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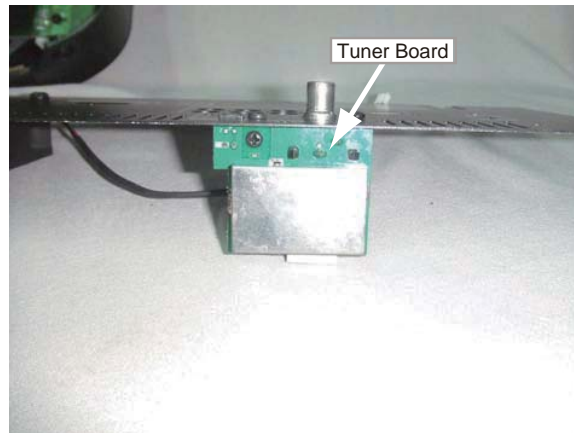
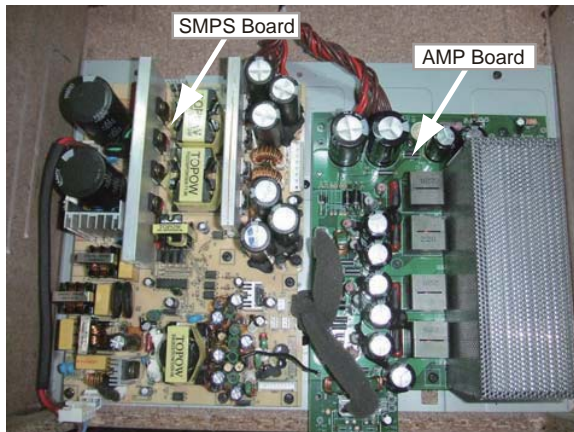
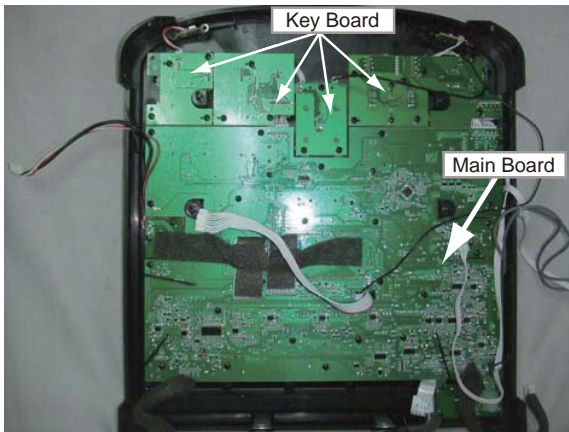
# Service Manual

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## 1.Location of PC Boards & Versions Variation

### Location of PC Boards



### VERSION VARIATION

Type /Versions:		NTX800									
Board in used:	Service policy	/55 (LATAM)	x/78 (BRAZIL)								
MAIN BOARD		C/M	C/M								
AMP BOARD		C/M	C/M								
JACK BOARD		C/M	C/M								
TUNER BOARD		C/M	C/M								
SMPS BOARD		M	M								
MCU+CD BOARD		C/M	C/M								
Type /Versions:		NTX800									
Features	Feature difference	/55	x/78								
RDS											
VOLTAGE SELECTOR											
ECO STANDBY - DARK											
* TIPS : C -- Component Lever Repair. M -- Module Lever Repair ✓ -- Used											C/M C/M

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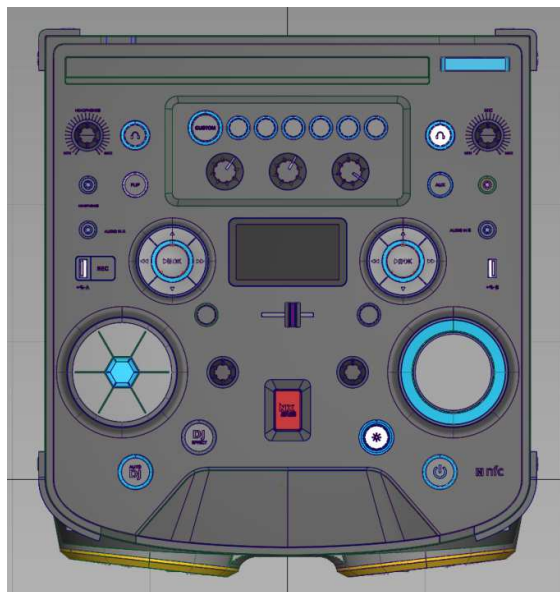
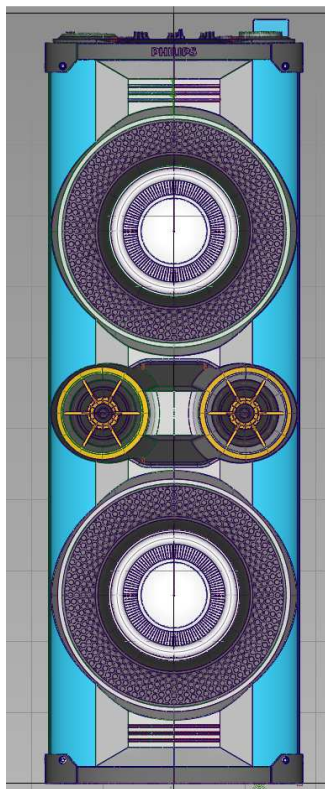
# Product Performance Specification

Product Brand : Philips

Model : NTX800

Description : 3000W Speaker Tower

Type Number	Stroke Versions	Region/Countries	Comment
NTX800	/55	Brazil	



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## Owners

Functions	Name	Comment
Project Management (approver)	Vincent Chou	
Product Management	Keith	
Electrical Engineering	Sonda So	
Mechanical Engineering	Thomas Lee	
Software Engineering	Dou Yudong	
Acoustics Engineering	Tony	
Development Quality	Emil	
Industrial Operation	K.K	

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**Document History:**

Revision	Description of Change	Functions	Prepared by	Approved by	Date
V1.0	1 <sup>st</sup> proposal	Electrical	XT		2014-09-16
V1.01	Add acoustic part	Acoustics	Tony	NA	2014-09-17
V1.02	Add mechanical part	Mechanical	Thomas Lee	NA	2014-09-18
V1.03	Acoustic part update	Acoustics	Tony	NA	2014-10-05
V2.0	Released for PPC	Electrical	Walker Wang		2014-11-05
V2.1	Update the output power to 3000W	Electrical	Walker Wang	NA	2014-11-25
V2.2	Update acoustic part	Acoustics	Tony	NA	2014-11-26
V3.0	Release for Re_AA	Electrical	Walker Wang		2014-11-27
V4.0	Change name form NTX770 to NTX800  Release for RE-AA +PPC	Electrical	Walker Wang		2014-12-10
V5.0	Update CTQ	E/M/A	Walker Wang		2015-01-06
V6.0	Update Mechanical and Acoustics CTQ.  Release for PTR Use	M/A	Walker Wang		2015-01-08
V6.1	Update acoustic MP CTQ	Acoustics	Tony	NA	2015-02-27
V6.2	Update acoustic MP CTQ	Acoustics	Tony	NA	2015-04-15
V6.3	Update Mechanical CTQ	Mechanical	Thomas	NA	2015-04-20
V6.4	Update the power output in AUX/Audio in	Electrical	Walker Wang	Vincent Chou	2015-04-22
V7.0	Release for PV	Electrical	Walker Wang	Vincent Chou	2015-4-23

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## References:

- Audio Product Performance Handbook
- Audio Product Quality & Reliability Handbook

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## 1 General

[illegible]

**Refer Audio Product Performance Handbook and Audio Product Quality & Reliability Handbook for performance items not mentioned in this document.**

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## 2 Models and Versions

Model	Version	Destination	
NTX800	/55	LATAM	

## 3 Mechanical Performance

### 3.1 General Mechanical Performance and Specification

Refer to Performance Handbook for BL Audio V1.0 and Quality and Reliability Handbook for BL Audio V1.0

### 3.2 Product profile

#### 3.2.1 Product weight :

	Main Set Weight (kg)	LSB Weight (kg)
Product w/o D-Box	<b>26.3</b>	<b>22.2</b>
Product w/ D-Box	<b>30.6</b>	<b>25.7</b>

#### 3.2.2 Product size (HxWxD) :

	Main Set Dimension (mm)	LSB Dimension (mm)
Product w/o D-Box	<b>H1091 x W360 x D471</b>	<b>H1065 x W360 x D471</b>
Product w/ D-Box	<b>H1192 x W550 x D421</b>	<b>H1164 x W550 x D421</b>

### 3.3 Cosmetic and Finishing

#### 3.3.1 MUS

Refer to : **NTX600\_NT800\_MUS\_v7.0\_20150211**

#### 3.3.2 PGD

Refer to : **NTX800\_PGD\_v7.0\_20150407**

#### 3.3.3 Colour Chip

N/A

### 3.4 Mechanical Operation

Refer to Performance Handbook for BL Audio V1.0

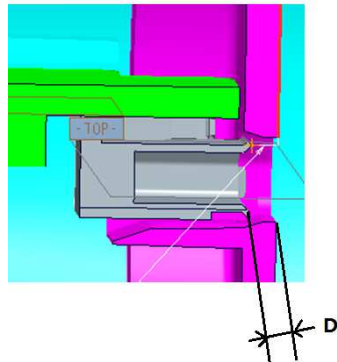
#### 3.4.1 USB type A socket

Depth: D < 2.6mm

USB connector must be with pins which can be crossed through and soldered on PCB.

Mechanical strength: withstand 50N, 30sec. (detailed requirement refer to PQP)

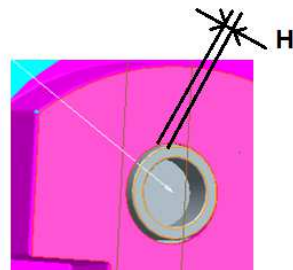
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#### 3.4.2 3.5mm Audio in socket

Protrusion H > 0.3mm

Mechanical strength: withstand 50N, 30sec. (detailed requirement refer to PQP)



### 3.5 Mechanical Strength and Reliability

Refer to Performance Handbook for BL Audio V1.0 and Quality and Reliability Handbook for BL Audio V1.0

### 3.6 Bare drop (optional)

N/A

### 3.7 Others

***All the Control Buttons/Tact Switch, Connectors/Jack and other moveable mechanism must be complied with mechanical strength test criteria according to WOOX requirement.***

No	System	Sub-system	MP	CTQs S/N	Diagram	Description	Test condition/ equipment	USL	LSL	Mean	Sample Size	Target
1		Y	Y	IQC check according to AQL		Width of wooden speaker box: 350.2mm +0.8/-0.8	Calliper, Projector, Micrometer or other Gages/ equipment	351	349.4	350.2	20	Meet USL and LSL
2		Y	Y	IQC check according to AQL		Height of wooden speaker box: 1019mm +1.0/-1.0	Calliper, Projector, Micrometer or other Gages/ equipment	1020	1018	1019	20	Meet USL and LSL
3		Y	Y	IQC check according to AQL		Depth of wooden speaker box: 319.5mm +0.9/-0.9	Calliper, Projector, Micrometer or other Gages/ equipment	320.4	318.6	319.5	20	Meet USL and LSL
4		Y	Y	IQC check according to AQL		Width of internal of main unit wooden speaker box: >324.5	Calliper, Projector, Micrometer or other Gages/ equipment	-	324.5	-	20	Meet LSL
5		Y	Y	IQC check according to AQL		Deformation of CD Door should be max. 0.5mm lengthwise	Calliper, Projector, Micrometer or other Gages/ equipment	0.5	-	-	20	Meet USL

## 4 Packaging, Storage and Transportation

### 4.1 Package Instruction

Refer to package instruction, filename : update before ppc

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#### 4.2 Packaging Stacking Instruction – PSI (Container loading)

Refer to PSI, filename : **NTX800MU-55-PSI-WEEE-v2.1, NTX800SB-55-PSI-WEEE-v2.1**

#### 4.3 Special packing requirement (for specific items/Retailer only)

N/A

#### 4.4 Label's briefing

Refer to label briefing document, filename : **NTX800MU-55 Label briefing 20150403, NTX800SB-55 贴纸 20150319**

#### 4.5 Others

N/A

### 5 Electrical Performance

#### 5.1 General Requirement

##### 5.1.1 Safety Standards

Where applicable:

For /12 (EU), /05 (UK), /51 (Russia)	EN/IEC 60065 7th Edition
For /37 (US, Canada)	UL 60065
For /55 (LATAM), /78 (Brazil)	IEC 60065 7th Edition
For /98 (AP), /69 (Singapore), /75 (Australia)	IEC 60065 7th Edition
For /93 (China)	GB 8898 (IEC 60065 7th Edition)
For /61 (Korea)	K 60065 6th Edition
For /96 (Taiwan)	CNS 14408 (IEC 60065 7th Edition)

##### 5.1.2 EMC Standards

For /12 (EU), /05 (UK), /51 (Russia)	EN55013: 2001, EN55020: 2002
For /37 (US, Canada)	FCC15
For /55 (LATAM), /78 (Brazil)	CISPR13
For /98 (AP), /69 (Singapore), /75 (Australia)	CISPR13
For /61 (Korea)	CISPR13/20

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For /93 (China)	GB 13837 (CISPR13)
For /96 (Taiwan)	CNS 13439 (CISPR13)

### 5.1.3 ESD Standards

The product shall withstand electro static discharges on all user accessible parts of the product.  
Reference: IEC61000-4-2.

General requirement:

1. 10 arcs for positive and negative polarity for unit "on" and "off" for 1kV incremental steps.
2. Component or mechanical damage is not allowed. No loss of fixed stored data (stored in EEPROMs).
3. Hang-ups and malfunctions are allowed, as long as the customer can "recover" from the hang-up by pressing the Standby or ON/OFF button of the set.
4. Failures that disappear only by unplugging the AC mains cord and/or power sources are not acceptable.

#### 5.1.3.1 For contact discharges:

Level	General (kV)	USA (kV)	Requirement
1	0-2	0-3	No deviations allowed.
2	>2-4	>3-4	Short perceptible deviations allowed
3	>4-5	>4-5	Normal recallable function changes allowed.
4	>5-7	>5-7	Control recallable function changes allowed.
5	-	>7-8	No loss of stored data allowed.

#### 5.1.3.2 For air discharges:

Level	General (kV)	USA (kV)	Requirement
1	0-4	0-6	No deviations allowed.
2	>4-8	>6-8	Short perceptible deviations allowed.
3	>8-10	>8-10	Normal recallable function changes allowed.
4	>10-15	>10-15	Control recallable function changes allowed.
5	-	>15-18	No loss of stored data allowed.

## 5.2 Electrical Performance

### 5.2.1 Power Supply and performance

Build-in SMPS will be used for all models and stroke versions. All using figure '8' socket, will cater

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for all versions:

Versions	Region/Country	SMPS	Detachable mains cords
12 / 05	EUROPE / UK	1) 100 ~240Vac nom. (wide range from 90V~264Vac limit) used in all versions except India.  Frequency: 47~63Hz.	EU (/12) round 2-pin & UK (/05) 3-pin
37	NAFTA		UL flat pin (non-polarized)
55	LATAM		INMETRO certified round 2-pin
98	APAC		EU round 2-pin
94	India	2) 100 ~310Vac limit (India compatible with up cost) used only for India.  Frequency: 47~63Hz.	EU (/12) round 2-pin

All requirements per defined for each country should be met with sufficient testing.

Battery information and playtime: **N.A**

Power consumption at nominal AC input:

1. CD play mode at 1/8 P-rated output power	:	≤	160W
2. Low Power Standby Mode (Demo OFF)	:	≤	40W
(Demo ON)	:	≤	40W

## 5.2.2 Bluetooth and WiFi

### 5.2.2.1 Bluetooth

General Part				
Bluetooth module				
BT Audio				
Description	Normal	Limited	unit	remark
Frequency Response ? Hz ~16kHz	+ / - 1.5 dB		dB	
S/N (A-weighted)	55	50	dB	
Channel Separation	55	50	dB	
THD + Noise ( 0dB, 1Khz )	<1.5%			
Bluetooth at Set Level				
10%THD OUTPUT POWER (EQ:FLAT)	750 X 4	(-1dB)	W	
Connected distance	10	8	meter	
NFC: <b>Built-in</b>				
Connected distance	Normal:2.5cm	Limit: 1.5CM	CM	

### 5.2.2.2 WiFi: **N.A**

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### 5.2.3 Clock specification

TECHNIAL DESCRIPTION		
SOFTWARE IMPLEMENTED CLOCK / TIMER FUNCTION WITH 32.768kHz QUARTZ OSCILLATOR.		
GENERAL PART		
Timer Setting	:	Clock and Timer
Timer Wakeup Mode	:	CD/USB/Tuner
Remarks Time Setting	:	/12 version for 24hrs /37 version for 12hrs
Volume at Wakeup	:	12 level Volume
No of Alarm Timer Settings	:	1 Alarm timer,
Clock Accuracy	:	Nom : 1 sec/day Limit : 2 sec/day
INDICATORS		
Display Type	:	LCD

### 5.2.4 AM/FM Tuner:

FM/AM tuner Module: xxx									
GENARAL PART									
WAVE RANGE		VERSION		TOLERANCE		TUNING GRID			
FM 87.5 – 108.00 MHz		/55		QUARTZ PRECISION		100kHz			
AM 530 -1700kHz		/55		QUARTZ PRECISION		10 kHz			
AERIAL									
FM : PIGTAILTYPE ANT WIRE 75Ω									
AM :FRAME ANT.									
ELECTRICAL DATA									
A.M		Nom	Limit	Unit	FM		Nom	Limit	Unit
Search Tuning Sensitivity		α26	+/-10	α26	Tuning search sensitivity		28	35	dBf
Amplification Reverse		- 2	-4	dB	Search time digital tuning system.		60		S
Distortion ( RF 50mV, M 80% )		3	5	%	Distortion ( RF 1mV, Frq Dev.75 kHz )		2	3	%
S/N Ratio		45	40	dB	S/N Ratio		50	45	
					Modulation Hum		50	45	dB
					Overall Frequency Response: 63Hz – 12.5KHz		-	±3	dB
					Amplification Reverse		0	-4	dB
FM Frequency (MHz)		Noise Limited Sensitivity 26 dB		Image Rejection	IF Rejection	Large Signal Handling			
FM 88.0	Nom.	18				116 dBf			
	Lim.	22				108 dBf			
FM 98.0	Nom.	18				116 dBf			
	Lim.	22				108 dBf			
FM 107.0	Nom.	18				116 dBf			
	Lim.	22				108 dBf			
Units		dBf		dB	dB	dBf			



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AM Frequency (KHz)	Noise Limited Sensitivity 26 dB	Image Rejection	IF Rejection	Large Signal Handling		
MW 610KHz	Nom. 70 Lim. 75			1000 500		
MW 1000KHz	Nom. 65 Lim. 73			1000 500		
MW 1440 kHz	Nom. 65 Lim. 73			1000 500		
Units	dBuV	dB	dB	mV/m		
Remark: AM Performance based on the field test result						
Susceptibility to unwanted signals(CPU, SMPS, AMP, DSP ...):		Limited(dB)	Normal (dB)	Remark		
		-15dB	-20dB	Refer to self-pollution curve also		

### 5.2.5 Electrical Miscellaneous (NA)

### 5.3 Audio Performance (\*1)

General Part		NA	Temperature	Yes	Short Circuit:	Yes
Output Stage Protection:			:			
Indicators						
Standby Mode Indicator:					Clock Display Active	
Power Standby Mode:					LED Turns Off	
Electrical Data						
DSC:	YES		Hum (Vol <sub>min</sub> --- default vol)			0.5mV
DBB:	YES		Hum Vol max			1.2mV
NX Bass:	Y		THD <sub>Maximal</sub>			<1%
Treble:	N.A		SNR @standard output (A-weighted) (*1):			≥ 55dB
Loudness:	N.A		SNR @standard output (Un-weighted):			≥ 50 DbA
			Amplification Reserve			2dB
			Acoustic Noise /Hum ( Volume Max.) ( A - weighted )			33 -36 dbA (1.2mV - 1.5mV)
Audio Input						
Audio Input Sensitivity(±3dB) rated output power at 1kHz			Audio Output (*1)			
Tuner	FM 67.5kHz, Modulation (Limit:-6dB)		Line Out(Left/Right)		NA	
CD/MP3	0dB track (Audio Disc 1, Track 1)		Headphone RL =2x 16Ω		0dB 1KHz sine wave	
USB	0dB 1KHz sine wave( 2.0HS)					
AUX1(back)	2V±200mV; Rin≥22kΩ					
MP3_link(front)	2V±200mV; Rin≥22kΩ					
Output Power			At THD=10%, 1kHz/5kHz Sine Wave			
Main Operation for series/ all version (rms)		3000W				
CD/USB		3000W±0. 5dB	3000W±0. 5dB	3000W±0. 5dB	( At Cold Condition	
BT		3000W ±1dB	3000W ±1dB	3000W ±1dB		

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Audio_in (3.5mm)/AUX	3200W±0. 5dB	3200W±0. 5dB	3200W±0. 5dB	with 10% THD,) ( At Cold Condition with 10% THD,)
Headphone	450mV-0.5dB			
Frequency Response Woofer	40H---5KHz	40H---5KHz		( At Cold Condition with 30% THD*2,)
Tweeter	5KHz---20KHz	5KHz---20KHz		
Impedance Load:	Right/Left:	4Ω	4Ω	
Speaker Impedance	Right/Left	8ohm//8ohm	8ohm//8ohm	
Subwoofer:	NA			

**REMARKS:**

1\* ) Electrical Parameters are measured at Speaker Terminals across rated impedance Load(such as 4ohm) with Rated Input Signal in CD Mode setting in DBB/Loudness Off and Pre-eq at Flat unless specified otherwise.

2\* ) Special requirement for commercial output power, with aux in or audio\_in input, increase input level to achieve 30%THD. Normally test with one channel

**5.4 Video Performance: N.A**
**5.4.1 HDMI**

The unit shall fulfil the requirements as stated in the HDMI test specification Version 1.4b

**5.4.2 Composite and Components**
**5.4.2.1 Composite:**

Description		Test Signal	Specification	
			NTSC	PAL
Amplitude output		100% White	1Vpp ± 10%	1Vpp ± 10%
White bar		100% White	714mV ± 10%	700mV ± 10%
Sync. Amplitude		100% White	286mV ± 10%	300mV ± 10%
Burst Amplitude		75% Colour bar	286mV, +1dB / -4dB	300mV, +1dB / -4dB
Burst / Chroma ratio		100% Colour bar	± 5%	± 5%
S/N luminance		100% White	≥ 60 dB	≥ 60 dB
S/N chroma		100% Red	≥ 57 dB	≥ 60 dB
	AM		≥ 57 dB	≥ 57 dB
Video Bandwidth		Multi-burst		
0.5MHz – 4MHz				+1dB/-1dB
4.8MHz			-1.5dB	-2dB
5.8MHz			-5dB	-5dB
Chroma Subcarrier Frequency		75% Colour bar	3.579545 MHz ± 25ppm	4.433618MHz ± 30ppm
Chroma / luminance delay		2T pulse	≤ 20ns	≤ 20ns
Subcarrier locked/unlocked		75% Colour bar	locked	locked

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DC Level	0% Black	$\leq 1V$	$\leq 1V$
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#### 5.4.2.2 Component:

Description	Test Signal	Specification	
		Interlace/Progressive	
		NTSC	PAL
Amplitude output	100% White	1000mV $\pm$ 10%	1000mV $\pm$ 10%
White bar	100% White	714mV $\pm$ 10%	700mV $\pm$ 10%
PbPr peak to peak	75% Colour bar	525mV $\pm$ 10%	535mV $\pm$ 10%
PbPr Output unbalance	75% Colour bar	$\leq 3\%$	$\leq 3\%$
Sync. Amplitude	100% White	286mV $\pm$ 40mV	300mV $\pm$ 10%
S/N on outputs	Y Pb / Pr	$\geq 60$ dB	$\geq 60$ dB
Video Bandwidth	4.2MHz 5.8MHz	Multi-burst	-1.5dB -5dB
Video Bandwidth (Progressive)	8.4MHz 9.6MHz	Multi-burst	-1.5dB -5dB
DC Level	0% Black	$\leq 1V$	$\leq 1V$

#### 5.5 Remote Control (refer to performance Handbook)

Parameters	Requirement	
Receiver Sensitivity	<u>Receiver sensitivity</u>	<u>Max Distance</u>
	• $E(0^\circ) = 0.70 \text{ mW/m}^2$	10m
	• $E(30^\circ, h) = 1.12 \text{ mW/m}^2$ , $\gamma = \pm 30^\circ$ off horizontal or vertical axis	7.92m
	• $E(45^\circ, h) = 2.19 \text{ mW/m}^2$ , $\gamma = \pm 45^\circ$ off horizontal axis	5.65m
Short Operating Distance	$\leq 0.1 \text{ m}$	
Minimum Optical Viewing Angle	Horizontal ( $\gamma$ ) $\geq \pm 60^\circ$ Vertical ( $\delta$ ) $\geq \pm 30^\circ$	
Electromagnetic Interference	Field-strength: $E_q \leq 100 \text{ V/m}$ at nominal 36KHz carrier frequency.	

#### 5.6 Key components list

Item	Feature	Description	Quantity	Remark
1	Display		1	
2	Amplifier		1	
3	MCU		1	
4	Bluetooth		1	
5	Real time clock		1	

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### 5.7 Accessory

Model	
Stroke Version	/55
Region	Brazil
Power Cord	Attached.
AV cable	N.A
Audio cable (3.5mm audio)	
Tuner Antenna	One FM antenna, One AM Frame antenna
Speaker cable	N.A
AV cable (Video out only)	N.A
USB cable	N.A
Remote Control	N.A
Battery	N.A
Quickly guide	Yes
IFU	Yes

### 5.8 Others

## 6 Acoustic Performance:

### 6.1 System Overview

Description: 3000W (bi-amp, 4x750W), BT, CD, Nitro, 8" woofer + 4" coaxial mid-high driver

Project type classification: B

Highlights/Risks: Power derating setting adjustment

### 6.2 Sound Quality Benchmarking

Must have at least 65% preference in blind listening tests

Internal benchmark: NXTR700, more louder

External benchmark: no, 2 x NTRX500

### 6.3 Main Set Specifications

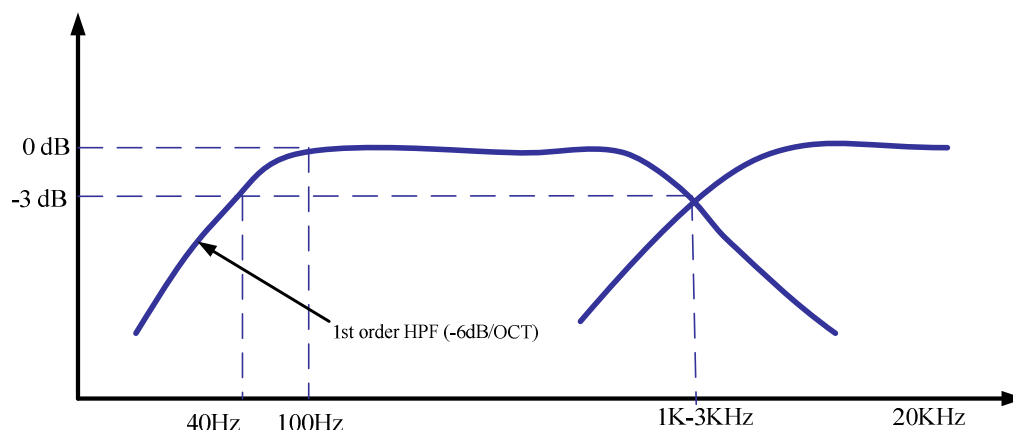
No.	Item	Requirement	Test Condition / Descriptions
-----	------	-------------	-------------------------------

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Model : NTX800		Page <b>19</b> of <b>25</b>

6.3.1	Output power (RMS)	<b>4x750W,</b> <b>power derating function</b>	RMS at 10% THD, Low Frequency at 500kHz, High Frequency at 10KHz,.Source: CD 0dB FS
		n/a	RMS at 1% THD, at 1kHz Source: CD 0dB
6.3.2	Amplification reserve	<b>1-2dB</b>	AR = output power @ max volume – output power @10% THD volume position
6.3.3	Electrical frequency response in source direct mode (flat)	<b>See illustration below</b>	in ‘Source Direct’ mode on both <b>4</b> ohms dummy load and real speaker, 5W output Source: CD 0dB FS
6.3.4	DISTORTION before clipping	<b>&lt; 0.5%</b>	<b>FNAC test method :</b> Use 1kHz and 5kHz 0DB FS signals Set volume control to reach 1% THD Reduce volume control by 1dB Then measure distortion
6.3.5	Front Stage distortion with high-level input signal	No clip or THD <b>&lt;1%</b> from power amplifier	2V Aux in, FM 75KHz deviation, volume 1 - >Prated -6dB, subwoofer + satellite channel, all effective frequencies
6.3.6	Hum	Amp: <b>&lt; 200nW</b>	Amp: Volume control from min. till max. – 20 dB Value true RMS.
6.3.7	SNR	<b>≥67</b> dB (unfiltered)	AUX IN 0dB, 1KHz Test power: <b>5W</b>
6.3.8	Sound processing and features	<b>2 band EQ, preset center frequency: 63Hz, 16kHz;</b> <b>3 band user EQ mode, adjustable);</b> <b>DSC, DBB/3 level, Nitro(10s)</b>	
6.3.9	Sound setting	<b>See separated file “sound setting”</b>	

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### Electrical frequency response requirement in flat mode



## 6.4 Speaker Driver Specifications

Supplier Model Number:

No.	Item	Woofer	Mid-high range	Measurement conditions: IEC 60268-5
6.4.1	Size and numbers of speaker driver	8" x 2	4" coaxial mid-high driver x 2	
6.4.2	Membrane area	Piston area >		
6.4.3	Rated IMPEDANCE	8ohms	8ohms	
6.4.4	Long term noise POWER	500W, unfiltered	500W, with filter	RMS, 100 hours pink noise IEC filtered.
6.4.5	EFFICIENCY	$\geq 89$ dB/1W/1m	$\geq 89$ dB/1W/1m	In IEC baffle in anechoic chamber, average level on pink noise in used frequency range
6.4.6	T/S parameter target	See driver spec	n/a	N/A
6.4.7	FREQUENCY RESPONSE at 0 degree in baffle	See driver spec	See driver spec	On IEC baffle, 1/3 octave smoothing, in anechoic chamber
6.4.8	FREQUENCY RESPONSE at 30 degrees in baffle	n/a	n/a	On IEC baffle, 1/3 octave smoothing, in anechoic chamber
6.4.9	FREQUENCY RESPONSE at 60 degrees in baffle	n/a	n/a	On IEC baffle, 1/3 octave smoothing, in anechoic chamber
6.4.10	FREQUENCY RESPONSE at 0 degree in free air	See driver spec	See driver spec	In free air, 1/3 octave smoothing, in anechoic chamber

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6.4.11	DISTORTION (THD)	See driver spec	See driver spec	On IEC baffle, 1/3 octave smoothing, input power providing 94dB SPL in typical frequency range
6.4.12	Magnet material and shielding version	130mm ferrite magnet	Coaxial-4": 80mm ferrite; Coaxial-tweeter: NdFeB magnet	
6.4.13	Diaphragm material	Paper cone, foam surround, 50mm PI VC,	Coaxial-4" mid: paper cone, cloth edge, PI coil; Coaxial-tweeter: 13mm silk dome tweeter	
6.4.14	Frame	≥ 6 holes for screw mounting	≥ 4 holes for screw mounting	
6.4.15	Leakage prevention Cushion	1mm thick EVA on back of basket	1mm thick EVA on front of basket	

## 6.5 Speaker Box Specifications

No.	Item	Requirement	Test condition / description
6.5.1	CROSSOVER filter target complexity	Active crossover + one capacitor in coaxial; Add PTC circuits on tweeter	To be confirmed by listening test
6.5.2	Net internal acoustic volume	> 2 x 50L	Net volume excluding the wood thickness and electronics.
6.5.3	Bass port /Passive radiator design	Sound pipe, size: D150 x 180mm, fB: 50Hz	
6.5.4	Passive Radiator	n/a	
6.5.5	Speaker box material and thickness	MDF or PB, 12-15mm	
6.5.6	Internal construction	Must match Vibration and Buzz and Rattle noise requirements.	Please refer to following sections for tests description on "Buzz and Rattle noise" and "Vibration"
6.5.7	Speaker driver mounting	Screws	
6.5.8	Leakage Prevention Approaches	Airtight joints may be used for speaker, vent,	

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	plastic box assembly	
6.5.9 Box edges profile	See speaker box spec	
6.5.10 Box shape	See speaker box spec	
6.5.11 Speakers positioning	See speaker box spec	
6.5.12 Speaker grille	n/a	
6.5.13 Speaker connectors	See speaker box spec	
6.5.14 Speaker cable	See speaker box spec	
6.5.15 Acoustic damping material	n/a	
6.5.16 Weight	See speaker box spec	
6.5.17 Speaker design illustration	See MUS	

## 6.6 Others

## 7 Software Performance

Refer Functional Requirement Specification (FRS) : Refer latest FRS



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## 8 Mass Production Critical To Quality (MP CTQ)

### 8.1 Acoustics MP CTQs

Acoustic Section	MP CTQ	Check frequency	Complete system: one unit or [main unit + speaker box]	Speaker box	Speaker driver	Item to check	Requirement / Specification	Test condition / description	Equipment and facilities								Device setting	Information that needs to be recorded, with product identification number
								Isolation room on production line	Silent room	Acoustic measurement systems	Electronics measurement system	R&B measurement system	Air leakage measurement system	Polarity check systems	Woox Specified CD			
	YES	Sampling / 2pcs/hr	x			Acoustic frequency response (SPL)	Within target mask, both speakers. (compared with approved Reference Samples performance)	Measured on the center of speaker box, 1.0m, smoothed 1/3 octaves.	x		x						Out of box settings	SPL curves (or data).
	YES	Sampling / 2pcs/hr		x		Acoustic frequency response (SPL)	Within target mask, both speakers. (compared with approved Reference Samples performance)	Measured on the center of speaker box, 1.0m, smoothed 1/3 octaves.	x		x						n/a	SPL curves (or data).
	YES	Full			x	Acoustic frequency response (SPL)	Within target mask, both speakers. (compared with approved Reference Samples performance)	Measured on the center of speaker driver, in measurement box on production line, 0.5m, smoothed 1/3 octaves.			x						n/a	SPL curves (or data).
	YES	Full	x			Rattling, Rub and buzz	No any rub and buzz noise from drivers; No any audible rattling noise from speaker boxes.	Check with Philips rattling check track at maximum volume. (30 seconds for production, 1 minute for QA)	x				x			x	Maximum volume and bass, strongest powerful EQ (Rock + DBB3)	Measurement curve/value if available
	YES	Full		x	x	Rattling, Rub and buzz	No any rub and buzz noise from drivers; No any audible rattling noise from speaker driver/LSB.	Sweeping with sine wave, the power and frequency range refer to driver/LSB spec.	x				x				n/a	n/a
	YES	Full	x			Air leakage	No audible air leakage noise from speaker box.	Check with Philips rattling check track at maximum volume. (30 seconds for production, 1 minute for QA)	x				x			x	Maximum volume and bass, strongest powerful EQ (Rock + DBB3)	Measurement curve/value if available
	YES	Full		x		Air leakage	Meet the requirement. Acceptance criteria refer to driver/LSB spec.	Measure the impedance curve of the speaker box			x						n/a	IMP curves (or data).
	YES	Full	x			Polarity & Channel	As specified, for electrical outputs and speakers.	Check with Philips Channel & Phase check track (10 seconds for production)	x							x	Out of box settings	n/a
YES	Full		x	x	Polarity & Channel	As specified, for speakers.	Polarity meter.							x		n/a	n/a	

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## 8.2 Mechanical MP CTQs

ME Section	MP CTQ	Check frequency	Complete system: one unit or [main unit + speaker box]	Speaker box	Main unit (amplifier)	Item to check	Requirement / Specification	Test condition/description	Equipment and facilities				Device setting	Information that needs to be recorded, with product identification number
									Silent room	Acoustic measurement systems	Calliper, Projector, Micrometer or other Gages or equipment	Visual inspection		
YES	IQC check according to AQL	x	x			<b>Key Fitting Dimension &amp; Tolerance in complete set level and/or components level</b>	Within specified dimension in Q-DWG, both complete set and components must be fulfilled the CTQs dimension (compared with approved Reference Samples(CR) performance). See section 8.2.1, 8.2.2, 8.2.3, 8.2.4 below	Refer to Q-DWG or specification in PPS			x		Refer to PQR or PPS	CTQs Dimensions Measurement Report
YES	Full	x	x			<b>Cosmetic Defects (for specific item)</b>	Cosmetic Defects include but not limited to parting Line step, Flash/Burr, Welding line, sink mark... must be within the approved sample.	Refer to general PQR or specification in PPS			x	x	Refer to PQR or PPS	Cosmetic Inspection Report
YES	OQA check according to AQL	x				<b>Mechanical noise (Refer to S&amp;A MP CTQs)</b>	Should be less than 30dBA.	Microphone located 10cm from the moving mechanism in anechoic room.	x	x			Measured under CD and Fan at low volume	Noise level (dB).
YES	Full	x				<b>Jumping track</b>	No audio cutting issue	Brazil disc1 :track 2 extract 10s		x			Rock +DBB3&Max volume& Nitro on	No short mute

No	System	Sub-system	MP	CTQs S/N	Diagram	Description	Test condition/ equipment	USL	LSL	Mean	Sample Size	Cpk Target
1		Y	Y			Internal width of front cabinet: 351.4mm +0.3/-0.3	Calliper, Projector, Micrometer or other Gages/ equipment	351.1	351.7	351.4	20	1.33
2		Y	Y			Height of front cabinet: 1020.9mm +0.5/-0.5	Calliper, Projector, Micrometer or other Gages/ equipment	1021.4	1020.4	1020.9	20	1.33
3		Y	Y			Internal width of main unit top cabinet: 351.4mm +0.3/-0.3	Calliper, Projector, Micrometer or other Gages/ equipment	351.1	351.7	351.4	20	1.33
4		Y	Y			Internal depth of main unit top cabinet: 373.6mm +0.3/-0.3	Calliper, Projector, Micrometer or other Gages/ equipment	373.9	373.3	373.6	20	1.33
3		Y	Y			Internal width of LSB top cabinet: 351.4mm +0.3/-0.3	Calliper, Projector, Micrometer or other Gages/ equipment	351.1	351.7	351.4	20	1.33
4		Y	Y			Internal depth of LSB top cabinet: 373.6mm +0.3/-0.3	Calliper, Projector, Micrometer or other Gages/ equipment	373.9	373.3	373.6	20	1.33

## 8.3 Electrical MP CTQs

EE Section							Requirement / Specification				Equipment and facilities				
MP CTQ	Check frequency	Complete system: one unit or [main unit + speaker box]	Speaker box	Main unit (amplifier)	Item to check	Specification	Target Cpk or Verdict			Test condition / description	Electronics measurement system	Equipment in Shielded room	Device setting	Information that needs to be recorded, with product identification number	
YES	Full PCBA check			x	AM/FM alpha 26dB sensitivity (88,98,107M Hz)	FM 88MHz	Nom	18	dBf	1.33	IEC315-4	x	x	Refer to test condition	measured data
						Lim.	22								
						FM 98MHz	Nom	18							
						Lim.	22								
						FM 107MHz	Nom	18	dBu						
						Lim.	22								
						MW 610KHz	Nom	70							
						Lim.	75								
MW	Nom	65													

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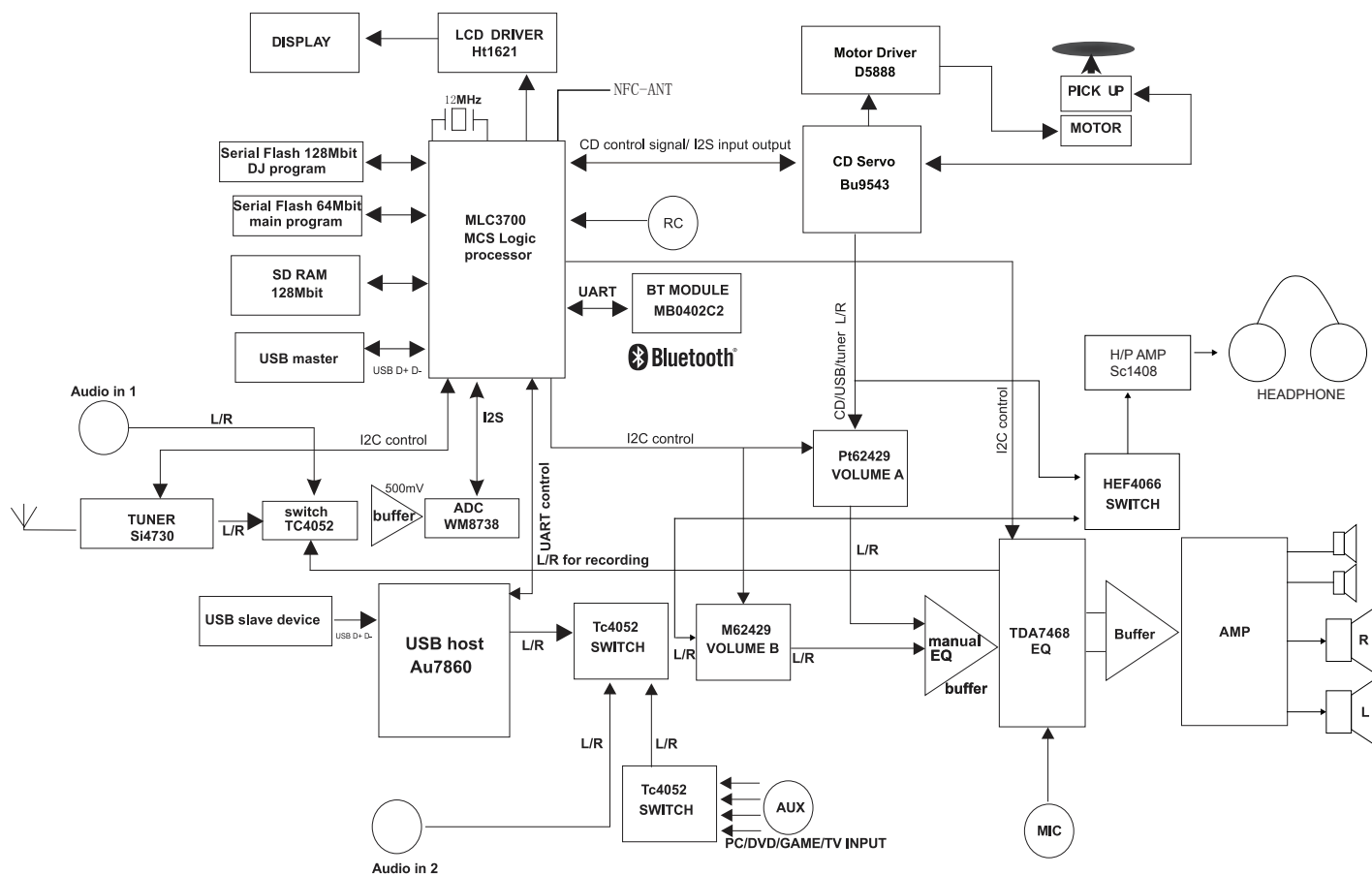
Reference: WX-B-009-01	Title: Product Performance Specification	
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					610KHz/1000 KHz/1440 kHz	1000KHz	Lim.	63									
						MW	Nom	65									
						1440KHz	Lim.	73									

# BLOCK DIAGRAM

4-1

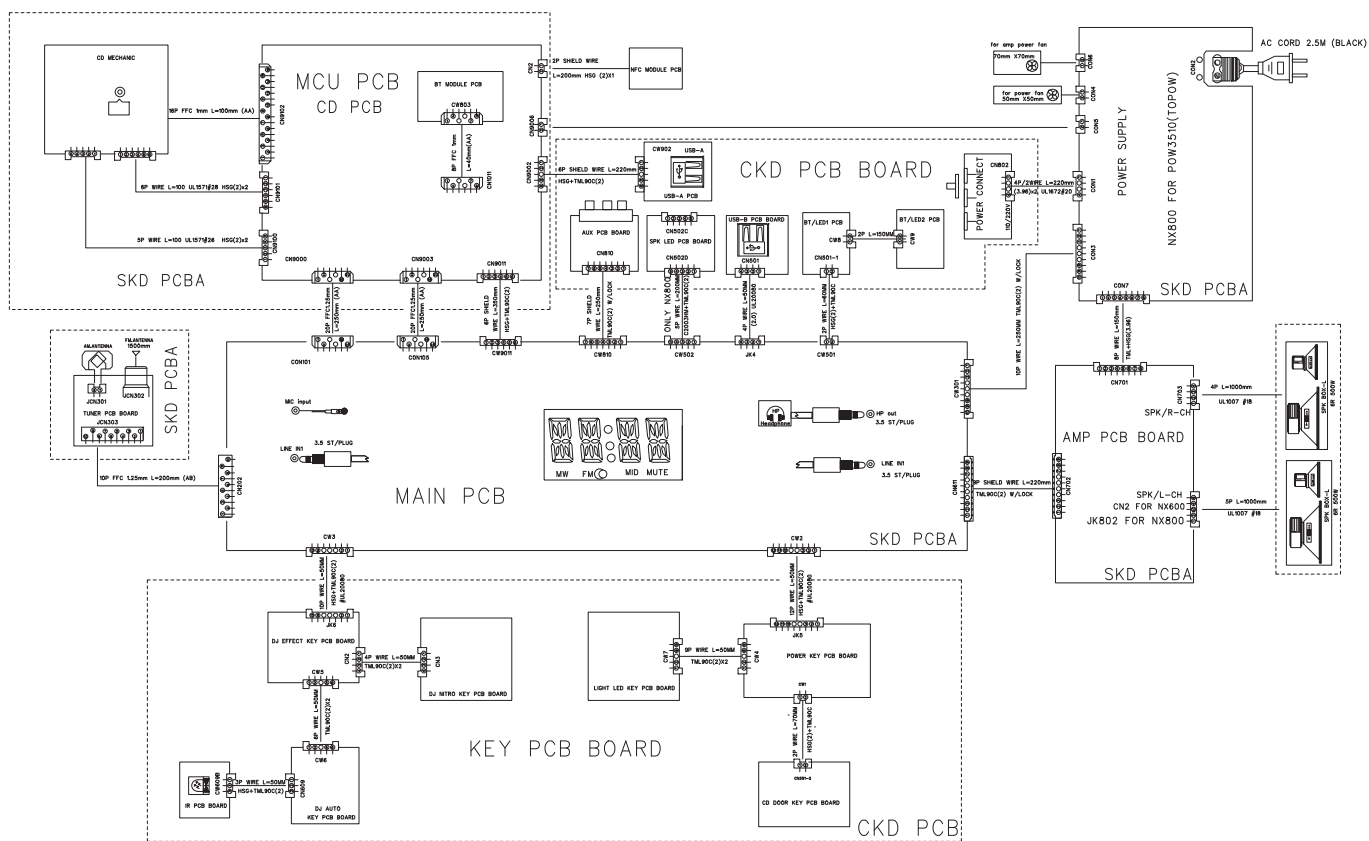
4-1



# WIRING DIAGRAM

5-1

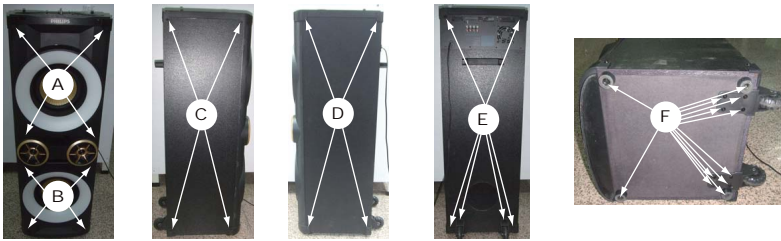
5-1



## DISASSEMBLY INSTRUCTIONS

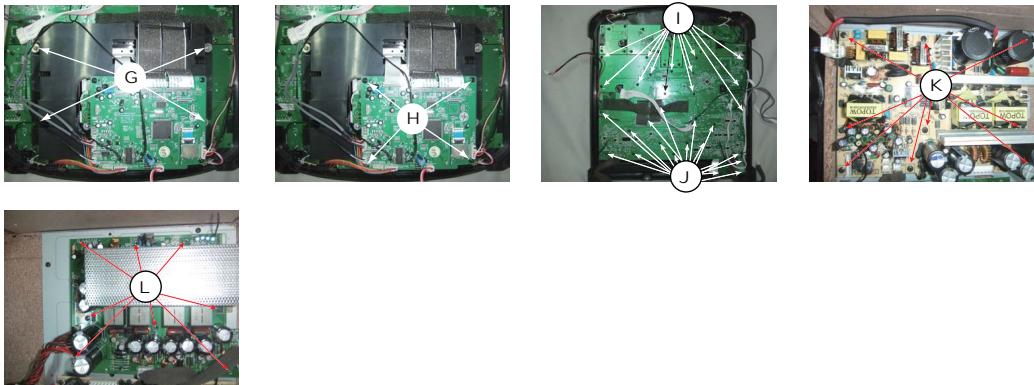
### Dismantling of OUTER Portion

- 1) Remove 34 screws A/B/C/D/E/F as indicated to loosen the top/front/bottom plate.

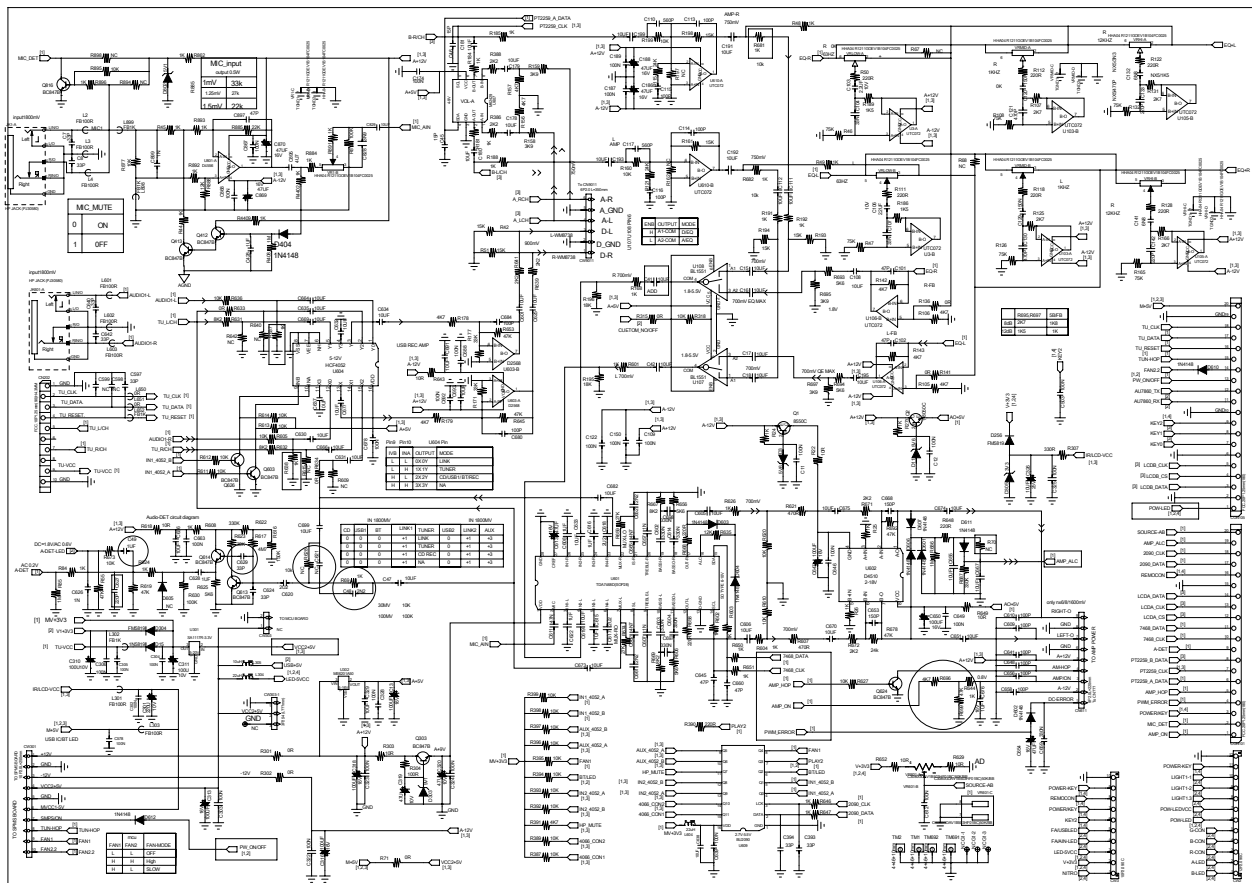


### Dismantling of the CD part and PCB Board

- 1) Remove 4 screws G as indicated to loosen the CD part.
- 2) Remove 4 screws H as indicated to loosen the CD Board.
- 3) Remove 13 screws I and 16 screws J as indicated to loosen the Main Board.
- 4) Remove 9 screws M as indicated to loosen the Smgs power Board.
- 5) Remove 8 screws L as indicated to loosen the Amp Board.



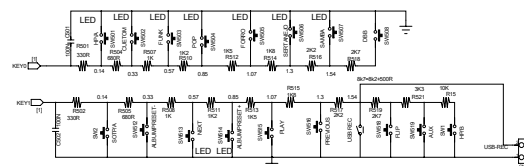
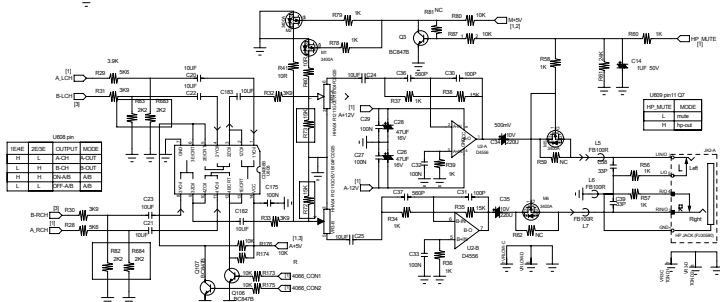
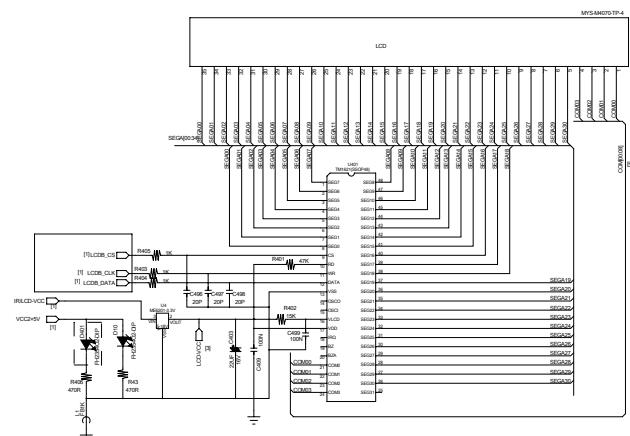
## CIRCUIT DIAGRAM - MAIN BOARD&amp;JACK BOAR D



## 7-2

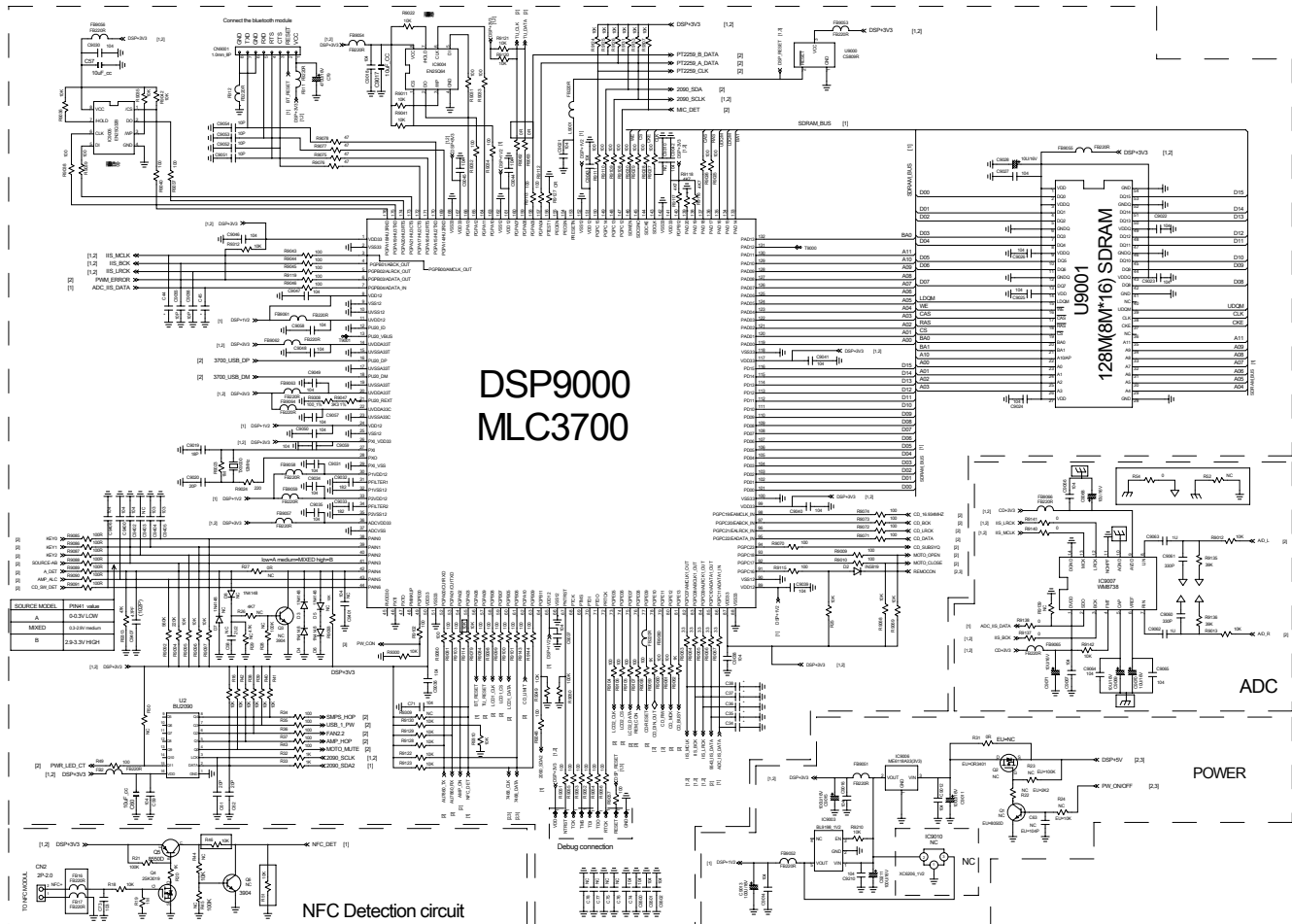




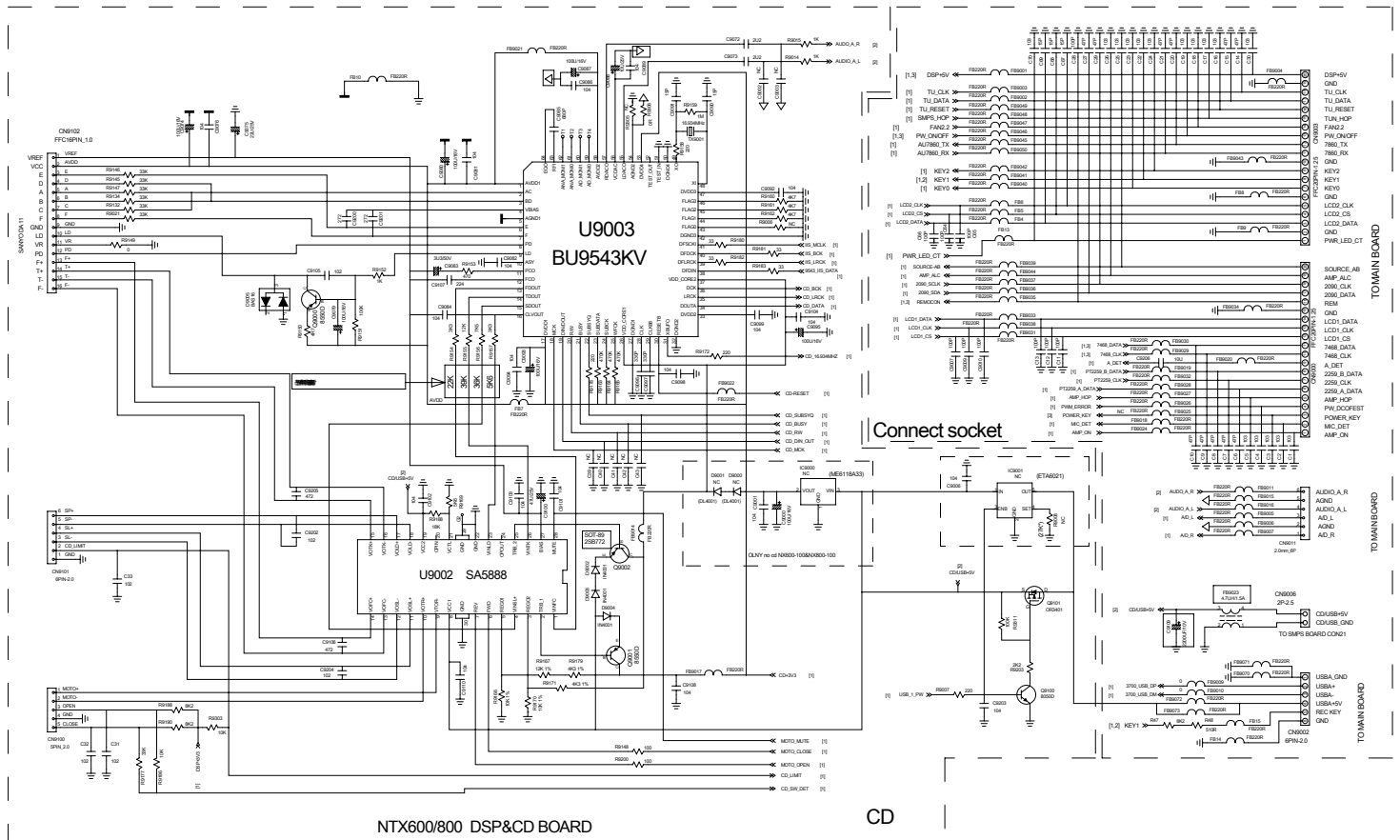




## CIRCUIT DIAGRAM - MCU+CD BOARD



## CIRCUIT DIAGRAM - MCU+CD BOARD

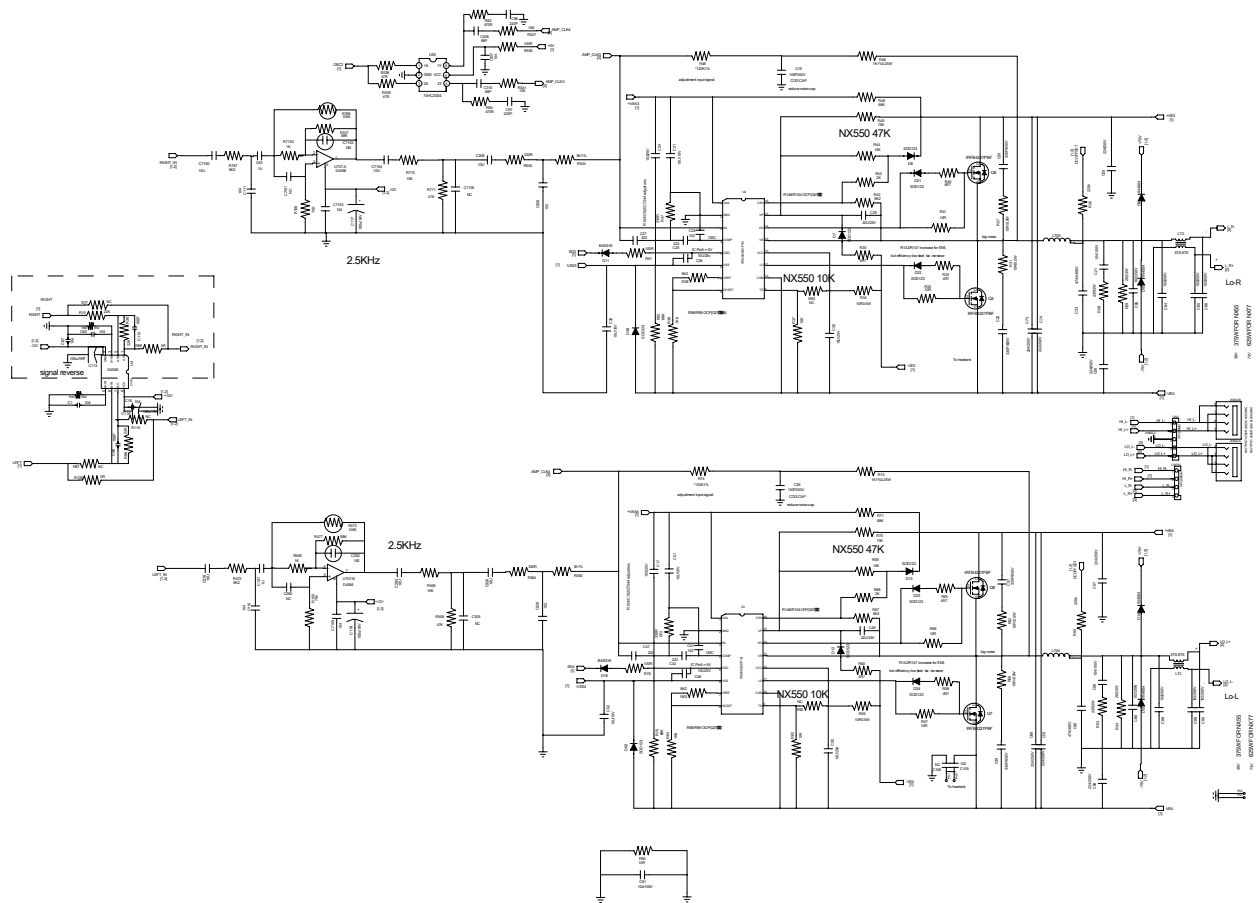


OPTION





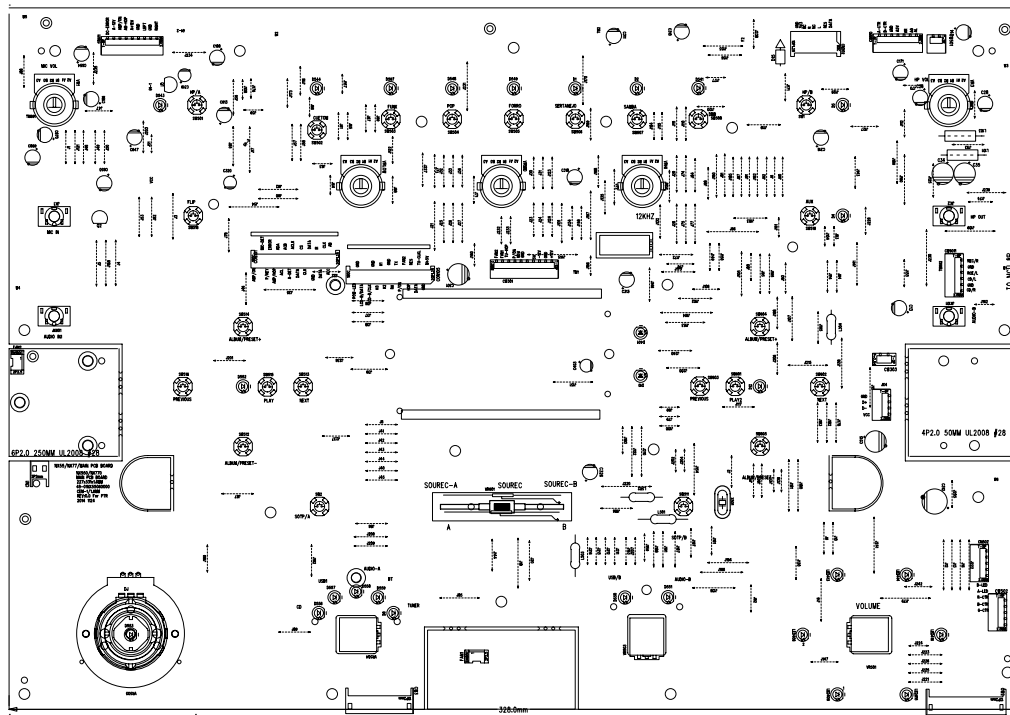
## CIRCUIT DIAGRAM - AMP BOARD



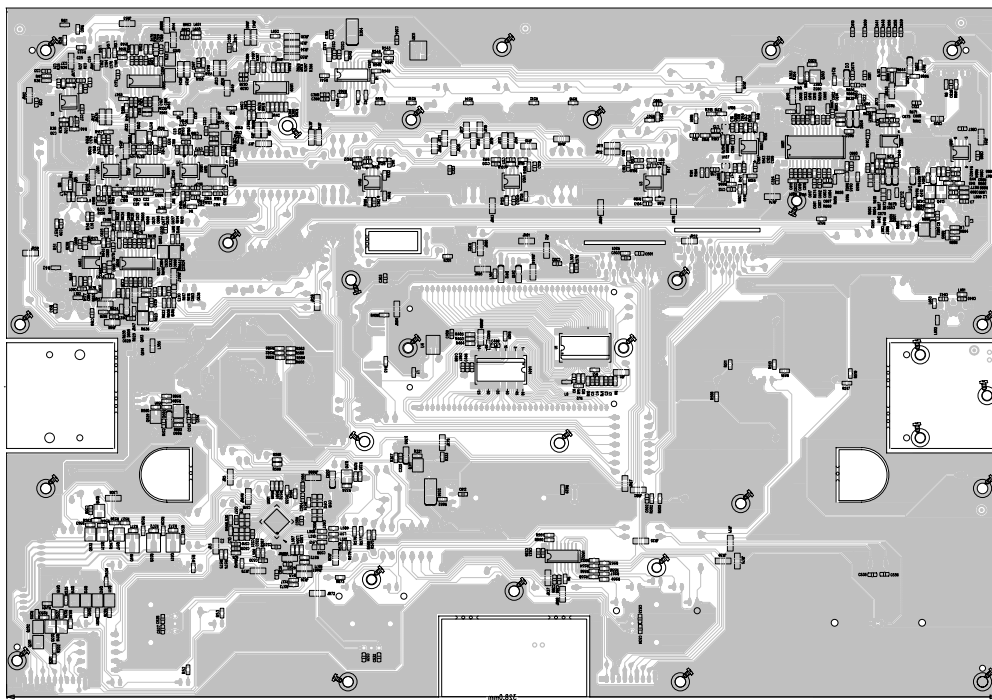




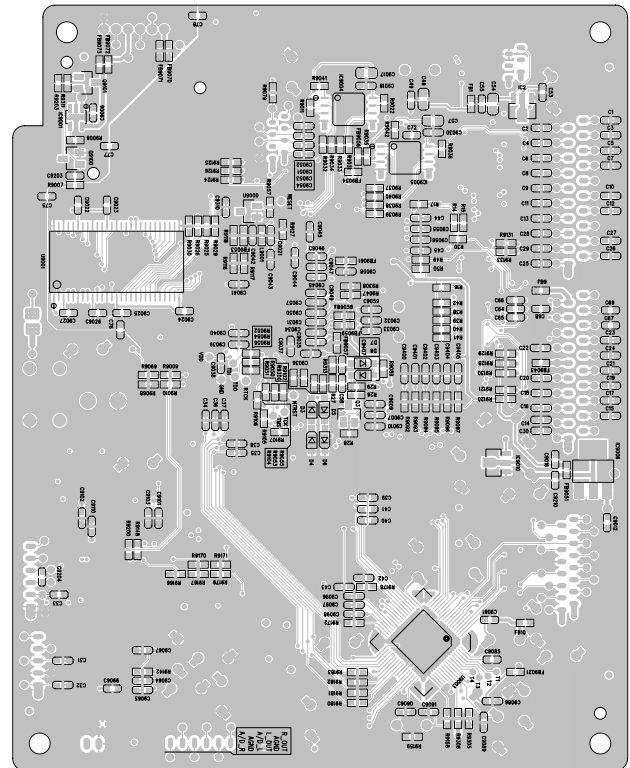
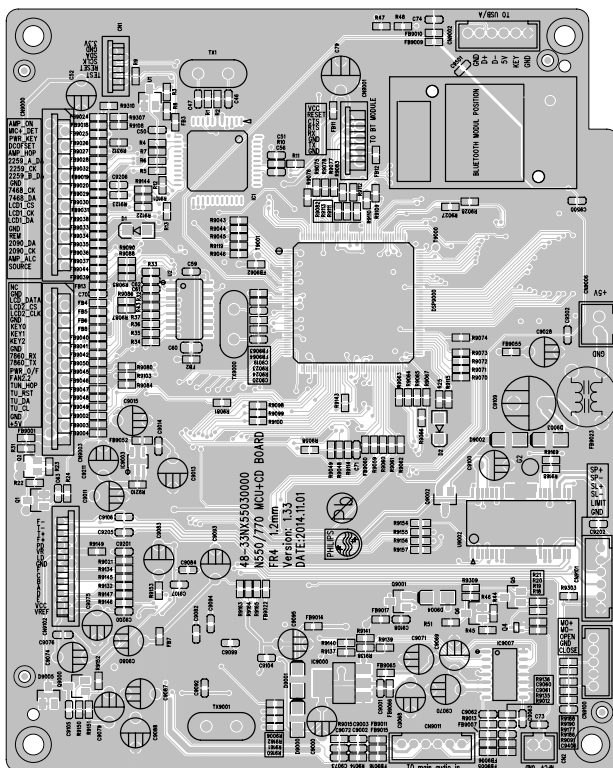
## PCB LAYOUT - MAIN BOARD



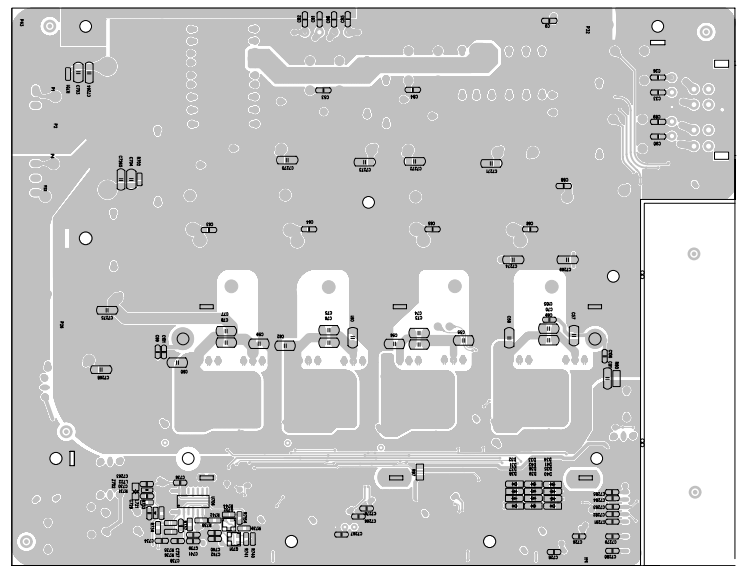
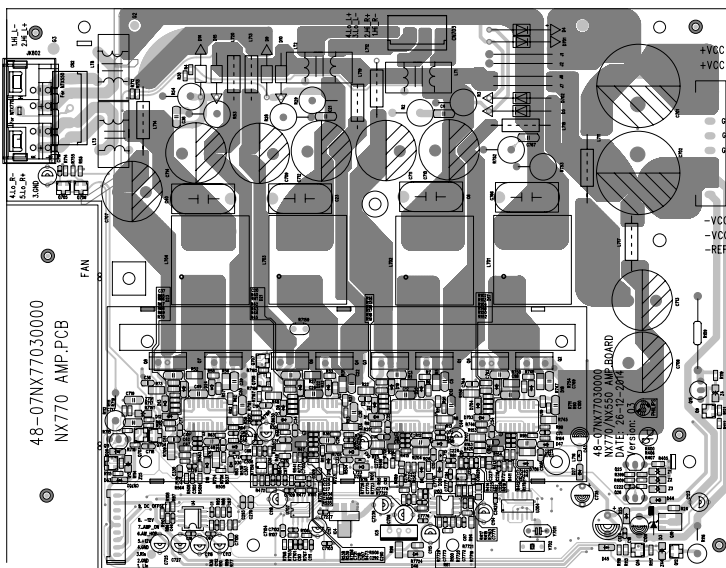
## PCB LAYOUT - MAIN BOARD



## PCB LAYOUT - MCU BOARD



## PCB LAYOUT - AMP BOARD



# EXPLODED VIEW

8-1

8-1

