

SERVICE MANUAL

14" 20" 21" SOLID STATE Color Television Receiver

ART-TECH. TV.

PAL SECAM VERSION
TOSHIBA I²C IC

This manual is the latest at the time of printing, and does not include the modification which may be made after the printing, by the constant improvement of product.

Document : SM - 32PM Date : 25-08-2000 Approved by : _____

Checked by : _____

(WONG YIM FAI)

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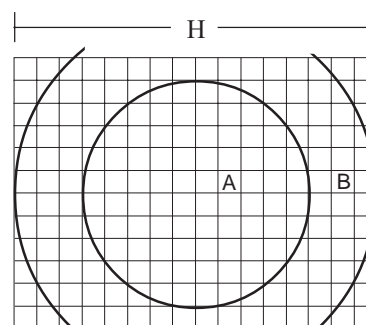
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This manual is the latest at the time of
Printing , and does not include the modification
Which may be made after the Printing, by the
Constant improvement of Product.

ITEMS OF MEASUREMENT	STANDARD	UNIT
VIDEO SENS. AT S/N 30db		
L - VHF	≤ 57	dbuv
H - VHF	≤ 57	dbuv
UHF	≤ 60	dbuv
SOUND SENS. AT S/N 30db		
L - VHF	≤ 42	dbuv
H - VHF	≤ 42	dbuv
UHF	≤ 48	dbuv
AGC CHARACTER	≥ 60	db
SELECTIVITY -1.5 MHz	≥ 35	db
+ 8 MHz	≥ 40	db
COLOR SENS.	≤ 45	dbuv
COLOR LOCK - IN RANGE	$\geq \pm 300$	Hz
VERTICAL LOCK - IN RANGE	≥ 6	Hz
HORIZONTAL LOCK - IN RANGE	≥ 400	Hz
MAX BRIGHTNESS	≥ 140	cd / m2
MAX OUTPUT POWER	≥ 1	W
OUTPUT POWER AT 10% THD	≥ 0.7	W
BUZZ	≤ -40	db
AFC RANGE	$\geq +1$	MHz
	≥ -0.5	MHz
MIN. VOL HUM	≤ 20	mV
RESOLUTION HORIZONTAL	≥ 300	LINES
VERTICAL	≥ 400	LINES
LINEARITY DISTORTION VERTICAL	≤ 10	%
HORIZONTAL	≤ 10	%
RASTER DISTORTION	≤ 5	%
REMOTE CONTROL DISTANCE	≥ 5	METER
ANGLE	$\geq \pm 15$	DEGREE
POWER CONSUMPTION (AT NORMAL CONDITION)	≤ 60	WATTS
POWER CONSUMPTION (AT MAX. CONDITION)	≤ 70	WATTS
CONVERGENCE DISLOCATION AT AREA "A"	≤ 0.4	%
AREA "B"	≤ 0.8	%
(see fig.1)		

VIDEO INPUT LEVEL : 1.0V P-P \pm 3dB
 AUDIO INPUT LEVEL : 0.5V RMS \pm 3dB

Fig.1



ITEMS OF MEASUREMENT	STANDARD	UNIT
VIDEO SENS. AT S/N 30db	≤ 57	dbuv
L - VHF	≤ 57	dbuv
H - VHF	≤ 60	dbuv
UHF		
SOUND SENS. AT S/N 30db	≤ 42	dbuv
L - VHF	≤ 42	dbuv
H - VHF	≤ 48	dbuv
UHF		
AGC CHARACTER	≥ 60	db
SELECTIVITY -1.5 MHz	≥ 35	db
+ 8 MHz	≥ 40	db
COLOR SENS.	≤ 45	dbuv
COLOR LOCK - IN RANGE	$\geq \pm 300$	Hz
VERTICAL LOCK - IN RANGE	≥ 6	Hz
HORIZONTAL LOCK - IN RANGE	≥ 400	Hz
MAX BRIGHTNESS	≥ 120	cd/m ²
MAX OUTPUT POWER	≥ 1.8	W
OUTPUT POWER AT 10% THD	≥ 1.3	W
BUZZ	≤ -40	db
AFC RANGE	$\geq +1$	MHz
	≥ -0.5	MHz
MIN. VOL HUM	≤ 20	mV
RESOLUTION HORIZONTAL	≥ 300	LINES
VERTICAL	≥ 400	LINES
LINEARITY DISTORTION VERTICAL	≤ 10	%
HORIZONTAL	≤ 10	%
RASTER DISTORTION	≤ 5	%
REMOTE CONTROL DISTANCE	≥ 5	METER
ANGLE	$\geq \pm 15$	DEGREE
POWER CONSUMPTION (AT NORMAL CONDITION)	≤ 70	WATTS
POWER CONSUMPTION (AT MAX. CONDITION)	≤ 85	WATTS
CONVERGENCE DISLOCATION AT AREA "A"	≤ 0.4	%
AREA "B"	≤ 0.8	%
(see fig.2)		

VIDEO INPUT LEVEL : 1.0V P-P \pm 3dB
 AUDIO INPUT LEVEL : 0.5V RMS \pm 3dB

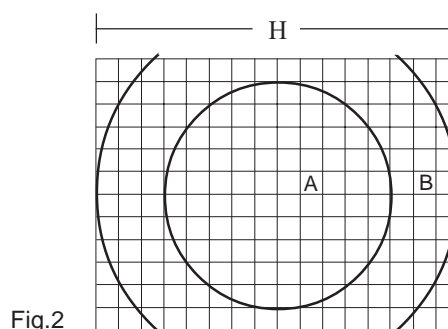


Fig.2

SPECIFICATION

SUPPLY VOLTAGE : AC220V 50Hz $\geq +10\%$ / -20%

MODEL : 14"

SYSTEM :	PAL - I / I	PAL - BG	PAL - I (UK)	PAL - SECAM - BG / DK	PAL - SECAM - BG / DK (HYPER)	PAL - BG (HYPER)	PAL - BG (CATV)	SECAM - L	L'	
CHANNEL L - VHF : H - VHF : UHF :	4 - 13 21 - 69	2 - 4 5 - 12 21 - 69	21 - 69	1 - 5 6 - 12 21 - 69	1 - 5 6 - 12 21 - 69	E2 - S10 E5 - S41 E21 - E69	E2 - S2 E5 - S20 E21 - E69	1 - Q 21 - 69	FB - FC	CH CH CH
VIF FREQUENCY :	38.9	38.9	39.5	38.0	38.9	38.9	38.9	38.9	32.7	MHz
SIF FREQUENCY :	32.9	33.4	33.5	31.5 32.5	32.4 33.4	33.4	33.4	32.4	39.2	MHz
CHROMA IF FREQUENCY :	34.47	34.47	35.07	33.57 33.57	34.47 34.47	34.47	34.47	34.47		MHz
INTER-CARRIER FREQUENCY :	6.0	5.5	6	6.5 5.5	6.5 5.5	5.5	5.5	6.5	6.5	MHz
SCANNING HORIZONTAL : VERTICAL :	15625 LINE 50 Hz									
ANTENNA INPUT IMPEDANCE :										
CRT :										
	75 OHM									
	14"									

SPECIFICATION

SUPPLY VOLTAGE : AC220V 50Hz $\geq + 10\%$ / -20%

MODEL : 20" - 21"

SYSTEM :	PAL - I / I	PAL - BG	PAL - I (UK)	PAL - SECAM - BG / DK	PAL - SECAM - BG / DK (HYPER)	PAL - BG (HYPER)	PAL - BG (CATV)	SECAM - L	L'	
CHANNEL L - VHF : H - VHF : UHF :	4 - 13 21 - 69	2 - 4 5 - 12 21 - 69	21 - 69	1 - 5 6 - 12 21 - 69	1 - 5 6 - 12 21 - 69	E2 - S10 E5 - S41 E21 - E69	E2 - S2 E5 - S20 E21 - E69	1 - Q 21 - 69	FB - FC	CH CH CH
VIF FREQUENCY :	38.9	38.9	39.5	38.0	38.9	38.9	38.9	38.9	32.7	MHz
SIF FREQUENCY :	32.9	33.4	33.5	31.5 32.5	32.4 33.4	33.4	33.4	32.4	39.2	MHz
CHROMA IF FREQUENCY :	34.47	34.47	35.07	33.57 33.57	34.47 34.47	34.47	34.47	34.47		MHz
INTER-CARRIER FREQUENCY :	6.0	5.5	6	6.5 5.5	6.5 6.5	5.5	5.5	6.5	6.5	MHz
SCANNING HORIZONTAL : VERTICAL :	15625 LINE 50 Hz									
ANTENNA INPUT IMPEDANCE :										
CRT :										
	75 OHM									
	20" - 21"									

ALIGNMENT INSTRUCTION

I. PLEASE READ BEFORE ATTEMPTING SERVICE

1. Do not connect any antenna plug directly to the tuner socket and do not connect any equipments directly to the TV chassis, otherwise it may be burnt out the TV or equipment, except an isolation transformer is used for main power source or the TV sets.
2. Never disconnect any leads while receiver is in operation.
3. Disconnect all power before attempting any repairs.
4. Do not short any portion of the circuit while power is on.
5. For safety reasons, all parts replaced should be identical (for parts and part numbers see parts list).
6. Before alignment the set must be pre-heated for 30 minutes or more and erase magnetism thoroughly from CRT front chassis frame by erase coil.

II. TEST EQUIPMENT

- | | |
|-------------------------------|--|
| 1. Colour Bar/Dot/Cross Hatch | 5. High Voltage Meter |
| 2. Oscilloscope | 6. Ampere Meter (0.5 Class, DC 3mA Max.) |
| 3. Vacuum Tube Voltmeter | 7. Demagnetizing Coil |
| 4. Volt Ohmmeter | 8. Closed Caption Encoder |
| | 9. High Pot Tester. |

I. B+ ADJUSTMENT

1. Connect a digital voltmeter to B+ and Ground.
2. Set Brightness Contrast to minimum.
3. Adjust Screen Volume on FBT until the picture can just be seen.
4. Adjust VR901 to obtain a reading of $112 \pm 0.5V$ (FOR samsung CRT).

II. AFC ALIGNMENT

1. Disconnect the soldering pad 'F'.
2. Input the signal from Pattern Generator (IF 38.9MHz) colour bar to R101 and GND.
3. Adjust the T101 until the colour bar show on the screen.
4. Select 'SELF VCO' in D-MODE.
5. Press the AFC button on the handset.
6. About few seconds screen will be show AFT OK.

*REMARK: No this factory on Normal R.C.

III. AGC ALIGNMENT

1. Receive CH69 (UHF) and input filed strength. TUNER INput Signal $62 \pm 3dB$,
 2. Connect a digital Voltmeter between the TUNER AGC Terminal and Ground.
 3. Select RAGC item, Adjust the value to 3F, and then adjust the AGC value obtain the voltage drop down 0.4V.
- Remark: 1 The drop down voltage should be more than and tends to 0.4V.
2 No observable noise can be seen.

IV. VERTICAL LINEARTY ADJUSTMENT

1. PAL (50Hz) Adjustment
 - (1). Receive Crosshatch Pattern (50Hz) .
 - (2). Select VLIS item adjust value to normal regular picture.
2. NTSC (60Hz) Adjustment.
 - (1). Receive Cross hatch Patter (60Hz).
 - (2). Select VILN item adjust value to normal regular picture.
3. Repeat 1.2. receive Cross hatch 50Hz and 60Hz is same picture.

V. VERTICAL HEIGHT ADJUSTMENT

1. PAL (50Hz) Adjust .
 - (1). Receive Mono scope Patter (50Hz).
 - (2). Select HITS item adjust value to normal regular picture.
2. NTSC (60Hz).
 - (1). Receive Mono scope Patter (60Hz).
 - (2). Select HIT item adjust value to normal regular picture
3. Repeat 1.2. receive Mono Scope Patter 50Hz and 60Hz is same picture.

1. Receive Cross hatch Pattern
2. Select VSC item adjust value to normal,regular picture.

1. PAL (50Hz) Adjustment
 - (1). Receive Monscope Pattern (50Hz).
 - (2). Select VP50 item adjust value to obtain the picture at center .
2. NTSC (60Hz) Adjustment
 - (1). Receive Monscope Pattern (60Hz).
 - (2). Select VP60 item adjust value to obtain the picture at center.
3. Repeat 1.2. receive Mono Scope Pattern 50Hz and 60Hz is same picture center.

1. PAL(50Hz) Adjustment.
 - (1). Receive Mono Scope Pattern (50Hz).
 - (2). Select HPS item adjust value to normal regular Picture.
2. NTSC(60Hz)
 - (1). Receive Mono Scope Pattern (60Hz).
 - (2). Select HPOS item adjust value to normal regular Picture.
3. Repeat 1. 2. receive Mono Scope Pattern (50Hz) and (60Hz) is Same Picture.

mm

← -5 -4 -3 -2 -1 0 1 2 3 4 5 →

LEFT

↑

CENTER OF THE SCREEN

CRT MUST FACE TO EAST

RIGHT

1. SUITABLE FOR 14" OR ABOVE TV.
2. Adjust the centre position must take the upper side of monoscope pattern for standard.
3. Group A : AUSTRALIA, NEW ZEALAND, TAHITI.
4. Group B : HONG KONG, CHINA, AMERICA, CANADA, MALAYSIA, MEXICO.
5. Group C : ENGLAND, ITALY, GERMANY, RUSSIA, SWITZERLAND, JUGOSLAVIA, SPANISH.

If the above countries are not include, please consult to Engineering Dept.

VIII. WHITE BALANCE ALIGNMENT STEP

(Degauss the picture by degaussing coil if necessary)

1. Disconnect the any input signal, set the blue black OFF.
2. Enter to D HODE.
3. Adjust the RCUT, GCUT, BCUT value to 80, GDRV, BDRV to 45, BRTS to CO.
4. Adjust the BRIGHT, CONT to min.
5. Adjust the screen VR (on the FBT) until the show cannot just be screen.
6. Connect the VOLT meter '+' to CRT BOARD G2, (-) to GND and get the reading value.
7. Adjust the screen VR lead the reading value reduce $25 \pm 5v$
8. Adjust the BRTS set to F6, and set BRIGHT, CONT to mid.
9. Receive a Black and White Pattern.
10. Select Remote handset direct key (2) and (3) button adjust GCUT and BCUT to minimum value, Press (1) button adjust RCUT to middle value.
11. Press Picture mode, select Brightness and Contrast adjust value to minimum.
12. Press handset direct key (2) button to obtain a yellow line.
13. Press handset direct key (3) button to obtain a white line.
14. Press handset direct key (-/-) button again.
15. Press CH button select GDRV and BDRV item adjust value to make the
16. picture uniformly white ($9300^{\circ}K \pm 3JND$).

IX. SUB-BRIGHTNESS ALIGNMENT

1. Receive a Colour Bar Pattern.
2. Press PICTURE mode select BRIGHTNESS, CONTRAST adjust value to minimum.
3. Select BRTS in D-MODE.
4. Adjust value the brightness bar can just be seen.

X. FOCUS ALIGNMENT

1. Set the Brightness and Contrast to middle position.
2. Receive a Monoscope Pattern.
3. Adjust focus control to obtain sharpest picture.

XI. HIGH POT TESTING

- 1) Short the L-pole and N-pole of AC line cord.
- 2) Switch on the power switch of the TV Set.
- 3) Connect The High Pot Tester (-) to L and N pole, (+) to the METAL PART of CABINET.

CONDITION SAFETY STD.	TEST SYANDARD	TEST STANDARN FOR PRODUCTION
VDE,SAA	3.0KV 10mA / 1MIN	$\geq 3.5KV \leq 10mA / \geq 10 \text{ SEC.}$
UL	1.0KV 5mA / 1MIN	$\geq 1.25KV \leq 5mA / \geq 1 \text{ SEC.}$

REMARK:

- (1). If no other speciality, the strength of input signal should be $70dB \pm 10dB$.
- (2). The HIGH POT TESTER can have $\leq \pm 5\%$ tolerance.

Model: 21 "

Chassis: I²C technology.

Picture Tube: SAMSUNG, Type:A51KQK99X01, S/N:2090344252

Service Mode Data

Item	Parameter	C o d e			Value SAMSUNG 21 "		
1	RCUT	I			83		
2	GCUT	I			D8		
3	BCUT	I			85		
4	GDRV	I			49		
5	BDRV	I			49		
6	CNTX	A			3A		
7	BRTC	A			47		
8	COLC	A			30		
9	TNTC	A			3A		
10	COLP	A			33		
11	COLS	A			2E		
12	SCNT	A			0E		
13	CNTC	A			2B		
14	CNTN	A			06		
15	BRTX	A			23		
16	BRTN	A			21		
17	COLX	A			25		
18	COLN	A			00		
19	TNTX	A			30		
20	TNTN	A			30		
21	ST3	A			09		
22	SV3	A			09		
23	ST4	A			09		
24	SV4	A			10		
25	SHPX	A			12		
26	SHPN	A			05		
27	TXCX	I			2A		
28	RGCN	I			1E		
29	VMO	N			2C		
30	VM1	N			00		
31	HPOS	I			06		

32	VP50	I			03		
33	HIT	I			16		
34	HPS	I			04		
35	VP60	I			00		
36	HITS	I			02		
37	VLIN	I			0C		
38	VSC	I			08		
39	VLIS	I			FF		
40	DPC	N			00		
41	DPCS	N			00		
42	KEY	N			00		
43	KEYS	N			00		
44	WID	N			00		
45	WIDS	N			00		
46	VCP	N			00		
47	CNR	N			00		
48	HCP	N			00		
49	SBY	A			08		
50	SRY	A			08		
51	RAGC	I			21		
52	AFT	N			27		
53	HAFC	N			00		
54	V25	A			3E		
55	V50	A			4A		
56	BRTS	I			04		
57	VM2	N			30		
58	MOD0	A			00		
59	MOD1	A			12		
60	MOD2	N			00		
61	SELF	N			00		
62	SELF VCO	N			80		
63	SELF AGC	N			69		
64	SELF BRTC	N			75		
65	SELF CNTC	N			23		
66	SELF TNTC	N			00		
67	SELF COL	N			20		
68	LOGO	A			01		
69	LANG	A			00		
70	IF FREQ	A			03		
71	OSD	I			02		
72	OPT	N			04		

SAMSUNG, Type: A51KQK99X01

Adjustment codes:

- I Data adjustable individually for each unit.
- A Adjustable parameter.Changes need Engineering Department approval.
- N Non adjustable parameter.

Model: 21 "

Chassis: PC technology.

Picture Tube: SEG-HITACHI, Type:A51JSY63X13, S/N:SH9E210453

Service Mode Data

Item	Parameter	C o d e			Value HITACHI 21 "		
1	RCUT	I			83		
2	GCUT	I			84		
3	BCUT	I			86		
4	GDRV	I			4A		
5	BDRV	I			43		
6	CNTX	A			3A		
7	BRTC	A			43		
8	COLC	A			30		
9	TNTC	A			3A		
10	COLP	A			30		
11	COLS	A			2F		
12	SCNT	A			0E		
13	CNTC	A			27		
14	CNTN	A			06		
15	BRTX	A			2A		
16	BRTN	A			21		
17	COLX	A			25		
18	COLN	A			00		
19	TNTX	A			30		
20	TNTN	A			30		
21	ST3	A			09		
22	SV3	A			09		
23	ST4	A			09		
24	SV4	A			10		
25	SHPX	A			12		
26	SHPN	A			05		
27	TXCX	I			27		
28	RGCN	I			27		
29	VMO	N			2C		
30	VM1	N			00		
31	HPOS	I			09		

32	VP50	I			03		
33	HIT	I			11		
34	HPS	I			04		
35	VP60	I			01		
36	HITS	I			02		
37	VLIN	I			0C		
38	VSC	I			08		
39	VLIS	I			FF		
40	DPC	N			00		
41	DPCS	N			00		
42	KEY	N			00		
43	KEYS	N			00		
44	WID	N			00		
45	WIDS	N			00		
46	VCP	N			00		
47	CNR	N			00		
48	HCP	N			00		
49	SBY	A			08		
50	SRY	A			08		
51	RAGC	I			1F		
52	AFT	N			40		
53	HAFC	N			00		
54	V25	A			3E		
55	V50	A			4A		
56	BRTS	I			08		
57	VM2	N			30		
58	MOD0	A			00		
59	MOD1	A			12		
60	MOD2	N			00		
61	SELF	N			00		
62	SELF VCO	N			80		
63	SELF AGC	N			69		
64	SELF BRTC	N			75		
65	SELF CNTC	N			23		
66	SELF TNTC	N			00		
67	SELF COL	N			20		
68	LOGO	A			01		
69	LANG	A			00		
70	IF FREQ	A			03		
71	OSD	I			00		
72	OPT	N			04		

SEG-HITACHI,Type:A51JSY63X13

Adjustment codes:

- I Data adjustable individually for each unit.
- A Adjustable parameter.Changes need Engineering Department approval.
- N Non adjustable parameter.

Model: 20 "

Chassis: I²C technology.

Picture Tube: LG, Type:A48QAD220X06, S/N:C9806005382 S

Service Mode Data

Item	Parameter	C o d e			Value LG 20 "		
1	RCUT	I			0		
2	GCUT	I			65		
3	BCUT	I			64		
4	GDRV	I			55		
5	BDRV	I			4A		
6	CNTX	A			3F		
7	BRTC	A			45		
8	COLC	A			30		
9	TNTC	A			3A		
10	COLP	A			33		
11	COLS	A			2E		
12	SCNT	A			0E		
13	CNTC	A			25		
14	CNTN	A			06		
15	BRTX	A			20		
16	BRTN	A			21		
17	COLX	A			25		
18	COLN	A			00		
19	TNTX	A			30		
20	TNTN	A			30		
21	ST3	A			09		
22	SV3	A			09		
23	ST4	A			09		
24	SV4	A			10		
25	SHPX	A			16		
26	SHPN	A			05		
27	TXCX	I			20		
28	RGCN	I			20		
29	VMO	N			2C		
30	VM1	N			00		
31	HPOS	I			0A		

32	VP50	I			03		
33	HIT	I			05		
34	HPS	I			04		
35	VP60	I			00		
36	HITS	I			01		
37	VLIN	I			0D		
38	VSC	I			07		
39	VLIS	I			FF		
40	DPC	N			00		
41	DPCS	N			00		
42	KEY	N			00		
43	KEYS	N			00		
44	WID	N			00		
45	WIDS	N			00		
46	VCP	N			00		
47	CNR	N			00		
48	HCP	N			00		
49	SBY	A			08		
50	SRY	A			08		
51	RAGC	I			1A		
52	AFT	N			19		
53	HAFC	N			00		
54	V25	A			3E		
55	V50	A			4A		
56	BRTS	I			0A		
57	VM2	N			30		
58	MOD0	A			00		
59	MOD1	A			12		
60	MOD2	N			00		
61	SELF	N			00		
62	SELF VCO	N			80		
63	SELF AGC	N			69		
64	SELF BRTC	N			75		
65	SELF CNTC	N			23		
66	SELF TNTC	N			00		
67	SELF COL	N			20		
68	LOGO	A			01		
69	LANG	A			00		
70	IF FREQ	A			03		
71	OSD	I			06		
72	OPT	N			04		

LG,4828

Adjustment codes:

- I Data adjustable individually for each unit.
- A Adjustable parameter.Changes need Engineering Department approval.
- N Non adjustable parameter.

Model: 14 "

Chassis: I²C technology.

Picture Tube: SAMSUNG, Type:A34KQV42X02, S/N:7881202225

Service Mode Data

Item	Parameter	C o d e			Value SAMSUNG 14 "		
1	RCUT	I			80		
2	GCUT	I			67		
3	BCUT	I			6D		
4	GDRV	I			4A		
5	BDRV	I			44		
6	CNTX	A			3A		
7	BRTC	A			4C		
8	COLC	A			40		
9	TNTC	A			3A		
10	COLP	A			31		
11	COLS	A			2E		
12	SCNT	A			0E		
13	CNTC	A			24		
14	CNTN	A			0C		
15	BRTX	A			22		
16	BRTN	A			32		
17	COLX	A			25		
18	COLN	A			00		
19	TNTX	A			30		
20	TNTN	A			30		
21	ST3	A			07		
22	SV3	A			07		
23	ST4	A			07		
24	SV4	A			10		
25	SHPX	A			10		
26	SHPN	A			05		
27	TXCX	I			25		
28	RGCN	I			20		
29	VMO	N			2C		
30	VM1	N			00		
31	HPOS	I			11		

342.Samsung

32	VP50	I			05		
33	HIT	I			14		
34	HPS	I			08		
35	VP60	I			01		
36	HITS	I			00		
37	VLIN	I			0A		
38	VSC	I			08		
39	VLIS	I			FF		
40	DPC	N			00		
41	DPCS	N			00		
42	KEY	N			00		
43	KEYS	N			00		
44	WID	N			00		
45	WIDS	N			00		
46	VCP	N			00		
47	CNR	N			00		
48	HCP	N			00		
49	SBY	A			08		
50	SRY	A			08		
51	RAGC	I			25		
52	AFT	N			40		
53	HAFC	N			00		
54	V25	A			3E		
55	V50	A			4A		
56	BRTS	I			FD		
57	VM2	N			30		
58	MOD0	A			00		
59	MOD1	A			02		
60	MOD2	N			00		
61	SELF	N			00		
62	SELF VCO	N			80		
63	SELF AGC	N			69		
64	SELF BRTC	N			75		
65	SELF CNTC	N			23		
66	SELF TNTC	N			00		
67	SELF COL	N			20		
68	LOGO	A			01		
69	LANG	A			00		
70	IF FREQ	A			03		
71	OSD	I			00		
72	OPT	N			04		

Adjustment codes:

- I Data adjustable individually for each unit.
- A Adjustable parameter.Changes need Engineering Department approval.
- N Non adjustable parameter.

Model: 14 "

Chassis: I²C technology.

Picture Tube: IRICO, Type:37SX110Y22-DC05, S/N:97020510

Service Mode Data

Item	Parameter	C o d e			Value IRICO 14 "		
1	RCUT	I			82		
2	GCUT	I			CA		
3	BCUT	I			85		
4	GDRV	I			52		
5	BDRV	I			4A		
6	CNTX	A			3F		
7	BRTC	A			3F		
8	COLC	A			30		
9	TNTC	A			3A		
10	COLP	A			30		
11	COLS	A			2E		
12	SCNT	A			0E		
13	CNTC	A			2A		
14	CNTN	A			0C		
15	BRTX	A			22		
16	BRTN	A			36		
17	COLX	A			25		
18	COLN	A			00		
19	TNTX	A			30		
20	TNTN	A			30		
21	ST3	A			07		
22	SV3	A			07		
23	ST4	A			07		
24	SV4	A			10		
25	SHPX	A			10		
26	SHPN	A			05		
27	TXCX	I			25		
28	RGCN	I			20		
29	VMO	N			2C		
30	VM1	N			00		
31	HPOS	I			0B		

32	VP50	I			02		
33	HIT	I			12		
34	HPS	I			04		
35	VP60	I			02		
36	HITS	I			2E		
37	VLIN	I			0B		
38	VSC	I			08		
39	VLIS	I			FF		
40	DPC	N			00		
41	DPCS	N			00		
42	KEY	N			00		
43	KEYS	N			00		
44	WID	N			00		
45	WIDS	N			00		
46	VCP	N			00		
47	CNR	N			00		
48	HCP	N			00		
49	SBY	A			08		
50	SRY	A			08		
51	RAGC	I			24		
52	AFT	N			1E		
53	HAFC	N			00		
54	V25	A			3E		
55	V50	A			4A		
56	BRTS	I			14		
57	VM2	N			30		
58	MOD0	A			00		
59	MOD1	A			02		
60	MOD2	N			00		
61	SELF	N			00		
62	SELF VCO	N			80		
63	SELF AGC	N			69		
64	SELF BRTC	N			75		
65	SELF CNTC	N			23		
66	SELF TNTC	N			00		
67	SELF COL	N			20		
68	LOGO	A			01		
69	LANG	A			00		
70	IF FREQ	A			03		
71	OSD	I			12		
72	OPT	N			04		

Picture Tube: IRICO,Type:37SX110Y22-DC05, S/N:97020510

Adjustment codes:

- I** Data adjustable individually for each unit.
- A** Adjustable parameter.Changes need Engineering Department approval.
- N** Non adjustable parameter.

Model: 14 "

Chassis: I²C technology.

Picture Tube: Orion, Type:A34JLL90X32

Service Mode Data

Item	Parameter	C o d e			Value Orion 14 "		
1	RCUT	I			7E		
2	GCUT	I			94		
3	BCUT	I			6D		
4	GDRV	I			40		
5	BDRV	I			41		
6	CNTX	A			3F		
7	BRTC	A			4C		
8	COLC	A			33		
9	TNTC	A			3A		
10	COLP	A			29		
11	COLS	A			2E		
12	SCNT	A			0E		
13	CNTC	A			20		
14	CNTN	A			0C		
15	BRTX	A			22		
16	BRTN	A			32		
17	COLX	A			25		
18	COLN	A			00		
19	TNTX	A			30		
20	TNTN	A			30		
21	ST3	A			07		
22	SV3	A			07		
23	ST4	A			07		
24	SV4	A			10		
25	SHPX	A			10		
26	SHPN	A			05		
27	TXCX	I			25		
28	RGCN	I			20		
29	VMO	N			2C		
30	VM1	N			00		
31	HPOS	I			0C		

32	VP50	I			00		
33	HIT	I			12		
34	HPS	I			03		
35	VP60	I			01		
36	HITS	I			03		
37	VLIN	I			0C		
38	VSC	I			09		
39	VLIS	I			02		
40	DPC	N			00		
41	DPCS	N			00		
42	KEY	N			00		
43	KEYS	N			00		
44	WID	N			00		
45	WIDS	N			00		
46	VCP	N			00		
47	CNR	N			00		
48	HCP	N			00		
49	SBY	A			08		
50	SRY	A			08		
51	RAGC	I			25		
52	AFT	N			13		
53	HAFC	N			00		
54	V25	A			3E		
55	V50	A			4A		
56	BRTS	I			15		
57	VM2	N			30		
58	MOD0	A			00		
59	MOD1	A			02		
60	MOD2	N			00		
61	SELF	N			00		
62	SELF VCO	N			80		
63	SELF AGC	N			69		
64	SELF BRTC	N			75		
65	SELF CNTC	N			23		
66	SELF TNTC	N			30		
67	SELF COL	N			20		
68	LOGO	A			01		
69	LANG	A			00		
70	IF FREQ	A			03		
71	OSD	A			00		
72	OPT	N			04		

Orion, Type: A34JLL90X32

Adjustment codes:

- I Data adjustable individually for each unit.
- A Adjustable parameter.Changes need Engineering Department approval.
- N Non adjustable parameter.

- TB1238N Adjustment in D-Mode
Show the D-Mode Items information

Mode	For PAL	For NTSC	Remark
D	RCUT	RCUT	R CUTOFF
	GCUT	GCUT	G CUTOFF
	BCUT	BCTU	B CUTOFF
	GDRV	GDRV	G DRIVE
	BDRV	BDRV	B DRIVE
	CNTX	CNTX	SUB CONTRAST MAX
	BRTC	BRTC	SUB BRIGHT CENTER
	COLC	COLC	SUB COLOR CENTER for NTSC
	TNTC	TNTC	SUB TINT CENTER
	COLP		SUB COLOR CENTER for PAL (DIFFERENCE)
	COLS		SUB COLOR CENTER for SECAM
	SCNT	SCNT	Y-SUB CONTRAST
	CNTC	CNTC	SUB CONTRAST CENTER
	CNTN	CNTN	SUB CONTRAST MINIMUM
	BRTX	BRTX	SUB BRIGHT MAX (DIFFERENCE)
	BRTN	BRTN	SUB BRIGHT MIN (DIFFERENCE)
	COLX	COLX	SUB COLOR MAX (DIFFERENCE)
	COLN	COLN	SUB COLOR MIN
	TNTX	TNTX	SUB TINT MAX (DIFFERENCE)
	TNTN	TNTN	SUB TINT MIN (DIFFERENCE)

Mode	For PAL	For NTSC	Remark
D	ST3	ST3	SUB SHARP CENTER NTSC3.58 in TV
	SV3	SV3	SUB SHARP CENTER NTSC3.58 in VIDEO
	ST4	ST4	SUB SHARP CENTER other color system in TV
	SV4	SV4	SUB SHARP CENTER other color system in VIDEO
	SHPX		SUB SHARPNESS MAX points from Center value
	SHPN		SUB SHARPNESS MIN points from Center value
	TXCX		RGB Contrast data at MAX data of user contrast
	RGCN		RGB Contrast data at MIN data of user contrast
	VM0		VCD mode data 0 (Setting Data of TB1238) Bit 7: F-ID, Bit 6: CW-SW, Bit 5,4: BAL Start Point Bit 3,2: ABL-Gain Bit 1: WPS Bit 0: ID-SW
	VM1		VCD mode data 1 (Setting Data of TB1238) Bit 7: No use , Bit 6: N-COM, Bit 5-1: V-Mute Timing Bit 0: BLK V-Mute Timing = 200ms + 8ms * Data
	HPOS		50Hz Horizontal Phase
	VP50		50Hz Vertical Phase
	HIT		50Hz Vertical Amplitude
	HPS	HPS	Shift data of 50Hz / 60 Hz Horizontal Phase
	VP60	VP60	60Hz Vertical Phase
	HITS	HITS	Shift data of 50Hz / 60Hz Vertical Amplitude
	VLIN		V-LINEARITY
	VSC		V-S CORRECTION
	VLIS	VLIS	Shift data of 50Hz / 60Hz V-LINEARITY
	DPC		
	DPCS		
	KEY		
	EKYS		
	WID		
	WIDS		
	VCP		
	CNR		
	HCP		
	SBY		SECAM B-Y
	SRY		SECAM R-Y
	RAGC	RAGC	RF AGC adjustment
	AFT		PIF VCO adjustment
	HAFC		1/2 AFC data adjustment
	V25		Volume output data at 25%
	V50		Volume output data at 50%
	BRTS		SUB Brightness (DIFFERENCE)
	VM2		
	MOD0		
	MOD1		
	MOD2		
	SELF		
	SELF VCO		
	SELF AGC		
	SELF BRTC		
	SELF CNTC		
	SELF TNTC		
	SELF COL		
	LOGO		
	LANG		
	IF FREQ		
	OSD		
	OPT		

MOD0

SYS	DATA	
	CPU: 133-328738-14 133-358738-14	CPU: 133-358738-14
	FOR SAA 5254	FOR STV 5348
PAL SECAM TEXT CCD NTSC	46	47
PAL SECAM NTSC TEXT	42	43
PAL SECAM NTSC CCD	44	44
PAL NTSC TEXT CCD	06	07
PAL NTSC TEXT	02	03
PAL NTSC CCD	04	04
PAL NTSC	00	00
PAL SECAM NTSC	40	40

TABLE 1.

MOD1

PROGRAM	VIDEO	DATA		
		CPU:133-328738-14 133-358738-14	CPU: 133-358738-14	
		FOR AV MODE	For AV/STERO	For SCART
50	TV—VIDEO	00	20	04
100	TV — VIDEO	02	22	06
50	TV—VIDEO 1—VIDEO 2	10	30	14
100	TV—VIDEO 1—VIDEO 2	12	32	16

TABLE 2.

MOD2

SOUND	SYSTEM	DATA	
		CPU:133-328738-14 133-358738-14 (PIN14 POSITIVE)	CPU : 133-358738-14 (PIN 14 NEGATIVE)
BG or DK or I		00	20
DK . I		0A	2A
BG . DK		0C	2C
BG . I		06	26

TABLE 3.

LOGO

NO LOGO	00
TEAC	01
ROWA	02

TABLE 4.

LANG

ENGLISH	00
ENGLISH ; FRANCAIS ;ITALIALNO	01
ENGLISH ; RUSSIAN	02

TABLE 5.

IF FREQ

MHz	DATA
39.5	02
38.9	03
38.0	04

TABLE 6.

For 14”

VOLTAGE TABLE FOR TRANSISTOR (ONLY FOR REFERENCE)							
SYMBOL	B (V)	C (V)	E (V)	SYMBOL	B (V)	C (V)	E (V)
Q101	1.3	9.0	0.6	Q507	0	9.0	0.1
Q102	3.6	8.9	2.9	Q508	0.5	0	1.2
Q103	4.3	8.9	3.7	Q601	5.0	5.1	4.5
Q104	2.8	0	3.5	Q603	0.6	0	0
Q105	6.3	8.9	5.5	Q604	0	5.1	0
Q106	1.4	0	2.1	Q605	0	4.9	0
Q201	17.5	1.1	17.2	Q606	-0.8	4	0
Q202	0.6	0	0	Q801	3.0	2.3	2.3
Q203	16	15.3	15.3	Q803	0.67	0	0
Q301	0.1	22.8	0	Q901	8.8	11.9	8.2
Q401	0.3	14.9	0	Q902	5.1	-0.05	1.6
Q402	-0.2	106.0	0	Q903	0	1.1	0
Q403	5.5	7.7	4.9	Q904	-2.5	296.7	0
Q501	9.0	107	8.5	Q905	0.6	0	0
Q502	9.0	108.7	8.5	Q906	109.4	110	110
Q503	9.0	105.3	8.5	Q907	110	110	109.3
Q504	2.6	8.5	2.1	Q108	3.1	5.1	2.4
Q505	2.6	8.5	2.1	Q109	5.1	8.9	4.5
Q506	2.7	8.5	2.3	Q110	5.9	9.0	5.2

NOTE: VOLTAGE ARE TAKEN UNDER TUNED CONDITION WITH

CONTRAST	:	Maximum Position
BRIGHTNESS	:	Maximum Position
COLOR	:	Maximum Position
SIGNAL INPUT	:	70dB \pm 10dB
CHANNEL SETTING	:	The Last Channel of UHF High
SIGNAL PATTERN	:	Colour Bar

FOR 20" ~ 21"

VOLTAGE TABLE FOR TRANSISTOR (ONLY FOR REFERENCE)							
SYMBOL	B (V)	C (V)	E (V)	SYMBOL	B (V)	C (V)	E (V)
Q101	1.3	9.0	0.6	Q603	0.6	0	0
Q102	3.6	8.9	2.9	Q604	0	5.1	0
Q103	4.3	8.9	3.7	Q605	0	4.9	0
Q104	2.8	0	3.5	Q606	-0.8	4	0
Q105	6.3	8.9	5.5	Q901	8.8	11.9	8.2
Q106	1.4	0	2.1	Q902	5.1	-0.05	1.6
Q108	3.1	5.1	2.4	Q903	0	1.1	0
Q109	5.1	8.9	4.5	Q904	-2.5	296.7	0
Q110	5.9	9.0	5.2	Q905	0.6	0	0
Q201	17.5	1.1	17.2	Q906	109.4	110	110
Q202	0.6	0	0	Q907	110	110	109.3
Q203	16	15.3	15.3	Q001	0	8.9	GND
Q301	0.1	22.8	0				
Q401	0.3	14.9	0				
Q402	-0.2	106.1	0				
Q403	5.5	7.7	4.9				
Q501	9.0	107	8.5				
Q502	9.0	108.7	8.5				
Q503	9.0	105.7	8.5				
Q504	2.6	8.5	2.1				
Q505	2.6	8.5	2.1				
Q506	2.7	8.5	2.3				
Q507	0	9.0	0.1				
Q508	0.5	0	1.2				
Q601	5.0	5.1	4.5				
Q801	3.0	2.3	2.3				
Q803	0.67	0	0				

NOTE: VOLTAGE ARE TAKEN UNDER TUNED CONDITION WITH

CONTRAST	:	Maximum Position
BRIGHTNESS	:	Maximum Position
COLOR	:	Maximum Position
SIGNAL INPUT	:	70dB \pm 10dB
CHANNEL SETTING	:	The Last Channel of UHF High
SIGNAL PATTERN	:	Colour Bar

VOLTAGE TABLE FOR IC (ONLY FOR REFERENCES) (FOR 1P.TEXT)					
PIN NO. SYMBOL	IC101	IC601	IC801	IC802	IC302
1	5	GND	5	0	2.6
2	3.6	4.7	2	0	NC
3	8.9	5	3.6	0	2.5
4	2.5	0	0	0	2.5
5	0	0	GND	5	2.5
6	0.4	0	5	4	2.5
7	0	5	2.2	0	4.6
8	4.5	5	2.4	1.6	NC
9	4.2	5	2.5	0	4.9
10	2.3	0	5	0	NC
11	2.5	5	GND	1.1	0
12	0	5	NC	GND	2.9
13	0	2.6	5	5	3.3
14	2.6	NC	GND	NC	2.5
15	2.4	5	0.2	3.2	2.6
16	2.6	5	0.2	2.9	NC
17	9	NC	0.2	NC	0.7
18	2.9	NC	2.6	0	4.9
19	2.7	NC	1.6	0	2.7
20	2.8	NC	GND		NC
21	5.3	GND	NC		1.4
22	4	0	2.5		
23	4.8	0	NC		
24	1	0	2.9		
25	1.8	0	3.2		
26	5	4	NC		
27	5	4.9	NC		
28	9	5	NC		
29	5.2	5	NC		
30	1.6	GND	NC		
31	4.8	2.2	NC		
32	1.9	2.2	NC		
33	GND	0.2	NC		
34	1.2	0.2	NC		
35	2.9	5	NC		
36	5.2	4.8	NC		
37	2.5	5	NC		
38	2.5	3.2	NC		
39	2.9	0.3	NC		
40	7	0	NC		
41	1.6	0			
42	GND	5			
43	3.2				
44	2.3				
45	2.9				
46	4.9				
47	3.7				
48	4				
49	GND				
50	8				
51	8				
52	8.8				
53	4.6				
54	5.8				
55	8.8				
56	5.5				

NOTE : VOLTAGE ARE TAKEN UNDER TUNED CONDITION WITH
 SHARP : Maximum Position
 CONTRAST : Maximum Position
 BRIGHTNESS : Maximum Position
 COLOR : Maximum Position
 SIGNAL INPUT : 70dB ±10dB
 CHANNEL SETTING : The Last Channel of UHF High
 SIGNAL PATTERN : Colour Bar

VOLTAGE TABLE FOR IC (ONLY FOR REFERENCES) (FOR 1P.TEXT)					
PIN NO. \ SYMBOL	IC401	IC402	IC201	IC901	IC301
1	GND	12.2	2	11.2	8.8
2	12.7	GND	2.1	GND	0
3	24.4	9	GND	5	0
4	0.9		5.2		0
5	0.9		GND		GND
6	24.3		7.5		10.4
7	1.2		15.3		0
8					0
9					9
10					
11					
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13					
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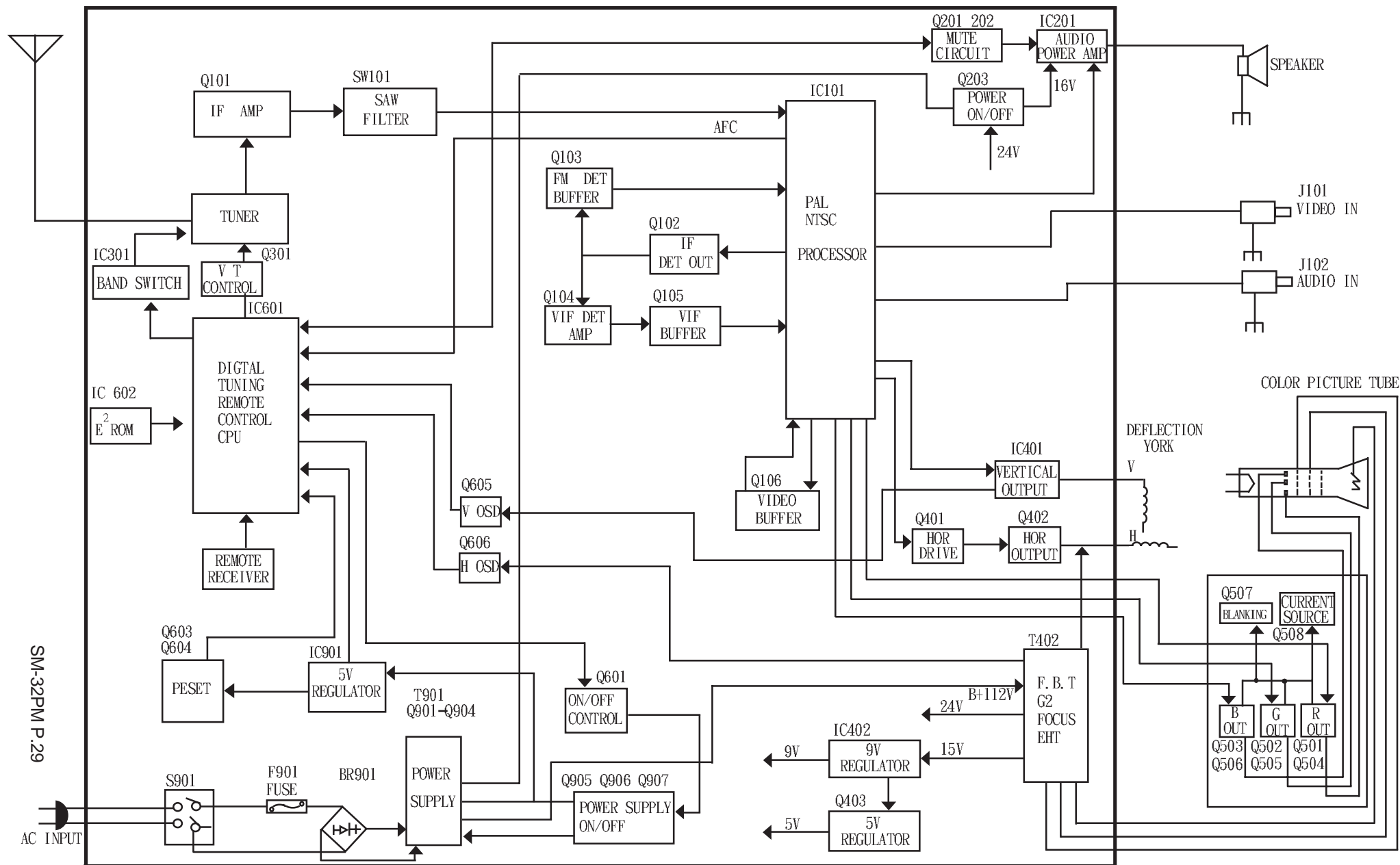
NOTE : VOLTAGE ARE TAKEN UNDER TUNED CONDITION WITH

CONTRAST : Maximum Position
 BRIGHINESS : Maximum Position
 COLOR : Maximum Position
 SIGNAL INPUT : 70dB \pm 10dB
 CHANNEL SETTING : The Last Channel of UHF High
 SIGNAL PATTERN : Colour Bar

VOLTAGE TABLE FOR IC (ONLY FOR REFERENCES) (FOR 1P.TEXT)					
PIN NO.	SYMBOL	IC001	IC602		
1		GND	GND		
2		GND	GND		
3		2.4	GND		
4		4.4	GND		
5		0	5		
6		GND	5		
7		GND	0		
8		GND	5		
9		0			
10		0			
11		0			
12		4.4			
13		1.7			
14		4.4			
15		NC			
16		9			
17					
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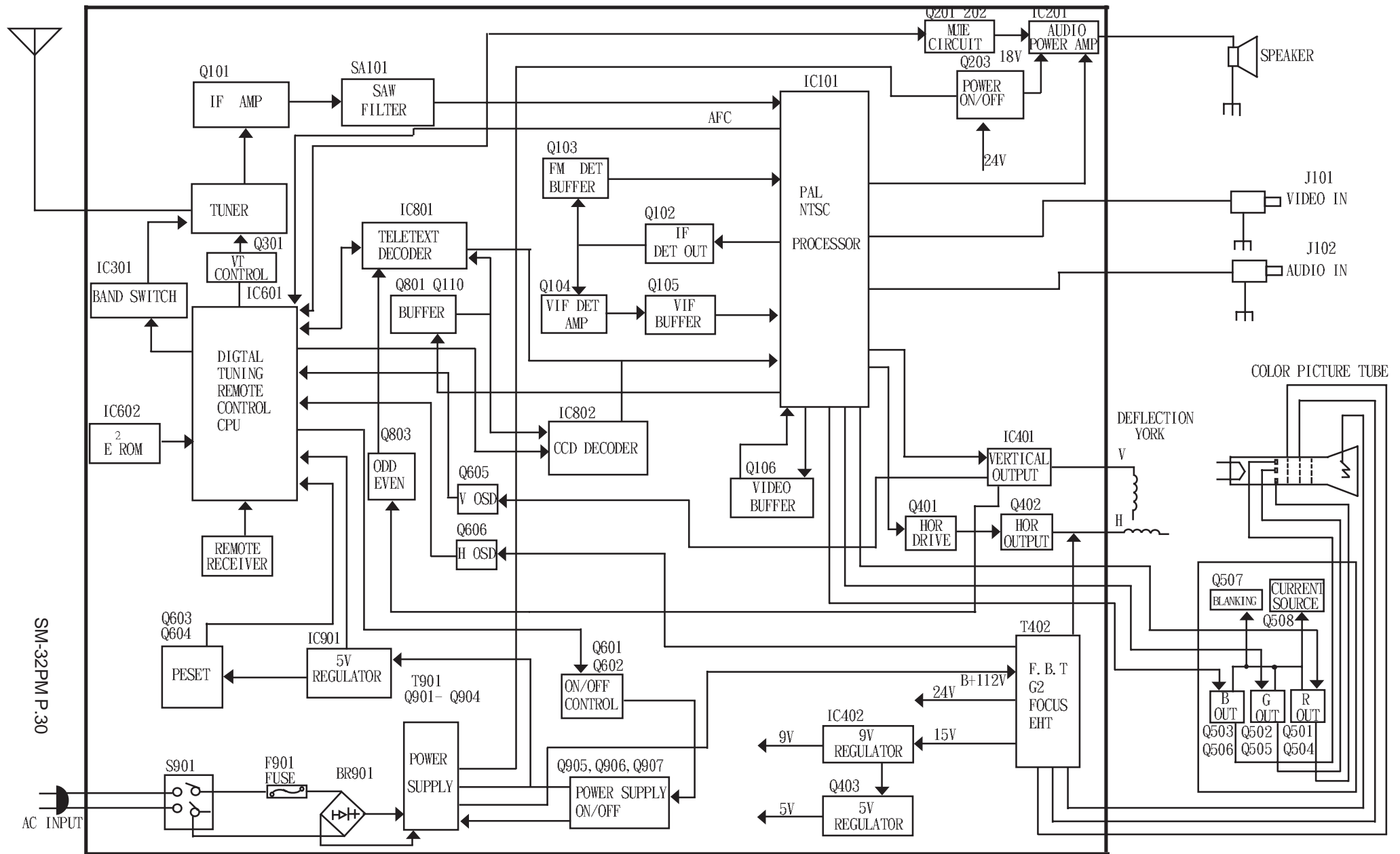
NOTE : VOLTAGE ARE TAKEN UNDER TUNED CONDITION WITH

CONTRAST : Maximum Position
 BRIGHNESS : Maximum Position
 COLOR : Maximum Position
 SIGNAL INPUT : 70dB \pm 10dB
 CHANNEL SETTING : The Last Channel of UHF High
 SIGNAL PATTERN : Colour Bar

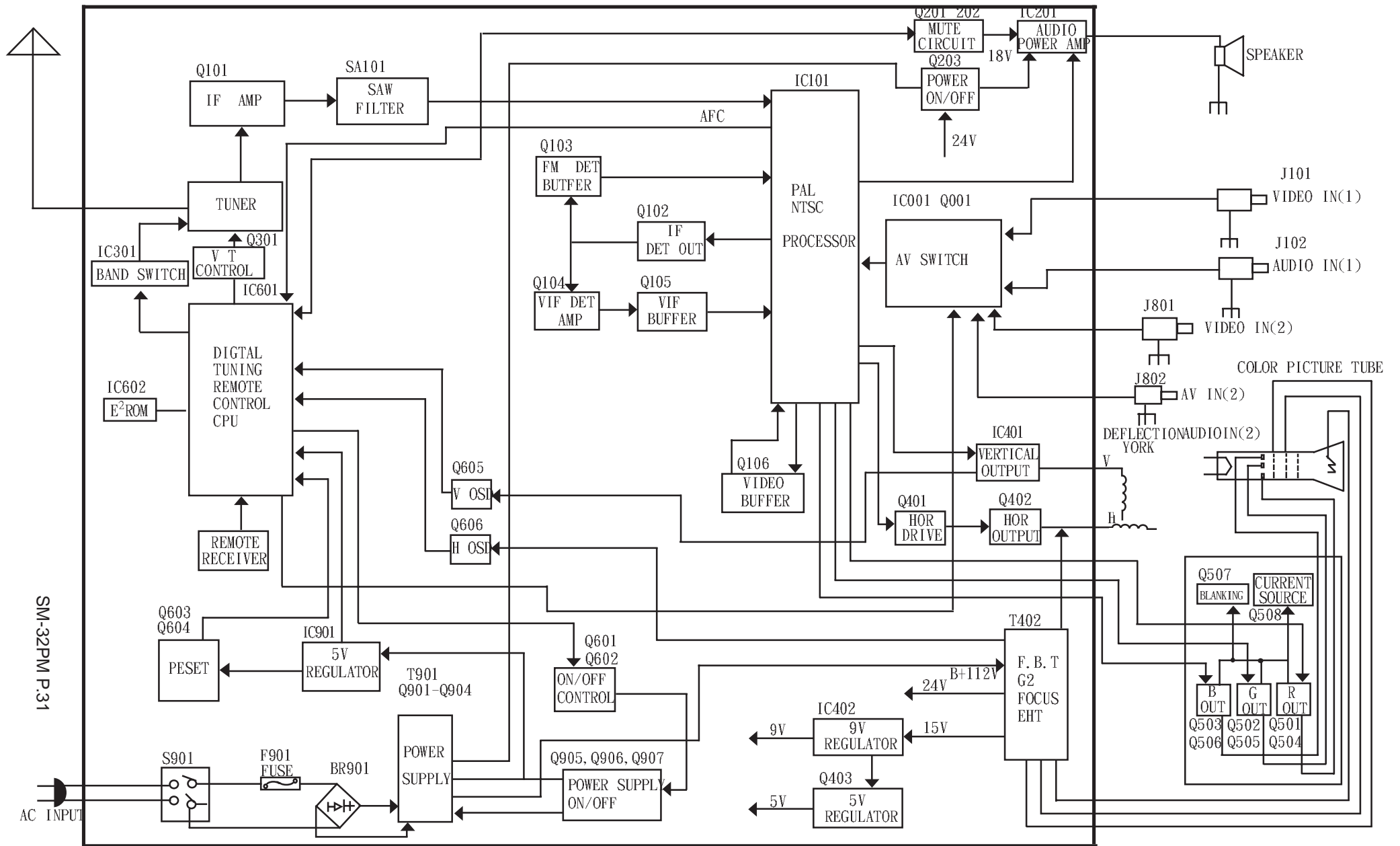


**BLOCK DIAGRAM
FOR '14' MODEL**

SM-32PM P.29

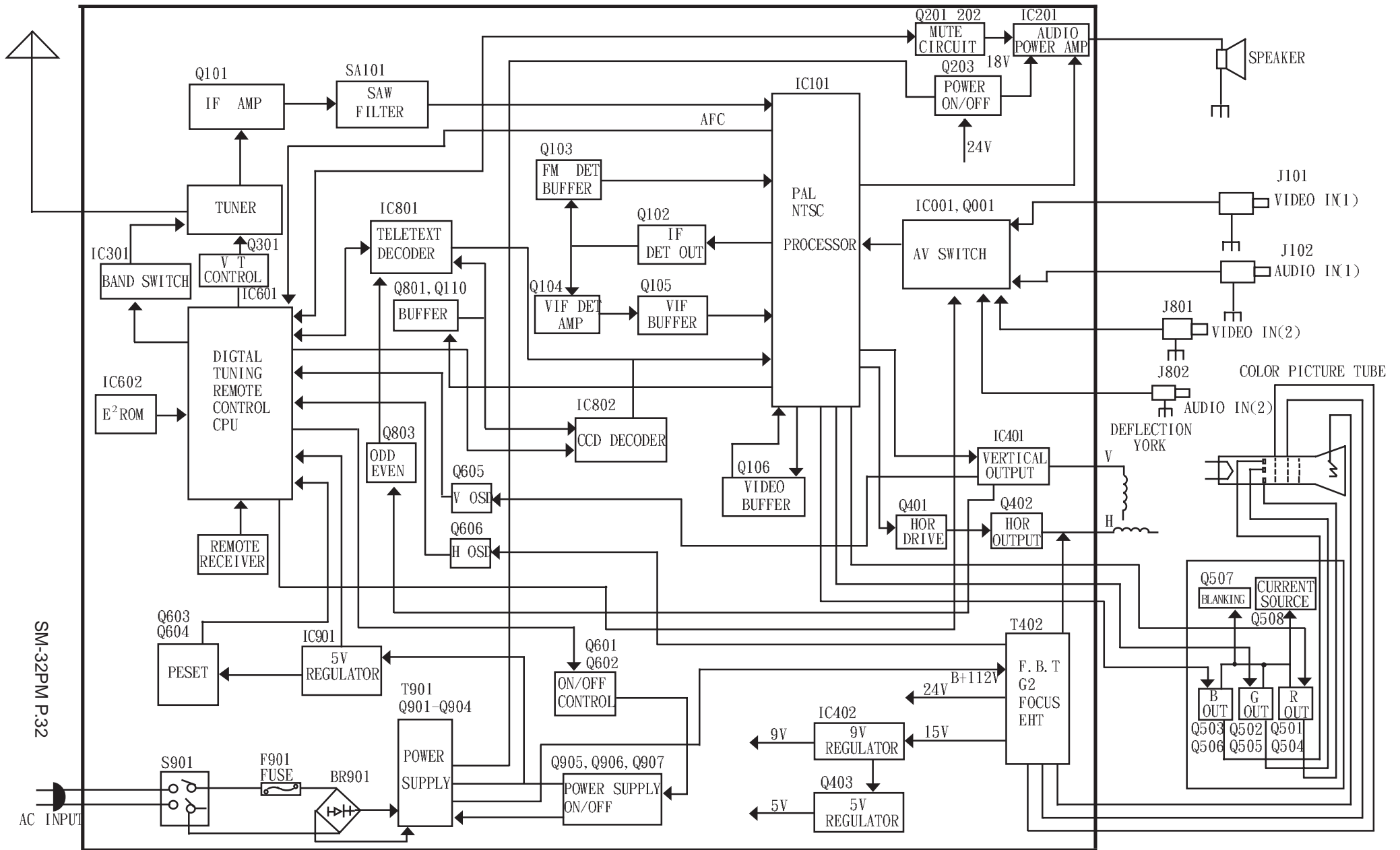


**BLOCK DIAGRAM
FOR '14' MODEL W TELETEXT & CCD**



BLOCK DIAGRAM

FOR 20",21" MODEL



**BLOCK DIAGRAM
FOR 20",21" MODEL W TELETEXT & CCD**

WIRING DIAGRAM

