6. Repair facilities, software adjustments and Hotel Mode

6.1 Introduction

In the software program of the set (µC IC7600 and EEPROM IC 7601 in diagram A9) a number of service settings and error detection facilities are included. These programs can be activated if the set is put in the Service Default Mode (SDM).

6.2 Service Default Mode (SDM)

Activating the SDM mode:
The SDM is activated by short circuiting the service mode pin M25 to ground (ground is the combined screening for µC and EEPROM), while switching on the set via the mains switch. The SMD pin M25 is connected to pin 1 of EEPROM 7601, on the main panel, see also diagram A9.
After the set is switched on the set the short circuit of M25 to ground can be removed. To indicate that the set is in the SDM, a "S" and the Service Menu is displayed on the screen (see 6.3).
After switching off and on by means of the mains switch, the set remains in the SDM mode but the Service Menu will disappear (only the "S" remains on the screen).

De-activating of the SDM mode:
The SDM mode can be left via a "stand-by" command.

In the SDM the set is put in a pre-defined condition.
These conditions are:
- For sets with a VST tuner, the program number 1 is selected.
- For sets with a PLL tuner, the tuner is tuned at 475.25MHz.
- All picture controls are set at 50%
- Audio volume is set at 25%.
- Sharpness is set at normal.

Remark:
- In the SDM mode the set is normally controllable, so the initial conditions (see above) can be overruled.
- All voltages & oscillograms indicated in the Service Manual are measured in the SDM.

6.3 Service Menu

Below an example of the service menu is shown.

S

ANUBIS-PV4 PM 1.0

OPTIONS
TUNER
WHITE TONE
GEOMETRY
TDA9840
ERR 00 00 00 00 00

General: The items of the sub menus in the Service Menu can be selected with the up/down arrow keys on the remote control. Entry into the sub menus is executed with the east/west arrow keys. Leaf the sub menu via the "OK" key.
In the Service Menu the following information and sub menu items are indicated.
- ANUBIS-PV4 xxx.xx
  This is the indication of the software version number used in the µC.The version number is indicated as:
  Anubis-PV4 PM x.xx for PAL/MULTI sets.
  Anubis-PV4 TK x.xx for TAIWAN or KOREA sets.
  Remark: x.xx represents the location for the version number.
- Submenu "Options", see 6.5
- Submenu "Tuner", see 6.6
- Submenu "White Tone", see 6.7
- Submenu "Geometry", see 6.8
- Submenu "TDA9840" (optional), see 6.9
- ERR 00 00 00 00 00, see 6.4
  Remark: 5 error code locations (00 00 00 00 000) are available.

6.4 Error codes

Via the I^2C bus the µC can detect malfunction of all I^2C controlled IC's. If the µC no acknowledgement receives from a particular I^2C device, an error code is generated and stored in the error code buffer in the EEPROM. Maximal 5 error codes can be stored, indicating maximal 5 different errors detected at switch on. Only the latest 5 errors are stored. When an error occurs and disappears later on, the error message will be remained stored in the EEPROM. The contents of the error buffer is erased when the SDM mode is exited.
Reading of error codes is only posible via the service menu.
In Table 6.1 the error codes with description are listed.

Error Code	Error description	Possible defective component
01	General I^2C Error	—
02	EEPROM Configuration Error	Set not correct configured (see chapter 6.5)
03	Main signal processor (TDA8374/75)	IC 7200 (diagram A2,,A3,,A4,,A5)
04	2CS Stereo Decoder	IC 7802 (diagram G)
05	Internal RAM error	IC 7600 (diagram A9)
06	EEPROM	IC 7601 (diagram A9)
07	Nicam Stereo Decoder	IC 7353 (diagram H1)
08	Teletext Decoder	IC 7701 (diagram E)
09	Not used	—
10	Sound Processor	IC 7140 (diagram A8)

Table 6.1

6.5 Options

Below an example of the sub menu Options is shown.

S

OPTIONS

ADDR 000
DATA 032
STORE

General: Via this menu the data in the EEPROM with the addresses 000 to 255 (decimal notation) can be changed.

In these addresses the hardware settings and hardware configuration options of the set are stored.
The data stored in the factory for these addresses can differ for each type and stroke number. If a frech EEPROM is mounted in a set the EEPROM is initialy loaded with default data by the µC. These default data can however differ for the relevant type.

Therefore it is necessory to load the EEPROM with the data for the correct settings and hardware options again. These data are indicated on a sticker glued inside the rear cover for each set. For an example of this sticker see Table 6.2. (table is valid for 21PT262A/69R)

Loading a frech EEPROM
With the "OPTIONS" menu the EEPROM can be loaded with the correct configuration options for the relevant type/version indicated on the inside sticker. On entering the OPTION sub menu, the address will start at the fist option byte (000). The address and data can be changed by first highlighting the respective item using up/down and left/right keys, the values can be decreased or increased respectively. In order to store the data the user has to highlight the STORE item by using the up/down key and then by pressing the left/right or OK key. A message "STORED" will be shown for approximately two seconds after the key is pressed. After changing the option configuration, the µC must be reset to make the changes effective. The EEPROM options are read only ONCE by the µC after reset of the µC. Resetting is executed via switching off/on the set.

Adress	Data
193	010
194	010
195	011
196	002
223	087
224	215
226	215
227	087
229	215
230	215
243	000
244	037
245	215
246	076
247	042
248	073
249	000
250	129
251	000
252	224
253	072

Table 6.2 (only valid for 21PT262A/69R)

Remark: In the addresses 243, 244, 245 and 246 are the so called cofuguration OPTION BYTES stored. The checksum of these bytes is stored in address 253. When changing the data in these bytes it is possible to change the configuration (fuction/features) of the set.

6.6 Tuner

Below an example of the sub menu Tuner is shown.

S

TUNER

IF-PLL 125
AFW 80 KHz
AFA 1
AFB 1
AGC 36

When the main signal processor (IC TDA8374/75) is changed, the IF PLL needs to be realigned as follows:
- Use an off-air channel.
- Select "tuner" in the service menu.
- Put AFW at 240KHz.
- Adjust IF-PLL setting until AFA is "1" and AFB is just toggling between "0" and "1" or "1" and "0".
- Put AFW at 80KHz.
- Check whether AFA is still "1" and AFB is just toggling between "0" and "1" or "1" or "0" otherwise re-adjust IF-PLL setting.

Remarks:
- AFA and AFB are adjusting indicators and therefor not selectable.
- For the setting of the "AGC" see Chapter electrical adjustments paragraph 8.1.3.

6.7 White Tone

Below an example of the sub menu White Tone is shown.

S

WHITE TONE

COOL	R-45	G-45	B-46
(NORMAL	R-45	G-45	B-43)
(WARM	R-45	G-42	B-34)

Remark: Only one of the 3 items (COOL, NORMAL or WARM) will be displayed on the screen. Via "scrolling" with the up/down keys the item can be changed.

- COOL: Via this menu the cool colour temperature alignment can be set.
- NORMAL: Via this menu the normal colour temperature alignment can be set.
- WARM: Via this alignment the warm colour temperature alignment can be set.

Changing any of the item's red, green or blue, the settings can be changed by first pressing the control left/right keys to highlight the desired setting. With the desired setting highlighted, the user can either increment or decrement the setting by using control up/down key respectively. All changed data will be stored into the EEPROM after returning to the Service Main Menu via the OK key.

The initial default values for all settings is 37.
The factory settings of the colour temperatures are:
"Warm" 8200K
"Normal" 10500K
"Cool" 14000K

Remark: The sub menu White Tone is needed for adjusting the Vg2 voltage (f.i. when the LOT is replaced). See also chapter 8.1.5 of the Electrical adjustments.

6.8 Picture Geometry

Below an example of the Geometry Submenu is shown.

S

GEOMETRY

HOR. SHIFT	52
VERT. SLOPE	34
VERT. AMPL.	35
S- CORRECT.	18
VERT. SHIFT	31
E-W WIDTH	00 *
E-W PARA.	00 *
E-W CORNER	00 *
E-W TRAP.	00 *
VERT. ZOOM	25 *

* Items only available if for main signal processer, type TDA8375 is used.

Upon entry into the picture geometry menu, the first item will be highlighted and displayed in the centre of the screen.
The value can be incremented or decremented by pressing the control right or left key.
The rest of the parameters can be scrolled through by using the control up/down keys.
All data will only be stored into the EEPROM after returning to the Service Main Menu via the OK key.
Remark; The E-W and VERT.ZOOM adjustments are only available if a main signal procesor TDA8375 is used.

6.9 TDA9840 (2CS Audio adjustment), optional.

Below an example of the "Audio adjustment" Submenu is shown.

S

TDA9840

STEREO ADJ	24
LEVEL ADJ.	04

The TDA9840 sub menu is only available if the TDA9840 (2CS sound decoder) is present (optional, see diagram G IC 7802). The settings can be changed by first highlighting the respective item using the control up/down keys and then increment or decrement the value by using the control right or left keys.
The values should not change unless it is absolutely necessary. The default values shown in the diagram are the nominal values. For service purposes the nominal values can be used.

6.10 Hotel mode

Introduction:
The hotel mode gives the possibility to fine tune the behaviour of the set to be used in hotel rooms. A feature of the hotel mode is , that it is possible to blank channels separately and to set the maximum volume. A blanked channel is a channel that remains blanked and to be used as a radio channel. The transmitter signal of these channels should produce a valid horizontal IDENT.
Activating of the hotel mode
The hotel mode is activated when channel number 38 is selected and the following two keys on the remote control are pressed in sequence within 1 second:
- The "PICTURE MENU" key.
- The "FEATURES MENU" key.

De-activating of the hotel mode
The hotel mode is de-activated when channel number 38 is selected and the following two keys on the remote control are pressed in sequence within 1 second:
- The "PICTURE MENU" key.
- The "OSD" key.

The message "HOTEL MODE OFF" is displayed for 4 seconds at the bottom of the screen.

By activating the hotel mode the following sequence is carried out:
- All menus are switched off.
- The hotel menu is displayed.
- The current volume will be the maximum volume.

Below the hotel menu is shown.

HOTEL MODE

BLANK OFF	YES
RESET	
STORE	

The Hotel menu is switched off when:
- The set is switched off with the mains switch.
- The set is switched to standby mode.
- The OK key on the remote control is pressed (RESET or STORE is not highlighted).
- However to re-enter the Hotel menu again, the hotel mode has to be de-activated and activated again.

Menu description
- Blank off settings:
  - Select channel for blanking.
  - Highlight Blank off and select yes.
  - Highlight STORE and press OK key (STORED will be displayed).
- Reset:
  - Select RESET and invoke.
  - All chanels are set to "BLANK OFF".

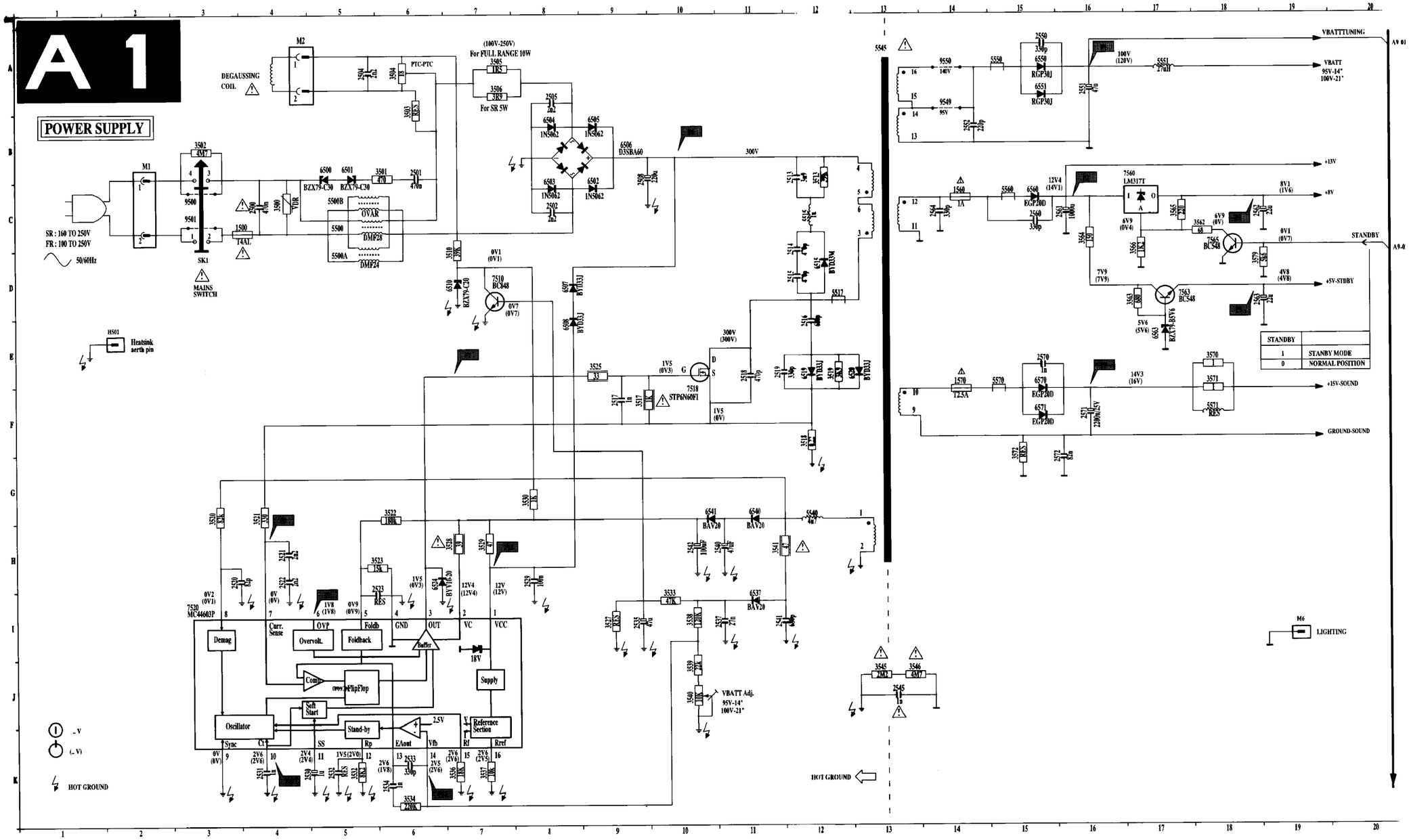


TABLE 1

ITEM NO.	NONCISPR	CISPR
2501	33nF	SURGE PROT.
2516	680pF	1n5
2545	1nF	2n2
2564	—	330pF
3519	3k9	1k5
5500	DMF 2820H	DMF 2415H
6500	BZX79-C20	jumper
6501	BZX79-C20	jumper
6520	OUT	IN

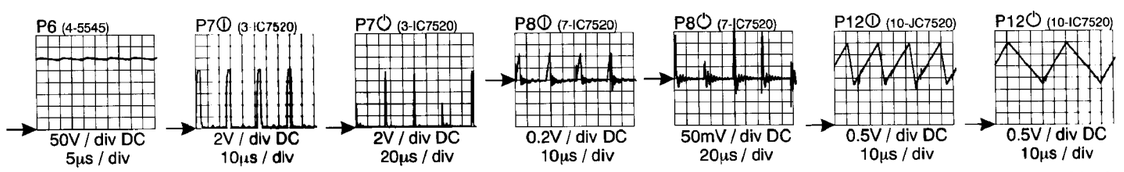
TABLE 2

ITEM NO.	21"/14"
9500	OPEN
9501	OPEN

TABLE 3

ITEM NO.	+100V	+95V
9549	IN	IN
9550	OPEN	OPEN

P1ⓘ 95V DC 14"
P1ⓘ 100V DC 21"
P2ⓘ 14V4 DC
P3ⓘ 8V1 DC



osc_A1.cdr
CL 170696

A2

SYNCHRONISATION, HOR + VRT OUTPUT

SYNCHRONISATION

VRT-OUTPUT

HOR-DRIVE + OUTPUT

item	TOS. tube 21"	MEC tube 21"	THUI tube 21"	MUAFEI 21"
2452	470nF	680nF	470nF	470nF
9439	jumper	-	jumper	jumper
5477	-	8uH2	-	-
3483	1k	470R	1k	470R
3937	3R3	3R3	4R7	3R3
3938	3R3	3R3	4R7	3R3
9450	jumper	jumper	jumper	jumper
9448	jumper	jumper	jumper	jumper
9484	res	res	res	res
4442	jumper	jumper	jumper	jumper
5457	res	res	100uH	jumper
9457	jumper	jumper	-	jumper
9455	jumper	jumper	jumper	jumper
9482	res	res	res	jumper

L1 (40-IC7200) 0.2V / div DC, 20µs / div

L2 (B-7440) 0.2V / div DC, 20µs / div

L3 (C-7440) 10V / div DC, 20µs / div

L4 (B-7448) 2V / div DC, 20µs / div

L5 (C-7448) 100V / div DC, 20µs / div

L6 (SAND) 1V / div DC, 20µs / div

F1 (7-7660) 0.2V / div DC, 5ms / div

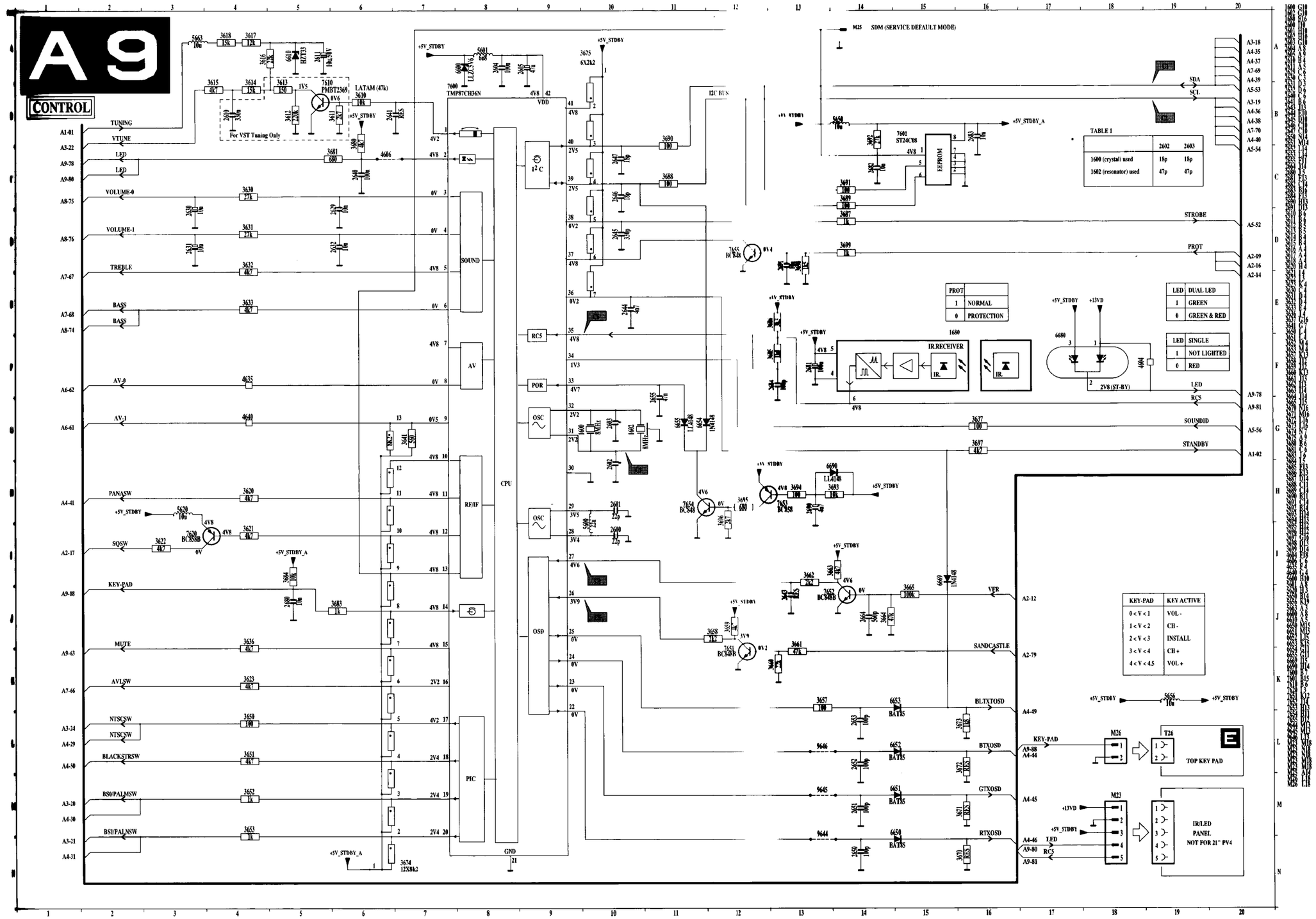
F2 (1-7660) 0.5V / div DC, 5ms / div

F3 (5-7660) 10V / div DC, 5ms / div

osc_A2.cdr
CL_170696

A9

CONTROL



	2602	2603
1600 (crystal) used	18p	18p
1602 (resonator) used	47p	47p

PROT	
1	NORMAL
0	PROTECTION

LED	DUAL LED
1	GREEN
0	GREEN & RED

LED	SINGLE
1	NOT LIGHTED
0	RED

KEY-PAD	KEY ACTIVE
0 < V < 1	VOL -
1 < V < 2	CH -
2 < V < 3	INSTALL
3 < V < 4	CH +
4 < V < 4.5	VOL +

C1 (I²C DATA)
1V / div DC
0.2ms / div

C2 (I²C SCL)
1V / div DC
0.2ms / div

C3 (OSC)
0.5V / div DC
62.5ns / div

C4 (VFR)
1V / div DC
5ms / div

C5 (SAND)
1V / div DC
20µs / div

C6 (RC5)
1V / div DC
0.2ms / div

osc_A9.cdr
CL 030696