CD-Soundmachina AZ385/05/12/96

Service
Service
Service

Service Manual

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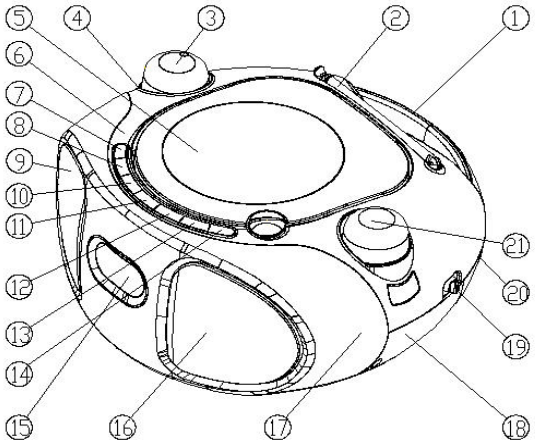
CLASS 1
LASER PRODUCT

Published by LZ 1302 Subject to modification 3141 785 39520

Version 1.0

PHILIPS

Description



Pos.	Description	Pos.
1	HANDLE	
2	ANTENNA	
3	VOLUME KNOB	
4	DBB KNOB	
5	CD DOOR	
6	TOP CABINET	
7	RANDOM KEY	
8	REPT KEY	
9	SPEAKER GRILLE(L)	
10	PREVIOUS KEY	
11	PLAY/PAUSE KEY	
12	NEXT KEY	
13	STOP KEY	
14	PROG KEY	
15	FRONT LENS	
16	SPEAKER GRILLE(R)	
17	FRONT CABINET	
18	BOTTOM CABINET	
19	FUNCTION KNOB	
20	AUX JACK	
21	TUNING KNOB	

Battery location:BOTTOM CABINET

CABINET

Dimensions with Boxes (L x W x H): 281*261*144MM	Material: ABS / HIPS	
Dimensions without Boxes (L x W x H): 261X245X125MM	Finishing: Spray	
Weight (including packing):. 2KG	Unit in Master carton: N/A	
Weight (excluding packing and batteries): 1.63KG	Units in Dealer carton: 1 set	

INTERCONNECTION POSSIBILITIES

Pos.	Connection/Function	Connector type	Electrical data (input or R.O.P)
37			
38			
39			
40			
41			
42			
43			
44			
45			
46			

ACCESSORIES :

		CD/MP3/FM/USB AZ385/05/12/96	SET SPECIFICATION		
	VER 1				
Prepared:		Supers:		10 Sh. **190**	A4
KT Check:		DATE:	© PHILIPS Electonics Hong Kong Ltd., BU-PORTABLE AUDIO		

REMARKS :

General description: 1

LIFETIME : 5 YEARS (ACC. TO UAN-D1611) 2

PERFORMANCE CLASSES :

	TUNER	SUPPLY, AMPLIFIER	SPEAKER BOXES	RECORDER	CLOCK	CD	DCC	TELEPHONE	REC. PLAYER	
I	x	x								3
II						x				4
III										5

SAFETY REQUIREMENTS: 6
EN 60065 (IEC 65) CE ,

RADIATION, IMMUNITY REQUIREMENTS: (EMC) 7
EN55013, .EN55020 , (Version 05/12/61 approbation CB only)
EN61000-3-2:2006 EN61000-3-3:1995 (Version /61 approbation CB only)

CLIMATIC REQUIREMENTS: (acc. to UAN-D1590)

All climates: -10 ☒ till +50 ☒ (Functional); Set has to be pre-conditioned for 2 hour, except CD function 8

For all measurements: 25 ☒ 9

POWER SUPPLY:

MAINS (AC) operation		**DC (int. or ext.) operation / Backup Buffer**	
Voltage selection:	See table below	Battery type: R14, UM2, C-cell x 6; nom.: 9V minimum operating voltage : 5V for CD / Tape 3.3V for TU	10
Selection:	See table below	Lifetime: CD ☒ 10 hours, TU ☒ 20 hours, (R14 ‰ ˝alkaline batteries)	11
Frequency:	See table below	External DC: No	12
POWER CONSUMPTION:			
Power off mode: ☒☒☒typ.		Standby: <0.5W (power off mode)	13
Maximum: 15 W		Maximum:	14

General:
Q and R according to production division rules : Q ≤ 1% (Major), Q ≤ 4% (Minor)
Measured according to: R ≤ 3% (CE52)

DERIVED VERSIONS: **APPROBATION** 15

Version	AC Voltage/ Frequency on typeplate	Safety Tolerance	Tuner		
/05 UK	230VAC 50HZ	+/-10%	FM,		
/12 Europe	230VAC 50HZ	+/-10%	FM,		
/61 Korea	220VAC 60HZ	+/-10%	FM		

	VER 1	**CD/MP3/FM/USB AZ385/05/12/96**	SET SPECIFICATION

Prepared:	Supers:		10 Sh. **190**		A4
KT Check:	DATE:	© PHILIPS Electonics Hong Kong Ltd., BU-PORTABLE AUDIO			

REMARKS: For operation and thermal stability test : 220/230/240Vac setting : 198Vac to 264Vac 120Vac setting : 99Vac to 140Vac dual voltage ac setting (120Vac / 230Vac) : 99Vac to 140Vac and 196Vac to 264Vac	16

TUNER PART

TECHNICAL description:

	AM (circuitry)	FM	AM (active components)	FM	
RF				KT0922	1
IF				1	2
Detector					3
Decoder					4

GENERAL part:

WAVE RANGE		TOLERANCES	TUNING STEP	
				5
				6
FM (05/96/12/61 version)	87.5 –108MHZ	LOW : +0.3/-0.3MHZ HIGH: +0.4/-0.4MHZ		7
				8
				9
				10

AERIAL:

	FM telescope : 430 mm	11
FM wire : N/A	Execution - N/A	12

INDICATORS:

Pointer stroke:	Execution pointer:	13
Knob indication over:	Field Strength:	14

ELECTRICAL DATA:

AM:	Nom.	limit	FM:	nom.	limit	
RATED OUTPUT POWER 10% THD 80%Mod 120dB	/	/	AM Suppression	/	/	15
			-3dB limiting point	12	18 dBf	16
Amplification reserve			Amplification reserve	2	+/-2 dB	17
AGC figure of merit			AFC holding range (average)			18
Distortion (RF 74 to 94 dBuV/m, m=80%)			Distortion (RF 32 to 72 dBuV, mono ☒ 100kHz, Stereo : 90% + 9%)	5	7 %	19
			Stereo -46dB quieting ¡]20KHz LPF ¡ ^	40	44 dBuV	20
			Cross-talk (RF 1mV, ☒ 40kHz, 400Hz /1kHz / 5kHz)	21/25/18	18/20/15 dB	21
Strong S/N radio RF 94dBuV/m, m=80%			S/N radio (A-Weighted, RF 4mV)	53	50 dBA	22
Channel difference			Channel unbalance (250Hz to 6300Hz)	0	3 dB	23
Modulation hum (30% mod)			Modulation hum (22.5kHz dev) £¤A-Weighte£ '	44	40 dB	24
2, 3th IF harmonics rejection (RF 64 to 94dBuV/m)			8, 9,10th harmonics whistle	35	30 dB	25
Overall frequency response (-3dB)			Overall frequency response (+/- 3dB, 1kHz ref) - 50us -	 70 12k	 80 Hz 10k Hz	26
Oscillator stop voltage 120V setting 230V setting			Oscillator stop voltage 120V setting 230V setting	 90 190	 96 Vac 192 Vac	27

Search tuning sensitivity	/	N/A	Search tuning sensitivity	/	N/A	28
Search tuning stop accuracy RF ☒☒6 to 1mV RF ☒1V/m	/ / /	N/A	Search tuning stop accuracy - 20uV ~ 20mV - 20mV ~ 500mV with step size = 50kH - 20mV ~ 500mV with step size > 50kHz	/ / /	N/A	29
Search time of total tuning range	/	N/A	Search time of total tuning range		N/A	30
IF	455KHZ	☒3kHz	IF			31
Frequency drift vs temp. -10☒ to 10☒ 10☒ to 30☒ 30☒o 50☒	0.7 / 1000 * operating frequency		Frequency drift vs temp.	15KHZ/ ¡ ºC 10KHZ/ ¡ ºC 15KHZ/ ¡ ºC		32
Dial calibration	5	7%	Dial calibration	-1.2	+/- 1.5MHz	33
			Stereo On point (Pilot deviation : 6kHz)	14	15.5 dBuV	34
				Switching on – 6dB		35

wave range		Sensitivity for 50mW			noise limited sensitivity (26dB)		Image rejection	IF rejection	large signal	Selectivity S9/300kHz	bandwidthB+3dB	
FM	nom.				13		21	55	130dBf	21		36
	lim.				15		19	50	125dBf	19		37
MW	nom.											
	lim.											
unit		☒V/m	☒V	dBf	☒V/m	dBf	dB	dB	dB	mV/m	dB	kHz	

REMARKS:

SUPPLY, AF-AMPLIFIER & LOUDSPEAKER PART:

TECHNICAL description:	Power supply	Tone Control	AF-Amplifier	Loudspeaker	
Active components			D8227		1
Passive components				2 X 1 W, 8ohm	2
					3

GENERAL part:		
Headphone type	None	4
Loudspeaker filter, high pass	None	5
Loudspeaker filter, low pass	None	6
Power stage protection	AC – NO; DC - NO; Temperature – YES; Short circuit – NO	7
Public address	No	8

INDICATORS:		
Output power or VU-meter	No : digits:	9
Frequency response	No : digits:	10
Low power (battery)	No	11

ELECTRICAL DATA: £¤ALL 20KHz LPF£ '

TONE/EQUALIZER/DBB

Balance control	No	12
Mechanical noise (ISO 1996)		13
Noise overall (ISO)		14
Channel difference at 50mW		15
Hum (vol.max.-20dB to vol.min.)	Limit: 260 nW	16
Residual noise (volume minimum)	Limit: 350 nW	17

Input sens.: Nom.				650mV		mV		
for 50mW Limit:						mV		
Line outp.: Nom.						mV		
voltage Limit:						mV		
OUTPUT POWER:								
Mains operation: D=10%				2 X 1W ☒		Limit: - 1dB		18
Battery operation: D=10%				2 X 1W ☒		Limit: - 1dB		19
Music power (MPO) / Peak-MPO (PMPO):						(acc. to DIN45324)		20
Short term maximum output power:				-2*1.2W		(acc. to IEC 60268-15)		21
Long term maximum output power:				-		(acc. to IEC 60268-15)		22
Headphone output voltage/power:								23
Bandwidth FTC – 1dB at:				n.a.		(acc. to FTC/16/1/D/432)		24
Bandwidth DIN – 3dB at:				-		(acc. to IEC 60268-15)		25
Frequency response at Vol. max – 20dB:				typ. 60Hz to 16kHz (☒dB)				26
DBB raise level				4db at125hz vol max-20db		Disc SBC429 Track 12		
LOUDSPEAKER (output):								
Low pass crossover frequency:				- kHz	tolerance:		Hz	27
High pass crossover frequency:				- kHz	tolerance:		Hz	28
Short term maximum output power:				- W (acc. to IEC 60268-15)				29
Long term maximum output power:				- W (acc. to IEC 60268-15)				30
Frequency response at:				- Hz			kHz	31
REMARKS:								32
27 : Measured in Tuner mode; 28: CD Mode.								

CD-PART: (SANYO DA11B3VF CD MECHANISM) (BALL type)

Technical description:					
	Input	Output	Motor/control	Logic control	1
Active components			SCA4720	Ali-M5677-ALAA	2
Passive components					3
	Signal processing	D/A converter	HF-preamplifier	Servoprocessor	4
Active components	CD: Ali-M5677-ALAA	CD: Ali-M5677-ALAA			5
Passive components					6
Indicators/Display/Keys:					
Display: LCD for Track No. display 3 Digit					7
Keys: Slide switches & tact switches					8
Playability: (acc. to AHR-82-Gbu-00-4201)					
	Limit	Typical	Testdisc		9
Wedge	600 ☒m	900 ☒m	TNO 7,9 of SBC 444A (7104 099 24990)		10
Eccentric	150 ☒m	200 ☒m	TNO 1,24 of 200☒m disc (7104 099 24960)		11
Fingerprint	No audible defect		TNO 11of Subchassis 8A		12
Black dot	500 ☒m	600 ☒m	TNO 13, 14 of SBC 444A (7104 099 24990)		13
Double black dot	No failure		TNO 9 of Subchassis 8A		14
Skew 0.6 deg, 8cm	No audible defect		TNO 1,6 of 0.6deg C, 8cm skew disc		15
Bad HF track	No audible defect		TNO 8 of Subchassis 8A		16
Heavy fingerprint	No track jumps/plops		TNO 10 of Subchassis 8A		17
Maximum diameter	No audio effect		Last TNO of Subchassis 8A		18

Input sens.: Nom.				650mV			mV		
for 50mW Limit:							mV		
Line outp.: Nom.							mV		
voltage Limit:							mV		
OUTPUT POWER:									
Mains operation: D=10%				2 X 1W ☒			Limit: - 1dB		18
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Bandwidth DIN – 3dB at:				-			(acc. to IEC 60268-15)		25
Frequency response at Vol. max – 20dB:				typ. 60Hz to 16kHz (☒3dB)					26
DBB raise level				4db at125hz vol max-20db			Disc SBC429 Track 12		
LOUDSPEAKER (output):									
Low pass crossover frequency:				- kHz		tolerance:		Hz	27
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Short term maximum output power:				- W (acc. to IEC 60268-15)					29
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Frequency response at:				- Hz				kHz	31
REMARKS:									32
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Passive components					3
	Signal processing	D/A converter	HF-preamplifier	Servoprocessor	4
Active components	CD: Ali-M5677-ALAA	CD: Ali-M5677-ALAA			5
Passive components					6
Indicators/Display/Keys:					
Display: LCD for Track No. display 3 Digit					7
Keys: Slide switches & tact switches					8
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	Limit	Typical	Testdisc		9
Wedge	600 ☒m	900 ☒m	TNO 7,9 of SBC 444A (7104 099 24990)		10
Eccentric	150 ☒m	200 ☒m	TNO 1,24 of 200☒m disc (7104 099 24960)		11
Fingerprint	No audible defect		TNO 11of Subchassis 8A		12
Black dot	500 ☒m	600 ☒m	TNO 13, 14 of SBC 444A (7104 099 24990)		13
Double black dot	No failure		TNO 9 of Subchassis 8A		14
Skew 0.6 deg, 8cm	No audible defect		TNO 1,6 of 0.6deg C, 8cm skew disc		15
Bad HF track	No audible defect		TNO 8 of Subchassis 8A		16
Heavy fingerprint	No track jumps/plops		TNO 10 of Subchassis 8A		17
Maximum diameter	No audio effect		Last TNO of Subchassis 8A		18

	CD-RW playability						
1	Fingerprint	"K" TNO 18		No audible disturbance			
2	Black dot	"K" 13, 17	um	800	400		
3	Low reflection	"L"		No audible disturbance			
4	High reflection	"M"		Startup			
	MP3 playablity : See specification on CD-DA						
	MP3 - Data-format-check Remark :support ISO-9660, Joliet format and UDF 1.0 & 2.0						
1	File format check	Html file of "N"		File in non supported formats are skipped.			
2	Sample rate check	"N"		No audible disturbance			
3	Bitrate check 32,40, 48, 56, 64, 80, 96, 112, 128, 160, 192, 224, 250, 320 kbps, VBR (variable bit rate)	"N"		No audible disturbance			
4	Multissession	"O"		All titles accessible, no audible disturbance			
5	Iso9660	"N"		All titles accessible, no audible disturbance			
6	Playlist m3u			Not supported			
7	Id3 check	"N"		Text in display ok			
8	CD-Extra (1 audio seesion + 1 digitalsession)	"Q" Remark : selectable by mode button		No audible disturbance.			
9	Direct CD	"R"		No audible disturbance			
10	Mixed CD	"P"		No audible disturbance			
11	AAC-playback			Not supported			
12	WMA-playback			Not supported			
13	Max. titles / directories	"S" max. 350 titles and directories, avg. length of filename/foldername is 20 characters		All titles accessible, no audible disturbance.			

USB-PART ELECTRICAL CHARACTERISTICS MEASUREMENT DATA SHEET

Item	Description	condition	Unit	Norminal	Limit		
1	max. Output current		mA	250	500		
2	Output Voltage		V	5	,+0.2/-.01		
4	Frequency Response	100Hz-10K	dB		+/-6dB		
5	Distortion	1KHz	THD%		<3%		
6	S/N £¤A-Weighte£'	1KHz	dB	60	>50dB		
7	channel seperation	1KHz	dB	40	>30dB		
8	Working current		mA	130mA	<180		
9	charge current during play song		mA	0-200	>300		
10	output power		W	1	1		

USB Compatibility Test

Support MSC/MTP dual mode USB device .

Test requirement and method follow attached file as below:

"USB Direct Compatibility tes

5

Type /Versions: / Boardi nu sed: Service policy	AZ385								
	/12								
Main BOARD	M								
Key BOARD	M								
Power BOARD	M								
USB BOARD	M								
Type /Versions: / Features Feature diffrence	AZ385								
	/12								
RDS									
VOLTAGE SELECTOR									
ECO STANDBY - DARK									

*T IPS :C -- Component Lever Repair.
M -- Module Lever Repair
√ -- Used

2.0 SAFTETY 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 enfiler 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 ridatta 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.

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

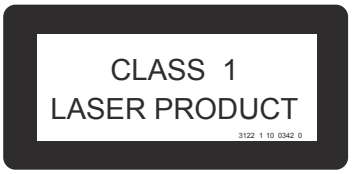
(F)
Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utiliséés les piéces de rechange identiques à celles spécifiées .

(D)
Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Original zustand 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."

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



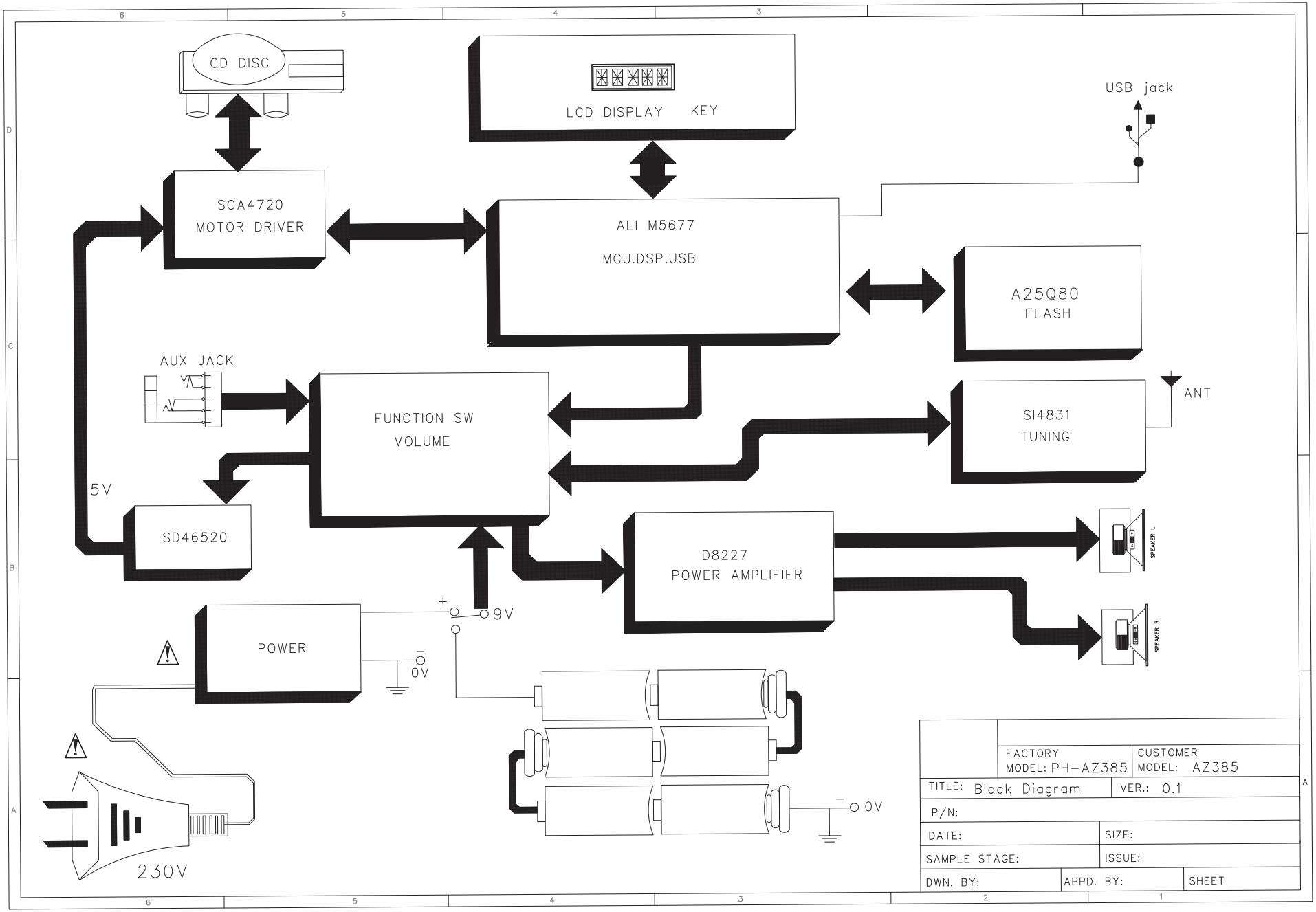
(GB) Warning !
Invisible laser radiation when open .
Avoid direct exposure to beam.

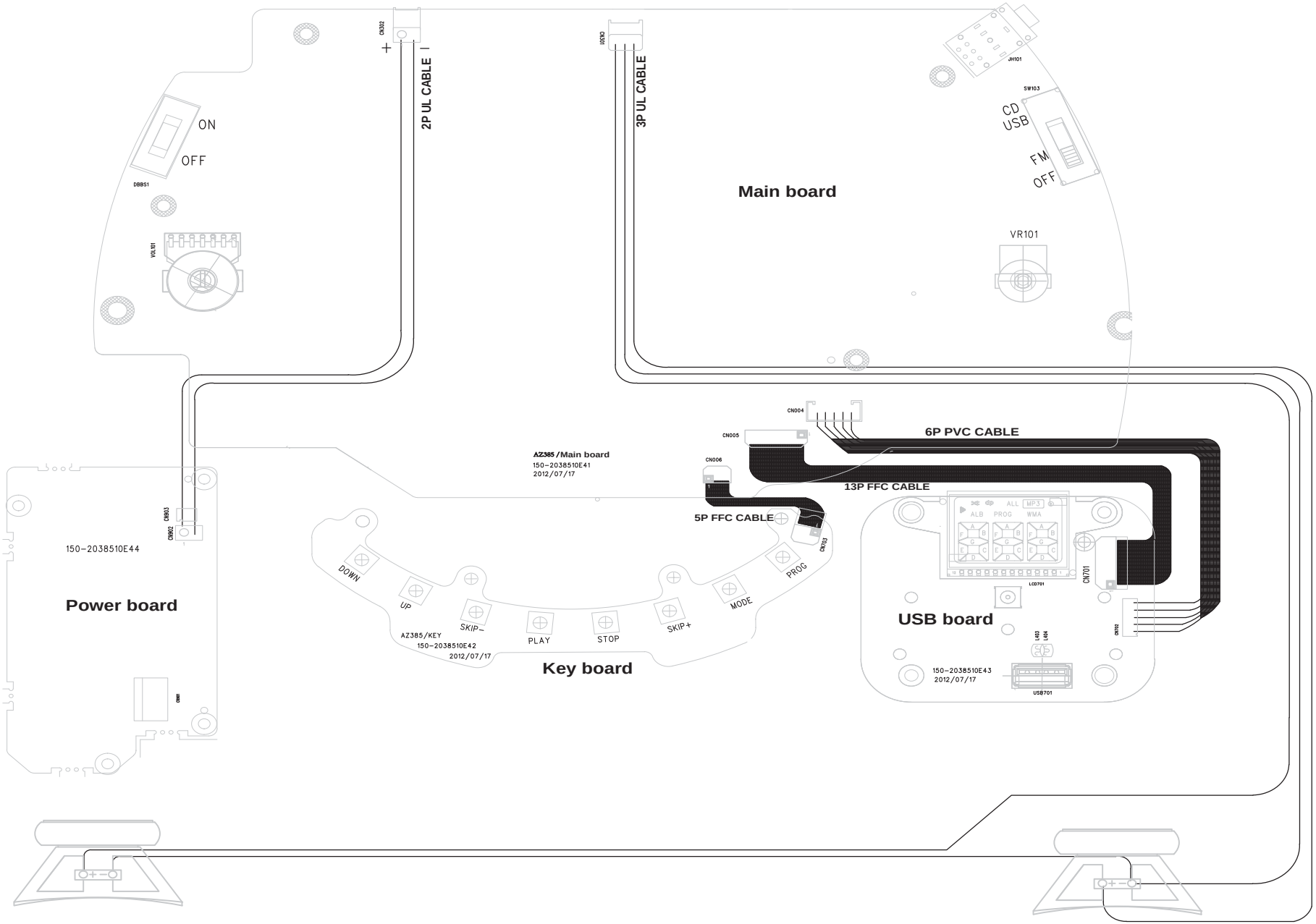
(S) Varning !
Osynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen .

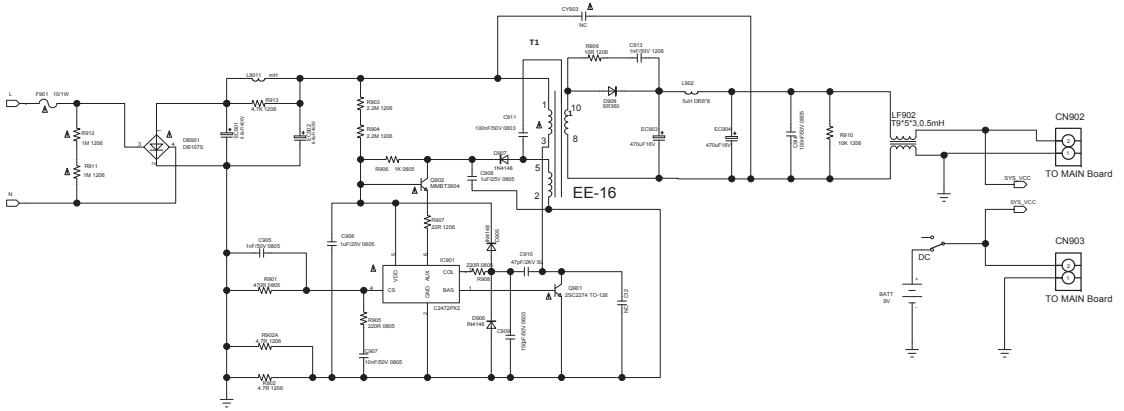
(SF) Varoitus !
Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkymättömälle laserisäteilylle. Älä katso säteeseen !

DK Advarse !
Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsaettelse for stråling .

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.

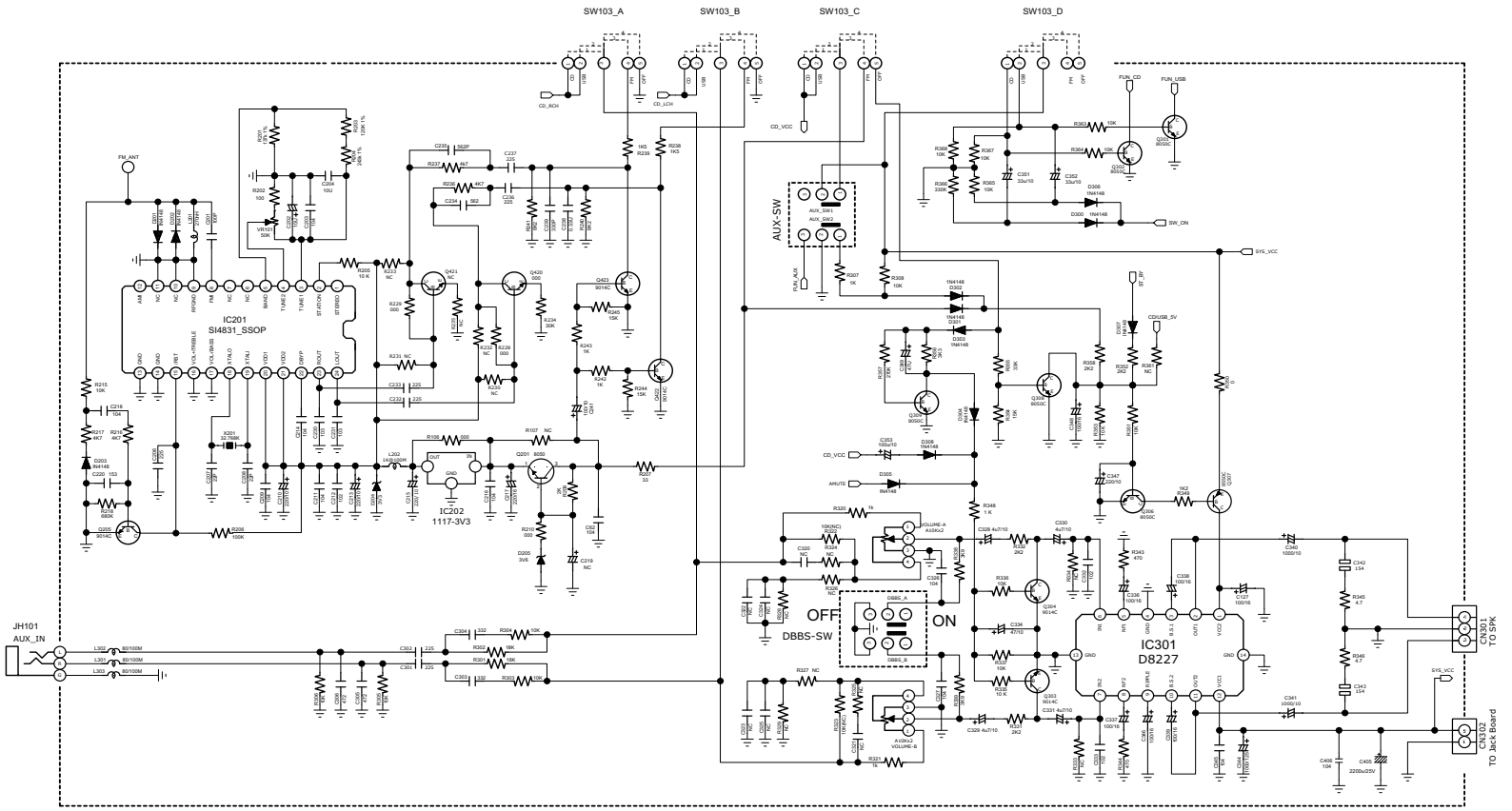

CD DISC
LCD DISPLAY KEY
USB jack
SCA4720
MOTOR DRIVER
ALI M5677
MCU.DSP.USB
A25Q80
FLASH
AUX JACK
FUNCTION SW
VOLUME
SI4831
TUNING
ANT
5V
SD46520
D8227
POWER AMPLIFIER
SPEAKER L
SPEAKER R
POWER
9V
0V
0V
230V
FACTORY
MODEL: PH-AZ385
CUSTOMER
MODEL: AZ385
TITLE: Block Diagram
VER.: 0.1
P/N:
DATE:
SIZE:
SAMPLE STAGE:
ISSUE:
DWN. BY:
APPD. BY:
SHEET


2P UL CABLE
3P UL CABLE
ON
OFF
DBBS1
VOL101
Main board
JH101
SW103
CD
USB
FM
OFF
VR101
CN004
CN005
CN006
6P PVC CABLE
13P FFC CABLE
5P FFC CABLE
AZ385 /Main board
150-2038510E41
2012/07/17
CN302
CN301
CN902
CN903
150-2038510E44
Power board
DOWN
UP
SKIP-
PLAY
STOP
SKIP+
MODE
PROG
CN703
AZ385/KEY
150-2038510E42
2012/07/17
Key board
ALL
MP3
ALB
PROG
WMA
LCD701
CN701
USB board
L403
L404
CN702
150-2038510E43
2012/07/17
USB701



	SCALE	UNIT	DRAWN: li zhi wang	SCHEMATIC DIAGRAM
	N / S	PAGE: 1 OF 2	CHECKED:	MODEL: AZ385
HARBOUR LIGHT TECHNOLOGY LTD			APPROVED:	RADIO/AUDIO PART REV: C

20 1 24 0 1 9



	SCALE	UNIT	DRAWN: li zhi wang	SCHEMATIC DIAGRAM
	N / S	PAGE: 1 OF 2	CHECKED:	MODEL: AZ385
HARBOUR LIGHT TECHNOLOGY LTD			APPROVED:	RADIO/AUDIO PART — REV: C

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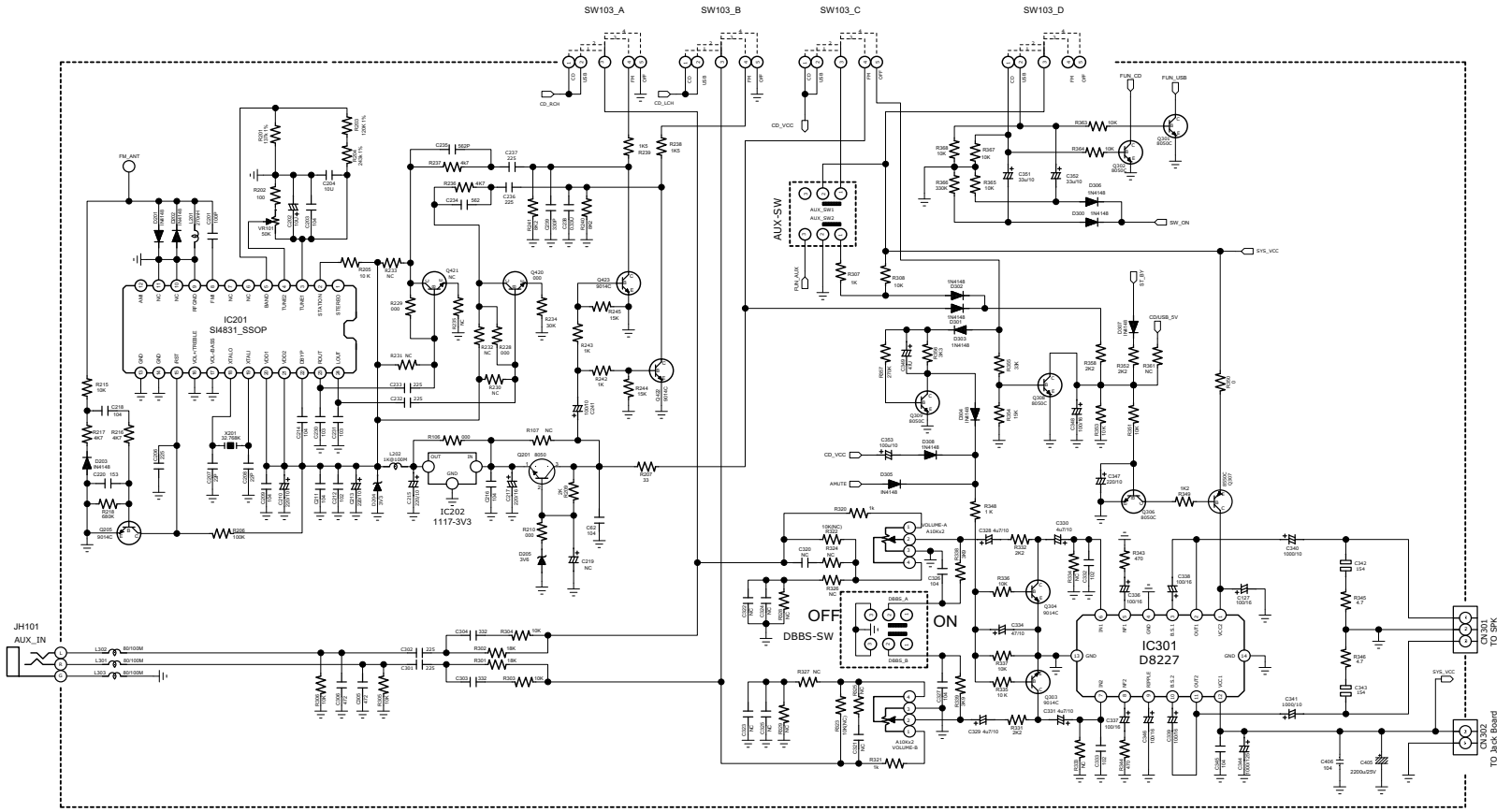

Warning:

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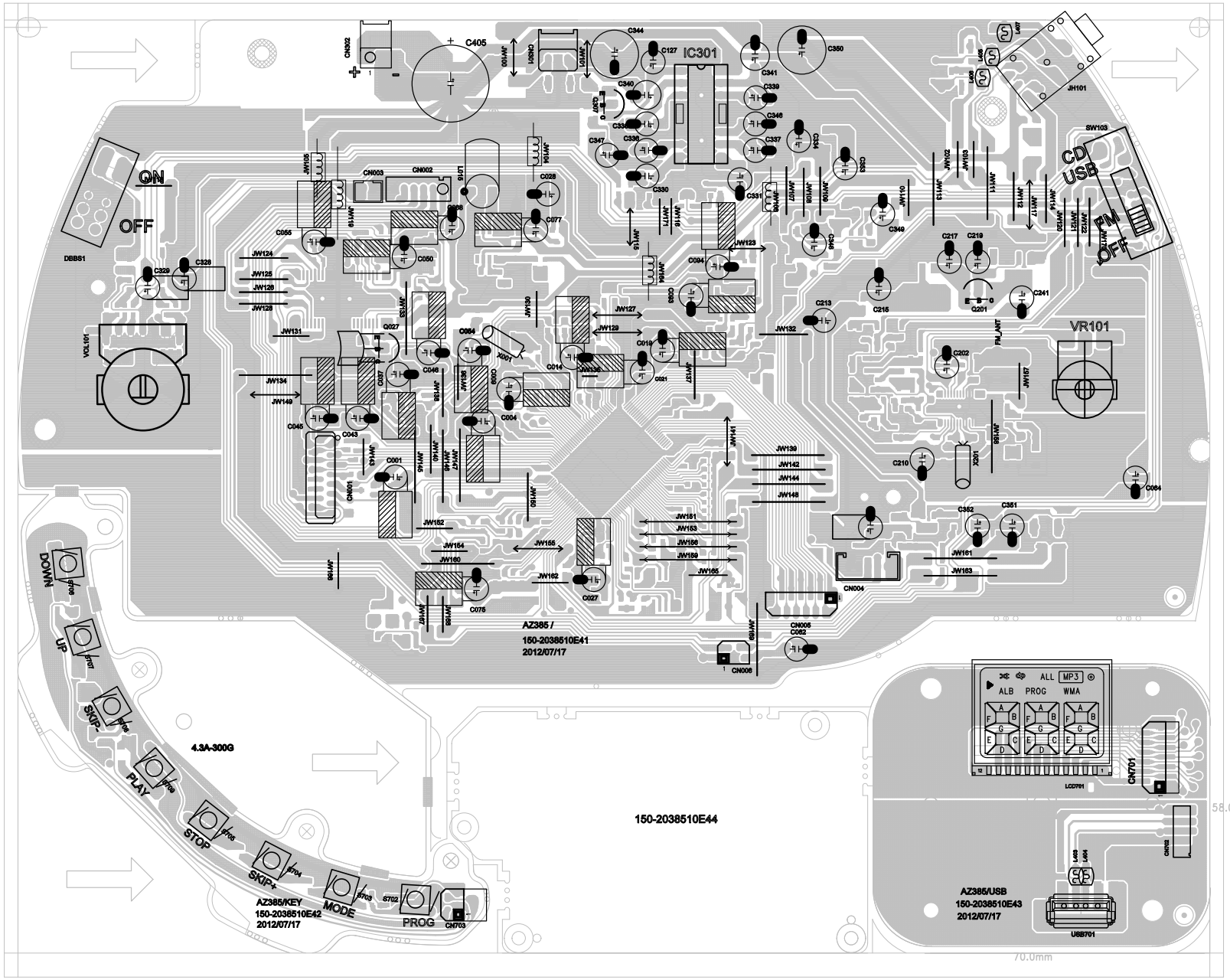
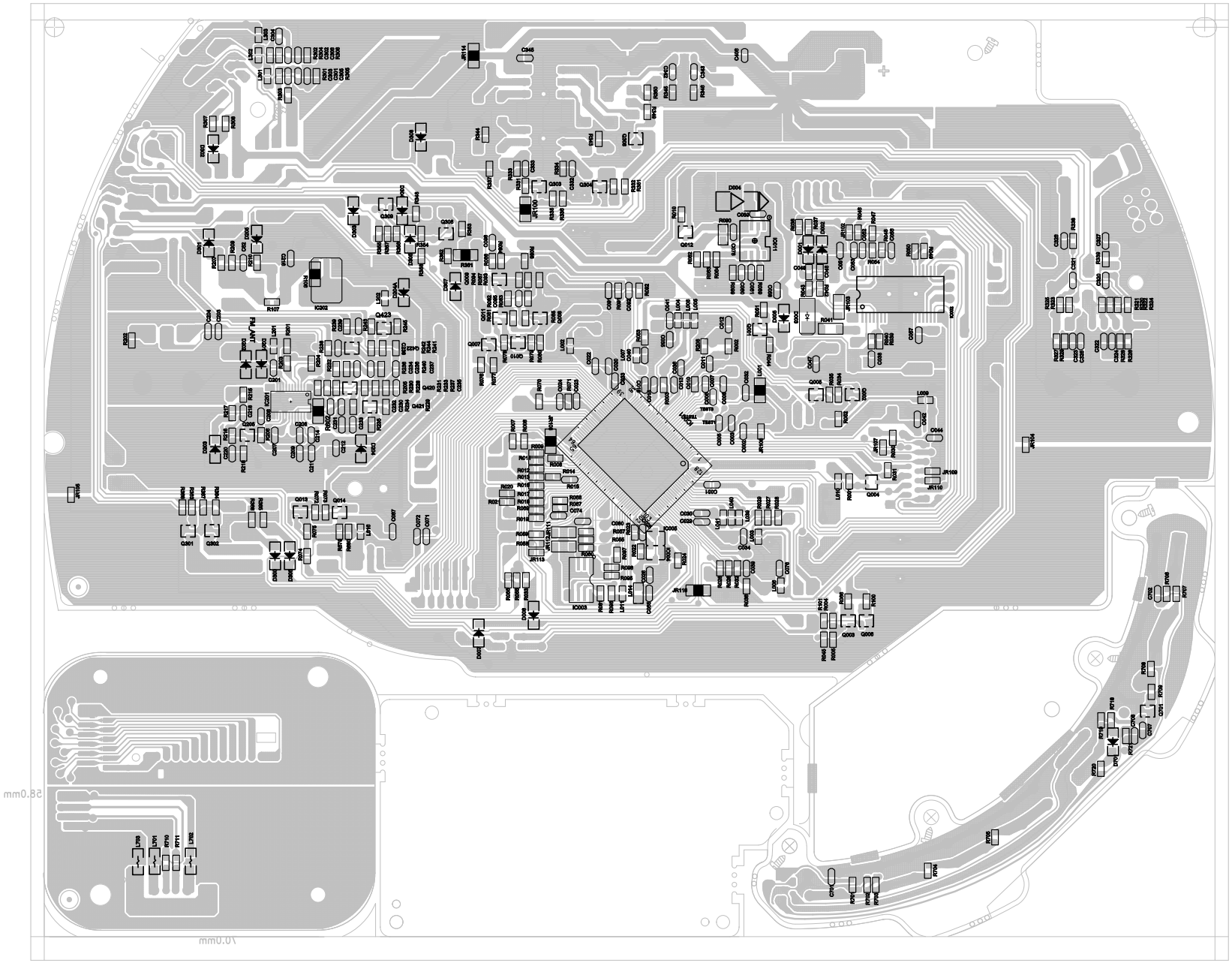
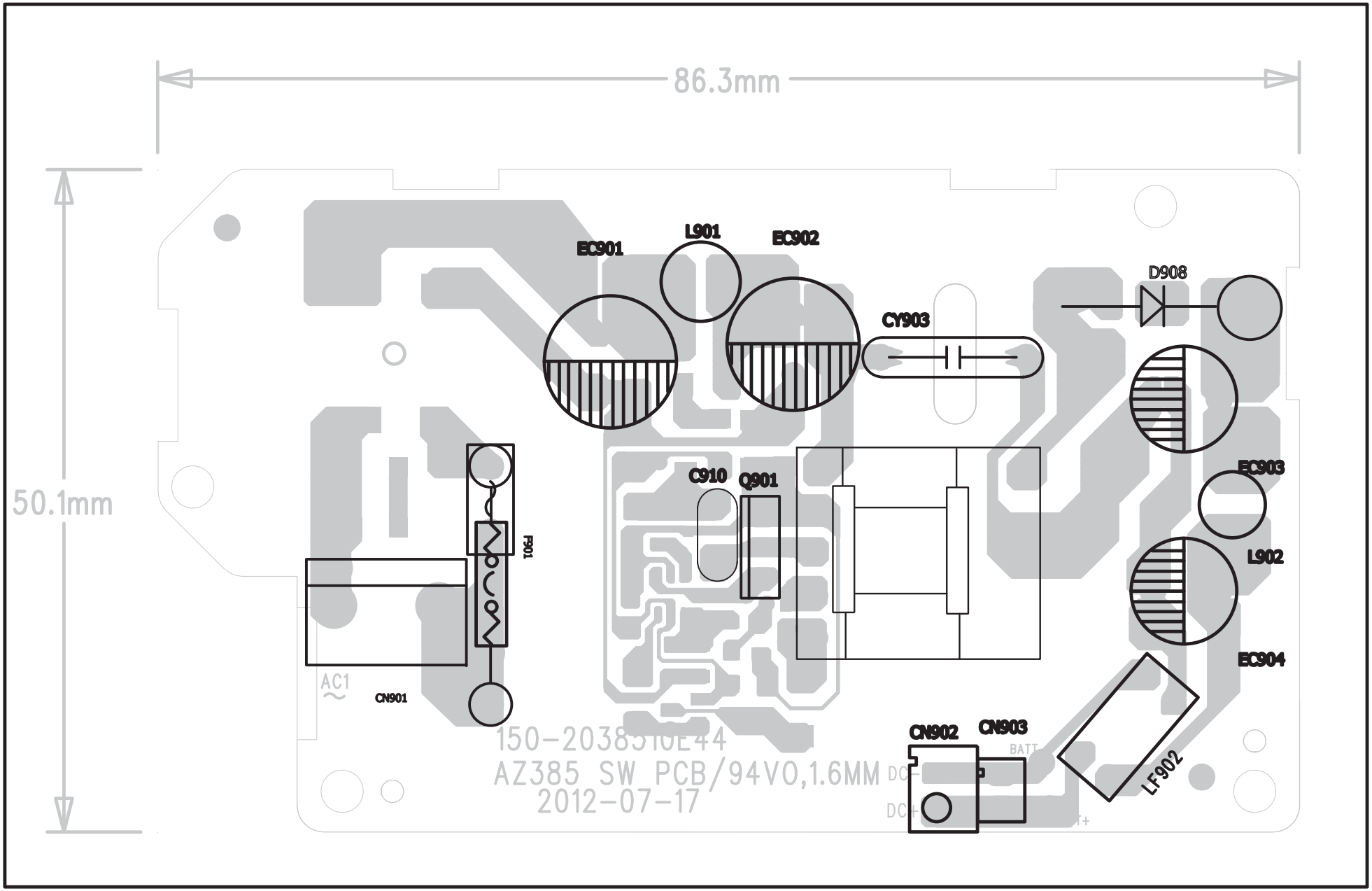
	SCALE	UNIT	DRAWN: li zhi wang	SCHEMATIC DIAGRAM
	N / S	PAGE: 1 OF 2	CHECKED:	MODEL: AZ385
HARBOUR LIGHT TECHNOLOGY LTD			APPROVED:	RADIO/AUDIO PART — REV: C

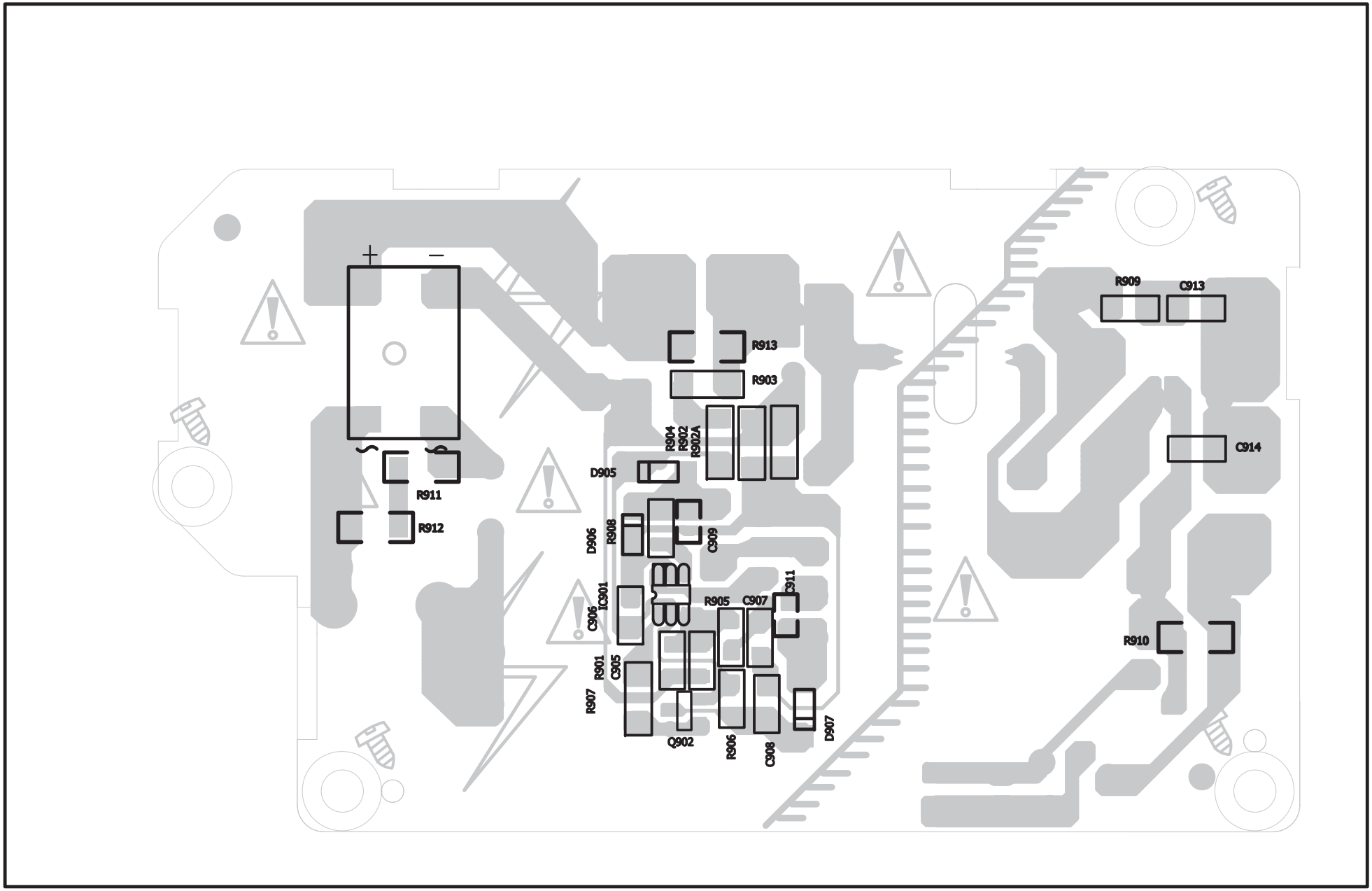
X	2	0	1	2	0	4	1	9

MAIN +USB+KEY BOARD TOP LAYOUT






86.3mm
50.1mm
EC901
L901
EC902
D908
CY903
C910
Q901
EC903
L902
EC904
F901
AC1
CN901
CN902
CN903
BATT-
DC-
DC+
BAT+
LF902
150-2038510E44
AZ385 SW PCB/94V0,1.6MM
2012-07-17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R911
R912
R913
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R904
R902
R902A
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C906
TC901
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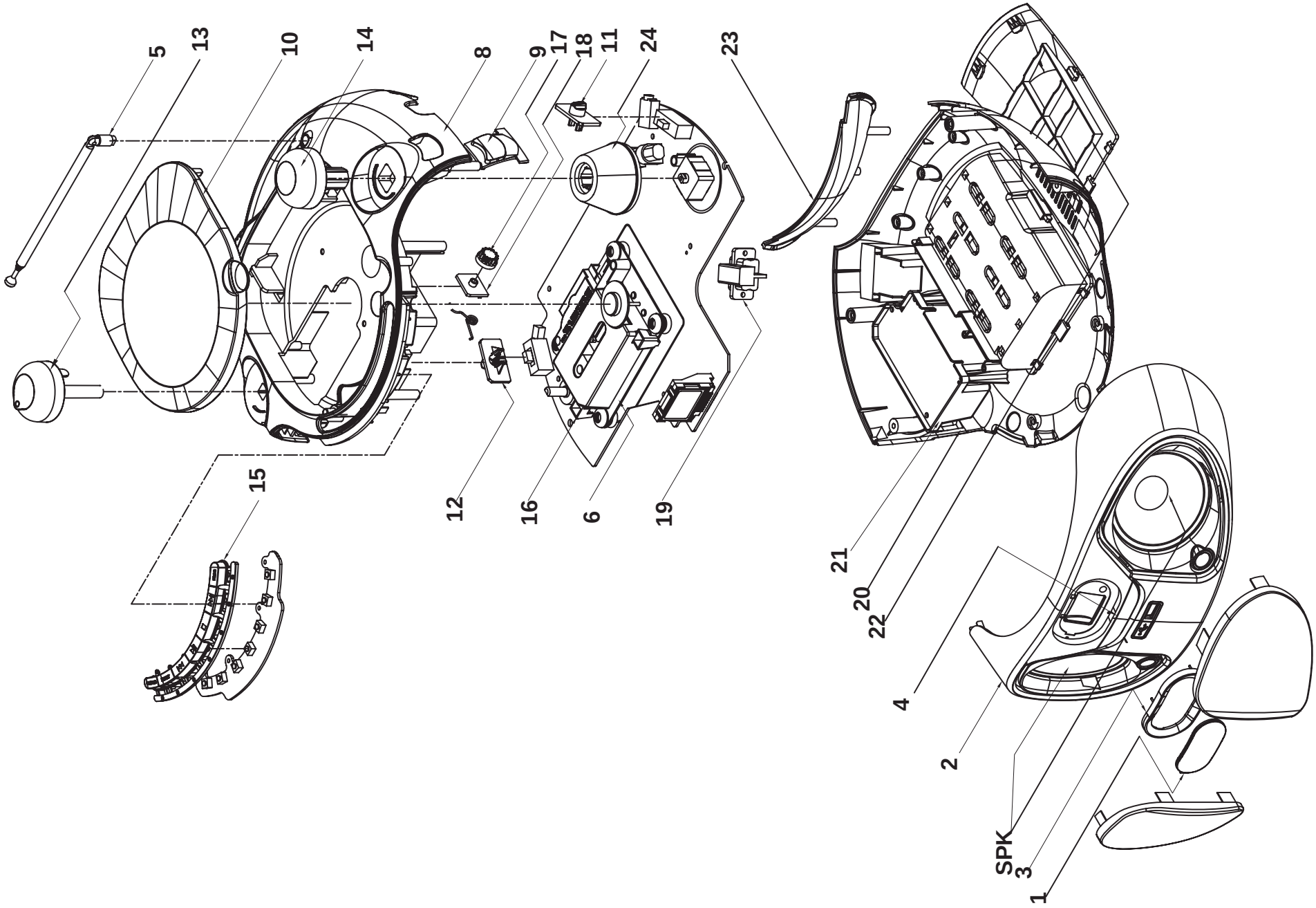
R910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