

Service  
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**Service**



# Service Manual



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**CLASS 1  
LASER PRODUCT**

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**Version 1.0**



**PHILIPS**

## TECHNICAL SPECIFICATION

	3Description	Pos.	Description	Pos.						
	1	TOP CABINET								
	2	TUNING KNOB								
	3	DBB OPEN KNOB								
	4	CD DOOR								
	5	FUNCTION PUSH KNOB								
	6	MP3 JACK								
	7	VOL KNOB								
	8	SPEAKER GRALLE (RIGHT)								
	9	CD FUNCTION CONTROL KNOB								
	10	FRONT CABINET								
	11	PROG/MODE KNOB								
	12	DISPLAY LENS								
13	SPEAKER GRALLE (LIFT)									
Battery location										
<b>CABINET</b>										
Dimensions with Boxes (W x D x H): 532x242x200 mm		Material: ABS/HIPS		33						
Dimensions without Boxes: 532x242x200 mm (W x D x H )		Finishing:		34						
Weight (including packing):. 2.3 kg		Unit in Mastercarton: N/A		35						
Weight (excluding packing and batteries): 2.0 kg		Units in Dealercarton: 1 set		36						
<b>INTERCONNECTION POSSIBILITIES</b>										
Pos.	Connection/Function	Connector type	Electrical data (input or R.O.P)							
37	DC Jack									
38	Aux in jack									
<b>ACCESSORIES :</b>										
(1) AC CORD				47						
<b>General description:</b> MC1000- PORTABLE CD SOUND MACHINE TUNER				1						
<b>LIFETIME :</b> 5 YEARS (ACC. TO UAN-D1611)				2						
<b>PERFORMANCE CLASSES :</b>										
	TUNER	SUPPLY, AMPLIFIER	SPEAKER BOXES	RECORDER	CLOCK	CD	DCC	TELEPHONE	REC. PLAYER	
I	X	X		X						3
II						X				4
III										5
<b>SAFETY REQUIREMENTS:</b>										
IEC 60065:2001(SEVENTH EDITION)+AI:2005-----SAFETY										6
<b>RADIATION, IMMUNITY REQUIREMENTS: (EMC)</b>										
EN55013:2001+A1:2003+A2:2006;EN55020:2007 EN61000-3-2:2006+A2:2009;EN61000-3-3:2008										7
EN61000-4-5:2006; EN61000-4-11:2004										

## TECHNICAL SPECIFICATION

<b>CLIMATIC REQUIREMENTS:</b> (acc. to UAN-D1590)						
All climates: -10 °C till +50 °C (Functional); Set has to be pre-conditioned for 2 hour, except CD function						8
For all measurements: 25 °C						9
<b>POWER SUPPLY:</b>						
<b>MAINS (AC) operation</b>			<b>DC (int. or ext.) operation / Backup Buffer</b>			
Voltage selection:		Battery type:			10	
Selection: See table below					11	
Frequency:		External DC: YES			12	
<b>POWER CONSUMPTION:</b>						
Standby: Less than < 1W			Standby:		13	
Maximum: 12 w			Maximum:		14	
<b>General:</b>						
Q and R according to production division rules :			Q ≤ 1% (Major), Q ≤ 4% (Minor)			
Measured according to:			R ≤ 3% (CE52)			
<b>DERIVED VERSIONS:</b>					<b>APPROBATION</b>	
Version	Voltage on typeplate	Tolerance	Frequency	Tuner	15	
93	230V, 50Hz	10% (207V – 253V);	50Hz	FM,		
<b>TUNER PART</b>						
<b>TECHNICAL description:</b>						
	(circuitry)	FM	(active components)		FM	
RF			SA2111	SA2111		1
IF			SA2111	SA2111		2
Detector		QD				3
Decoder				SA2111		4
<b>GENERAL part:</b>						
WAVE RANGE		TOLERANCES		TUNING		
						5
FM	87.5MHz - 0.3 MHz			1MHz		6
	108MHz + 0.5 MHz			1MHz		7
						8
						9
						10
<b>AERIAL:</b>						
			FM telescope	-	540 mm	12
FM	wire : N/A		Execution	-	Rotational 180°	13
<b>INDICATORS:</b>						
Pointer stroke:			Execution pointer:		14	
Knob indication over:			Field Strength:		15	
<b>ELECTRICAL DATA:</b>						
AM:	nom.	limit	FM:	nom.	limit	
						16
			-3dB limiting point	20	26 dBf	17
			Amplification reserve	0	-4 dB	18
			AFC holding range	-		19
			Distortion (RF 1mV, Δf 67.5kHz)	1	7 %	20
			Stereo -46dB quieting	48	52	21
						22
			Cross-talk (RF 1mV, Δf 40kHz, 1kHz)	25	20 dB	23
			IF			24
wave range	Sensitivity for 50mW	noise limited sensitivity (26dB)	Image rejection	IF rejection	large signal	

## TECHNICAL SPECIFICATION

FM	nom.				18		24	55	122dB f			25
	lim.				22		20	50	111dB f			26
												27
												28
												29
												30
												31
	unit	$\mu$ V/m	$\mu$ V	dBf	$\text{dB}\mu\text{V/m}$	dBf	dB	dB	dB	mV/m		

### SUPPLY, AF-AMPLIFIER & LOUDSPEAKER (Boxes) PART:

<b>TECHNICAL description:</b>												
	Power supply			Tone Control			AF-Amplifier			Loudspeaker		
Active components							BF3602					1
Passive components										2 X 8 $\Omega$ , 2W		3
<b>GENERAL part:</b>												
Aux in jack type				$\varnothing$ 3.5mm								5
Loudspeaker filter, high pass				None								6
Loudspeaker filter, low pass				None								7
Power stage protection				Temperature – YES; Short circuit – YES								8
Public address				No								9
<b>INDICATORS:</b>												
Output power or VU-meter				No								11
Frequency response				No								12
Low power (battery)				No								13
<b>ELECTRICAL DATA:</b>												
TONE/EQUALIZER/DBB												
DSC				Balance control				No				15
				Mechanical noise (ISO 1996)								16
				Noise overall (ISO)								17
				Channel difference at -46dB				Type: < 3 dB				18
				Hum (vol.max.-20dB to vol.min.)				Limit: 2mV				19
				Residual noise(volume min)				Limit: 2mV				20
DBB on (Vol.max.-20dB): 100Hz, +6dB ( $\pm$ 2dB) w.r.t. 1kHz at DBB on								DBB has no dynamic, fixed to 6dB				21
DBB off (Vol.max.-20dB): 100Hz, -2dB ( $\pm$ 2dB) w.r.t. 1kHz at DBB on												22
Input sens.:Nom.		500	mV									23
for 50mW Limit:		600	mV									24
Line outp.: Nom.			mV									25
voltage Limit:			mV									26
<b>OUTPUT POWER:</b>												
Mains operation:			D=10%	2 X 2W 8 $\Omega$			Limit: -1dB					27
Music power (MPO) / (PMPO):			(acc. to DIN45324)									29
Short term maximum output power:			-			(acc. to IEC 60268-15)					30	
Long term maximum output power:			-			(acc. to IEC 60268-15)					31	
Headphone output voltage/power:			n.a.									32
Bandwidth FTC – 1dB at:			n.a.			(acc. to FTC/16/1/D/432)					33	
Bandwidth DIN – 3dB at:			-			(acc. to IEC 60268-15)					34	
Frequency response at Vol. max – 20dB:			typ. 60Hz to 20kHz ( $\pm$ 3dB)									35
<b>LOUDSPEAKER (output):</b>												
Low pass crossover frequency:			--	kHz		tolerance:			Hz		36	
High pass crossover frequency:			--	kHz		tolerance:			Hz		37	
Short term maximum output power:			--			W (acc. to IEC 60268-15)					38	
Long term maximum output power:			--			W (acc. to IEC 60268-15)					39	
Frequency response at:			--	Hz					kHz		41	

## TECHNICAL SPECIFICATION

**REMARKS:**

27 : Measured in Tuner mode;  
28: CD or Tape mode.

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### **TAPE function: (ECO-MTF-PA-SD-MS (FE) Module)**

**Indicators:**

Recording level	No	21
Play back level	No	22
Tape counter	No	23

**Electrical data:**

Bias system FM/AM		24
RIF switch	No	25
Erase system FM/AM		26
Erasing damping		27
Channel separation (IEC1)		28
Track separation (IEC1)		29
Frequency response (PB)		30
SNR 250nWb/m		31
Signal/hiss 250nWb/m		32
Signal/hum 250nWb/m		33
Channel difference (PB)		34
Distortion 250nWb/m		35
ALC attack time		36
ALC release time		37
Crosstalk	Between forward to reverse track	38

**REMARKS:** 31: \* not according to PQR clause 18.5 class I  
31: \*\* Chromium performance not fulfilled

Amplification Reserve for Tape = 1dB  $\pm$ 2dB  
For details, please see specification SH-190 of ECO-MTF-PA-SD (3140 117 14890).

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### **CD-PART: ( CD MECHAISM-DA11B3VF)(SANYO)**

**Technical description:**

	Input	Output	Motor/control	Logic control	
Active components			MMSA1465(Mitsu mi)	SC9639	1
Passive components					2
	Signal processing		HF-preamplifier	Servoprocessor	3
Active components				SC9639	4
Passive components					5
					6

**Indicators/Display/Keys:**

Display: Digits LCD for Track No. display	7
Keys: one 4-position slider switch, 6 tact switches on unit, 6 for CD--: Play, Stop, Previous/Search down, Next/Search up, Program/Program review, CD-modes (Repeat/Shuffle)	8

**Playability: (acc. To AR 30-05-239)**

	Limit	Typical	Testdisc	
Wedge	500 $\mu$ m	700 $\mu$ m	TNO 7,9 of SBC 444A (7104 099 24990)	9
Eccentric	150 $\mu$ m	200 $\mu$ m	TNO 1,24 of 200 $\mu$ m disc (7104 099 24960)	10
Fingerprint	No audible defect		TNO 11of Subchassis 8A	11
Black dot	500 $\mu$ m	600 $\mu$ m	TNO 13 of SBC 444A (7104 099 24990)	12
Skew 0.6mm	No audible defect		TNO 1,6 of 0.6mm skew (7104 099 28260)	13
Bad HF track	No audible defect		TNO 8 of Subchassis 8A	14
Heavy fingerprint	No track jumps/plops		TNO 10 of Subchassis 8A	15

## TECHNICAL SPECIFICATION

Playback position	Horizontal, Normal position (Set is located on a flat surface, floor)		17
<ul style="list-style-type: none"> <li>- Playback of above mentioned tracks possible without track loss or audible defects.</li> <li>- Double black dot, max. diameter, thin/thick disk is according to PQR or AR 30-05-239</li> <li>- This unit can playback (only) CD-R or CD-RW discs. For performance specification, please refer to module specification of CD99 (3103 308 52190)</li> </ul>			18
<b>Shock resistance:</b> (acc. to AR 13-A6-CD-068)			
± Z axis	5 G		19
± X or Y axis	5 G m		20
<b>Acoustical noise:</b>			
Mode: Play/Pause	35 dBA max. (45 dbA in Search mode)		21
Mode: Jump (Next)	45 dBA max.		22
<b>AUDIO part:</b> (Measured with Audio Signals Disc-1, 7104 078 04911 on Speakers or Headphone socket with nom. load)			
	Typ.	Limit	23
Output level (TNO1)			24
SNR unwd.	60 dB	48 dB	25
SNR wtd. dBA	65 dBA	57 dBA	26
Crosstalk (1kHz)	40 dB	26 dB	27
Crosstalk (10kHz)	30 dB	16 dB	28
Frequency response	+9dB	±2dB at 100Hz	29
Vol.max. -20dB (DBB on)	+5dB	±3dB at 10kHz	
THD (1kHz, -6 dB)	0.2 %	2 %	30
THD (10 kHz, -20 dB)	< 1 %	< 3 %	31
Channel difference	2 dB	3 dB	32
Frequency accuracy	-	+/-0.5 %	33
De-emphasis	15µs / 50µs Switchable via Subcode information		34
<b>REMARKS:</b>			35
- Amplification reserve for CD = +2dB (±2dB); Ref. Level for CD is a 0dB track instead of a -6dB track.			

### Feature Specification of MP3 CD

CODEC / COMPRESSION Format Compatibility			
MP3	X		35
MPEG 2.5	X		36
MP3 Pro	X		37
WMA	X		38
AAC	X		39
Playback CAPACITY			
Maximum number of tracks per CD	X		40
Maximum number of albums per CD	X		41
DISC TYPE			
CD-RW	√		42
CD-R	√		43
8 cm	√		44
12 cm	√		45
DISC SIZE (MB)			
185	√		46
225	√		47
650	√		48
680	√		49
700	√		50
ISO-9660 + Joliet	X		51
Joliet	X		52
UDF (Direct CD from	X		53
ID3	X		54
Packet writing	X		55

## TECHNICAL SPECIFICATION

Multi-session CDDA	X				56
Multi-session MP3	X				57
Closed session	√				58
Open session	√				59
Finalized disc	√				60
Unfinalized disc	√				61
<b>CDDA + MP3/WMA</b>					
CDDA + MP3/WMA	X				62
MP3/WMA + CDDA	X				63
MP3/WMA + CDDA + MP3/WMA	X				64
CDDA + MP3/WMA + CDDA	X				65
Video + CDDA	X				66
CDDA + Data	X				67
MP3/WMA + Data	X				68

<b>BITRATE (kbps)</b>					
64 -192	X				70
8 – 320	X				71
Variable	X				72
<b>Sampling RATE (kHz)</b>					
8	X				73
11.025	X				74
12	X				75
16	X				76
22.05	X				77
24	X				78
32	X				79
44.1	X				80
48	X				81
96	X				82
<b>UPGRADE ABILITY</b>					
MP3	X				83
MP3 Pro	X				84
WMA	X				85
AAC	X				86
<b>SOUND</b>					
Single Channel	√				87
Dual Channel	√				88
Stereo & joint Stereo	√				89
Intensity Stereo	√				90
MS Stereo	√				91
<b>LANGUAGE SUPPORT</b>					
English	X				92
Chinese	X				93
<b>Playlist Compatibility</b>					
WinAmp	X				94
Realjukebox	X				95
MS Mediaplayer	X				96
MusicMatch	X				97





## 2.0 SAFETY INSTRUCTIONS

**(GB)** WARNING

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools also at this potential.

**ESD****(NL)** WAARSCHUWING

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD). Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat. Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

**(F)** ATTENTION

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD). Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation. Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfilez le bracelet serti d'une résistance de sécurité. Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

**(D)** WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD). Unsorgfältige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren. Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes. Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

**(I)** AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD). La loro longevità potrebbe essere fortemente ridotta in caso di non osservazione della più grande cauzione alla loro manipolazione. Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza. Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

**(GB)**

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified, be used.

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

**(NL)**

Veiligheidsbepalingen vereisen, dat het apparaat bij reparatie in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.

**(F)**

Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisés les pièces de rechange identiques à celles spécifiées.

**(D)**

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Geräts darf nicht verändert werden; für Reparaturen sind Original-Ersatzteile zu verwenden.

**(I)**

Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambio identici a quelli specificati.

"After servicing and before returning set to customer perform a leakage current measurement test from all exposed metal parts to earth ground to assure no shock hazard exist. The leakage current must not exceed 0.5mA."

Caution: These servicing instructions are for use by qualified service personnel only.

To reduce the risk of electric shock do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

**(GB)** Warning !

Invisible laser radiation when open. Avoid direct exposure to beam.

**(S)** Varning !

Osynlig laserstrålning när apparaten är öppnad och spårren är urkopplad. Betrakta ej strålen.

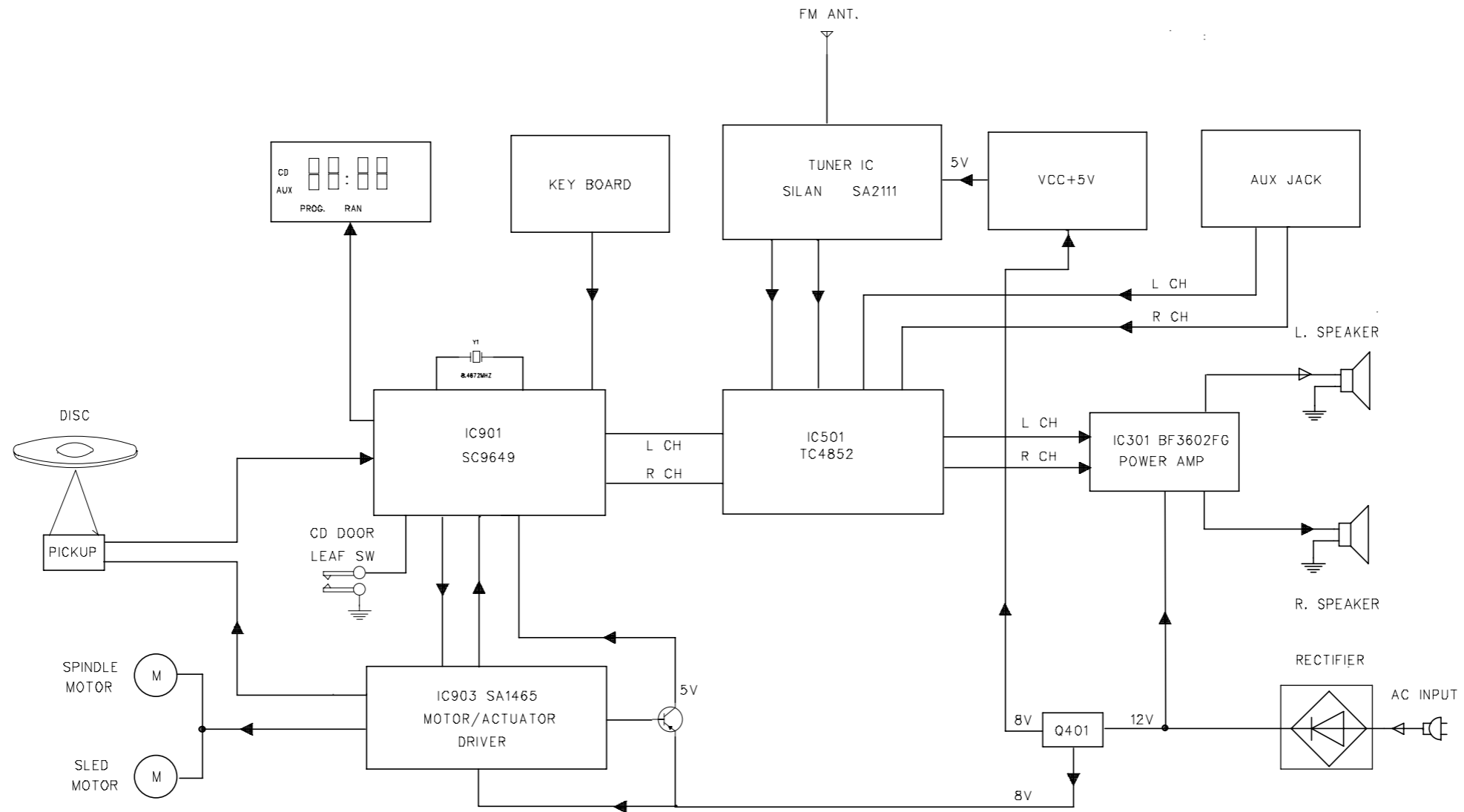
**(SF)** Varoitus !

Avatussa laitteessa ja suojalukituksen ohitettaessa olet alltiina näkymättömälle laserisäteilylle. Älä katso säteeseen!

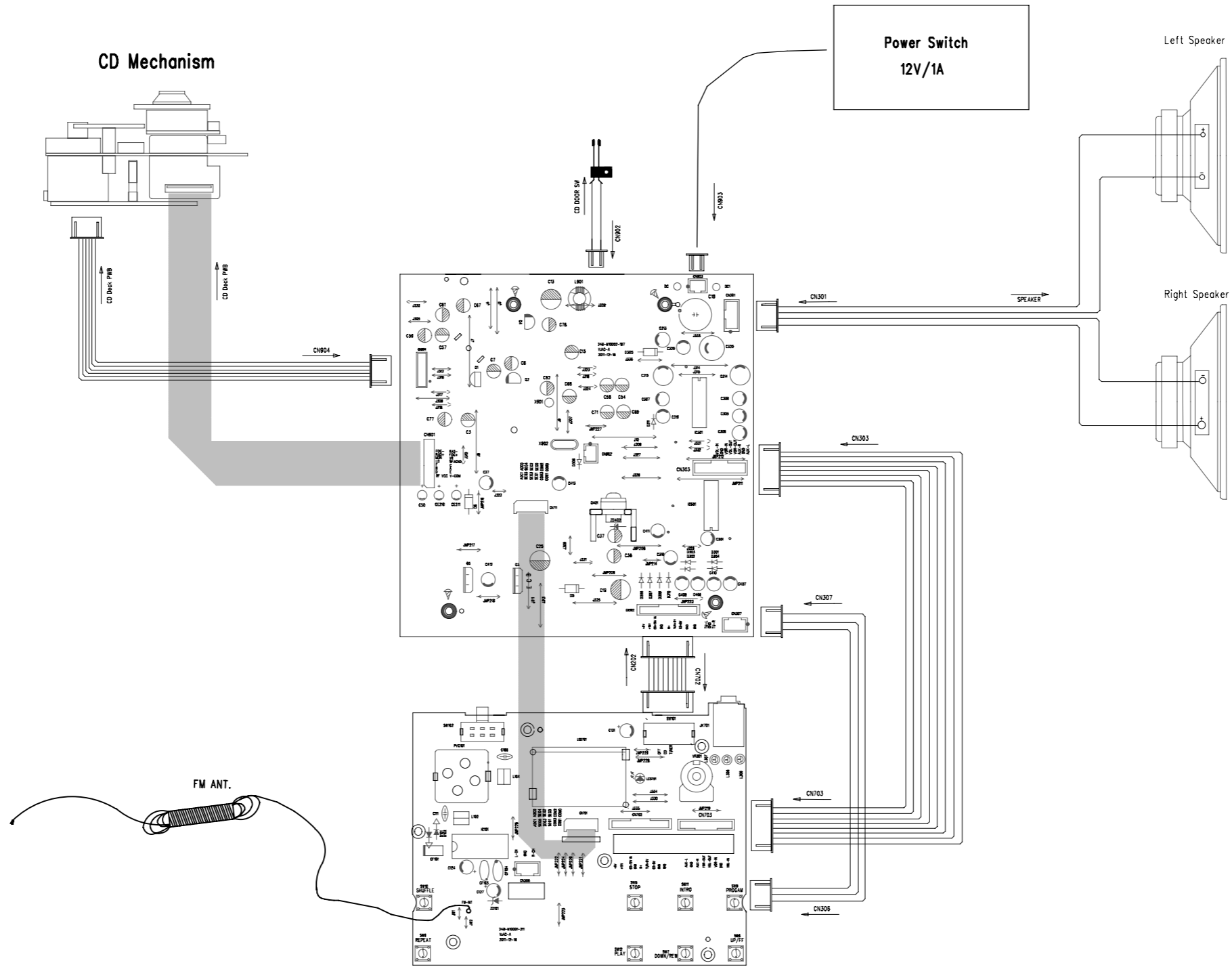
**DK** Advarsel !

Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

# SET BLOCK DIAGRAM

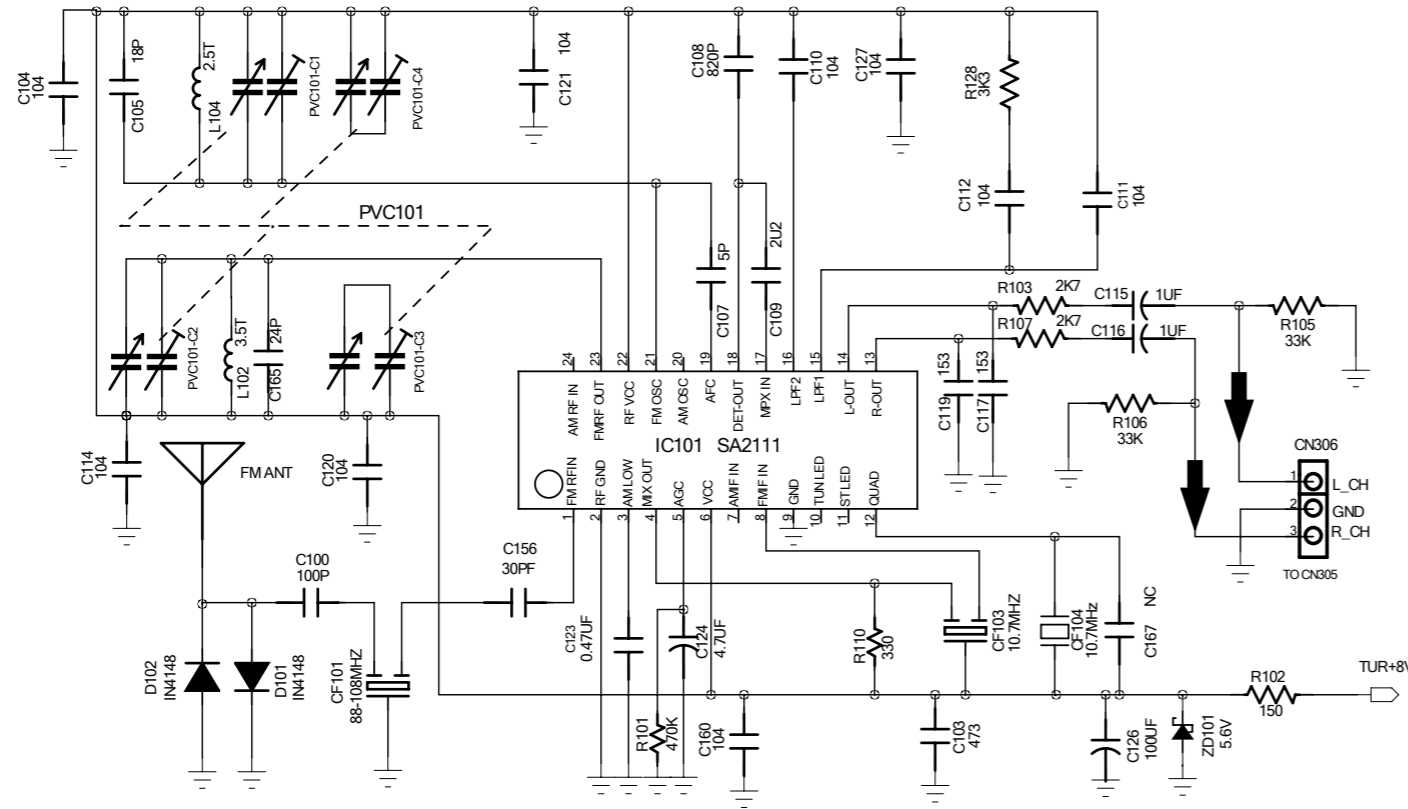


# WIRE CONNECT DIAGRAM

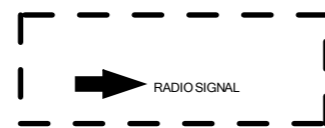
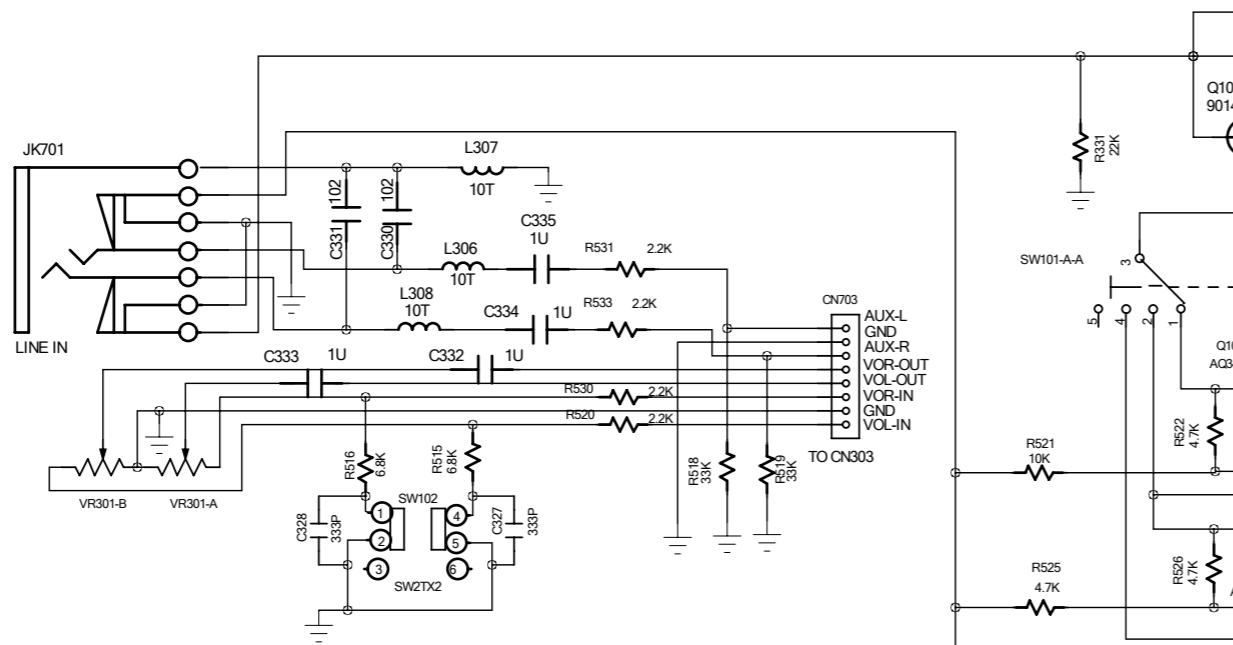
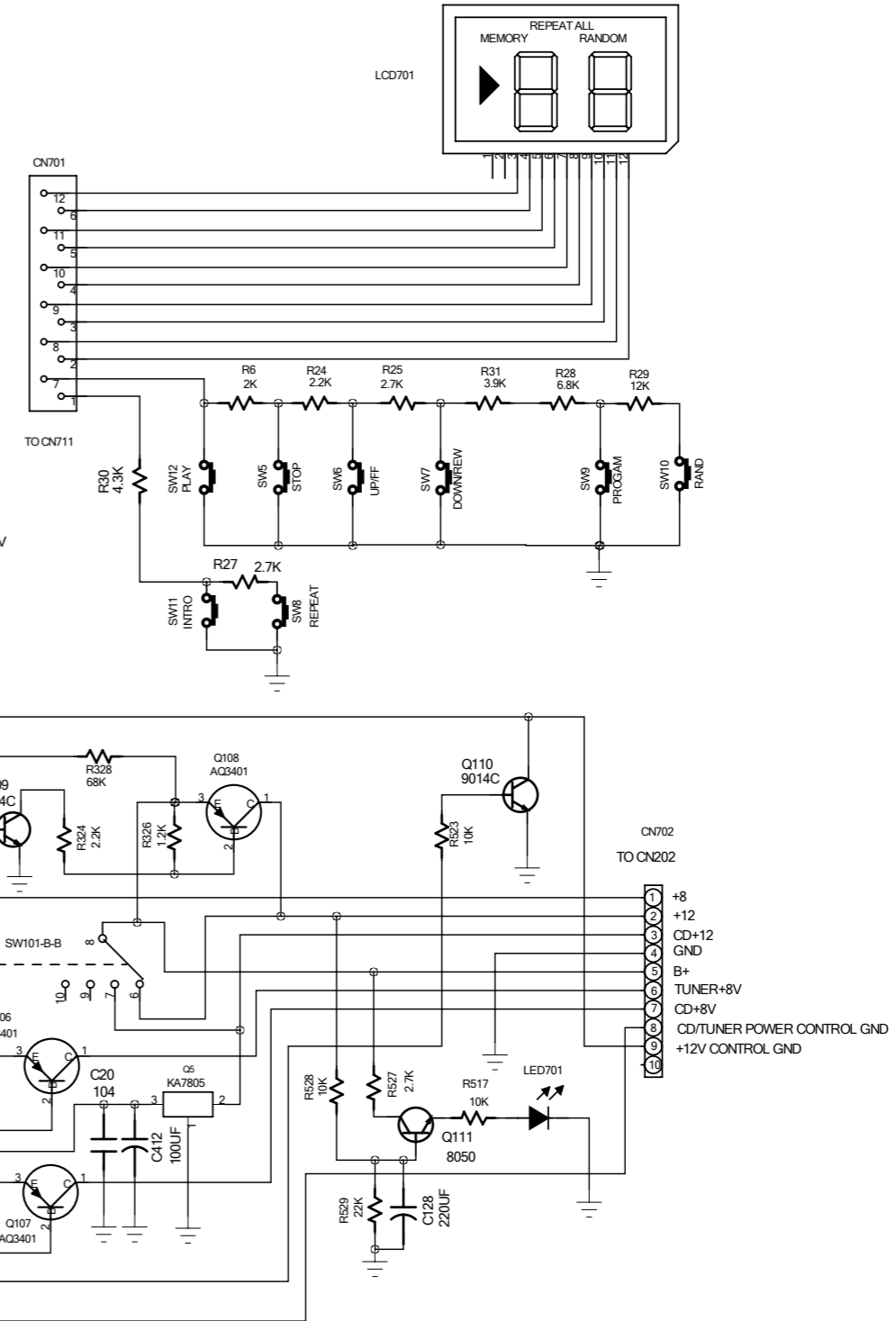


# CIRCUIT DIAGRAM -TUNER&DISPLAY&KEY BOARD

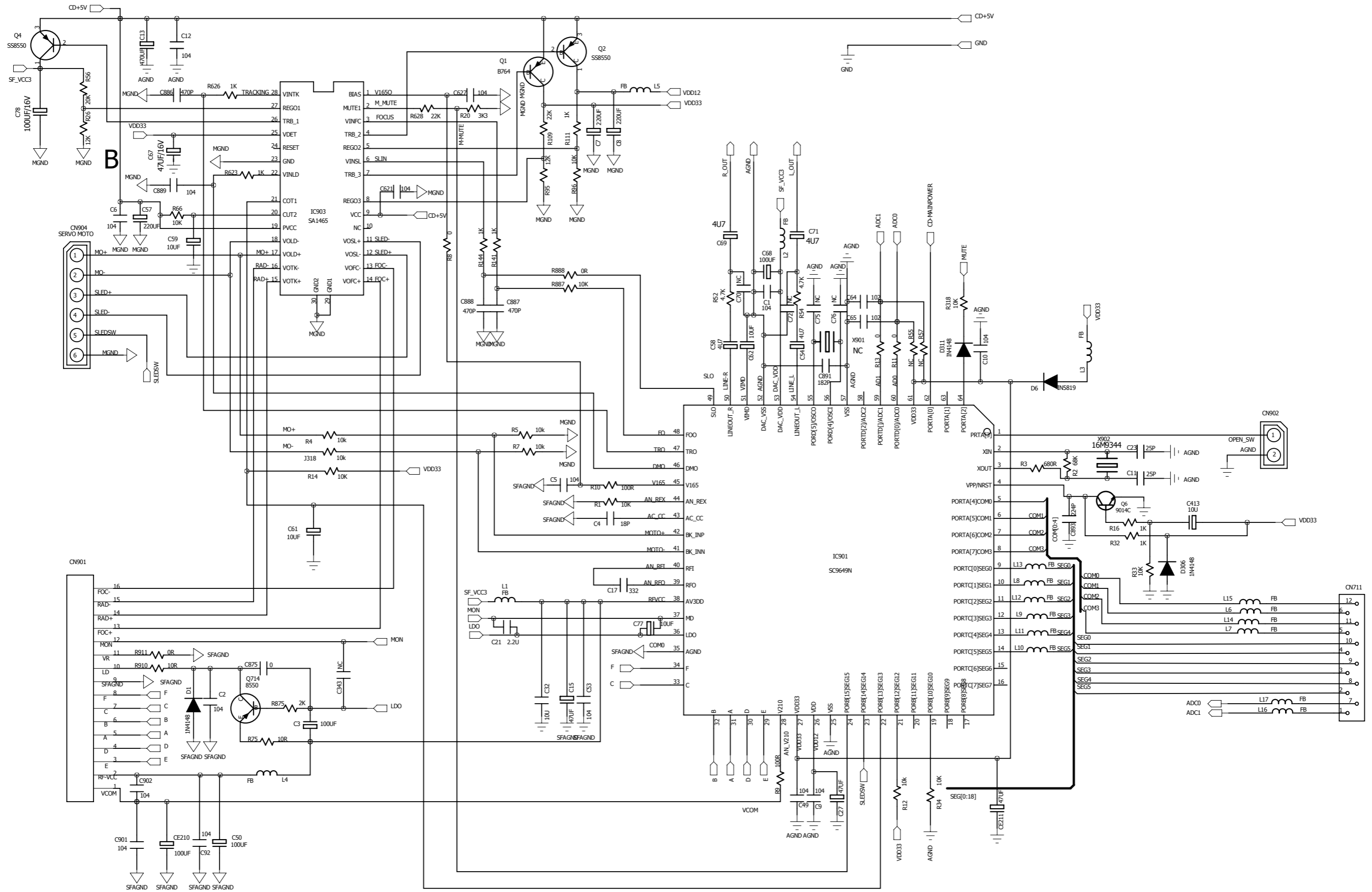
## TUNER PWB



## DISPLAY AND KEY PWB

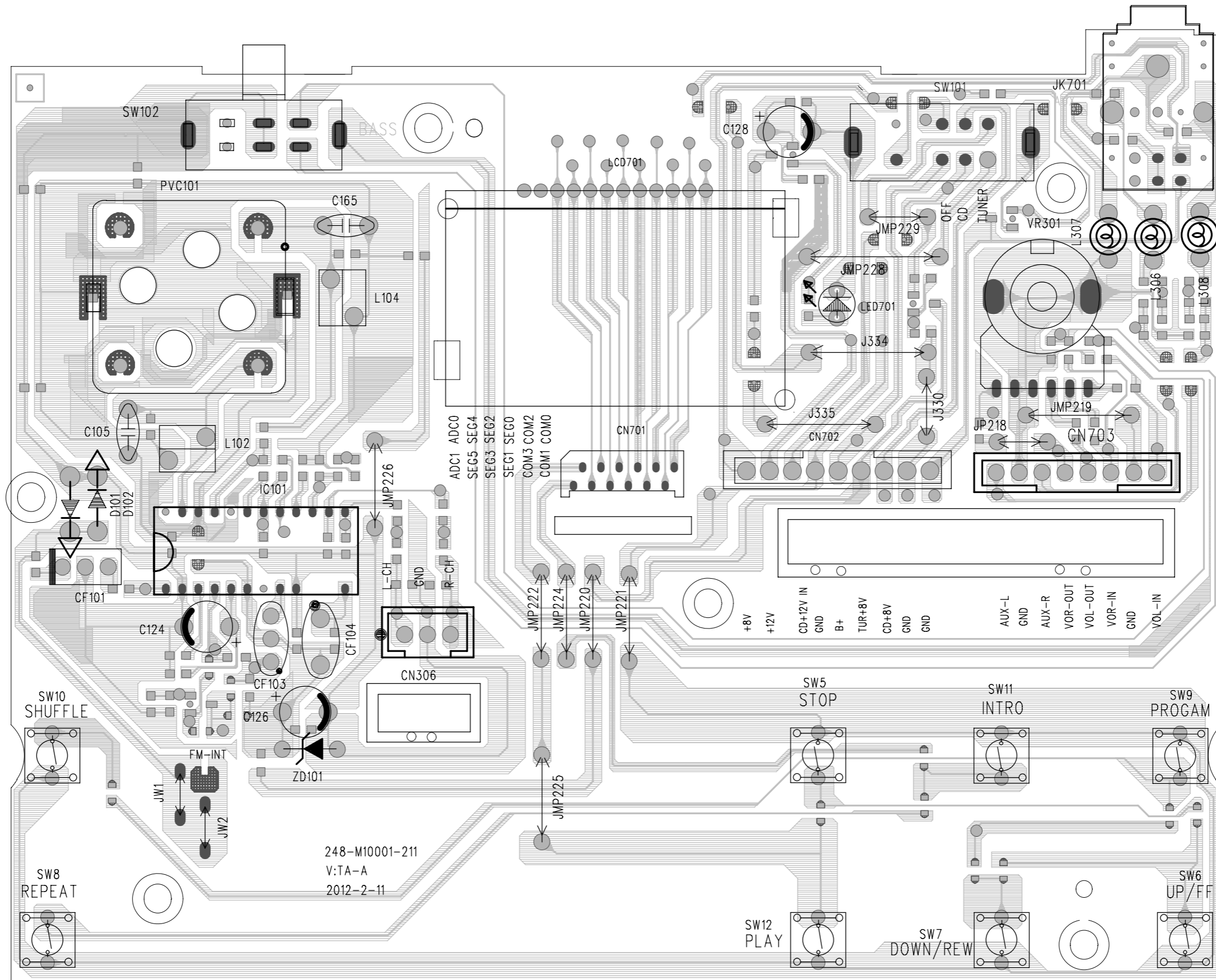


CIRCUIT DIAGRAM - CD BOARD





LAYOUT DIAGARM -TUNER&DISPLAY&KEY BOARD  
TOP SIDE VIEW

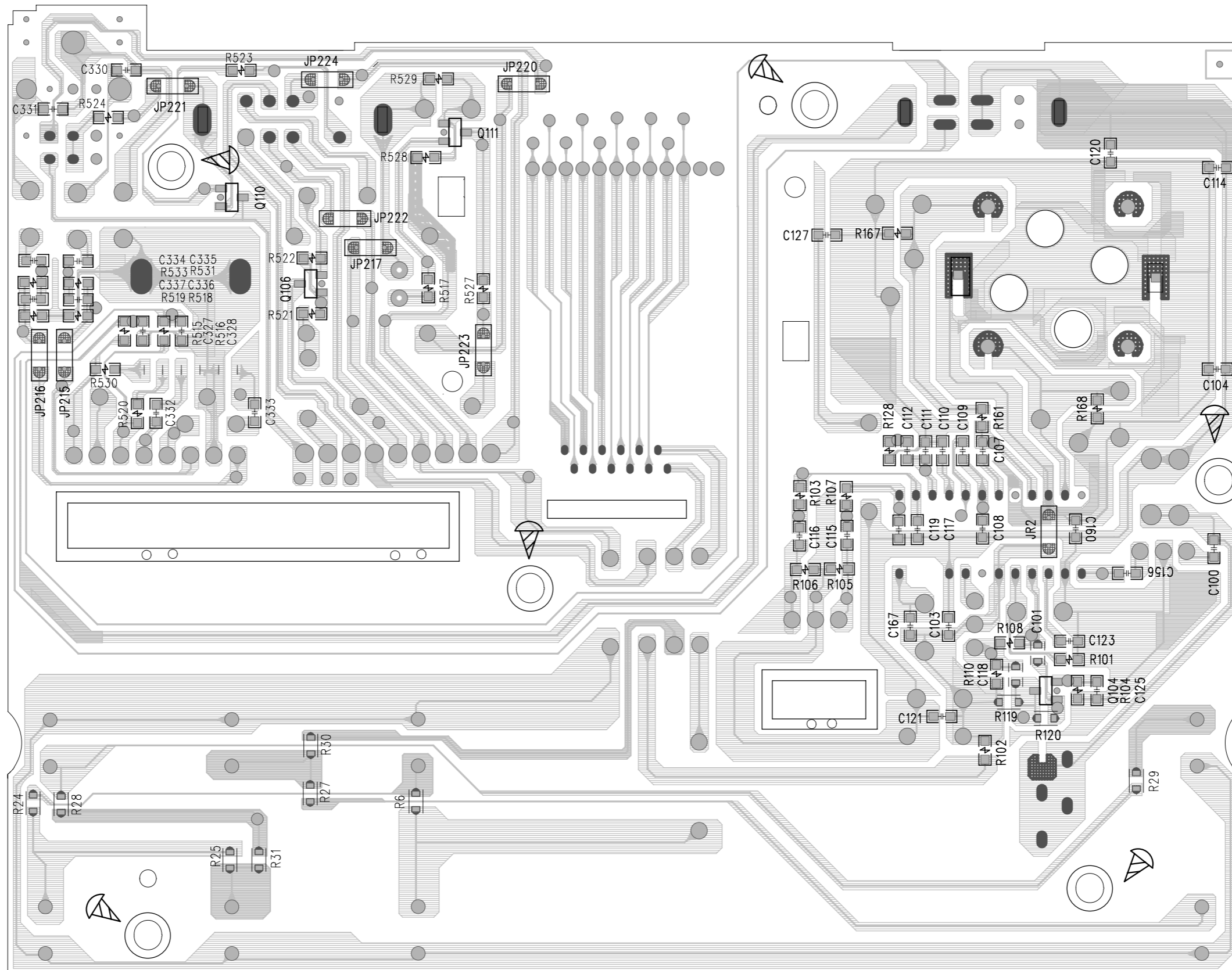




LAYOUT DIAGRAM - TUNER&DISPLAY&KEY  
BOTTOM VIEW

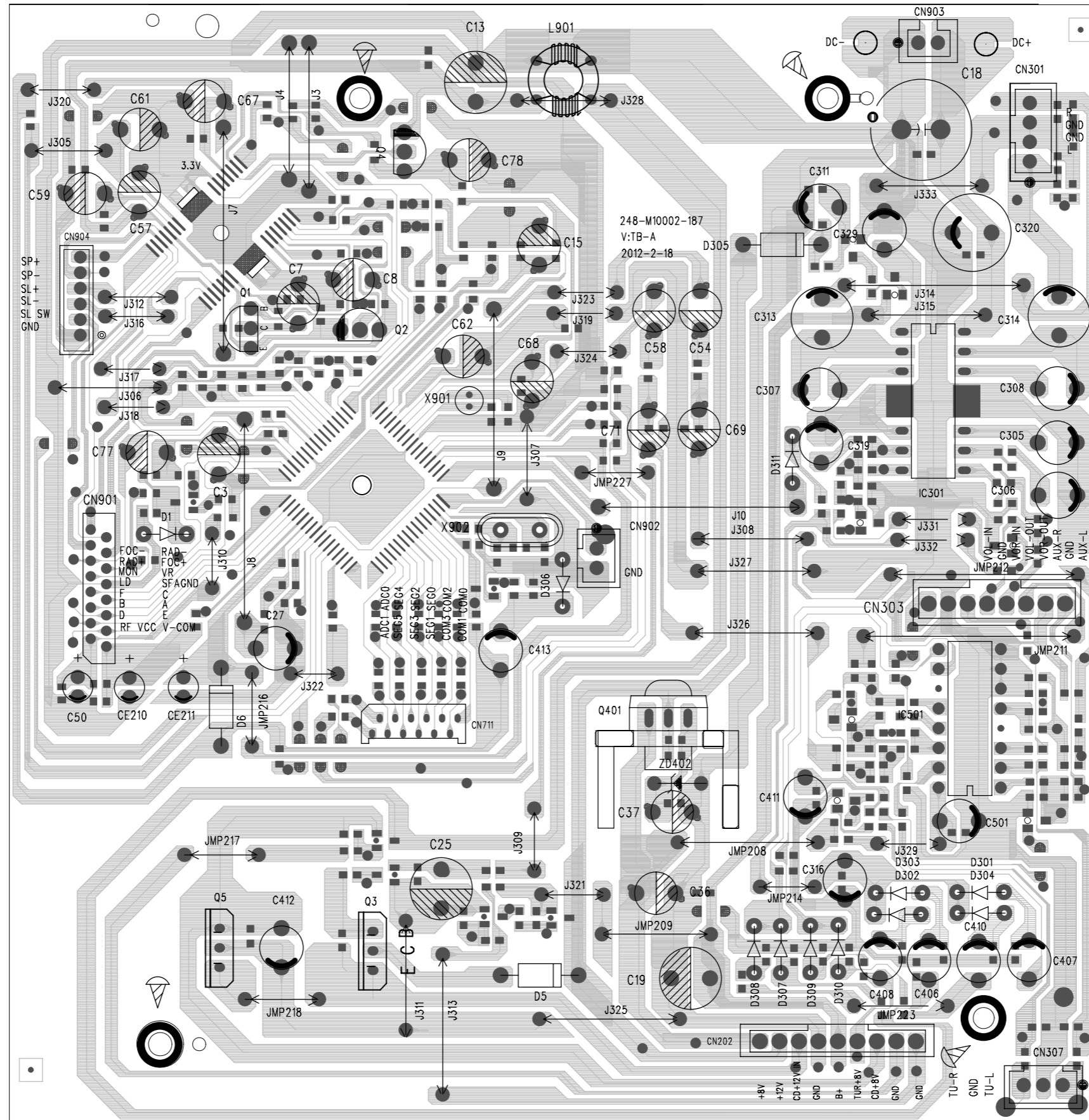
5-2

5-2





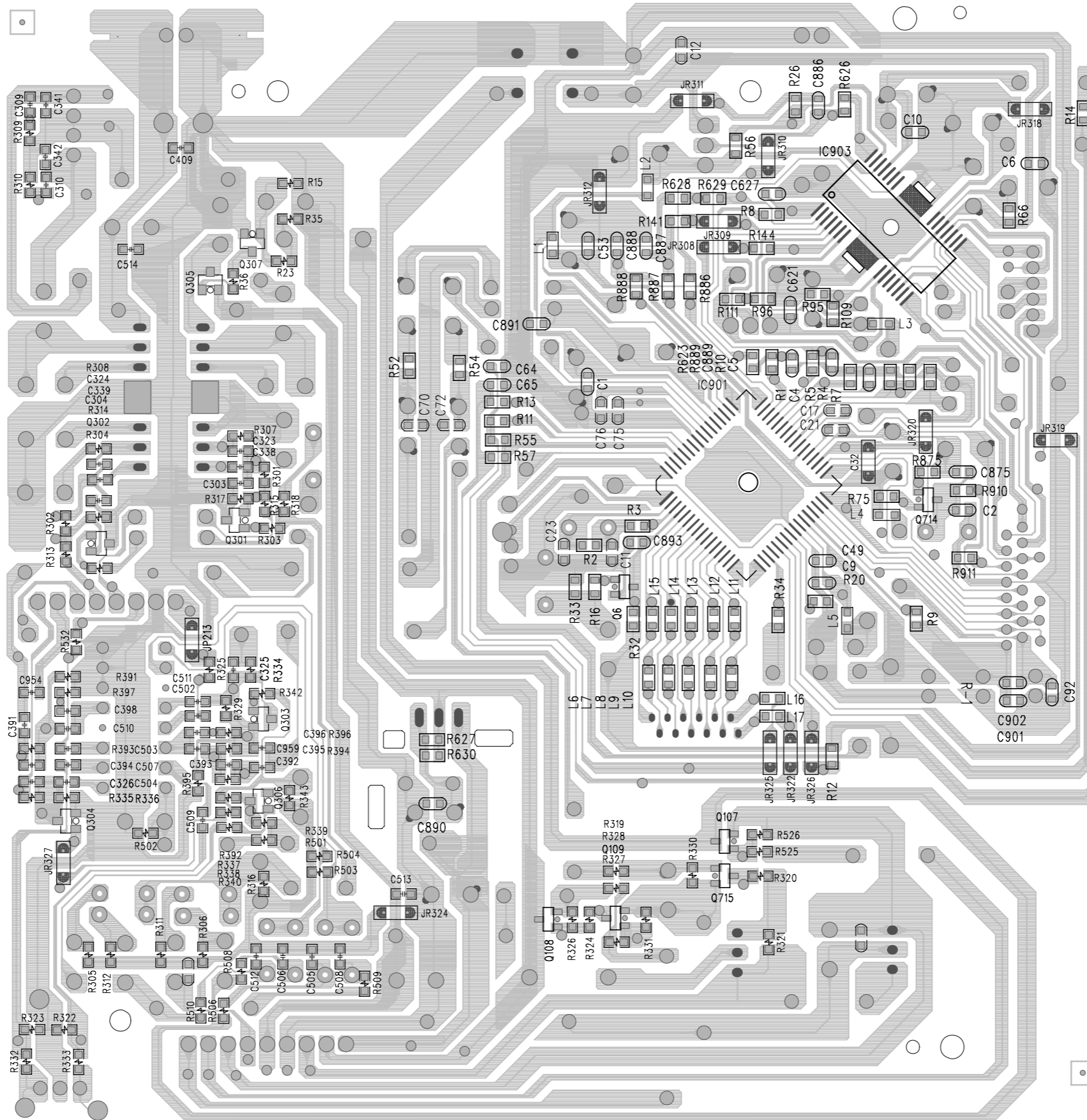
LAYOUT DIAGARM -MAIN BOARD  
TOP VIEW



LAYOUT DIAGRAM - MAIN BOARD  
BOTTOM SIDE VIEW

5-4

5-4



EXPLODED VIEW DIAGRAM

