TCL ELECTRONICS LTD

ALIGNMENT PROCEDURE

SYSTEM: PAL, SECAM and NTSC (AV)

MODEL: 29” Philips Chassis

ISSUE DATE: 1 September, 1999

VER 1.1

Prepared by: Kwok Chun Wah

1 B+ voltage adjustment

1.1 Receive a grey scale and color bar signal and set all the analogue setting to middle (standard).

1.2 Adjust VR830 until B+ voltage is 140V±0.5V.

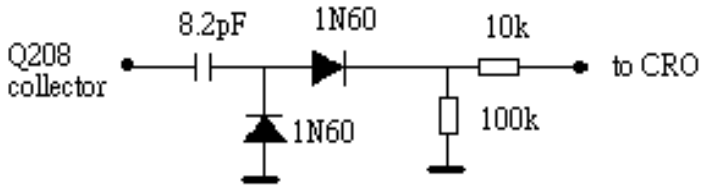
2 RF AGC adjustment

2.1 Receive a 80dB grey scale signal and set all the analogue setting to middle (standard).

2.2 Press the factory key & AGC key to select the AGC item (address 13H) in the factory setting mode and set it to a value 02.

2.3 Connect the following detector to the Collector terminal of Q208 and measure the output of the detector using a CRO

2.4 Adjust the AGC item until the output of the detector (Vpp) become 0.8V~0.9V.



The detector circuit

3 Adjustment of screen voltage

1. Receive a 8 steps grey scale pattern and set all the analogue setting to middle.
2. Press the factory key and accelerate key.
3. Measure the cutoff voltage at CRT KG terminal.
4. By adjust the “SCREEN VR” on the flyback transformer, set the cutoff voltage to 172V~173V.
5. Receive a black signal (only have sync. signal but no pattern)
6. Press the factory key and accelerate key again.
7. Measure the black level voltage at CRT KG terminal.
8. By adjust the “SCREEN VR” on the flyback transformer, set the black level voltage to 162V±3V.

4 PAL signal geometry setting

1. Receive a PAL cross & hatch pattern.
2. Press the factory key together with the field or line key, you can find the geometry setting item.
3. Adjust the geometry by setting the follow data.

HOR. SHIFT	address: 03
VERT. SHIFT	address: 0B
VERT. SLOP (linearity)	address: 08
VERT. AMP. (amplitude)	address: 09
S-CORRECT	address: 0A

5 NTSC signal geometry setting

1. Receive a NTSC cross & hatch pattern.
2. Repeat the steps in PAL geometry setting.

6 East / West pincushion adjustment

1. Receive a PAL cross & hatch pattern.
2. Adjust VR351 until no pincushion distortion

7 Horizontal amplitude adjustment

1. Receive a PAL cross & hatch pattern.
2. Adjust VR350 to set the horizontal amplitude.

8 South / North pincushion adjustment

1. Receive a PAL cross & hatch pattern.
2. Adjust L710 until no pincushion distortion

9 White balance adjustment

1. Receive a white pattern.
2. Measure the color temperature of the CRT.
3. If the color temperature is within the range 9300K+31MPCD to 9300K-15MPCD, there is no need to re-adjust the white balance.
4. If the white balance is outside the range, press the factory key and the white balance key and you can find the Red-Drive, Green-Drive, Blue-Drive. Then adjust the white balance according to the follow data:

X = 0.284+/-0.003

Y = 0.299+/-0.016

PRODUCT SPECIFICATION

MODEL：EC 2911

A: GENERAL SPECIFICATION:

1: CRT

- ☐ 14"_____
- ☐ 20"_____
- ☐ 21"_____
- ☐ 25"_____
- ☒ 29"_____
- ☐ 34"_____
- ☐ OTHER_____

2: CHASSIS :

- ☐ NICAM STEREO
- ☒ I^2C Chassis
- ☒ S.VHS
- ☐ ANALOG
- ☒ SURROUND SOUND
- ☐ GERMAN STEREO
- ☐ TELETEXT
- ☒ OTHER ON/OFF/RESTRICT TIMER, COMB-FILTER, AV STEREO

3: CPU:

- ☐ TSB M5C01
- ☐ TSB M5C03
- ☐ TSB M5ENG
- ☐ TSB M6/M6A
- ☐ TSB M7/M7A
- ☐ TSB M8A
- ☐ TSB M8B
- ☐ TSB CTS-654A
- ☐ TSB M2A
- ☐ SS M4F
- ☐ PHIL.CTV 222S
- ☒ MIT.(2911)
- ☐ SIE SDA 5252
- ☐ OTHERS _____

4: TV BROADCASTING SYSTEM AND COUNTRY

- ☐ PAL-1
- ☒ PAL-BG
- ☒ PAL-DK
- ☒ SECAM-BG
- ☐ SECAM-L
- ☒ SECAM-DK
- ☐ PAL-N/M
- ☐ NTSC-M

5：SCANNING LINES AND FREQUENCIES

- ☐ 625 LINES 15.625KHz 50Hz
- ☐ 525 LINES 15.75KHz 60Hz
- ☒ 525/625 LINES 15.625KHz /15.75KHz 50/60Hz

6：COLOUR SUB-CARRIER

- ☒ 4.433MHz
- ☒ 3.579MHz
- ☐ 3.58MHz

7：INTERMEDIATE FREQUENCIES

- ☐ PICTURE 39.5MHz
- ☐ SOUND 6.0MHz
- ☒ PICTURE 38.9MHz
- ☒ SOUND5.5MHz
- ☐ PICTURE 38.0MHz
- ☒ SOUND 6.5MHz
- ☐ PICTURE 45.75MHz
- ☐ SOUND 4.5MHz
- ☐ OTHER_____
- ☐ AM SOUND 6.5MHz

8：POWER CONSUMPTION：

- ☐ 65W
- ☐ 70W
- ☐ 75W
- ☐ 80W
- ☐ 110W
- ☐ 120W
- ☐ 130W
- ☒ 140W
- ☐ 180W
- ☐ 190W
- ☐ OTHER_____

9：POWER SOURCE：

- ☐ AC 100 - 120V 50/60H_Z+/-10%
- ☒ AC 180 – 240V 50/60Hz +/-10%
- ☐ AC 110V-240V 50/60H_Z+/-10%
- ☐ OTHER_____

10：AUDIO OUTPUT POWER（7%THD）

- ☐ 1.5W (mono)
- ☐ 2W (mono)
- ☐ 1.5W + 1.5W (R + L)
- ☐ 2W + 2W (R + L)
- ☒ 6W + 6W (R + L)
- ☐ 8W + 8W (R + L)
- ☐ OTHER_____

11：AERIAL INPUT IMPEDANCE

- ☒ 75 OHM UNBALANCED DIN JACK ANT.INPUT
- ☐ 75 OHM UNBALANCED F TYPE ANT.INPUT FOR NTSC
- ☐ 300 OHM BALANCED（TWO TERMINALS ANT.INPUT）
- ☐ OTHER_____

B：BASIC FEATURES OF CONTROLLER

1：CHANNEL TUNING METHOD

- ☒ VOLTAGE SYNTHESIZER （V.S.）
- ☐ PLL FREQUENCY SYNTHESIZER （F.S.）

2：PRESETTABLE PROGRAM

- ☐ 50 PROGRAMS ☐ 99 PROGRAMS
- ☒ 100 PROGRAMS ☐ 181 PROGRAMS
- ☐ OTHER_____

3：TUNING FOR VHF AND UHF BANDS

- ☒ AUTO SEARCH ☒ MANUAL TUNING
- ☒ FINE TUNING

4：PICTURE AND SOUND ADJUSTMENT

- ☒ BRIGHT，CONTRAST，COLOUR AND VOLUME CONTROL
- ☒ TINT CONTROL（NTSC）
- ☐ TREBLE，BASS，BALANCE CONTROL
- ☒ SHARPNESS CONTROL ☐ OTHER_____

5：TELETEXT

- ☐ SIMPLE TEXT ☐ TOP（TABLE OF PAGES）
- ☐ FLOF（FASTEXT） ☐ LIST

6：SLEEP TIMER

- ☐ 10-120 MINUTES WITH 10M.INCREMENT
- ☐ 30M，60M，90M SELECTABLE

7：AUTO OFF WHEN NO BROADCASTING SIGNAL

- ☐ 10 MINUTES ☒ 15 MINUTES ☐ 20 MINUTES

8：REMOTE EFFECTIVE DISTANCE 8 M

C：CONSTRUCTION OF FRONT PANEL

- [x] MAIN POWER SWITCH
- [x] REMOTE SENSOR
- [ ] SYSTEM FUNCTION
- [ ] MICROPHONE INPUT
- [x] STANDBY INDICATOR
- [ ] BAND SELECT
- [ ] EARPHONE INPUT
- [ ] AUTO SEARCH AND MANUAL TUNING SELECT
- [ ] FUNCTION SELECT
- [x] MENU SELECT
- [x] S.VHS INPUT
- [x] TV/AV SELECT
- [x] PROGRAM VOLUME UP/DOMN
- [ ] RCA SOCKET
- [x] OTHER: RCA SOCKET ON SIDE TERMINAL

D：CONSTRUCTION OF REAR PANEL

- [x] 75 OHM AERIAL TERMINAL
- [ ] 300OHM AERIAL TERMINAL
- [ ] RCA SOCKET（AV INPUT ONLY）
- [ ] RCA SOCKET（AV IN/OUT ）
- [x] RCA SOCKET （A-R+L IN/OUT，V- IN/OUT）
- [ ] RCA SOCKET （A-R+L /V INPUT X 2，AV OUTPUT X 1）
- [ ] SCART SOCKET
- [ ] S.VHS INPUT
- [ ] EXT/INT SPEAKER SELECT
- [ ] EXT.SPEAKERS（R+L）TERMINALS
- [ ] EXT.SPEAKERS（R+L）RCA SOCKET
- [x] SUPER WOOFER TERMINAL
- [ ] OTHER_____

E：AUDIO AND VIDEO INPUT/OUTPUT

- [x] RCA SOCKET
- [ ] SCART SOCKET（AV）
- [ ] SCART SOCKET（FULL）

SPECIFICATION	SCART	RCA
VIDEO INPUT 75 OHM	$1V_{P-P}$	$1V_{P-P}$
AUDIO INPUT 10K OHM（R+L）	$0.5V_{rmS}$	$0.5V_{rmS}$
VIDEO OUTPUT 75 OHM	$1V_{P-P}$	$1V_{P-P}$
AUDIO OUTPUT 1K OHM（R+L）	$0.5V_{rmS}$	$0.5V_{rmS}$
RGB INTPUT 75 OHM	$0.7V_{P-P}$	
AUDIO LINE OUTPUT 1K OHM	$1V_{P-P}$	

F：AMBIENT CONDITIONS

1. Ambient Temperature ：
   Operating ：-10c ~ +40c
   Storage ：-15c ~ +45c
2. Humidity:
   Operating ：＜80%
   Storage ：＜90%
3. Air Pressure ：86 ~ 106kpa

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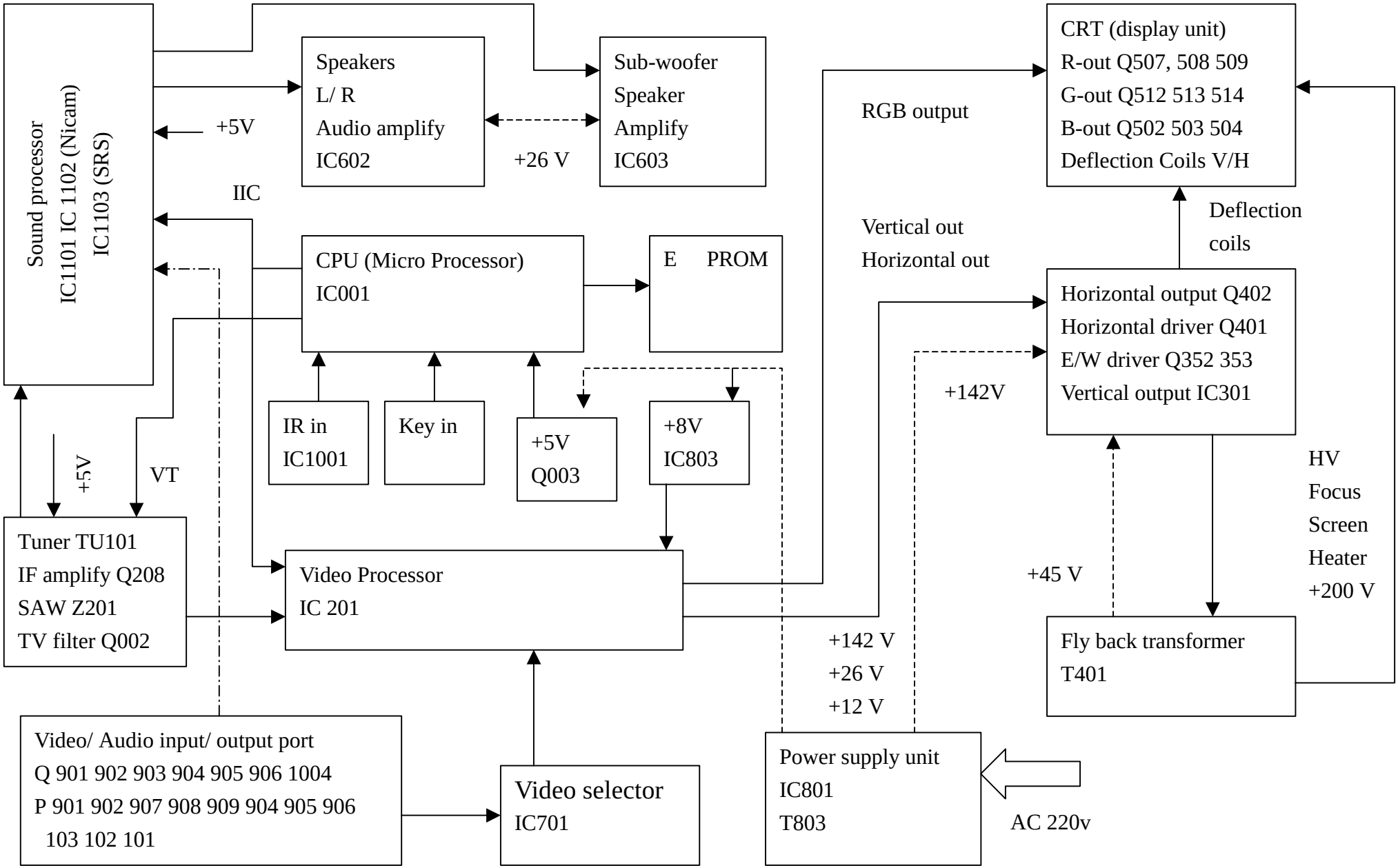
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AUDIO OUTPUT 1K OHM（R+L）	$0.5V_{rmS}$	$0.5V_{rmS}$
RGB INTPUT 75 OHM	$0.7V_{P-P}$	
AUDIO LINE OUTPUT 1K OHM	$1V_{P-P}$	

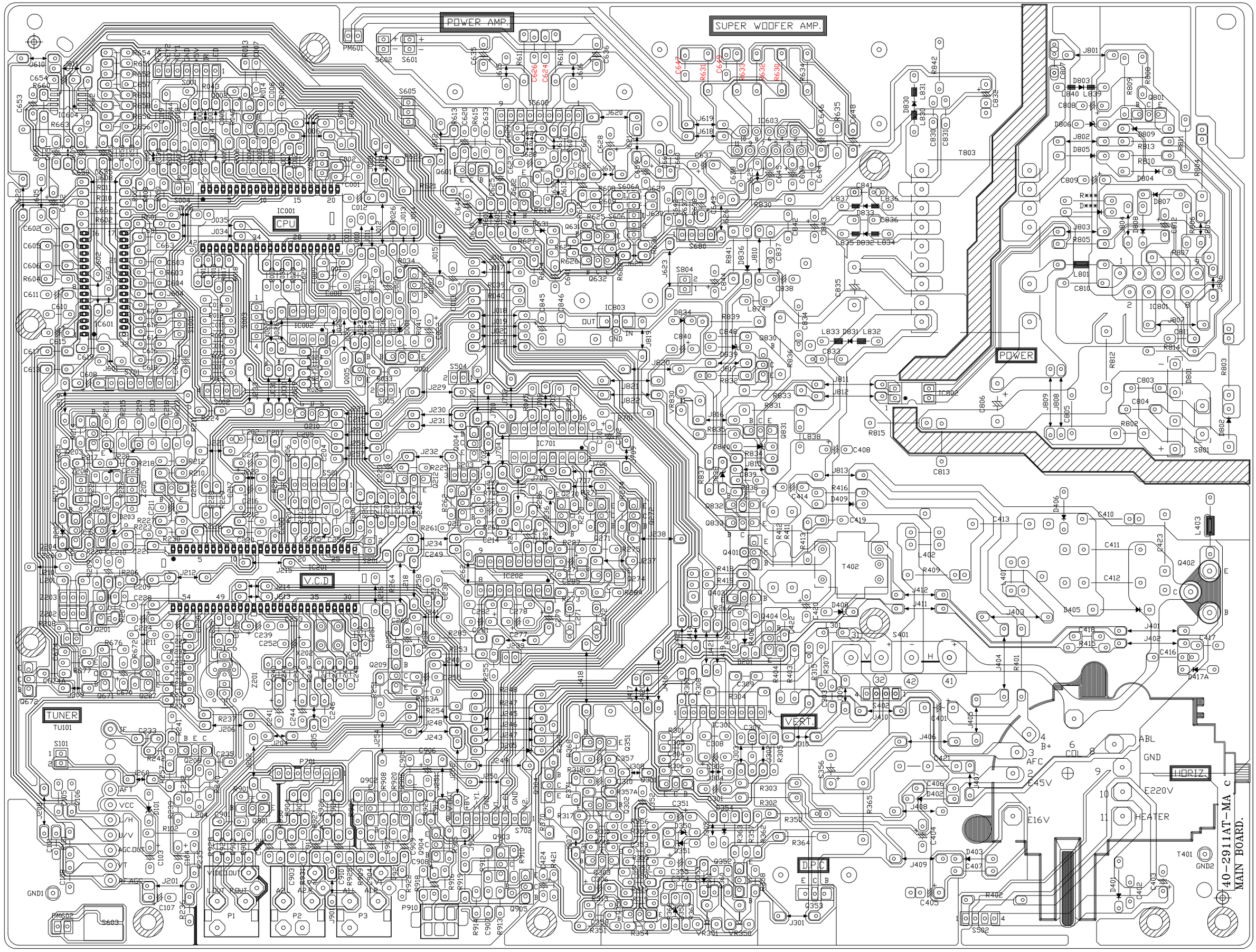
F：AMBIENT CONDITIONS

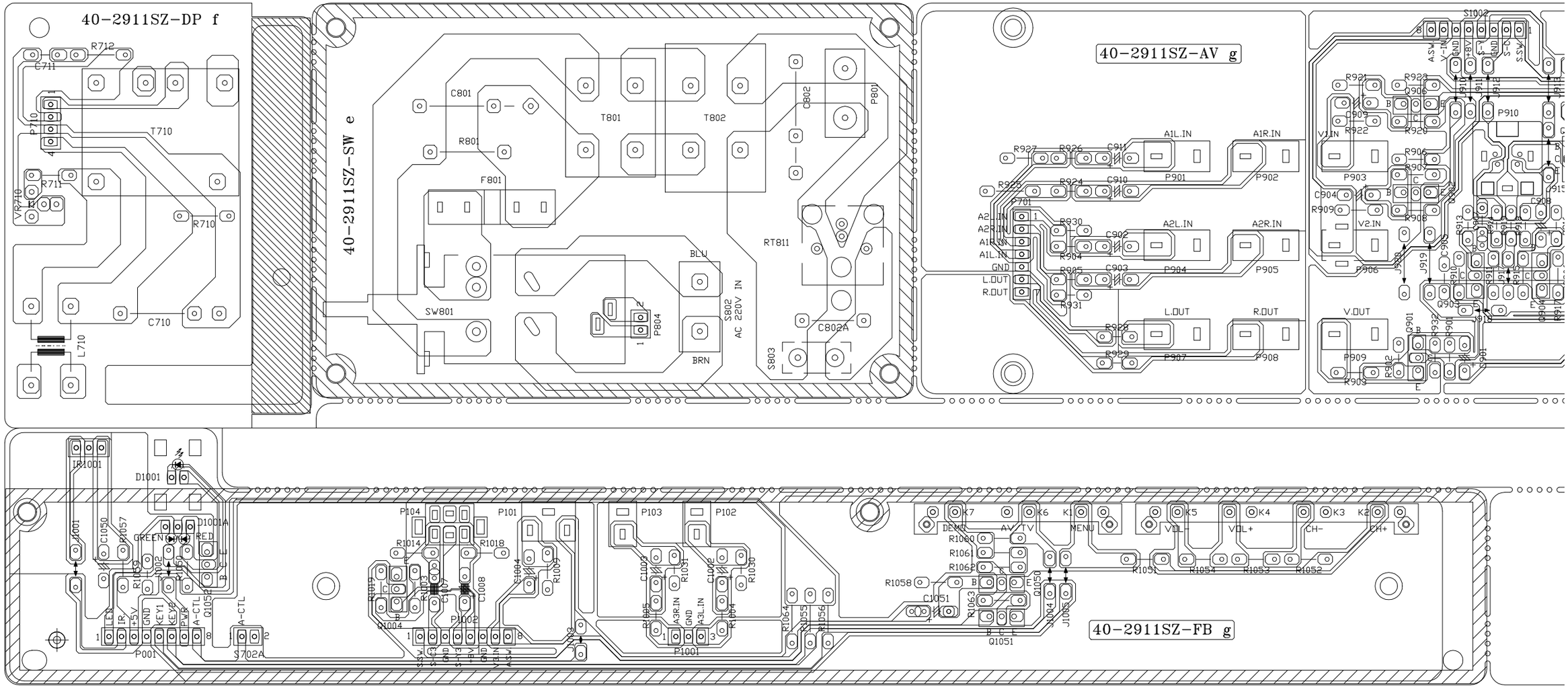
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2. Humidity:
   Operating ：＜80%
   Storage ：＜90%
3. Air Pressure ：86 ~ 106kpa

2911 ML Block Diagram TCL Electronic Hong Kong ltd



40-2911AT-MAC




40-2911SZ-DP f
R712
C711
T710
R711
R710
C710
L710
40-2911SZ-SW e
C801
R801
F801
T801
T802
C802
P801
RT811
BLU
BRN
SW801
S802
AC 220V IN
P804
S803
C802A
40-2911SZ-AV g
A1L.IN
A1R.IN
A2L.IN
A2R.IN
L.OUT
R.OUT
P901
P902
P903
P904
P905
P906
P907
P908
P909
P910
V1IN
V2.IN
V.OUT
S1002
40-2911SZ-FB g
IR1001
D1001
D1001A
GREEN
RED
P104
P101
P103
P102
P1002
P1001
P001
S702A
K7
K6
K5
K4
K3
K2
K1
DEMO
AV/TV
MENU
VOL-
VOL+
CH-
CH+
Q1051
Q1050

40-2911SZ-CR e

P501 1 6

P502

R527 D508 R528 C507 J501 CUT +9V J502 R R517 J503 G B R516 R519 J504 C513 +200v GND HEATER

C508 J505 R514 C511 R515 J508 C501 J506 R533

C502 R513 R501 R521 R518 C512 J507 R512 IC501 R511 D509 C514

R525 D506 R526 D507 C516 R524 D505 C515 R532 R530

D503 D501 R506 L501 R508 L502 R523 R522

S SCREEN 7 8 KR 9 10 11 KB 12 R531 J509 R507 C504 6 KG D502 5 C E B Q501 4 R534 R510 Q502 B C E R535 R536 C505

CRT BOARD.

P503 S501

40-2911SZ-CR e

P501 1 6

P502

R527 D508 R528 C507 J501 CUT +9V J502 R R517 J503 G B R516 R519 J504 C513 +200v GND HEATER

C508 J505 R514 C511 R515 J508 C501 J506 R533

C502 R513 R501 R521 R518 C512 J507 R512 IC501 R511 D509 C514

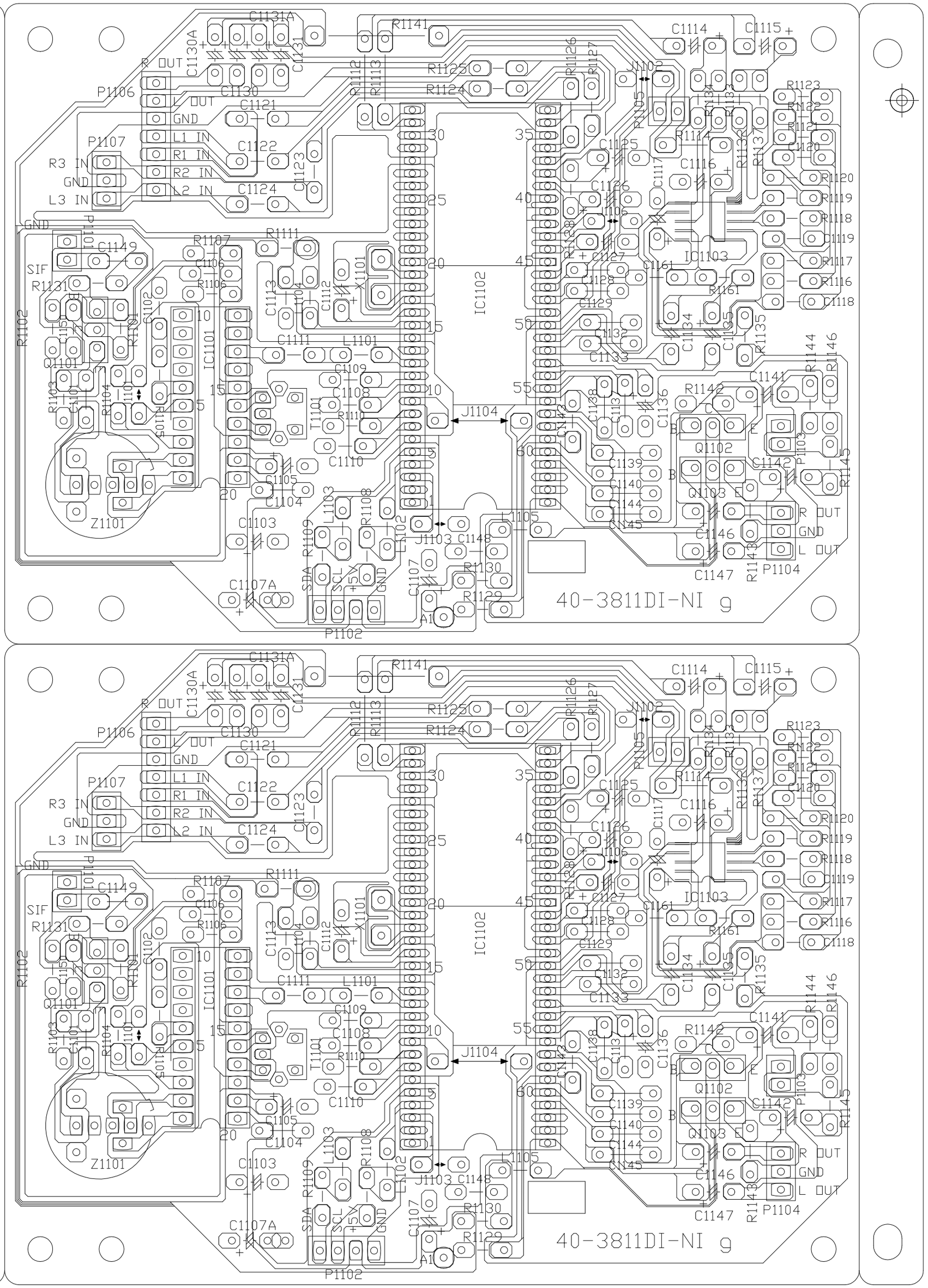
R525 D506 R526 D507 C516 R524 D505 C515 R532 R530

D503 D501 R506 L501 R508 L502 R523 R522

S SCREEN 7 8 KR 9 10 11 KB 12 R531 J509 R507 C504 6 KG D502 5 C E B Q501 4 R534 R510 Q502 B C E R535 R536 C505

CRT BOARD.

P503 S501


C1131A
C1130A
C1131
R1141
C1114
C1115
R OUT
P1106
L OUT
GND
L1 IN
R1 IN
R2 IN
L2 IN
C1130
C1121
C1122
C1123
C1124
P1107
R3 IN
GND
L3 IN
R1112
R1113
R1125
R1124
R1126
R1127
J1102
R1105
R1123
R1122
R1121
C1120
R1134
R1133
R1137
R1132
R1114
C1125
C1116
C1117
C1126
J1107
R1138
C1127
IC1103
C1161
R1161
C1128
C1129
C1134
C1135
R1135
C1132
C1133
R1120
R1119
R1118
C1119
R1117
R1116
C1118
R1144
R1146
C1141
R1142
C1136
C1138
C1137
C1142
Q1102
Q1103
P1103
R1145
C1139
C1140
C1144
C1145
C1146
C1147
R1143
P1104
R OUT
GND
L OUT
GND
R1107
R1111
C1106
R1106
C1149
SIF
R1131
C1115
R1102
R1101
C1102
Q1101
R1103
C1101
R1104
R1105
C1113
C1104
C1112
X1101
IC1102
IC1101
C1111
L1101
C1109
C1108
R1110
T1101
C1110
C1105
C1104
C1103
Z1101
L1103
R1108
R1109
L1102
C1107
C1148
J1103
J1104
J1105
R1130
R1129
C1107A
SDA
SCL
+5V
GND
A1
P1102
10
15
20
25
30
35
40
45
50
55
60
5
1
40-3811DI-NI g

2911DI

SRS

HANDSET BOARD.

POWER SW. BOARD.

AC 220V

MAIN BOARD.

SCHEMATIC.
01-2911DI-MA1
2000.1.5

S-N D.P. BOARD.

FRONT CTL & AV BOARD.

CRT BOARD.

TO MAIN BOARD

NICAM BOARD

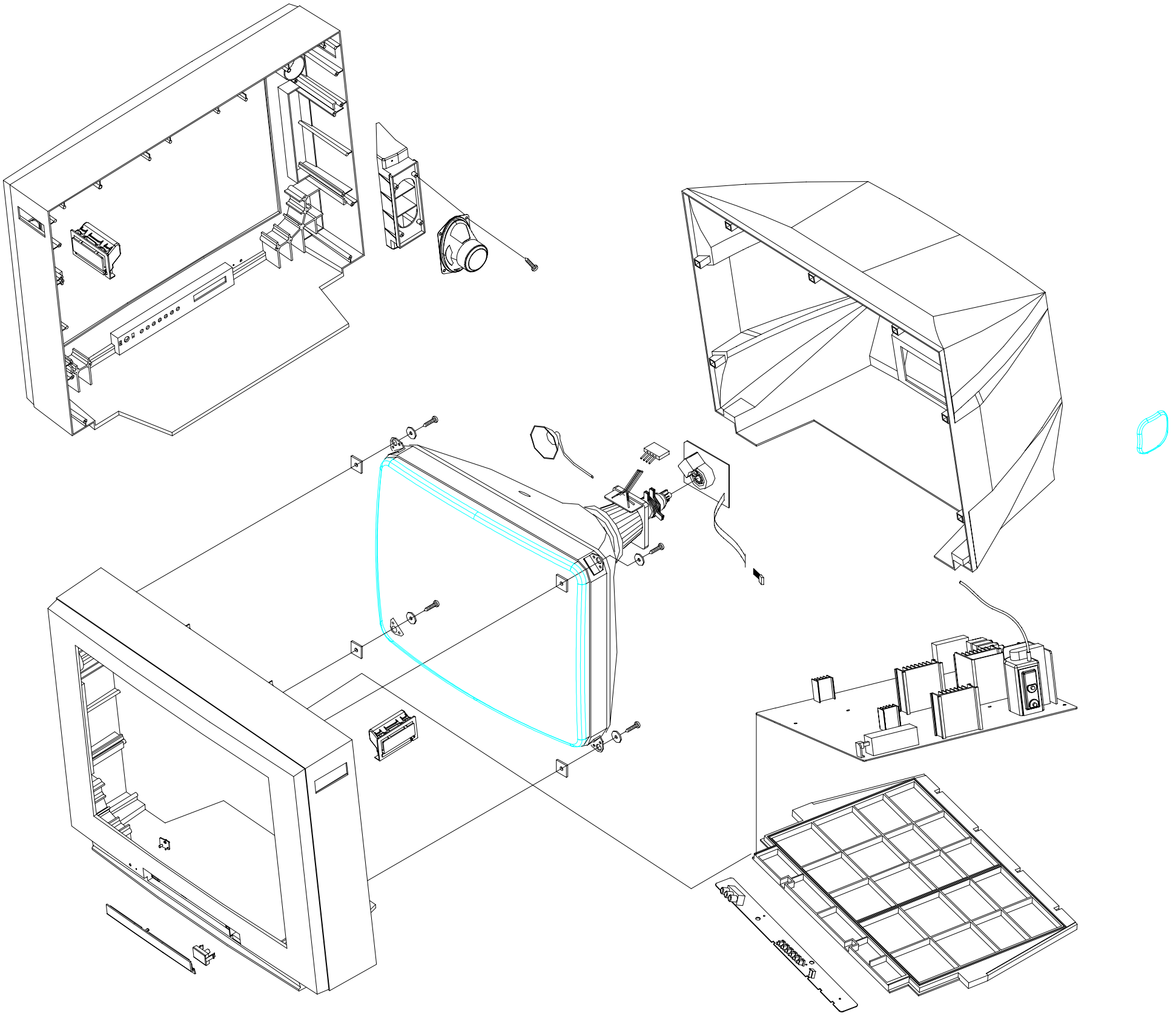
BACK AV BOARD.

PIN15	SYSTEM
L	PAL
H	NTSC

PIN10	PIN9	PIN11
L	Y	C
H	COMPOSITE	

U/V	L/H	BAND
H	L	VHF-L
L	H	VHF-H
H	H	UHF

EC2911 EXPLODED VIEW



EC2911 Cabinets

