I/DK (Optional)
- Digital Audio Output (S/PDIF)
- Dolby Digital Audio (Optional)
- Support Games (Tetris, Snake etc)

3. TECHNICAL SPECIFICATIONS

Transmission Standards : DVB, MPEG2

3.1. Conditional Access Interface

PCMCIA	2 Slot.type I or type II DVB Common Interface Standard (Viaccess, Irdeto, Nagra Vision, Conax, Cryptoworks, AlpaCrypt ...)
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3.2. Tuner & Demodulator

LNB IF input	1 × F Type, IEC169-24, Female
LNB IF loop through output	1 × F Type, IEC169-24, Female
Input Frequency Range	950MHz to 2150MHz
RF input Signal Level	-25 ~ -65 dBm
RF impedance	75 ohms
LNB Power	13.5 / 18.5Vdc +/- 5%,0.5Amax Overload Protected
LNB tone switch	22KHz +/- 2KHz, 0.6Vpp +/- 0.2V
DiSEqC	Version1.2, Tone burst A/B
Demodulation	QPSK
Symbol Rate	2 ~ 45 Msps, SCPC/MCPC

3.3. MPEG

Transport Stream	MPEG-2 TS Specification(ISO/IEC 13818)
Input Rate	Max. 60Mbit/s
VIDEO	MPEG-2 MP@ML
AUDIO	MPEG-1/2 Audio layer 1,2
Aspect Ratio	4:3, 16:9
Video Resolution	720 x 576(PAL), 720 x 480(NTSC)
Audio mode	Stereo, Dual channel, Joint stereo, Mono
Audio Sampling Frequency	32/44.1/48KHz

3.4. A/V & Data In/Out

TV SCART	RGB, CVBS, L, R out
VCR SCART	CVBS, L, R out RGB, CVBS, L, R in
RCA JACK	CVBS(Yellow) Audio L, R(White, Red) 0/12Vdc out(Black)
TOSLINK	Digital Audio Output(S/PDIF)
Serial Port	RS232C D-Sub MaleType

3.5. MEMORY

FLASH MEMORY	2 Mbytes
SDRAM	8 Mbytes
EEPROM	8 Kbytes

3.6. RF Modulator

TV Standard	PAL BG/I/DK Selectable by Menu Setting
Audio Output	Mono with Volume Control
Preset Channel	CH 38(or TBD). Software changeable by Menu Screen

3.7. Hard Disk Drive

Capacity	20/40/80 Gbyte
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3.8. Power Supply

Input Voltage Range	84Vac ~ 264Vac(SMPS)
Input Frequency Range	47Hz ~ 63Hz
Power Consumption	Max 40W
Standby Power Consumption	<= 6.5W
Protection	Separate Internal Fuse The input shall the lighting protection

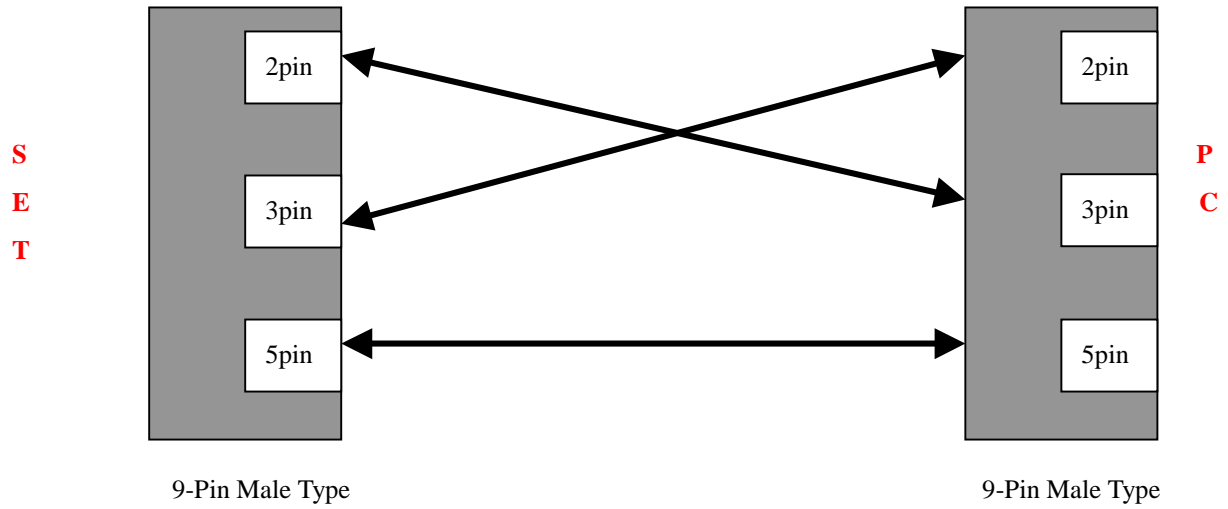
3.9. SCART Socket

PIN No.	TV	AUX
1	Audio out Right	Audio out Right
2	-	Audio in Right
3	Audio out Left	Audio out Left

4	Audio ground	Audio ground
5	Blue ground	Blue ground
6	-	Audio in Left-
7	BLUE out	BLUE in
8	Function control out	Function control in
9	Green ground	Green ground
10	-	-
11	GREEN out	GREEN in
12	-	-
13	Red ground	Red ground
14	Fast blanking ground	Fast blanking ground
15	RED out	RED in
16	Fast blanking out	Fast blanking in
17	Cvbs ground	Cvbs ground
18	Cvbs ground	Cvbs ground
19	CVBS out	CVBS out
20	-	CVBS in
21	Ground	Ground

3.10. Serial(RS-232) Connector

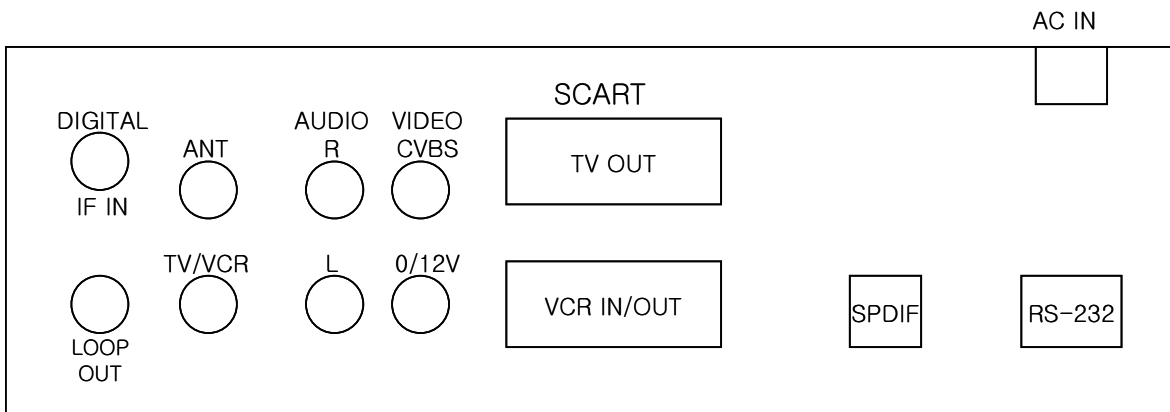
PIN No.	Signal Name
1	-
2	RXD(Receive Data)
3	TXD(Transmit Data)
4	-
5	Ground
6	-
7	-
8	-
9	-



3.11. Physical Specification & Environmental Condition

Weight	3.5 KG
Size(WxHxD)	380mm x 65mm x 290mm
Operating Temperature	0 °C ~ 40 °C
Storage Temperature	-10 °C ~ 80 °C
Operating Humidity Range	10~85% RH, Non-condensing
Storage Humidity Range	5~90% RH, Non-condensing

3.11. REAR Panel (Back View)



4. TROUBLE SHOOTING

There may be various reasons for the abnormal operation of the receiver.

Check the receiver according to the procedures shown below.

If the receiver does not work properly after checking it, please contact the dealer.

Don't open the receiver cover. It may cause a dangerous situation.

4.1. Trouble shooting

Symptom	Cause	Remedy
The display on front Panel does not light up.	The power cable is Not plugged in	Check that the power cord Is plugged into the wall outlet.
No picture or sound.	Wrong connection of The Audio/Video output Of the receiver to TV. Audio muting. TV power off.	Connect the Audio/Video Output of the receiver to TV correctly. Press the MUTE button. Turn TV on.
No picture.	The receiver can't Receive the signal. Incorrect values of some Tuner parameters. Wrong direction of the dish	Check the antenna cable. Replace the cable, or connect The cable to the receiver tightly. Set the values of tuner Parameters correctly in System set-up menu. Check the signal strength With a spectrum analyzer and Adjust your dish correctly.
The remote controller Does not working.	The batteries of the Remote controller are Not inserted or Exhausted.	Check whether the batteries Are inserted correctly in your Remote controller. Check the batteries, and if Exhausted, replace the Batteries of the remote Controller.

4.2. Check Point

◆ 4.2.1. Appearance (Exterior) Test

Check the condition of install, joining of connectors, break or bend of PCB, cold-soldering or short of components and problem of part ,etc.

◆ 4.2.2. Power Test

5V Checking to L902

3.3V Checking to L901

30V Checking to L906

23V Checking to L905

12V Checking to L(904,909)

7V Checking to L903

◆ 4.2.3. System Test

Check STI5518 CPU or Flash Memory TE28F160C3T is working or not.

Check Message Display and Execution of Hyper Terminal in PC.

* Configuration of Hyper Terminal

Baud rate : 115,200 bps

Data bit : 8 bits

Parity bit : none

Stop bit : 1

Control : none

4.2.3.1. Check STI5518 Clock

4.2.3.2. Test for Flash Memory

◆ 4.2.4. MPEG and Audio Video Test

Check the whole process from MPEG Decoder (STI5518) and Audio/Video SWITCH (STV6412) of R, G, B, Y, C, CVBS

Also Check the Audio signal (U505 AK4351VT)

Output port (SCART, Phone Jack, RF-Modulator)

4.2.4.1. STI5518 (MPEG-2 Audio/Video Decoder)

4.2.4.2. SCART Controller STV6412

4.2.4.3. Audio DAC (U505 AK4351VT)

◆ 4.2.5. Channel Test

4.2.5.1. When "NO SIGNAL" Message display.

4.2.5.1.1. U105 (KA317 Regulator) → Check the Voltage 21V ~ 24V at Pin 3.

Check the Voltage 13V(Vert) or 18V(Horz) at R125.

4.2.5.1.2. I2C Control Signal

◆ 4.2.5.2. 22Khz Control through , TS-Data and Data Error control signal

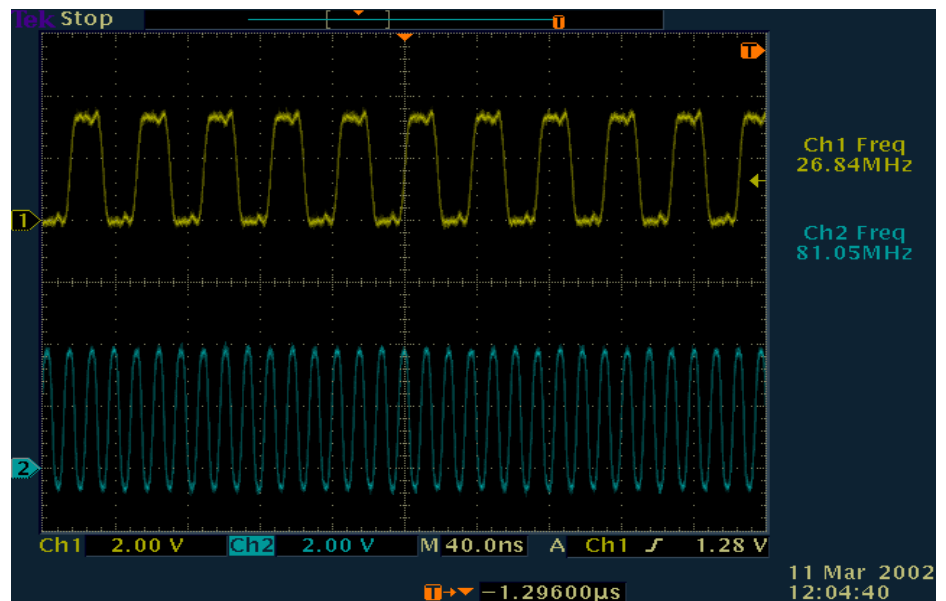
◆ 4.2.6. Common Interface Test

◆ 4.2.7. HDD Interface Test

◆ 4.2.3.1. Check STI5518 Clock.

27Mhz →

Check point : U301 Pin 120 or R310
or R309.

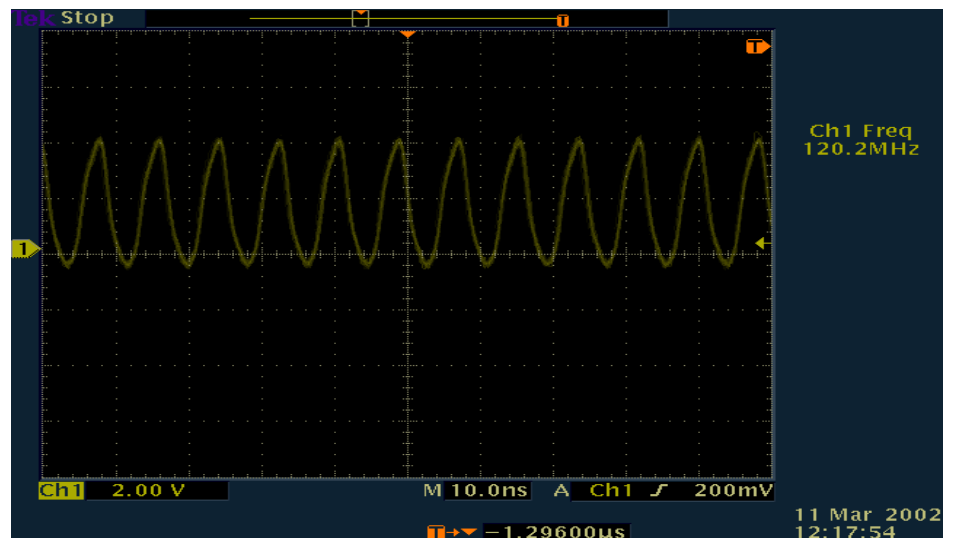


81Mhz →

Check point : U301 Pin 118 or TP301

120 MHz →

Check point : U402 Pin 38 or R313



◆ Failure Causes and Solution.

If the 27Mhz is acting unstably, Check the U304(OSC) and U303(74HC04) and U301(STI5518) is damaged or not.

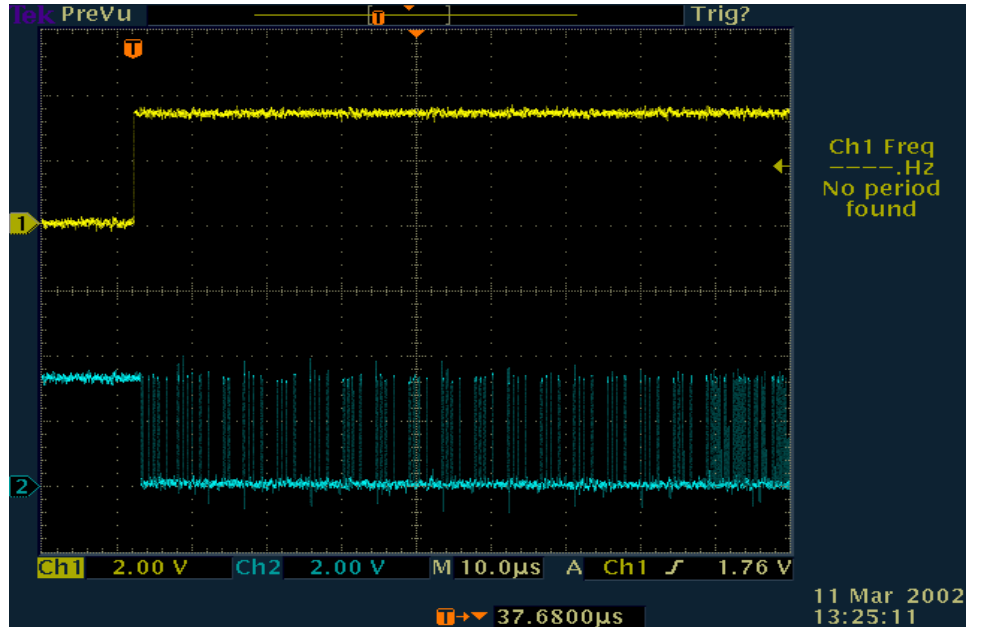
If you have firm belief of damage for the device, then replace the device.

If the clock 81Mhz on TP301, 120Mhz on Pin-38 of U402 are not generated from the chip U301(STI5518), Please check the soldering state of U301.

◆ 4.2.3.2. Test for Flash Memory

RESET →
Check Point : U301 Pin 124

CE →
Check Point : U401 Pin 26



◆ Failure Causes and Solution

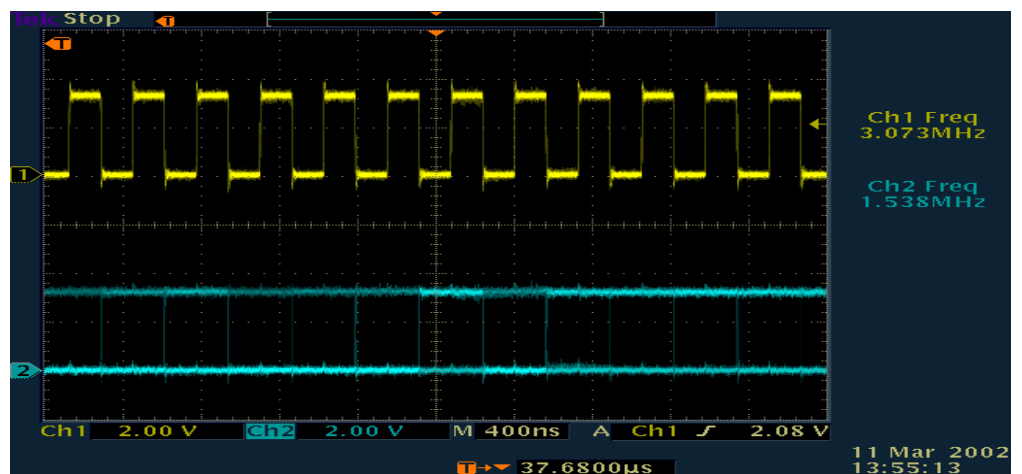
If the set do not operating correctly, the chip select pin and the reset pin of STI5518 must be checked. And if these signal are not acting like above figure, then check the soldering state of U301, U401 and RA3xx.

Before checking these signal you must check the power for U301, U401 etc. Check 3.3V on L301, L302, L304 and check 2.5V on L303, L305, L306 respectively.

◆ 4.2.4.1. STI5518(MPEG-2 Audio/Video Decoder)

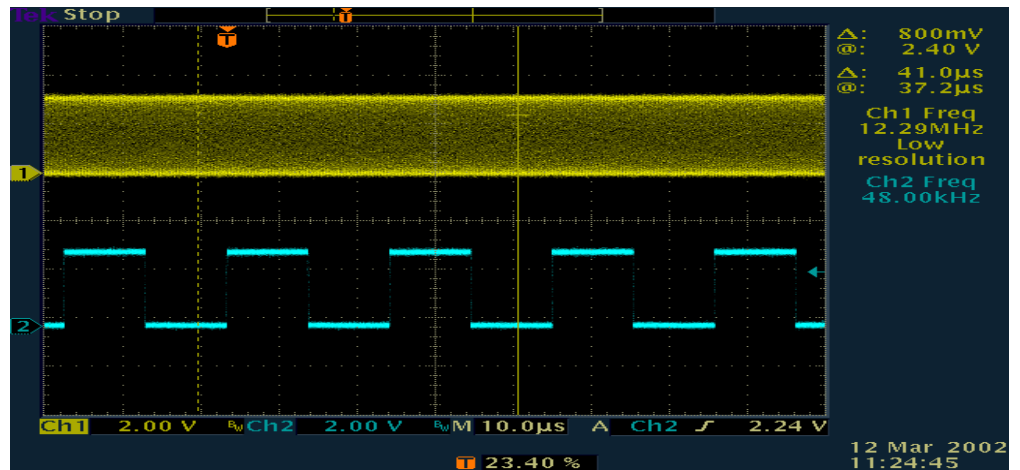
SCLK →
Check point : U301 Pin 51

SDATA →
Check Point : U301 Pin 52

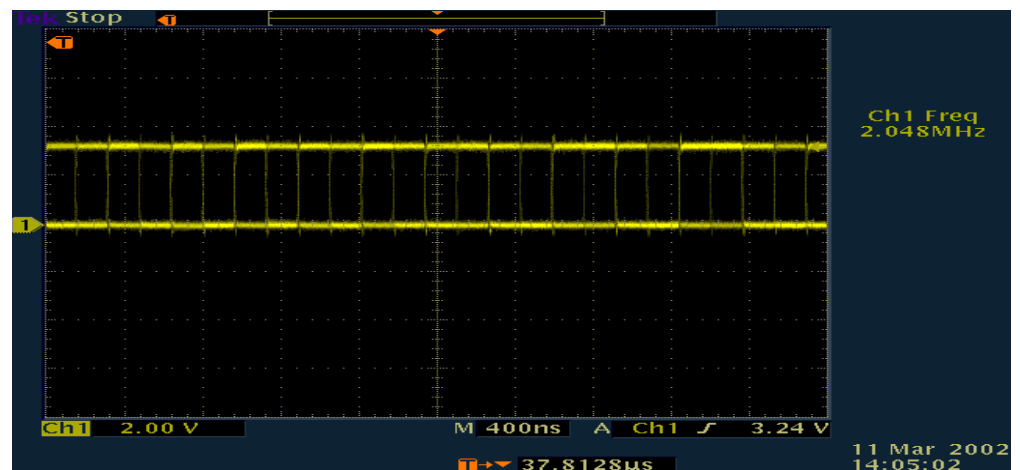


MCLK →
Check Point : U301 Pin 55

LRCLK →
Check Point : U301 Pin 56



SPDIF →
Check Point : U301 Pin 57



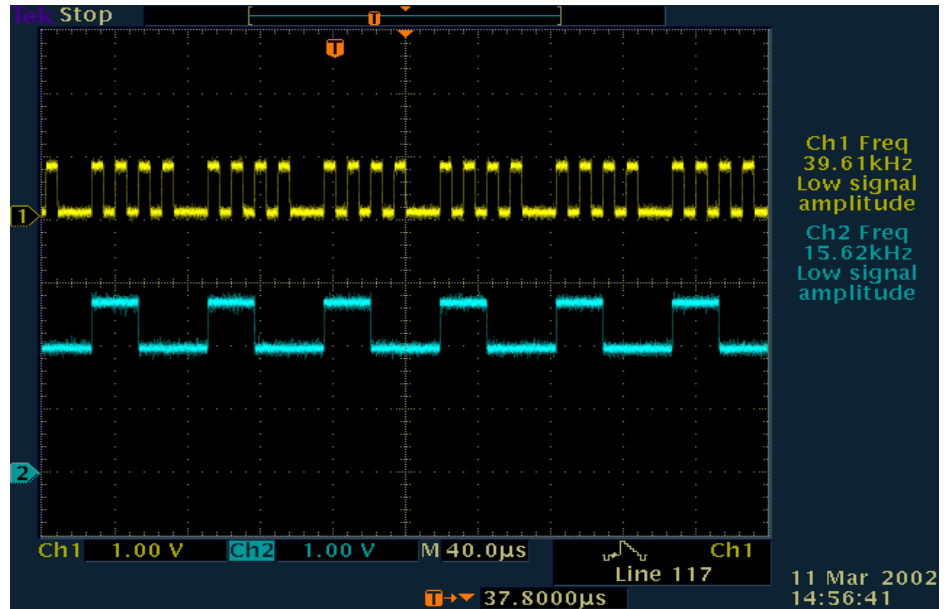
◆ Failure Causes and Solution

If the Audio Main CLK MCLK(2.048Mhz ~12.8Mhz) is acting unstably, check the soldering state of STI5518. And check the oscillator U304 is generating 27 Mhz clock. If STI5518 and oscillator are OK, then check the Audio DAC U505. And all these are OK, STI5518 maybe damaged. Then you can try to replace the STI5518.

◆ 4.2.4.2. SCART Controller STV6412

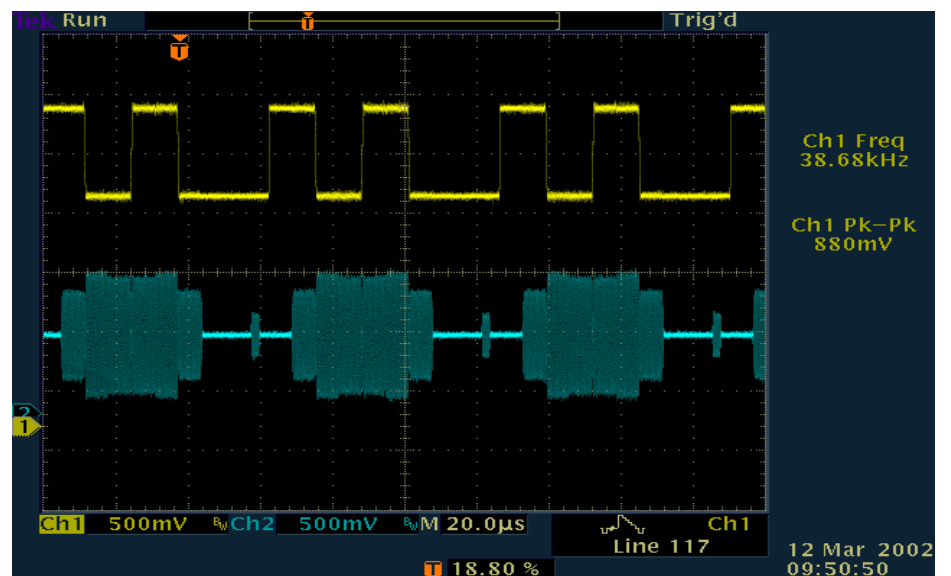
BLUE →
Check Point : U301 Pin 25

GREEN →
Check Point : U301 Pin 26

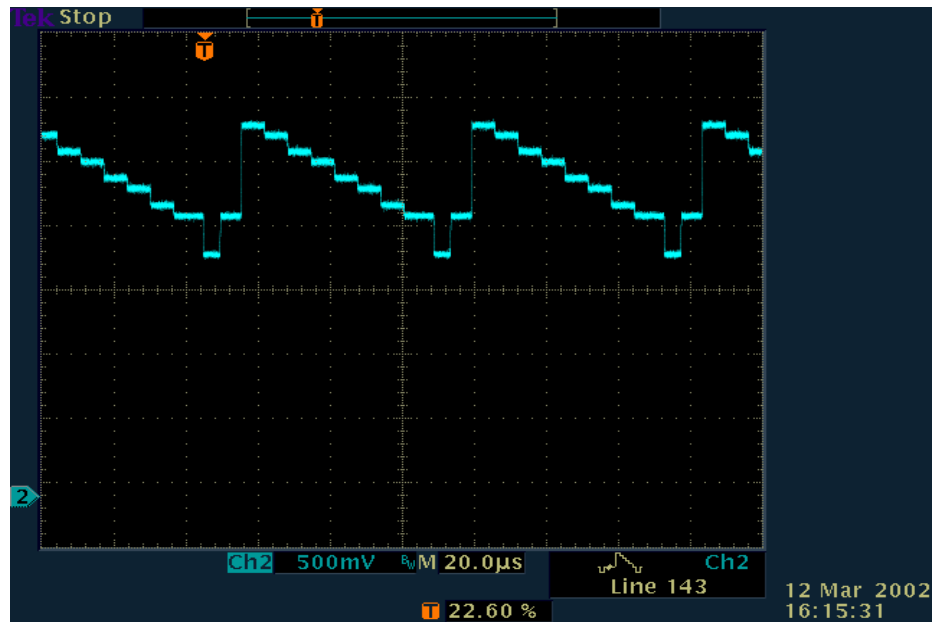


RED →
Check Point : U301 Pin 27

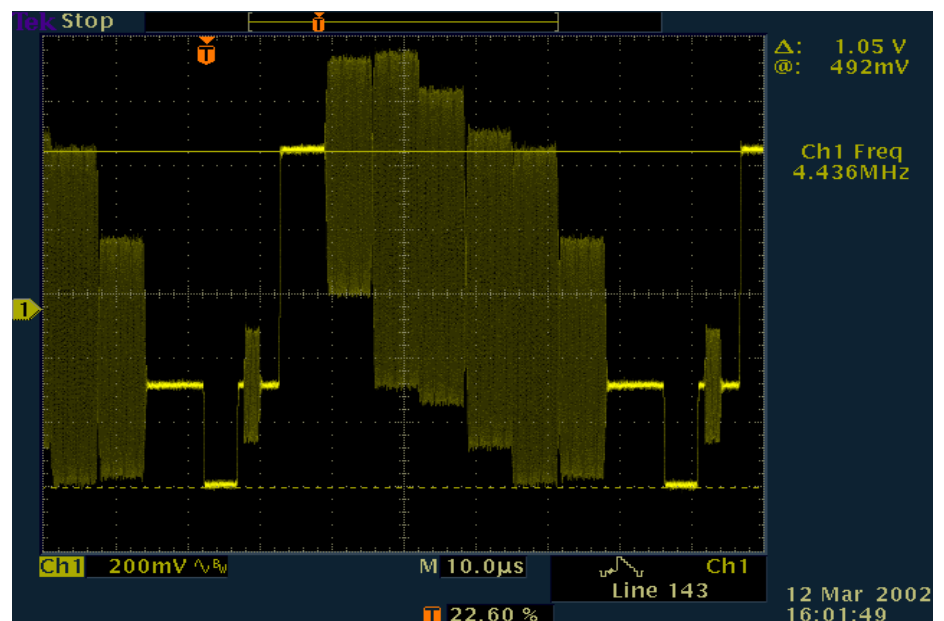
C →
Check Point : U301 Pin 33



Y →
Check Point : U301 Pin 32



CVBS →
Check Point : U301 Pin 34



◆ Failure Causes and Solution

If the video signal is not operating correctly, you should check R314, R315(18 Kohm).

And you may try to check the net concerning to B, G, R, Y, C, CVBS on R501, R503, R505, R507, R509 and R511.

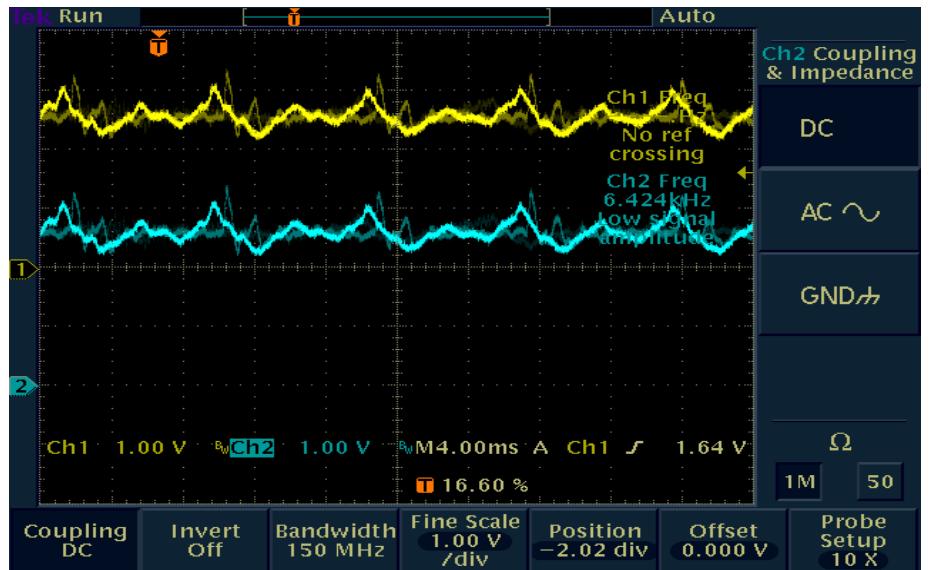
When you had finished checking the above net or device and all these are OK, STI5518 maybe damaged.

Then you can try to replace the STI5518.

4.2.4.3. Audio DAC AK4351VT

AOUTL →
 Check Point : U505 Pin 11

 AOUTR →
 Check Pont : U505 Pin 10



◆ Failure Causes and Solution

If there are no audio output, you should check the input signal LRCLK, SCLK, SDTA and MCLK of Audio DAC U505. And you may try to check the net concerning to audio L, R on R582, R585 and pin 11, 13 of U501. When you had finished checking the above net or device and all these are OK, Audio DAC maybe damaged. Then you can try to replace the Audio DAC.

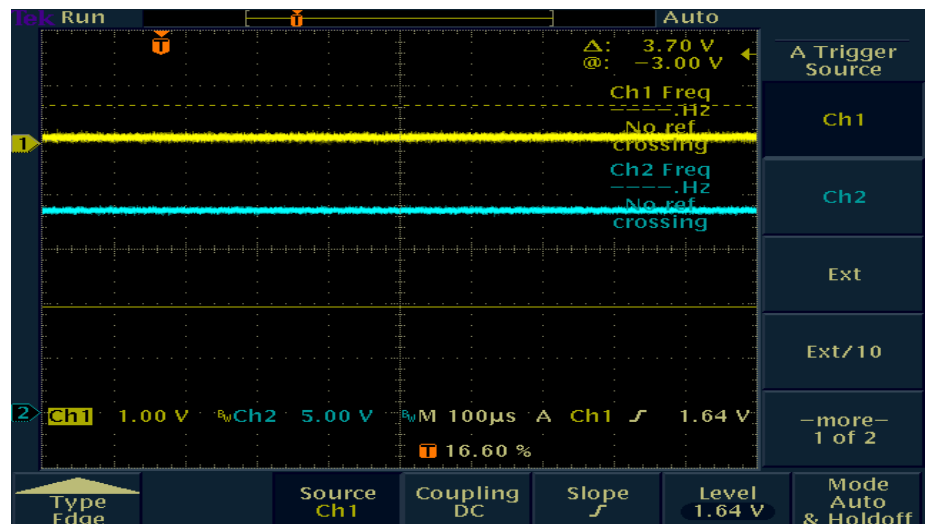
4.2.5. Channel Test

◆ 4-5-1. When “NO SIGNAL” is displayed.

Check the RF cable is connected to LNB IN connector of rear panel. Then check U105(KA317 Regulator) pin 3 is powered between 21V to 24V. And check the voltage on L101, L103, L104, L105, L107 is proper level. When you had finished checking the above net or device and all these are OK, Tuner maybe have problem. Replace the Tuner.

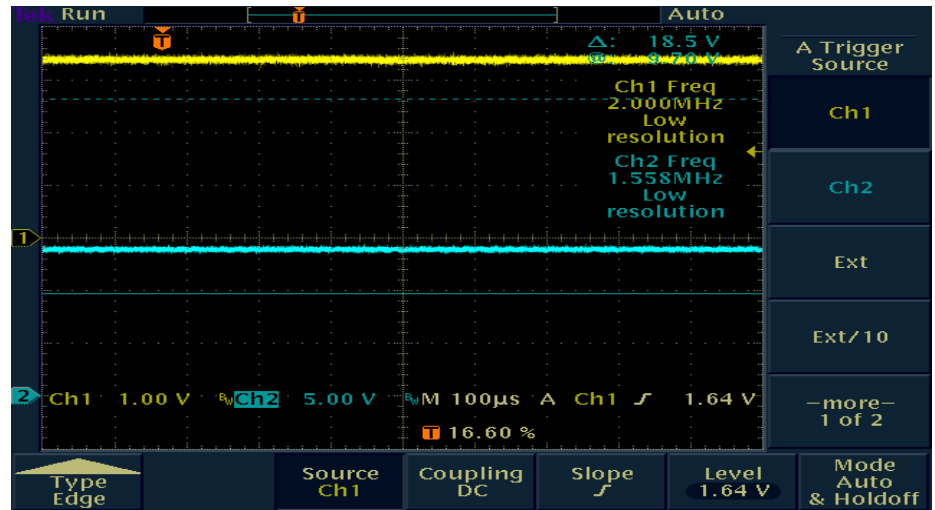
In case of Horz Polarity →
 Check Pont : R125

 LNBA →
 Check Point : L106, (18V)



In case of Vert Polarity →
 Check Point : R125

LNBA →
 Check Point : L106, (13V)



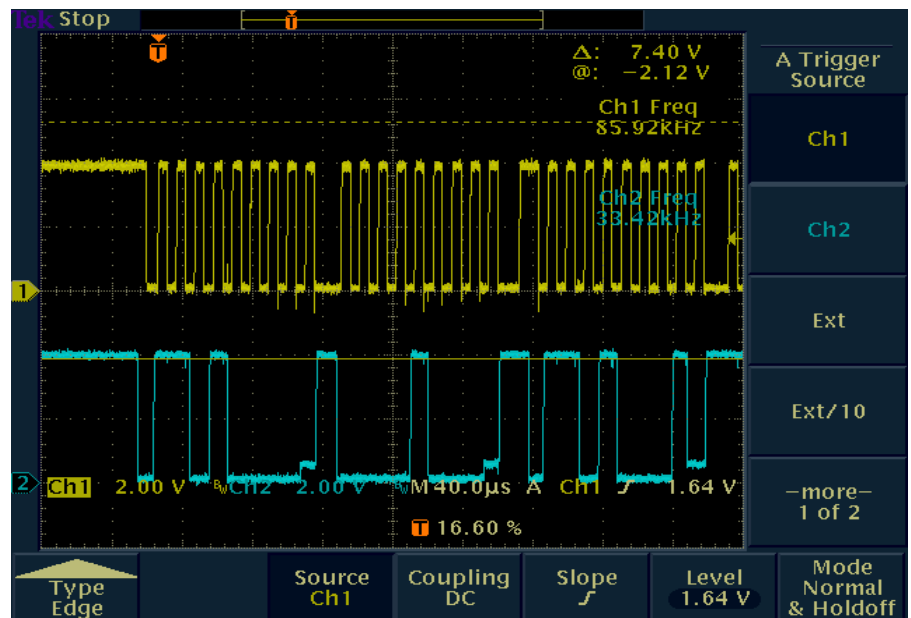
◆ Failure Causes and Solution

If there's no 13V or 18V on the output connector of Tuner U101, you should check High(3.3V)/low(0V) state of R121. And this is properly high then check the Q107, U105 and Q109 respectively.

◆ 4.2.5.1.2. I2C Control Signal

SCL_NIM →
 Check Pont : U301 Pin 20

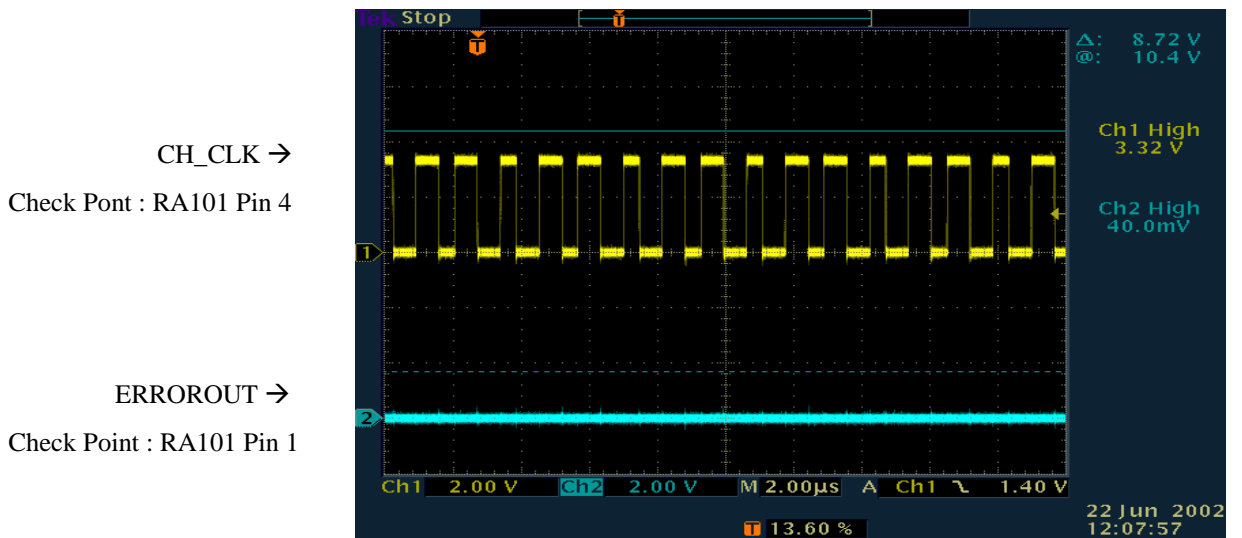
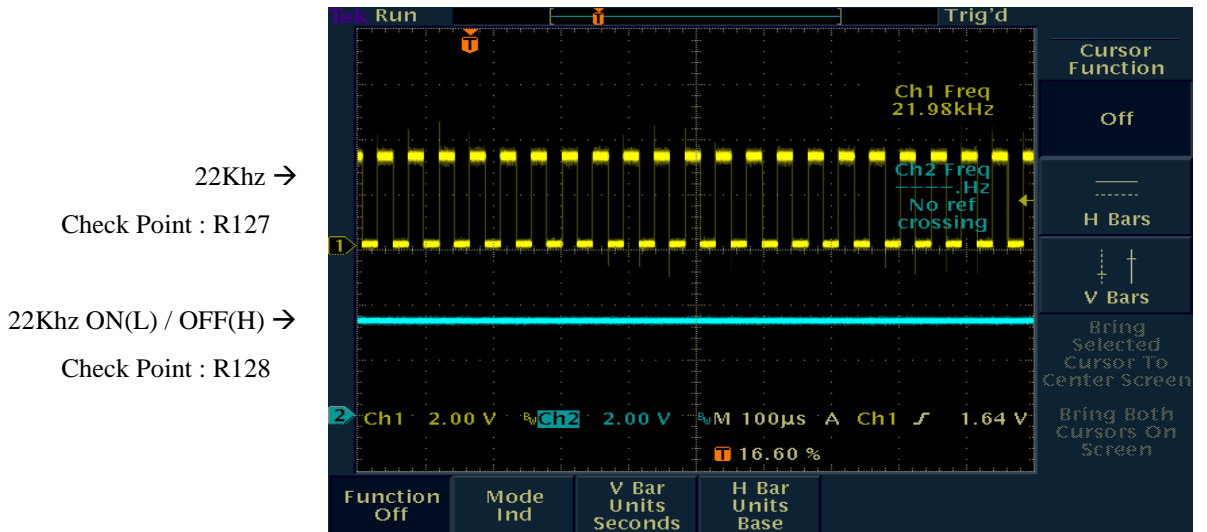
SDA_NIM →
 Check Point : U301 Pin 21



◆ Failure Causes and Solution

If there's no or different signal compare to above picture on I2C line, check the associated net. Try to remove serial resistor R230, R232, R351, R352, R549, R550, R588 and R589, then you can find what device has problem.

◆ 4.2.5.2. 22Khz Control through , BCLK and ERROROUT control signal



◆ Failure Causes and Solution

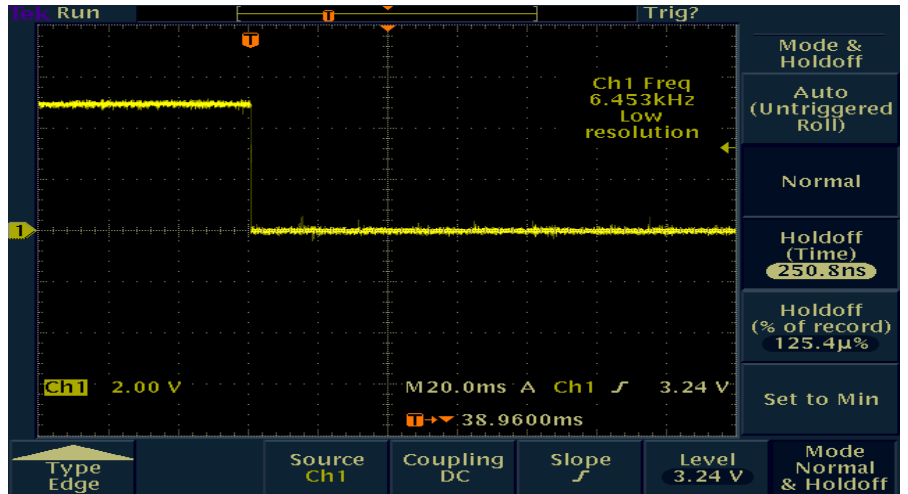
If there's no 22 KHz, check the Pin 12 of Tuner and associated net.

◆ 4.2.6. Common Interface Test

CDA# / CDB# →

Check Point : CDA# : U203 Pin 7, 72

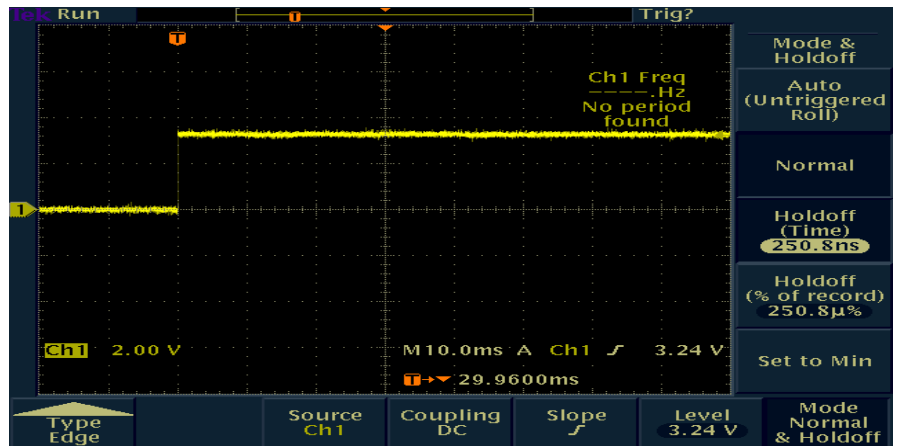
CDB# : U203 Pin 6, 71



PCMCIA_A / PCMCIA_B →

Check Point : PCMCIA_A: R209

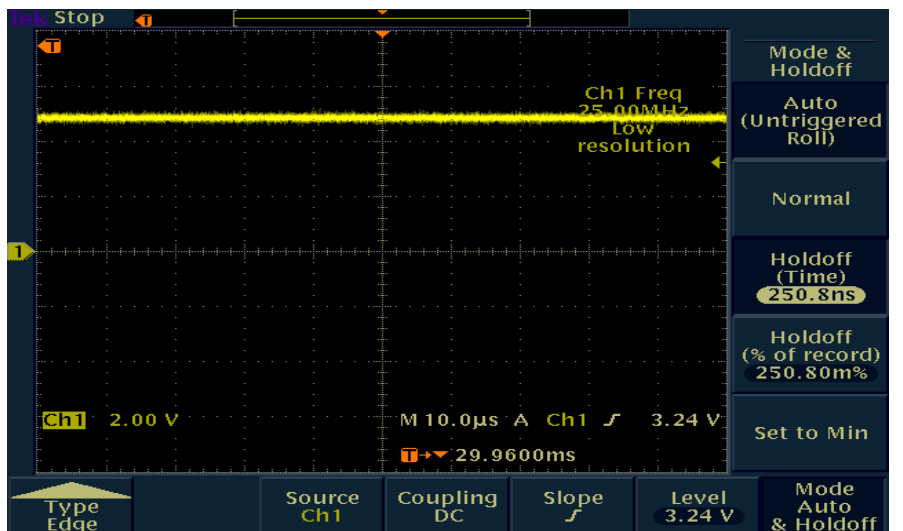
PCMCIA_B: R251



VCC1,VCC2 →

Check Point :

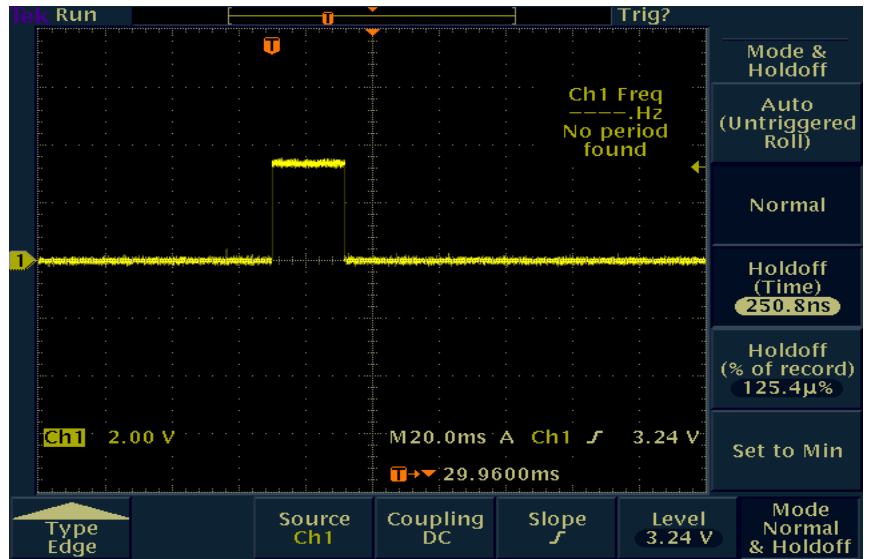
VCC1,VCC2 : Collector of Q201, Q203



RSTA / RSTB →

Check Point : RSTA : U203 Pin 120

RSTB : U203 Pin 119



TS-Signal →

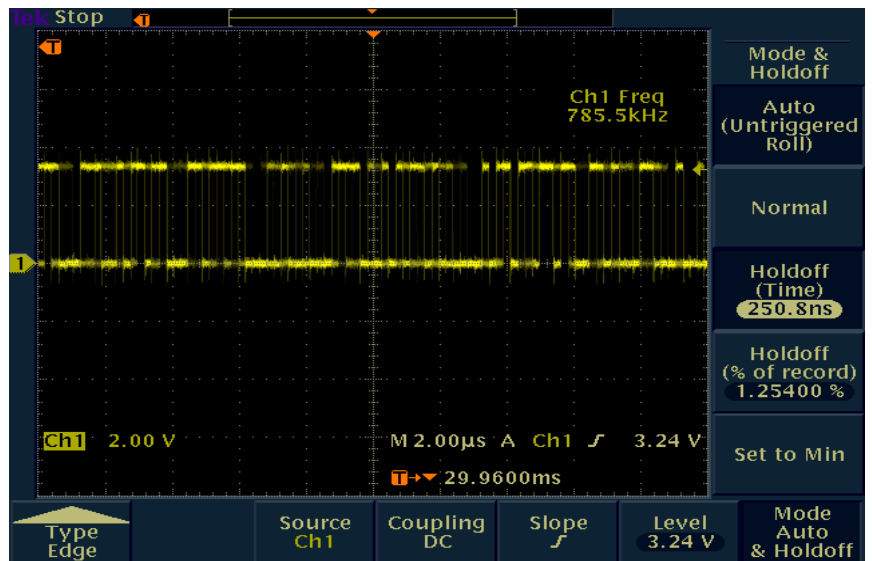
Check Point : U203 Pin 40 ~ 47,

MDIA[7:0], MDIB[7:0],

MDOA[7:0], MDOB[7:0],

U203 Pin 53 ~ 60 and

U201



◆ Failure Causes and Solution

If above signal is not acting properly, check the associated net.

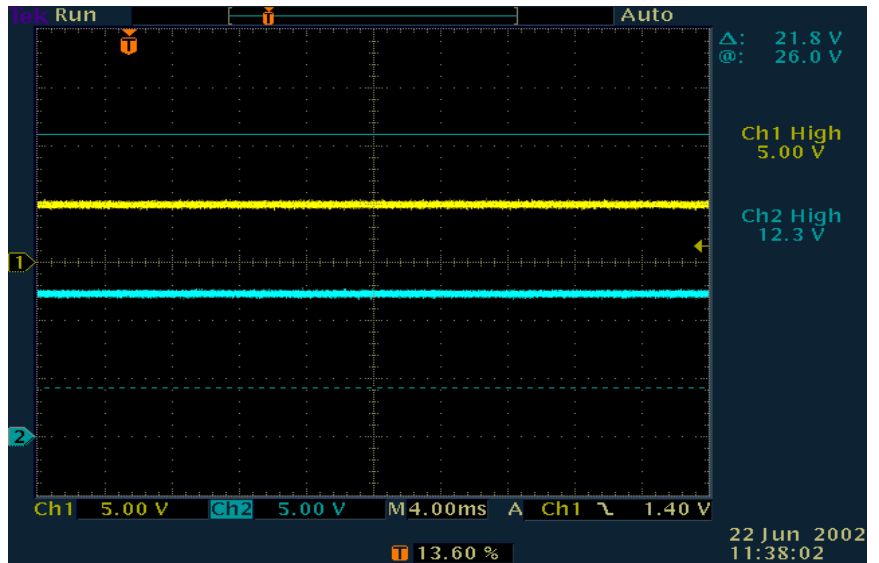
◆ 4.2.7. HDD Interface Test

HDD_5V →

Check Point : JP702 Pin 4

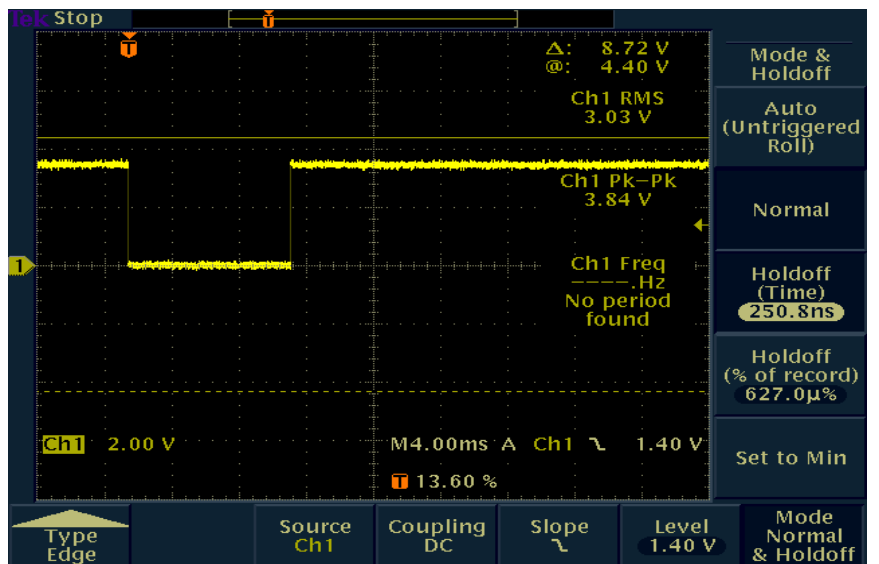
HDD_12V →

Check Point : JP702 Pin 1



HDD_RESET →

Check Point : R721



nCE1 →

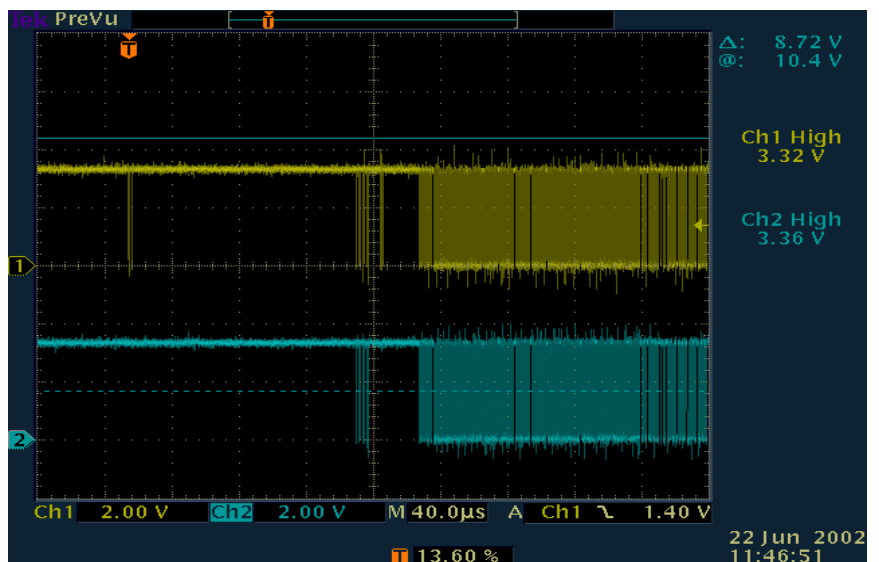
Check Point : U301 Pin 134

And R701

nWE →

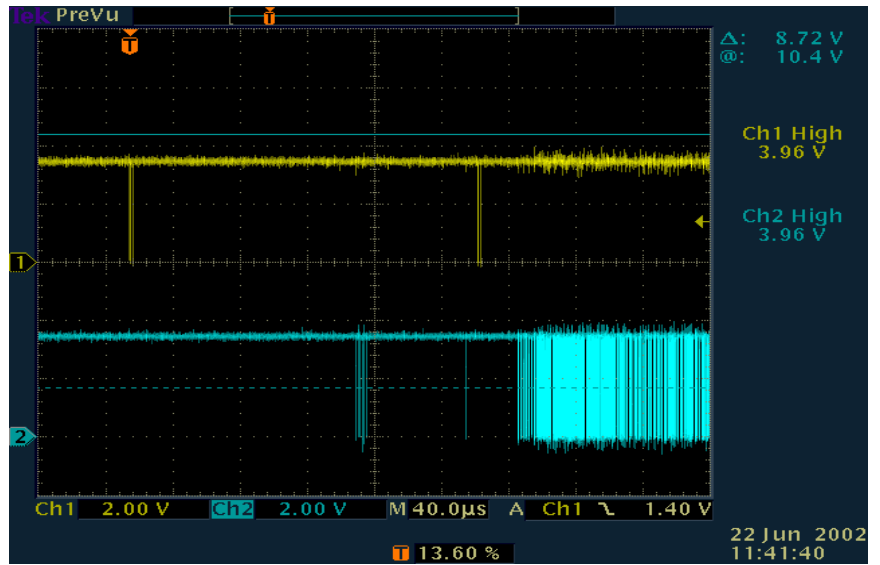
Check Point : U301 Pin 130

And R703



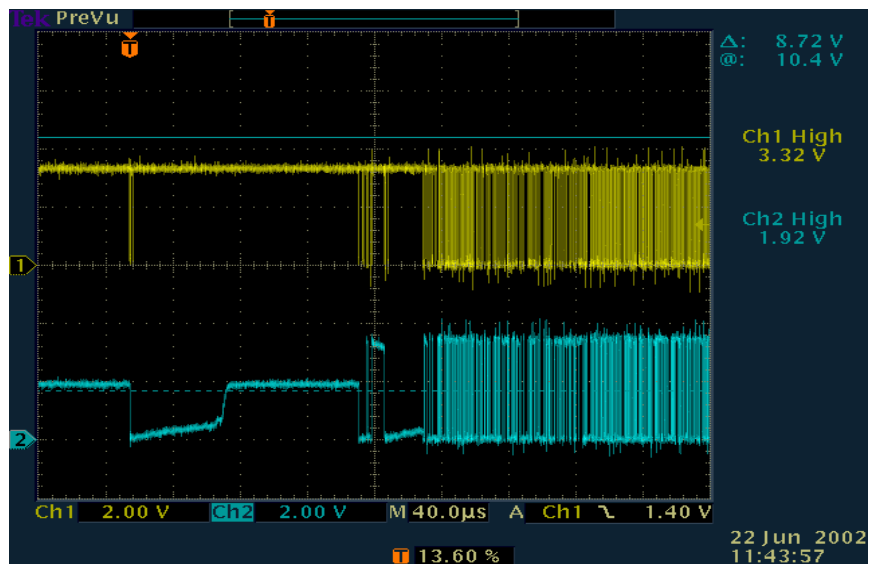
ATAPI_RD →
Check Point : U301 Pin 187
And R720

ATAPI_WR →
Check Point : U301 Pin 188
And R719



nCE1 →

HDD_DATA →
Check Point : U701 Pin 3~10
And RA701 ~ 704



◆ Failure Causes and Solution

If above signal is not acting properly, check the associated net.

STRONG SRT4356PVR

1. MAIN PCB ASS'Y

1-1. SMD

Item	SPEC	Quantity	Reference	Part Number	Vendor	Code	Remark
1	SMD	24	L101,L103,L104,L105,L107, L201,L301,L302,L303,L304, L305,L306,L401,L451,L452, L453,L509,L512,L514,L515, L516,L601,L903,L906	FCM2012C-101	TAI-Tech	I3301-001375	Ferrite Chip Bead, 100 ohm ± 25%, 600mA(max) 2nd:Expan, ECFB201209G600T, 60 ohm , 600mA(max)
2	SMD	2	L106,L108	ECFB201209P601	Expan	I3301-001379	Ferrite Chip Bead, 600 ohm, 1000mA(max)
3	SMD	6	L501,L502,L503,L504,L505, L506	FCI2012-150K	TAI-Tech	I2703-100507	Ferrite Chip Inductor, 15uH ± 10%
4	SMD	11	L701,L702,L901,L902,L904, L905,L907,L908,L909,L910, L911	SMB403025	TAI-Tech	I3301-000290	CORE-FERRITE BEAD (4030 size)
5	SMD	6	BC101,BC521,BC909,BC910, BC911,BC912	CS2012Y5V104Z500NR	SAMWHA	I2203-000192	Chip Ceramic, 2012 Size, 0.1uF/50V, 2nd:Samsung
6	SMD	106	C101,C102,BC102,BC103, BC104,BC105,BC106,BC108, BC201,BC204,BC205,BC206, BC207,BC208,BC209,BC210, BC211,BC212,BC213,BC214, BC215,BC216,BC217,BC218, BC301,BC302,BC303,BC304, BC305,BC306,BC307,BC308, BC309,BC310,BC311,BC312, BC313,BC314,BC315,BC317, BC319,BC320,BC321, BC323,BC324,BC351,BC401, BC402,BC403,BC404,BC405, BC406,BC407,BC408,BC409, BC410,BC413,BC451,BC452, BC453,BC454,BC455,BC501, BC502,BC503,BC504,BC505, BC506,BC507,BC508,BC511, BC512,BC515,BC516,BC517, BC518,BC519,BC520,BC522, BC523,BC524,BC525,BC603, BC604,BC605,BC701,BC702, BC703,BC704,BC707,BC708, BC709,BC710,BC711,BC712, BC713,BC901,BC902,BC903, BC904,BC905,BC906,BC907, BC908,BC913,BC914	CS1608Y5V104Z500NR	SAMWHA	I2203-006000	Chip Ceramic, 1608 Size, 0.1uF, 2nd:Samsung
7	SMD	10	C103,C311,C522,C523,C524,	CS1608X7R102K500NR	SAMWHA	I2203-005662	Chip Ceramic, 1608 Size, 1000pF, 2nd:Samsung

			C525,C526,C527,C528,C529				
8	SMD	5	C104,C201,C202,C207,C210	CS1608C0G220J500NR	SAMWHA	I2203-006001	Chip Ceramic, 1608 Size, 22pF, 2nd:Samsung
9	SMD	5	C105,C203,C204,C205,C206,	CS1608Y5V103J500NR	SAMWHA	I2203-002719	Chip Ceramic, 1608 Size, 0.01uF, 2nd:Samsung
10	SMD	6	C502,C505,C508,C511,C514,	CS1608C0G560J500NR	SAMWHA	I2203-001071	Chip Ceramic, 1608 Size, 56pF, 2nd:Samsung
			C517				
11	SMD	6	C503,C506,C509,C512,C515,	CS1608C0G180J500NR	SAMWHA	I2203-002354	Chip Ceramic, 1608 Size, 18pF, 2nd:Samsung
			C518				
12	SMD	4	C209,C211,C530,C531	CS1608C0G101J500NR	SAMWHA		Chip Ceramic, 1608 Size, 100pF, 2nd:Samsung
13	SMD	1	RA361	CN 164 472 JT	HAN RYUK	I2011-001280	Chip Array Resistor, 4.7 Kohm, 2nd:kamaya,koa
14	SMD	3	RA206,RA207,RA218	CN 164 331 JT	HAN RYUK		Chip Array Resistor, 330 Ohm, 2nd:kamaya,koa
15	SMD	6	RA102,RA103,RA211,RA212,	CN 164 101 JT	HAN RYUK	I2011-001281	Chip Array Resistor, 100 Ohm, 2nd:kamaya,koa
			RA213,RA214				
16	SMD	28	RA101,RA201,RA202,RA203,	CN 164 330 JT	HAN RYUK	I2011-001282	Chip Array Resistor, 33 Ohm, 2nd:kamaya,koa
			RA208,RA209,RA210,RA215,				
			RA216,RA217,RA302,RA303,				
			RA304,RA305,RA306,RA307,				
			RA308,RA309,RA310,RA311,				
			RA312,RA313,RA316,RA701,				
			RA702,RA703,RA704,RA705,				
17	SMD	1	R123	CR 1/10 1201 FT	HAN RYUK	I2007-000218	Chip Resistor, 2012 Size, 1.2 Kohm 1%
18	SMD	1	R131	CR 1/10 1101 FT	HAN RYUK	I2007-000207	Chip Resistor, 2012 Size, 1.1 Kohm 1%
19	SMD	4	R113,R122,R211,R250,	CR 1/10 2400 FT	HAN RYUK	I2007-001657	Chip Resistor, 2012 Size, 240 Ohm 1%
20	SMD	5	R102,R103,R119,R120,R577	CR 1/10 472 JT	HAN RYUK	I2007-000872	Chip Resistor, 2012 Size, 4.7 Kohm 5%
21	SMD	2	R124,R141	CR 1/10 821 JT	HAN RYUK	I2007-001201	Chip Resistor, 2012 Size, 820 Ohm 5%
22	SMD	5	R205,R246,R270,R271,R901	CR 1/10 331 JT	HAN RYUK	I2007-000766	Chip Resistor, 2012 Size, 330 Ohm 5%
23	SMD	4	R513,R514,R515,R516	CR 1/10 151 JT	HAN RYUK	I2007-000401	Chip Resistor, 2012 Size, 150 Ohm 5%
24	SMD	1	R126	CR 1/10 121 JT	HAN RYUK	I2007-000023	Chip Resistor, 2012 Size, 120 Ohm 5%
25	SMD	12	R530,R534,R535,R536,R537,	CR 1/10 750 JT	HAN RYUK	I2007-001166	Chip Resistor, 2012 Size, 75 Ohm 5%
			R539,R555,R556,R557,R558,				
			R567,R568				
26	SMD	2	R314,R315	CR 1/16 1802 FT	HAN RYUK	I2007-000455	Chip Resistor, 1608 Size, 18 Kohm 1%
27	SMD	6	R501,R503,R505,R507,R509,	CR 1/16 3000 FT	HAN RYUK	I2007-040212	Chip Resistor, 1608 Size, 300 Ohm 1%
			R511				
28	SMD	7	R116,R527,R528,R544,R545,	CR 1/16 473 JT	HAN RYUK	I2007-000939	Chip Resistor, 1608 Size, 47 Kohm 5%
			R559,R560				
29	SMD	2	R583,R586	CR 1/16 273 JT	HAN RYUK	I2007-000129	Chip Resistor, 1608 Size, 27 Kohm 5%
30	SMD	1	R538	CR 1/16 223 JT	HAN RYUK	I2007-000094	Chip Resistor, 1608 Size, 22 Kohm 5%
31	SMD	1	R132	CR 1/16 153 JT	HAN RYUK	I2007-000092	Chip Resistor, 1608 Size, 15 Kohm 5%
32	SMD	2	R566,R565	CR 1/16 123 JT	HAN RYUK	I2007-000091	Chip Resistor, 1608 Size, 12 Kohm 5%
33	SMD	52	R101,R104,R112,R114,R117,	CR 1/16 103 JT	HAN RYUK	I2007-000090	Chip Resistor, 1608 Size, 10 Kohm 5%
			R118,R121,R125,R127,R128,				
			R129,R140,R142,R150,R201,				
			R203,R204,R206,R209,R219,				
			R245,R247,R251,R252,R254,				
			R255,R256,R257,R307,R311,				
			R361,R362,R365,R367,R368,				
			R427,R428,R546,R574,R575,				
			R576,R578,R597,R598,R704,				
			R706,R722,R728,R729,R730,				
			R731,R732				
34	SMD	3	R542,R570,R571	CR 1/16 682 JT	HAN RYUK	I2007-000087	Chip Resistor, 1608 Size, 6.8 Kohm 5%

35	SMD	20	R220,R258,R278,R279,R301, R302,R304,R316,R317,R331, R401,R402,R403,R408,R410, R411,R573,R581,R584,R727,	CR 1/16 472 JT	HAN RYUK	I2007-000084	Chip Resistor, 1608 Size, 4.7 Kohm 5%
36	SMD	10	R134,R202,R253,R312,R259 R533,R543,R587,R592,R594	CR 1/16 102 JT	HAN RYUK	I2007-000078	Chip Resistor, 1608 Size, 1.0 Kohm 5%
37	SMD	6	R531,R532,R540,R541,R547, R548	CR 1/16 471 JT	HAN RYUK	I2007-000077	Chip Resistor, 1608 Size, 470 Ohm 5%
38	SMD	4	R280,R281,R282,R283	CR 1/16 331 JT	HAN RYUK		Chip Resistor, 1608 Size, 330 Ohm 5%
39	SMD	16	R217,R221,R222,R229,R234, R235,R303,R529,R552,R553, R554,R561,R562,R563,R582, R585	CR 1/16 221 JT	HAN RYUK	I2007-000075	Chip Resistor, 1608 Size, 220 Ohm 5%
40	SMD	2	R580,R579	CR 1/16 151 JT	HAN RYUK	I2007-000402	Chip Resistor, 1608 Size, 150 Ohm 5%
41	SMD	10	R107,R108,R147,R227,R230, R232,R549,R550,R588,R589	CR 1/16 101 JT	HAN RYUK	I2007-000074	Chip Resistor, 1608 Size, 100 Ohm 5%
42	SMD	2	R363,R364	CR 1/16 750 JT	HAN RYUK	I2007-001167	Chip Resistor, 1608 Size, 75 Ohm 5%
43	SMD	21	R223,R237,R242,R244,R305, R309,R310,R313,R321,R324, R325,R326,R329,R330,R351, R352,R705,R707,R719,R720, R721,	CR 1/16 330 JT	HAN RYUK	I2007-000113	Chip Resistor, 1608 Size, 33 Ohm 5%
44	SMD	20	R212,R213,R216,R231,R236, R274,R276,R319,R320,R328, R405,R407,R413,R426,R564, R572,R595,R724,R725,R726,	CR 1/16 000 JT	HAN RYUK	I2007-000070	Chip Resistor, 1608 Size, 0 Ohm 5%
45	SMD	1	Q501	MMBT2222A	Fairchild	I0501-002283	TR-Chip, NPN, SOT-23, KN2222S(KEC)
46	SMD	15	Q102,Q104,Q106,Q108,Q109, Q110,Q111,Q112,Q113,Q202, Q204,Q504,Q506,Q550,Q551	KST3904-MTF	Fairchild	I0501-002275	TR-Chip, NPN, SOT-23, KN3904S(KEC)
47	SMD	1	U103	AMS1117CD-3.3	AMS	I1203-001921	IC-LDO, 3.3V, TO-252, 2nd:LD1117DT33(ST) 2nd:AME1117CCTT-3.3V
48	SMD	1	U201	STV0700A	ST	I0904-001308	IC-CI H/W Controller, PQFP-128
49	SMD	2	U203,U202	74LCX244MTC	Fairchild	I0801-003015	IC-CMOS Logic, TSSOP-20
50	SMD	2	U205,U206	MM74LCX373MTC	Fairchild	I0801-003019	IC-CMOS Logic, TSSOP-20
51	SMD	1	U207	MM74HC125M	Fairchild	I0801-003020	IC-CMOS Logic, SOIC-14
52	SMD	1	U301	STi5518BVB	ST	I0902-001289	IC-STB Decoder, PQFP-208 2nd:STi5518BVC
53	SMD	2	U302,U406	MM74HC14M	Fairchild	I0801-003011	IC-CMOS Logic(Schmitt Trigger), SOIC-14
54	SMD	1	U303	MM74HC04M	Fairchild	I0801-002385	IC-CMOS Logic, SOIC-14
55	SMD	1	U306	MIC39100-2.5 (SOT-223)	Micrel	I1203-001935	IC-VOTAGE REGULATOR; MIC39100-2.5v, sot-223
56	SMD	1	U351	AT24C64N-10SC-2.7	Atmel	I0801-00125D	IC-EEPROM, 3.3V, 64K, SOIC-8, 2nd:M24C64WMN6
57	SMD	1	U401	TE28F160C3TA90	Intel	I1107-001164	IC-Flash, 3.3V, 1M*16, 90ns, TSOP-48 2nd : M28W160CT-90N(ST)
58	SMD	1	U402	K4S641632E-TC60	Samsung	I1105-001321	IC-SDRAM, 3.3V, 1M*16*4Banks, 125MHz 2nd : HY57V641620HGT-6(HYUNDAI), IS42S16400-7T(ISSI)
59	SMD	1	U403	74LCX374MTC	Fairchild	I0801-003012	IC-CMOS Logic, TSSOP-20
60	SMD	1	U405	74F32		I0801-003016	IC-TTL, SOIC-14
61	SMD	1	U451	ST3232CD	Sipex	I1006-000008	IC-Interface, 3.3V, SOIC-16
62	SMD	1	U501	STV6412A	ST	I1001-001024	IC-SCART Interface, TQFP-64
63	SMD	1	U505	AK4351VT	Asahi-Kasei	I1204-003510	IC-Audio DAC, TSSOP-16

64	SMD	5	U204,U701,U702,U704,U705	74LCX245MTC	Fairchild	I0801-003014	IC-CMOS Logic, TSSOP-20
65	PCB	1	Main PCB	IT490S-R1.4, 2002.06.12.		P-IT490S-1.4	PCB-MAIN, IT490S_R1.4 ,VER1.0, 2LAYER

1-2 DIP

Item	SPEC	Quantity	Reference	Part Number	Vendor	code	Remark
1	DIP	3	CE703,CE704,CE707	470uF/10V	DAEWOO	I2401-001358	C-AL ;470uF/10V-8*11.5*5, FORMING CUT TYPE
2	DIP	5	CE102,CE103,CE104,CE106, CE204	330uF/16V	DAEWOO	I2401-001100	C-AL ; 330uF/16V-8*11.5*5, FORMING CUT TYPE
3	DIP	4	CE901,CE902,CE903,CE904	RSM/T 220uF, 20%, 10V,6X11.5mm	DAEWOO	I2401-002383	C-AL ; 220uF, 20%, 10V, GP, TP, 6X11.5mm
4	DIP	9	CE701,CE702,CE905,CE906, CE907,CE908,CE913,CE914, CE607	RSM/T 100uF, 20%, 25V,6X11,5mm	DAEWOO	I2401-001078	C-AL ; 100uF, 20%, 25V, GP, TP, 6X11, 5
5	DIP	11	CE101,CE303,CE503,CE508, CE509,CE525,CE526,CE909, CE910,CE911,CE912	RSS/T 47uF, 20%, 50V,6X11, 5mm	DAEWOO	I2401-002438	C-AL ; 47uF, 20%, 50V, GP, TP, 6X11, 5mm
6	DIP	19	CE202,CE301,CE302,CE304, CE306,CE307,CE308,CE309, CE401,CE402,CE512,CE515, CE516,CE519,CE524,CE527, CE528,CE529,CE530	RSM/T 10uF/25V-5*7*5	DAEWOO	I2401-001077	C-AL ; 10uF/25V-5*7*5, FORMING CUT TYPE
7	DIP	8	CE513,CE514,CE517,CE518, CE520,CE521,CE522,CE523	4.7uF, 20%, 25V, 3.5X5, 5	DAEWOO	I2401-002414	C-AL ; 4.7uF, 20%, 25V, GP, TP, 3.5X5, 5
8	DIP	5	CE107,CE201,CE203,CE501, CE502	RSM/T 1uF, 20%, 50V, 5X11,5mm	DAEWOO	I2401-000602	C-AL ; 1uF, 20%, 50V, GP, TP, 5X11, 5mm
9	DIP	1	R135	0.5 Ohm, 1/2W	C&B	I2001-040214	Resistor-Axial, 0.5 Ohm 1/2W
10	DIP	2	D103,D102	1N4004A	Philips, Rohm	I0402-001242	Diode-Rectifier, 1A
11	DIP	1	D101	MTZ J 3.6B	Rohm	I0403-001407	Diode-Zener, 3.3V
12	DIP	1	D901	MTZ J 33B	Rohm	I0403-001406	Diode-Zener, 30V
13	DIP	2	Q101,Q107	KSB772-Y	Fairchild	I0502-000249	TR-Power, PNP, TO-126
14	DIP	7	Q103,Q105,Q114,Q201,Q203, Q503,Q505	KTA1273	KEC	I0502-001107	TR-Power, PNP, TO-92
15	DIP	1	SW301	KPT-1115A	Kyungin	I3403-001097	Push Button Switch
16	DIP	1	CON361	2110-DS20-G	ILSSAN	I3711-001361	2.54mm, Dual-Row, 20-Pin Header
17	DIP	1	CON451	3302-09P-AFS-0	ILSSAN	I3710-001574	DB9, Male, PCB Mount Right Angle
18	DIP	1	JP201	P1T2B1393	OTAX	I3709-001142	PCMCIA Socket 2nd: 007222TF20A(CONCRAFT INDUSTRIAL)
19	DIP	1	JP302	2110-SS2-G	ILSSAN	I3711-005028	2.54mm, 2-Pin Header
20	DIP	1	JP303	SMW200-08	Hanlim	IAJ37-00609G	2.0mm, 8-Pin Wafer
21	DIP	1	JP501	2203-42ST (-A- Type)	ILSSAN	I3722-001410	Dual SCART Connector 2203-42T
22	DIP	1	JP502	JS0401315N		I3722-001211	Phono RCA Jack - 4 Pack
23	DIP	1	JP602	TOTX178A	Toshiba	I3707-000001	Toslink (SPDIF)
24	DIP	1	JP701	3241-40S-0	ILSSAN	I3711-005017	2.54mm, Dual-Row, 40P, BOX PIN Header
25	DIP	1	JP702	5267-4		I3711-005018	2.5mm, 4-Pin Wafer
26	DIP	1	JP901	5267-13		I3711-005019	2.5mm, 13-Pin Wafer
27	DIP	1	U101	BS2F7VZ0184	Sharp	I4703-000011	NIM(ST STV0299 QPSK Demodulator)
28	DIP	2	U102,U503	MC78L05	Fairchild	I1203-001930	IC-Regulator, 100mA, 5V, TO-92, LM78L05
29	DIP	1	U105	KA317T	Fairchild	I1203-001923	IC-Regulator, 2.2A, TO-220, LM317T
30	DIP	1	U304	SXO-8100C		I2806-001226	Clock Oscillator, 27MHz, 3.3V, Half Type
31	DIP	1	U504	RMUP74055WM	Samsung	IRMUP74055WM	RF Modulator
32	DIP	1	H1(FOR U105)	002A-I		I1623-000002	HEAT SINK(27mm x 40mm)

33	DIP	1	H1 SCREW(FOR U105)	TT2, BIN(+)*WTH 3*6 (BLACK) T		I6009-001019	SCREW
34	DIP	1	CABLE-POWER ; KKJ640	CABLE-POWER ; KKJ640		I3801-000001	

2. FRONT ASS'Y(N3 MOLD)

2-1. SMD

Item	SPEC	Quantity	Reference	Part Number	Vendor	CORD	Remark
1	SMD	1	U3	TP6311		UPD16311-AB6	VFD Controller, PQFP-52, 2nd:uPD16311GC
2	SMD	1	U4	74HCT245MTC	Fairchild	I0801-003035	IC-CMOS Logic, TSSOP-20, 2nd : 74LS245MTC
3	SMD	1	R10	CR 1/16 563 JT	HAN RYUK	I2007-000098	Chip Resistor, 1608 Size, 56 Kohm 5%
4	SMD	4	R4,R20,R22,R23	CR 1/16 103 JT	HAN RYUK	I2007-000090	Chip Resistor, 1608 Size, 10 Kohm 5%
5	SMD	3	R25,R26,R27	CR 1/16 472 JT	HAN RYUK	I2007-000084	Chip Resistor, 1608 Size, 4.7 Kohm 5%
6	SMD	12	R16,R17,R18,R19,R28,R29,R30,R31, R32,R33,R34,R35	CR 1/16 102 JT	HAN RYUK	I2007-000078	Chip Resistor, 1608 Size, 1.0 Kohm 5%
7	SMD	1	R6	CR 1/16 621 JT	HAN RYUK	I2007-001093	Chip Resistor, 1608 Size, 620 Ohm 5%
8	SMD	3	R1,R2,R3	CR 1/16 221 JT	HAN RYUK	I2007-000075	Chip Resistor, 1608 Size, 220 Ohm 5%
9	SMD	8	R5,R7,R11,R12,R13,R14,R15,R21	CR 1/16 151 JT	HAN RYUK	I2007-000402	Chip Resistor, 1608 Size, 150 Ohm 5%
10	SMD	1	R8	CR 1/16 330 JT	HAN RYUK	I2007-000113	Chip Resistor, 1608 Size, 33 Ohm 5%
11	SMD	1	R24	CR 1/16 000 JT	HAN RYUK	I2007-000070	Chip Resistor, 1608 Size, 0 Ohm 5%
12	SMD	5	BC1,BC2,BC3,BC4,BC5	CS1608Y5V104Z500NR	SAMWHA	I2203-006000	Chip Ceramic, 1608 Size, 0.1uF, 2nd:Samsung
13	PCB	1	FRONT PCB	IT490FN3-PR1.1, 2002.01.31., 2Layer			PCB-FRONT; IT490FN3_PR1.1_2LAYER

2-2. DIP

Item	SPEC	Quantity	Reference	Part Number	Vendor	CORD	Remark
1	DIP	1	U1	IC-REMOTE CONTRPL ; TSOP1238	Vishay	I1204-001624	IC-REMOTE CONTRPL ; TSOP1238
2	DIP	4	Q1,Q2,Q3,Q4	PN2222ATA	KEC	I0501-002278	TR, TO-92, 2nd:2N2222A(KEC),KSP2222A(Fairchild)
3	DIP	2	D1,D2	1N4004A	Philips	I0402-001243	Diode-Rectifier, 1A
4	DIP	1	CE1	RSM/T 25-47 5*11*5	DAEWOO	I2401-001075	C-AL, 47uF/25V
5	DIP	1	CE2	RSM/T 50-10 5*711*5	DAEWOO	I2401-000480	C-AL, 10uF/50V
6	DIP	1	FOUR DIGIT LED DISPLAY(LED1)	LFD4162-10/SP8	LIGITEK	I0703-000001	4-Digit 7-Segment
7	DIP	1	FOUR DIGIT LED support	Support 높이 : 10mm			Support Height 10mm
8	DIP	1	D3	LH3330	LIGITEK	I0601-001378	LED-RED, Round, 5Φ
9	DIP	1	D5	LY3330	LIGITEK	I0601-001410	LED-YELLOW, Round, 5Φ
10	DIP	3	SUPPORT(U1,D3,D5)	Support 높이 : 7mm		I6103-001040	7mm,blu
11	DIP	1	J1	IT01B08L-150A		I3711-001146	2.0mm Pitch, Length 150mm, 8-Pin Cable Ass'y, Locking Type
12	DIP	7	SW1,SW2,SW3,SW4,SW5, SW6,SW7	KPT-1115A	KYUNGIN	I3403-001097	Push Bottom Switch

3.IT490S HDD-SUB ASS'Y

Item	SPEC	Quantity	Reference	Part Number	Vendor	Code	Remark
1	DIP	1	HDD	ST340810ACE	SEAGATE	I4601-000002	40 GB, 5400 RPM
2	DIP	1	HDD POWER CABLE	IT07X04S-260C		I3802-000001	HDD Power Cable, 4P 260M/M
3	DIP	1	HDD DATA CABLE	IT06A0S-220D		I3802-000002	HDD Data Cable, 40P 300M/M

4. SMPS

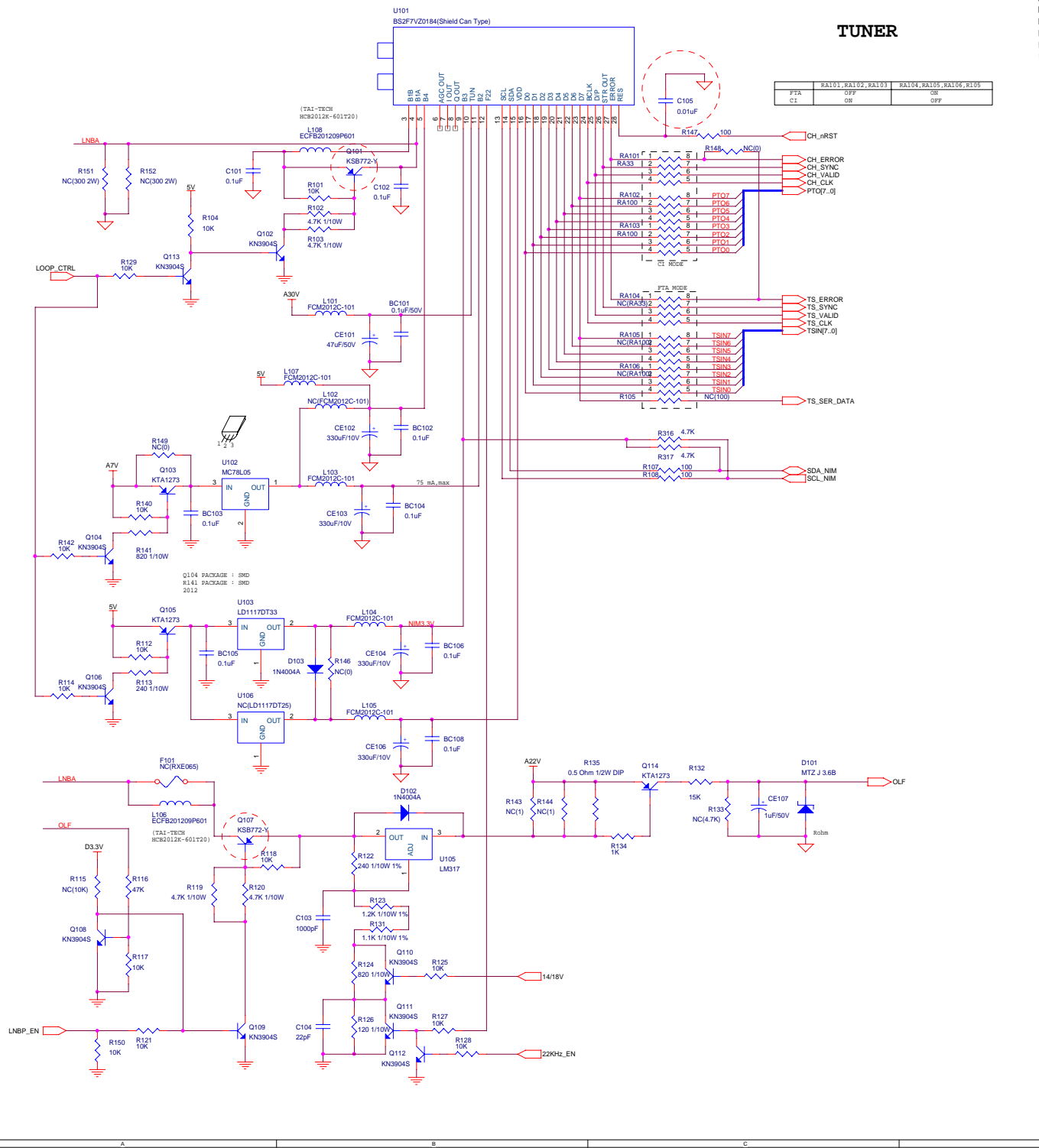
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1	DIP	1	SMPS	M380H	MUREX	SMPS-M380HOO	SMPS;M380H

5.ETC (REMOCON ASS'Y)

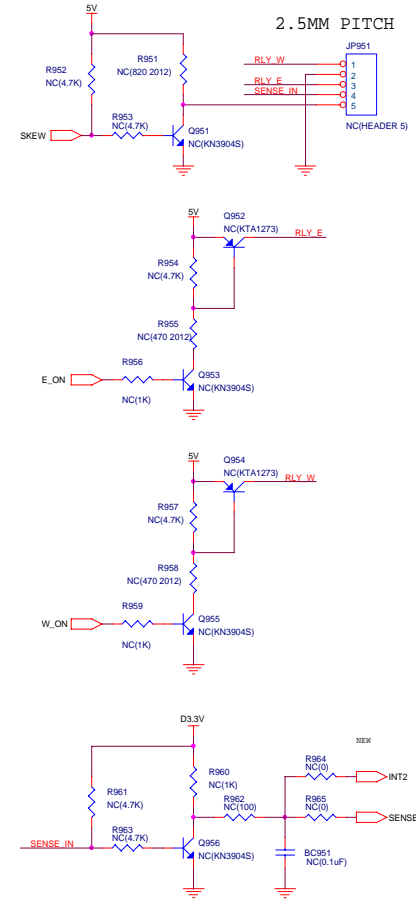
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1	ass'y	1	REMOTE CONTROL UNIT	HD710P			
2	ass'y	2	R.C.U. BATTERY			A-BD00000001	SIZE AAA 1.5V * 2EA

TUNER

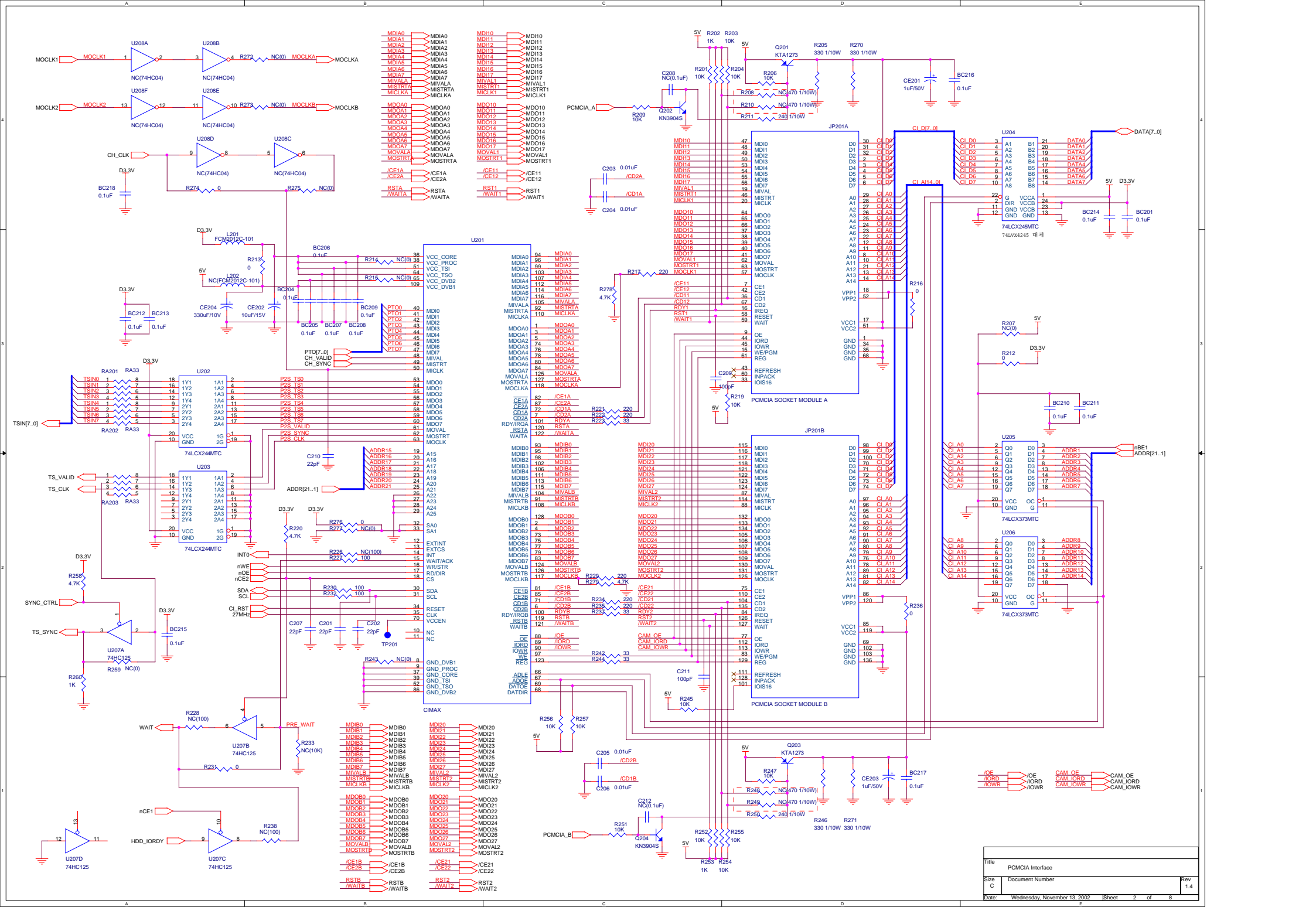
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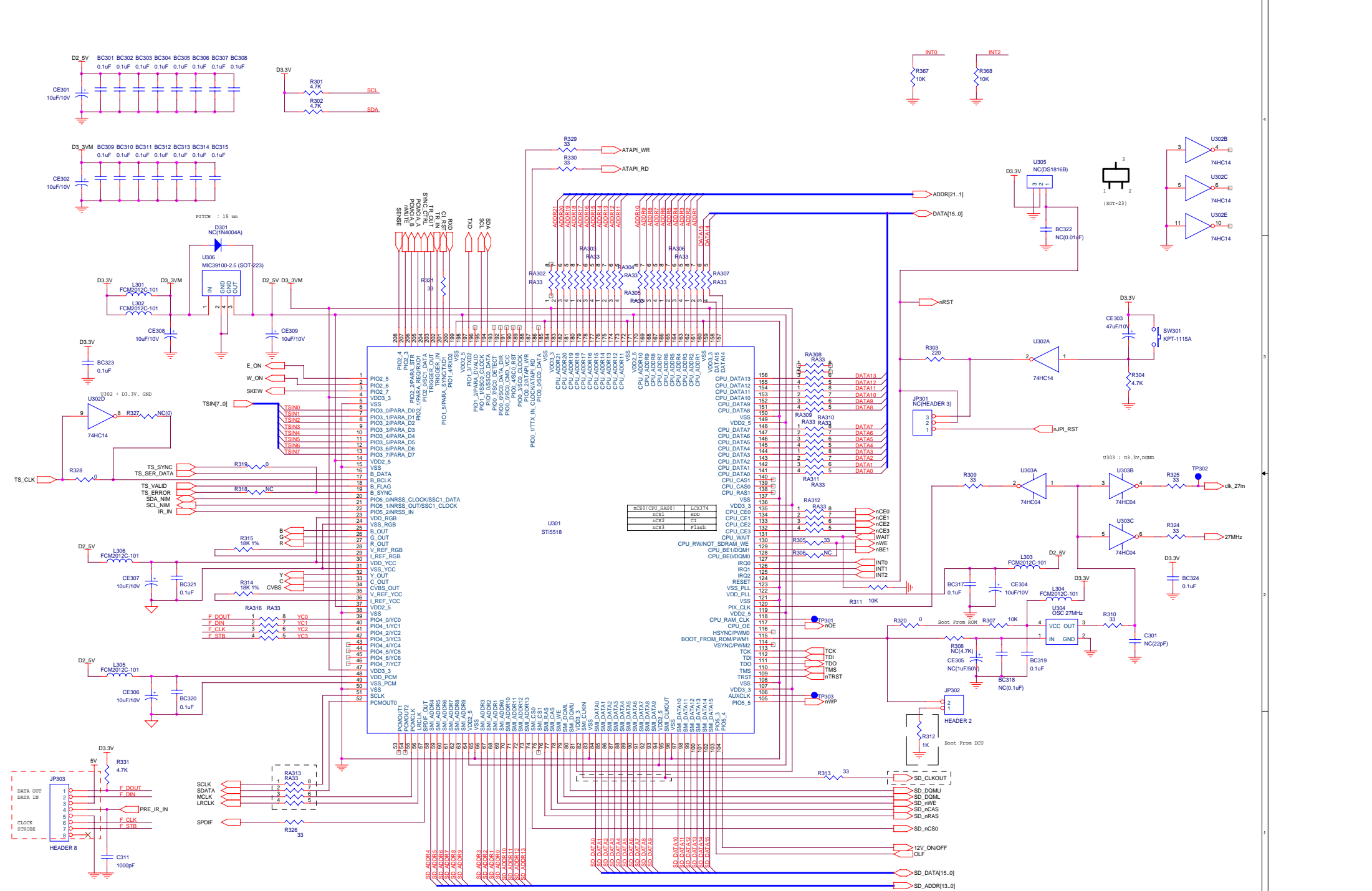
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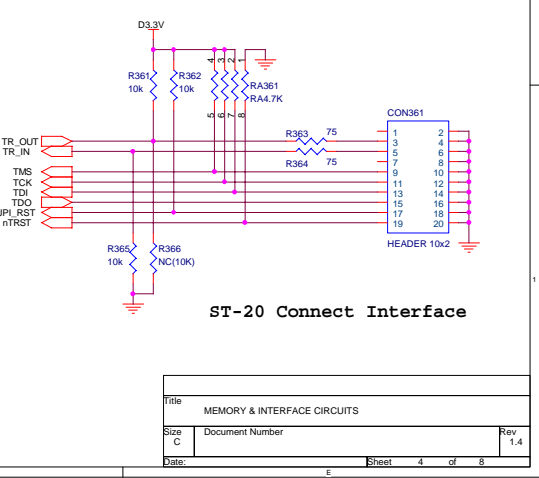
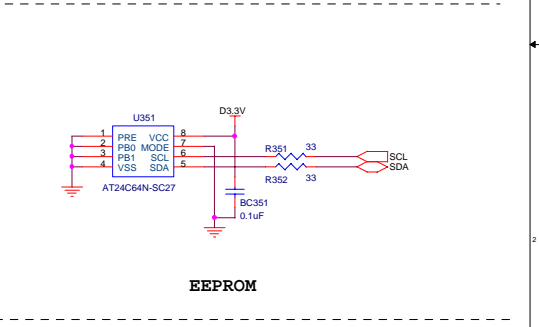
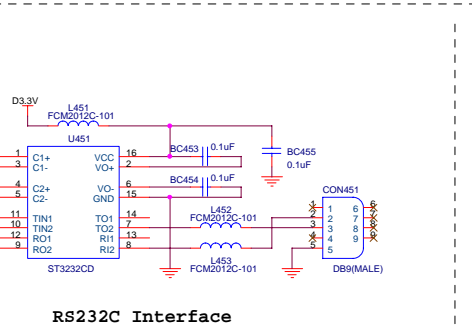
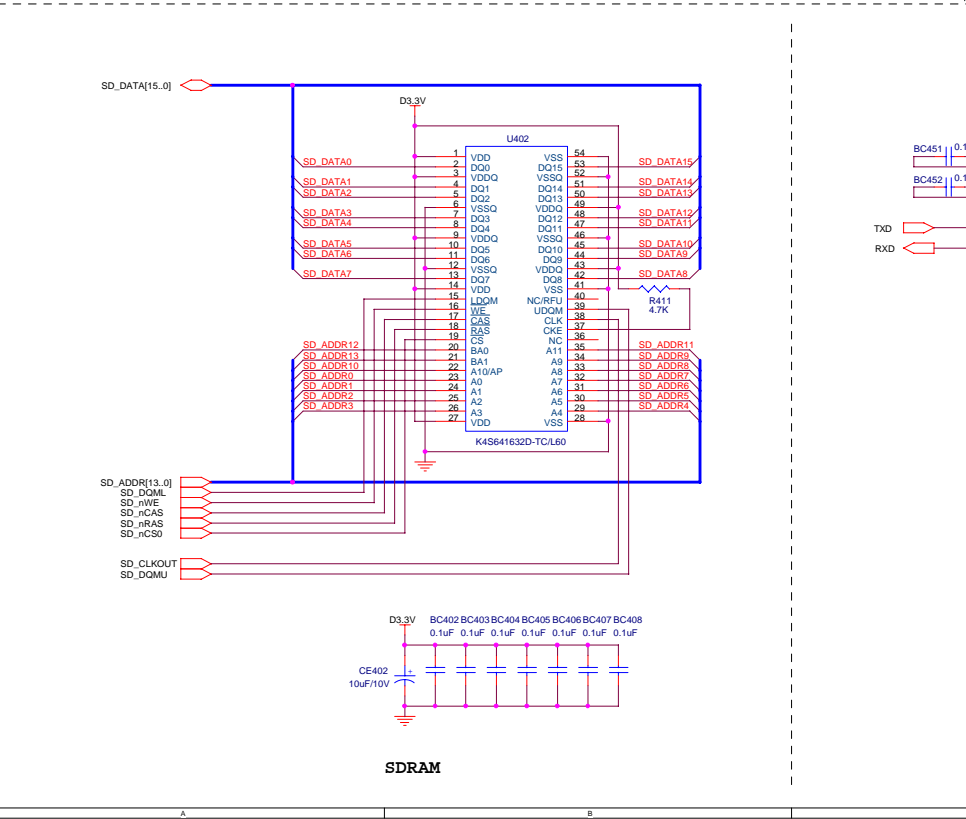
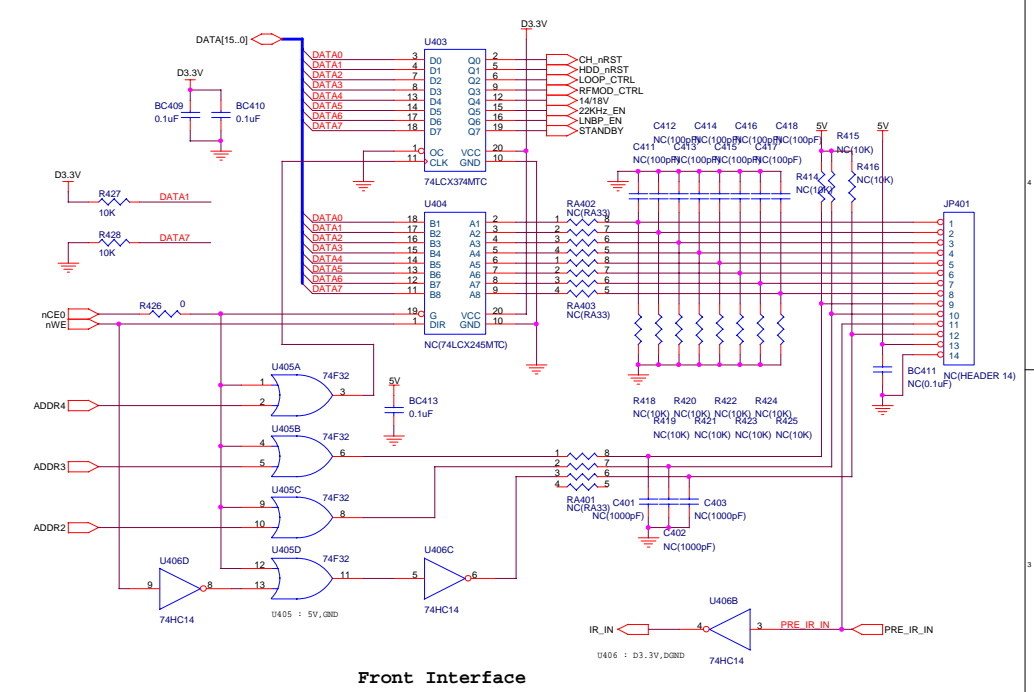
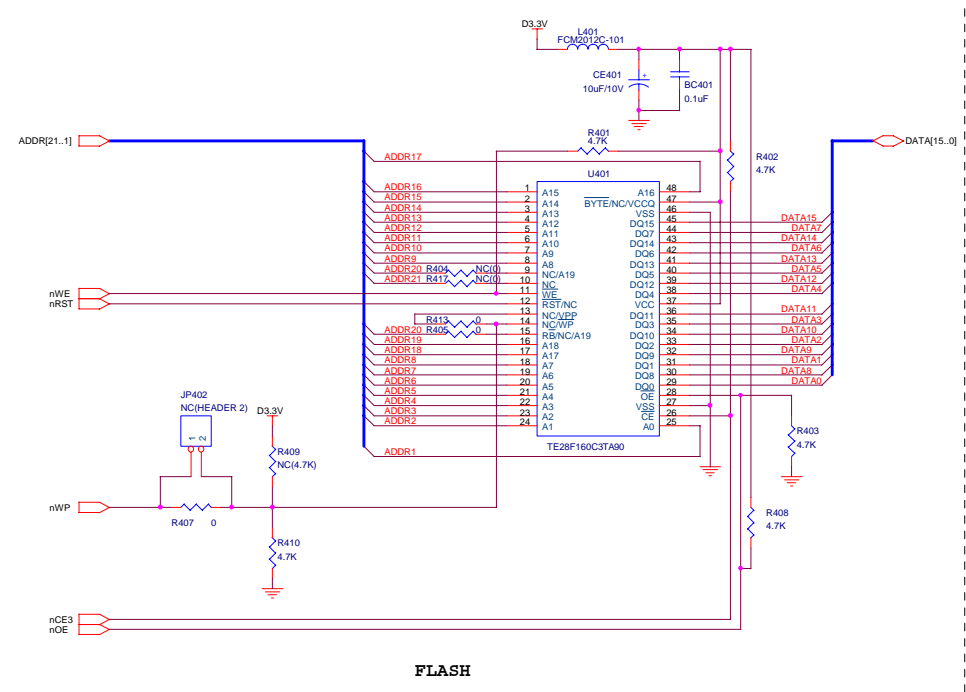


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Size	Document Number	Rev 1.4
Date	Wednesday, November 13, 2002	Sheet 1 of 8

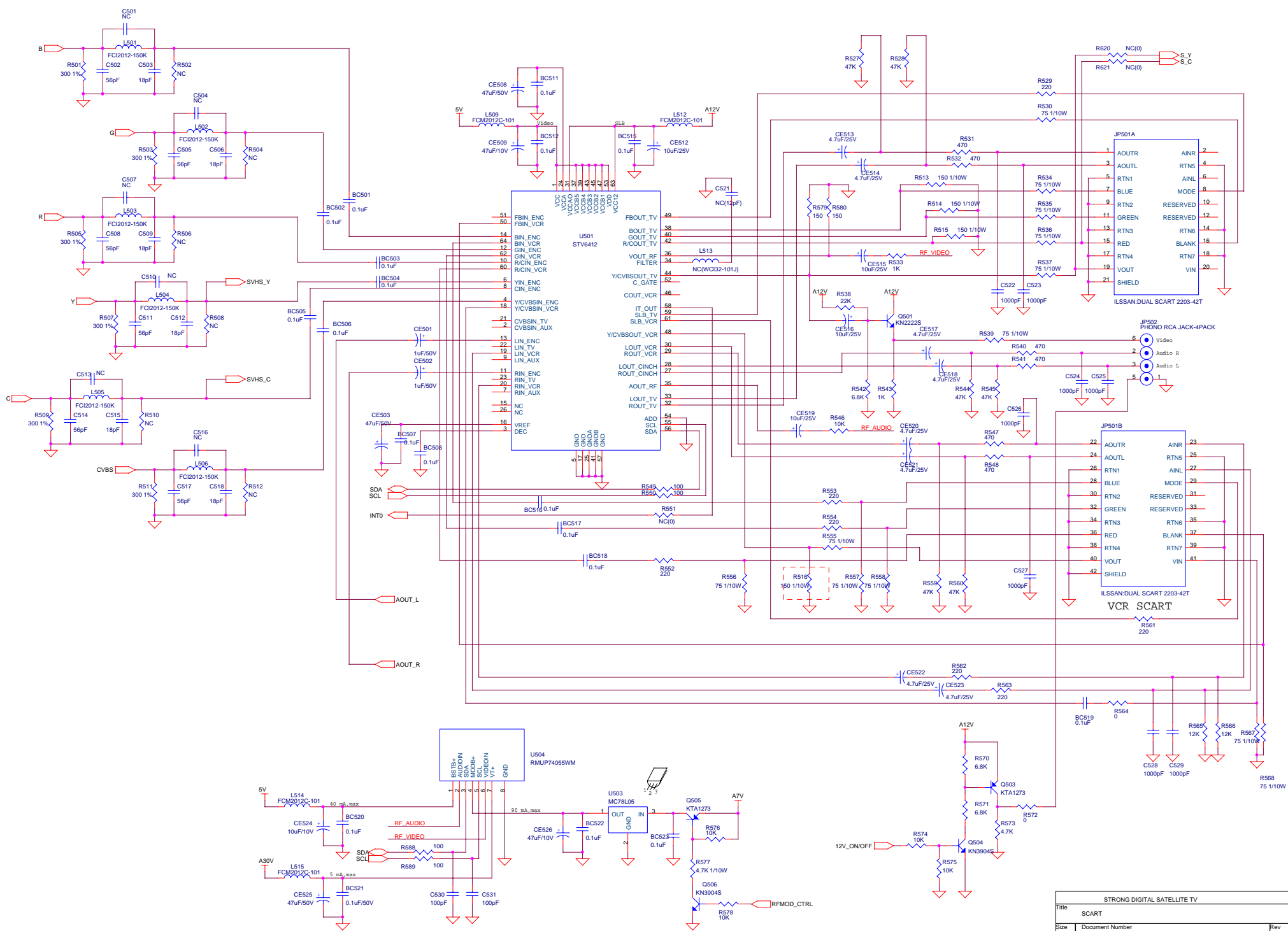


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Date: Wednesday, November 13, 2002	Sheet 2	Rev 1.4



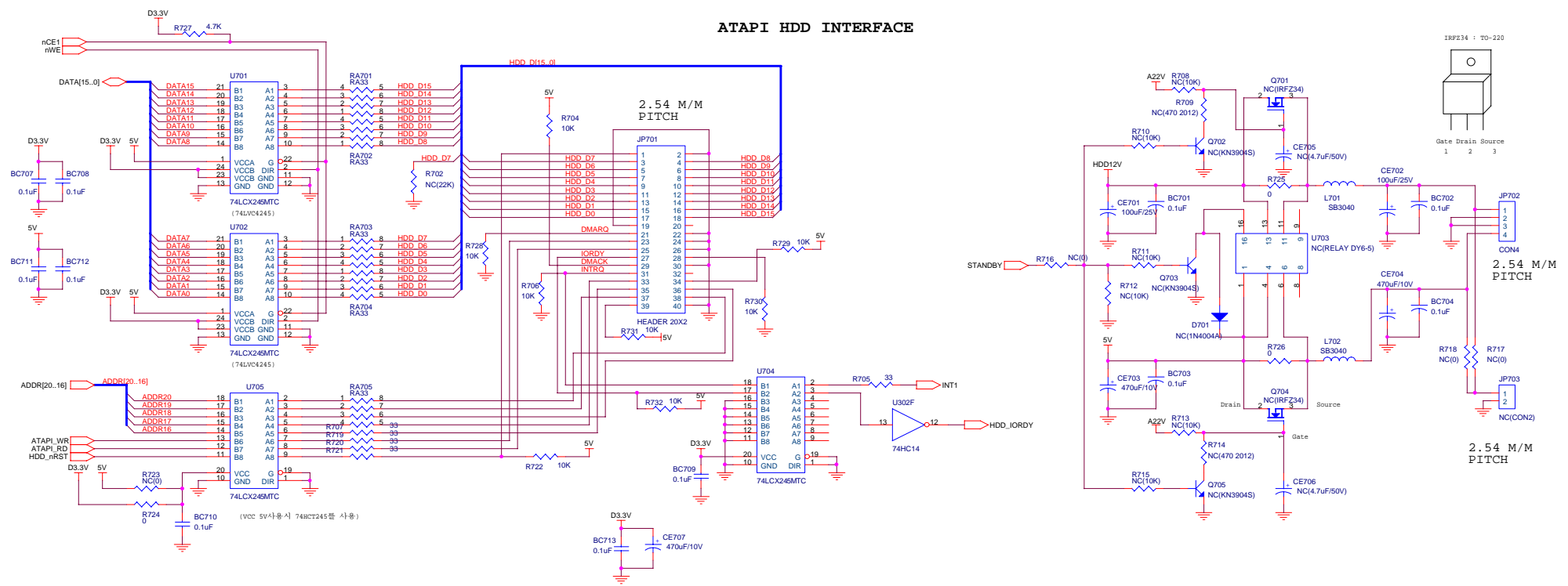


Title		
MEMORY & INTERFACE CIRCUITS		
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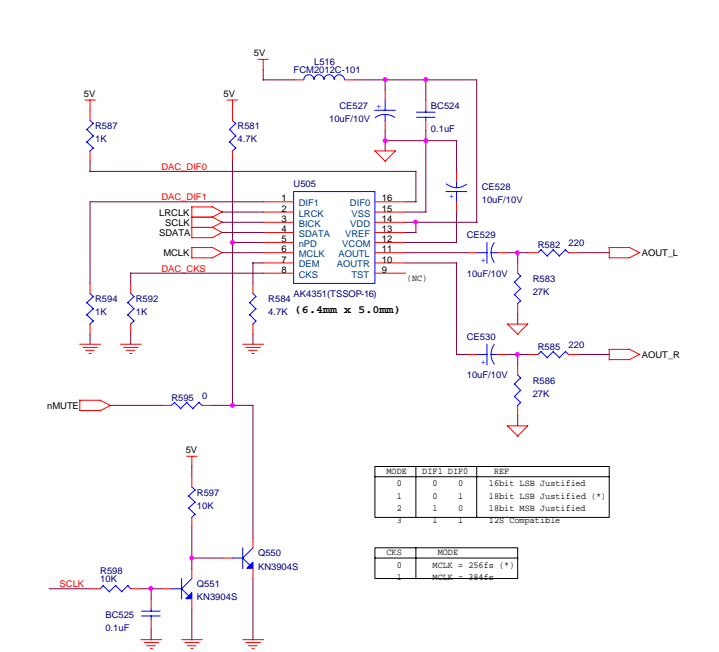


STRONG DIGITAL SATELLITE TV		
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Size	Document Number	Rev
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Date:	Wednesday, November 13, 2002	Sheet 5 of 8

ATAPI HDD INTERFACE



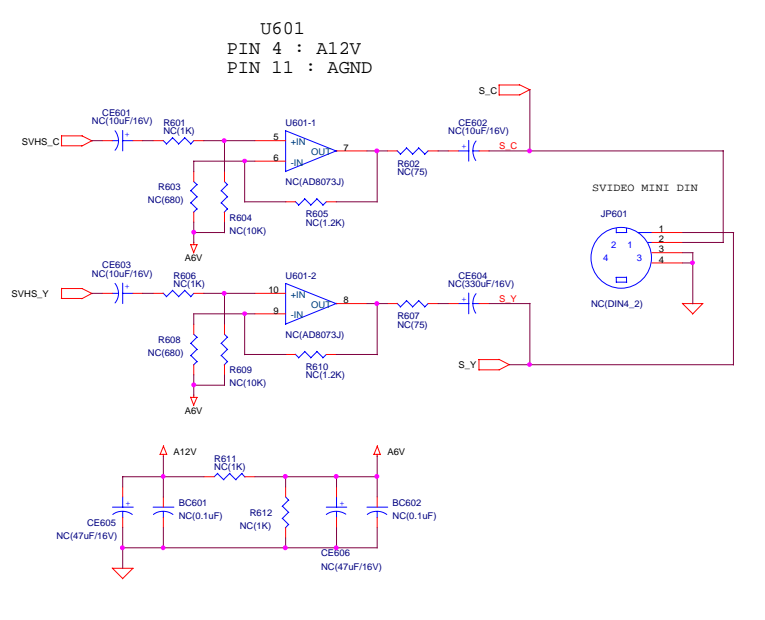
AUDIO DAC (NEW)



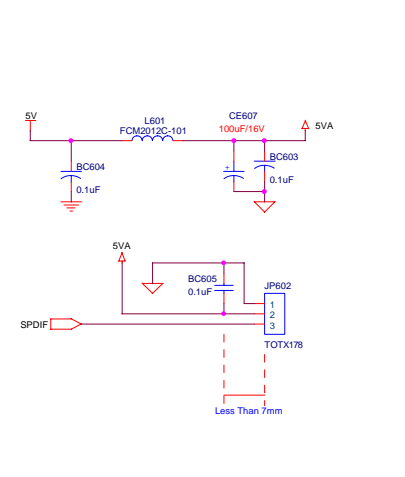
MODE	DIF1	DIF0	SEP
0	0	0	18bit LSB Justified
1	0	1	18bit LSB Justified (*)
2	1	0	18bit MSB Justified
3	1	1	22s compatible

CKS	MODE
0	MCLK = 255fs (*)
1	MCLK = 284fs

SVIDEO INTERFACE

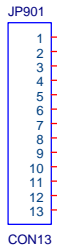


SPDIF INTERFACE

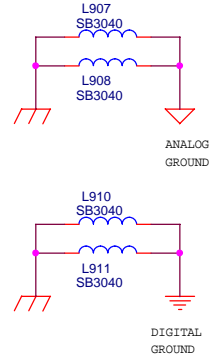
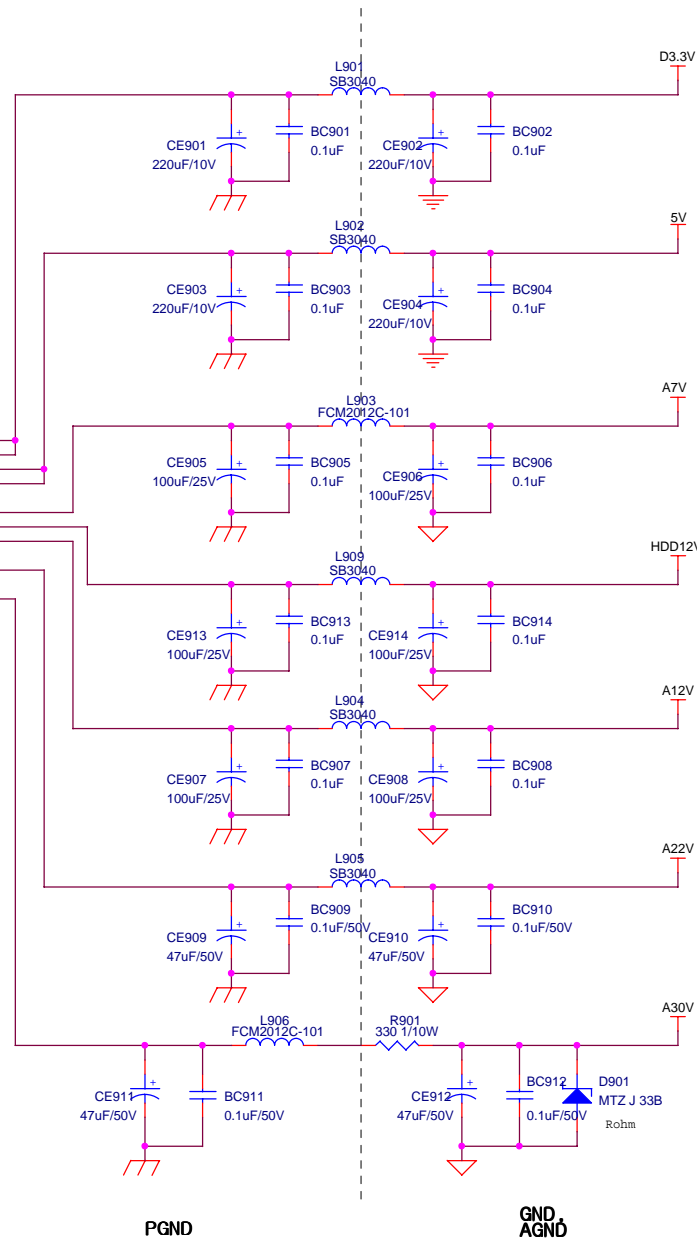


POWER

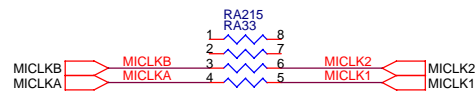
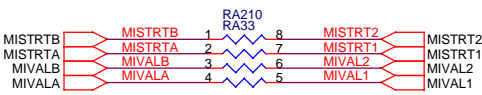
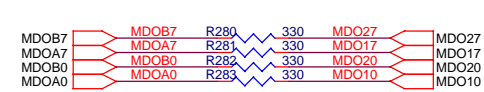
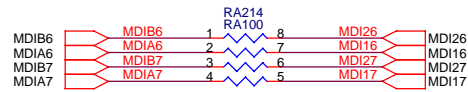
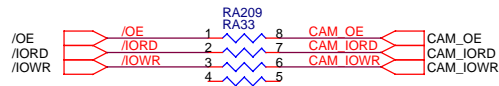
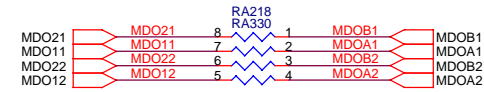
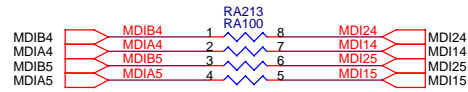
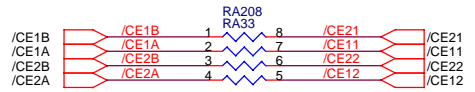
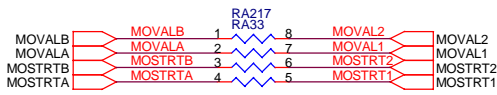
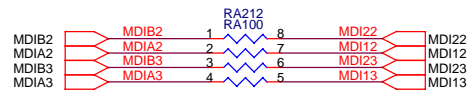
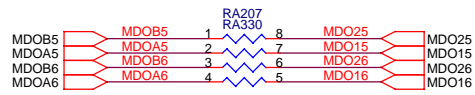
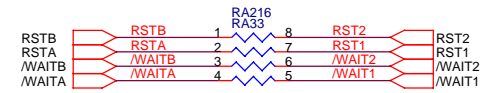
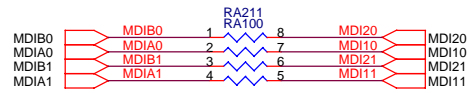
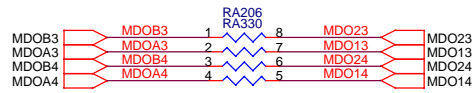
2.5MM PITCH



CON13

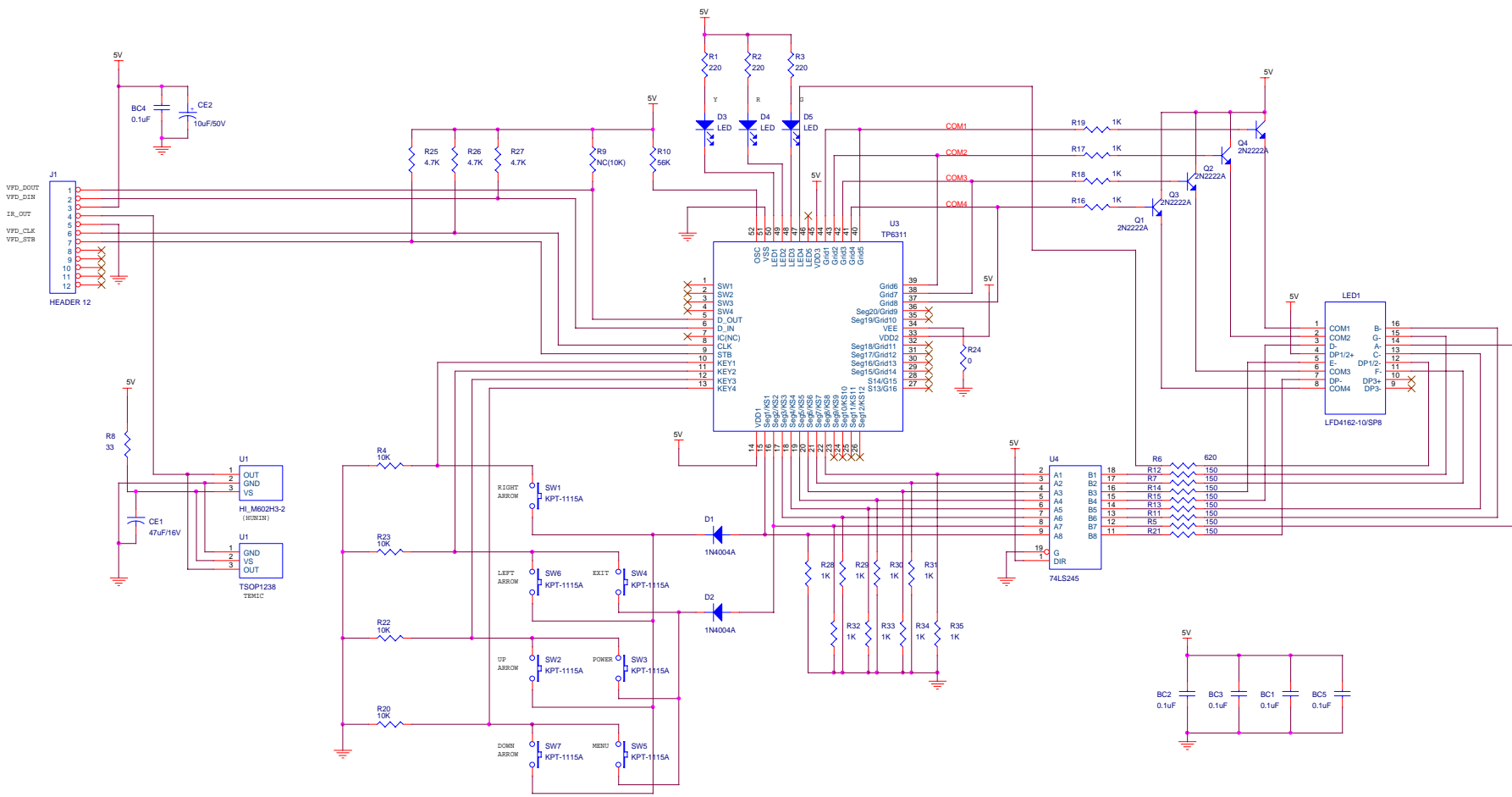


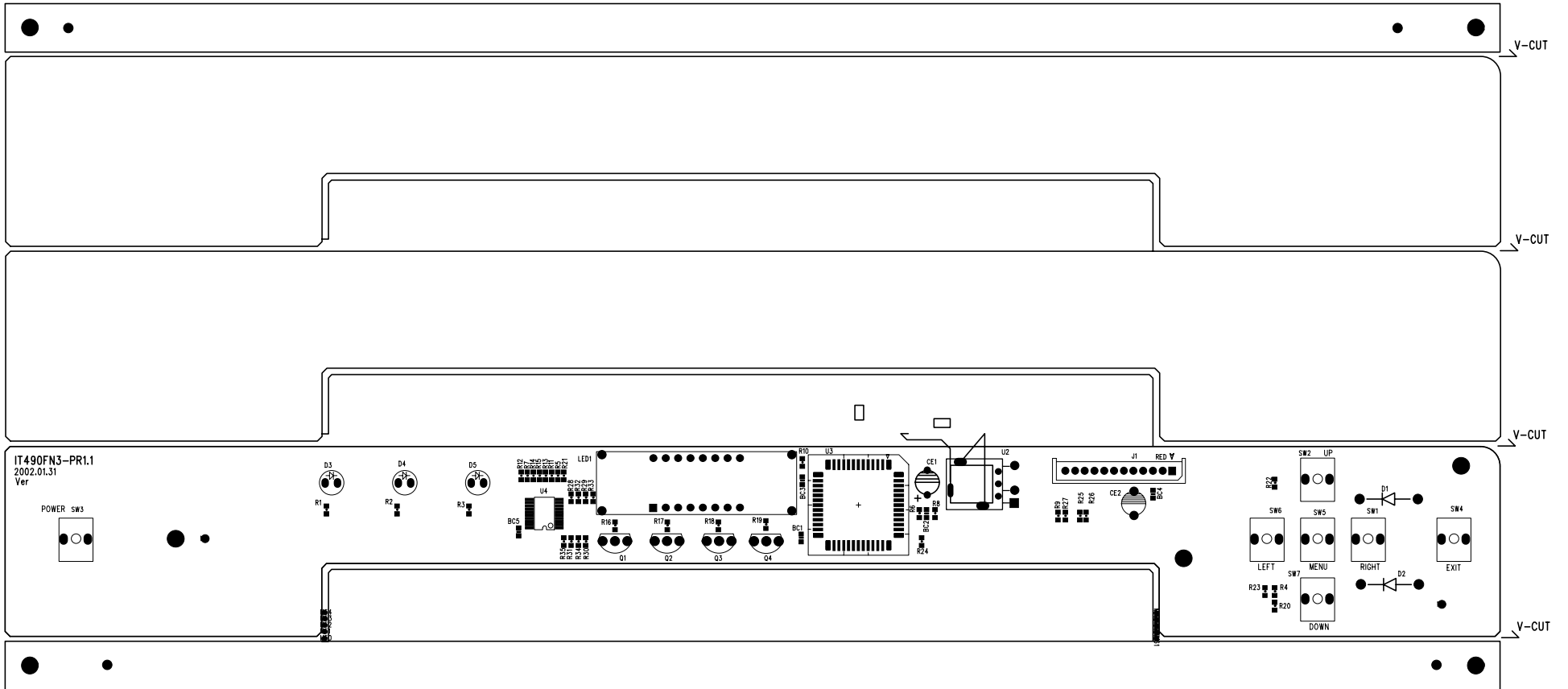
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Size	Document Number	Rev	
B	POWER	1.4	
Date:	Wednesday, November 13, 2002	Sheet	7 of 8



Title			
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Size	Document Number	Rev	
B	<Doc>	1.4	
Date:	Wednesday, November 13, 2002	Sheet	8 of 8

FRONT CIRCUIT





307 X 141 MM

Front panel PCB

