# SERVICE MANUAL

## SRT 4300

## DIGITAL DIRECT-TO-HOME

## TELEVISION RECEIVER

# TABLE OF CONTENTS


TABLE OF CONTENTS ---------- 1

WARNING AND PRECAUTIONS ---------- 2

TECHNICAL SPECIFICATIONS ---------- 3

INSTRUCTIONS ---------- 4

THEORY OF OPERATIONS ---------- 5

1. QPSK MODULE ---------- 5

2. DEMUX & CPU, CONTROL ---------- 5

3. A/V DECODING ---------- 6

7. AUDIO/VIDEO OUTPUT(BUFFERING) ---------- 7

8. POWER CIRCUITS ---------- 7

DIAGNOSTICS ---------- 8

TROUBLE SHOOTING ---------- 10

FLOW CHARTS ---------- 11

PART LIST ---------- 14

TRANSISTOR PINOUTS ---------- 28

IC PINOUTS ---------- 29

PCB DRAWING ---------- 30

SCHEMATIC DIAGRAM ---------- 36

## WARNING

Alternations of the design or circuitry of this SRT 4300 should not be made.
Any design changes or additions such as, circuit modifications, auxiliary jacks, switches, grounding, active or passive circuitry etc. may alter the safety characteristics of this SRT 4300 potentially create a hazard situation for the user.

Any design alterations or additions will void the manufacture's warranty and will further relieve the manufacture of responsibility for personal injury or property damage resulting therefrom.

## SAFETY PRECAUTIONS

Before installing any SRT 4300 for the customer, a safety check of the entire instrument should be made.
The service technician must be sure that no protective device built in to the instrument by the manufacturer has become defective or inadvertently degraded during service.

# TECHNICAL SPECIFCATIONS

1. POWER SUPPLY

   Type : SMPS

   Input voltage : 95– 240VAC 50/60Hz

   Fuse Rating : 250V/T2A

2. TUNER

   Frequency Range : 950 ~ 2150MHz

   Input Signal Level : -65 ~ -25 dBm

   First IF Frequency : 479.5MHz

   Channel Selections : PLL Frequency Synthesizer

   Input Impedance : 75 Ohm

   Connector Type : 'F' Type Female

3. DEMODULATOR

   Type: QPSK Demodulation(DVB-S)

   Symbol Rate: 2 ~ 35MS/s

   Inner FEC: Viterbi Convolution Coding, Rate 1/2,2/3,3/4,5/6,7/8

   Outer FEC: Reed Solomon Coding (204,108) T=8

4. VIDEO DECODER

   System Decoding: MPEG 2 ISO/TEC 13818 (Transport Stream)

   Profile and Level: MPEG 2 MP@ML(4:2:2)

   Data Rate: 1 ~ 15MB/s

   Video Formats: 4:3(Normal) & 16:9(Widescreen)

   Picture Resolution: 720(H) x 576(V) x 50 Fields/sec, 560(H) x 480(V) x 50 Fields/sec

5. AUDIO DECODER

   System Decoding: MPEG 1 ISO/TEC 11172~3, Layer I & II

   Audio Mode: Mono, Dual Channel , Stereo, Joint Stereo, Mutilingual

   Sampling Frequency: 32,44.1, 48 kHz

6. RF MODULATOR

   Modulator Output: CH 21 ~ 69(Preset to CH 38)

   Video type: PAL B/G, PAL I

   Output Connector: IEC Male, IEC Female

   Tuning Method: PLL Frequency Synthesized

7. EXTERNAL CONNECTORS

   **Video Output: TV & VCR Scarts**

   A/V Input : AUX Scart

   Control Port : 0/12V Switching Phono Jack

   RF Output : IEC Male

   RF Input : IEC Female

8. SERIAL DATA INTERFACE

   Standard : RS232,115.2kB Max.

   Connector Type : 9 Pin D-Type Female

9. EXTERNAL MODEM INTERFACE

   Connector Type : 9Pin D-Type male

# INSTRUCTIONS

## SCOPE OF MANUAL

This service manual is intended to direct experienced technician in the service of this product.
It contains necessary information for the equipment described and is current as of the printing date changes that occur after the printing date are incorporated by service manual revisions.

## CUSTOMER SERVICE

Product service and information are available from custom service department during normal workdays from the hours at AM 08:00 to PM 17:00.

## REPLACEMENT PARTS

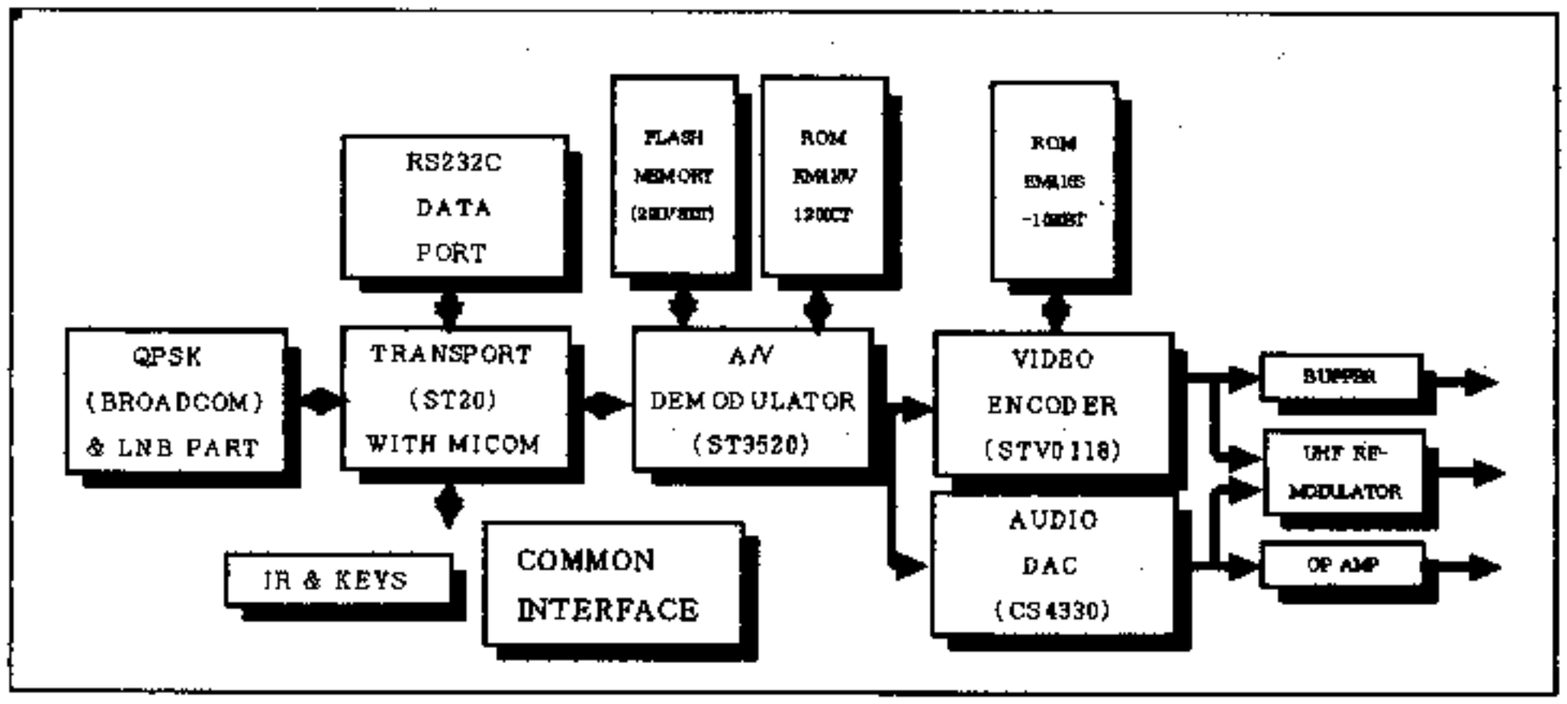
Replacement parts are available through STRONG & CO. (FAR EAST) YOKOHAMA, JAPAN
when ordering replacement parts.
Please use the complete identification number of the part shown later in this manual.
If the identification number is not known, the order should contain the part schematic symbol number, and a descriptions of the part so that the part may be properly identified.

## TECHNICAL SUPPORT

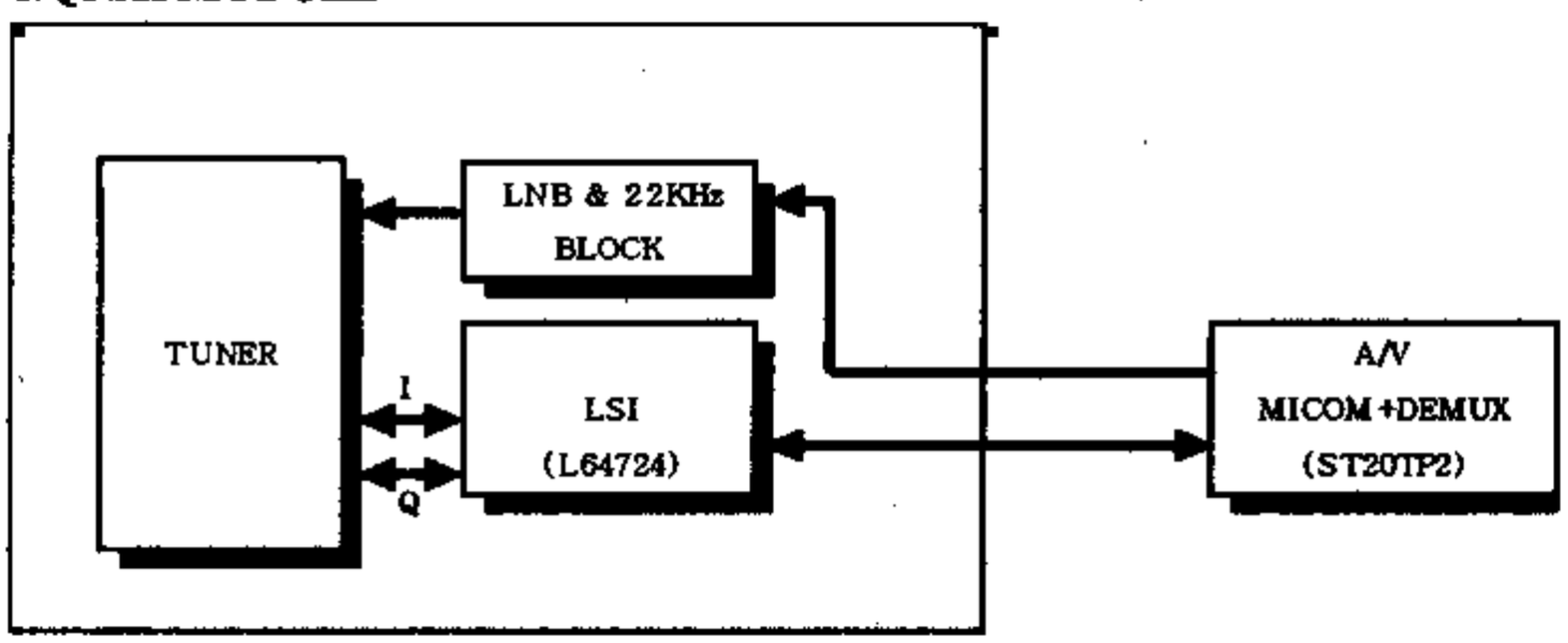
Technical trouble shooting assistance is available through service center appointed by
STRONG & CO. (FAR EAST) YOKOHAMA, JAPAN

# THEORY OF OPERATION

## Entire BLOCK DIAGRAM




## 1.QPSK MODULE




A LNB(Low Noise Block Down Converter) converts the incoming satellite signal from 12GHz down to an intermediate frequency(IF) of 1 GHz to 2 GHz. Then a PLL frequency synthesizer further down converts the signal to a second IF(479.5MHz).

The DEMUX(with microprocessor) adjusts the frequency delivered by this circuit in such a way that the IF signal falls within the bandwidth of the IF surface acoustic wave (SAW) filter. The I/Q down converter translates the IF signal to baseband.

## 2. DEMUX & CPU, CONTROL

A Transport Demultiplexing integrates all audio, video, and data service MPEG-2 transport layer functions, the DEMUX's principle operation is straight forward:

1. A stream of data packed in transport layer format (188 bytes per packet; see figure 2-1) enters the DEMUX IC through its channel decoder interface. The DEMUX system or IC detects the sync byte, which is the first byte of every transport packet header. Once in sync, byte, byte-aligned data is posted to the next stage of processing.
2. The DEMUX parses the incoming data using its Packet ID(PID) processor. Upon user programming the DEMUX extracts the user selected program, audio, and video Packetized Elementary Stream(PES) data, Program Specific Information(PSI), Service Information(SI), and Private Data.
3. The selected audio and video PES layer encoded data stream is output through the DEMUX.

| Header | Payload | Header | Payload | Header | Payload |
|---|---|---|---|---|---|

## 3. A/V DECODING

● Video Compression & Decompression Concepts

The MPEG standards define a format for compressed digital video.

Encoders designed to work within the confines of the standard compress video information, and decoders decompress it. The MPEG algorithms for video compression and decompression are flexible, but generally fit the following criteria:

- Data rates are about 1 to 1.5Mbit/sec for MPEG-1 and up to 15Mbit/sec for MPEG-2. The MPEG-2 A/V Decoder used in SRT 4300 is capable of supporting data rates up to 15Mbits/sec.
- Resolution are about 352 pixels horizontal up to about 288 lines vertical for MPEG-1 and 720 x 576 for MPEG-2(main profile). The A/V Decoder used in SRT 4300 is capable of resolution up to 720 x 576 for either MPEG-1 or MPEG-2.

### 3-1. Video Encoding

For a video signal to be compressed, it must be sampled, digitized, and converted to luminance and color difference signals (Y, Cr, Cb ). The MPEG standard stipulates that the luminance component(Y) be sampled with respect to the color difference signal ( Cr and Cb ) by the ratio of 4:1. That is, for every four samples of Y, there is to be one sub-sample each of Cr and Cb, because the human eye is much more sensitive to luminance components than to color components. Video sampling takes place in both the vertical and horizontal directions. Once video is sampled, it is reformatted, if necessary, into a non-interlaced signal. An interlaced signal contains only part of the picture content( every other horizontal line, for example) for each complete display scan.

The encoder must also choose which picture type is used. A picture correspond to a single frame of motion video, or to a movie frame. There are three picture types:

- Intracoded pictures (I-pictures) are coded without reference to any other pictures.
- Predictive-coded pictures (P-pictures) are coded using motion compensated prediction from the past I or P reference pictures.
- Bidirectionally predictive-coded pictures (B-pictures) are coded using motion compensation from a previous and future I or P-pictures.

A typical coding scheme contains a mixture of I, P, and B-pictures. Typically, an I-picture may occur every half a second, to give reasonably fast random access, with two B-pictures inserted between each pair of I or B-pictures.

### 3-2. Video Decoding

Video decoding is the reverse of video encoding and is intended to reconstruct a moving picture sequence from a compressed, encoded bitstream. Decoding is simple then encoding because there is no motion estimation performed and there are far fewer options. The data in the stream is decoded according to the syntax defined in the MPEG-2 standard. The decoder must first identify the beginning of a coded picture and identify the type of picture, then decode each individual macroblock( a 16 x 16 region of video, corresponding to 16 horizontal pixels and 16 vertical display lines.)within a particular picture. Motion vectors and macroblock types (each of the picture types I, P, and B have their own macroblock types) present in the bitstream, are used to construct a prediction of the current macroblock based on past and future reference pictures that the encoder has already stored. Coefficient data is then inversed quantized and operated on by inverse DCT(Discrete Cosine Transform) process that changes data from the frequency domain to the time space domain. After the decoder processes all of the macroblocks the picture reconstruction is completed. If the picture just reconstructed is a reference picture(I-picture or B-picture), it

replaces the oldest stored reference picture and is used as the new reference for subsequent pictures. The pictures may need to be reordered before they are displayed, in accordance with the display order instead of the coding order. After the pictures are reordered, they may be displayed on an appropriate output device.

### 3-3. System Overview

A/V decoding is for use in digital audio and video-decoding systems based on the MPEG-2 algorithm. It may consider as a "black box" that receives coded audio and video data and produces a decoded audio and video data stream.

## 4. AUDIO/VIDEO OUTPUT(BUFFERING)

Video :

After the output of the video encoder(STV0118) it is buffered to be output for the SCART and UHF modulator.

Audio :

After the output of the OPAMP it is buffered to be output for the SCART and RCA jack and UHF modulator.

## 5. POWER CIRCUITS

Pin Number

1 - GND
2 - 5V ANALOG (650mA) : ± 0.25
3 - GND
4 - 3.3V DIGITAL (800mA) : ± 0.25
5 - 5V DIGITAL (650mA) : ± 0.5
6 - GND
7 - 12V (200mA) : ± 0.5
8 - 7.5V (400mA) : 7.0V ~ 9.0V
9 - 28V (30mA) : ± 1
10 - GND
11 - LNB OUTPUT

Supplies all the power for QPSK Module, output board, and the Main Board.

# DIAGNOSTICS

1. Preparations

   - Personal Computer(With 486 CPU or higher)
   - RS232 Cable for communication
   - OS (Windows3.1 or higher)

2. Setup

   - Connect the 9 pin connector(RS232 Null Modem cable) of IRD(on the back panel) to the serial port of the PC or terminal(115200,N,8,1).
   - Turn on the PC
   - Select Hyper-Terminal from Windows95 or Terminal from Windows 3.1(or Higher Version)
     Select Com1 or 2 port and config the port as below,
     Speed : 115200
     Data Bit : 8
     Parity : None
     Stop Bit : 1
     Control : None
   - Turn on the IRD.

For normal operation the following messages will display on the PC screen,

```
CI DVB ver 1.30 ......
Exist  SW

Initialising Flash ...

Initialising PWM ...
anon flash.c 408> Flash init ..
EVAL-STB2 Reference Firmware
anon pwm.c 140> Clock recovery/PWM init
Version 1.2 of Dec 19 1998 at 04:56:38
                                        .
                                        .
                                        .
PAL_NTSC.... process start....

System  initialised - hit ESC to enter testtool

System  initialised - hit ESC to enter testtool
```

3. Error Messages

- Nothing on the screen(No message)

: PC to UUT communication error -> Check HyperTerminal configurations the speed should be 115200.

Check the pin of MAX202(U701, on the output board)or the Microprocessor(U103)for bad soldering or replace the IC.

4. To DownLoad New S/W version

: Connect the UUT to a PC and open HyperTerminal

Plug In the power cord of the UUT While pressing Power Key on the front Panel.

You should see a message as,

```
Boot Version ..
Ram Clear
```

This means the UUT is set for Programme DownLoad Mode.

The next step is to select Transfer, Send File in the HyperTerminal Menu.

Then select the binary file and choose 1k Xmodem for protocol.

And click send for DownLoad.

# TROUBLE SHOOTING

1. No Power & No composite Video output

   a. Check the input AC voltage

   b. Check fuse.(Rating 250V T2A)

   c. Check the SMPS output pin voltages.(Refer to page 7 for pinouts)

   d. Check T402 connect pin 8 for 12 volts.

   e. Check U401 connector pin 11 for composite video output.

   f. Follow the composite video signal path from starting with U401 to final output the scart connector to find out where the signal has been cut off.

   **If there is no video at this point replace the main PCB.**

2. No Audio

   a. Check pin 5 and 8 of connector U302 for audio signal with an oscilloscope.

   b. Check pin 15 of connector U110

   c. Check IC U301 pin 1 for left audio output and pin 7 for right audio output.

   e. Keep checking the signal path referring to the schematic diagram and find the defective component to replace.

   **This pin must be 'high' (3~3.3V)for normal audio performance.**
   **This pin is 'low' when audio is muted.**

3. No RF output

   a. Check the DC level of I2C(CLK,DATA) line of the RF modulator input with an oscilloscope ,this point always be high(4.4 ~ 5V).

   b. Check the tuning voltage of the modulator pin 1 of connector MOD401 this voltage should be 28 ± 1V.

   Pin 7 & 8 of connector MOD401

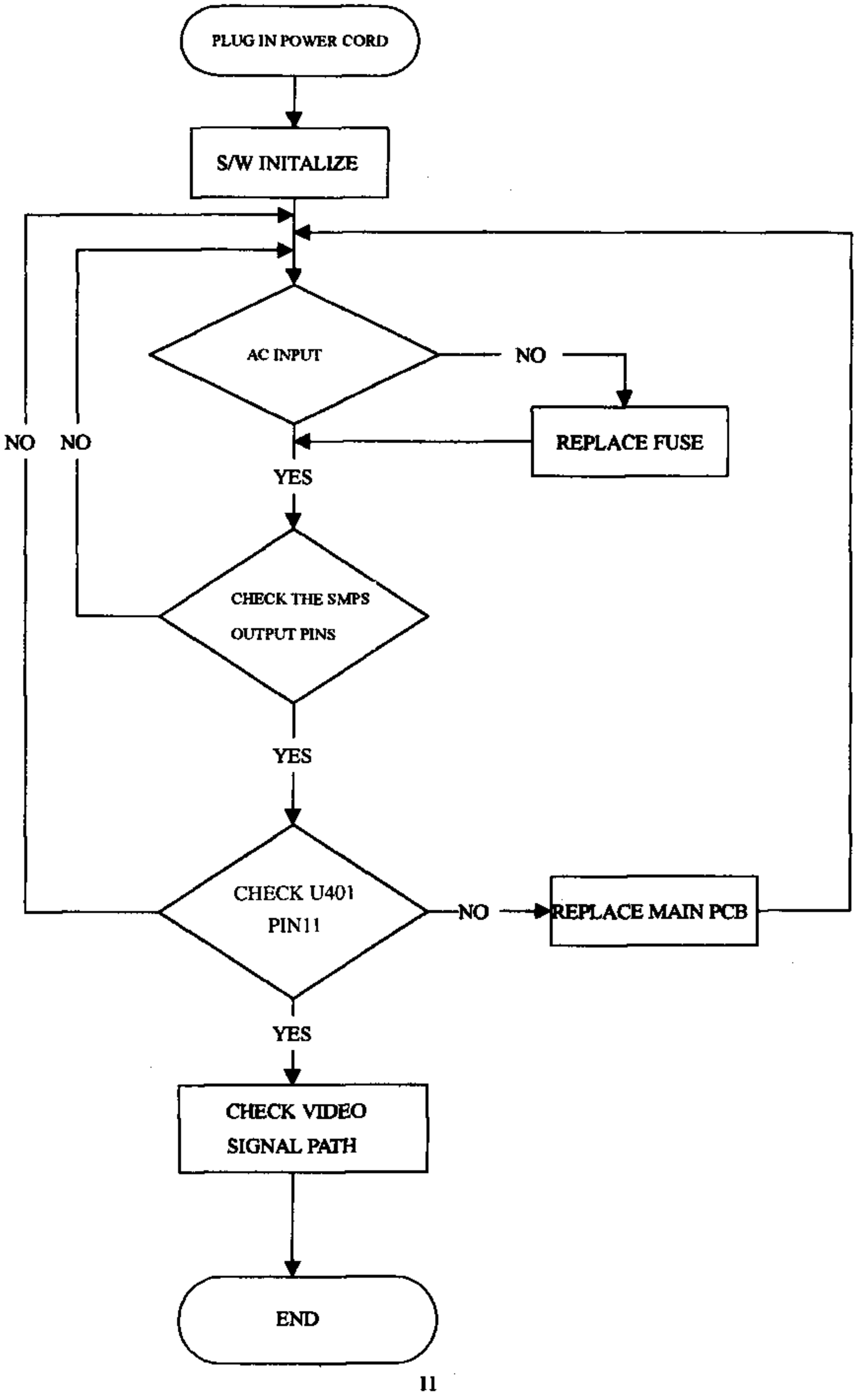
   c. Check pin 4.6 of MOD401 (RF Modulator) this pin should be always 5V

   d. Make sure the audio and video signals are going to the RF modulator input

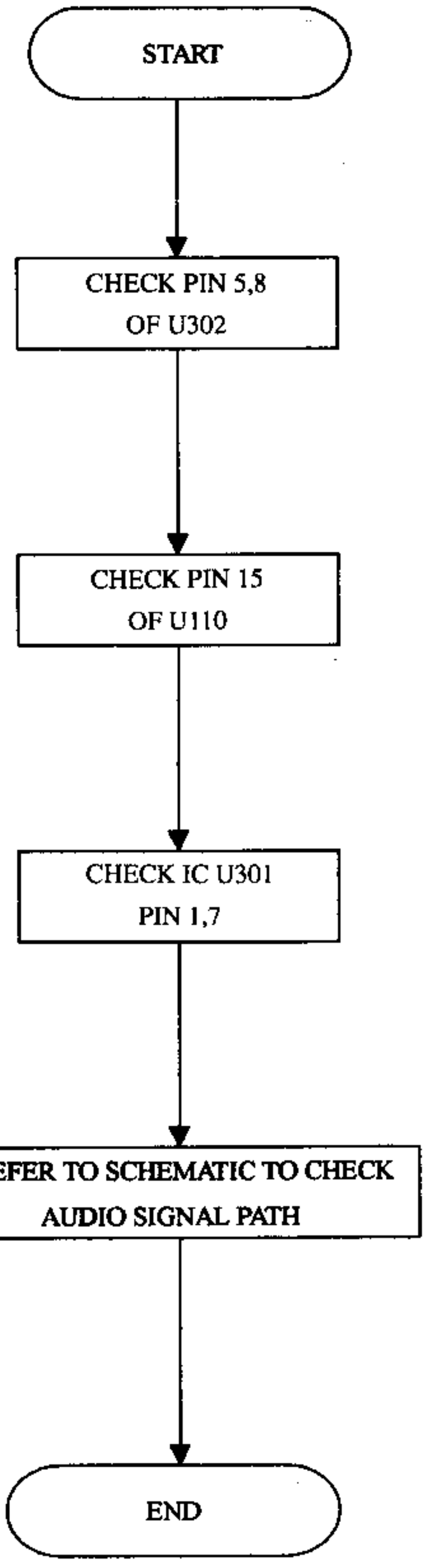
   e. The pins should be 2 for video and 3 for audio(the pin of MOD401 RF modulator).

# FLOW CHARTS

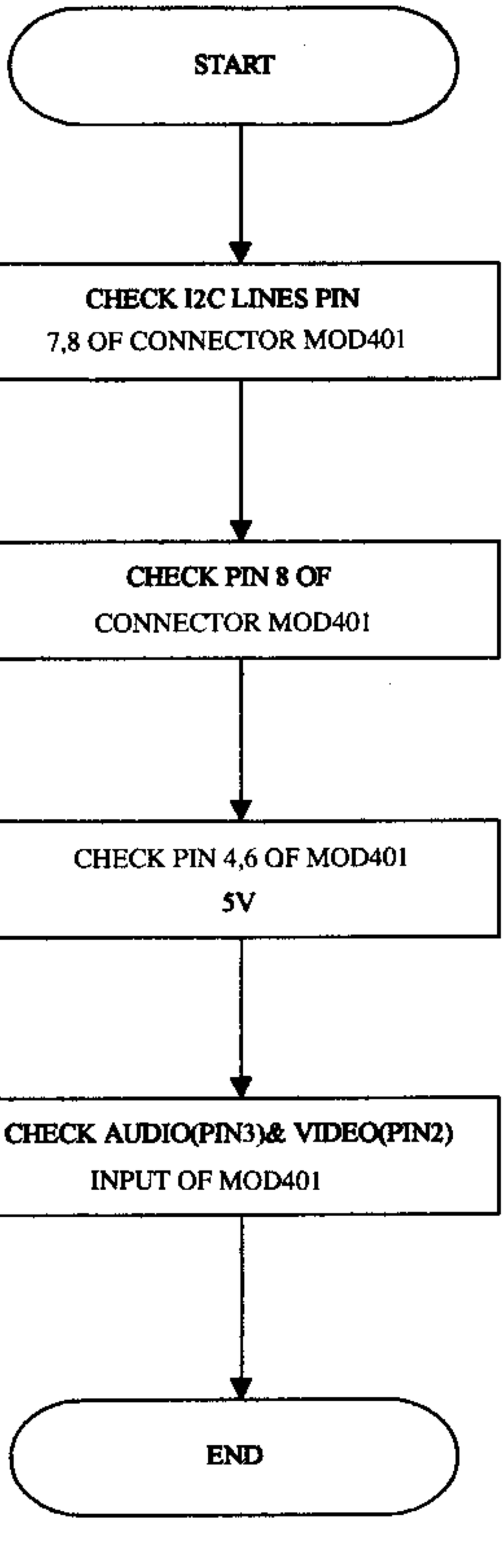
**No Power & No composite Video output**



NO AUDIO


START
CHECK PIN 5,8
OF U302
CHECK PIN 15
OF U110
CHECK IC U301
PIN 1,7
REFER TO SCHEMATIC TO CHECK
AUDIO SIGNAL PATH
END

**NO RF OUTPUT**


START
CHECK I2C LINES PIN
7,8 OF CONNECTOR MOD401
CHECK PIN 8 OF
CONNECTOR MOD401
CHECK PIN 4,6 OF MOD401
5V
CHECK AUDIO(PIN3)& VIDEO(PIN2)
INPUT OF MOD401
END

# PART LIST

| NO. | BOM CODE | LOCATION NO | DESCRIPTION | 갯수 |
|---|---|---|---|---|
| | MF95-10001U | MAIN PCB ASS'Y | | |
| | MF41-00061J | MAIN PCB | | 1 |
| | 3711-000754 | J902 | CONNECTOR-HEADER;20P | 1 |
| | 3709-001099 | CON501 | PCMCIA CONNECTOR: 68PIN, | 1 |
| | 3701-000320 | DB1 | CONNECTOR DB;9P,2R, FEMALE,ANGLE,AUF | 1 |
| | 3701-000245 | DB2 | CONNECTOR DB;9P,2R, MALE,ANGLE | 1 |
| | 3711-001415 | J101 | CONNECTOR-HEADER; NOWALL,2P,1R,2.54mm, STRAIGHT,A | 1 |
| | 3711-003689 | J201 | CONNECTOR ; 1WALL,3P,2.54 | 1 |
| | MF37-00014A | J401 | CONNECTOR; 1WALL,7P,2.54 | 1 |
| | 3711-002687 | J103 | CONNECTOR-HEADER;1 WALL,10P,1R,2.5mm, STRAIGHT,SN | 1 |
| | 3711-000661 | J901 | CONNECTOR-HEADER;1 WALL,12P,1R,2.5mm, STRAIGHT,SN | 1 |
| | MF59-00183Z | MOD401 | RF MODULATOR; RMUP74055FL,8P | 1 |
| | 3722-001210 | T401 (SCART 옆) | JACK-RCA:2P/2C,3.5mm, NI,BLK,NO | 1 |
| | 3722-001230 | T402 | JACK-SCART;SCART,-,S N,BLK,NO | 1 |
| | 2801-003365 | X101 | CRYSTAL-UNIT;27MHz,50 ppm,28-AAM,17pF,35oh m, | 1 |

| NO | BOM CODE | LOCATION NO | DESCRIPTION | 원수 |
|---|---|---|---|---|
| | MF95-18001T | MAIN IC-M ASS'Y | | |
| | 2203-000811 | C102,C434,C101, | C-CERAMIC,CHIP:33pF,5%,50V,NP0,TP,2012,- | 3 |
| | 2203-002016 | C302,C309 | C-CERAMIC,CHIP:390pF,5%,50V,X7R,TP,2012,- | 2 |
| | 2203-000635 | C108 | C-CERAMIC,CHIP;22pF,5%,50V,NP0,TP,2012,- | 1 |
| | 2203-000295 | C107 | C-CERAMIC,CHIP;10pF,5%,50V,NP0,TP,2012,- | 1 |
| | 2203-000618 | C103 | C-CERAMIC,CHIP;22nF,10%,50V,X7R,TP,2012,- | 1 |
| | 2203-000852 | C130 | C-CERAMIC,CHIP;39pF | 1 |
| | 2203-000590 | C407,C417,C422,C427 | C-CERAMIC,CHIP;220pF,5%,50V,NP0,TP,2012,- | 4 |
| | 2203-000267 | C430,C412 | C-CERAMIC,CHIP:10nF,20%,50V,X7R,TP,2012,- | 2 |
| | 2203-000444 | C950,C411,C432 | C-CERAMIC,CHIP:1nF,10%,50V,X7R,TP,2012,- | 3 |
| | 2203-000206 | C105,C106,C112,C113,C114<br>C115,C116,C117,C118,C119<br>C120,C121,C122,C123,C124<br>C125,C126,C127,C128,C181<br>C182,C183,C184,C203,C204<br>C205,C206,C208,C209,C301<br>C305,C401,C403,C405,C406<br>C408,C409,C410,C415,C416<br>C418,C419,C423,C426,C428<br>C450,C501,C502,C503,C504<br>C506,C507,C508,C509,C510<br>C701,C702,C703,C704,C705<br>C706,C707,C708,C709,C710<br>C711,C712,C910,BC01,BC02,<br>BC03,BC04,C185 | C-CERAMIC,CHIP;100nF,10%,50V,X7R,TP,2012, | 73 |
| | | | | |
| | | | | |

| NO. | BOM CODE | LOCATION NO. | DESCRIPTION | 원수 |
|---|---|---|---|---|
| | 2007-000218 | R403,R405,R435,R466,R485<br>R496 | R-CHIP;1.2Kohm,1%,1/10W,DA,TP,2012 | 6 |
| | 2007-000029 | R141,R160,R180,R494,R905<br>R923,R925,R926,R928,L401<br>R511,R140,R201,R202 | R-CHIP;0ohm,5%,1/10W,DA,TP,2012 | 14 |
| | 2007-000766 | R431,R446,R463,R483 | R-CHIP;330ohm,5%,1/10W,DA,TP,2012 | 4 |
| | 2007-000290 | R410,R437,R454,R470 | R-CHIP;100ohm,5%,1/10W,DA,TP,2012 | 4 |
| | 2007-000457 | R411,R413,R429,R445,R462<br>R482 | R-CHIP;18Kohm,5%,1/10W,DA,TP,2012 | 6 |
| | 2007-000586 | R303,R309,R421,R475,R476<br>R490 | R-CHIP;22Kohm,5%,1/10W,DA,TP,2012 | 6 |
| | 2007-000401 | R422 | R-CHIP;150ohm,5%,1/10W,DA,TP,2012 | 1 |
| | 2007-000026 | R423,R424 | R-CHIP;200ohm,5%,1/10W,DA,TP,2012 | 2 |
| | 2007-000300 | R101,R102,R103,R104,R110<br>R111,R113,R114,R115,R116<br>R117,R118,R119,R120,R121<br>R122,R123,R128,R129,R130<br>R131,R132,R133,R134,R135<br>R136,R137,R142,R143,R145<br>R146,R147,R148,<br>R203,R204,R301,R305,R310<br>R316,R412,R453,R468,R473<br>R493,R501,R502,R503,R504<br>R505,R506,R507,R512,R903 | R-CHIP;10Kohm,5%,1/10W,DA,TP,2012 | 53 |
| | 2007-001716 | R125,R126,R127,R138,R139<br>R306,R311,R401,R402,R414<br>R419,R432,R438,R440,R447<br>R450,R451,R455,R459,R464<br>R478,R479,R484,R152 | R-CHIP;4.7Kohm,5%,1/10W,DA,TP,2012 | 24 |
| | 2007-000361 | R415,R439,R456,R477 | R-CHIP;12ohm,5%,1/10W,DA,TP,2012 | 4 |
| | | | | |

| NO. | BOM CODE | LOCATION NO. | DESCRIPTION | 원수 |
|---|---|---|---|---|
| | 2007-001071 | R425,R426 | R-CHIP;6.8Kohm,5%,1/10W,DA,TP,2012 | 2 |
| | 2007-000572 | R207,R428,R443,R460,R481 | R-CHIP;220ohm,5%,1/10W,DA,TP,2012 | 5 |
| | 2007-001166 | R420,R430,R444,R461,R471 R472 | R-CHIP;75ohm,5%,1/10W,DA,TP,2012 | 6 |
| | 2007-000447 | R433 | R-CHIP;180ohm,1%,1/10W,DA,TP,2012 | 1 |
| | 2007-000931 | R434,R448,R465,R474,R480 | R-CHIP;470ohm,5%,1/10W,DA,TP,2012 | 5 |
| | 2007-000565 | R441,R442,R449 | R-CHIP;220Kohm,5%,1/10W,DA,TP,2012 | 3 |
| | 2007-000530 | R452 | R-CHIP;200Kohm,1%,1/10W,DA,TP,2012 | 1 |
| | 2007-001710 | R457,R458 | R-CHIP;15Kohm,5%,1/10W,DA,TP,2012 | 2 |
| | 2007-000468 | R109,R205,R206,R302,R315 R469 | R-CHIP;1Kohm,5%,1/10W,DA,TP,2012 | 6 |
| | 2007-000941 | R304,R308,R313,R314 | R-CHIP;47Kohm,5%,1/10W,DA,TP,2012 | 4 |
| | 2007-000710 | R307,R312 | R-CHIP;3.9Kohm,5%,1/10W,DA,TP,2012 | 2 |
| | 2007-001043 | R124,R510 | R-CHIP;56ohm,5%,1/10W,DA,TP,2012 | 2 |
| | 2007-000757 | R144 | R-CHIP;330Kohm,5%,1/10W,DA,TP,2012 | 1 |
| | 2007-000518 | R149,R150,R151 | R-CHIP;2.7Kohm,5%,1/10W,DA,TP,2012 | 3 |
| | 2007-000282 | R105,R108 | R-CHIP;100Kohm,5%,1/10W,DA,TP,2012 | 2 |
| | 2007-000498 | R107 | R-CHIP;2.2Mohm,5%,1/10W,DA,TP,2012 | 1 |
| | 2007-001118 | R499 | R-CHIP;680ohm,5%,1/10W,DA,TP,2012 | 1 |
| | | | | |
| | | | | |

| NO. | BOM CODE | LOCATION NO. | DESCRIPTION | 원수 |
|---|---|---|---|---|
| | 2007-000210 | R404 | R-CHIP;1.1Kohm,5%,1/10W,DA,TP,2012 | 1 |
| | 2007-000001 | R106 | R-CHIP;68Kohm,5%,1/10W,DA,TP,2012 | 1 |
| | 2007-000451 | R409 | R-CHIP;180ohm,1%,1/10W,DA,TP,3216 | 1 |
| | 2703-000229 | L402,L403,L405,L406 | INDUCTOR-SMD;6.8uH,20%,1.25x2x1.25mm | 4 |
| | 2703-000125 | L301,R495 | INDUCTOR-SMD;INDUCTOR-SMD,10UH | 2 |
| | 0501-000462 | Q302,Q303,Q408,Q410,Q412 Q418,Q406 | TR-SMALL SIGNAL;MMBT2907A,PNP,225mW,SOT-23,TP, | 7 |
| | 0501-000458 | Q301,Q304,Q403,Q404,Q405 Q407,Q411,Q413,Q416,Q417 Q419 | TR-SMALL SIGNAL;KST2222ATF,NPN,350mW,SOT-23,TP | 11 |
| | 0401-000133 | D401,D402,D403,D404,D405 D406 | DIODE-SWITCHING;RLS4148,100V,200mA,500mW,4nS,S | 6 |
| | 0801-001045 | U402,U403 | IC-CMOS LOGIC;74HC4053,MUTIPLEXER,SOP,16P,30 | 2 |
| | 0801-000397 | U101 | IC-CMOS LOGIC;74HC04,INVERTER,SOP,14P,150MIL | 1 |
| | 1201-000167 | U301 | IC-OP AMP;358,SOP,8P,150MIL,DUAL,100V/mV | 1 |
| | 1006-000133 | U701,U702,U703 | SP232ACN | 3 |
| | 1205-001330 | U103 | IC-TRANSMITTER;ST20TP2BX50S,QFP,208,-,PLASTIC | 1 |
| | 1105-001107 | U108,U109 | IC-VIDEO RAM;416V1204,1M*16BIT,SOP,44P,400 | 2 |
| | 1005-001001 | U201 | IC-DECODER;STI3520A,QFP,160P,-,TR,CMOS,PL | 1 |
| | | | | |

| | | | | |
|---|---|---|---|---|
| | 1105-001049 | U202 | IC-DRAM;416S1120,512 KX16BITX2,SOP,50P, | 1 |
| | 1002-001059 | U302 | IC-D/A CONVERTER;CS43 30-KS,18BIT,SOP,8P,25 0MIL, | 1 |
| | 1204-001272 | U401 | IC-ENCODER;STV0118, SOP,28P,291MIL, PLASTIC | 1 |
| | 1203-001026<br>1203-001455 | U902 | IC-POSI.FIXED REG.;33 269,DPAK,3P,265MIL, PLASTIC,3 | 1 |
| | 1107-001033 | U106,U107 | IC-FLASH MEMORY;29LV8 00,512Kx16BIT,SOP,48 P,567 | 2 |
| | 1203-000416 | U901 | IC-RESET;1233,SOT-22 3,4P,-,PLASTIC,-,-, | 1 |
| | 0801-000312 | U904 | IC-CMOS LOGIC;74HC14, SELECTOR/MULTIPLEX, SOP, | 1 |
| | 0405-000117 | VD101,VD102 | DIODE-VARACTOR;1SV21 5,30V,10nA,USC,TP | 2 |
| | 0803-000111 | U102 | IC-LOGIC;74F138 | 1 |
| | 0803-001688 | U104,U105,U110 | IC ; 74LS377 | 3 |
| | 0802-001037 | U501 | IC ;74LVT16245 | 1 |
| | 0802-001039 | U502,U503,U504,U505 | IC ;74LVT16244 | 4 |
| | 1301-001265 | U506 | IC-EPROM;PALCE22V10H-10JC | 1 |
| | 1203-001560 | U5104 | IC ; LTC1472 | 1 |
| | | | | |

| NO. | BOM CODE | LOCATION NO. | DESCRIPTION | 원수 |
|---|---|---|---|---|
| | MF95-14001P | MAIN RADIAL ASS'Y | | |
| | 2401-000038 | C402,C404,<br>CP422,CP424,C951 | C-AL,:470uF,20%,25V,<br>GP,TP,8x11.5mm,- | 5 |
| | 2401-000273 | C104,C109,C110,C111,C201,<br>C202,C207,CP401,CP405,CP406,<br>CP408,CP411,CP412,CP413,<br>CP417,CP419,CP420,CP423,<br>CP427,CP428,CP430,<br>CP435,CP436,CP437 | C-AL,:100uF,20%,16V,<br>-,TP | 24 |
| | 2401-001287 | C303,C306,C308,C310,C311<br>C313,CP402,CP403,CP409,CP410<br>CP414,CP418 | C-AL,:47uF,20%,16V<br>,GP,TP,5*11.5 | 12 |
| | 2401-000408 | C304,CP415,CP416,CP426,C505 | C-AL,:10uF,20%,16V | 5 |
| | 2401-000036 | CP429,CP431 | C-AL,:1000uF,20%,16V | 2 |
| | 2401-000010 | C902,CP404,CP407,CP421 | C-AL,:220uF,20%,16V<br>,GP,TP,8*12 | 4 |
| | 0501-000317 | Q401,Q414,Q421,Q423 | TR-SMALL SIGNAL:KSA92<br>8A-Y,PNP,1W,TO-92 | 4 |
| | 0504-000180 | Q402,Q409,Q415,Q420,Q422 | TR-DIGITAL:DTC114ES,<br>NPN,300mW, | 5 |
| | 2301-000543 | C307,C312 | C-FILM,PEF;1.5nF,10%,<br>100V,TP,8x6.3 | 2 |
| | 3404-001064 | S901 | SWITCH-TACT;12V,50mA,<br>160gF,6.2x6.2x5 | 1 |
| | MF95-16001P | MAIN AXIAL ASS'Y | | |
| | 3301-000287 | BD301,BD401 | CORE-FERRITE BEAD:AA,<br>3.5x1.0x(BC3560) | 2 |
| | ML27-00174A | L410 | INDUCTOR ; 100UH,10 | 1 |
| | 2001-000342 | R408 | R-CARBON:130ohm,5%,1/<br>4W,AA,TP,2.4x6. | 1 |
| | 2001-000034 | R416,R417 | R-CARBON:220ohm,5%,1/<br>4W,AA,TP,2.4x6. | 2 |
| | 2001-000036 | R407,R418,R427 | R-CARBON:330ohm,5%,1/<br>4W,AA,TP,2.4x6. | 4 |
| | | | | |

| NO. | BOM CODE | LOCATION NO. | DESCRIPTION | 원수 |
|---|---|---|---|---|
| | MF95-40001L | FRONT PCB ASS'Y | | |
| | MF41-00061G | FRONT PCB | | 1 |
| | 0703-000113 | U202 | DISPLAY LED ;DA4354W,7SEG | 1 |
| | MF39-00209B | J1 | ASS'Y-CONN,HOUS,0TH<br>-,CHL0640-10,10S,L150,10S | 1 |
| | MF59-00183H | T100 | IR RECEIVER;<br>TSOP1238UU1,-,-,-,-,38KHz | 1 |
| | MF95-42001B | FRONT CHIP MOUNT ASS'Y | | |
| | 2203-000206 | C201,C202 | C-CERAMIC,CHIP;100nF,10%,<br>50V,X7R,TP,2012, | 2 |
| | 0401-000133 | D200,D201,D202,D203,D204,<br>D205,D206,D207 | DIODE-SWITCHING;RLS4148,1<br>00V,200mA,500mW,4nS,S | 8 |
| | 0501-000458 | Q1,Q2,Q3,Q4 | TR-SMALL SIGNAL;KST2222<br>ATF,NPN,350mW,SOT-23,TP | 4 |
| | 2007-000300 | R213 | R-CHIP;10Kohm,5%,1/10W,D<br>A,TP,2012 | 1 |
| | 2007-000468 | R214,R215,R216,R217 | R-CHIP;1Kohm,5%,1/10W,DA,<br>TP,2012 | 4 |
| | 2007-000290 | R218,R219,R220,R221,R222<br>R223,R224,R225 | R-CHIP;100ohm,5%,1/10W,D<br>A,TP,2012 | 8 |
| | 0801-000679 | U201,U203 | IC ; 74HC595,SOP,RESISTOR | 2 |
| | 2007-000033 | JP17,JP18,JP19,JP20,JP21<br>JP23,JP24,JP25 | R-CHIP;0ohm,5%,1/8W,DA,T<br>P,3216 | 8 |
| | MF95-44001L | FRONT RADIAL ASS'Y | | |
| | 3404-001064 | SW200,SW201,SW202,SW203<br>SW204,SW205,SW206,SW207 | SWITCH-TACT;12V,50mA,160<br>gF,6.2x6.2x5mm,SPS | 8 |
| | | FRONT AXIAL ASS'Y | | |
| | 3811-000545 | JP5,JP8,JP22 | JUMPER;DIP | 3 |
| | 3811-000545 | JP1,JP2,JP6,JP7,JP9<br>JP11,JP12,JP13,JP27 | JUMPER;DIP | 9 |
| | 3811-000545 | JP3,JP4,JP10,JP14,JP16<br>JP26 | JUMPER;DIP | 6 |
| | | | | |

| NO. | BOM CODE | LOCATION NO. | DESCRIPTION | 원수 |
|---|---|---|---|---|
| | MF95-20001J | CH PCB ASS'Y | | |
| | MF41-00061M | CH PCB | 양면 | 1 |
| | MF40-00115R | J1 | TUNER-DBS;TBDU38321IA,900-2150,PAL,- | 1 |
| | 1206-000152 | U7 | IC-TIMER;KA555,DIP,8P,300MIL,PLASTIC, | 1 |
| | 1203-000157 | U6 | IC-POSI.ADJUST REG.;317,TO-220,3P,-,PLASTIC,1.2V/3 | 1 |
| | 1203-000273 | U1 | IC-POSI.FIXED REG.;7805,TO-220,3P,-,PLASTIC,4.8/5 | 1 |
| | MF37-00012A | J4 | CONN;LWL0640-11,SR,-,2.54,WHITE,-,- | 1 |
| | 2801-000165 | Y1 | CRYSTAL-UNIT;15MHz,50ppm,28-AAM,16pF,25ohm, | 1 |
| | MF62-00014B | CHANNEL U6 | HEAT-SINK | 1 |
| | 6002-000441 | CHANNEL U6 | BH,+,1,M3,L6,ZPC(BLK),SWRCH18A | 1 |
| | MF39-00230N | J5 | 12P WIRE ;80MM | 1 |
| | 3711-000754 | J3 | 20P CONN | 1 |
| | MF95-28001J | CH CHIP ASS'Y | | |
| | 2203-000206 | C1,C2,C3,C7,C10,C11<br>C12,C13,C14,C15<br>C19,C20,C25,C26,C27<br>C28,C29,C30,C31,C35 | C-CERAMIC,CHIP;100nF,10%,50V,X7R,TP,2012, | 20 |
| | 2203-002278 | C36,C38 | C-CERAMIC,CHIP;100pF,5%,50V,NPO,TP,2012,- | 2 |
| | 2203-000609 | C9 | C-CERAMIC,CHIP;22nF,10%,50V,X7R,TP,2012,- | 1 |
| | 2203-000267 | C37 | C-CERAMIC,CHIP:10nF,20%,50V,X7R,TP,2012,- | 1 |
| | 2203-000429 | C32,C33,C39 | C-CERAMIC,CHIP;18pF,5%,50V,NPO,TP,2012,- | 3 |
| | 2203-000635 | C16 | C-CERAMIC,CHIP;22pF,5%,50V,NPO,TP,2012,- | 1 |
| | | | | |

| NO | BOM CODE | LOCATION NO | DESCRIPTION | 数量 |
|---|---|---|---|---|
| | 2203-000483 | C17,C18,C21 | C-CERAMIC,CHIP:1UF,+80-20%,25V,Y5V,TP,3216,- | 3 |
| | 2404-000201 | C5,C6 | C-TA,CHIP;22UF,20%,6.3V,TP,6032 | 2 |
| | 2404-000235 | C4,C8,C22 | C-TA,CHIP;4.7UF,20%,16V,TP,3528 | 3 |
| | 2703-000125 | L1 | INDUCTOR-SMD;INDUCTOR-SMD,10UH | 1 |
| | 2007-000308 | R9 | R-CHIP;10ohm,5%,1/10W,DA,TP,2012 | 1 |
| | 2007-000395 | R27 | R-CHIP;150Kohm,5%,1/10W,DA,TP,2012 | 1 |
| | 2007-000457 | R24 | R-CHIP;18Kohm,5%,1/10W,DA,TP,2012 | 1 |
| | 2007-000468 | R11,R13 | R-CHIP;1Kohm,5%,1/10W,DA,TP,2012 | 2 |
| | 2007-000477 | R12 | R-CHIP;1Mohm,5%,1/10W,DA,TP,2012 | 1 |
| | 2007-000518 | R3 | R-CHIP;2.7Kohm,5%,1/10W,DA,TP,2012 | 1 |
| | 2007-000572 | R5,R6,R7 | R-CHIP;220ohm,5%,1/10W,DA,TP,2012 | 3 |
| | 2007-000026 | R26 | R-CHIP;200ohm,5%,1/10W,DA,TP,2012 | 1 |
| | 2007-000586 | R19 | R-CHIP;22Kohm,1%,1/10W,DA,TP,2012 | 1 |
| | 2007-000931 | R2,R23 | R-CHIP;470ohm,5%,1/10W,DA,TP,2012 | 2 |
| | 2007-000766 | R17 | R-CHIP;330ohm,5%,1/10W,DA,2012 | 1 |
| | 2007-000300 | R15,R16,R20,R21<br>R28,R30,R14 | 10Kohm,5%,1/10W,AA,TP,2012 | 7 |
| | 2007-000774 | R25 | 33Kohm,5%,1/10W,AA,TP,2012 | 1 |
| | 2007-000830 | R8 | 39Kohm,5%,1/10,AA,TP,2012 | 1 |
| | | | | |

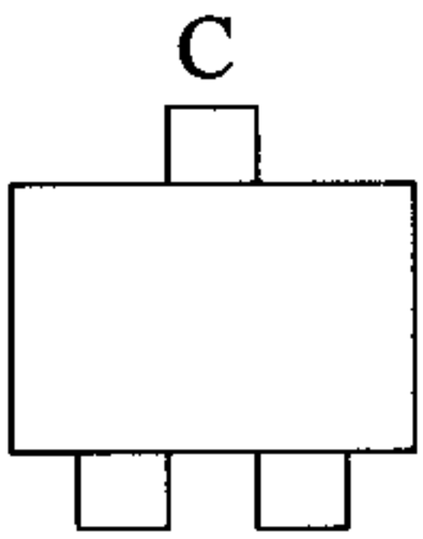
| NO. | ITEM CODE | LOCATION NO. | DESCRIPTION | 원수 |
|---|---|---|---|---|
| | 2007-001716 | R4,R10 | R-CHIP;4.7Kohm,5%,1/10W,DA,TP,2012 | 2 |
| | 2007-000981 | R18 | 5.6Kohm,5%,1/10W,AA,TP,2012 | 1 |
| | 0501-000458 | Q11 | TR-SMALL SIGNAL;KST2222ATF,NPN,350mW,SOT-23,TP | 1 |
| | 0501-000462 | Q1 | TR-SMALL SIGNAL;MMBT2907A,PNP,225mW,SOT-23,TP, | 1 |
| | 0801-002384 | U5 | IC-ANALOG SWITCH;HC4066BD,BILATERAL CMOS,SOP,14 | 1 |
| | 1204-001391 | U4 | IC-DECODER ; L64724,QFP,100P | 1 |
| | 1203-001026<br>1203-001455 | U2,U3 | IC-POSI.FIXED REG.;33269,DPAK,3P,265MIL,PLASTIC,3 | 2 |
| | | CH RADIAL ASS'Y | | |
| | 2401-000050 | C34 | C-AL,;10uF,20%,16V,GP,TP | 1 |
| | 0501-000317 | Q3,Q6,Q9 | TR-SMALL SIGNAL;KSA928A-Y,PNP,1W,TO-92L,TP,160 | 3 |
| | 0504-000180 | Q2,Q4,Q5,Q7,Q8,Q10 | TR-DIGITAL;DTC114ES,NPN,300mW, | 6 |
| | | CH AXIAL ASS'Y | | |
| | 2001-000044 | R22,R29,R31 | R-CABON;1.2Kohm,5%,1/4W,AA,TP,2.4x6.4m | 3 |
| | 3301-000287 | BD1,BD2,BD3,BD4,BD5,BD6 | CORE-FERRITE BEAD:AA,3.5x1.0x6.0mm,1500,2400G(BC3560) | 6 |
| | 1404-000196 | X1 | THERMISTOR-PTC;0.75ohm,-,-,60V,500mA | 1 |
| | 0402-000514 | D1 | DIODE-RECTIFIER;BYW32,200V,2A,SOD-57 | 1 |
| | 0402-000129 | D2 | DIODE : IN4003 | 1 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

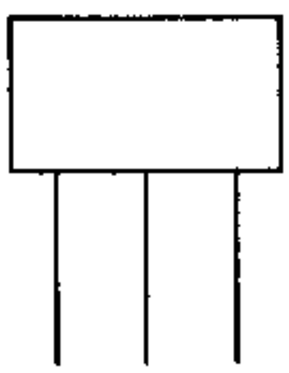
| NO. | BOM CODE | LOCATION NO. | DESCRIPTION | 원수 |
|---|---|---|---|---|
| | MF95-60001C | SUB PCB ASS'Y | | |
| | MF41-00061K | | SUB PCB | 1 |
| | MF37-00033A | S1 | JR-21A7SC,DR,21,2.54, BLACK | 1 |
| | 3722-000475 | J1 | JACK-DC POWER | 1 |
| | MD39-00007A | J2 | 7P, 80mm, | 1 |
| | MF95-64001B | SUB RADIAL ASS'Y | | |
| | 0501-000317 | Q2 | TR-SMALL SIGNAL;KSA928A-Y,PNP,1W,TO-92L,TP,160 | 1 |
| | 0504-000180 | Q1 | TR-DIGITAL;DTC114ES,NPN,300mW, | 1 |
| | | SUB AXIAL ASS'Y | | |
| | 2001-000044 | R2 | R-CABON;1.2Kohm,5%,1/4W, AA,TP,2.4x6.4m | 1 |
| | 0401-000005 | D1,D2 | DIODE ; 1N4148,DIP | 2 |

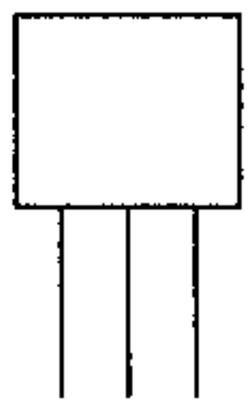
| NO. | BOM CODE | LOCATION NO. | DESCRIPTION | VENDOR | 원수 |
|---|---|---|---|---|---|
| PACKING | | | | | |
| | 4301-000115<br>4301-001005 | BATTERY-ALKALINE<br>BATTERY-ZN | 1.5V,AAA,<br>1.5V,AAA,10.5*44.5 | 서통 | 2<br>2 |
| | MD68-00103A | bar -cord | | 삼광 | 3 |
| | MF39-00229J | CABLE-PAL | 3C2V,-,-,L1500,-,1S,-,BLK,<br>-,-, | ksetc | 1 |
| | MF59-00185Y | REMOCON | SRT4300 | 삼진 | 1 |
| | | MANUAL | | 삼성 | 1 |
| | MF39-00230D | RCA CABLE | | | 1 |
| | MF69-00234Z | PACKING-BUFFER(L) | EPS,292x103x103,DSR-2000,-,<br>-,- | DHSGI | 1 |
| | MF69-00235A | PACKING BUFFER(R) | EPS,292x103x103,DSR-2000,- | DHSGI | 1 |
| | MF69-00239M | PACKING-GIFT BOX;<br>SRT4300 | | 대동칼<br>라인쇄 | 1 |
| | MF69-00240G | PACKING CB BOX | | 삼성산<br>업사 | 0.25 |

| NO. | DCM CODE | LOCATION NO. | DESCRIPTION | VENDOR | 원수 |
|---|---|---|---|---|---|
| 완 성 | | | | | |
| | MF39-00100A | POWER CORD | -,-,2S,L1830,-,-,-,-,-,-,-,-,- | 국제 통신 | 1 |
| | 6021-001002 | TUNER | NUT-HEXAGON;2C,M3/8-32UF | 금강 | 2 |
| | 6031-000524 | TUNER | WASHER-PLAIN;UNF,ID9.8 | 금강 | 2 |
| | 6103-000127 | SMPS 트랜스 밑면 | SUPPORTER,L6.5,BLK | 유일 | 1 |
| | 6502-001013 | CABLE CLAMP | DACH-1,ID10,T6.8,NYLON66, BLK | 동아 | 1 |
| | MF72-00158A | INSULATOR | PC | 유일 | 1 |
| | 6002-000440 | GOLD FOOT에 사용 | RWH,+,2,M3,L8,ZPC(BLK), SWRCH18 | 삼풍 | 2 |
| | 6002-000440 | black FOOT에 사용 | RWH,+,2,M3,L8,ZPC(BLK), SWRCH18 | 삼풍 | 2 |
| | MF70-00137H | CHASSIS | T1.0,358.8x240x59.2,DSR-2 | 신흥 | 1 |
| | MF62-00014C | HEAT SINK | 64724 (QPSK IC) 부착용 | | 1 |
| | MF70-00136A | COVER | SECCT0.6,366.8x240.8x61.9, DSR- | 신흥 | 1 |
| | MF70-00137D | REAR | SECC T0.6,360.2x58.4x11.9, DSR- | 신흥 | 1 |
| | MF39-00104E | FLAT CABLE | 20P | KSETC | 1 |
| | MF44-00001G | SMPS | 220V,1.3A,50-60HZ,FET,197x198x | INSUNG | 1 |
| | MF72-00156S | HOUSING FRONT ASS'Y | | | 1 |
| | 6002-000564 | 4*8 | BH,+,2,M4,L8,BLK,SWRCH18A | SPSNIS | 5 |
| | 6002-000441 | 3*6 | BH,+,1,M3,L6,ZPC(BLK),SWRCH 18A | SPSNIS | 19 |
| | 6104-000118 | FOOT | USR1500,T10.5,BLK,NEOPRENE, - | 유일 | 2 |
| | 6104-000119 | FOOT | USR1500,T11.3,YEL,ABS+EVA,- | 유일 | 2 |

## TRANSISTOR PINOUTS




| C114,A928 | 2N3906,PN2222 |
|---|---|

## SMPS PINOUTS

1 – GND

2 – 5V ANALOG (650mA) : ±0.5V

3 – GND

4 – 3.3V DIGITAL (800mA) : ±0.25

5 – 5V DIGITAL (650mA) : ±0.5V

6 – GND

7 – 12V (200mA) : ±0.5V

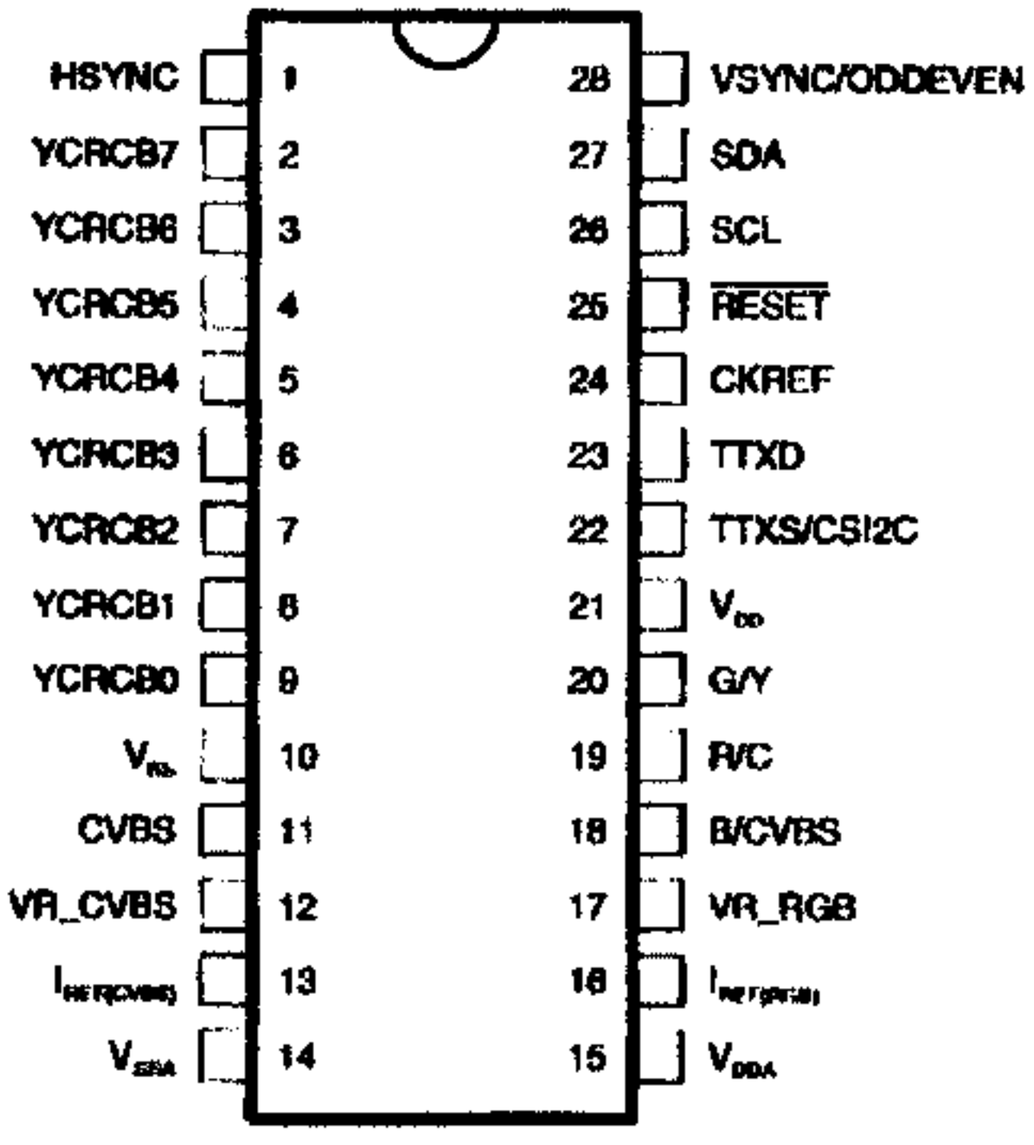
8 – 7.5V (400mA) : 7.0V ~ 9.0V

9 – 28V (30mA) : ±0.5V

10 – GND

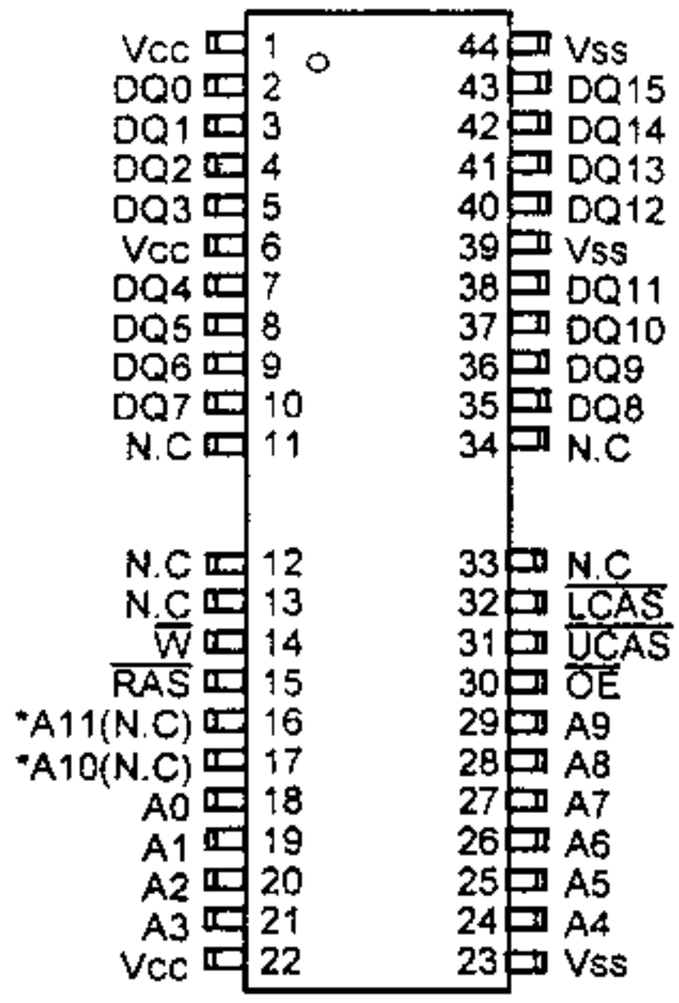
11 – LNB OUTPUT

# IC PINOUTS



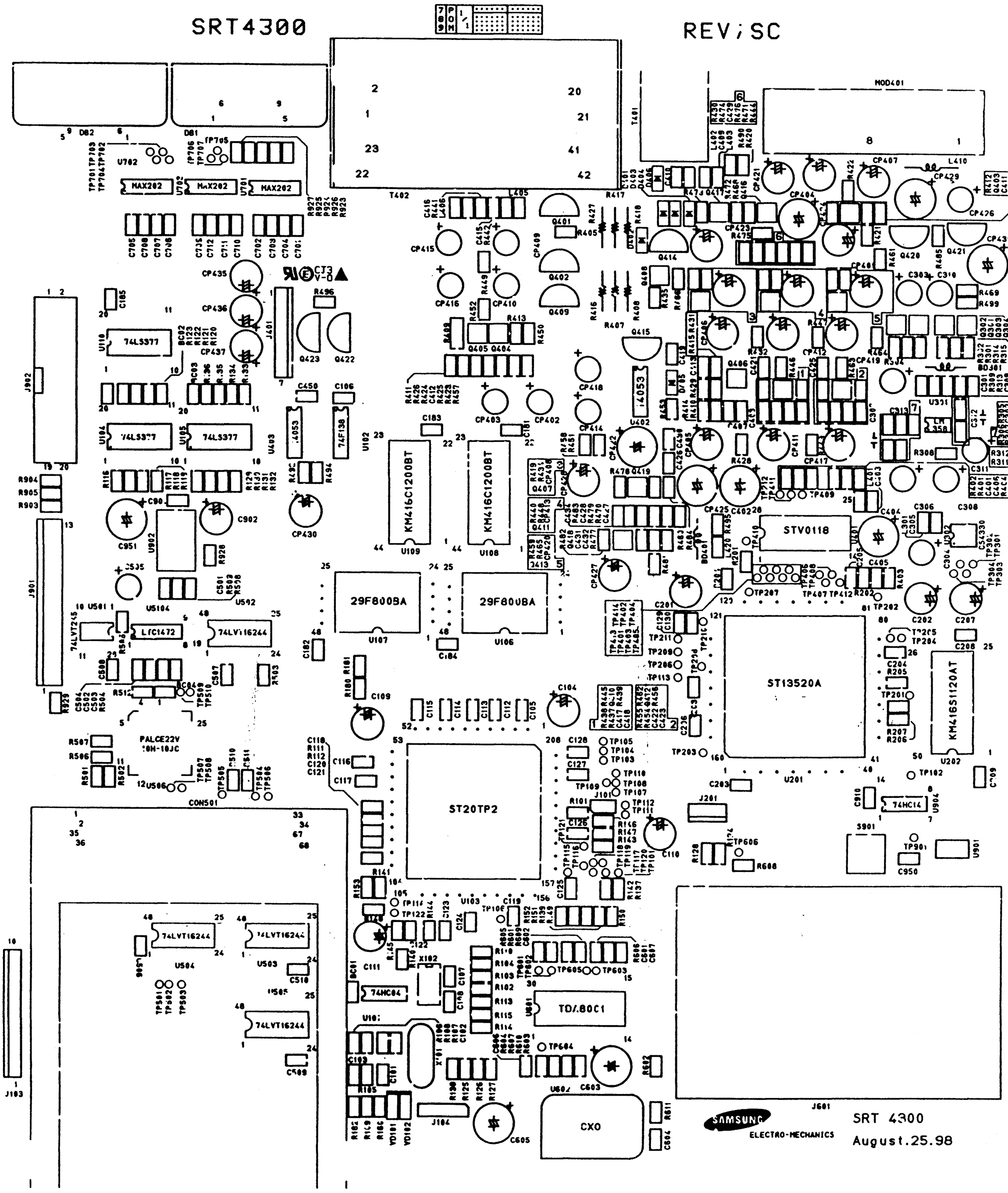

**STV0118**

•KM416C/V10(2)00CT

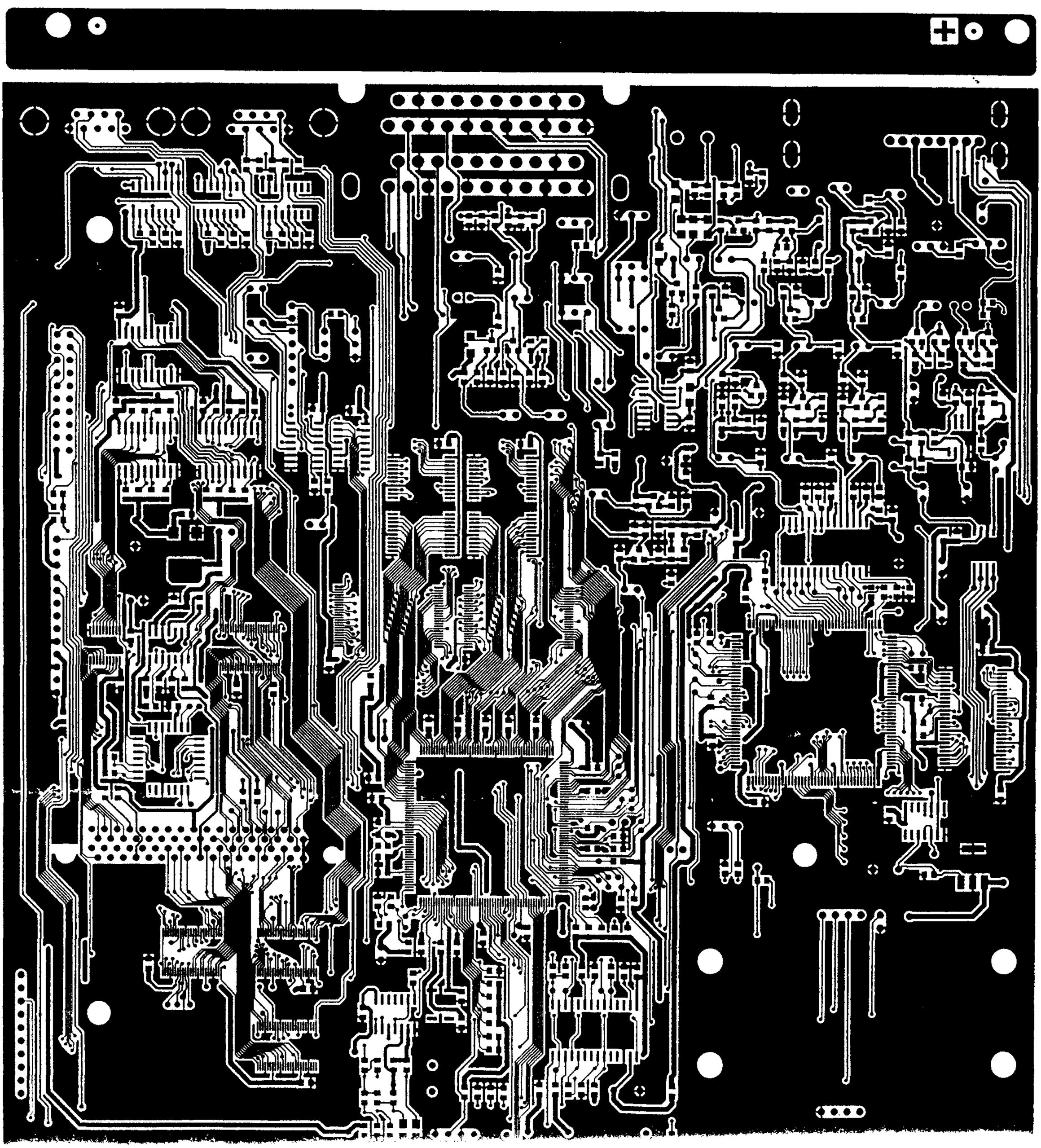


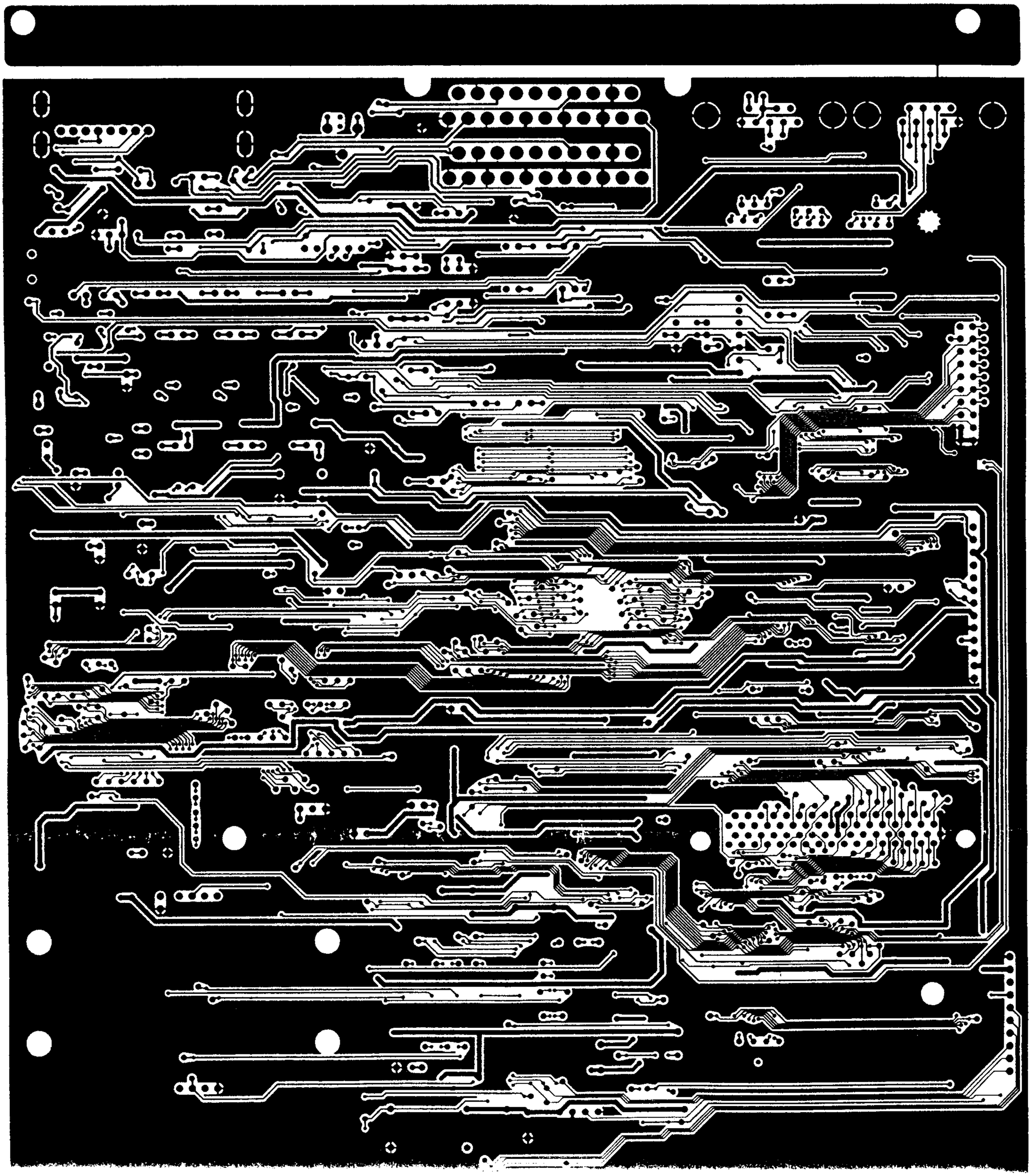
# SRT4300

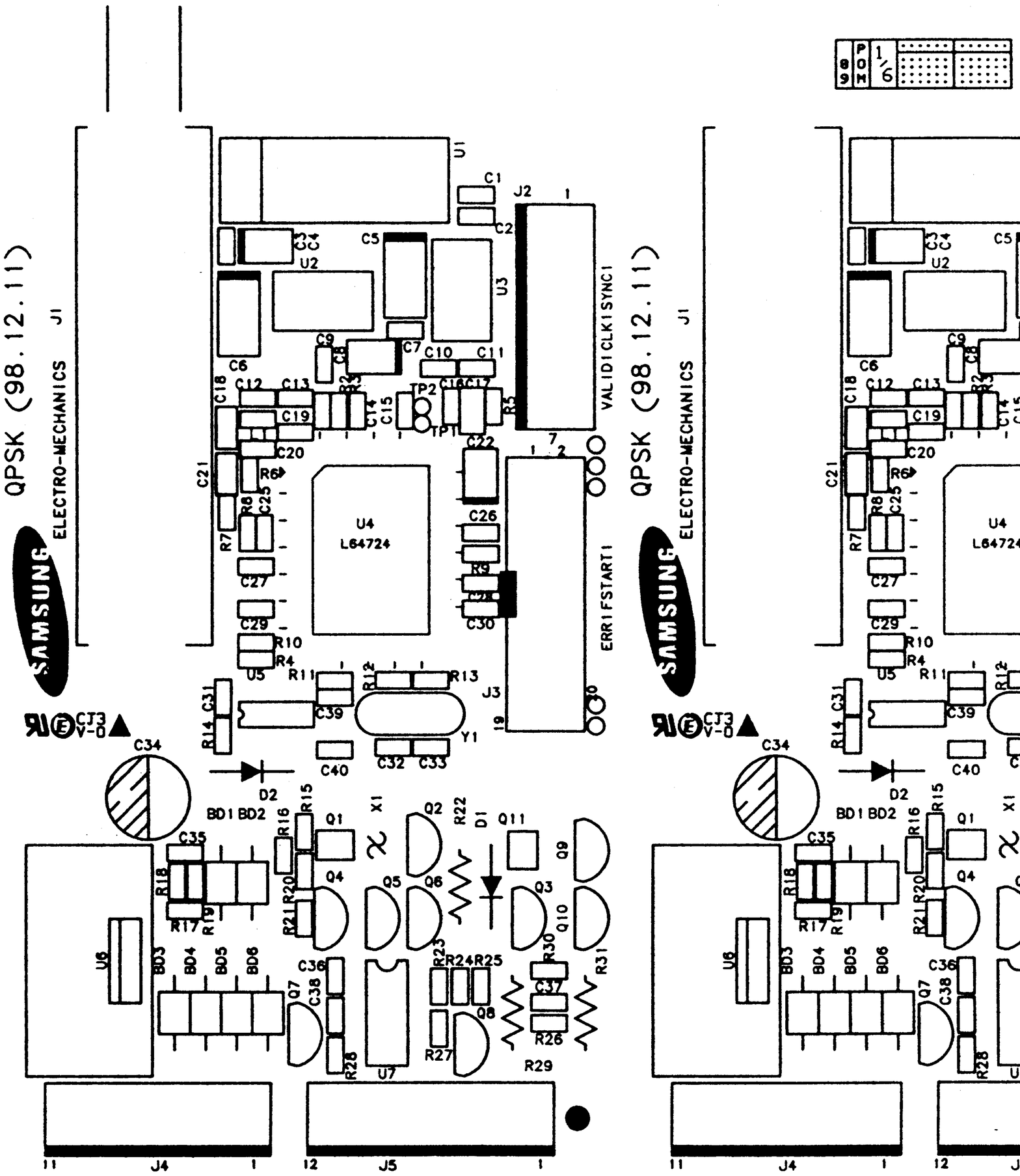
REV;SC




101/SRT4300/D01-365-SC/COMP/ dm/98.10.19 CAM;KBS R/T;





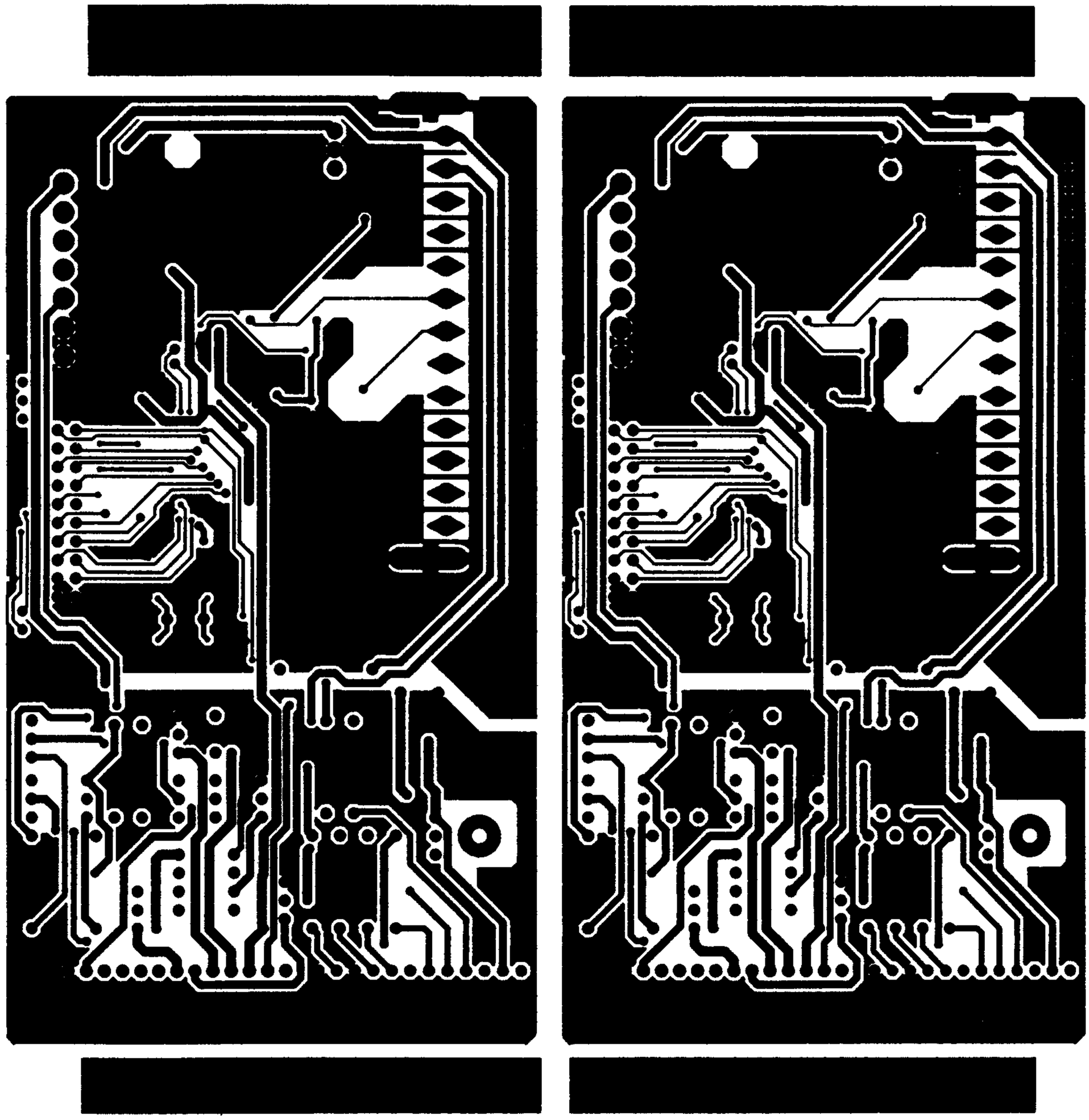



# SRT 4300 QPSK

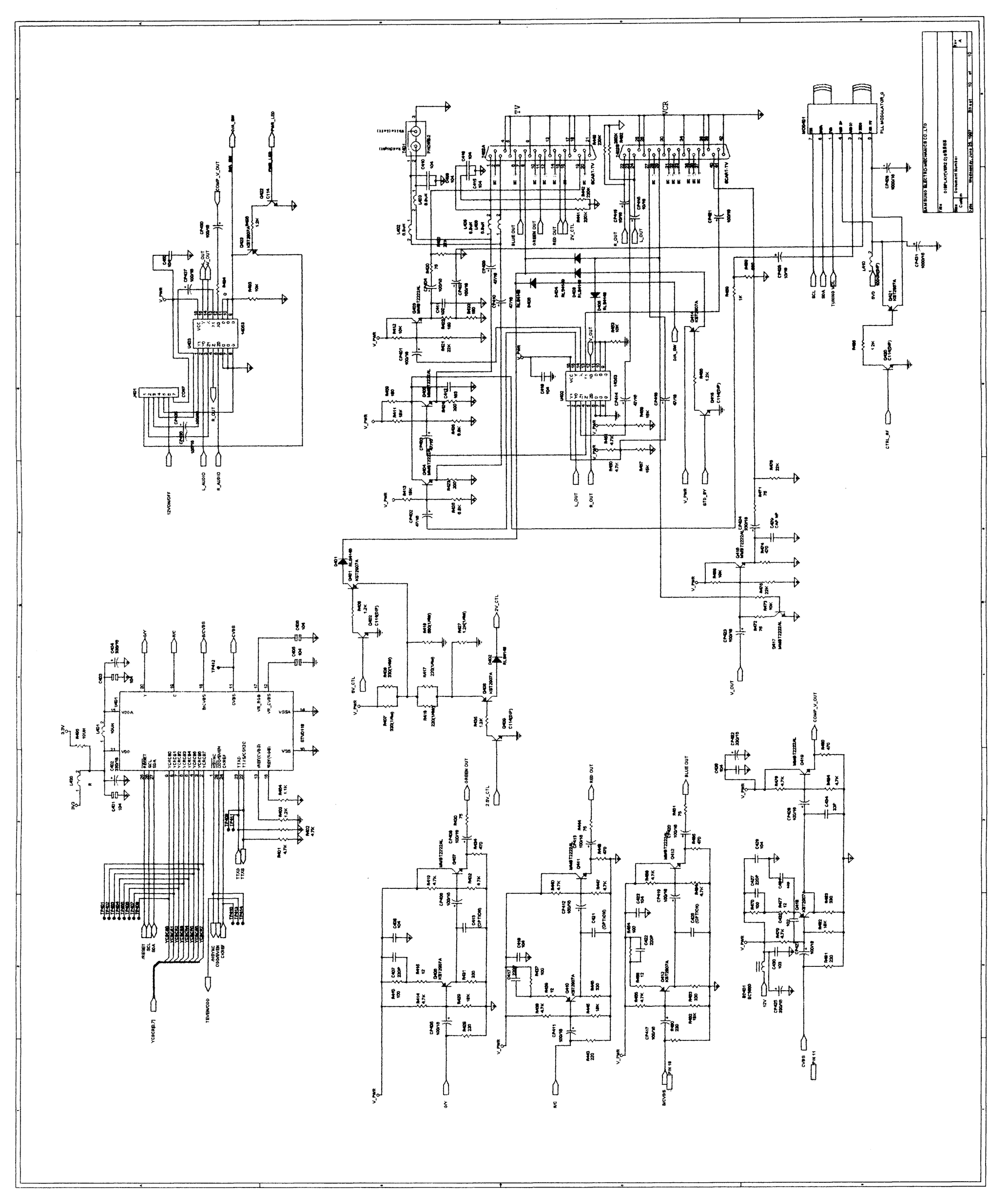
# REV;SF

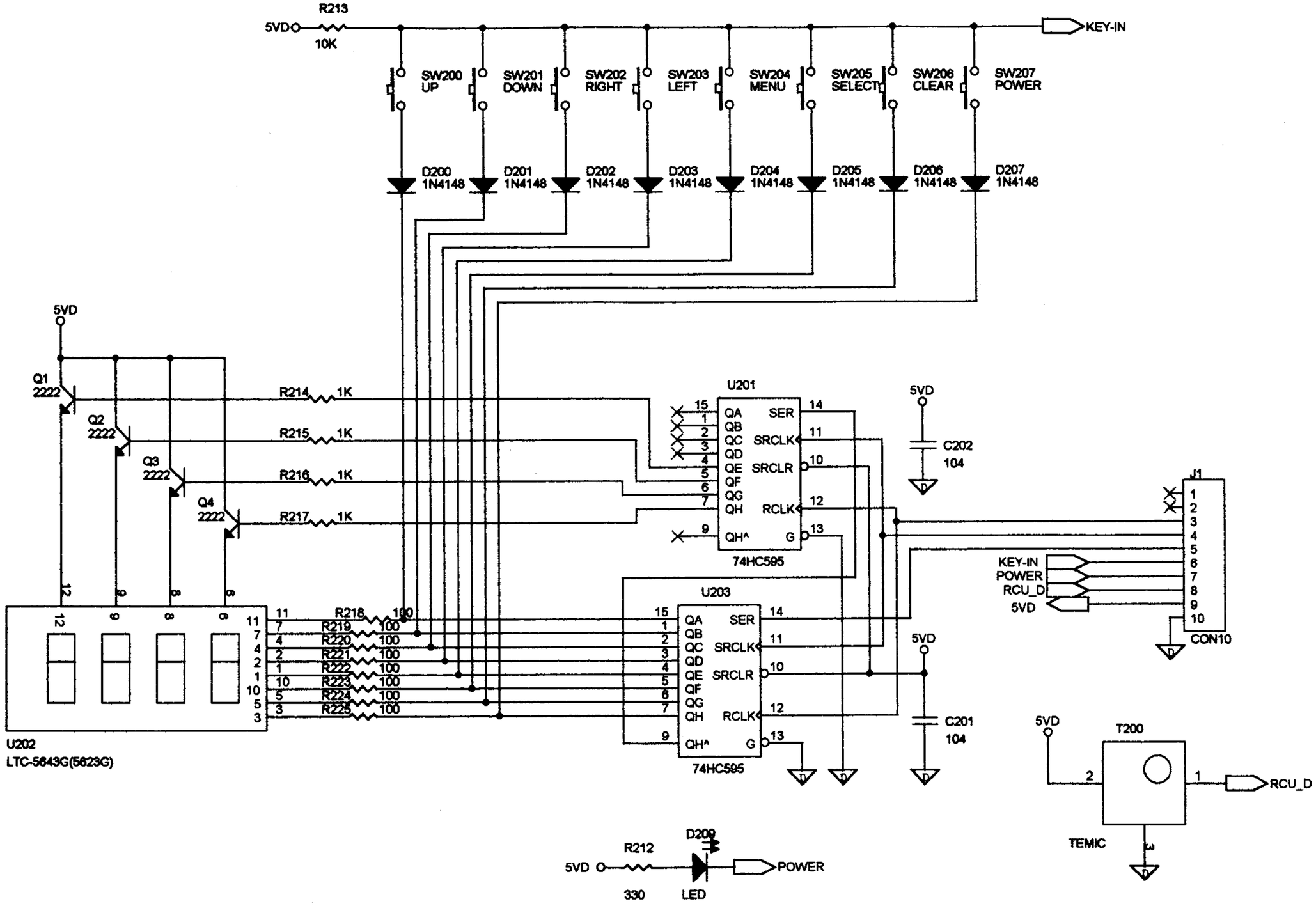
101/SRT 4300 QPSK/D01-366-SF/COMP/ dm/98.12.14

101/SRT 4300 QPSK/D01-366-SF/COMP/ dm/98.12.14



101/SRT 4300 DPSK/DQ1-255-SF/SOLID/ dm/98 12 14


SAMSUNG ELECTRO-MECHANICS CO.,LTD
DISPLAY(VER2.0)(BBS)
Document Number
Wednesday, June 25, 1997
TV
VCR
PLL MODULATOR_G
COMP_V_OUT
PWR_LED
DVA_SW
12VONOFF
L_AUDIO
R_AUDIO
CONF
BLUE OUT
GREEN OUT
RED OUT
2V_CTL
8V_CTL
2.5V_CTL
V_PWR
L_OUT
R_OUT
STD_BY
SCL
SDA
TUNING VT
SVO
CTRL_AV
YCBCR[0..7]
TEVENODD
RESET
VSSA
VSS
VDDA
VDD
CVBS
BVCVBS
PIN 11
PIN 19




| | | |
|---|---|---|
| Title | 4-DIGIT DISPLAY | |
| Size A4 | Document Number TELEFONICA | Rev 0 |
| Date: Tuesday, July 22, 1997 | Sheet 1 of 1 | |