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170904

Service Manual

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1. Technical Specifications, Connections, and Chassis Overview

Index of this chapter:

- 1.1 Technical Specifications
- 1.2 Connection Overview
- 1.3 Chassis Overview

Notes:

- Only information that is related to the iTV module, is published in this manual. For the other information, see the relevant chassis manual (order code on front page).
- Some models in this chassis range have a different mechanical construction. The information given here is therefore model specific.
- Figures below can deviate slightly from the actual situation, due to the different set executions.
- Specifications are indicative (subject to change).

1.1 Technical Specifications

1.1.1 Vision

Display type	: LCD
Screen size	: 15" (38 cm), 4:3 : 20" (51 cm), 4:3 : 23" (58 cm), 16:9
Resolution (HxV pixels)	: 1024x768 (15") : 640x480 (20") : 1366x768 (23")
Contrast ratio	: 500: 1 (15") : 350 : 1 (20") : 450 : 1 (23")
Light output (cd/m ²)	: 450 (15" + 20") : 500 (23")
Response time (ms)	: 16 (15" + 23") : 25 (20")
Viewing angle (HxV degrees)	: 130x100 (15") : 176x176 (20") : 140x125 (23")
Tuning system	: PLL
TV Colour systems	: PAL B/G, D/K, I : SECAM B/G, D/K, L/L'
Video playback	: NTSC : PAL : SECAM
Supported computer formats	: 640x480 (all) : 720x400 (15"+23") : 640x480 (15" + 23") : 832x624 (15" + 23") : 800x600 (15" + 23") : 1024x768 (15" + 23") : 1280x768 (23")
Supported video formats	: 640x480i-1fH (all) : 640x480p-2fH (15"+23") : 720x576i-1fH (all) : 720x576p-1fH (all) : 1280x720p-3fH (15"+23") : 1920x1080i-2fH (15"+23")
Presets/channels	: 125 presets
Tuner bands	: VHF : UHF : S-band : Hyper-band : FM-radio

1.1.2 Sound

Sound systems	: FM-mono : AM-mono : FM-stereo B/G : NICAM B/G, D/K, I, L : AV Stereo : Virtual Dolby Surround
Maximum power (W _{RMS})	: 2 x 2 (15") : 2 x 5 (20" + 23")

1.1.3 Miscellaneous

Power supply:	
- Mains voltage (V _{AC})	: 90 - 240 (15" + 23") : 100 - 250 (20")

- Mains frequency (Hz)	: 50 / 60
------------------------	-----------

Ambient conditions:	
- Temperature range (°C)	: +5 to +40
- Maximum humidity	: 90% R.H.

Power consumption (values are indicative)	
- Normal operation (W)	: ≈ 42/55/92
- Stand-by (W)	: < 1/1.5/3

Dimensions (WxHxD cm)	: 47.2x30.8x7.65 (15") : 58.3x38.6x8.7 (20") : 71.6x37.5x9.8 (23")
-----------------------	--

Weight (kg)	: 5 (15") : 8.5 (20") : 8.8 (23")
-------------	---

1.2 Connection Overview

Note: The following connector colour abbreviations are used (acc. to DIN/IEC 757): Bk= Black, Bu= Blue, Gn= Green, Gy= Grey, Rd= Red, Wh= White, and Ye= Yellow.

1.2.1 Side Connections

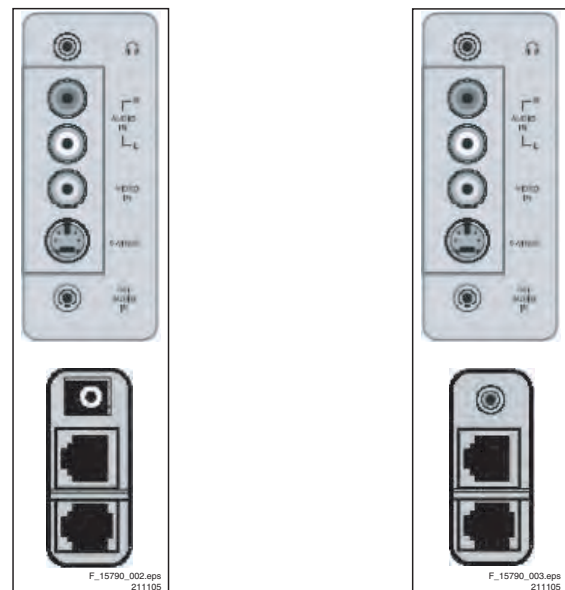


Figure 1-1 Side I/O: 15" (left side), 20"+23" (right side)

Mini Jack: Audio Head phone - Out

Bk - Head phone 32 - 600 ohm / 10 mW



Cinch: Video CVBS - In, Audio - In

Ye - Video CVBS 1 V_{PP} / 75 ohm
 Wh - Audio L 0.5 V_{RMS} / 10 kohm
 Rd - Audio R 0.5 V_{RMS} / 10 kohm



Mini Jack: DVI-Audio - In

1 - Ground Y Gnd
 2 - Ground C Gnd
 3 - Video Y 1 V_{PP} / 75 ohm
 4 - Video C 0.3 V_{PP} / 75 ohm



S-Video (Hosiden): Video Y/C - In

1 - Ground Y Gnd
 2 - Ground C Gnd
 3 - Video Y 1 V_{PP} / 75 ohm
 4 - Video C 0.3 V_{PP} / 75 ohm



12V_{DC} - In (15-inch models)

1 - Supply +12 V_{DC}
 2 - Ground Gnd
 3 - n.c.



Mini Jack: Speaker - Out (20 + 23-inch models)

- Loudspeaker 8 ohm



RJ45: DATA2 (Xpress Box- In/Out)

1 - +12V +12 V / 1 W
 2 - GND Gnd
 3 - H_{SYN} Signal
 4 - V_{SYN} Signal
 5 - TXD232 Signal
 6 - RXD232 Signal
 7 - SDA3_IR-OUT Signal
 8 - DCM-POR Signal
 9 - CVBS-terr Signal
 10 - GNDA Gnd



RJ12: DATA1 (HM-Link - In/Out)

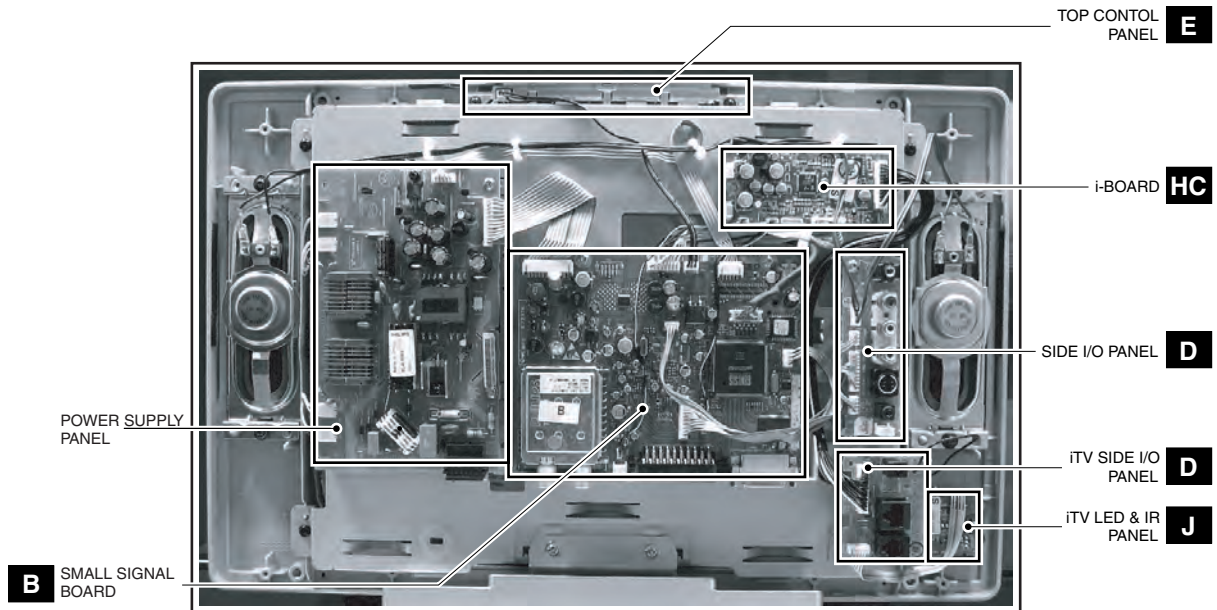
1 - LED_in < 0.3 V, active low
 2 - IR_in < 0.3 V, active low
 3 - MODE Vcc
 4 - TV Power Status 4.5 to 5 V - TV "On", < 0.3V - TV "Stdby", High impedance - TV "Off"
 5 - GND Gnd
 6 - IR_out Signal



1.2.2 Rear I/O connections

Rear connections are the same as for the LC4.1E.

1.3 Chassis Overview



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Figure 1-2 PWB locations (depending on model)

2. Safety Instructions, Warnings, and Notes

See the relevant chassis manual (order code on front page).

3. Directions for Use

See the relevant chassis manual (order code on front page).

4. Mechanical Instructions

Index of this chapter:

- 4.1 Service Position
- 4.2 Cable Dressing
- 4.3 Assy/Panel Removal
- 4.4 Set Re-assembly

Notes:

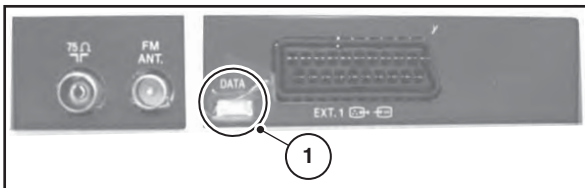
- Only information that is related to the iTV module, is published in this manual. For the other information, see the relevant chassis manual (order code on front page).
- Figures below can deviate slightly from the actual situation, due to the different set executions.
- Follow the disassembling instructions in described order.

Note: To diagnose the set with ComPair it is **not** needed to open the set entirely.

To access the ComPair connector, proceed with the following:

1. *Manually unlock and remove the cover cap.*
2. Remove the tape shielding that covers the ComPair connector (1).

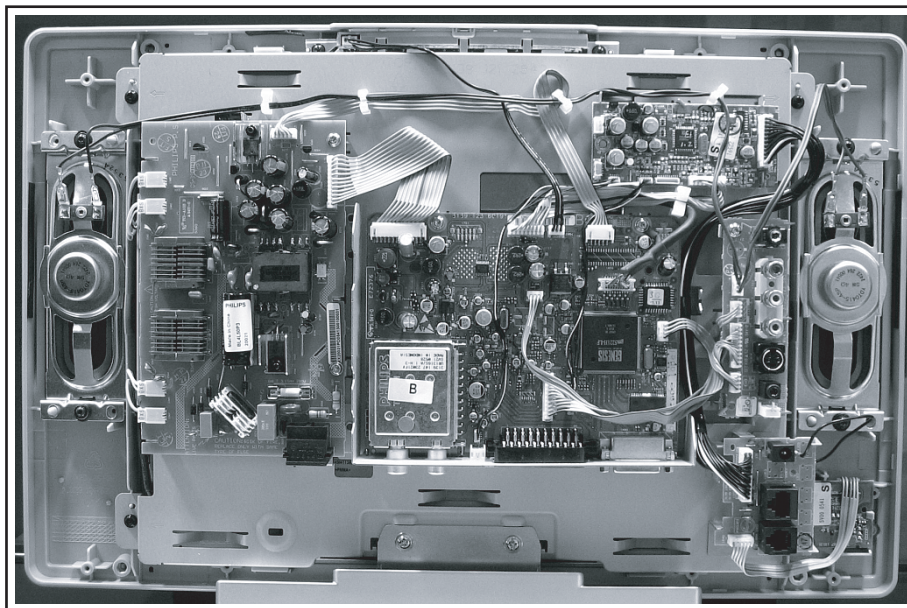
Note: Make sure that both the ComPair connector and the UART connector are shielded off with a piece of insulating tape after repair for ESD reasons. Place this tape over the holes in the rear cover of the set.



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Figure 4-1 ComPair connector

4.2 Cable Dressing

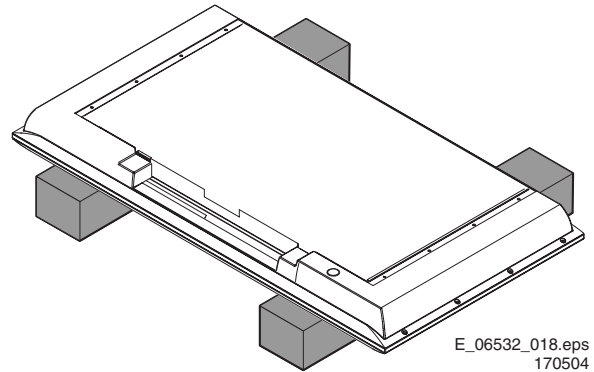


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Figure 4-3 Cable dressing (15-inch model)

4.1 Service Position

4.1.1 Foam Bars



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170504

Figure 4-2 Foam bars

The foam bars (order code 3122 785 90580) can be used for all types and sizes of Flat TVs. By laying the plasma or LCD TV flat on the (ESD protective) foam bars, a stable situation is created to perform measurements and alignments. By placing a mirror under the TV, you can easily monitor the screen.

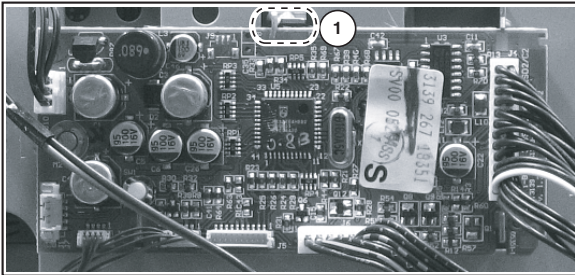
4.3 Assy/Panel Removal

4.3.1 Rear Cover

Warning: Disconnect the mains power cord before you remove the rear cover.

1. Remove the screws that secure the rear cover.
2. Lift the rear cover from the cabinet cautiously. Make sure that wires and other internal components are not damaged during cover removal.

4.3.2 i-Board Panel

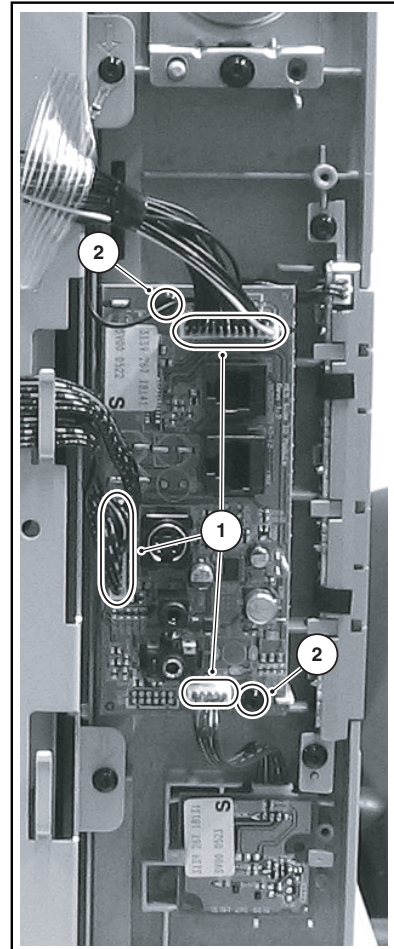


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201205

Figure 4-4 i-Board panel

1. Disconnect all cables from the panel.
2. Untwist the fixation lip [1] c.c.w. with a pair of pliers.
3. Remove the panel.

4.3.3 Side I/O Panel



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071205

Figure 4-5 Side I/O panel

1. Disconnect the cable [1] from the panel.
2. Release the two fixation clamps [2] and lift the panel out of the bracket.

4.4 Set Re-assembly

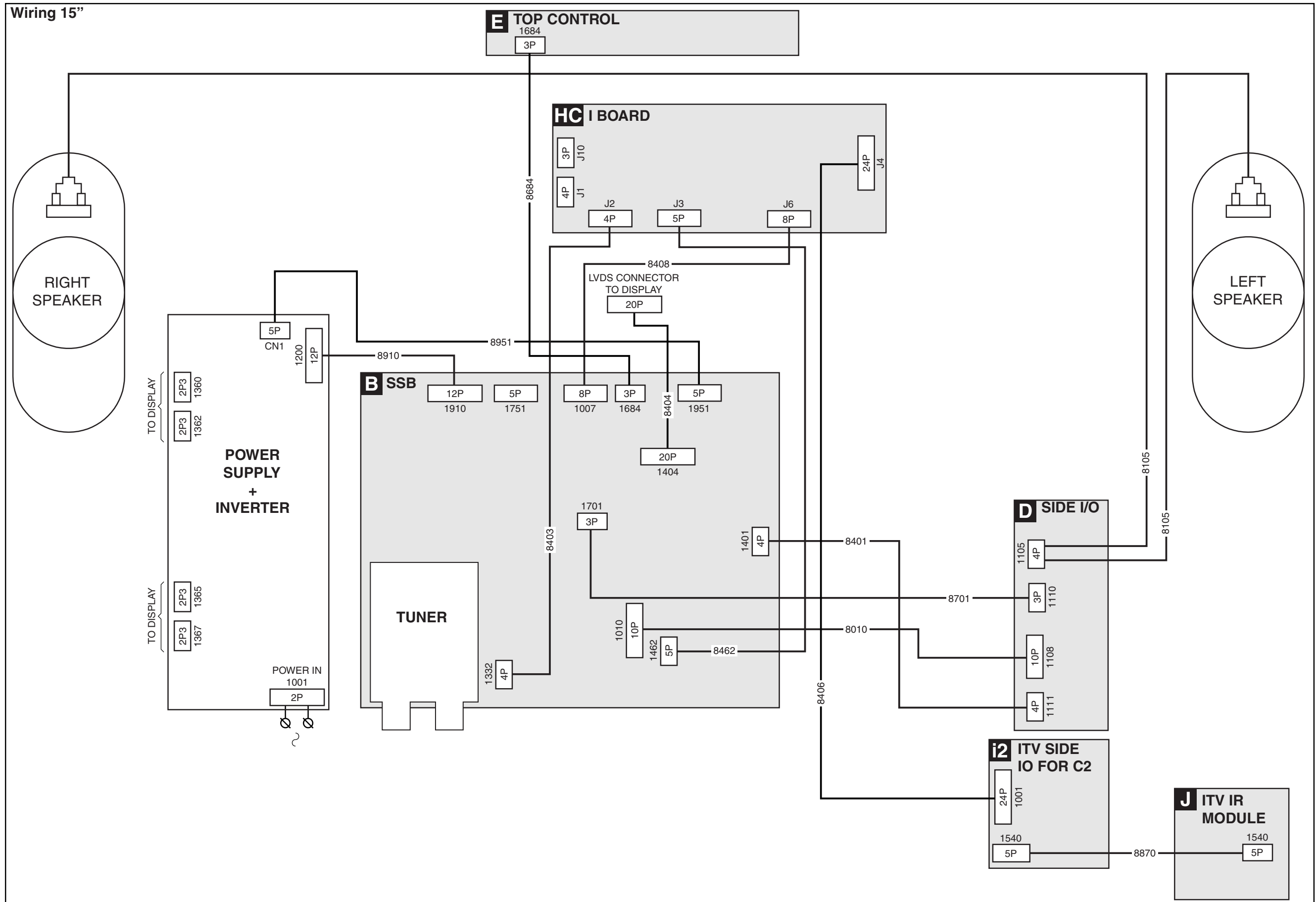
To re-assemble the whole set, execute all processes in reverse order.

Notes:

- While re-assembling, make sure that all cables are placed and connected in their original positions. See Figure "Cable dressing". Also make sure that the anti-static copper foils are not damaged and that they make good electrical contact with the metal frame. Be careful with the fragile LVDS cable.

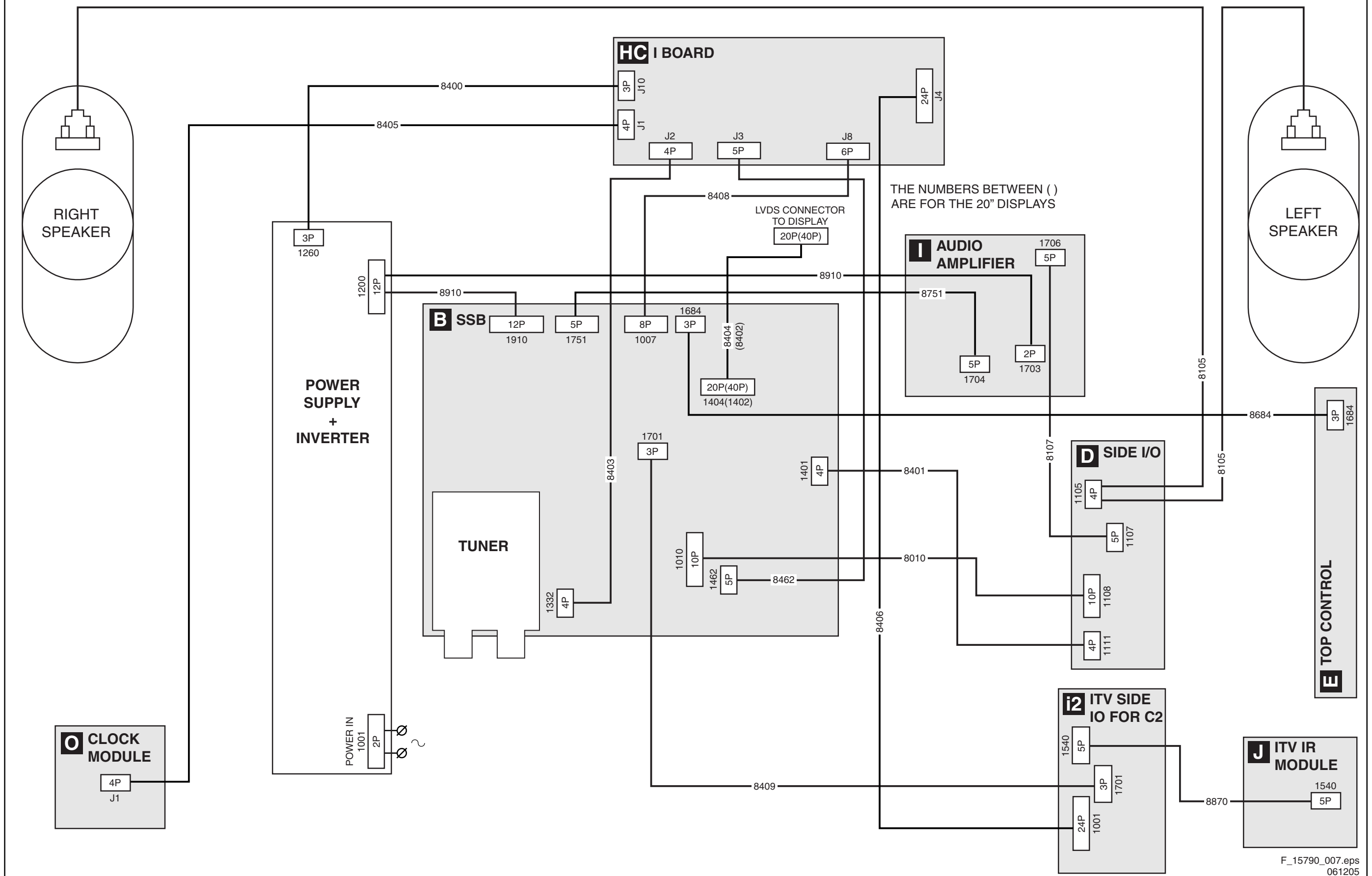
6. Block Diagrams, Test Point Overviews, and Waveforms

Wiring Diagram 15''

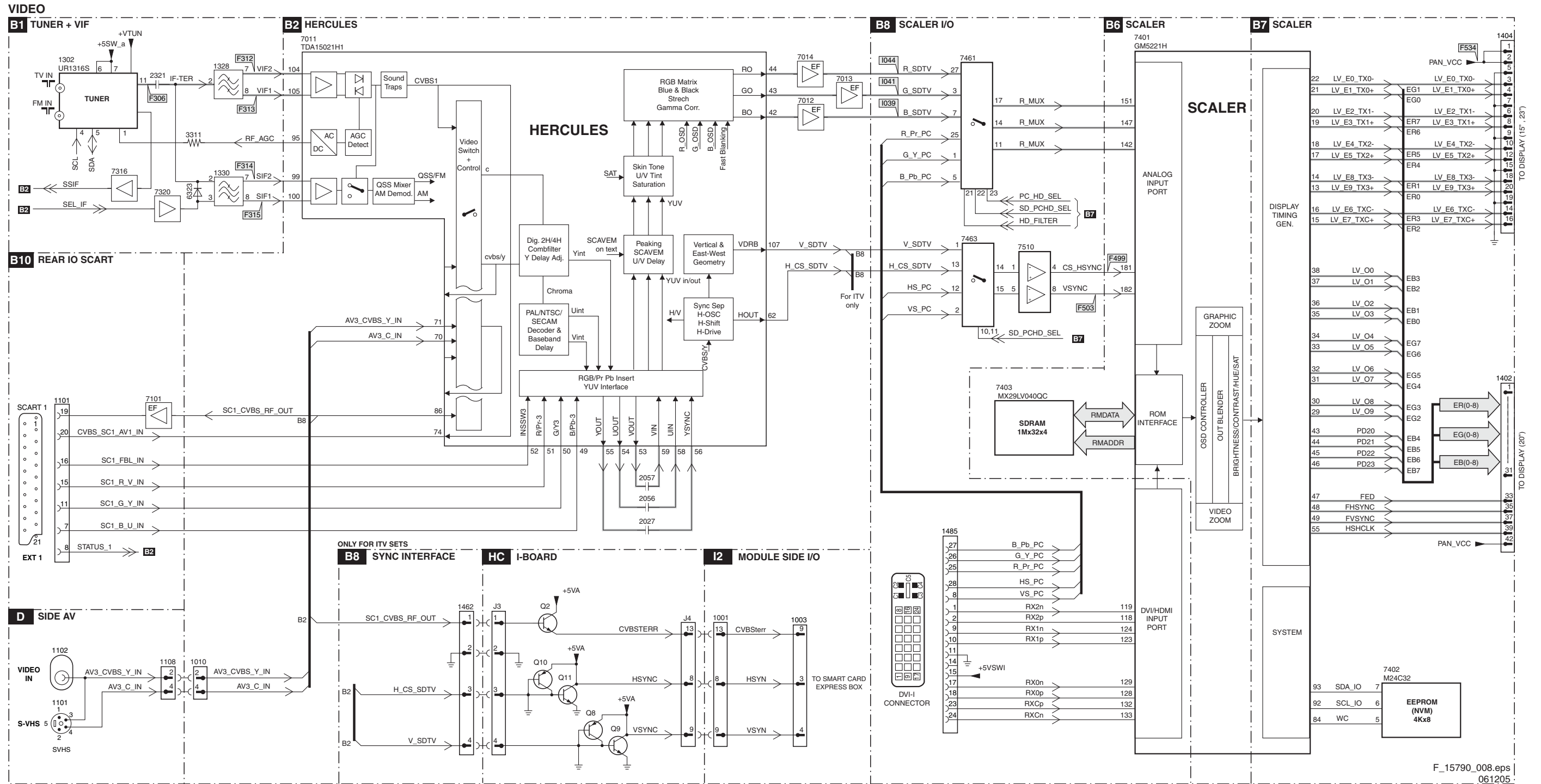


Wiring Diagram 20" & 23"

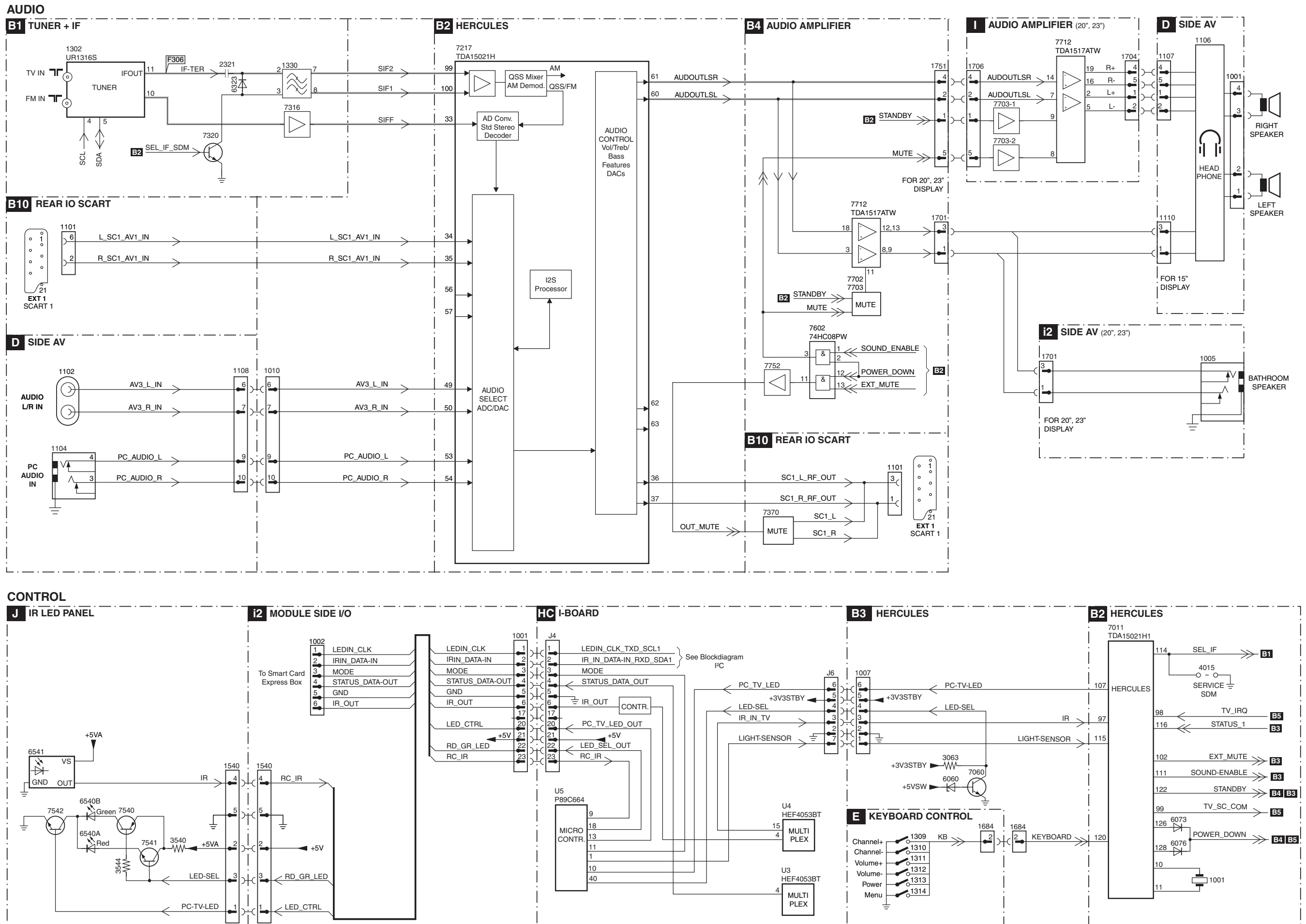
WIRING 20" AND 23"



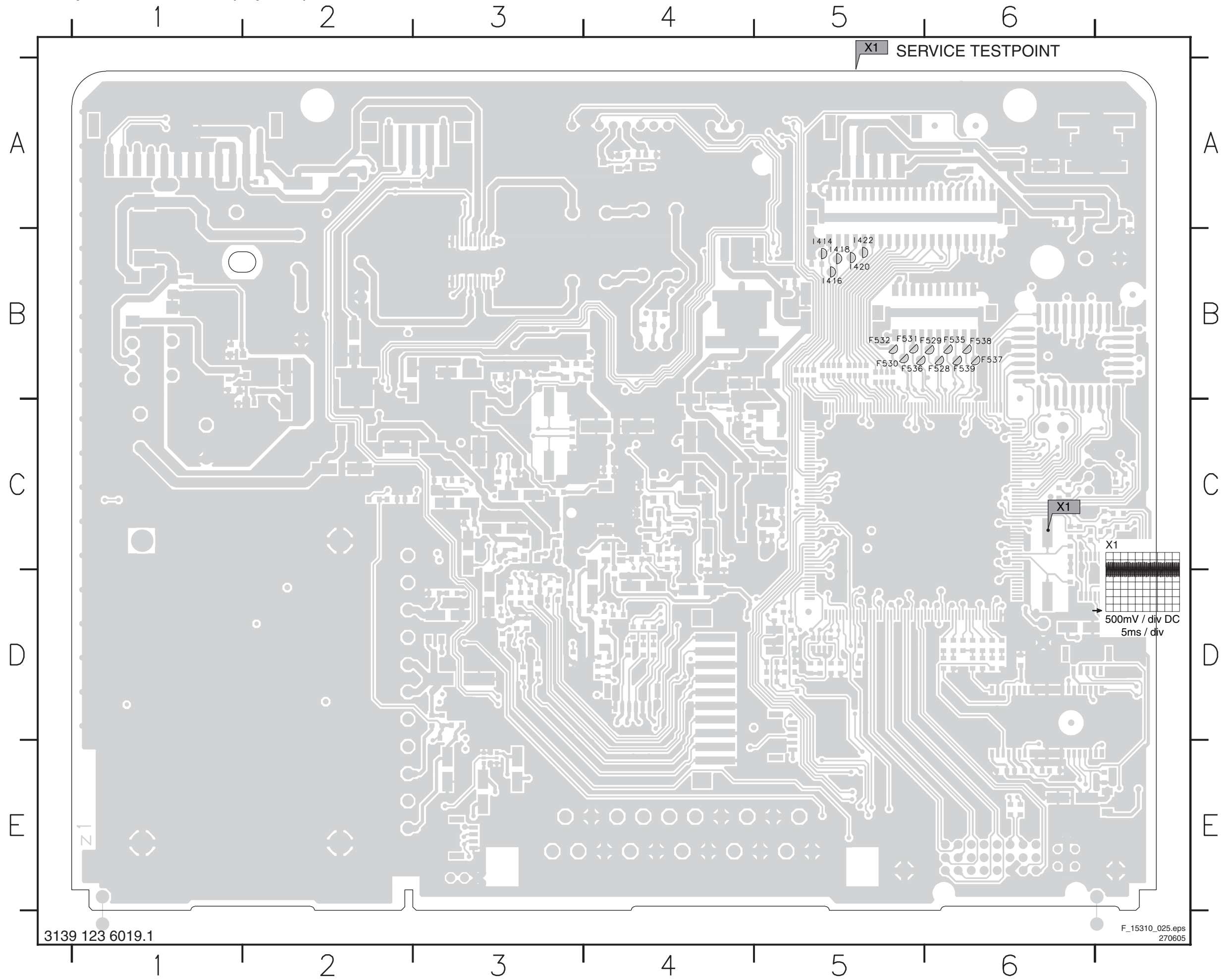
Block Diagram Video



Block Diagram Audio & Control

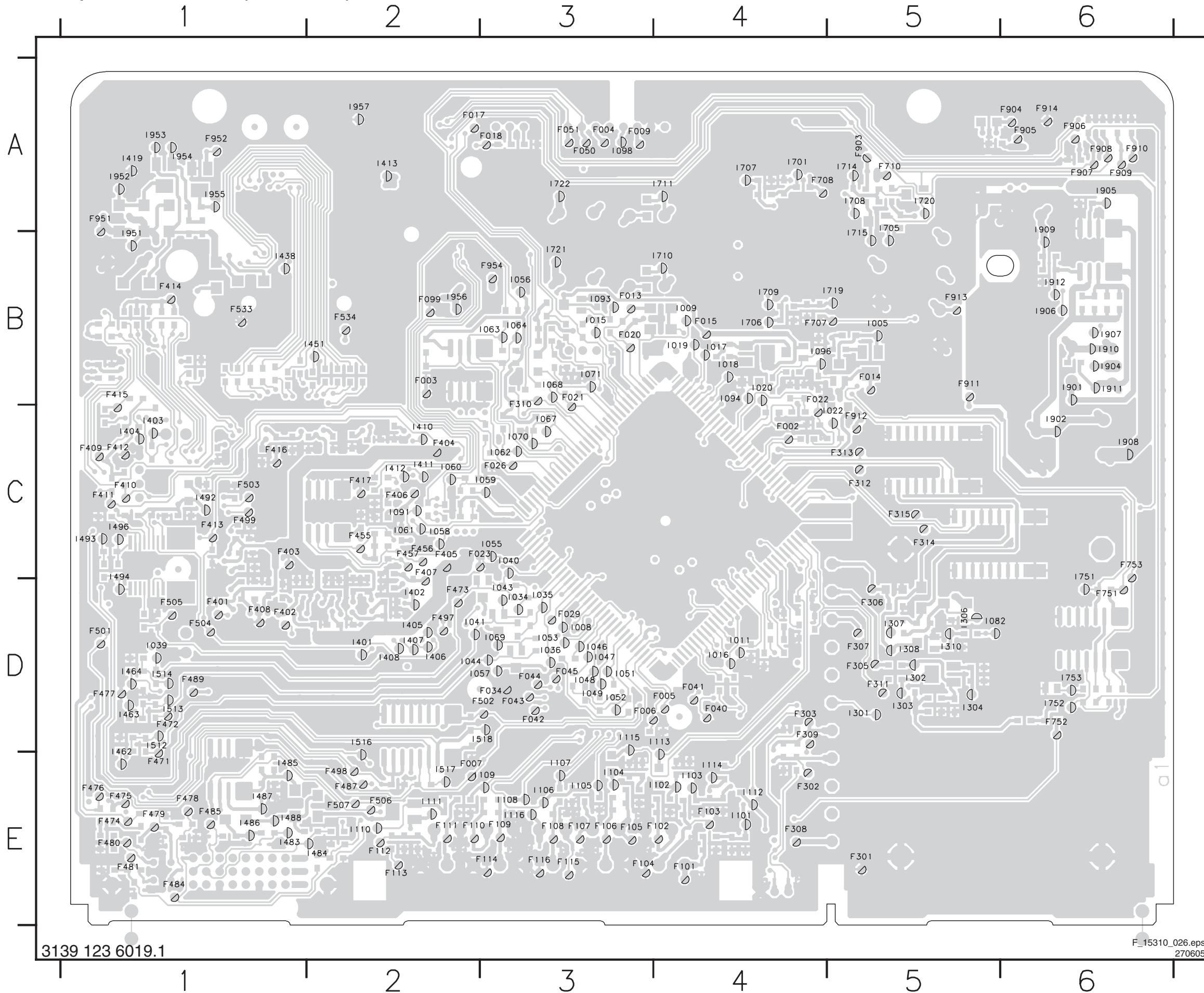


Testpoint Overview SSB (Top Side)



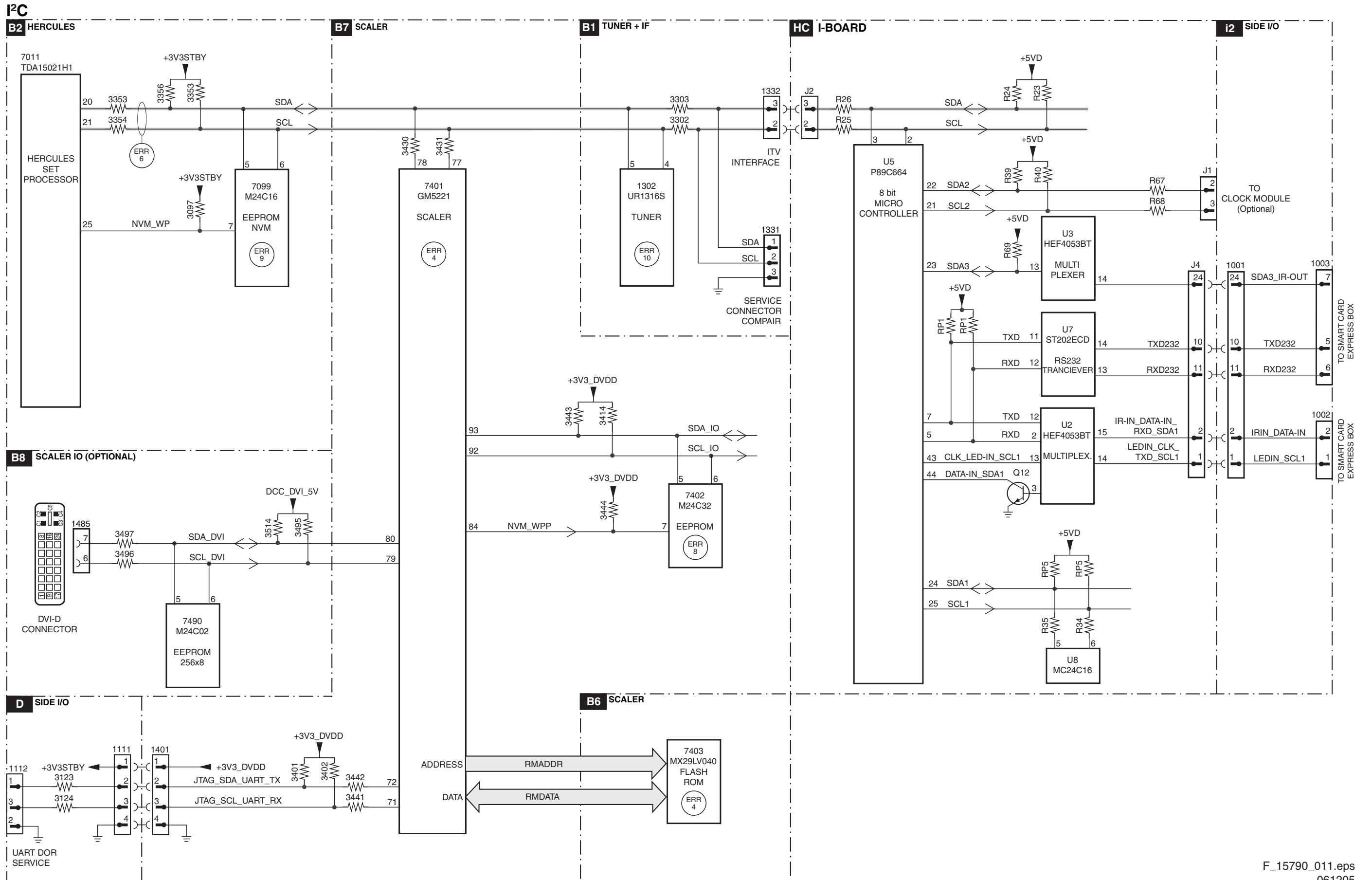
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- F529 B6
- F530 B5
- F531 B5
- F532 B5
- F535 B6
- F536 B5
- F537 B6
- F538 B6
- F539 B6
- I414 B5
- I416 B5
- I418 B5
- I420 B5
- I422 B5

Testpoint Overview SSB (Bottom Side)



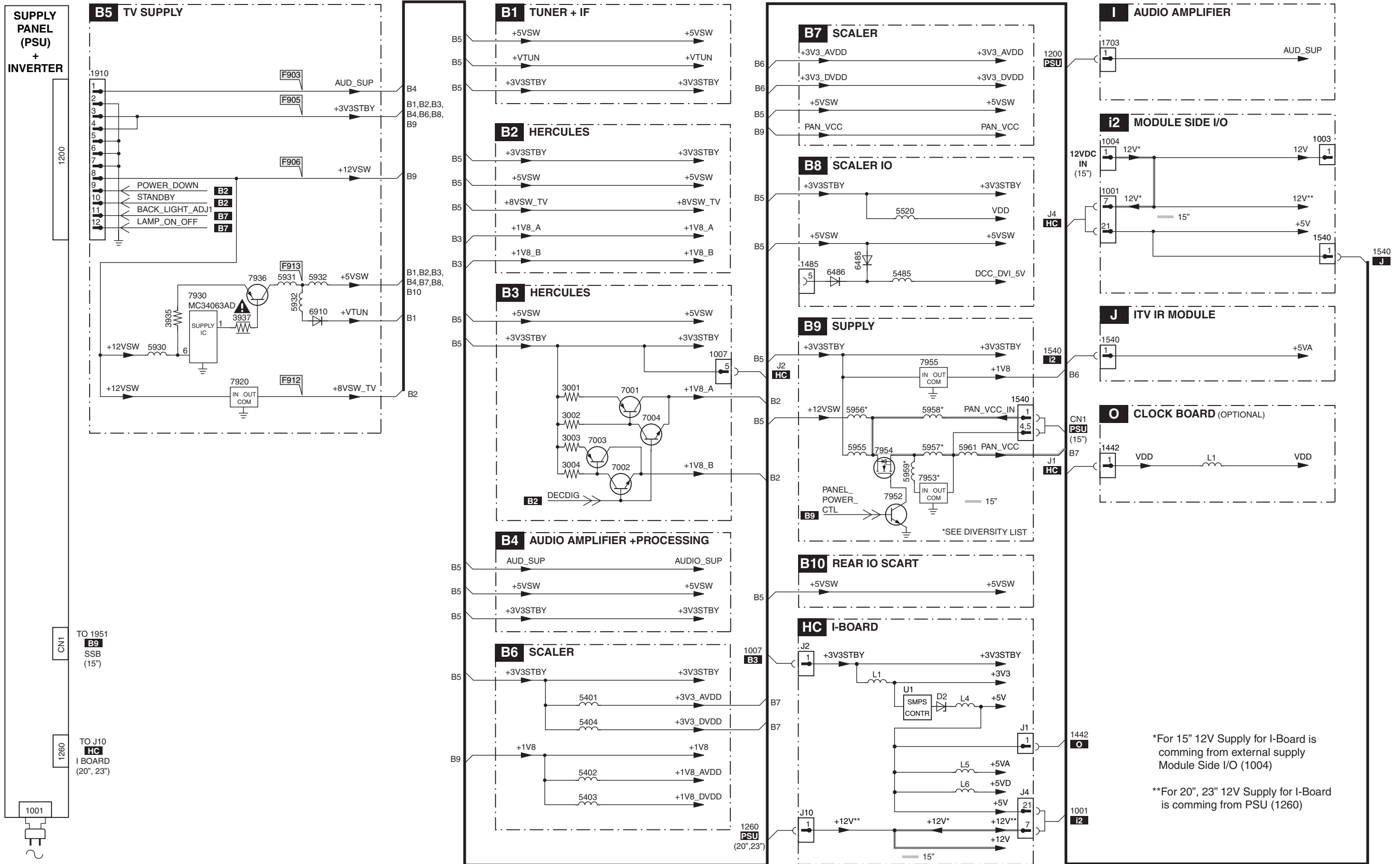
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F003	B2	F479	E1	I096	B4	I910	B6
F004	A3	F480	E1	I098	A3	I911	B6
F005	D4	F481	E1	I101	E4	I912	B6
F006	D3	F484	E1	I102	E4	I951	B1
F007	E2	F485	E1	I103	E4	I952	A1
F009	A3	F487	E2	I104	E3	I953	A1
F013	B3	F489	D1	I105	E3	I954	A1
F014	B5	F497	D2	I106	E3	I955	A1
F015	B4	F498	E2	I107	E3	I956	B2
F017	A2	F499	C1	I108	E3	I957	A2
F018	A3	F501	D1	I109	E3		
F020	B3	F502	D3	I110	E2		
F021	B3	F503	C1	I111	E2		
F022	B4	F504	D1	I112	E4		
F023	C2	F505	D1	I113	D4		
F026	C3	F506	E2	I114	E4		
F029	D3	F507	E2	I115	D3		
F034	D3	F533	B1	I116	E3		
F040	D4	F534	B2	I301	D5		
F041	D4	F707	B4	I302	D5		
F042	D3	F708	A4	I303	D5		
F043	D3	F710	A5	I304	D5		
F044	D3	F751	D6	I306	D5		
F045	D3	F752	D6	I307	D5		
F050	A3	F753	C6	I308	D5		
F051	A3	F903	A5	I310	D5		
F099	B2	F904	A6	I401	D2		
F101	E4	F905	A6	I402	D2		
F102	E4	F906	A6	I403	C1		
F103	E4	F907	A6	I404	C1		
F104	E3	F908	A6	I405	D2		
F105	E3	F909	A6	I406	D2		
F106	E3	F910	A6	I407	D2		
F107	E3	F911	B5	I408	D2		
F108	E3	F912	C5	I410	C2		
F109	E3	F913	B5	I411	C2		
F110	E2	F914	A6	I412	C2		
F111	E2	F951	A1	I413	A2		
F112	E2	F952	A1	I419	A1		
F113	E2	F954	B3	I438	B1		
F114	E3	I005	B5	I451	B2		
F115	E3	I008	D3	I462	D1		
F116	E3	I009	B4	I463	D1		
F301	E5	I011	D4	I464	D1		
F302	E4	I015	B3	I483	E1		
F303	D4	I016	D4	I484	E2		
F305	D5	I017	B4	I485	E1		
F306	D5	I018	B4	I486	E1		
F307	D5	I019	B4	I487	E1		
F308	E4	I020	B4	I488	E1		
F309	D4	I022	C5	I492	C1		
F310	B3	I034	D3	I493	C1		
F311	D5	I035	D3	I494	C1		
F312	C5	I036	D3	I496	C1		
F313	C5	I039	D1	I512	D1		
F314	C5	I040	C3	I513	D1		
F315	C5	I041	D2	I514	D1		
F401	D1	I043	D3	I516	D2		
F402	D1	I044	D2	I517	E2		
F403	C1	I046	D3	I518	D3		
F404	C2	I047	D3	I701	A4		
F405	C2	I048	D3	I705	A5		
F406	C2	I049	D3	I706	B4		
F407	C2	I051	D3	I707	A4		
F408	D1	I052	D3	I708	A5		
F409	C1	I053	D3	I709	B4		
F410	C1	I055	C3	I710	B4		
F411	C1	I056	B3	I711	A4		
F412	C1	I057	D2	I714	A5		
F413	C1	I058	C2	I715	B5		
F414	B1	I059	C3	I719	B5		
F415	B1	I060	C2	I720	A5		
F416	C1	I061	C2	I721	B3		
F417	C2	I062	C3	I722	A3		
F455	C2	I063	B3	I751	C6		
F456	C2	I064	B3	I752	D6		
F457	C2	I067	C3	I753	D6		
F471	E1	I068	B3	I901	B6		
F472	D1	I069	D3	I902	C6		
F473	D2	I070	C3	I904	B6		
F474	E1	I071	B3	I905	A6		
F475	E1	I082	D5	I906	B6		
F476	E1	I091	C2	I907	B6		
F477	D1	I093	B3	I908	C6		

I2C Overview



Supply Voltage Overview

SUPPLY LINE OVERVIEW

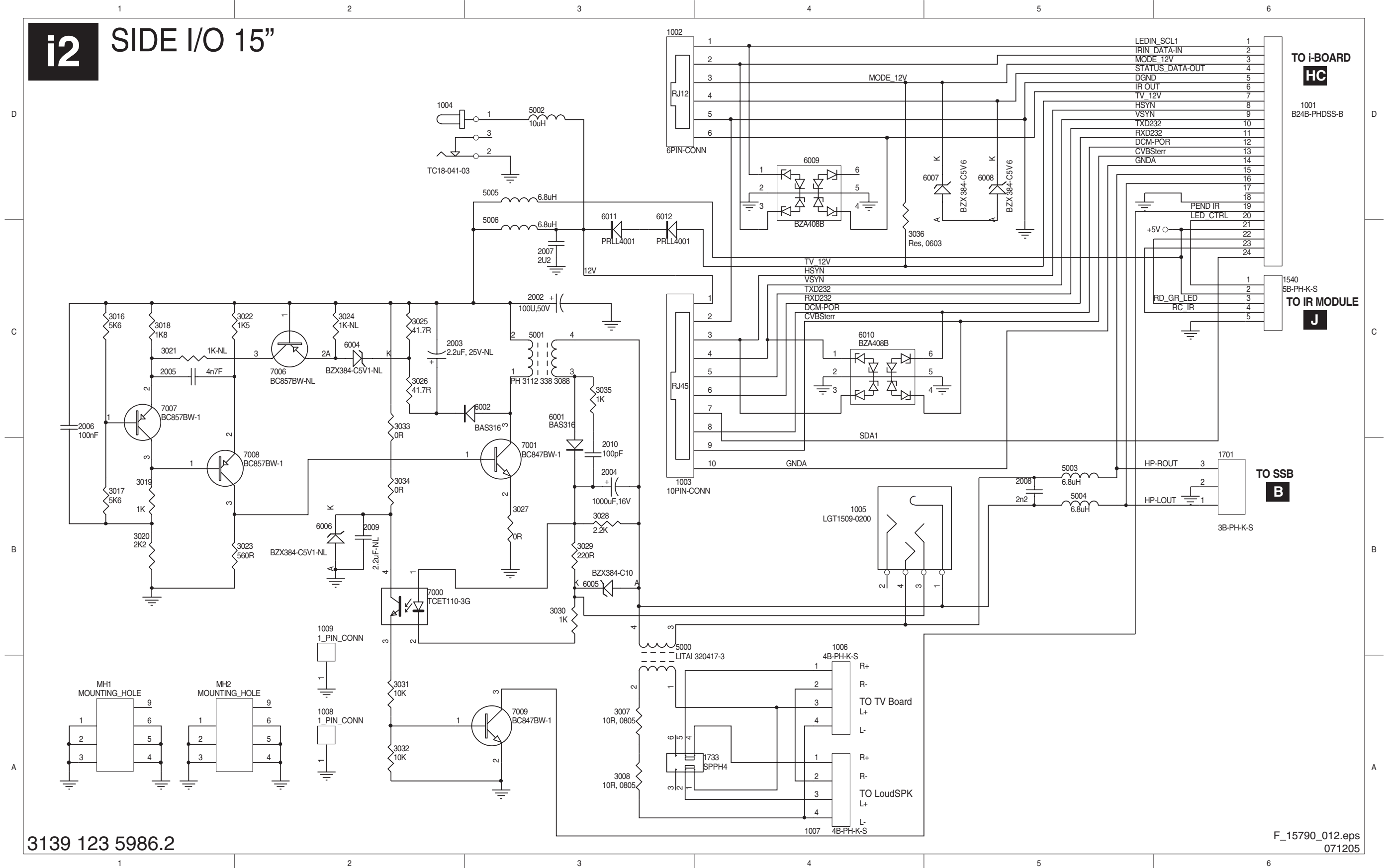


*For 15" 12V Supply for I-Board is coming from external supply Module Side I/O (1004)

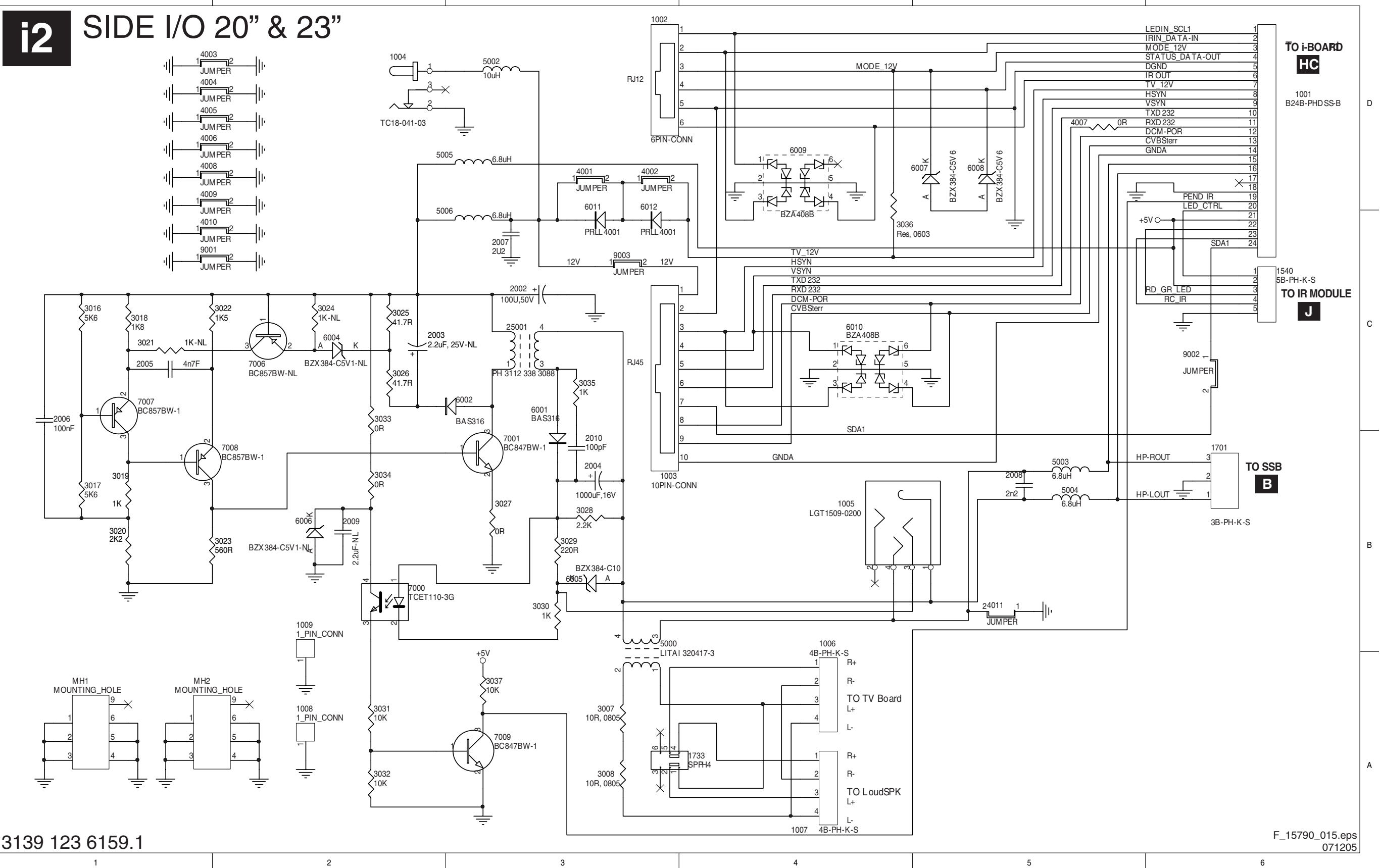
**For 20", 23" 12V Supply for I-Board is coming from PSU (1260)

7. Circuit Diagrams and PWB Layouts

Side I/O Panel & LKB 15"



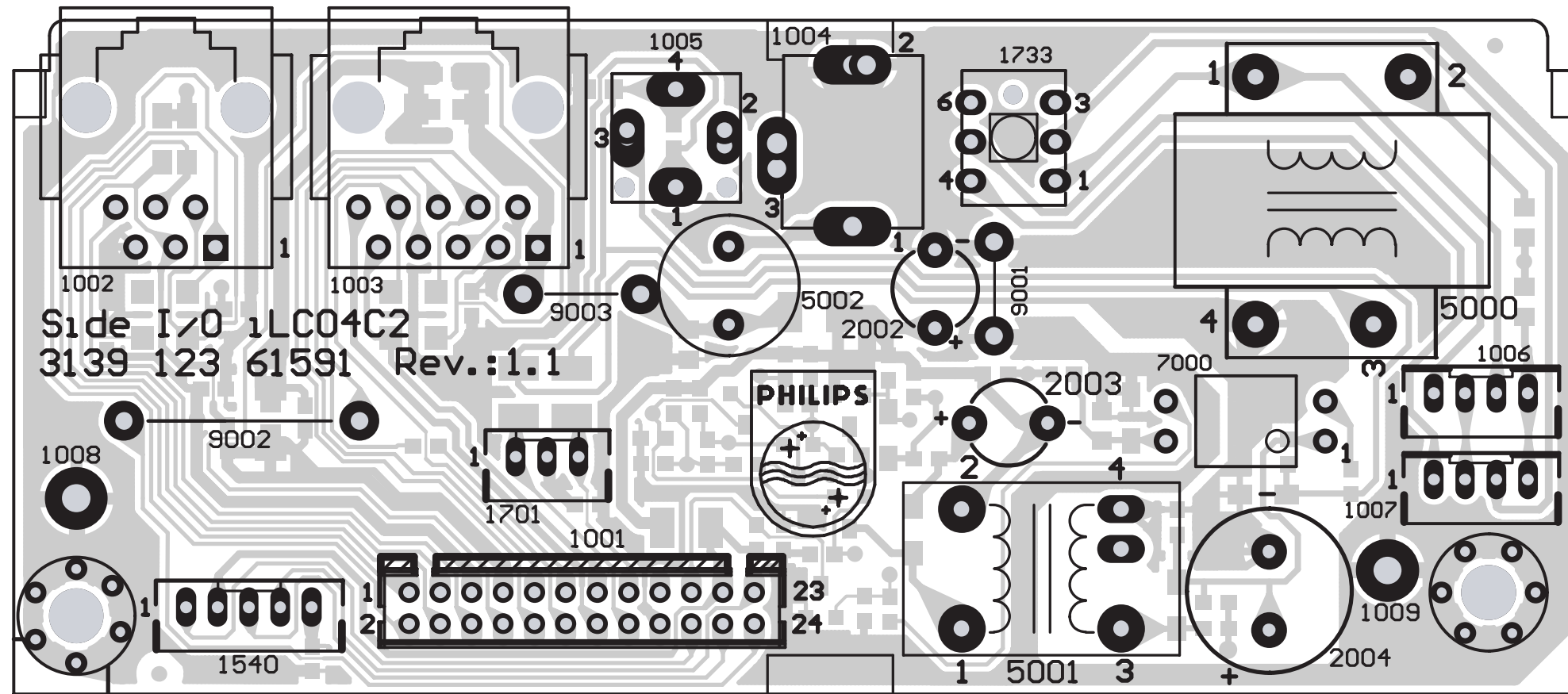
Side I/O & Panel & LKB 20" & 23"



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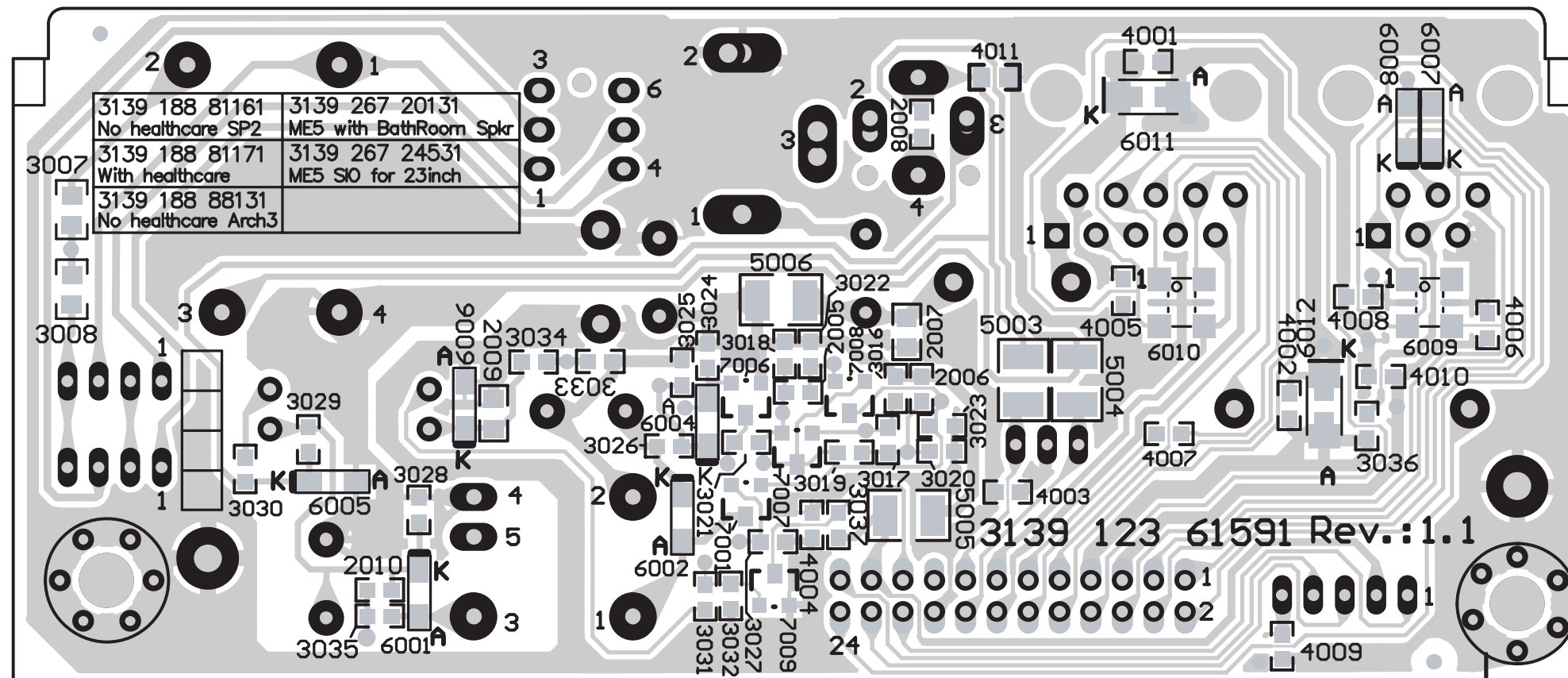
Layout Side I/O Panel 20" & 23" (Top Side)



3139 123 6159.1

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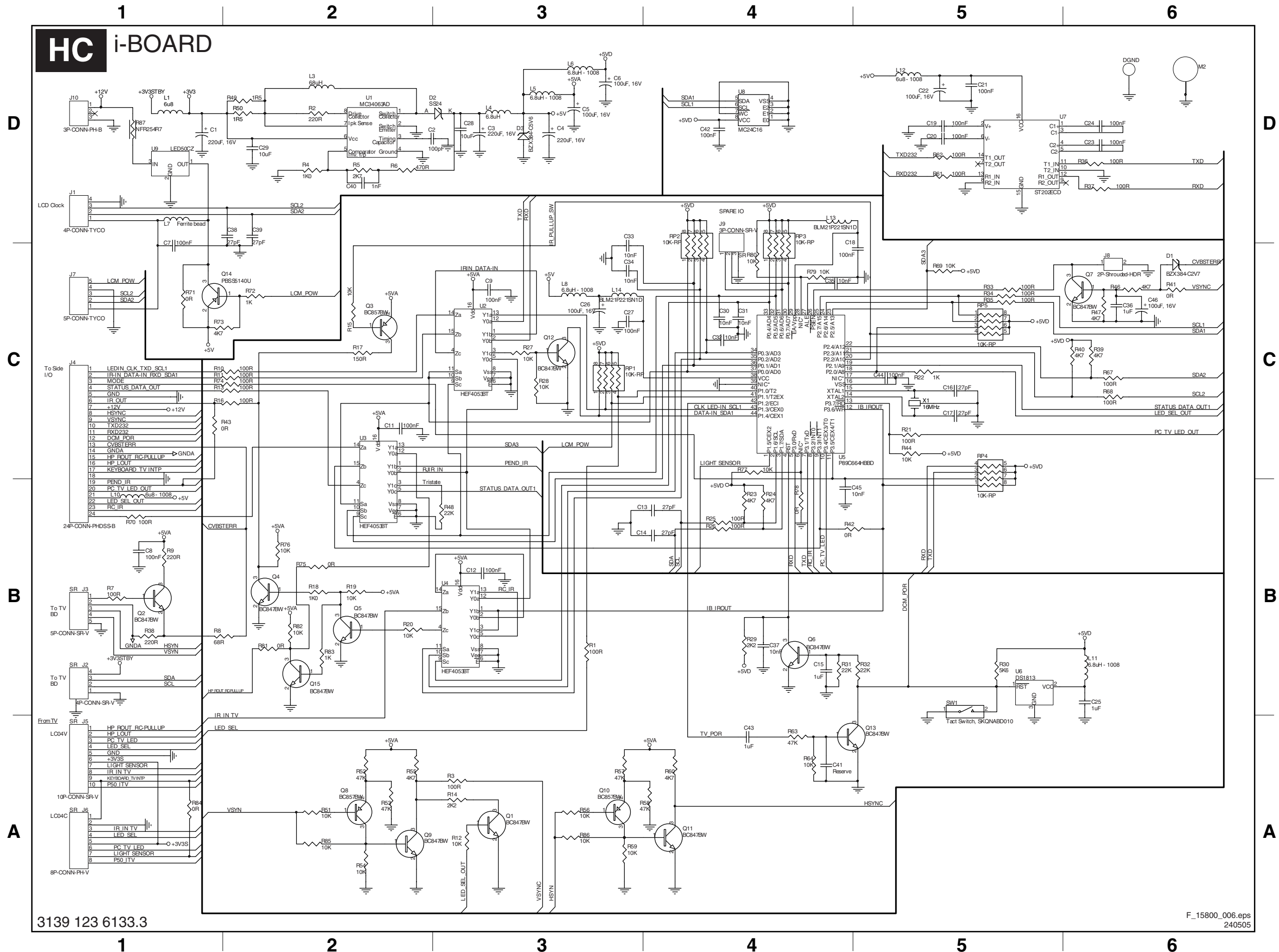
Layout Side I/O Panel 20" & 23" (Bottom Side)



3139 123 6159.1

F_15790_017.eps
061205

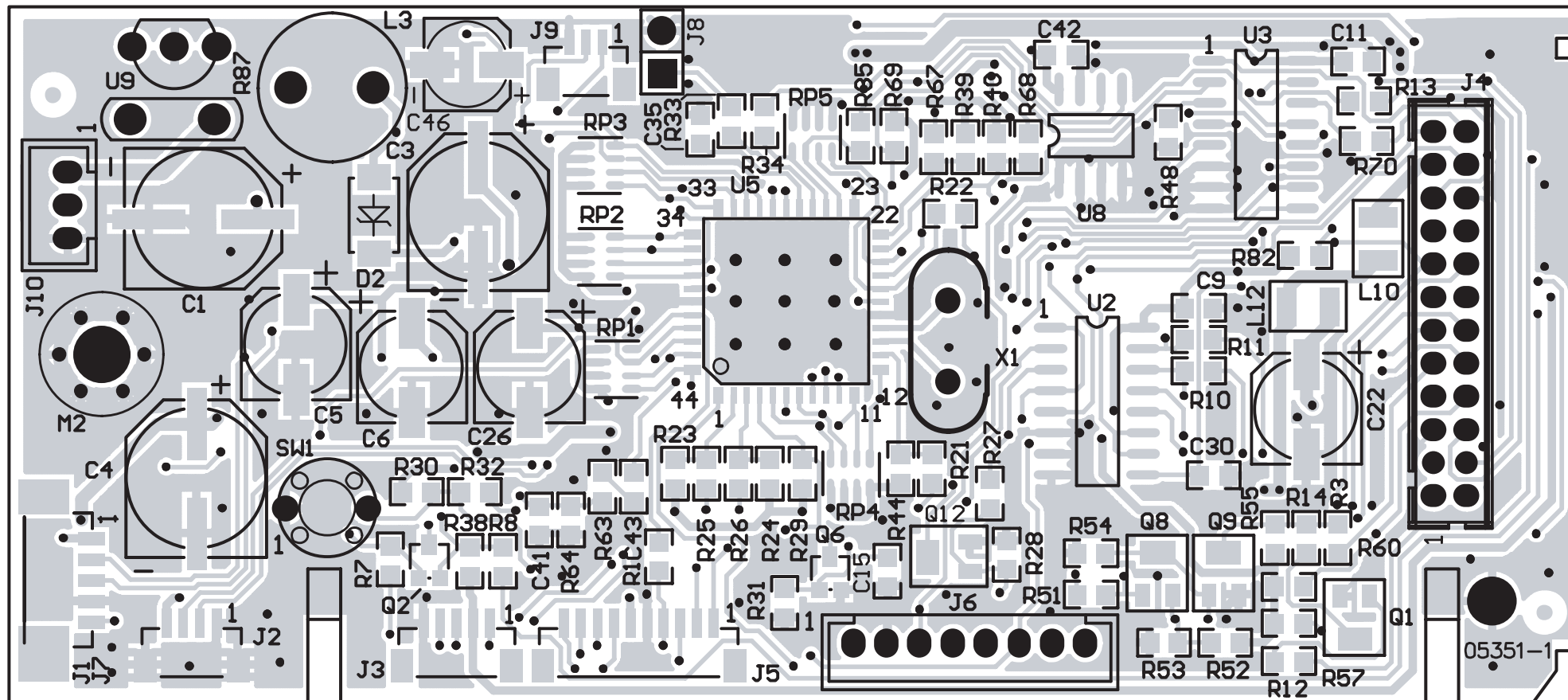
i-Board Panel



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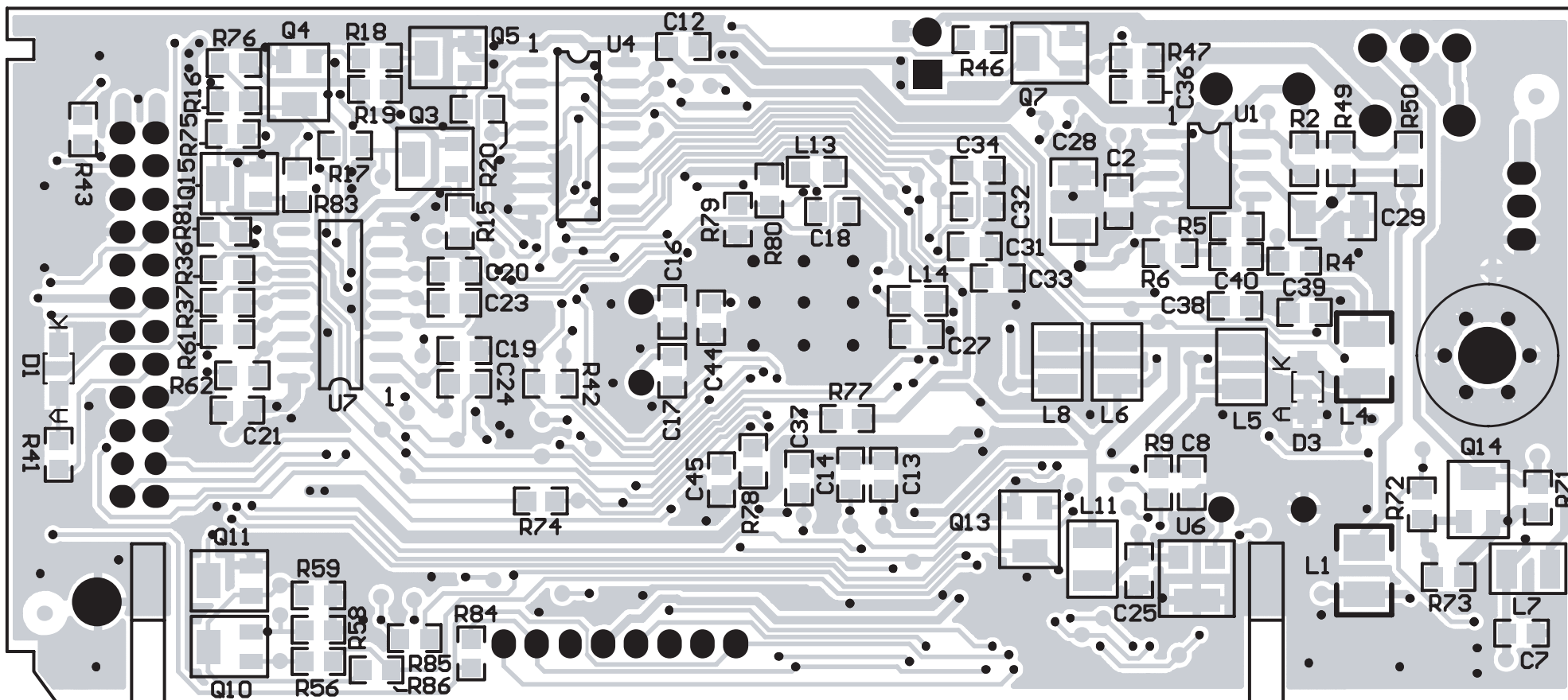
Layout i-Board Panel (Top Side)



3139 123 6133.3

F_15800_007.eps
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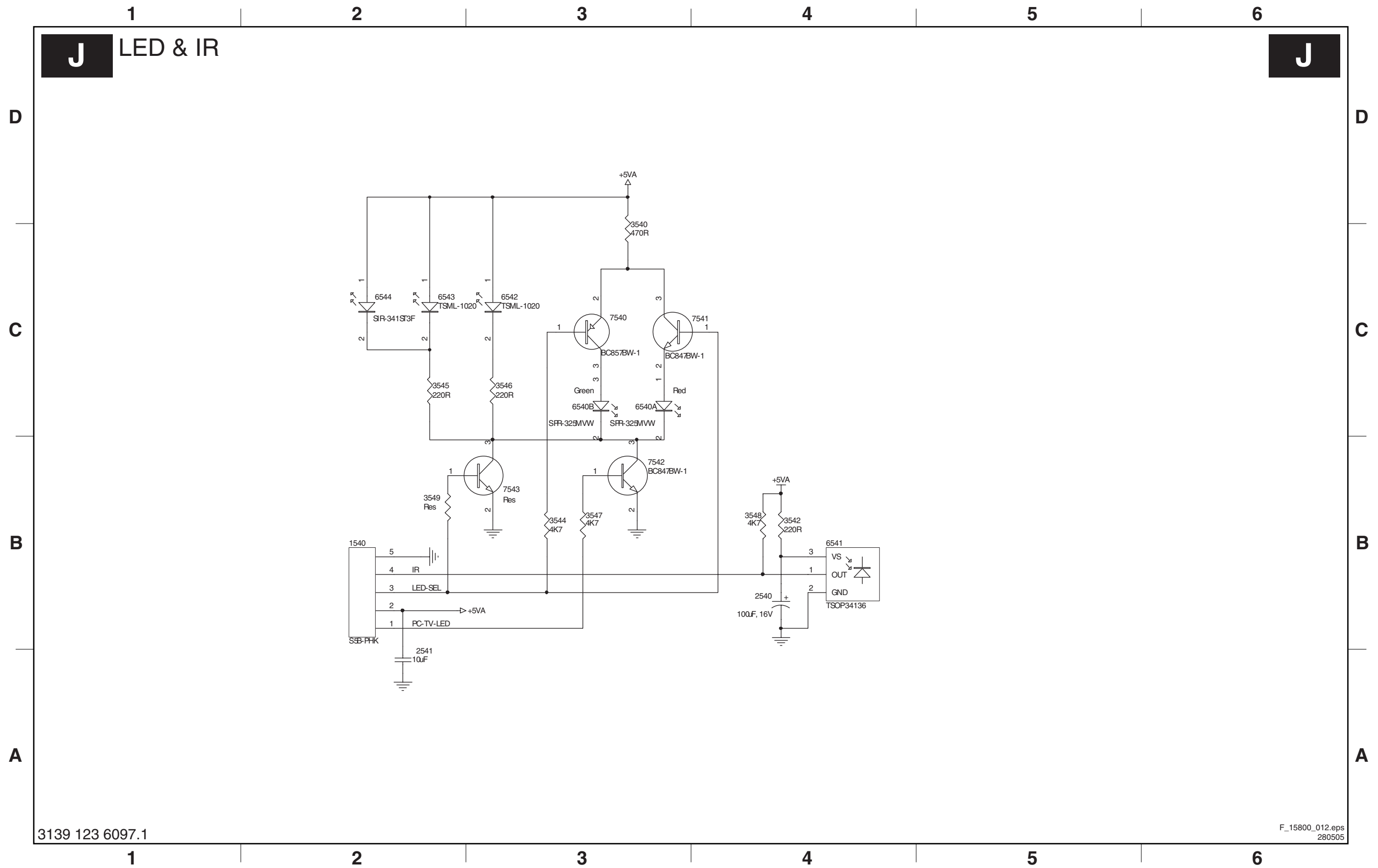
Layout i-Board Panel (Bottom Side)



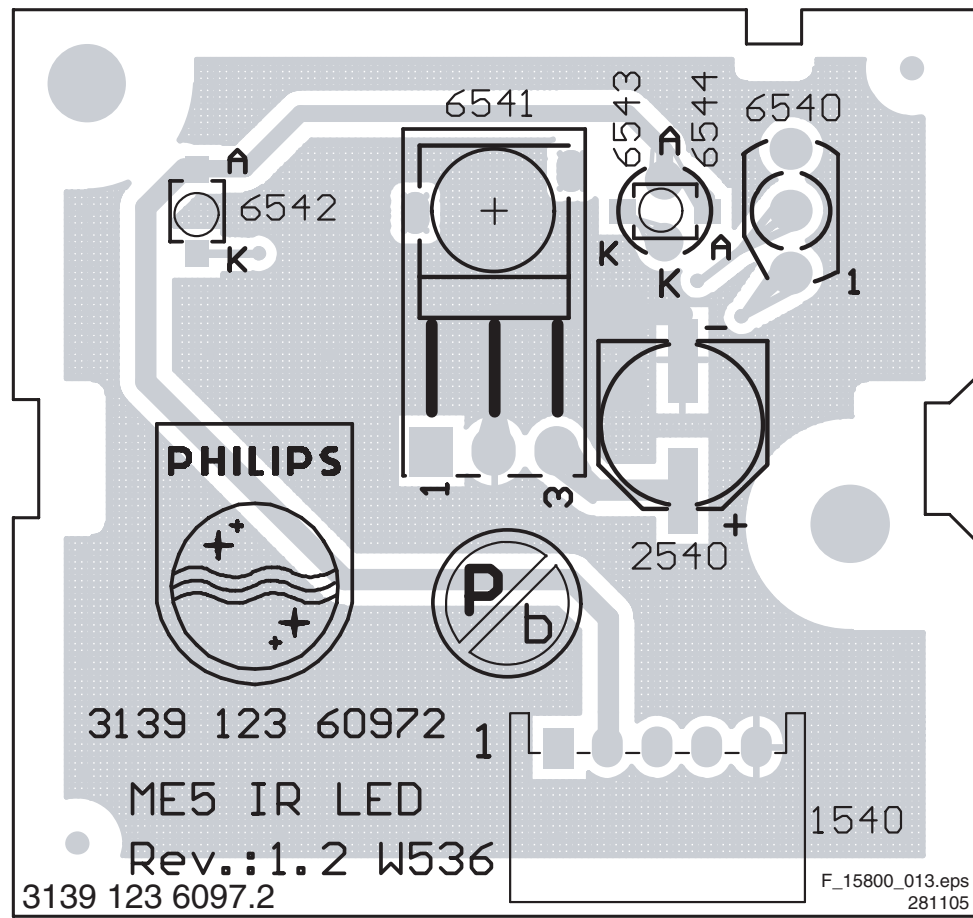
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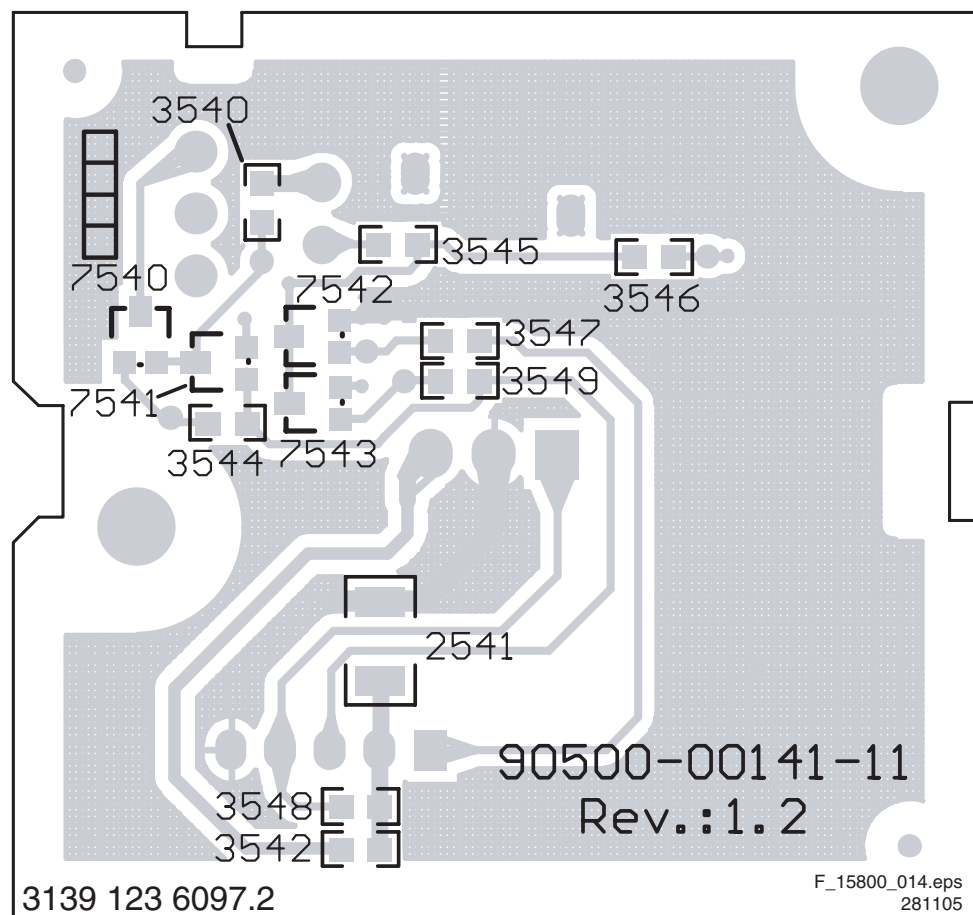
LED and IR Panel



Layout LED and IR Panel (Top Side)

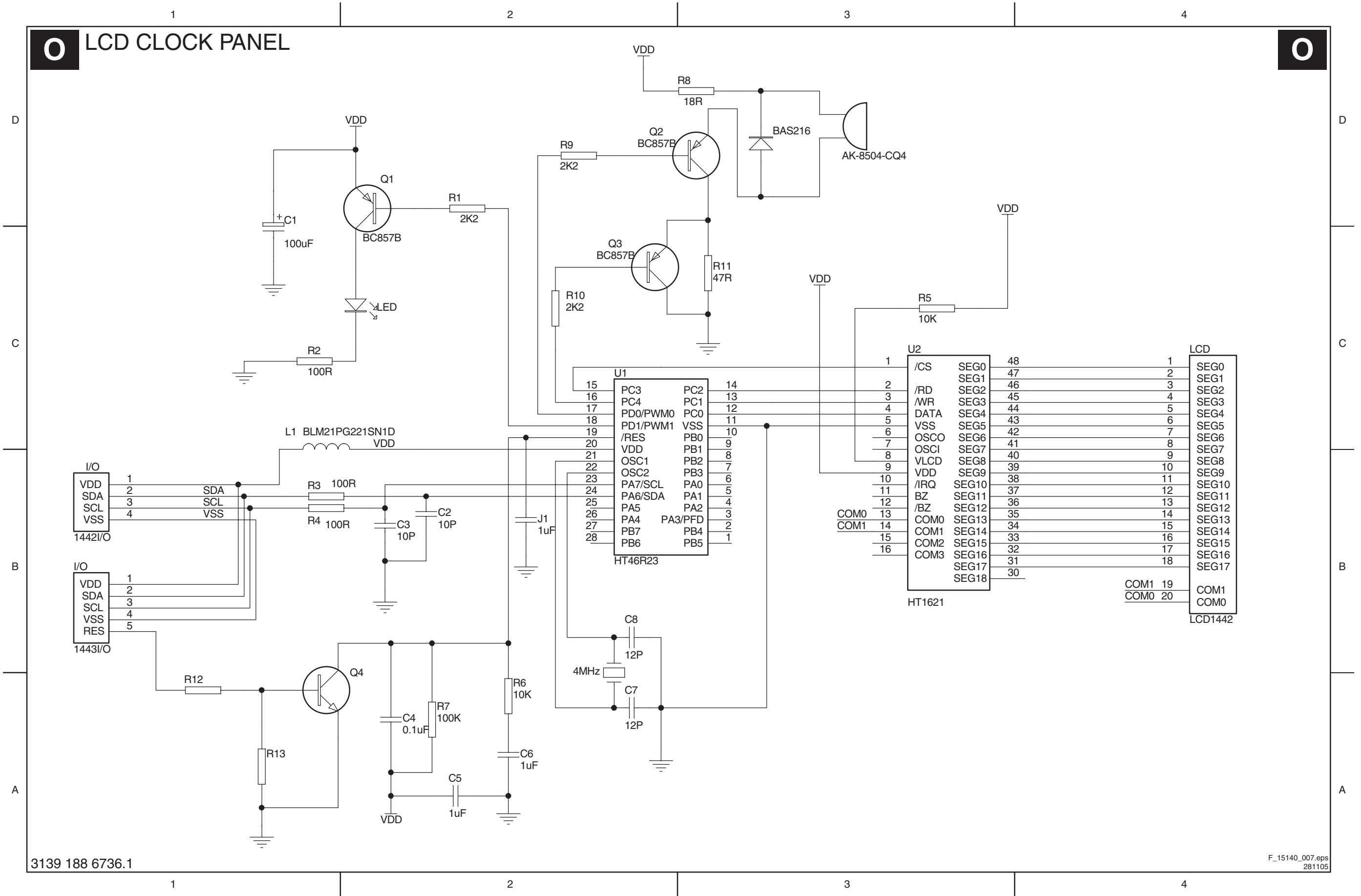


Layout LED and IR Panel (Bottom Side)



Personal Notes:

LCD Clock Panel



8. Alignments

Index of this chapter:

- 8.1 General Alignment Conditions
- 8.2 Hardware Alignments
- 8.3 Software Alignments

Notes:

- Only information that is related to the iTV module, is published in this manual. For the other information, see the relevant chassis manual (order code on front page).
- Figures below can deviate slightly from the actual situation, due to the different set executions.
- The Service Default Mode (SDM) and Service Alignment Mode (SAM) are described in chapter 5. Menu navigation is done with the Cursor Up, Down, Left or Right keys of the remote control transmitter.

8.1 General Alignment Conditions

Perform all electrical adjustments under the following conditions:

Mains voltage and frequency: 100-240 V / 50/60 Hz.
Allow the set to warm up for approximately 10 minutes.
Test probe: Ri > 10 MΩ; Ci < 2.5 pF.

8.2 Hardware Alignments

There are no hardware alignments foreseen for the LCD-TV.

8.3 Software Alignments

With the software alignments of the Service Alignment Mode (SAM) the geometry, white tone and tuner (IF) can be aligned. To store the data: Use the RC button Menu to switch to the main menu and next, switch to 'Stand-by' mode.

8.3.1 Options

Options OP1...OP7 in the SAM menu can be used for quickly restoring features or settings of the Hercules part of the TV set to their original default factory values (8 groups of 8 features/settings each). When the decimal value of one option byte OP1...OP7 is changed (see the first table below) then a group of 8 bits, representing 8 Hercules options or features, is changed as well (see the second table below for a detailed description of the features or settings that are changed). The second table shows which option byte (OP1...OP7) represents which group of 8 option bits. Each bit (0...7) switches a particular Hercules feature or setting ON or OFF, depending on its value (1 or 0).

It is also possible to change the features or settings mentioned in the second table directly at bit level, by means of the NVM Editor in the SAM menu. In the NVM Editor, first the correct NVM address (ADR) has to be entered, then the correct value (VAL, 1 or 0) for each bit (see second table), and finally the settings have to be stored (STORE). For quickly restoring the Hercules part of the TV set to its original factory settings, however, it is more convenient to simply enter the default factory settings OP1...OP7 that are given in the first table below. How to do this, is described in the next paragraph.

How to Change Options at Bit Level

If you wish to know which features or settings of the Hercules are changed via OP1...OP7, or if you want to change each option or feature bit by bit, use the more detailed table below.

Table 8-1 Option Bytes (OP1 .. 7) overview

OP	Bit	Feature / Mode	15HF5443/10	20HF5473/10	23HF5473/10
1	7	OP_PHILIPS_TUNER	1	1	1
	6	OP_FM_RADIO	1	1	1
	5	OP_LNA	0	0	0
	4	OP_ATS	1	1	1
	3	OP_ACI	1	1	1
	2	OP_UK_PNP	0	0	0
	1	OP_VIRGIN_MODE	0	0	0
	0	OP_CHINA	0	0	0
Total DEC Value			216	216	216
2	7	OP_SC	0	0	0
	6	OP_UI_GREEN	0	0	0
	5	OP_CHANNEL_NAMING	0	0	0
	4	OP_LTI (Lum Transient Improvmt)	0	0	0
	3	OP_TILT	0	0	0
	2	OP_FINE_TUNING	1	1	1
	1	OP_PIP_PHILIPS_TUNER	0	0	0
	0	OP_HUE	0	0	0
Total DEC Value			4	4	4
3	7	OP_EW_FUNCTION	1	1	1
	6	OP_2TUNER_PIP	0	0	0
	5	OP_PIP_SPLITTER	0	0	0
	4	OP_SPLITTER	0	0	0
	3	OP_VIRTUAL_DOLBY	1	1	1
	2	OP_WIDE_SCREEN	0	0	1
	1	OP_WSSB	0	0	1
	0	OP_ECO_SUBWOOFER	0	0	0
Total DEC Value			136	136	142
4	7	OP_PC_MODE	1	1	1
	6	OP_HD	1	1	1
	5	OP_ULTRA_BASS	0	0	0
	4	OP_DELTA_VOLUME	1	1	1
	3	OP_TAIWAN_KOREA	0	0	0
	2	OP_VOLUME_LIMITER	0	0	0
	1	OP_STEREO_DBX	0	0	0
	0	OP_STEREO_NICAM_2CS	1	1	1
Total DEC Value			209	209	209
5	7	OP_AV1	1	1	1
	6	OP_AV2	0	0	0
	5	OP_AV3	1	1	1
	4	OP_CVI	0	0	0
	3	OP_SVHS2	0	0	0
	2	OP_SVHS3	1	1	1
	1	OP_HOTEL_MODE	0	0	0
	0	OP_SIMPLE_FACTORY	0	0	0
Total DEC Value			164	164	164
6	7	OP_PERSONAL_ZAPPING	0	0	0
	6	OP_SMART_SURF	0	0	0
	5	OP_FMTRAP	0	0	0
	4	OP_COMBFILTER	1	1	1
	3	OP_ACTIVE_CONTROL	1	1	1
	2	OP_VIDEO_TEXT	0	0	0
	1	OP_LIGHT_SENSOR	0	0	0
	0	OP_TWIN_TEXT	0	0	0
Total DEC Value			24	24	24
7	7	OP_TIME_WIN1	0	0	0
	6	OP_16:9_set	0	0	1
	5	OP_THAI	0	0	0
	4	OP_3D_COMBFILTER	0	0	0
	3	OP_DUMMY6	0	0	0
	2	OP_DUMMY7	0	0	0
	1	OP_WEST_EU	1	1	1
	0	OP_MULTI_STANDARD_EUR	1	1	1
Total DEC Value			3	3	67

8.3.2 ADC Gain and Grey Scale Alignment

The table below shows a number of important NVM settings (in decimal values) used for each TV model. Be sure to use the correct editor in the SAM menu (NVM Editor), because this one is used for the Hercules NVM, and the SC NVM Editor for the SCALER (SC) part of the TV set.

Caution:

- Do not change the NVM settings without understanding the function of each setting, because incorrect NVM settings may seriously hamper the correct functioning of the TV set!
- Do not change the Scaler NVM settings below address 320 (dec), as this will hamper the DVI functionality of the TV set!
- Always write down the existing NVM settings, before changing the settings. This will enable you to return to the original settings, if the new settings turn out to be incorrect.

Table 8-2 Hercules default NVM settings (editable via "NVM Editor" in SAM mode)

Byte/Addr.	Bit	Feature/Mode	Description	15HF5443/10	20HF5473/10	23HF5473/10
Byte 0/ 174(dec)	0	QSS (LSB)	Mode of quasi split sound amplifier	1	1	1
	1	FMI	Connection of output of QSS amplifier	1	1	1
	2	HCO	EHT tracking mode	0	0	0
	3	HP2	Synchronization of OSD/Text display	1	1	1
	4	FSL	Forced slicing level for vertical sync	1	1	1
	5	TFR	DC transfer ratio of luminance signal	1	1	1
	6	OSVE	Black current measuring in overscan	0	0	0
	7	MVK (MSB)	(For Future Usage, as defined by software)	0	0	0
Total Dec Values				59	59	59
Byte 1/ 175(dec)	0	PSE		0	0	0
	1	OPC		0	0	0
	2	PRIS		0	0	0
	3	CONTINUOUS FACTORY	Continuous factory mode	1	1	1
	4	WHITE PATTERN ON	Last color pattern status in factory mode	0	0	0
	5	SDM MODE	Service default mode on/off	0	0	0
	6	SAM MODE	Service Align mode on/off	0	0	0
	7	SVMA	Scavm On / Off	0	0	0
Total Dec Values				8	8	8
Byte 2/ 176(dec)	0	MUTE STATUS	Mute status	0	0	0
	1	TUNER AUTO MODE	Auto mode	1	1	1
	2	CABLE MODE	Cable/Antenna mode	0	0	0
	3	LAST POWER MODE	Last power status of the set	1	1	1
	4	CHILD LOCK MODE	Child lock enabled	0	0	0
	5	SURF MODE	Surf mode on/off	0	0	0
	6	FACTORY MODE	Factory mode on	1	1	1
	7	PSNS	For PAL color enhancement in ES4	1	1	1
Total Dec Values				202	202	202
Byte 3/ 177(dec)	0	RADIO/TV MODE	Radio mode or TV mode	0	0	0
	1	WAKE-UP MODE		0	0	0
	2	HOTEL MODE	TV in Hotel mode	0	0	0
	3	HOTEL KBD LOCK	Keyboard locked	0	0	0
	4	HBL		0	0	0
	5	BLS	Blue stretch mode	1	1	1
	6	SL		0	0	0
	7	CFA0	Comb filter On/Off	0	0	0
Total Dec Values				32	32	32
Byte 4/ 178(dec)	0	Signal Strength	Signal Strength Switch in MK2	0	0	0
	1	LPG		0	0	0
	2	DVD TRAY LOCK	Lock/Unlock DVD tray	0	0	0
	3	SCRSAVER MODE	Screen saver mode	1	1	1
	4	BKS	Black Stretch Mode	1	1	1
	5	BSD	Black Stretch Depth	1	1	1
	6	CRA0	Coring on SVM	0	0	0
	7	PIP QSS	PIP QSS	0	0	0
Total Dec Values				56	56	56
Byte 5/ 179(dec)	0	FFI	Fast Filter	0	0	0
	1	NNR	No red reduction during blue stretch	1	1	1
	2	MUS	NTSC matrix	0	0	0
	3	GAM	Gamma control	1	1	1
	4	CBS	Control sequence of beam current limiting	0	0	0
	5	LLB	Low level of beam current limiter	0	0	0
	6	DSA	Dynamic skin tone angle	1	1	1
	7	DSK		0	0	0
Total Dec Values				74	74	74

Byte/Addr.	Bit	Feature/Mode	Description	15HF5443/10	20HF5473/10	23HF5473/10
Byte 6/ 180(dec)	0	LTI status	LTI last status	0	0	0
	1	INC_LIFE_TIME		0	0	0
	2	PC_MODE		0	0	0
	3	HD_MODE		0	0	0
	4	TACT_SWITCH		0	0	0
	5	SET_IN_SPECIAL_STBY		0	0	0
	6	HOTEL_OSDDISPLAY		0	0	0
	7	HOTEL_MONITOROUT		0	0	0
Total Dec Values				0	0	0
Byte 7/ 181(dec)	0	HOTEL_ICONNMODE		0	0	0
	1	DBE	Dynamic Bass Enhancement Status	1	1	1
	2	SET_IN_PC_SLEEP_MODE		0	0	0
	3	Reserved	Reserved	0	0	0
	4	Reserved	Reserved	0	0	0
	5	Reserved	Reserved	0	0	0
	6	Reserved	Reserved	0	0	0
	7	Reserved	Reserved	0	0	0
Total Dec Values				2	2	2

8.4 Setting the Correct iTV Model

If the i-Board is directly replaced by a new off-shelf module (already programmed with platform software), the correct iTV model still must be programmed via below sequences to get to the correct model type with its I/O configurations.

- Put the iTV remote control (e.g. RC2573) in setup mode.
- Push a number on the remote control to switch "on" the TV.
- Push the RECALL button.
- Check the model number, listed in line 05.
If it is correct, the setting is done.
If the number is incorrect, continue with the next point.
- Key in "042420", immediately followed by "M".
You now enter SDM.
- Select and activate NVM EDIT mode.
- Key in address "0022" (hex).
- Push ARROW DOWN to activate the "Value" line.
- From the Diversity table read the diversity code that belongs to the type of TV set you are adjusting. Enter that number in the "Value" line.
- Select STORE to put the new value in the NVM.
- Push the POWER button to switch "off" the TV set.
- Pull the mains plug.
- Reconnect the mains plug after a few seconds.
- The new setting is now active.

Table 8-3 Diversity table

Diversity Storage Byte		
Model	Address (hex)	Diversity code (hex)
15HF5443/10	0022	09
20HF5473/1016		10
23HF5473/1017		11

9. Circuit Descriptions, Abbreviation List, and IC Data Sheets

Index of this chapter:

- 9.1 Introduction
- 9.2 Abbreviation List
- 9.3 IC Data Sheets

9.1 Introduction

The LC4.1 LCD iTV is a Hotel TV based on the LC4.1 chassis. For a detailed circuit description, please use that specific manual (order code on front page). The iTV specific board in this chassis (i-Board) is for Service a "black box", and therefore must be replaced completely when defective (board swap).

9.2 Abbreviation List

480i	480 visible lines, interlaced
480p	480 visible lines, progressive scan
AV	External Audio Video
B/G	Monochrome TV system. Sound carrier distance is 5.5 MHz. B= VHF-band, G= UHF-band
ComPair	Computer aided rePair. A tool for diagnosing a TV through a PC controlled interface
CSM	Customer Service Mode
CVBS	Composite Video and Blanking Signal; A single video signal that contains luminance, colour, and timing information
DFU	Directions For Use: Owner's manual
DST	Dealer Service Tool; Special remote control designed for dealers to enter e.g. service mode (a DST-emulator is available in ComPair)
EU	Europe
H	H_sync to the module
HD	High Definition
I	Monochrome TV system. Sound carrier distance is 6.0 MHz. VHF- and UHF-band
I ² C	Integrated IC bus
IC	Integrated Circuit
IF	Intermediate Frequency
IR	Infra Red
ITV	Institutional TV
LC04	Philips chassis name for LCD TV 2004 project
LCD	Liquid Crystal Display
LED	Light Emitting Diode; A semiconductor diode that emits light when a current is passed through it
L/L'	Monochrome TV system. Sound carrier distance is 6.5 MHz. L' is Band I, L is all bands except for Band I
M/N	Monochrome TV system. Sound carrier distance is 4.5 MHz. M= 525 lines @ 60 Hz, N= 625 lines @ 50 Hz
NC	Not Connected
NICAM	Near Instantaneously Companded Audio Multiplexing; This is a digital sound system, mainly used in Europe
NTSC	National Television Standard Committee. Colour system used mainly in North America and Japan. Colour carrier NTSC M/N = 3.579545 MHz, NTSC 4.43 = 4.433619 MHz (this is a VCR norm, it is not transmitted off-air)

NVM	Non Volatile Memory; IC containing data such as alignment values, preset stations
O/C	Open Circuit
OSD	On Screen Display
PAL	Phase Alternating Line. Colour system used mainly in Western Europe (colour carrier = 4.433619 MHz) and South America (colour carrier PAL M = 3.575612 MHz and PAL N = 3.582056 MHz)
PCB	Printed Circuit Board (or PWB)
PLL	Phase Locked Loop. Used, for example, in FST tuning systems. The customer can directly provide the desired frequency
PWB	Printed Wiring Board (also called PCB or CBA)
RC	Remote Control transmitter
RC5 or 6	Remote Control system 5 or 6, the signal from the remote control receiver
RGB	Red, Green, and Blue colour space; The primary colour signals for TV. By mixing levels of R, G, and B, all colours (Y/C) are reproduced
SAM	Service Alignment Mode
S/C	Short Circuit
SCL	Serial CLock Signal on I ² C bus
SDA	Serial DAta Signal on I ² C bus
SECAM	SÉquence Couleur Avec Mémoire; Colour system mainly used in France and East Europe. The chroma is FM modulated and the R-Y and B-Y signals are transmitted line sequentially. Colour carriers= 4.406250 MHz and 4.250000 MHz
SIF	Sound Intermediate Frequency
VGA	Video Graphics Array; 640x480 (4:3)
Y/C	Y consists of luminance signal, blanking level and sync; C consists of chroma (colour) signal

9.3 IC Data Sheets

Use the specific manual (order code on front page).

10. Spare Parts List

Set Level			2023	3198 017 42240	220nF 16V Y5V 0603	2415	2238 586 59812	100nF 20% 50V 0603
			2024	4822 124 12084	1µF 20% 50V	2416	2238 586 59812	100nF 20% 50V 0603
			2027	2238 586 59812	100nF 20% 50V 0603	2417	2238 586 59812	100nF 20% 50V 0603
			2030	2238 586 59812	100nF 20% 50V 0603	2418	4822 126 13883	220pF 5% 50V
			2031	2238 586 59812	100nF 20% 50V 0603	2419	4822 126 13883	220pF 5% 50V
			2032	2238 586 59812	100nF 20% 50V 0603	2420	4822 124 11131	47µF 6.3V
			2033	3198 017 42240	220nF 16V Y5V 0603	2421	2238 586 59812	100nF 20% 50V 0603
			2035	2020 021 91729	4.7µF 20% 35V	2422	2238 586 59812	100nF 20% 50V 0603
			2036	4822 126 11785	47pF 5% 50V 0603	2423	2238 586 59812	100nF 20% 50V 0603
			2037	4822 126 11785	47pF 5% 50V 0603	2424	2238 586 59812	100nF 20% 50V 0603
			2043	2238 586 59812	100nF 20% 50V 0603	2425	2238 586 59812	100nF 20% 50V 0603
			2044	3198 017 42240	220nF 16V Y5V 0603	2426	4822 126 13883	220pF 5% 50V
			2049	4822 124 23002	10µF 16V	2427	4822 126 13883	220pF 5% 50V
			2051	4822 124 23002	10µF 16V	2429	2238 586 59812	100nF 20% 50V 0603
			2052	3198 016 31020	1nF 25V 0603	2430	2238 586 59812	100nF 20% 50V 0603
			2053	2238 586 59812	100nF 20% 50V 0603	2431	2238 586 59812	100nF 20% 50V 0603
			2054	2238 586 59812	100nF 20% 50V 0603	2432	2238 586 59812	100nF 20% 50V 0603
			2055	2238 586 59812	100nF 20% 50V 0603	2433	2238 586 59812	100nF 20% 50V 0603
			2056	2238 586 59812	100nF 20% 50V 0603	2434	2238 586 59812	100nF 20% 50V 0603
			2057	2238 586 59812	100nF 20% 50V 0603	2435	4822 126 13883	220pF 5% 50V
			2058	3198 016 31020	1nF 25V 0603	2436	4822 126 13883	220pF 5% 50V
			2060	2238 586 59812	100nF 20% 50V 0603	2438	2238 586 59812	100nF 20% 50V 0603
			2061	4822 124 23002	10µF 16V	2439	2238 586 59812	100nF 20% 50V 0603
			2063	3198 017 31540	150nF 10V 0603	2440	2238 586 59812	100nF 20% 50V 0603
			2067	3198 016 31020	1nF 25V 0603	2441	2238 586 59812	100nF 20% 50V 0603
			2068	3198 017 42240	220nF 16V Y5V 0603	2442	2238 586 59812	100nF 20% 50V 0603
			2072	3198 017 42240	220nF 16V Y5V 0603	2443	3198 016 35680	5.6pF 0.5pF 50V 0603
			2073	5322 126 11583	10nF 10% 50V 0603	2444	3198 016 35680	5.6pF 0.5pF 50V 0603
			2074	3198 017 42240	220nF 16V Y5V 0603	2445	2238 586 59812	100nF 20% 50V 0603
			2076	3198 017 42240	220nF 16V Y5V 0603	2448	2238 586 59812	100nF 20% 50V 0603
			2078	2020 552 94427	100pF 5% 50V	2450	4822 126 13883	220pF 5% 50V
			2082	2238 586 59812	100nF 20% 50V 0603	2451	4822 126 13883	220pF 5% 50V
			2083	2020 552 96637	10µF 10% 6.3V 0805	2452	5322 126 11583	10nF 10% 50V 0603
			2099	3198 016 31020	1nF 25V 0603	2463	2238 586 59812	100nF 20% 50V 0603
			2101	4822 126 14241	330pF 0603 50V	2471	4822 124 11131	47µF 6.3V
			2102	4822 124 23002	10µF 16V	2472	2238 586 59812	100nF 20% 50V 0603
			2103	4822 126 14241	330pF 0603 50V	2473	2238 586 59812	100nF 20% 50V 0603
			2104	4822 126 14491	2.2µF 10V 0805	2474	2238 586 59812	100nF 20% 50V 0603
			2105	4822 126 14241	330pF 0603 50V	2475	2238 586 59812	100nF 20% 50V 0603
			2106	4822 124 23002	10µF 16V	2476	2020 552 96664	33pF 50V 0603
			2107	4822 126 14241	330pF 0603 50V	2477	3198 017 41050	1µF 10V 0603
			2108	4822 126 14491	2.2µF 10V 0805	2478	3198 017 41050	1µF 10V 0603
			2307	3198 017 34730	47nF 16V 0603	2479	3198 017 41050	1µF 10V 0603
			2309	2020 012 00029	330µF 6.3V	2483	2238 586 59812	100nF 20% 50V 0603
			2311	4822 124 23237	22µF 6.3V	2485	3198 017 41050	1µF 10V 0603
			2313	5322 126 11578	1nF 10% 50V 0603	2486	3198 017 41050	1µF 10V 0603
			2314	2238 586 59812	100nF 20% 50V 0603	2487	3198 017 41050	1µF 10V 0603
			2317	5322 126 11578	1nF 10% 50V 0603	2488	4822 122 33761	22pF 5% 50V
			2318	5322 126 11578	1nF 10% 50V 0603	2489	4822 122 33761	22pF 5% 50V
			2321	5322 126 11583	10nF 10% 50V 0603	2490	2238 586 59812	100nF 20% 50V 0603
			2324	5322 126 11583	10nF 10% 50V 0603	2510	2238 586 59812	100nF 20% 50V 0603
			2325	2238 586 59812	100nF 20% 50V 0603	2513	4822 124 23002	10µF 16V
			2359	5322 126 11583	10nF 10% 50V 0603	2514	3198 016 31590	15pF 10% 50V 0603
			2372	2238 586 59812	100nF 20% 50V 0603	2515	5322 126 11583	10nF 10% 50V 0603
			2374	2238 586 59812	100nF 20% 50V 0603	2516	3198 016 36810	680pF 25V 0603
			2375	4822 124 23002	10µF 16V	2517	5322 126 11583	10nF 10% 50V 0603
			2376	2238 586 59812	100nF 20% 50V 0603	2518	5322 126 11583	10nF 10% 50V 0603
			2377	2238 586 59812	100nF 20% 50V 0603	2519	3198 016 31020	1nF 25V 0603
			2378	3198 017 42240	220nF 16V Y5V 0603	2520	2238 586 59812	100nF 20% 50V 0603
			2379	3198 017 42240	220nF 16V Y5V 0603	2521	5322 126 11583	10nF 10% 50V 0603
			2380	4822 124 12095	100µF 20% 16V	2522	5322 126 11583	10nF 10% 50V 0603
			2381	2238 586 59812	100nF 20% 50V 0603	2523	5322 126 11583	10nF 10% 50V 0603
			2382	2020 552 00183	2.2µF 10% 6.3V 0603	2524	5322 126 11583	10nF 10% 50V 0603
			2383	2020 552 00183	2.2µF 10% 6.3V 0603	2525	5322 126 11583	10nF 10% 50V 0603
			2384	2020 552 00183	2.2µF 10% 6.3V 0603	2526	5322 126 11583	10nF 10% 50V 0603
			2385	2020 552 00183	2.2µF 10% 6.3V 0603	2527	5322 126 11583	10nF 10% 50V 0603
			2386	3198 017 42240	220nF 16V Y5V 0603	2703	4822 124 23002	10µF 16V
			2387	2020 012 00029	330µF 6.3V	2712	3198 017 41050	1µF 10V 0603
			2388	2020 012 00028	470µF 20% 16V	2714	2020 012 00028	470µF 20% 16V
			2389	4822 126 11785	47pF 5% 50V 0603	2718	3198 017 41050	1µF 10V 0603
			2390	4822 126 11785	47pF 5% 50V 0603	2719	2238 586 59812	100nF 20% 50V 0603
			2394	2238 586 59812	100nF 20% 50V 0603	2724	4822 124 41584	100µF 20% 10V
			2395	2238 586 59812	100nF 20% 50V 0603	2736	4822 124 80791	470µF 20% 16V
			2397	4822 126 14249	560pF 10% 50V 0603	2737	4822 124 80791	470µF 20% 16V
			2398	4822 126 14249	560pF 10% 50V 0603	2738	3198 016 31020	1nF 25V 0603
			2401	4822 124 11131	47µF 6.3V	2739	3198 016 31020	1nF 25V 0603
			2402	2238 586 59812	100nF 20% 50V 0603	2741	4822 126 13881	470pF 5% 50V
			2403	2238 586 59812	100nF 20% 50V 0603	2742	4822 126 13881	470pF 5% 50V
			2404	2238 586 59812	100nF 20% 50V 0603	2910	4822 126 13881	470pF 5% 50V
			2405	2238 586 59812	100nF 20% 50V 0603	2911	2022 031 00308	22µF 20% 35V
			2406	2238 586 59812	100nF 20% 50V 0603	2920	4822 124 80151	47µF 16V
			2407	2238 586 59812	100nF 20% 50V 0603	2921	4822 124 80151	47µF 16V
			2408	2238 586 59812	100nF 20% 50V 0603	2930	4822 124 80791	470µF 20% 16V
			2409	2238 586 59812	100nF 20% 50V 0603	2931	4822 126 13881	470pF 5% 50V
			2410	2238 586 59812	100nF 20% 50V 0603	2933	4822 124 80791	470µF 20% 16V
			2411	2238 586 59812	100nF 20% 50V 0603	2934	4822 126 13193	4.7nF 10% 63V
			2412	2238 586 59812	100nF 20% 50V 0603	2936	5322 126 11578	1nF 10% 50V 0603
			2413	2238 586 59812	100nF 20% 50V 0603	2937	5322 126 11578	1nF 10% 50V 0603
			2414	2238 586 59812	100nF 20% 50V 0603	2938	5322 126 11578	1nF 10% 50V 0603
			2001	2238 586 59812	100nF 20% 50V 0603			
			2004	3198 017 42240	220nF 16V Y5V 0603			
			2008	3198 017 44740	470nF 10V 0603			
			2009	3198 017 41050	1µF 10V 0603			
			2010	5322 126 11582	6.8nF 10% 63V			
			2011	3198 017 42240	220nF 16V Y5V 0603			
			2012	4822 124 23002	10µF 16V			
			2013	2238 586 59812	100nF 20% 50V 0603			
			2016	2238 586 59812	100nF 20% 50V 0603			
			2017	2238 586 59812	100nF 20% 50V 0603			
			2018	5322 126 11583	10nF 10% 50V 0603			

0611	3139 127 05662	SW GENESIS 15", 23"
0611	3139 127 05682	SW GENESIS 20"
0626	3139 127 06191	SW DDC DVI 20"
0626	3139 127 06181	SW DDC DVI 23"



7001	3198 010 43130	BC807-25
7002	3198 010 42310	BC847BW
7003	3198 010 43130	BC807-25
7004	3198 010 42310	BC847BW
7011		For SW see item 0606
7012	3198 010 42310	BC847BW
7013	3198 010 42310	BC847BW
7014	3198 010 42310	BC847BW
7060	4822 130 11155	PDTC114ET
7099	9322 214 45668	M24C16-WMN6P
7101	5322 130 60159	BC846B
7316	5322 130 42718	BFS20
7320	3198 010 42310	BC847BW
7370	9340 425 20115	BC847BS
7401	9322 219 95671	GM5221H-LF-BC
7402	9322 189 01668	AT24C32AN
7403		For SW see item 0611
7461	9322 199 80668	SM5301BS-G
7463	9322 164 91668	CD74HC4053M
7490		For SW see item 0626
7510	9322 221 97668	SN74LVC14APW
7516	9322 212 97668	MK1575-01G
7702	3198 010 42310	BC847BW
7703	3198 010 42310	BC847BW
7712	9352 683 73118	TDA1517ATW/N1
7751	9352 500 20118	74LVC08AD
7752	3198 010 42310	BC847BW
7910	4822 130 42804	BC817-25
7920	9322 163 24668	L78M08CDT
7930	5322 209 90529	MC34063AD
7936	4822 130 41087	BC638
7952	4822 130 11155	PDTC114ET
7953	9322 199 25668	L4940D2T12
7954	9322 214 00668	SI2301BDS-E3
7955	9322 189 19668	LD1086D2T18

Side I/O Panel [D]

Various

1101	4822 267 10484	YKF51-5359
1102	4822 265 10658	Soc 3P
1104	2422 026 05513	Soc phone 1p
1105	2422 025 09406	Connector 4p m
1106	2422 026 05059	Connector Phone
1107	4822 267 10637	Connector 5p
1108	2422 025 10771	Connector 10p m
1110	2422 025 10768	Connector 3p m
1111	2422 025 09406	Connector 4p m
1112	2422 025 10768	Connector 3p m
1112	2422 025 18468	Connector 3p m
8107	3139 110 27841	Cable 05p/180/05p



2101	3198 016 31510	150pF 10% 50V 0603
2101	4822 126 11785	47pF 5% 50V 0603
2102	3198 016 31510	150pF 10% 50V 0603
2102	4822 126 11785	47pF 5% 50V 0603
2103	4822 126 13881	470pF 5% 50V
2104	4822 126 13881	470pF 5% 50V
2105	2020 552 94427	100pF 5% 50V
2106	2020 552 94427	100pF 5% 50V
2107	3198 016 31020	1nF 25V 0603
2108	3198 016 31020	1nF 25V 0603
2109	3198 016 31020	1nF 25V 0603
2110	3198 016 31020	1nF 25V 0603
2111	4822 124 12245	220µF 20% 10V
2112	4822 124 12245	220µF 20% 10V
2113	4822 126 13881	470pF 5% 50V
2114	4822 126 13881	470pF 5% 50V
2117	2020 552 96305	4.7µF 20-80% 10V



3101	4822 051 30109	10Ω 5% 0.062W
3103	4822 051 30109	10Ω 5% 0.062W
3104	4822 051 30759	75Ω 5% 0.062W
3105	4822 051 30759	75Ω 5% 0.062W
3106	4822 051 30759	75Ω 5% 0.062W
3107	4822 051 30223	22kΩ 5% 0.062W
3108	4822 117 12925	47kΩ 1% 0.063W 0603
3109	4822 051 30223	22kΩ 5% 0.062W

3110	4822 117 12925	47kΩ 1% 0.063W 0603
3111	4822 051 30223	22kΩ 5% 0.062W
3112	4822 051 30223	22kΩ 5% 0.062W
3113	4822 117 12925	47kΩ 1% 0.063W 0603
3114	4822 117 12925	47kΩ 1% 0.063W 0603
3115	4822 051 30121	120Ω 5% 0.062W
3116	4822 051 30121	120Ω 5% 0.062W
3123	4822 051 30101	100Ω 5% 0.062W
3124	4822 051 30101	100Ω 5% 0.062W
3125	4822 051 30102	1kΩ 5% 0.062W
3126	4822 051 30183	18kΩ 5% 0.062W
3127	4822 051 30183	18kΩ 5% 0.062W
4102	4822 051 30008	Jumper 0603
4103	4822 051 30008	Jumper 0603
4104	4822 051 30008	Jumper 0603
4105	4822 051 30008	Jumper 0603
4108	4822 051 30008	Jumper 0603
4120	4822 051 30008	Jumper 0603
4121	4822 051 30008	Jumper 0603
4122	4822 051 30008	Jumper 0603
4123	4822 051 30008	Jumper 0603



6101	4822 130 11148	UDZ4.7B
6102	4822 130 11148	UDZ4.7B
6105	4822 130 11148	UDZ4.7B
6106	4822 130 11148	UDZ4.7B
6109	4822 130 11148	UDZ4.7B
6110	4822 130 11148	UDZ4.7B
6111	4822 130 11148	UDZ4.7B
6112	4822 130 11148	UDZ4.7B



7101	4822 130 60373	BC856B
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Keyboard Control Panel [E]

Various

1309	4822 276 13775	Switch 1p 0.1A 12V
1310	4822 276 13775	Switch 1p 0.1A 12V
1311	4822 276 13775	Switch 1p 0.1A 12V
1312	4822 276 13775	Switch 1p 0.1A 12V
1313	4822 276 13775	Switch 1p 0.1A 12V
1314	4822 276 13775	Switch 1p 0.1A 12V
1684	4822 267 10459	Connector 3p
8684	3104 157 03961	Cable 3p/180/3p
8684	3139 110 27681	Cable 3p/280/03p Bk



3318	4822 051 30151	150Ω 5% 0.062W
3319	4822 051 30391	390Ω 5% 0.062W
3320	3198 021 31820	1.8kΩ 5% 0.062W 0603
3321	4822 117 12968	820Ω 5% 0.062W
3322	4822 051 30008	Jumper 0603
3323	4822 051 30008	Jumper 0603
3324	4822 051 30561	560Ω 5% 0.062W



6306	4822 130 11148	UDZ4.7B
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i-Board Panel [HC]

see "Set Level"

Audio Amplifier Panel [I]

Various

1703	2422 025 17117	Connector 2p m
1703	2422 025 18737	Connector 2p m
1704	2422 025 16966	Connector 5p m SMD
1704	2422 025 18739	Connector 5p m
1706	2422 025 16702	Connector 5p m h
1706	2422 025 18752	Connector 5p m



2703	4822 124 23002	10µF 16V
2712	3198 017 41050	1µF 10V 0603
2713	2238 586 59812	100nF 20% 50V 0603
2714	2020 012 00003	470µF 16V 20% SMD
2715	2020 012 00003	470µF 16V 20% SMD

2718	3198 017 41050	1µF 10V 0603
2719	2238 586 59812	100nF 20% 50V 0603
2741	4822 126 13881	470pF 5% 50V
2742	4822 126 13881	470pF 5% 50V
2746	3198 017 41050	1µF 10V 0603



3701	4822 051 30332	3.3Ω 5% 0.062W
3702	4822 051 30332	3.3Ω 5% 0.062W
3706	4822 051 30103	10kΩ 5% 0.062W
3714	5322 117 13056	8.2kΩ 1% 0.063W 0603
3715	4822 117 12903	1.8kΩ 1% 0.063W 0603
3726	5322 117 13056	8.2kΩ 1% 0.063W 0603
3727	4822 117 12903	1.8kΩ 1% 0.063W 0603
3744	4822 051 30103	10kΩ 5% 0.062W
3746	4822 051 30103	10kΩ 5% 0.062W
3747	4822 051 30103	10kΩ 5% 0.062W
3748	4822 051 30103	10kΩ 5% 0.062W
3749	4822 051 30103	10kΩ 5% 0.062W
3750	4822 051 30682	6.8Ω 5% 0.062W
3751	4822 051 30682	6.8Ω 5% 0.062W
4720	4822 051 30008	Jumper 0603



5709	4822 157 11716	Bead 30Ω at 100MHz
5710	4822 157 11716	Bead 30Ω at 100MHz



7703	9340 425 20115	BC847BS
7709	9322 206 09668	TDA7297D

Side I/O Panel & LKB [i2]

see "Set Level"

LED/IR Panel [J]

see "Set Level"

LCD Clock Panel [O]

see "Set Level"

11. Revision List

Manual xxxx xxx xxxx.0

- First release.

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