



# Service Manual (SRT4375)

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## 1. Technical specifications

### 1.1. Conditional Access Interface

|        |  |
|--------|--|
| PCMCIA | 2. Slot(type I or type II)<br><br>DVB Common Interface Standard<br>(Viaccess, Nagra Vision, Conax, Cryptoworks, Irdeto, ASTON) |
|--------|--|

### 1.2. Tuner & Channel

#### <Digital Part>

|                   |   |
|-------------------|---|
| Input Connector   | F-type, IEC169-24, Female   |
| Frequency Range   | 950MHz to 2150MHz   |
| Input Impedance   | 75ohm unbalanced  |
| Signal Level      | -25 to -65dBm   |
| IF Bandwidth      | 55MHz   |
| LNB Power         | Vertical: +13V    Horizontal: +18V    Current: Max, 400mA                       |
| Polarization      | 13V/18V or Skew Control   |
| 22kHz Tone        | Frequency: 22±4kHz      Amplitude: 0.6±0.2V                                     |
| DiSEqC control    | Version 1.0 Compatible  |
| Demodulation      | QPSK  |
| Input Symbol Rate | 2-45 Ms/s   |
| FEC Decoder       | Convolution Code Rate 1/2, 2/3, 3/4, 5/6, and 7/8<br>With Constraint Length K=7 |

#### <Analog Part>

|                 |   |
|-----------------|---|
| Input Connector | F-type, IEC169-24, Female                                 |
| Input Connector | 2   |
| Frequency Range | 950MHz to 2150MHz   |
| Input Impedance | 75ohm unbalanced  |
| Signal Level    | -30 to -60dBm   |
| IF Frequency    | 480MHz  |
| IF Bandwidth    | 18/27MHz  |
| LNB Power       | Vertical: +13V    Horizontal: +18V    Current: Max, 400mA |
| Polarization    | 13V/18V or Skew Control                                   |
| 22kHz Tone      | Frequency: 22±4kHz<br>Amplitude: 0.6±0.2V                 |
| DiSEqC Control  | Version 1.0 Compatible                                    |



### 1.3. System & Memory

|                                  |  |
|----------------------------------|--|
| Main Processor                   | L64108(LSI-LOGIC)                                |
| Flash Memort                     | 1Mbyte   |
| Program Dram                     | 2Mbyte   |
| EEPROM                           | 8kbyte   |
| Channel Memory<br>(Total : 3500) | Digital Channel: 3000<br>Analog Channel: 500     |
| Multi-Satellite                  | UP to 64   |
| Multi-Language Menu              | English/Spanish/French/Italian/German/Portuguese |
| Front                            | 7 keys, 4-digit 7-segment display                |
| Remote Controller                | 30-31 keys, IR Remote Control                    |

### 1.4. MPEG Transport Stream & A/V Decoding

#### <Digital Part>

|                    |   |
|--------------------|---|
| Transport Stream   | MPEG-2 ISO/IEC 13818 Transport Stream Specification |
| Profile Level      | MPEG-2 <a href="#">MP@ML</a>                        |
| Input Rate         | Max. 40Mbit/s                                       |
| Aspect Ratio       | 4:3, 16:9   |
| Frame Rate         | 25Hz for PAL, 30Hz for NTSC                         |
| Video Resolution   | 720x576(PAL), 720x480(NTSC)                         |
| Teletext           | Through VBI   |
| Audio Decoding     | MPEG/MusiCam Layer I & II                           |
| Audio Mode         | Single channel/Dual channel joint stereo/Stereo     |
| Frequency Response | 20~20kHz, <+/- 2dB<br>60Hz~18kHz <+/- 0.5dB         |
| Sampling Rate      | 32, 44.1, 48kHz                                     |

#### <Analog Part>

|                         |                       |
|-------------------------|-----------------------|
| Video Type              | PAL/NTSC              |
| Video Deemphasis        | CCIR rec. 405/625     |
| Audio Mode              | Mono, Stereo          |
| Audio Carrier Frequency | 5.58~8.80MHz          |
| Audio Demmphasis        | 50us/J17/Wagner Panda |

### 1.5. A/V & Date In/Out

|                  |  |
|------------------|--|
| TV Scart Output  | RGB, CVBS, L, R Output with Volume control |
| VCR Scart In/Out | CVBS, L, R In<br>CVBS, L, R Out            |



|                  |  |
|------------------|--|
| AUX Scart In/Out | RGB, CVBS, L, R In<br>CVBS, L, R Output                        |
| RCA Output       | CVBS, L, R Output(Yellow, White, Red Hack) with Volume Control |
| 0V/12V Output    | RCA Jack Output(Black Jack), Max. 150mA                        |
| Data Interface   | RS-232, Bit Rate: 115200baud<br>Connector: 9-pin D-sub type    |

#### 1.6. Positioner

|                  |   |
|------------------|---|
| Output Power     | 36V, 2A/5A max(10minute max, 50%)                 |
| Output Connector | 6 Push Terminal<br>(M1, M2, SEN, +5VDC, GND, SEN) |
| Sensor Type      | Reed or Hall Effect Switch                        |

#### 1.7. RF-Modulator

|                |   |
|----------------|---|
| RF-Connector   | 75w IEC169-2, Male/Female                           |
| Frequency      | 470MHz to 860MHz                                    |
| Output Channel | CH 21-69 for the Demodulator                        |
| TV Standard    | PAL B/G/I/D/K Selectable by Menu Setting            |
| Audio Output   | Mono with Volume Control                            |
| Preset Channel | CH 40 (or TBD). Soft ware changeable by Menu screen |

#### 1.8. Power Supply

|                   |  |
|-------------------|--|
| Input Voltage     | AC90 to 260V, 50Hz/60Hz  |
| Type              | PWM Regulator  |
| Power Consumption | Max. 40W(without Positioner)<br>Max. 240W(with 5A/36V Positioner)      |
| Stand-by Power    | <= 10W   |
| Protection        | Separate Internal Fuse<br>The input shall have the lighting protection |

#### 1.9. Physical Specification

|              |  |
|--------------|--|
| Size (WxHxD) | 380x60x280mm<br>Excluding the foot. Foot height is 10mm. |
| Weight       | 3.5Kg  |

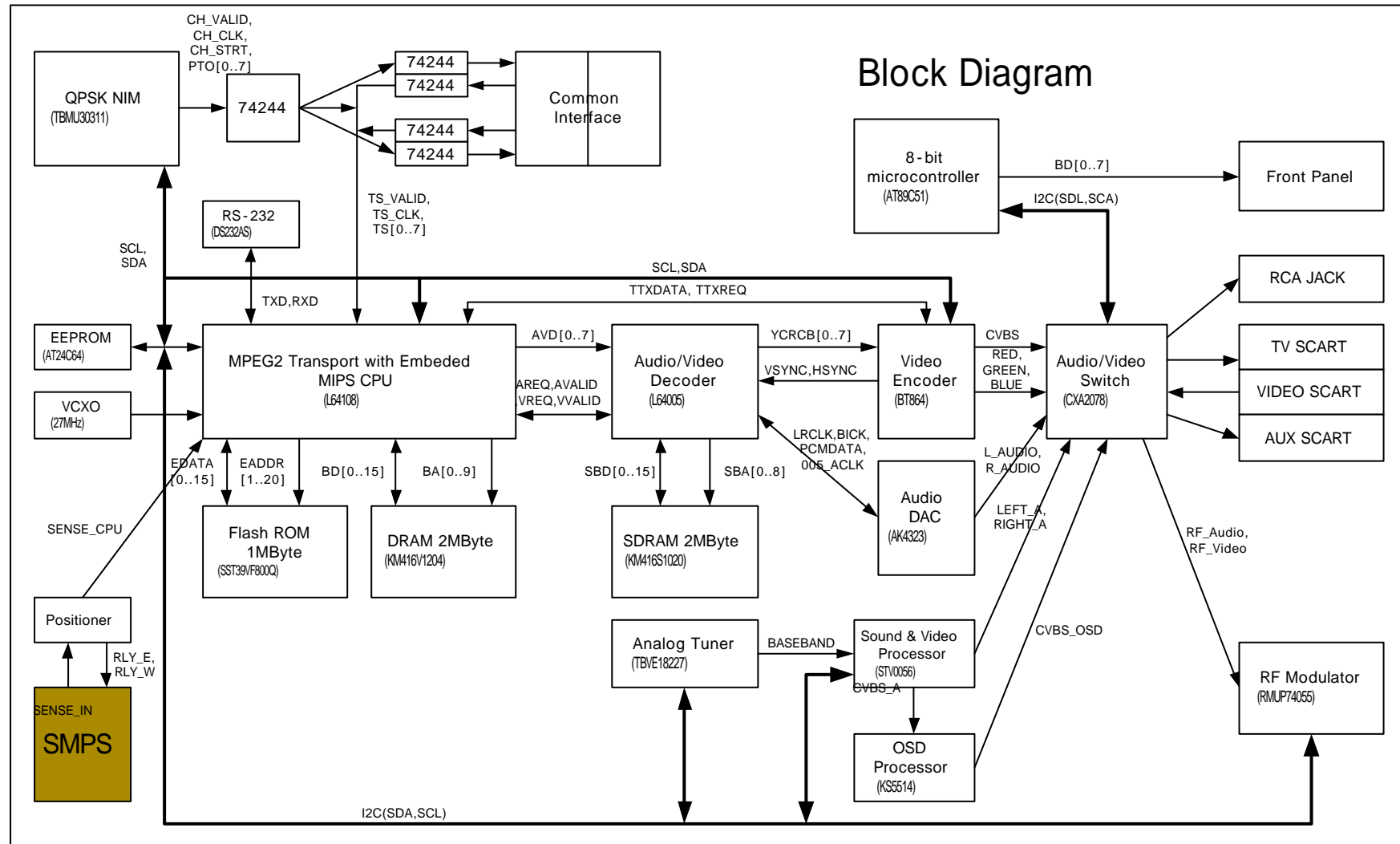


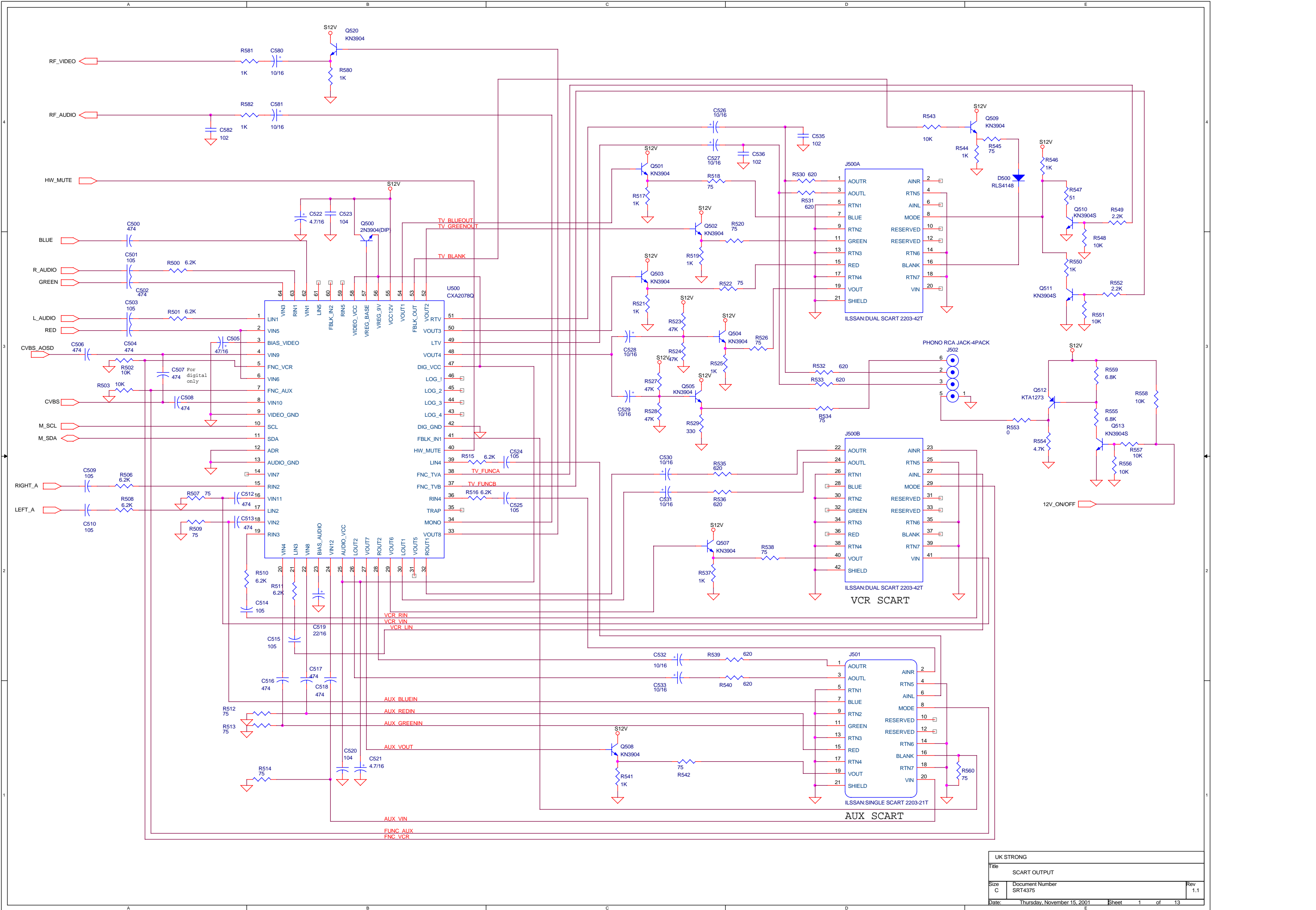
#### 1.10. Environmental Condition

|                          |                           |
|--------------------------|---------------------------|
| Operating Temperature    | 0~40C                     |
| Storage Temperature      | -10C~+50C                 |
| Operating Humidity Range | 10~85% RH, Non-condensing |
| Storage Humidity Range   | 5~90% RH, Non-condensing  |

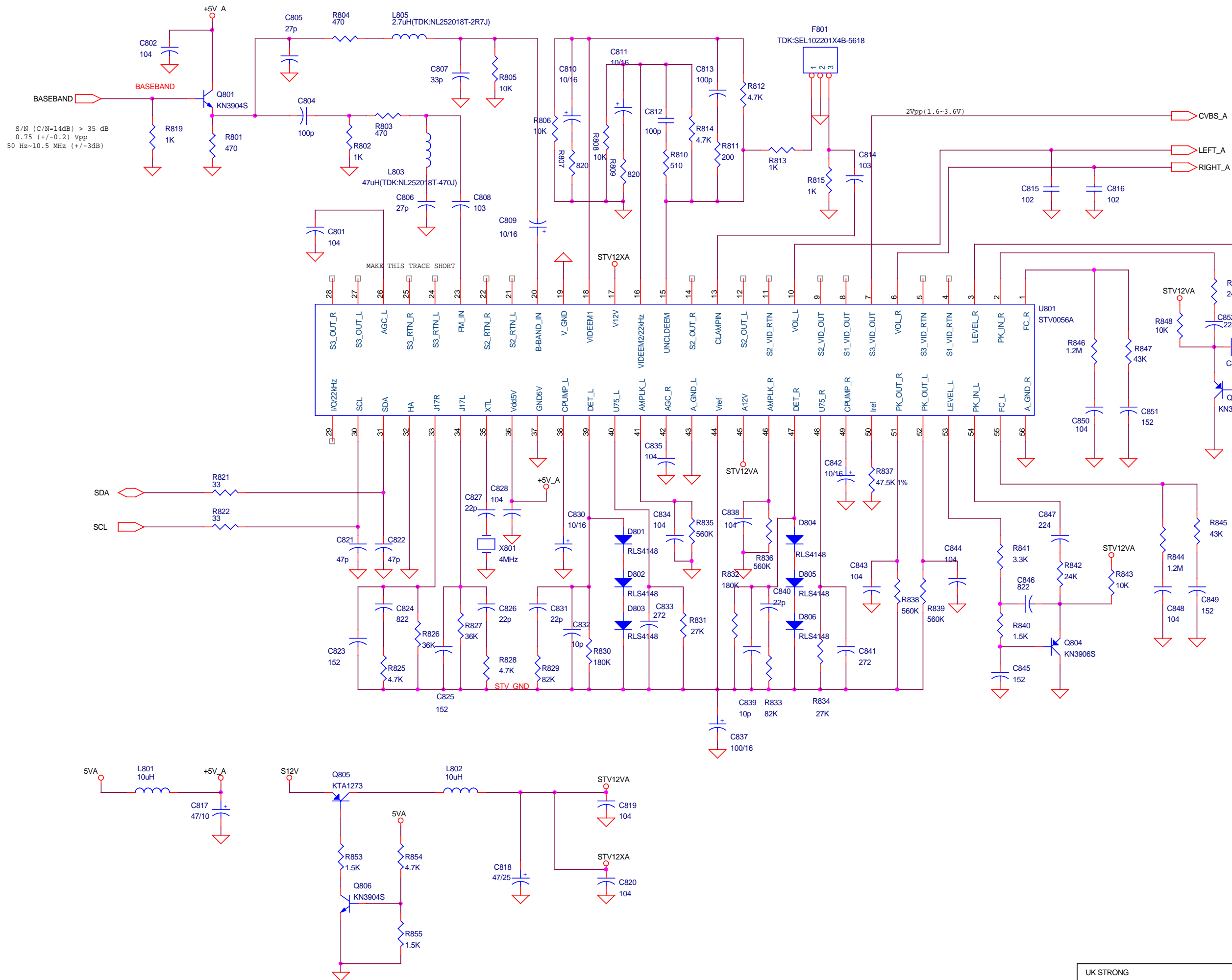


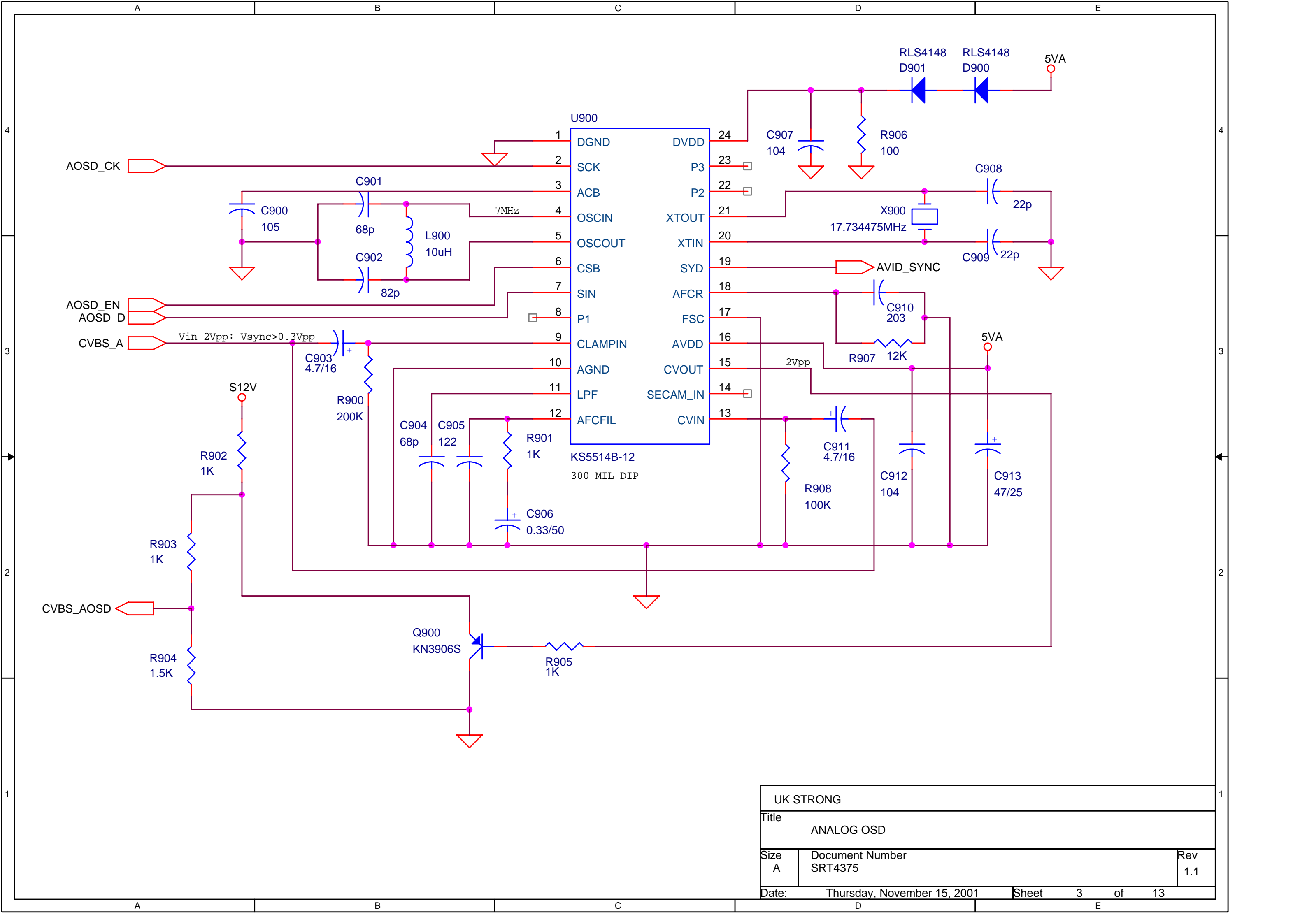
## 2. Block Diagram





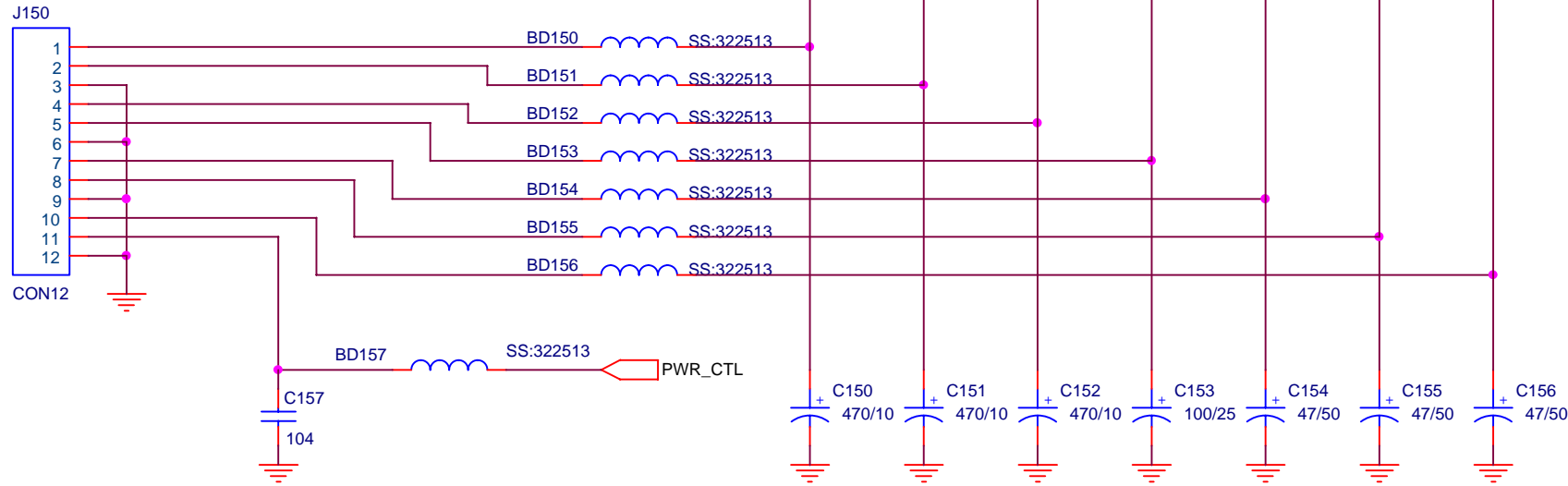




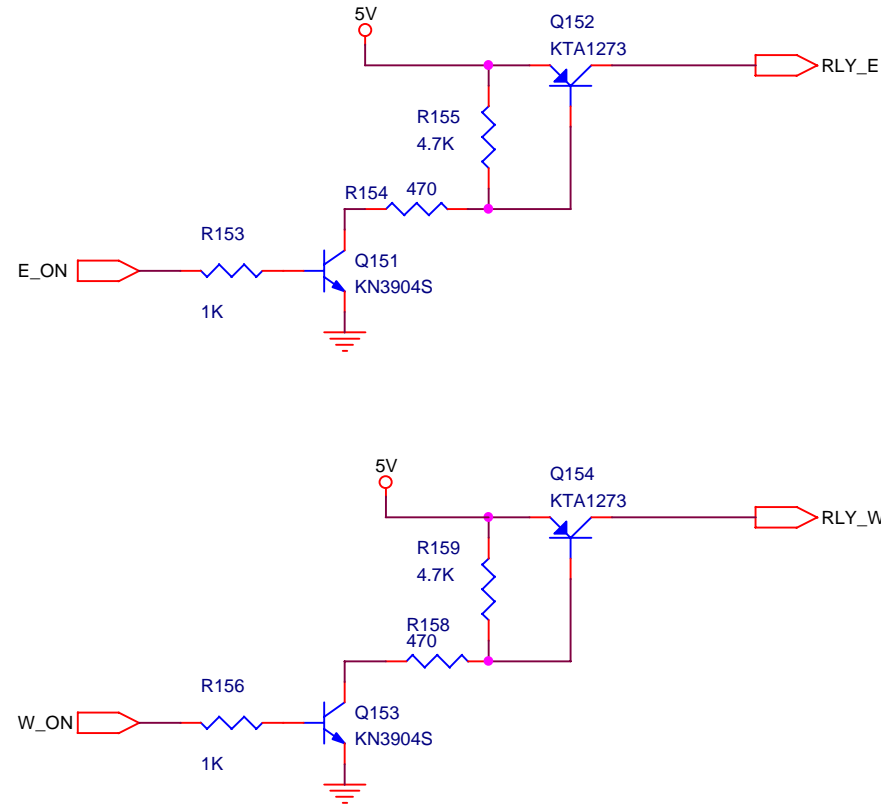
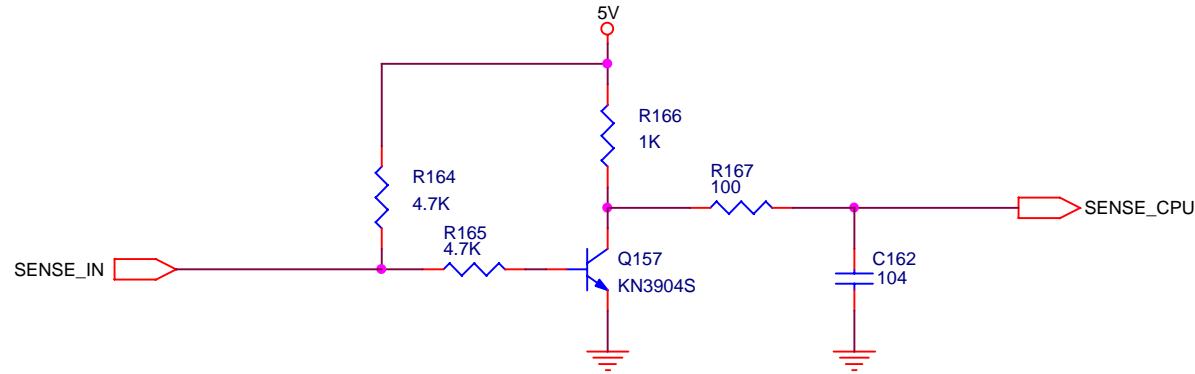
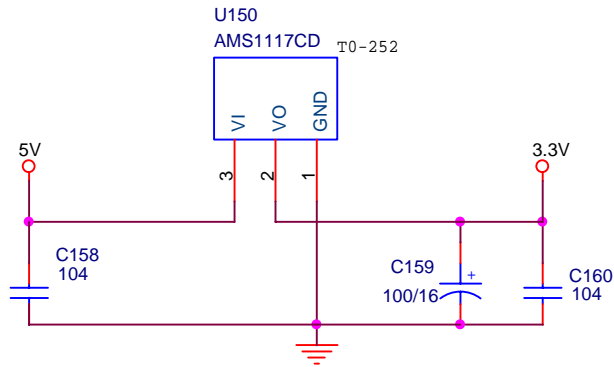
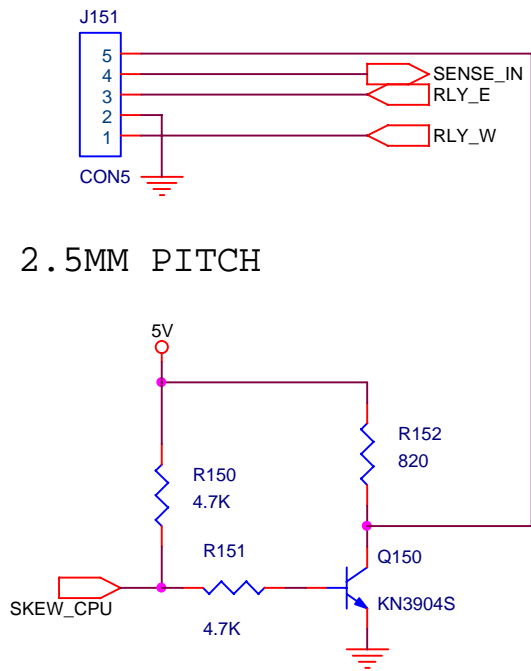


|            |                             |               |
|------------|-----------------------------|---------------|
| UK STRONG  |                             |               |
| Title      |                             |               |
| ANALOG OSD |                             |               |
| Size       | Document Number             | Rev           |
| A          | SRT4375                     | 1.1           |
| Date:      | Thursday, November 15, 2001 | Sheet 3 of 13 |

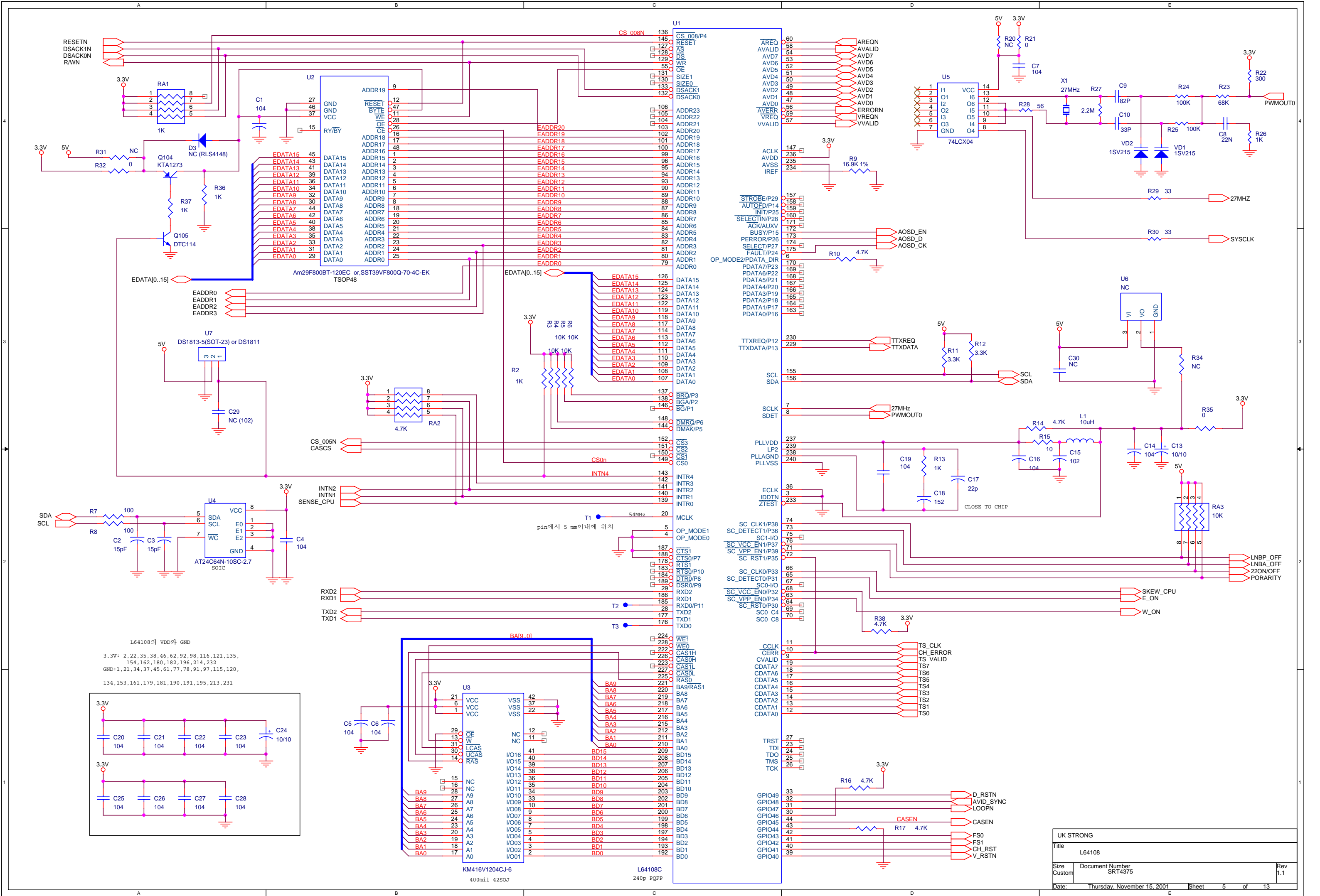
2.5MM PITCH

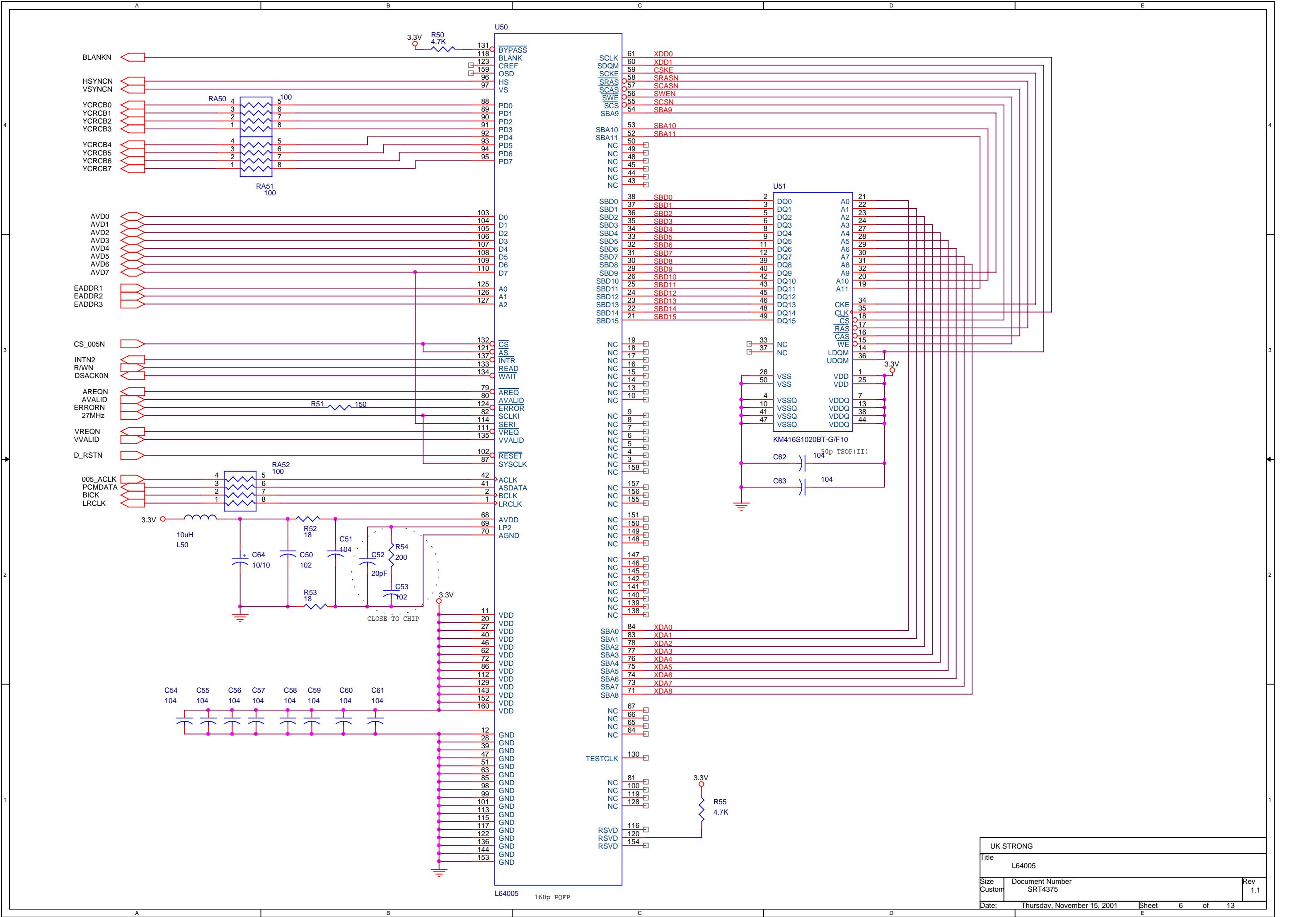


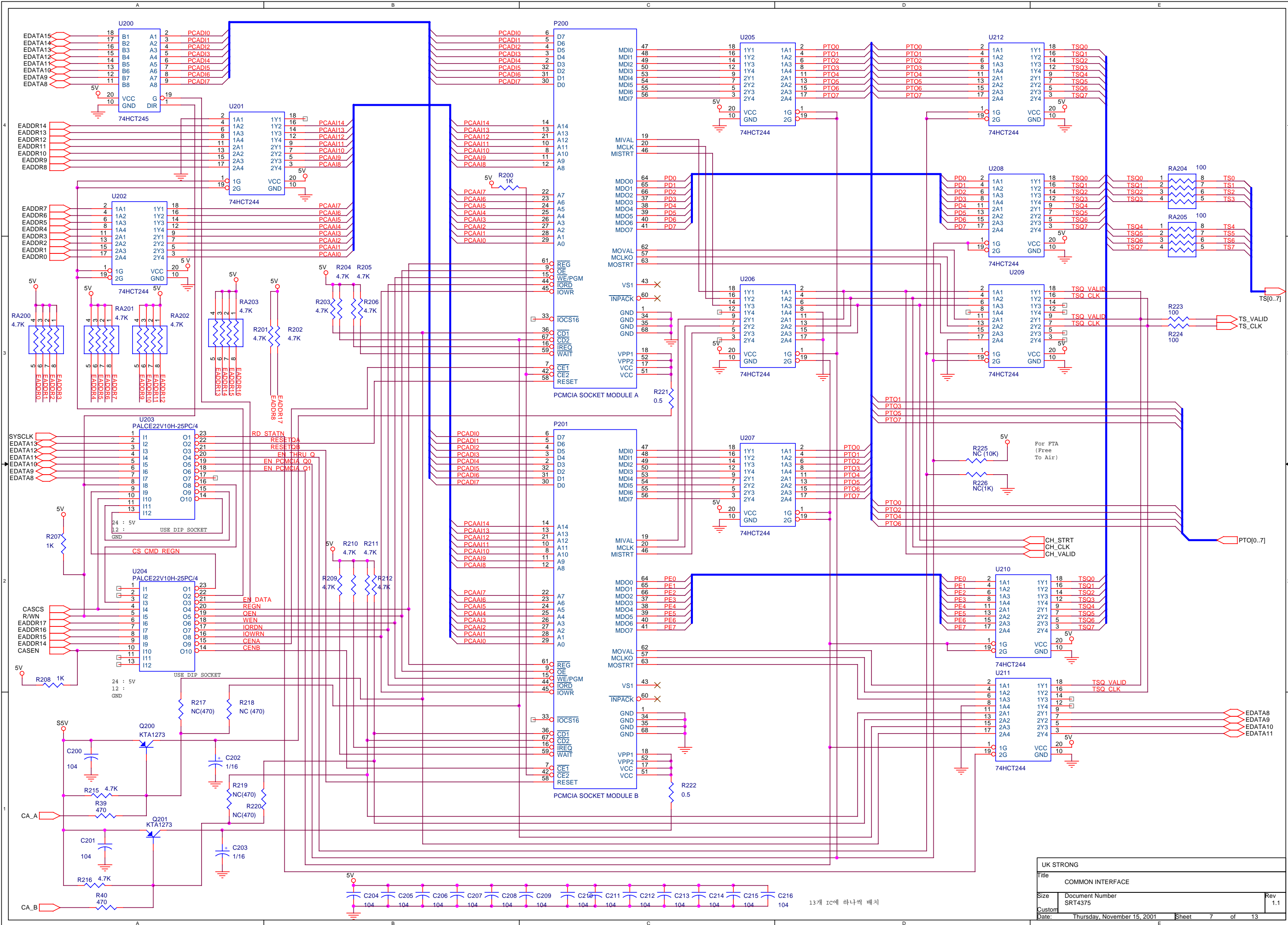
2.5MM PITCH



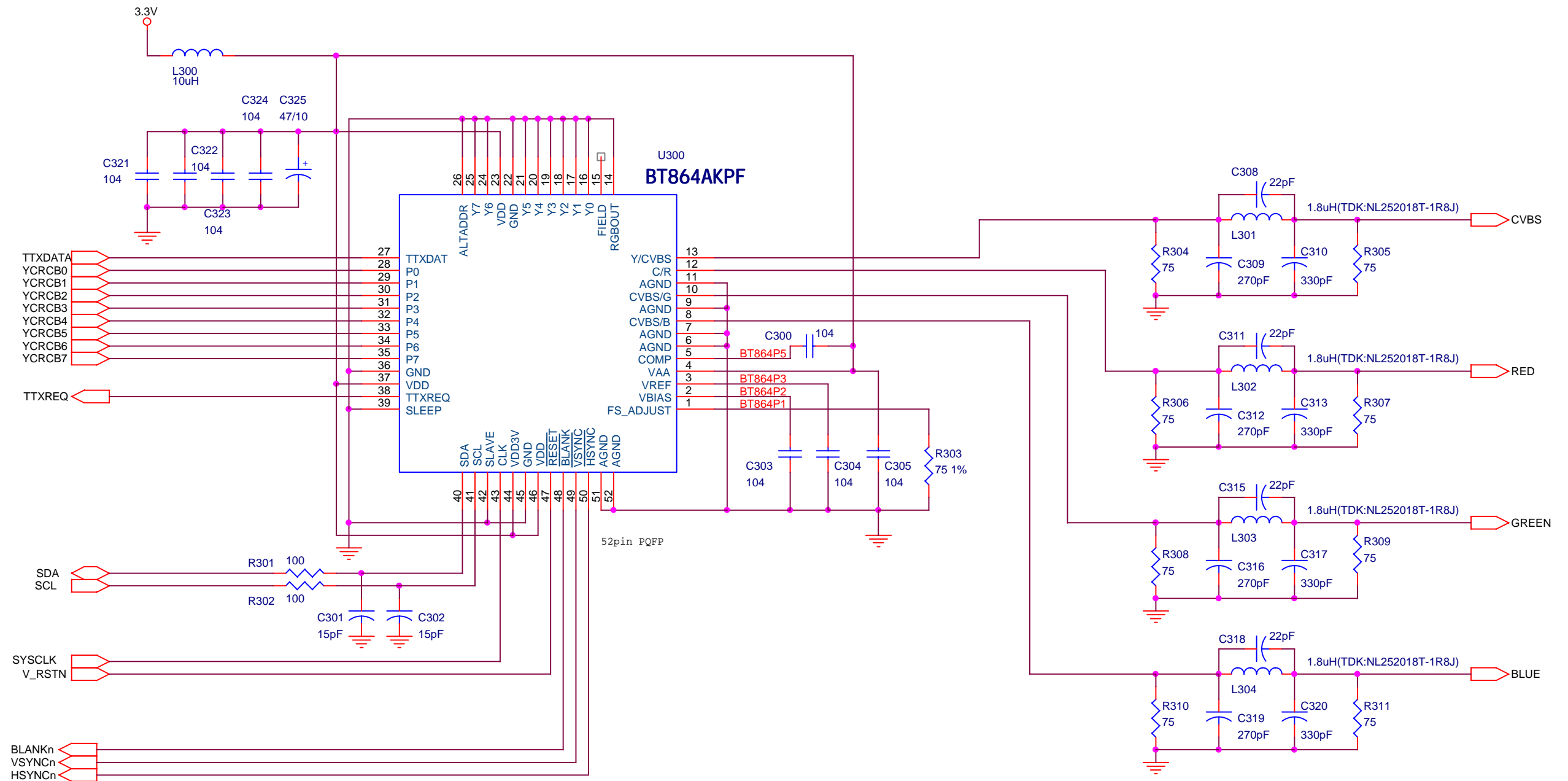
|                |                            |               |
|----------------|----------------------------|---------------|
| UK STRONG      |                            |               |
| Title<br>POWER |                            |               |
| Size<br>B      | Document Number<br>SRT4375 | Rev<br>1.1    |
| Date:          | Monday, February 12, 2001  | Sheet 4 of 13 |



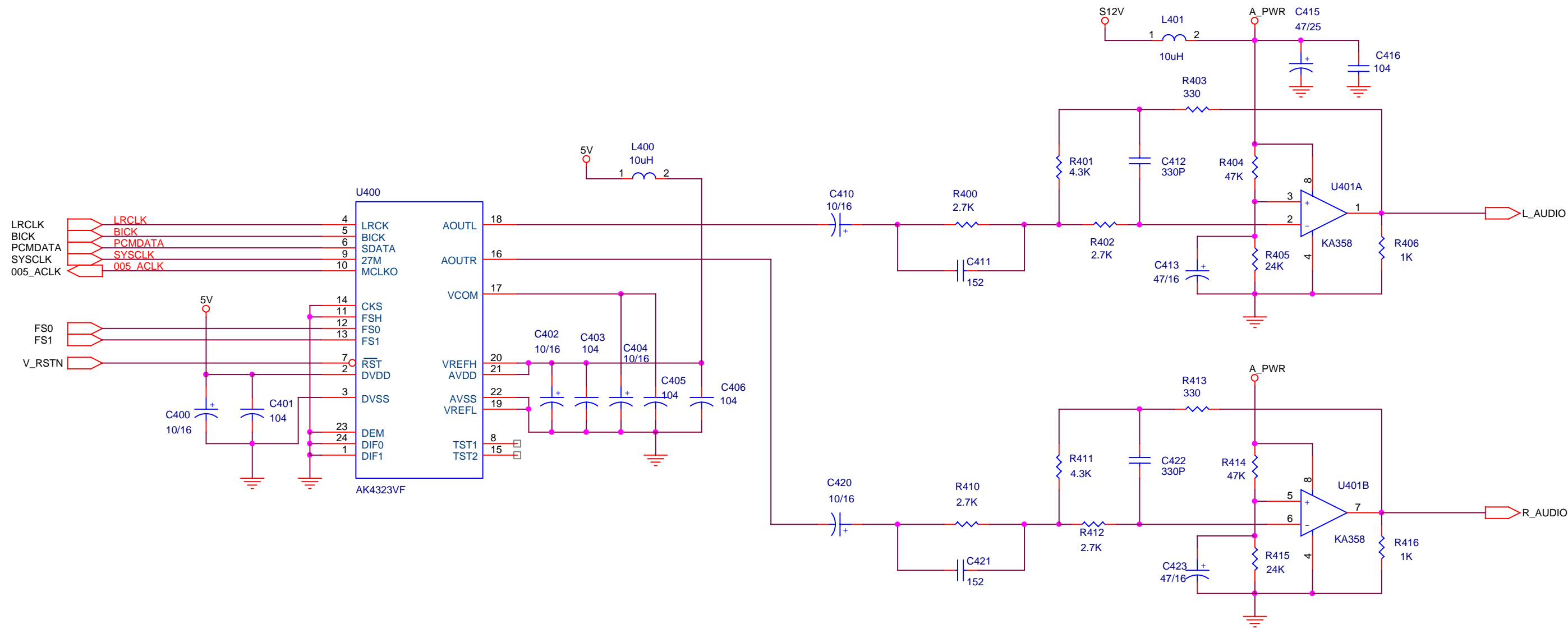






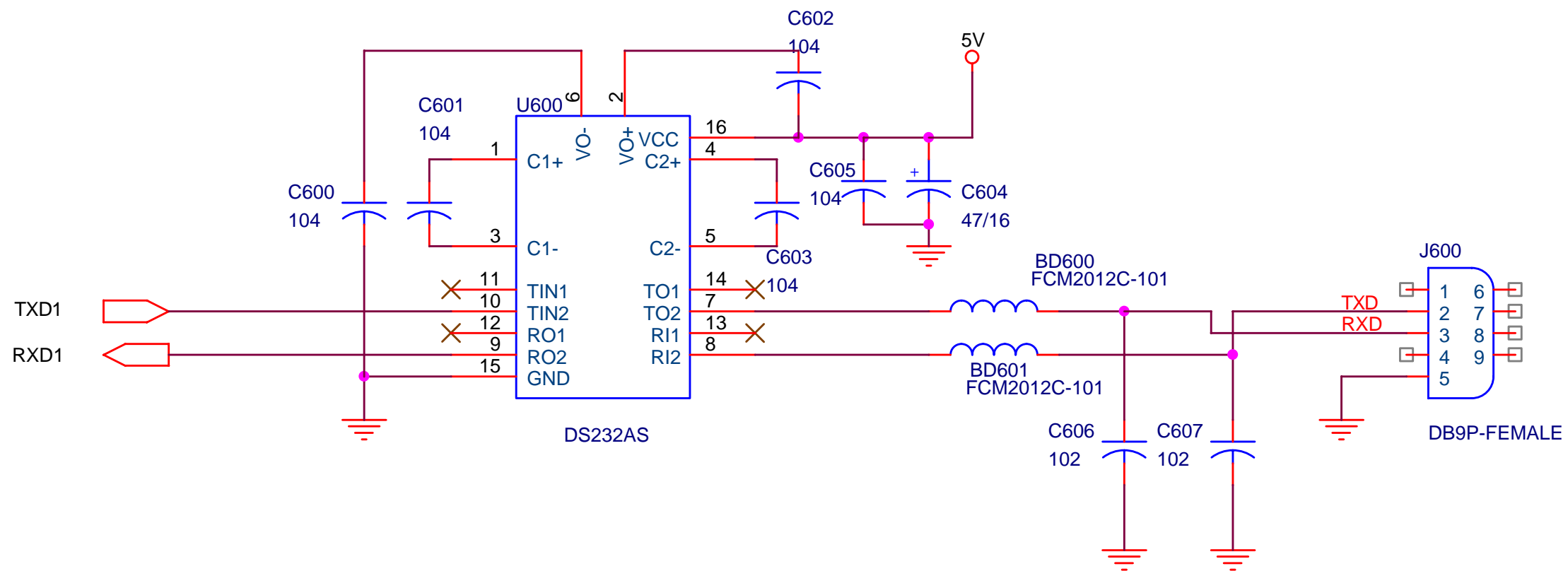


|               |                           |               |
|---------------|---------------------------|---------------|
| UK STRONG     |                           |               |
| Title         |                           |               |
| VIDEO ENCODER |                           |               |
| Size          | Document Number           | Rev           |
| B             | SRT4375                   | 1.1           |
| Date:         | Monday, February 12, 2001 | Sheet 8 of 13 |

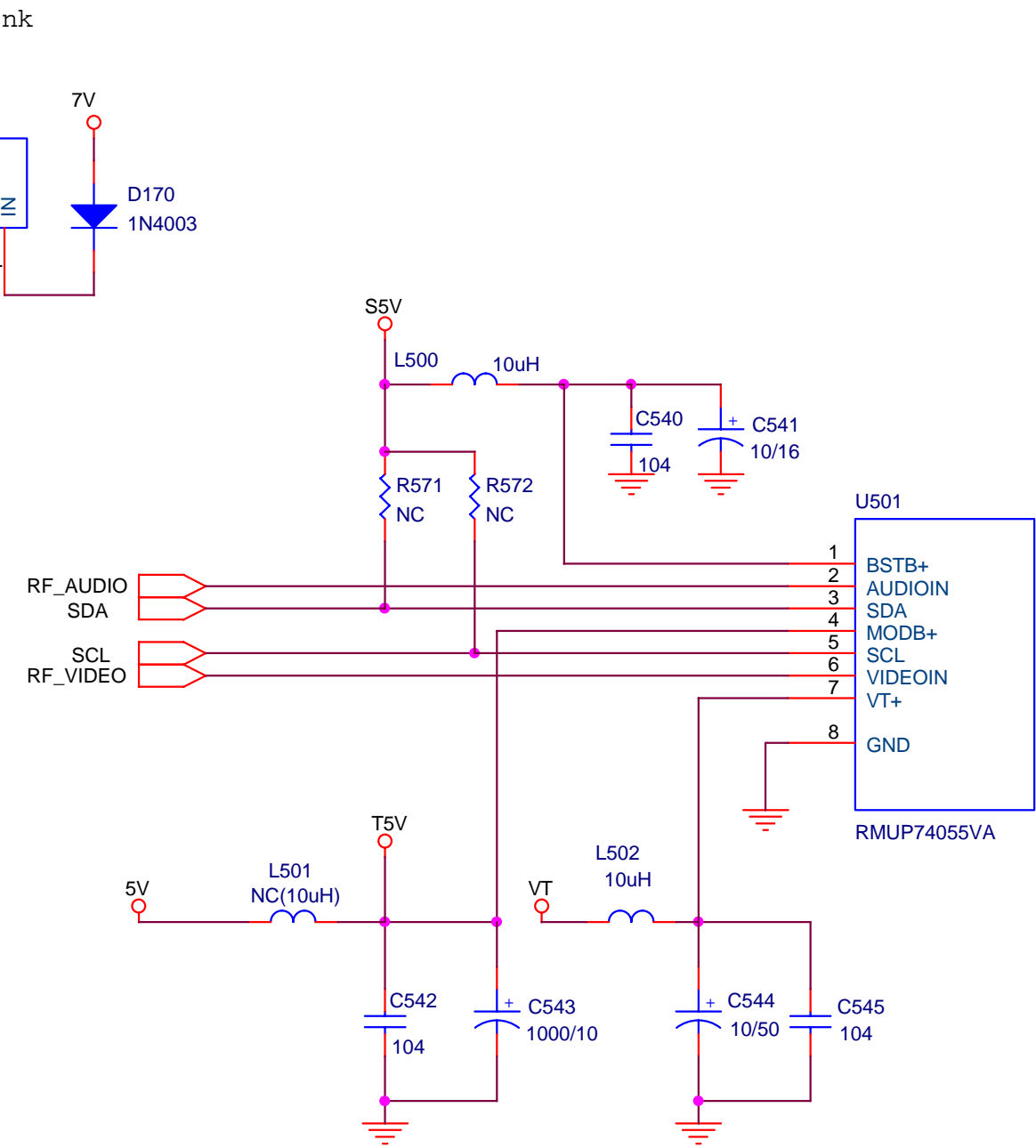
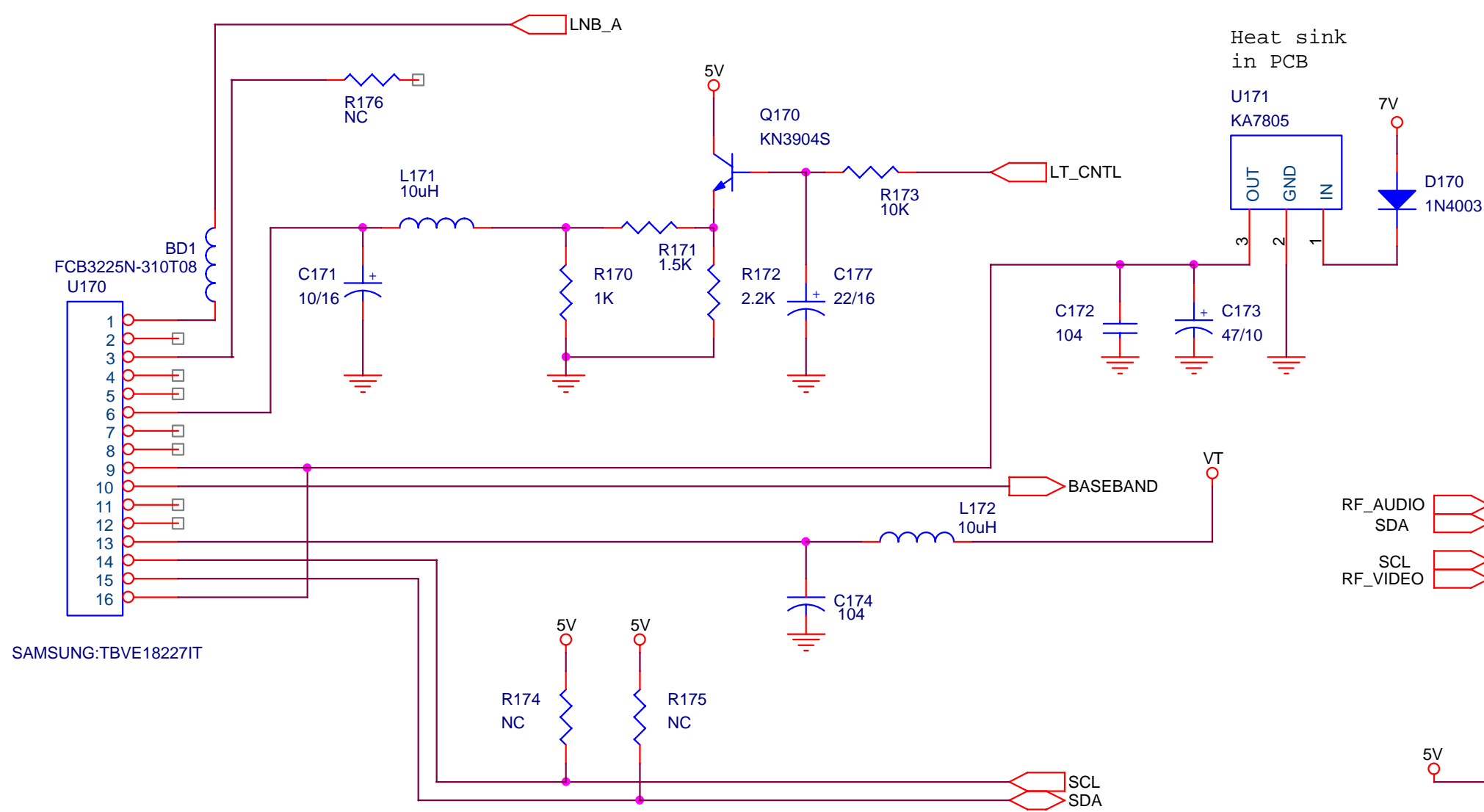


|           |                             |               |
|-----------|-----------------------------|---------------|
| UK STRONG |                             |               |
| Title     |                             |               |
| AUDIO DAC |                             |               |
| Size      | Document Number             | Rev           |
| B         | SRT4375                     | 1.1           |
| Date:     | Thursday, November 15, 2001 | Sheet 9 of 13 |

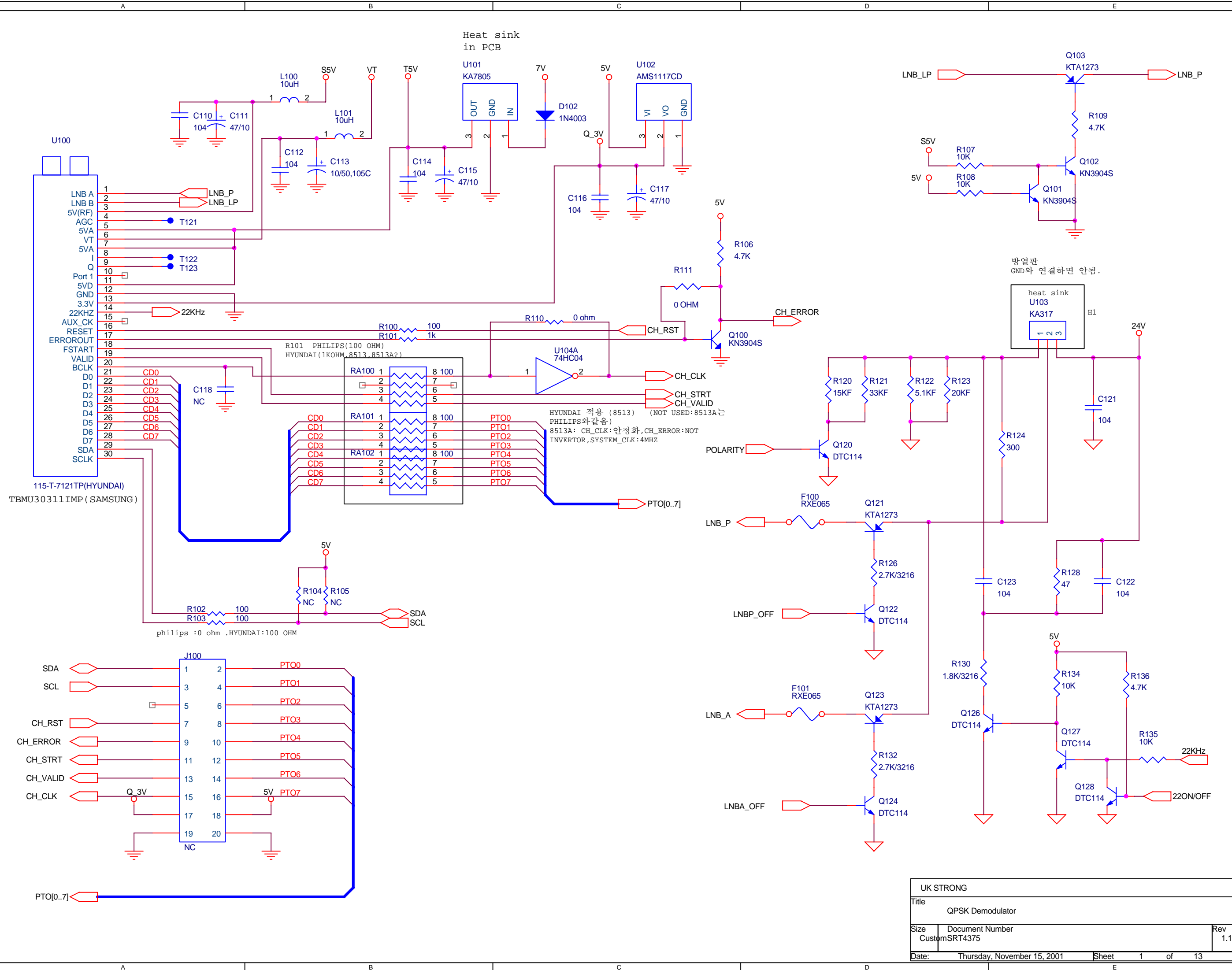




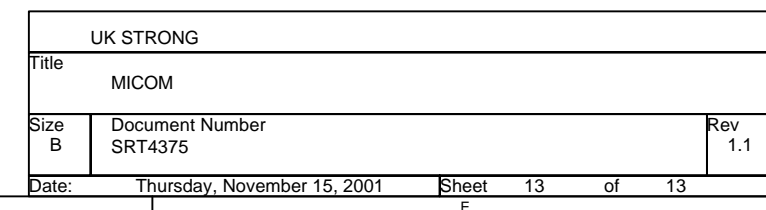
|           |                           |                |
|-----------|---------------------------|----------------|
| UK STRONG |                           |                |
| Title     |                           |                |
| RS232C    |                           |                |
| Size      | Document Number           | Rev            |
| A         | SRT4375                   | 1.1            |
| Date:     | Monday, February 12, 2001 | Sheet 10 of 13 |

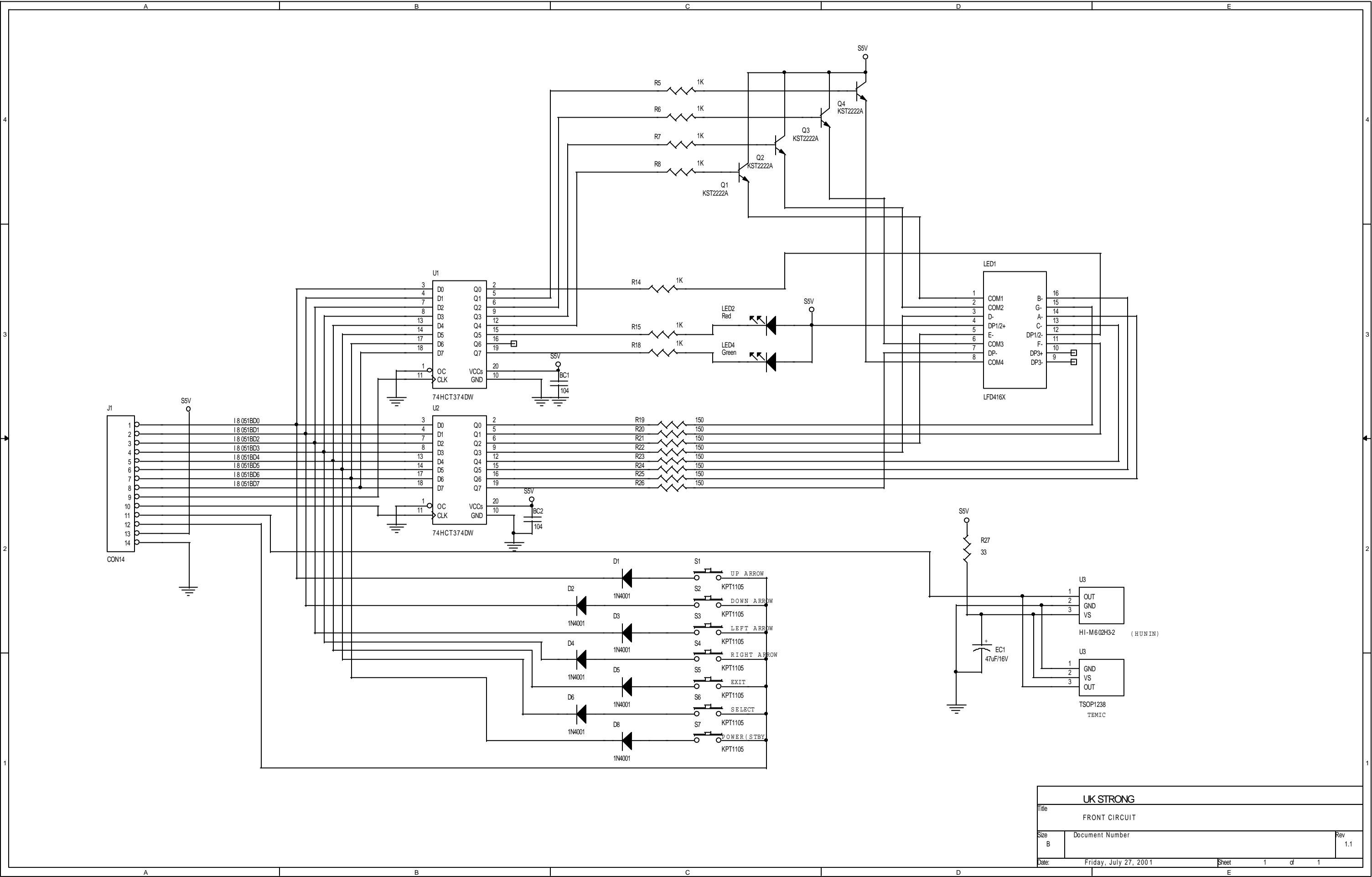


|                   |                             |               |
|-------------------|-----------------------------|---------------|
| UK STRONG         |                             |               |
| Title             |                             |               |
| Tuner & Modulator |                             |               |
| Size              | Document Number             | Rev           |
| Custom            | SRT4375                     | 1.1           |
| Date:             | Thursday, November 15, 2001 | Sheet 1 of 13 |



|                  |                             |               |     |
|------------------|-----------------------------|---------------|-----|
| UK STRONG        |                             |               |     |
| Title            |                             |               |     |
| QPSK Demodulator |                             |               |     |
| Size             | Document Number             |               | Rev |
| Custom           | SRT4375                     |               | 1.1 |
| Date:            | Thursday, November 15, 2001 | Sheet 1 of 13 |     |





| UK STRONG     |                       |              |
|---------------|-----------------------|--------------|
| Title         |                       |              |
| FRONT CIRCUIT |                       |              |
| Size          | Document Number       | Rev          |
| B             |                       | 1.1          |
| Date:         | Friday, July 27, 2001 | Sheet 1 of 1 |



## 4. List of Error codes

E001: Tuner Error.

E002: EEPROM Error.

E003: RF Error.

E004: BT864 Error.

E005: L64005 Error.

E006: DRAM Error.

E007: STV0056 Error.

E008: ATuner Error.

## 5. 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.

### 5.1. trouble shooting

| Symptom                                       | Cause   | Remedy   |
|---|---|--|
| The display on front Panel does not light up. | The power cord is Not plugged in  | Check that the power cord Is plugged in to the wall outlet.  |
| No picture or sound.                          | Wrong connection of The Audio/Video output Of the receiver to TV.<br>Audio muting.<br>TV power off.                 | Connect the Audio/Video Output of the receiver to TV correctly<br>Press the MUTE button.<br>Turn TV on.  |
| No picture.                                   | The receiver can't Receive the signal.<br>Incorrect values of some Tuner parameters.<br>Wrong direction of the dish | Check the antenna cable, Replace the cable, or connect The cable to the receiver tightly.<br>Set the values of tuner Parameters correctly in System set-up menu.<br>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. |
|---|---|--|

## 5.2. Check point about badness STB

### 5.2.1. When nothing appears on TV screen(front panel display "0000")

#### (1) Check the SMPS' s voltage

- Power Connect(J150) -> pin1, pin 2, pin 4 : 4.75~5.25V
- Power Connect(J150) -> pin5 : 10.2~12.6V
- Power Connect(J150) -> pin7 : 21V~24V
- Power Connect(J150) -> pin8 : 27V ~ 33V
- Power Connect(J150) -> pin10 : 7.5~8.5V

**Action)** : If voltage is not normalcy, it change, and measure again SMPS first. Still, SMPS is normalcy if voltage is low. There are possibility that is badness with parts that use the voltage in Main Board.

#### (2) Confirm that R32' s voltage becomes 3.3V

**Action)** : If 3.3V is not normalcy in R32, if more than 100 ohm comes when measured resistance value between R32 and GND after do AC POWER OFF normalcy . On this time, change U150(3.3V REGULATOR).

#### (3) Confirm by Oscilloscope whether 27 MHz break out in R29 and R33.

**Action)** : if 27Mhz do not break out, X1(27Mhz CRYSTAL), or U5(74LCX04) change .

#### (4) ROM Read cycle(Pulse) should be happened continuously through Oscilloscope at Power off/on in pin 26 of U2(39vf800A Flash ROM).

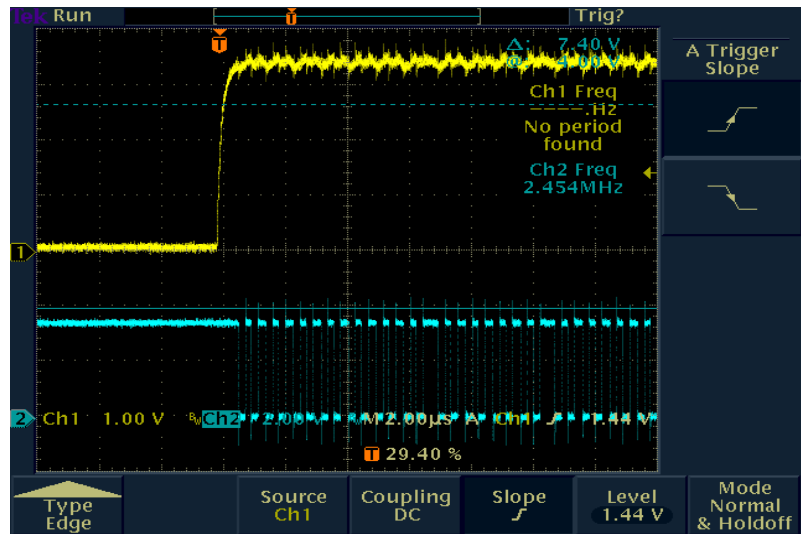
(If U2's pin 26 is 3.3V by Voltage Meter, it is normalcy)

**Action)** : if U2-pin26 is measured (0V ~ 2V) by Voltage Meter, U2(39VF800A FLASH ROM) change, still, change U1(L64108 CPU) if do not act.

#### (5) Flash-Rom of Start Control Signal uses reset, chip-Select

RESET --→  
Check Point : U2(12pin)

CE --→  
Check Pint : U2(26 pin)



**Action)** : If the flash-Rom(U2) not operation. , must be Checking chip-select pin from L64108. Replacement of part is required. Because Reset and Chip-Select signal is not Booting.  
Also , Checking soldering or Chip is consider flash-rom and CPU  
Where are replace of component Part, and Check the insertion of part

(6) Confirm that Message is displayed when interlink STB and PC by RS232 CABLE and did Power off/on

Execute Hyper terminal in PC and do together Setup with next time

Baud Rate: 115,200bps.

Data bit:8 bit

Parity bit :none

Stop bit :1

Control: none

1) When Message is not displayed:

1. Do AC Power put on in state that click Menu and Select key simultaneously after AC power put off, (method by boot mode Booting) Still, if any message is not displayed, it changes U2(39VF800A flash ROM)





2. if "starting boot" message is displayed, Do Download again by suitable Firmware to model.
3. Do STB Power off/on after Download is completed.
4. If screen is displayed, it does FACTORY RESET necessarily.

2) When Message is displayed:

(Message can be different according to Firmware Version)

```
Set ACLK <32000>
PHILIPS TDA8044 connected
IT520S SET-TOP BOX MONITOR v1.10 BY INTEGRA TELECOM
Nov 02 2000,23:35:35, http: www.integra.co.kr
>size of sysconfig=140
flash pattern(ffff)
flash pattern(ffff)
flash pattern(ffff)
PHILIPS TDA8044 connected
Enable AV Interrupts
launch OSD
launch OSD 3
Set ACLK <3>
launch OSD 4
launch OSD 4.5
launch OSD 5
intr EN end[D:0][AV:3c00]
RegValue23=3
AVO:OSD Initialized
AV decoder and OSD initialized
```

1. When " I2C ERROR " , " EEPROM ERROR " , " TUNER CONNECT FAIL " message happens After AC POWER OFF, measuring resistance between U1's pin 156 and GND, pin 155 and GND, if it is measured (20ohm ~ 0 ohm), L64108 ( CPU ) must change.
2. When "EEPROM ERROR" Message happens  
U4 : EEPROM(24C64) change



3. When “Tuner connect Fail” Message happens  
If POWER supplied to Tuner is normalcy, Tuner must change.
4. When “ FLUSH DRAM ” Message happens  
U50(L64005) and U51(KM416S1020) Re-soldering do, and  
change U50(L64005) if is happened again.
5. Normal Message as being displayed, change MICOM if TV screen  
does not come

#### 5.2.2. When “NO SIGNAL” message appears

(1) U103:(KA317(Regulator)) -> pin 3 : 21V~24V

U103:(KA317(Regulator))-> pin 2 : 13V /18V

If confirm that voltage is measured and is not measured, U103 change

**Action)** : When U103's(KA317) input voltage is low, do you change SMPS,  
do U103 Voltage Line check in SMPS if change SMPS and is  
low.

(2) Measure by Voltage Meter(Oscilloscope) whether VERTICAL(13Volt) or  
HORIZONTAL(18Volt), 22KHz(ON/OFF) is displayed normally measuring  
voltage of F100's Lead(or Tuner LNB OUT PORT) when do SCAN  
satellite in INSTALL MENU.  
(LNB supply voltage check)

(3) When LNB voltage(13V/18V) is not displayed, it changes Q121(TR:kta1273) if  
13V/18V is displayed measuring Q121's(TR:kta1273) Emitter monad by  
Voltage Meter and measure whether 13V/18V is displayed in F100(Poly  
Switch)

**Action)** : If mania is happened to F100 or Q121 after shift Tuner shift

#### (4) Voltage measurement supplied to TUNER

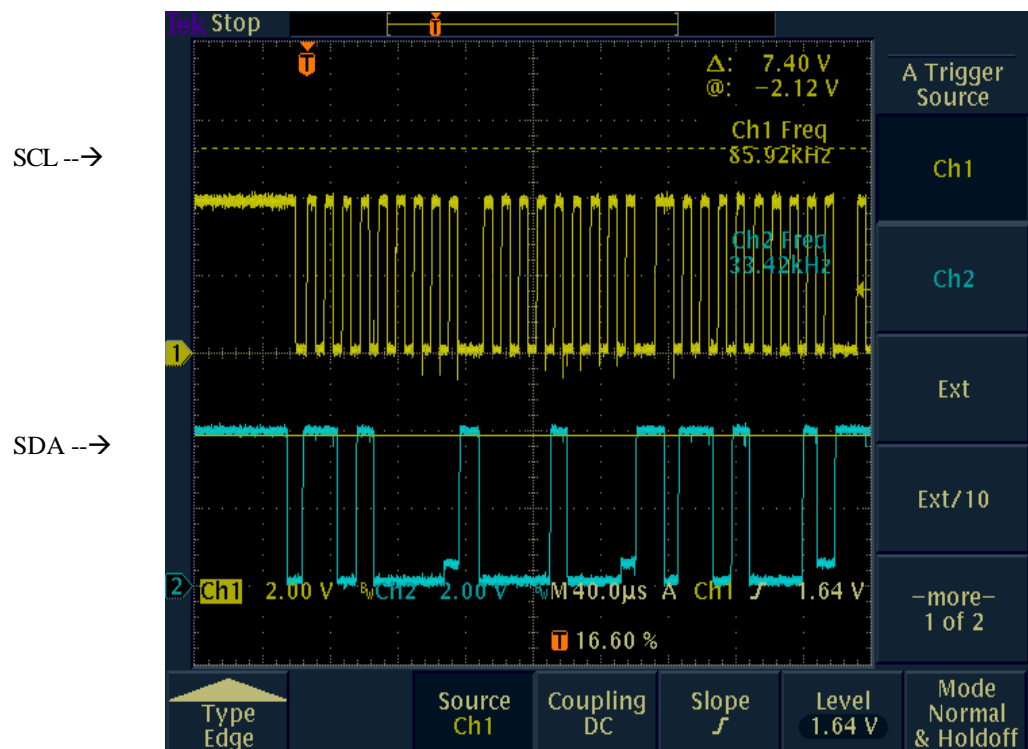
1. L100(Coil) : about 5V,  
L101(Coil): about 28V ,  
U101(Regulator)-Pin 3 : about 5V  
U102(Regulator)-PIN 2, (C117(+))Elect Cap ) : 3.3V  
**Action)** : If voltage is normalcy TUNER change .

#### 2. U101(Regulator)-Pin3 : 3V~ 0V

**Action)** : If it is 100 ohm lows, doing AC POWER OFF and measure  
U101's(Regulator) 3Pin and resistance between GND,  
Tuner change

#### (5) Check I2C Control Signal

**Action)** : if Voltage is drop SCL as well as SDA. “ No Signal ” message will  
be Display at TV Screen. therefore each of part check have to  
SCL with SDA of Voltage 3.2 ~3.5V. Check the install chip-position  
and short of solder, cold solder, etc. Where are replace of  
component Part, Check the insertion of part



#### (6) Changing SMPS test

#### (7) Try scan again after Factory reset



**Action) :** Do U2(39VF800A Flash ROM) and U1(L64108 CPU) Re-solder if “Wait to Reset setting” Message comes continually when did Factory Reset. Still, change U2(39VF800A Flash ROM) if do not become.

#### 5.2.3. POSITIONER fail

(1) hen do to act AUTO LIMMIT in POSITIONER MENU SMPS side RELAY both that act confirm

**Action) :** If RELAY in SMPS acts both, MAIN board side circuit is normalcy and most change SMPS

(2) Change SMPS and try TEST

(3) Do L64108 re-soldering .

(4) Do L64108 change .

5.2.4. “CI CARD INITIALIZING NOW...” Message becomes Display continually on screen and when Menu transfer is slow Firmware again Download do .

#### 5.2.5. When do not act whether FRONT 7-SEGMENT(DISPLAY) acts strangely

(7) Change FRONT PANEL

(8) Change MICOM(U700) (AT89C51)

U700 : Confirm by SCOPE whether 11.0592 MHzs break out in pin 19

(9) Confirm by SCOPE whether 11.0592 MHzs break out in U700-pin 18, 19

#### 5.2.6. When VIDEO screen gets into Scratch occurrence

(1) If scratch is happened on Video screen and Audio noise or stop phenomenon is happened Tuner change .

(2) Audio is normalcy and if scratch is happened Video screen U50 : (L64005) U51 : (km416S1020 sdram) change

(3) When Video Color is badness, U300 : (BT864) change.

(4) After Power ON, when that stop screen phenomenon happens U400 : (AKM4323) change

(5) Video Filter from Bt864A (Digital Video Encoder)

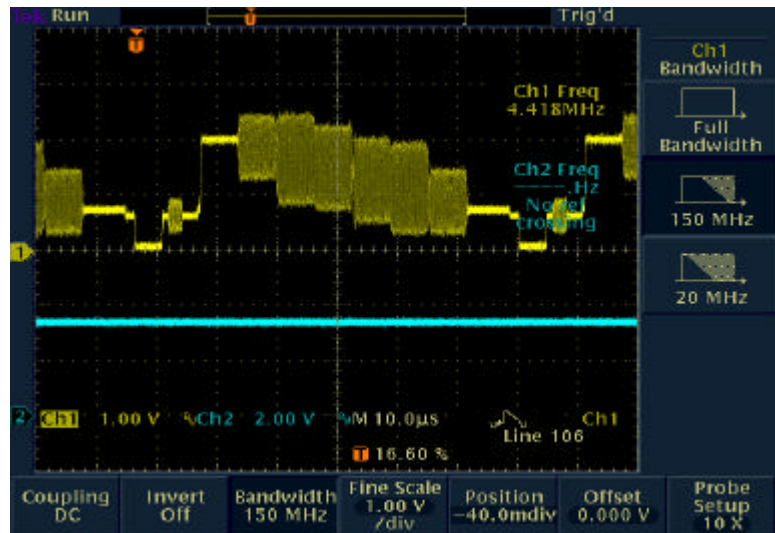
**Action) :** If the Color signal is not operation. Shoud be Checking 43pin(SYSCLK) 27Mhz Of U300 and VCC(3.3V) if you have

**STRONG**

checking, If No problem. Check the install chip-poistion and short of solder, cold solder, etc. Where are replace of component Part, Check the insertion of part

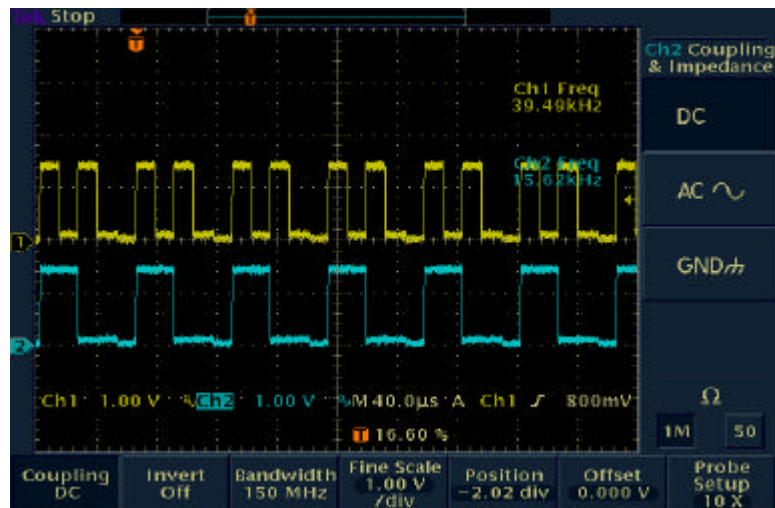
CVBS -->

(LOW active) RESET -->

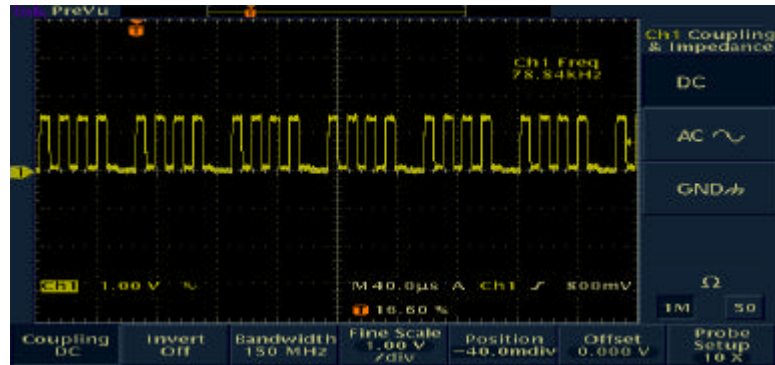


RED -->

GREEN -->



BLUE -->



## 6. Materials list

### 6.1 Main PCB materials list

| Item | Quantity | Reference  | Part Number        | VENDOR   |
|------|----------|--|--------------------|----------|
| 1    | 1        | PCB main   | ST640V5 VER 5.0    |          |
| 2    | 9        | BD150,BD151,BD152,BD153,<br>BD154,BD155,BD156,BD157<br>BD1   | SMB403025          | TAI-Tech |
| 2    | 2        | BD600,BD601  | FCM2012C-101       | TAI-Tech |
| 4    | 93       | C1,C4,C5,C6,C7,C14,C16,<br>C19,C20,C21,C22,C23,C25,<br>C26,C27,C28,C51,C54,C55,<br>C56,C57,C58,C59,C60,C61,<br>C62,C63,C110,C112,<br>C114,C116,C157,C158,C160,<br>C162,C172,C174,C200,C201,<br>C204,C205,C206,C207,C208,<br>C209,C210,C211,C212,C213,<br>C214,C215,C216,C300,C303,<br>C304,C305,C321,C322,C323,<br>C324,C401,C403,C405,C406,<br>C416,C520,C523,C540,C542,<br>C545,C600,C601,C602,C603,<br>C605,C701,C801,C802,C819,<br>C820,C828,C834,C835,C838,<br>C843,C844,C848,C850,C907,<br>C912,C121,C122,C123 | CS2012Y5V104Z500NR | SAMWHA   |
| 5    | 4        | C2,C3,C301,C302  | CS2012COG150J500NR | SAMWHA   |
| 6    | 1        | C8   | CS2012X7R223K500NR | SAMWHA   |
| 7    | 2        | C902,C9  | CS2012COG820J250NR | SAMWHA   |
| 8    | 2        | C10,C807   | CS2012C0G330J500NR | SAMWHA   |
| 9    | 11       | C15,C29,C50,C53,C535,<br>C536,C582,C815,C606,C607  | CS2012C0G102J500NR | SAMWHA   |

|    |    |   |                    |          |
|----|----|---|--------------------|----------|
| 10 | 11 | C816<br>C17,C826,C827,C831,C840,<br>C308,C311,C315,C318<br>C908,C909  | CS2012C0G220J500NR | SAMWHA   |
| 11 | 9  | C18,C411,C421,C823,C825,<br>C845,C849,C851,C854   | CS2012X7R152K500NR | SAMWHA   |
| 12 | 1  | C52   | CS2012C0G200J500NR | SAMWHA   |
| 13 | 2  | C703,C702   | CS2012C0G180J500NR | SAMWHA   |
| 14 | 2  | C821,C822   | CS2012COG470J500NR | SAMWHA   |
| 15 | 4  | C309,C312,C316,C319   | CS2012COG271J500NR | SAMWHA   |
| 16 | 6  | C310,C313,C317,C320<br>C422,C412  | CS2012COG331J500NR | SAMWHA   |
| 17 | 10 | C500,C502,C504,C506,<br>C508,C512,C513,C516,C517,<br>C518   | CS2012Y5V474Z160NR | SAMWHA   |
| 18 | 9  | C501,C503,C509,C510,C514,<br>C515,C524,C525,C900  | CS2012Y5V105Z160NR | SAMWHA   |
| 19 | 2  | C808,C814   | CS2021X7R103K500NR | SAMWHA   |
| 20 | 2  | C806,C805   | CS2012C0G270J500NR | SAMWHA   |
| 21 | 3  | C804,C812,C813  | CS2012C0G101J500NR | SAMWHA   |
| 22 | 3  | C824,C846,C853  | CS2012X7R822K500NR | SAMWHA   |
| 23 | 2  | C832,C839   | CS2012C0G100J500NR | SAMWHA   |
| 24 | 2  | C833,C841   | CS2012X7R272K500NR | SAMWHA   |
| 25 | 2  | C847,C852   | CS2012Y5V224Z250NR | SAMWHA   |
| 26 | 2  | C901,C904   | CS2012COG680J500NR | SAMWHA   |
| 27 | 1  | C905  | CS2012X7R122K500NR | SAMWHA   |
| 28 | 1  | C910  | CS2012X7R203K500NR | SAMWHA   |
| 29 | 10 | D500,D700,D801,D802,D803,<br>D804,D805,D806,D900,D901   | RLS4148            | Rohm     |
| 30 | 14 | L1,L50,L100,L101,L171,<br>L172,L300,L400,L401,L500,<br>L502,L801,L802,L900  | FCI2012-100K       | TAI-Tech |
| 31 | 4  | L301,L302,L303,L304   | FCI2012-1R8K       | TAI-Tech |
| 32 | 1  | L803  | NL252018T-470J     | TDK      |
| 33 | 1  | L805  | FCI2012-2R7K       | TAI-Tech |
| 34 | 21 | Q101,Q102,<br>Q150,Q151,Q153,Q157,<br>Q170,Q510,Q511,Q513,Q801,<br>Q501,Q502,Q503,Q504,<br>Q505,Q507,Q508,Q509,Q520<br>Q806 | KST3904-MTF        | SAMSUNG  |
| 35 | 3  | Q802,Q804,Q900  | KST3906-MTF        | SAMSUNG  |
| 36 | 7  | Q120,Q122,Q124,Q126,Q127,<br>Q128,Q105  | DTC114EKA          | ROHM     |
| 37 | 1  | RA1   | CN 164 102 JT      | HAN RYUK |
| 38 | 7  | RA2,RA200,RA201,RA202,RA203<br>RA700,RA701  | CN 164 472 JT      | HAN RYUK |
| 39 | 1  | RA3   | CN 164 103 JT      | HAN RYUK |

|    |    |  |                 |          |
|----|----|--|-----------------|----------|
| 40 | 8  | RA50,RA51,RA52,RA100,RA101<br>RA102,RA204,RA205  | CN 164 101 JT   | HAN RYUK |
| 41 | 34 | R2,R13,R26,R36,R37,<br>R153,R156,R166,R170,<br>R200,R207,R208,R406,R416,<br>R517,R519,R521,R525,R537,<br>R541,R544,R546,R550,R580,<br>R581,R582,R802,R813,R815,<br>R819,R901,R902,R903,R905  | CR 1/10 102 JT  | HAN RYUK |
| 42 | 41 | R10,R14,R16,R17,R50,<br>R55,R106,R109,R136<br>R150,R151,R155,R159,<br>R164,R165,R201,R202,R554<br>R203,R204,R205,R206,R209,<br>R210,R211,R212,R215,R216,<br>R704,R707,R812,R814,R825,<br>R828,R854,R703,R708<br>R710,R711,R712,R38 | CR 1/10 472 JT  | HAN RYUK |
| 43 | 25 | R3,R4,R5,R6,R107,<br>R108,R173,R502,R503,R543,<br>R548,R551,R556,R557,R558,<br>R701,R702,R705,R805,R806,<br>R808,R843,R848,R134,R135   | CR 1/10 103 JT  | HAN RYUK |
| 44 | 10 | R7,R8,R100,R101,R167<br>R223,R224,R301,R302,R906   | CR 1/10 101 JT  | HAN RYUK |
| 45 | 1  | R9   | CR 1/10 1692 FT | HAN RYUK |
| 46 | 4  | R11,R12,R841,R849  | CR 1/10 332 JT  | HAN RYUK |
| 47 | 1  | R15  | CR 1/10 100 JT  | HAN RYUK |
| 48 | 10 | R21,R32,R35,R111<br>R221,R222,R553,R110,R102,R103  | CR 1/10 000JT   | HAN RYUK |
| 49 | 1  | R23  | CR 1/10 683JT   | HAN RYUK |
| 50 | 3  | R24,R25,R908   | CR 1/10 104 JT  | HAN RYUK |
| 51 | 1  | R27  | CR 1/10 225 JT  | HAN RYUK |
| 52 | 1  | R28  | CR 1/10 560 JT  | HAN RYUK |
| 53 | 1  | R51  | CR 1/10 151 JT  | HAN RYUK |
| 54 | 2  | R53,R52  | CR 1/10 180 JT  | HAN RYUK |
| 55 | 2  | R811,R54   | CR 1/10 201 JT  | HAN RYUK |
| 56 | 7  | R154,R158,R801,R803,R804<br>R39,R40  | CR 1/10 471 JT  | HAN RYUK |
| 57 | 6  | R171,R840,R850,R853,R855,<br>R904  | CR 1/10 152 JT  | HAN RYUK |
| 58 | 3  | R172,R549,R552   | CR 1/10 222 JT  | HAN RYUK |
| 59 | 10 | R303<br>R304,R305,R306,R307,R308,<br>R309,R310,R311,R560   | CR 1/10 750 FT  | HAN RYUK |
| 60 | 4  | R400,R402,R410,<br>R412  | CR 1/10 272 JT  | HAN RYUK |
| 61 | 3  | R403,R413,R529   | CR 1/10 331 JT  | HAN RYUK |



|     |    |  |                       |           |
|-----|----|--|-----------------------|-----------|
| 62  | 6  | R404,R414,R523,R524,R527,<br>R528  | CR 1/10 473 JT        | HAN RYUK  |
| 63  | 4  | R405,R415,R842,R851  | CR 1/10 243 JT        | HAN RYUK  |
| 64  | 8  | R500,R501,R506,R508,R510,<br>R511,R515,R516                              | CR 1/10 622 JT        | HAN RYUK  |
| 65  | 13 | R507,R509,R512,R513,R514,<br>R518,R520,R522,R526,R534,<br>R538,R542,R545 | CR 1/10 750 JT        | HAN RYUK  |
| 66  | 8  | R530,R531,R532,R533,R535,<br>R536,R539,R540                              | CR 1/10 621 JT        | HAN RYUK  |
| 67  | 1  | R547   | CR 1/10 510 JT        | HAN RYUK  |
| 68  | 2  | R555,R559  | CR 1/10 682 JT        | HAN RYUK  |
| 69  | 3  | R807,R809,R152   | CR 1/10 821 JT        | HAN RYUK  |
| 70  | 1  | R810   | CR 1/10 511 JT        | HAN RYUK  |
| 71  | 2  | R401,R411  | CR 1/10 432 JT        | HAN RYUK  |
| 72  | 4  | R822,R821,R29,R30  | CR 1/10 330 JT        | HAN RYUK  |
| 73  | 2  | R826,R827  | CR 1/10 363 JT        | HAN RYUK  |
| 74  | 2  | R833,R829  | CR 1/10 823 JT        | HAN RYUK  |
| 75  | 2  | R832,R830  | CR 1/10 184 JT        | HAN RYUK  |
| 76  | 2  | R831,R834  | CR 1/10 273 JT        | HAN RYUK  |
| 77  | 4  | R835,R836,R838,R839  | CR 1/10 564 JT        | HAN RYUK  |
| 78  | 1  | R837   | CR 1/10 4752 FT       | HAN RYUK  |
| 79  | 2  | R844,R846  | CR 1/10 125 JT        | HAN RYUK  |
| 80  | 2  | R845,R847  | CR 1/10 433 JT        | HAN RYUK  |
| 81  | 1  | R900   | CR 1/10 204 JT        | HAN RYUK  |
| 82  | 1  | R907   | CR 1/10 123 JT        | HAN RYUK  |
| 83  | 1  | R120   | CR 1/10 153 FT        | HAN RYUK  |
| 84  | 1  | R121   | CR 1/10 333FT         | HAN RYUK  |
| 85  | 1  | R122   | CR 1/10 512FT         | HAN RYUK  |
| 86  | 1  | R123   | CR 1/10 203FT         | HAN RYUK  |
| 87  | 2  | R124,R22   | CR 1/10 301JT         | HAN RYUK  |
| 88  | 1  | R128   | CR 1/10 470JT         | HAN RYUK  |
| 89  | 2  | R126,R132  | CR 1/8 272JT          | HAN RYUK  |
| 90  | 1  | R130   | CR 1/8 182JT          | HAN RYUK  |
| 91  | 1  | U1   | L64108-54 _ 65041A1   | LSI logic |
| 92  | 1  | U2   | SST39VF800A -90-4C-EK | SST       |
| 93  | 1  | U3   | KM416V1204CJ-6        | SAMSUNG   |
| 94  | 1  | U4   | AT24C64N-10SC-2.7     | ATMEL     |
| 95  | 1  | U5   | 74LCX04M              | Fairchild |
| 96  | 1  | U7   | DS1811-10             | Dallas    |
| 97  | 1  | U50  | L64005F               | LSI logic |
| 98  | 1  | U51  | KM416S1020CT -G10     | SAMSUNG   |
| 99  | 2  | U150,U102  | AMS1117CD-3.3         | AMS       |
| 100 | 1  | U200   | MM74HCT245SJ          | Fairchild |
| 101 | 10 | U201,U202,U205,U206,U207,<br>U208,U209,U210,U211,U212                    | MM74HCT244SJ          | Fairchild |
| 102 | 1  | U300   | BT864AKPF             | Rockwell  |
| 103 | 1  | U400   | AK4323-V F            | AKM       |



|     |   |         |                  |           |
|-----|---|---------|------------------|-----------|
| 104 | 1 | U401    | KA358D           | Fairchild |
| 105 | 1 | U500    | CXA2078Q         | Sony      |
| 106 | 1 | U600    | DS232AR SOIC -16 | ST        |
| 107 | 2 | VD1,VD2 | 1SV215           | Toshiba   |

| Item | Quantity | Reference  | Part Number            | VENDOR    |
|------|----------|--|------------------------|-----------|
| 1    | 1        | C906   | RSS/TA-0.33/50-5*11*5  | DAEWOO    |
| 2    | 13       | C111,C115,C117<br>C413,C423,C505,C604<br>C415,C818,C913<br>C173,C325,C817  | RSS/TA-47/25-5*11*5    | DAEWOO    |
| 3    | 3        | C154,C155,C156   | RSS/TA-47/50-6.3*11*5  | DAEWOO    |
| 4    | 4        | C521,C522,C903,C911  | RSS/TA-4.7/50-5*11*5   | DAEWOO    |
| 5    | 27       | C13,C24,C64,C700,C705<br>C171,C400,C402,C404,C410,<br>C420,C526,C527,C528,C529,<br>C530,C531,C532,C533,C541,<br>C580,C581,C809,C810,C811,<br>C830,C842 | RSM/TA-10/25-5*7*5     | DAEWOO    |
| 6    | 2        | C113,C544  | RSS/TA-10/50-5*11*5    | DAEWOO    |
| 7    | 3        | C150,C151,C152   | RSS/TA-470/10-8*11.5*5 | DAEWOO    |
| 8    | 2        | C837,C159  | RSS/TA-100/16-6.3*11*5 | DAEWOO    |
| 9    | 1        | C153   | RSS/TA-100/25-6.3*11*5 | DAEWOO    |
| 10   | 2        | C202,C203  | RSS/TA-1/50-5*11*5     | DAEWOO    |
| 11   | 2        | C519,C177  | RSM/TA-22/16-5*7*5     | DAEWOO    |
| 12   | 1        | C543   | RSS/TS-1000/10-10*16*5 | DAEWOO    |
| 13   | 2        | D102,D170  | 1N4004                 | PHILIP    |
| 14   | 1        | Q500   | 2N3904                 | SAMSUNG   |
| 15   | 10       | Q103,Q104,Q152,Q154,Q121,Q123<br>Q200,Q201,Q512,Q805   | KTA1273Y               | KEC       |
| 16   | 1        | F801   | SEL5618                | TDK       |
| 17   | 2        | F100,F101  | RXE065                 | MANSUNG   |
| 18   | 1        | J150   | 5267-12                | Molex     |
| 19   | 1        | J151   | 5267-05                | Molex     |
| 20   | 1        | J500   | 2203-42ST (-A- Type)   | ILSSAN    |
| 21   | 1        | J501   | 2202-21ST(B)           | ILSSAN    |
| 22   | 1        | J502   | JS0401315N             | DAE RYUNG |
| 23   | 1        | J600   | 3302-09S-AFS-0         | ILSSAN    |
| 24   | 1        | J700   | 14pin socket           | molex     |
| 25   | 1        | P200,P201  | P1T2B1393              | OTAX      |
| 26   | 1        | U100   | TBMU 30311 IMP         | SAMSUNG   |
| 27   | 1        | U103   | KA-317T                | Fairchild |
| 28   | 1        | H1   | Extrusion TYPE C       | INSUNG    |
| 29   | 2        | U171,U101  | KA7805                 | Fairchild |
| 30   | 1        | U170   | TBVE18227IT            | SSEM      |
| 31   | 1        | U501   | HSM-3052MPV            | HANSE     |

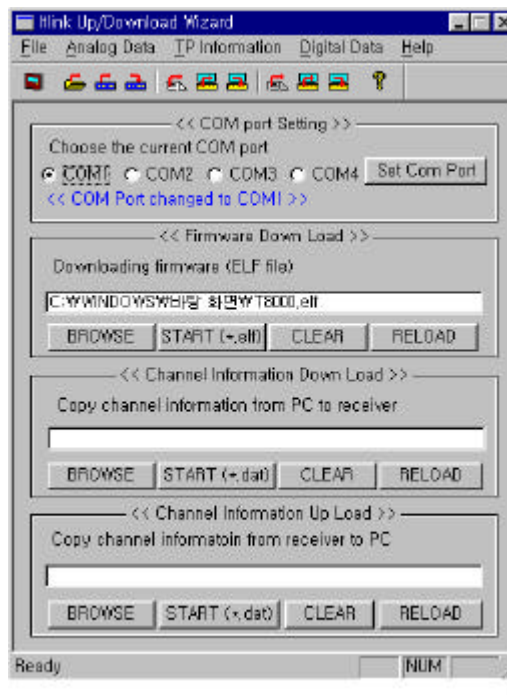
|    |   |                                |                    |           |
|----|---|--------------------------------|--------------------|-----------|
| 32 | 2 | U204,U203                      | PALCE22V10H-25PC/4 | AMD       |
| 33 | 2 | U204,U203 socket               | 4000-24SD-3        | ILSSAN    |
| 34 | 1 | U700                           | AT89C51-16PI       | ATMEL     |
| 35 | 1 | U700 socket                    | 4000-40SD6-1       | ILSSAN    |
| 36 | 1 | U801                           | STV0056A           | ST        |
| 37 | 1 | U900                           | KS5514B-12         | SAMSUNG   |
| 38 | 1 | X1(27MHz X-tal)                | HC-49/U 17         | Kony      |
| 39 | 1 | X700(11.0592MHz X-tal)         | 11.0592MHz(crytal) | SHINYOUNG |
| 40 | 1 | X801(4MHz X-tal)               | 4MHz               | SHINYOUNG |
| 41 | 1 | X900(17.734475MHz X-tal)       | 17.734475MHz       | SHINYOUNG |
| 42 | 1 | TT2, BIN(+)*WITH 3*6 (BLACK) T |                    |           |
| 43 | 1 | SMPS -P -108P0                 | SMPS ; POSITIONER  |           |
| 44 | 1 | KKJ650                         | AC POWER CORD      |           |
| 45 | 1 | RG-59 RF CABLE, 75ohm          | CABLE-LOOP         |           |

## 6.2 Front PCB materials list

| Item | Quantity | Reference                           | Part Number           | Vendor   |
|------|----------|-------------------------------------|-----------------------|----------|
| 1    | 2        | BC1,BC2                             | CR051BX7R104Z500R     | SAMWHA   |
| 2    | 7        | D1,D2,D3,D4,D5,D6,D8                | 1N4001                | PHILIPS  |
| 3    | 1        | J1                                  | 14162020(core) 160mm  | MOLEX    |
| 4    | 1        | FOUR DIGIT LED DISPLAY              | LFD4162-10/SP8        | LIGITEK  |
| 5    | 1        | FOUR DIGIT LED support              | support : 10mm        |          |
| 6    | 1        | LED2                                | LH3330                | LIGITEK  |
| 7    | 1        | LED3                                | LG3330                | LIGITEK  |
| 8    | 2        | LED support                         | support : 7mm         |          |
| 9    | 4        | Q1,Q2,Q3,Q4                         | 2N2222A               | SAMSUNG  |
| 10   | 7        | R5,R6,R7,R8,R14,R15,R18             | RNL 1/6 102 JT -52    | HAN RYUK |
| 11   | 8        | R19,R20,R21,R22,R23,R24,<br>R25,R26 | RNL 1/6 151 JT -52    | HAN RYUK |
| 12   | 1        | R27                                 | RNL 1/6 330 JT -52    | HAN RYUK |
| 13   | 7        | S1,S2,S3,S4,S5,S6,S7                | KPT-1115A             | KYUNG IN |
| 14   | 1        | EC1                                 | RSS/TS 25-47 5*11 2.5 | DAEWOO   |
| 15   | 2        | U1,U2                               | 74HCT374N             | TI,ST,LG |
| 16   | 1        | U3                                  | HI-M602H3-2           | HEONIN   |
| 17   | 1        | U3 support                          | support : 10mm        |          |
| 18   | 1        | front PCB                           | ST640F -R2 VER:2.0    |          |

## 7. Software download instructions(OTA and PC download)

### 7.1 Program Download



## **Firmware download**

You can download firmware to receiver

- Press “BROWSE” button to select firmware (ELF) to downloading.
- After selecting firmware, you can start downloading by pressing “START” button.
- You can see progressing bar while downloading
- The receiver will automatically restart when downloading is finished.

## **Channel Information upload**

You can save channel information of receiver to PC file by using this function

- You have to select a file to save in PC by pressing “BROWSE” button.
- Press “START” button to start uploading

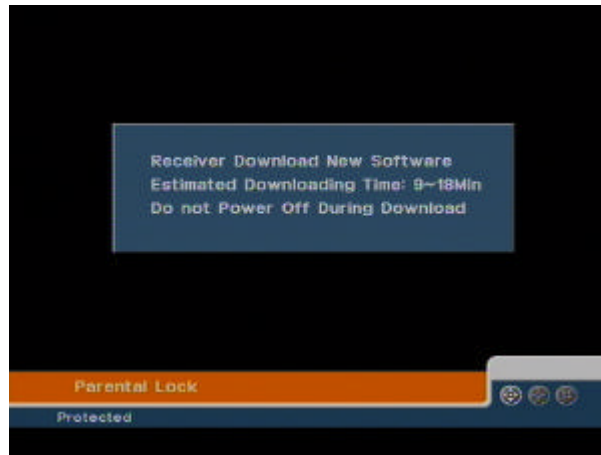
## **Channel Information download**

You can download channel information saved above to receiver

- You have to select a file to download to receiver by pressing “BROWSE” button.
- Press “START” button to start downloading

## **7.2 System Upgrade**

If there is a new version of software available for your receiver, you are able to download it automatically via the satellite signal of ASTRA 19.2 East.



1. Please wait while your receiver is checking if your software version is the newest one available.
2. If you already have the newest version nothing will happen, and you can leave the menu. When you need the newest version software, the receiver will automatically download that version from the satellite signal. After the download is finished, your screen will turn green for a few seconds while the receiver is re-booting.

When the screen is back is to normal, you can leave the menu.

**Tips :** Do not turn off your receiver while you are downloading new software.

Be sure that your receiver is connected to the satellite signal of ASTRA 19.2 East.

## 8. Specification of required cables for software download

