

Service  
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# Service Manual



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**Version 1.0**



# PHILIPS

# TECHNICAL SPECIFICATION

GENERAL DESCRIPTION							
Micro Hi-Fi System with PLL Tuner , CD-MP3, USB 10W * 2							
MP3 LINK , Remote Control							
LIFETIME : 7 Years							
Class	Tuner	Supply + Amplifier	Loudspeaker Boxes	USB	CD	Clock	MP3 LINK
I			X				
II	X	X		X	X	X	X
III							
Page	9	4,5	4	6	7	8	10
SAFETY requirements							
Version	Safety			EMC			
/12/05/79	IEC60065			EN55013			
RADIATION / IMMUNITY requirments ( EMC )							
CLIMATIC requirements							
ALL climates	: + 5 Degree		till	+ 35 Degree			
MODERATE climates	: + N.A		till	N.A Degree			
PERFORMANCE CLASSES							
POWER SUPPLY							
MAINS ( A.C. )				100/240 Vac(AC/DC Adaptor)			
Version				/12/05/79			
Voltage Selection				NO			
Frequency				60/50Hz			
POWER CONSUMER							
				MCM2050/12/05/79			
Stadby :							
( DEMO mode " OFF " ) , NOM. A, INPUT							
Maximum :				/			
@ 1/8 Prated , NOM. A, INPUT							
ECO Power mode :				/			
Q and R according to Product Division Rules							
Quality	: 0.4 % ( Major )		1.5 % ( Mirror )				
Reliability	: 2.0 % ( C 42 )						
Tested according to General Test Instruction refer to PHILIPS standary ( UAN -D1591 )							
Measured according to PHILIPS standary ( UAN - L1059 ) unless other wise stated							
All not mentioned date, please refer to PHILIPS standary ( XUW - 0010 - jun 2001)							

## TECHNICAL SPECIFICATION

TECHNICAL DESCRIPTION				
Total power 20W, matching LOUDSPEAKER of 2 x6 R. TWO INPUT SOURCE, ( Digital Sound Control )				
GENERAL PART				
OUTPUT stage Protection		: Yes	Temperature	: YES
LoudSpeaker D.C. Protection		: Yes.	Shorcircuit	: Yes
INDICATORS				
Standby Mode Indicator		: LCD display Clock active, LED backlight turn ON		
ECO Mode Indiicator		: NC		
ELECTRICAL DATA				
DSC :	ON/OFF	Channel Differencer at -46dB	3	dB
DBB	ON/OFF	Hum ( Volume Minimun - )	< 0.5	$\mu$ W
SIS :	N/A	Residual Noise ( Volume Minium )	0.06	$\mu$ W
VAC :	N/A	Channel Separation ( at 1 kHz )	$\geq$ 35	dB
WOOX :	N/A	Signal / Noise ( weighted )	$\geq$ 55	dB
INTERCONNECTS				
Input Sensitivity( $\pm$ 2 dB)rated ouput power at 1 kHz and 10kHz.		Line Output Voltage ( *1 )		
Tuner	: FM MODE 75KZH /(CD -6dB)	Line Out ( Left / Right )	N.A	
CD / USB	: 0 dB track ( Audio Disc 1, Trk 35 )	Subwoofer Out	N.A	
TAPE	: NC	Headphone	700mV+/-1dB, RL = 32 $\Omega$	
MP3 Link	: Nor: 500mV Lim: 350mV ~ 800mV CD 0dB	Digital Coaxial Out	N.A	
AUX IN	: NC	Booster Out	N.A	
OUTPUT POWER ( * 1 ) At THD = 10% (Measured with 20Hz-22KHz filter),				
Power output ( RMS )		channel	10W*2 +/-1dB (1*)	
LOUDSPEAKER ( BOXES )				
Please to package document of Speaker Box Assy				
Rated Impedance				
: 6 Ohms at Bass driver,				
Remarks :Radio Power output ( RMS ) Limit:-3dB				
(*1) Electrical parameters are to be measurement at speaker terminals across 6 Ohm load ( pure resistor )				
with rated input signal in AUX mode; DSC OFF mode with DBB OFF				
IS off unless specified otherwise				

# TECHNICAL SPECIFICATION

## AUDIO SIGNAL PROCESSING

Micro Hi-Fi System with PLL Tuner ,USB, CD-MP3, 10W/ TWO channel Universal Class D Power Amplifier

- 1) DSC ( Digital Sound Control )
  - Input sinewave 500mV at 1kHz to R/L channel of MP3 Link socket
  - Set DSC to Flat mode
  - Adjust volume to obtain 500mW across 6 ohm load at R/L speaker output
  - The 500mW will be used as 0dB reference

Tabel 1a ( Tolerance  $\pm$  3dB )

Frequency	DSC Modes with DBB Off VOL=20			
	DSC ON	DSC OFF		
100HZ				
10KHZ				

- 2) DBB ( Dynamic Bass Boot )

- Play CD testing signal of 1KHZ
- Set DSC to OFF mode and switch off DBB
  - Adjust volume level will be as "18"

Tabel 2 ( Tolerance  $\pm$  3dB )

Frequency	DBB OFF	DBB ON			

## TECHNIAL DESCRIPTION

USB  
 See also SH 190 USB Audio Module (300605)  
 Measurement are directly done at the coonector on the board

## GENERAL PART

Measurement are directly done at the connector on CDC board

Description	Specification
Output Resistance	$\leq 1.5$ kOhm
Output Voltage RL = 33 k ohm ( )dB, 1 KHz )	830mVrms +/- 1.5dB
Channel Unbalance	$\leq \pm 3$ dB
THD + Noise ( 0dB, 1KHz )	$\leq 0.3$ %
Channel Crosstalk ( 100Hz - 16,000 Hz )	$\geq 35$ dB
( 0 dB, 1 KHz )	$\geq 40$ dB
Signal to Noise Ratio ( 0dB,1kHz )	$\geq 60$ dB ( A - weighted )
( 100 - 16,000 Hz )	$\geq 55$ dB ( A - weighted )
Frequency Response ( 5dB+/- 3dB ), reference 1kHz	100Hz - 16kHz

## TECHNICAL SPECIFICATION

TECHNICAL DESCRIPTION				
CD + MP3 - Part Specifications				
CD mechanism refer to Philips standard specification				
GENERAL PART				
Measurement are directly done at the connector on CDC board				
Description	Extern	Nom	Lim	Unit
Output Resistance	No		< 100	Ohms
Output Voltage - Unloaded ( 0dB , 1 kHz )	No	0.5	± 1	Vrms
Channel Unbalance	No		< ± 2	dB
Frequency Response ( 125 Hz - 16 kHz )	No	5	± 3	dB
Signal to Noise Ratio ( Unweighted )	Yes	60	50	dB
Signal to Noise Ratio ( A - weighted )	Yes	65	55	dB
Crosstalk ( 1kHz )	Yes	65	55	dB
Crosstalk ( 125Hz to 16kHz )	No	<u>36</u>	<u>30</u>	dB
Hum & Noise ( *1 )	No	400	500	nW
Emphasis	-	/	/	/
TECHNICAL DESCRIPTION				
MP3 Link				
MP3 Link Part				
	Nom.	Limit	Condition	
SNR unwt'd.	60dB	50dB	500mV 1KHz input	
SNR wtd. dBA	62dBA	57dBA	500mV 1KHz input	
Crosstalk (different source, 1KHz)	60dB	50dB	500mV input	
Crosstalk (different source, 10KHz)	45dB	35dB	500mV input	
L, R Channel Separation	36dB	30dB	500mV input	
Frequency response (5+/-3dB)	100 to 10KHz (overall)		150mV input	
THD (1KHz, 0dB)	2%	3%	500mV 1KHz input	
AUX IN Part				
SNR unwt'd.	/	/	/	
SNR wtd. dBA	/	/	/	
Crosstalk (different source, 1KHz)	/	/	/	
Crosstalk (different source, 10KHz)	/	/	/	
L, R Channel Separation	/	/	/	
Frequency response (-3dB)	/	/	/	
THD (1KHz, 0dB)	/	/	/	

## TECHNICAL SPECIFICATION

TECHNICAL DESCRIPTION							
TUNER using SI4705							
GENERAL PART							
WAVE RANGE		TOLERANCE			TUNING GRID		
FM 87.5 - 108.00 MHz (12/05/79)		Quartz Precision			50KHZ		
NC							
AERIAL							
FM : 75 OHM ANT							
MW : NC							
INDICATORS LCD DISPLAY							
ELECTRICAL DATA							
A.M		Nom	Limit	Unit	F.M.		
					- 3 dB Limiting Point	: 17	23.5 dBf
Amplification Reverse		/	/	dB	Amplification Reverse	: 0	-4 dB
AGC Figure of Merit		/	/	dB	Distortion ( RF 1mV, Frq Dev.75 kHz )	: 2	3 %
Distortion ( RF 50mV, M 80% )		/	/	%	Stereo - 46 dB Quieting	: 46	49 dBf
IF		/	/	kHz	Crosstalk (RF1mV, Freq Dev.40kHz )	: 25	18 dB
					IF	/	/ MHz
Wave Range		Noise Limited Sensitivity 26 dB		Search tuning sensitivity dBf	IF Rejection dB	Large Signal	Selectivity S3 / S9 / 300kHz dB
MW 600 kHz	Nom.	1500uV/M		/	/	/	/
	Lim.	4000uV/M		/	/	/	/
MW 1400 kHz	Nom.	1500uV/M		/	/	/	/
	Lim.	4000uV/M		/	/	/	/
FM 98 MHz	Nom.		18dBf	<b>22 dBf</b>	/	116 dBf	30
	Lim.		22dBf	<b>35 dBf</b>	/	108 dBf	25
TECHNICAL DESCRIPTION							
SOFTWARE IMPLEMENTED CLOCK / TIMER FUNCTION WITH 75.000kHz QUARTZ OSCILLATOR.							
GENERAL PART							
Timer Setting		: Clock and Timer					
Timer Wakeup Mode		: LAST SETTING (MODE)					
Remarks Time Setting		: for 24hrs					
Volume at Wakeup		: Last Setting					
No of Timer Settings		: 1					
Clock Accuracy		: Normal: 0.5 sec/day Limit : 1 sec/day					
INDICATORS							
Display Type		: LCD					



## 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.

**(GB)** Warning !

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

**(S)** Varning !

Osynlig laserstrålning när apparaten är öppnad och spårren är urkopplad. Beträkta 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.

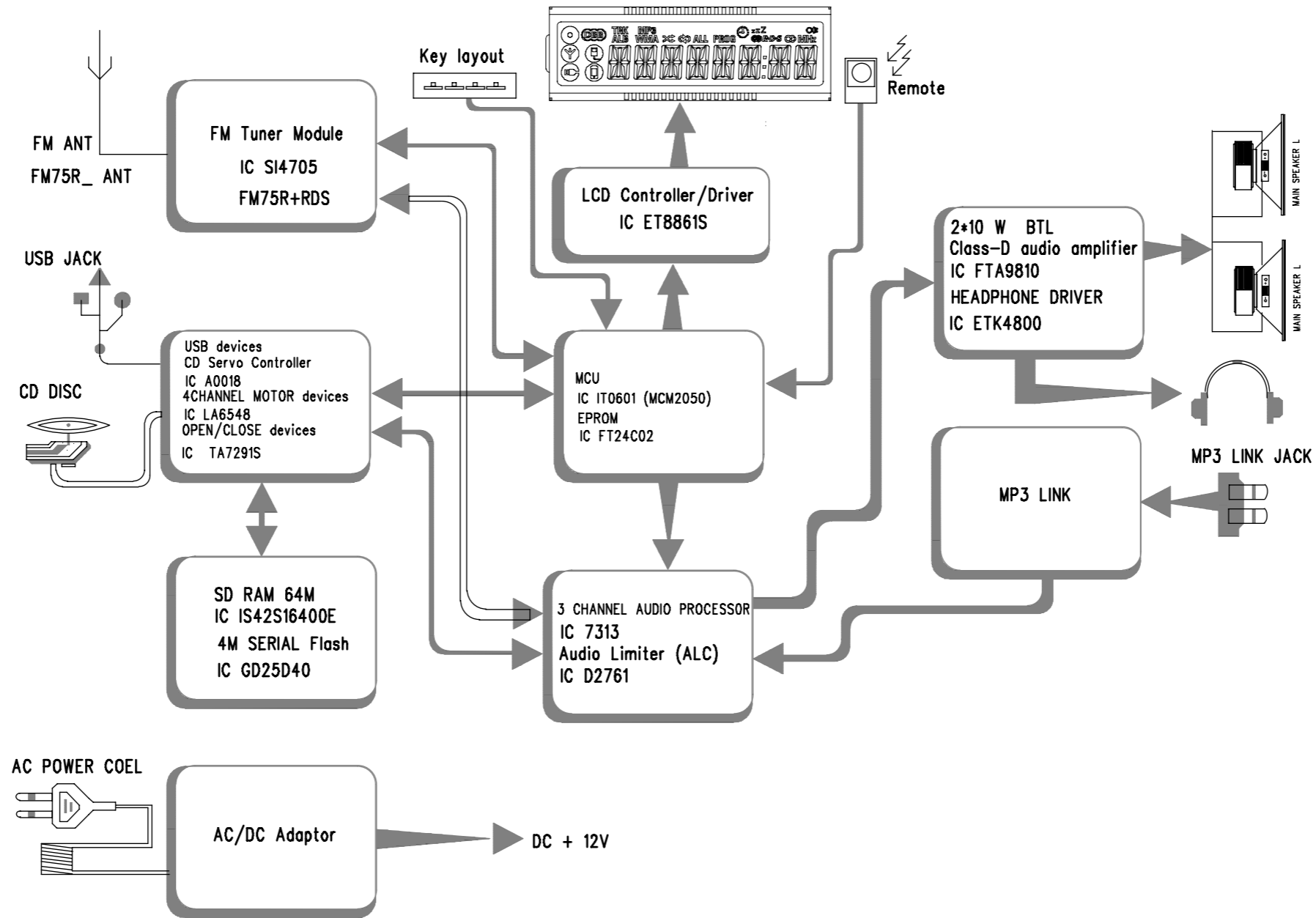
"After servicing and before returning set to customer perform a leakage current measurement test from all exposed metal parts to earth ground to assure no shock hazard exist. The leakage current must not exceed 0.5mA."

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

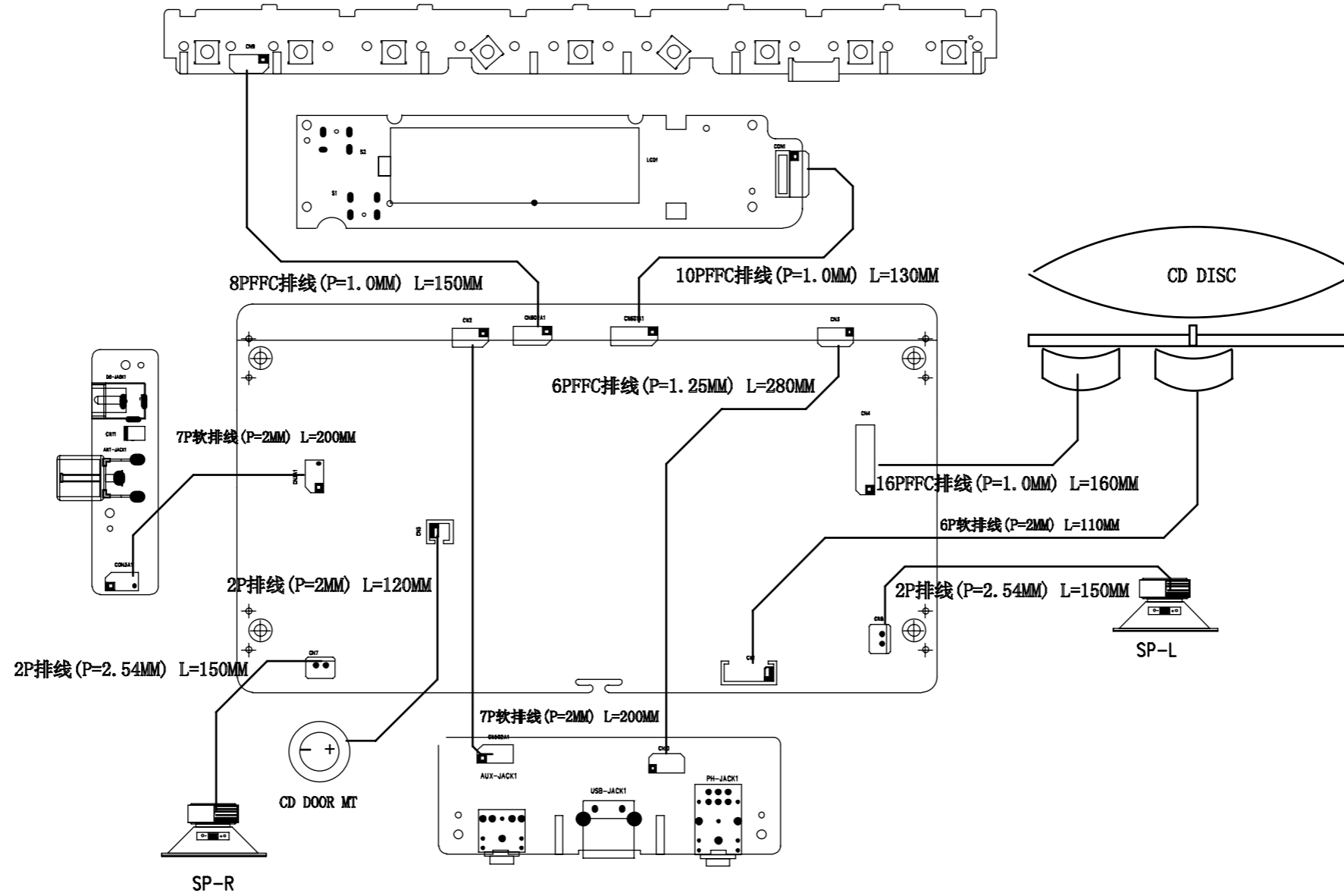
To reduce the risk of electric shock do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.



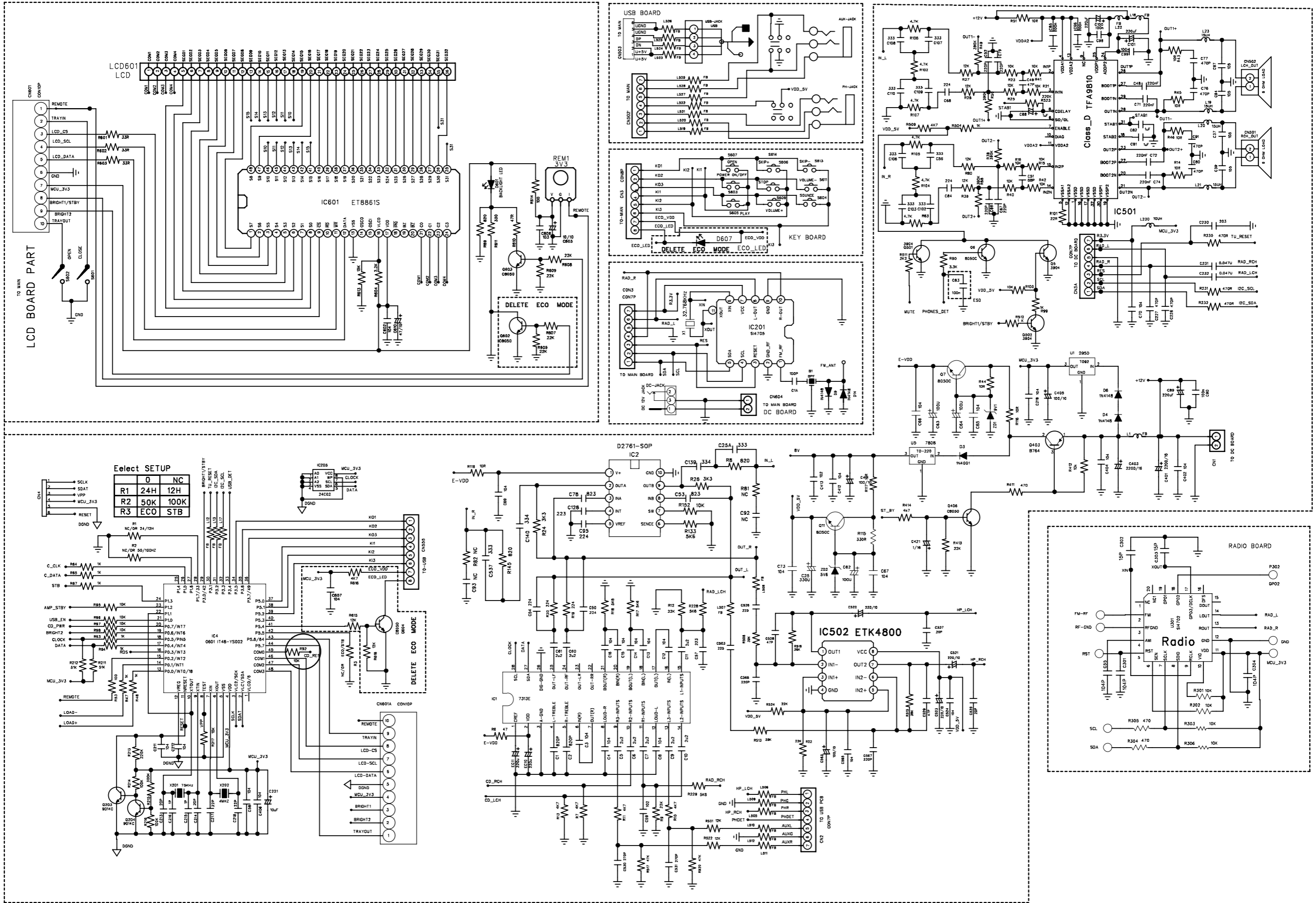
# SET BLOCK DIAGRAM



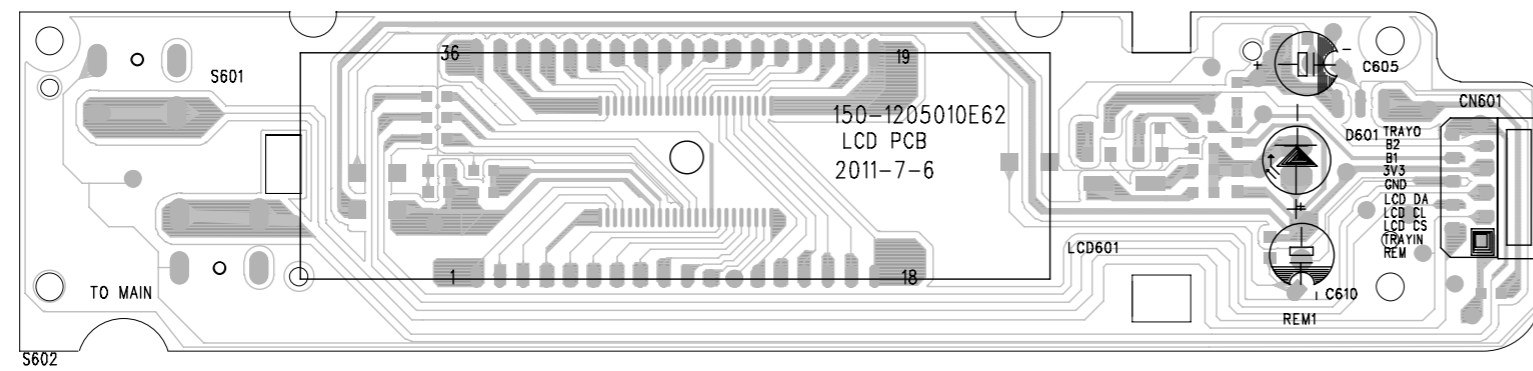
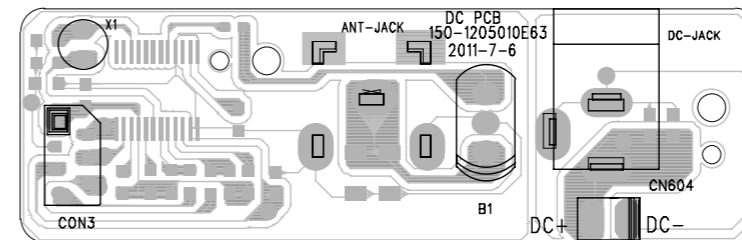
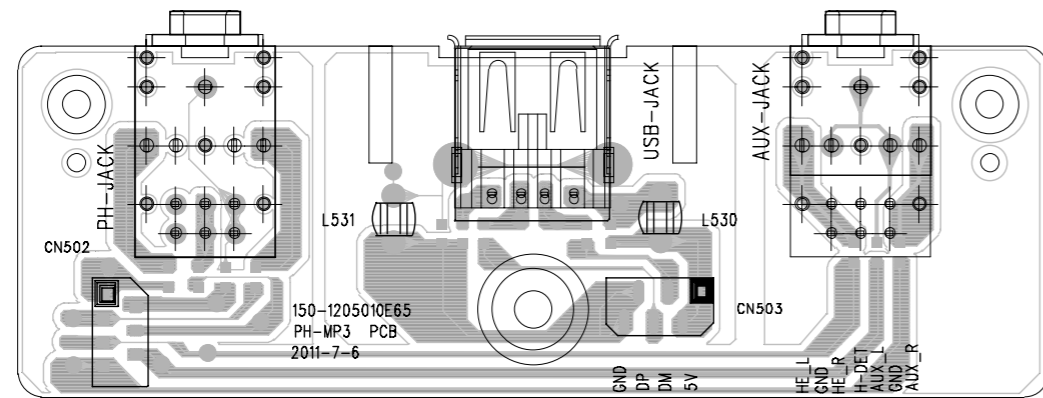
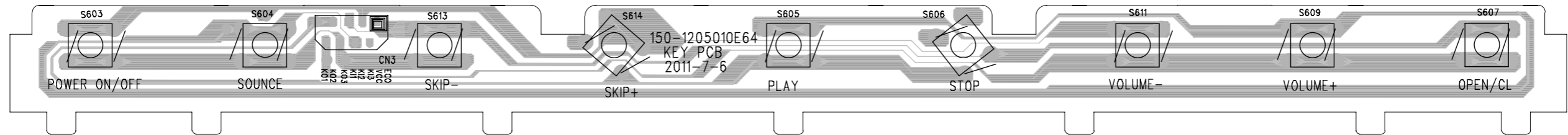
WIRE CONNECT DIAGRAM



# CIRCUIT DIAGRAM - LCD + DC + MP3 + KEY BOARD

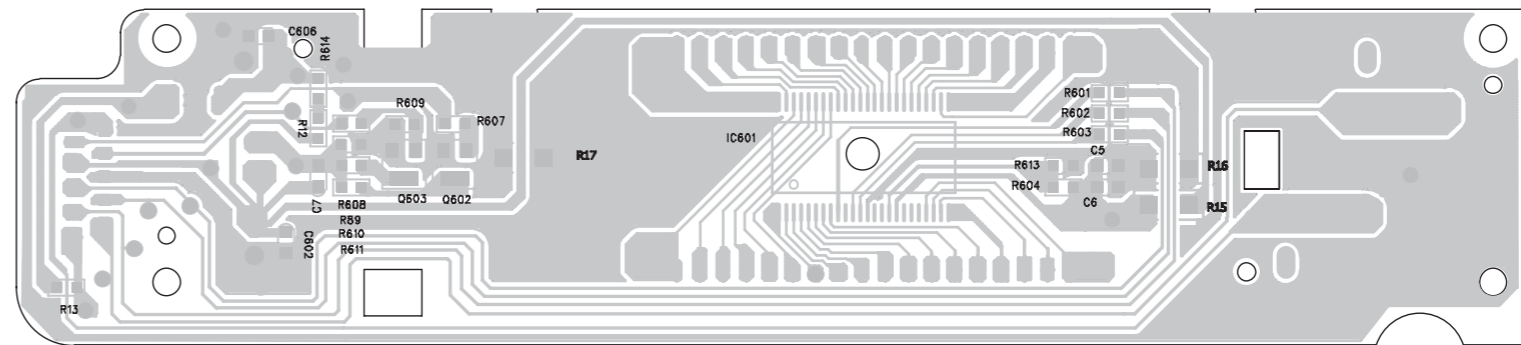
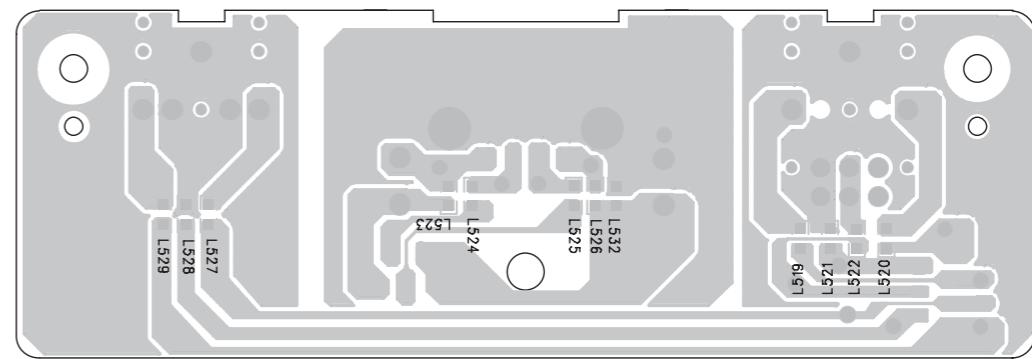
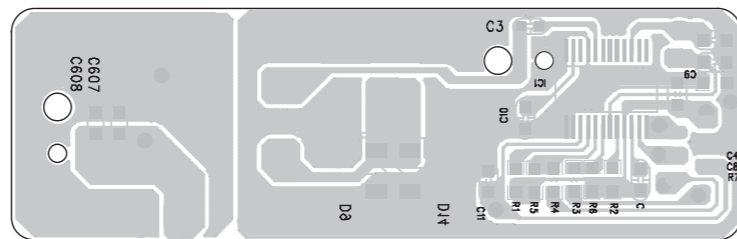
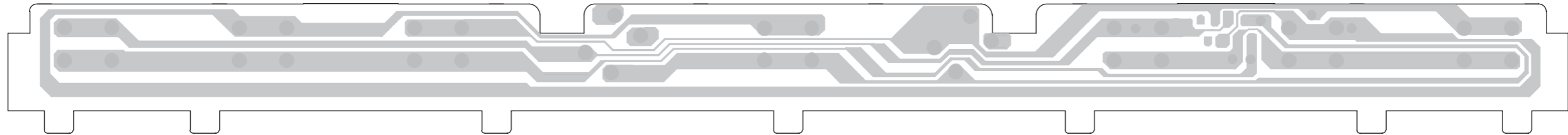


LAYOUT DIAGARM - LCD + DC + MP3 + KEY BOARD  
TOP SIDE VIEW

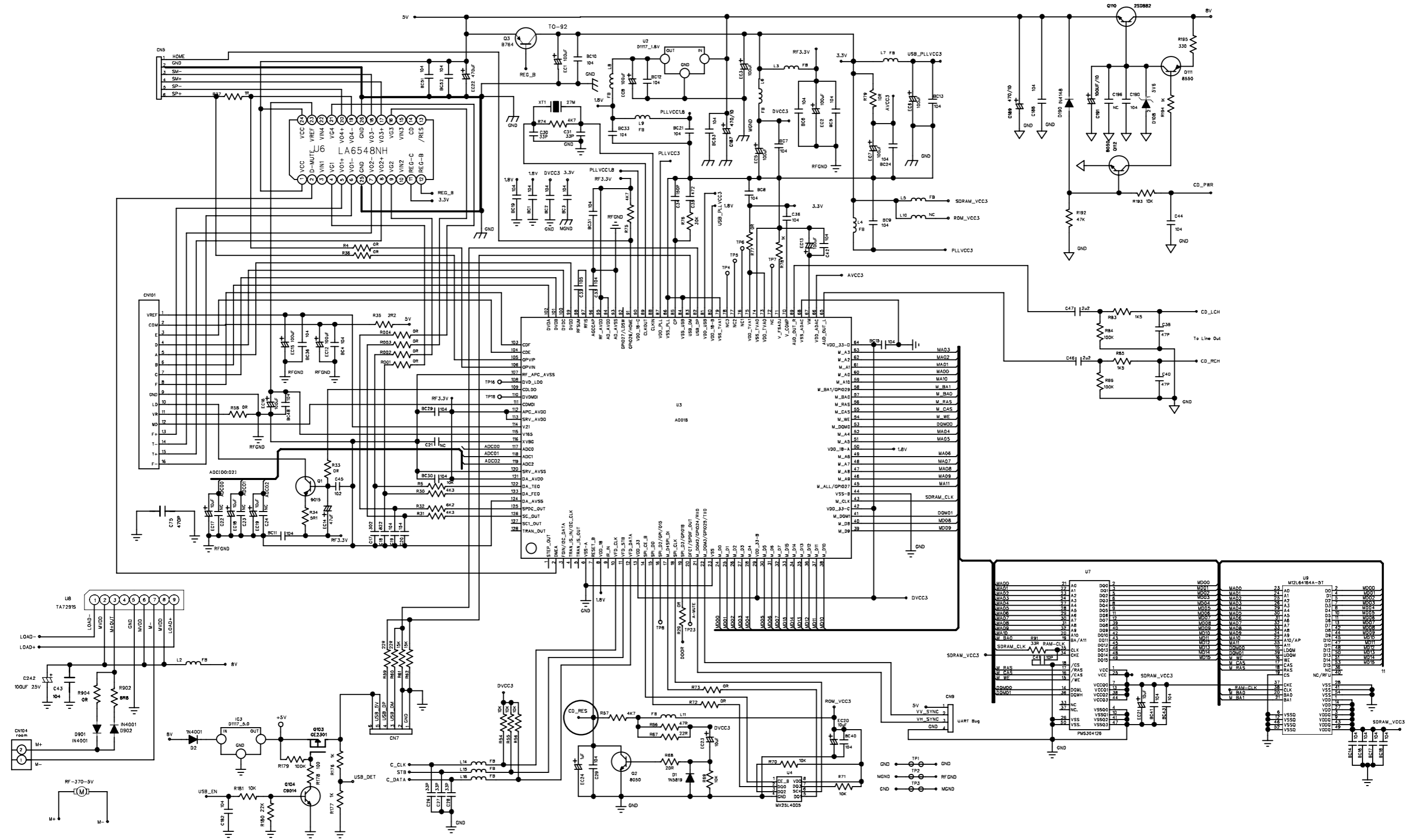


S602

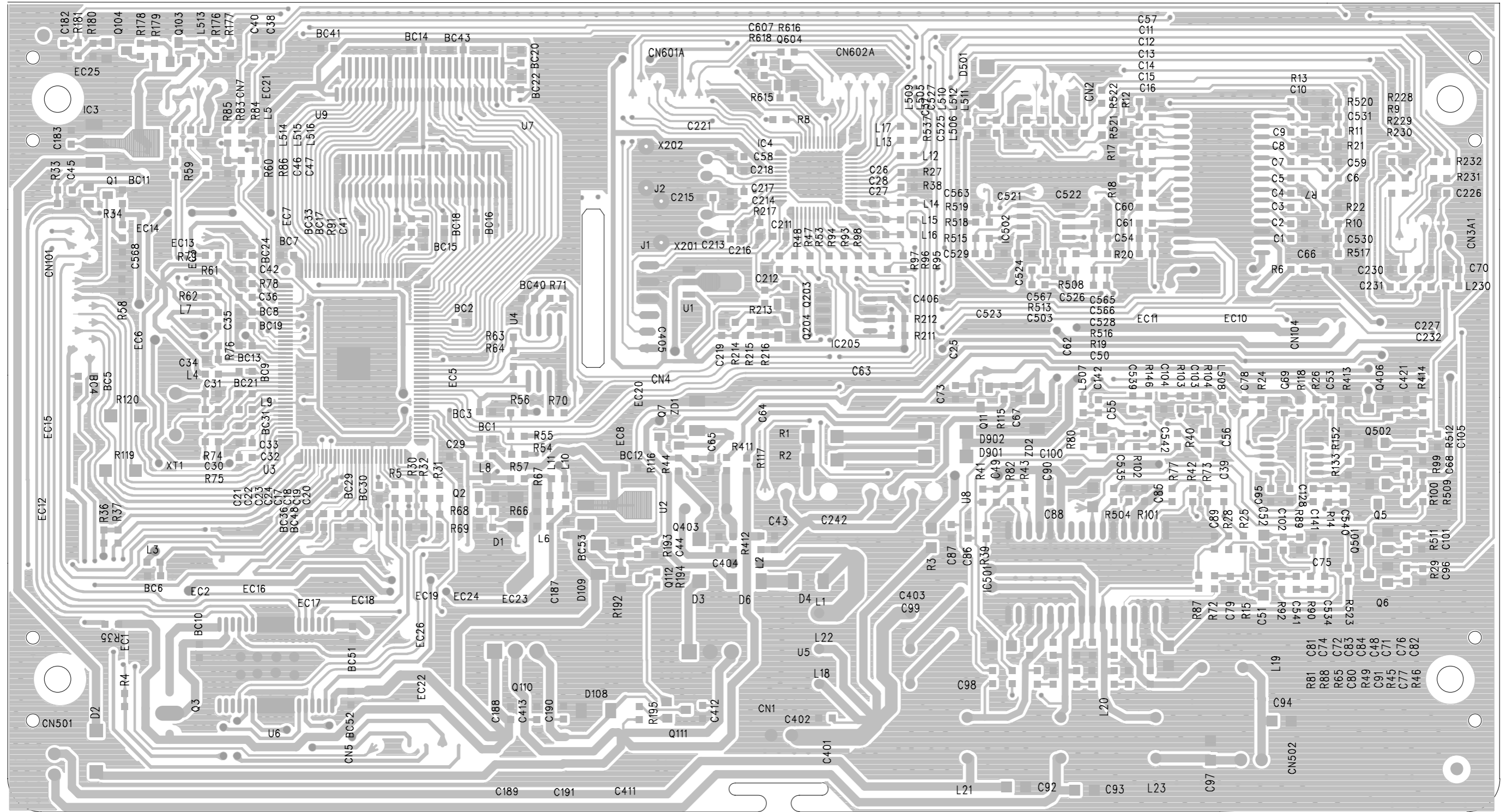
LAYOUT DIAGARM - LCD + DC + MP3 + KEY BOARD  
BOTTOM SIDE VIEW



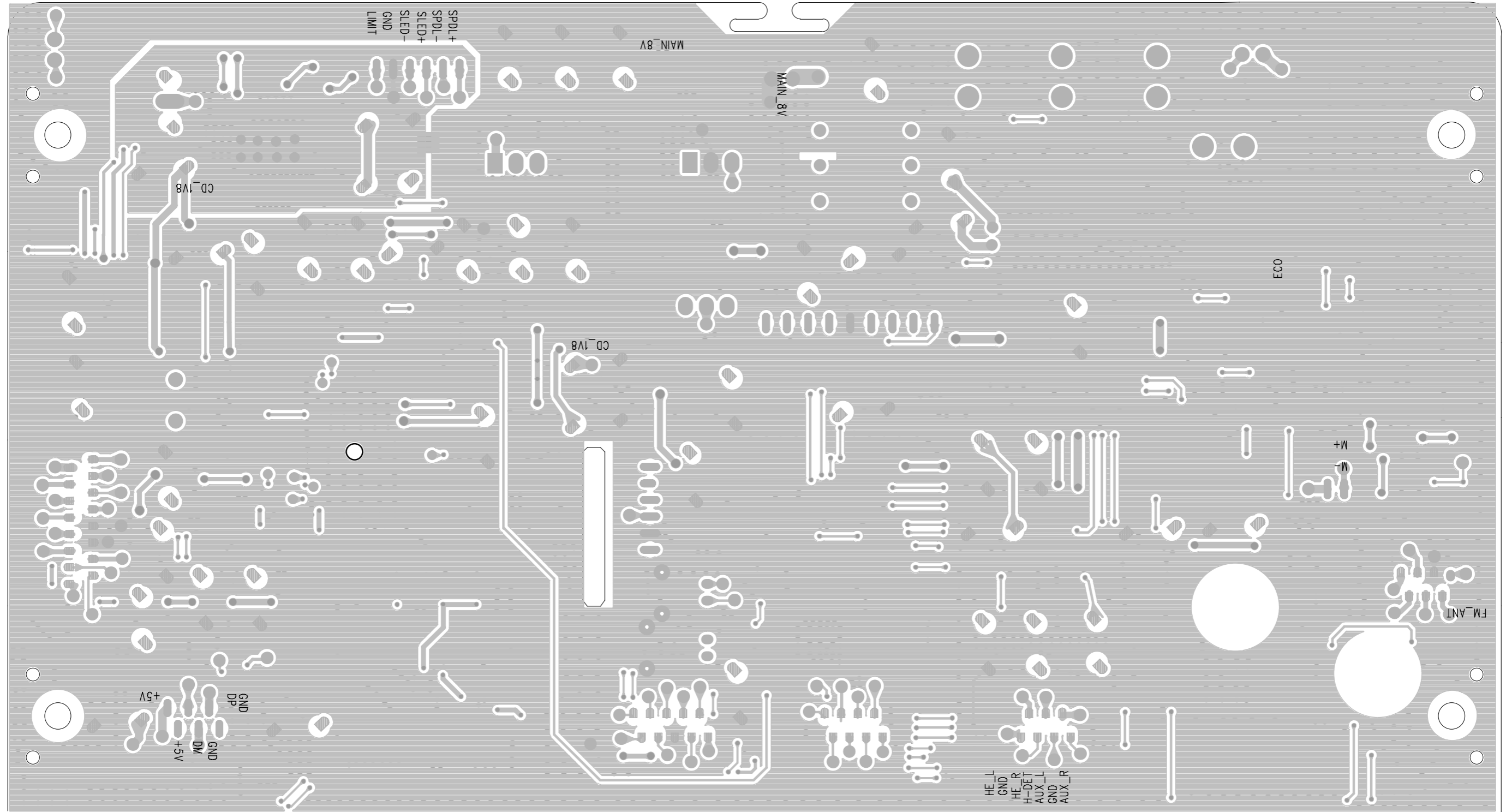
# CIRCUIT DIAGRAM -MAIN BOARD



LAYOUT DIAGRAM -MAIN BOARD  
TOP SIDE VIEW



LAYOUT DIAGARM - MAIN BOARD  
BOTTOM SIDE VIEW





EXPLODED VIEW DIAGRAM

