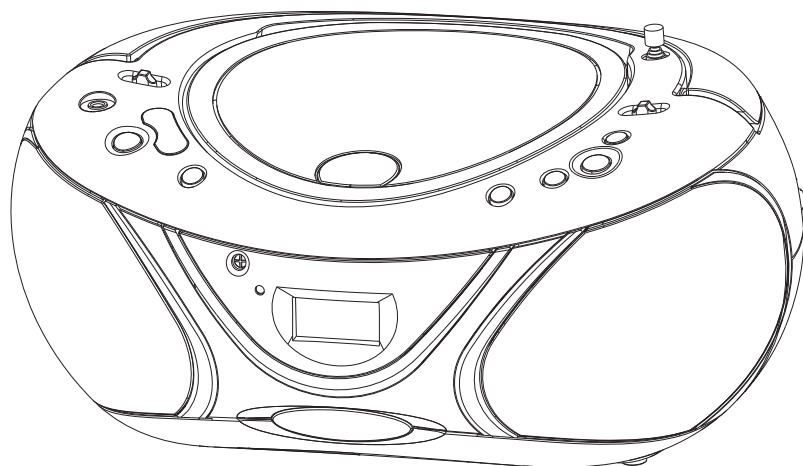


DAEWOO
DAEWOO ELECTRONICS EUROPE GmbH



Service Manual

TP-603GW



DAT H.K. LIMITED

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BOSONIC ELECTRONICS CO.,LTD.

SPECIFICATIONS

Tested by: Wilson

NO:QWI-EN-003-109

Model: TP-603GW (ALi) 1.2W (88-108)MHz

VERSION:A/0

DATE: 2007/03/17

Product:Radio+CD+MP3

Section: Radio **AM-MW**

Supply voltage: AC: 230V 50Hz DC: 12V

Reference output: 50 mW; Speaker load: 8ohm.

					P=Pass	F=Fail
NO	Measurements	Unit	Nominal	Limit	Actual	P/F
1	Tuning range Analogue Low	KHz	515	+/-10		
	High)	KHz	1625	+/-20		
2	Tuning indicator accuracy Analogue	KHz	+/- 25	+/- 50		
3	Sensitivity for-20 dB quieting 603KHz	dB/m	58	62		
	999KHz	dB/m	58	62		
	1404KHz	dB/m	56	60		
4	-6 dB RF bandwidth	KHz	5	4-8		
5	Frequency response -6dB Low	Hz	70	<120		
	High)	Hz	2500	>2200		
6	S/N ratio full limiting	dB	32	>30		
7	Min volume hum	mV	1.0	<2.0		
8	Distortion THD	%	2	<5.0		
9	Selectivity-ACA +/-10KHz	dB	+/- 20	>+/- 15		
10	AGC figure of merit 100dB/m	dB	40	>32		
11	IF frequency @450-465	KHz	465	+/-3		
12	IF rejection @600KHz	dB	40	>32		
13	Image rejection @1400KHz+2IF	dB	50	>30		
14	Whistle modulation	%	7	<10		
15	10% THD output power	W	1.2	>1		
16	Distortion at maximum volume 80%Mod	%	13	<30		
17	Headphone output power Undist	mW	50			
18	((@32Ohm load) Max	mW	-----	(25~65)		
19	Oscillator drop out @5mV/m AC	V	230	+10/-10%		
	DC	V	12	9.5		
20	Quiescent current	mA	80	120		
21	Current at max output	mA	480	500		

BOSONIC ELECTRONICS CO.,LTD.

SPECIFICATIONS

Tested by: Wilson

Model: TP-603GW (ALi) 1.2W (88-108)MHz

Product:Radio+CD+MP3

Section: **CD**

Supply voltage: AC: 230V 50Hz DC: 12V

NO:QWI-EN-003-109

VERSION:A/0

TATE: 2007/03/17

Reference output: 50 mW; Speaker load: 8ohm.

					P=Pass	F=Fail
NO	Measurements	Unit	Nominal	Limit	Actual	P/F
1	Frequency response (-3dB) 100Hz	dB	-1	+/-3		
	REF.@1KHz 10KHz	dB	-1	+/-3		
2	CD distortion 0dB	%	2.0	<3.0		
3	CD signal to noise ratio	dB	55	>45		
4	Channel separation 1KHz	dB	45	>38		
	Channel separation 10KHz	dB	35	>30		
5	Channel balance L/R	dB	0	<0.5		
6	Residual hum & noise(RMS) Max vol	mV	3	<20		
	Min vol	mV	1	<2.0		
7	Remote control +/-30deg	meter	8	>5		
	(All keys must functional)					
8	10%THD output power	W	1.2	>1		
9	Distortion at maximum volume 0dB	%	22	<30		
10	Headphone output power Undist	mW	50			
	(@32 Ohm load) Max	mW		(25~65)		
11	Max / Min must working voltage AC	V	230	+10/-10%		
	(Playing CD must workable) DC	V	12	9.5		
12	Quiescent current	mA	160	200		
13	Current at max output	mA	670	<690		
14	Error correction Interruption	TNO	0.8mm	0.7mm		
	Philips SBC-444A &TCD-725B Black dot	TNO	0.8mm	0.6mm		
	Fingerprint	TNO	75um	65um		
	(All tracks must playback without any audible errors)					
15	Last track error (TCD-781)	TNO	99	Workable		
16	Deflection test (TCD-731RA)	TNO	15	NO noise		
17	Eccentric test (TCD-712R)	TNO	15	NO noise		
18	3" sLngie disc-frist / last tracks (TCD-783)	TNO	1&23	Workable		
19	CD access time TNO 01	sec	5	<10		
	TNO 01-02	sec	1	<2.5		

BOSONIC ELECTRONICS CO.,LTD.

SPECIFICATIONS

Tested by: Wilson

Model: TP-603GW (ALi) 1.2W (88-108)MHz

Product:Radio+CD+MP3

Section: Radio **FM**

Supply voltage: AC: 230V 50Hz DC: 12V

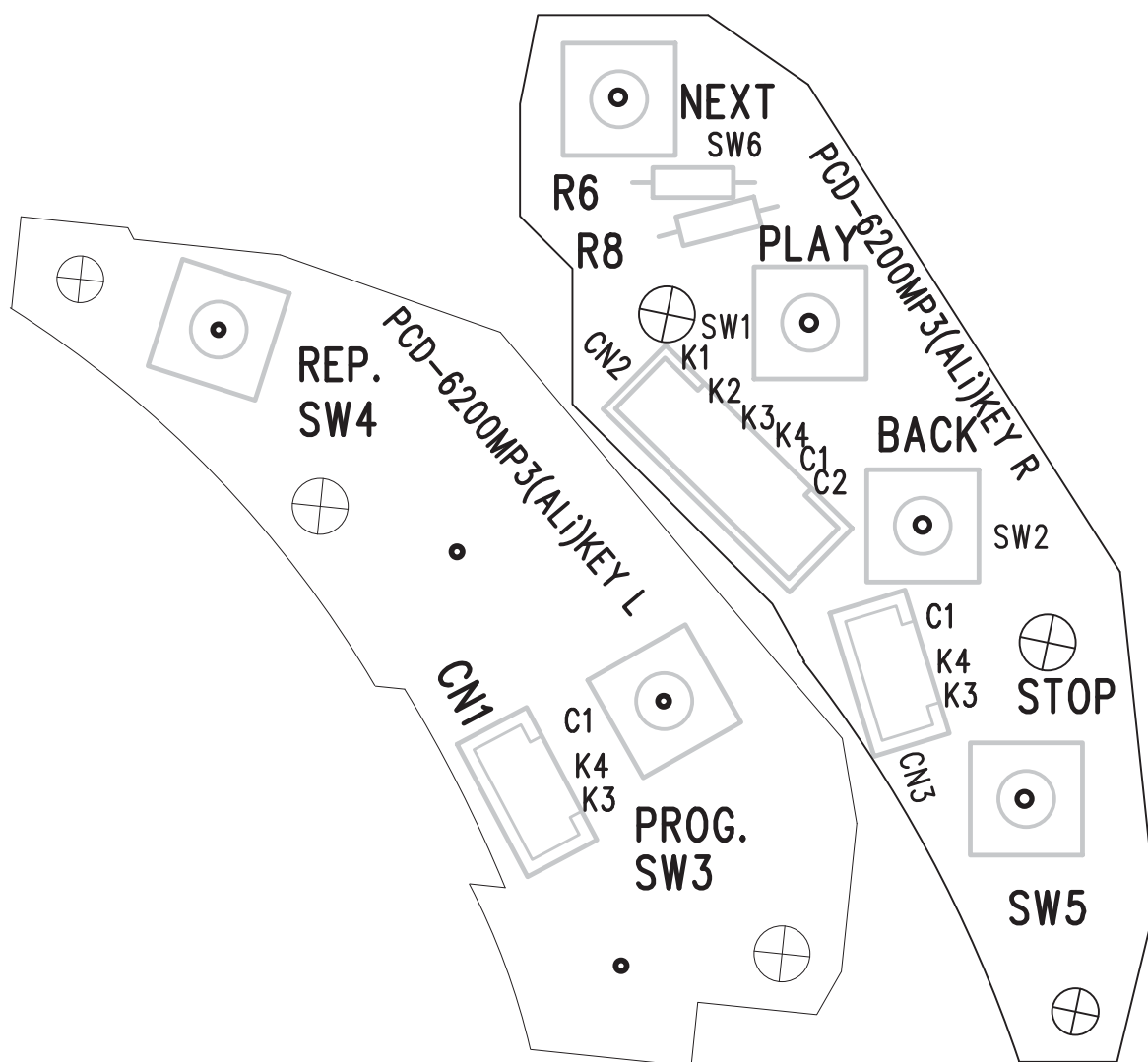
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VERSION:A/0

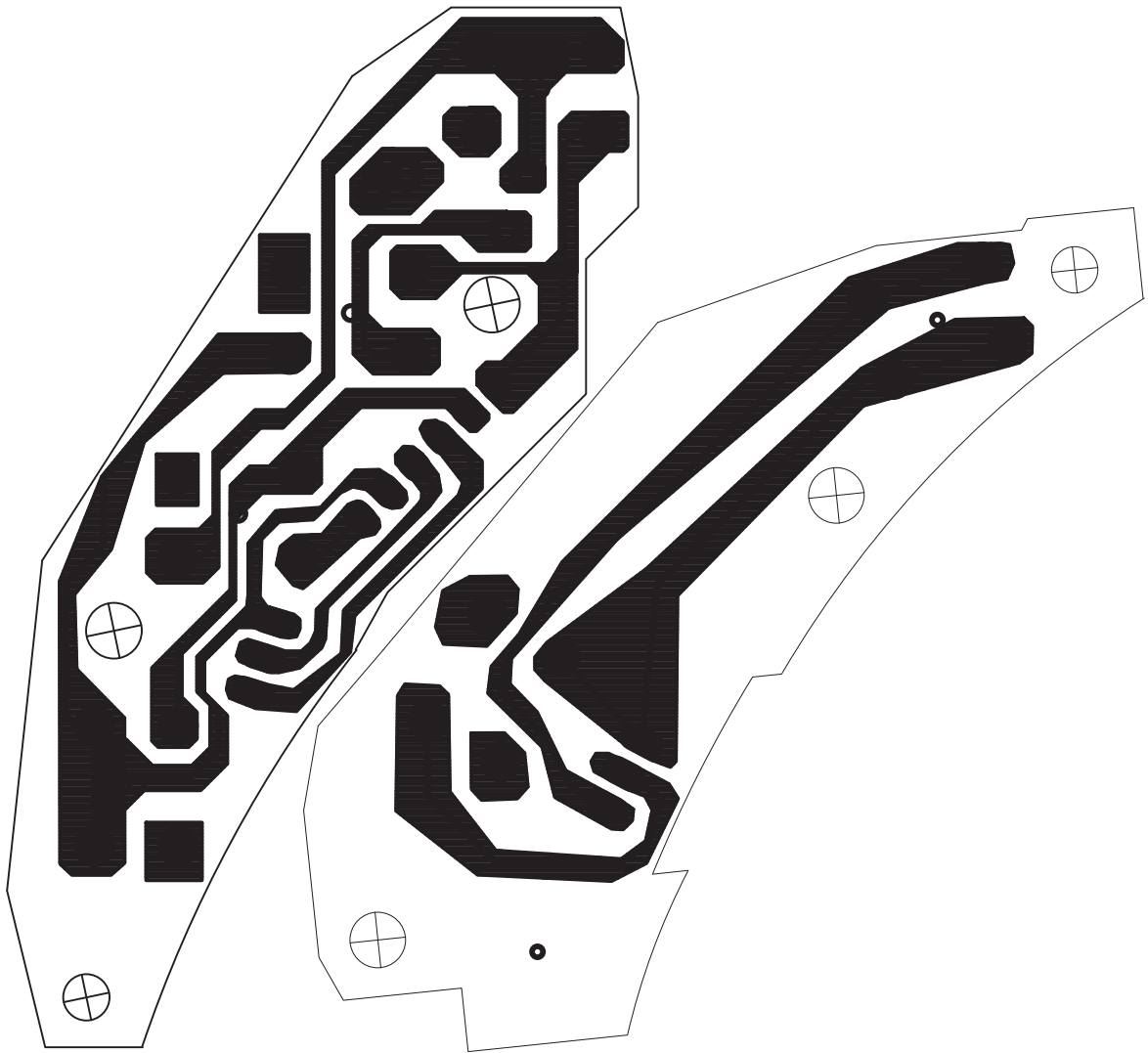
TATE: 2007/03/17

Reference output: 50 mW; Speaker load: 8 ohm.

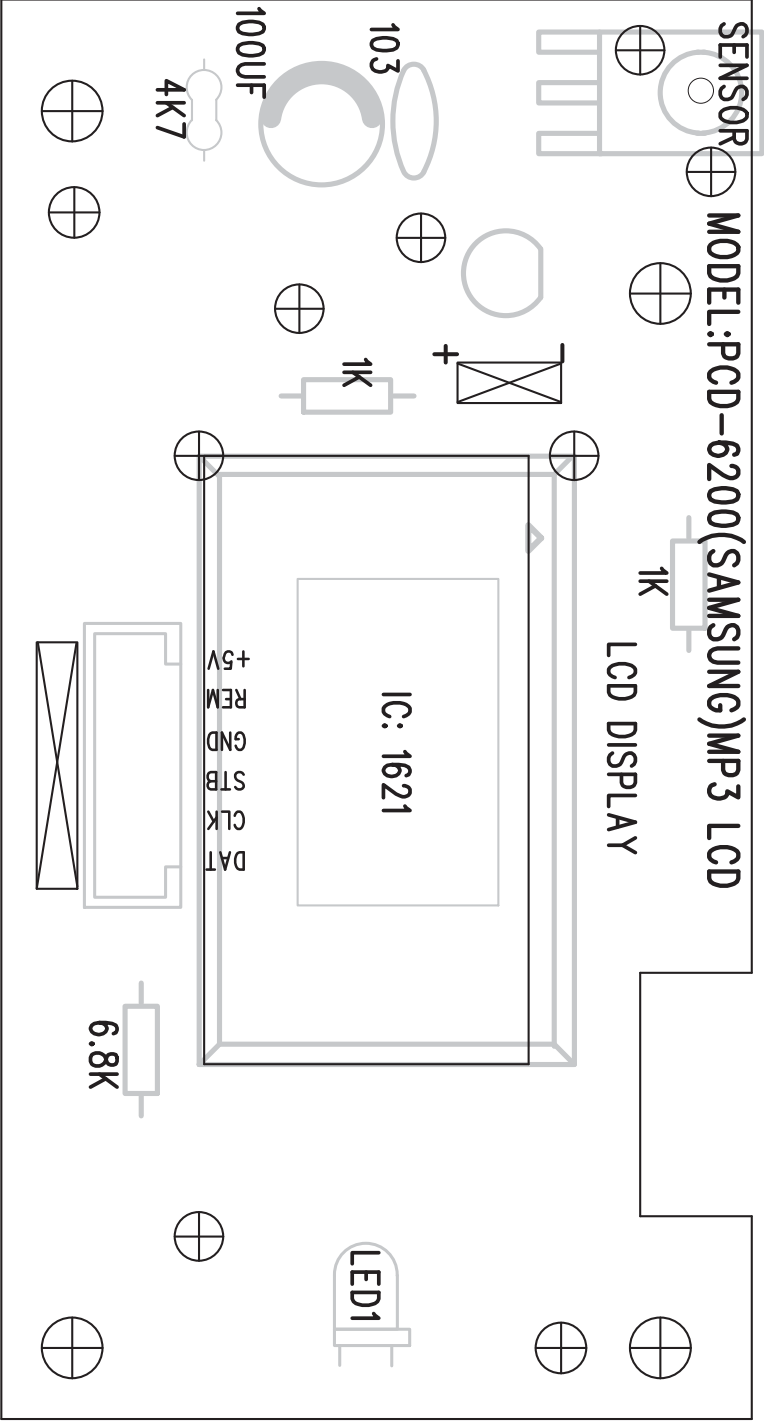
					P=Pass	F=Fail
NO	Measurements	Unit	Nominal	Limit	Actual	P/F
1	Tuning range Analogue Low	MHz	87.5	+/-0.15		
	High	MHz	108.25	+/-0.25		
2	Tuning indicator accuracy Analogue	MHz	+/-0.25	+/-0.50		
3	Sensitivity -30dB quieting 90MHZ	dBuV	18	28		
	98MHZ	dBuV	18	28		
	106MHZ	dBuV	17	26		
4	-3 dB limiting sensitivity 98 MHz	dBuV	16	<20		
5	Frequency response -6dB Low	Hz	60	<150		
	@98 MHz -6dB High	Hz	6500	>4000		
6	S/N ratio full limiting @98 MHz	dB	50	>40		
7	Min volume hum	mV	0.8	>5		
8	Distortion Mono	%	-----	-----		
	Stereo	%	2.5	<3		
9	Channel separation @98 MHz	dB	27	>20		
10	Channel balance	dB	0.5	<1.0		
11	Selectivity-ACA +/-200KHz	dB	28	>25		
12	AFC pull-in within 8 Db @98 MHz	KHz	200	>+/-200		
13	IF frequency	MHz	10.7	+/-0.10		
14	IF rejection @90 MHz	dB	65	>50		
15	Image rejection @106MHz +2 IF	dB	35	>22		
16	AM rejection 1KHz30%AM Mod	dB	45	>30		
17	Stereo indicator sensitivity @98 MHz	dBuV	18	<26		
18	10% THD output power	W	1.2	>1		
19	Distortion at maximum volume 75KHz Dev	%	18	<30		
20	Headphone output power Undist	mW				
	(@32 Ohm load) Max	mW	50	(25~65)		
21	Oscillator drop out @ 1mV AC	V	230	+10/-10%		
	DC	V	12	9.5		
22	Quiescent current	mA	90	120		
23	Current at max output	mA	480	500		



BOSONIC ELECTRONICS CO.,LTD	
MODEL:TP-603GW MP3(ALI) CE	
BOARD:TP-603GW MP3(ALI)KEY	
DATE:2008/01/28	VERSION:001



BOSONIC ELECTRONICS CO.,LTD	
MODEL:TP-603GW MP3(ALI) CE	
BOARD:TP-603GW MP3(ALI)KEY	
VERSION:001	DATE:2008/01/28



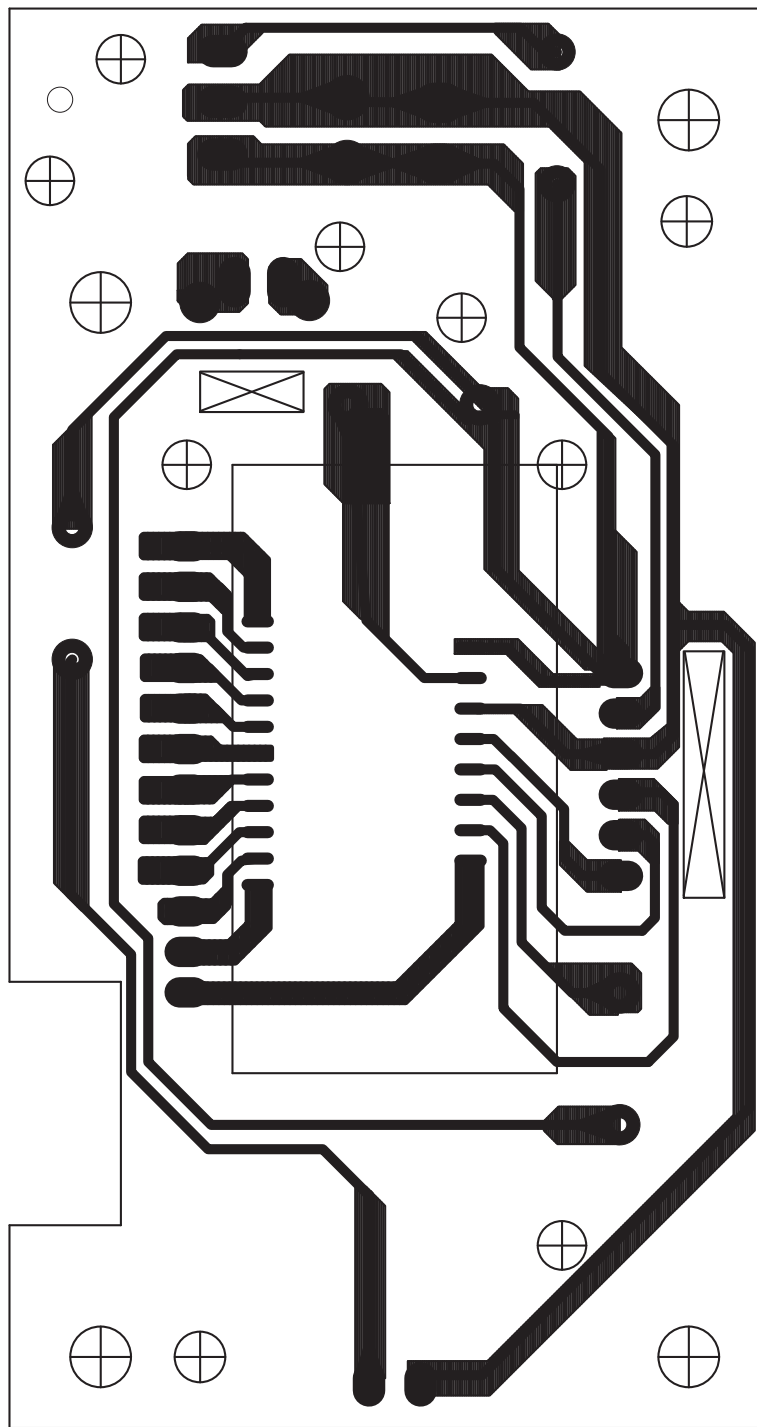
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MODEL:TP-603GW MP3(ALI) CE

BOARD:TP-603GW MP3(ALI)LCD

DATE:2008/01/28

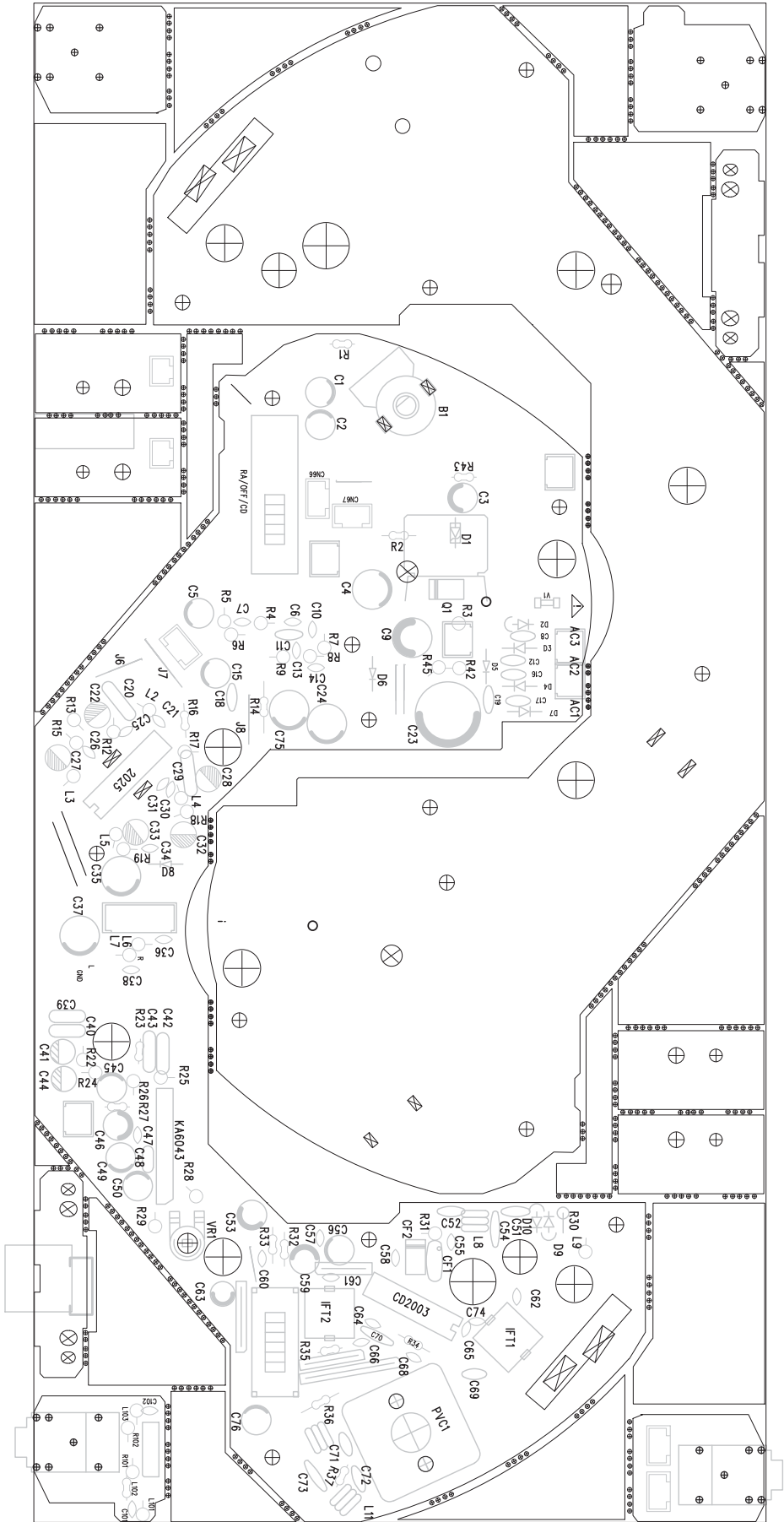
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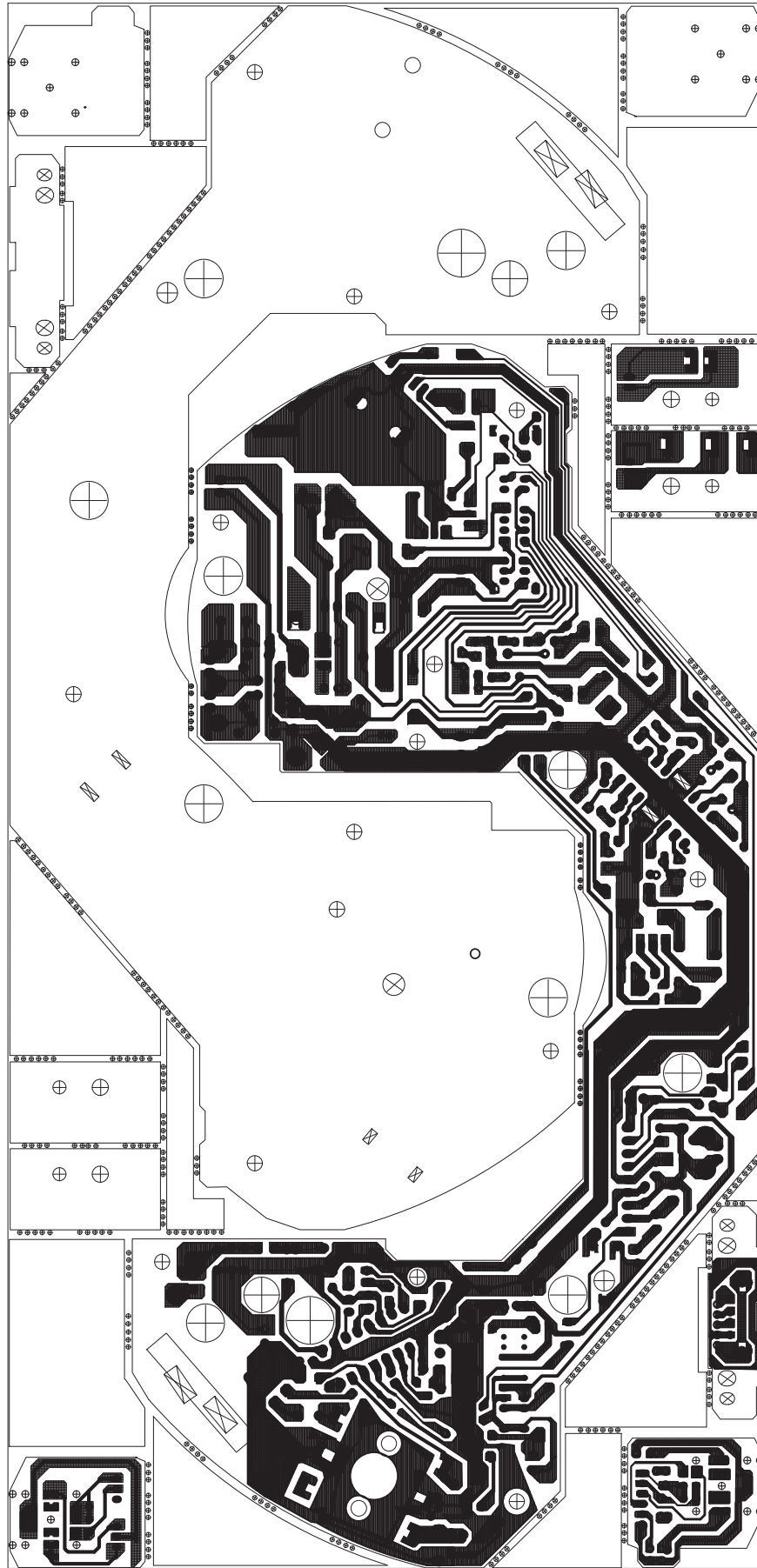


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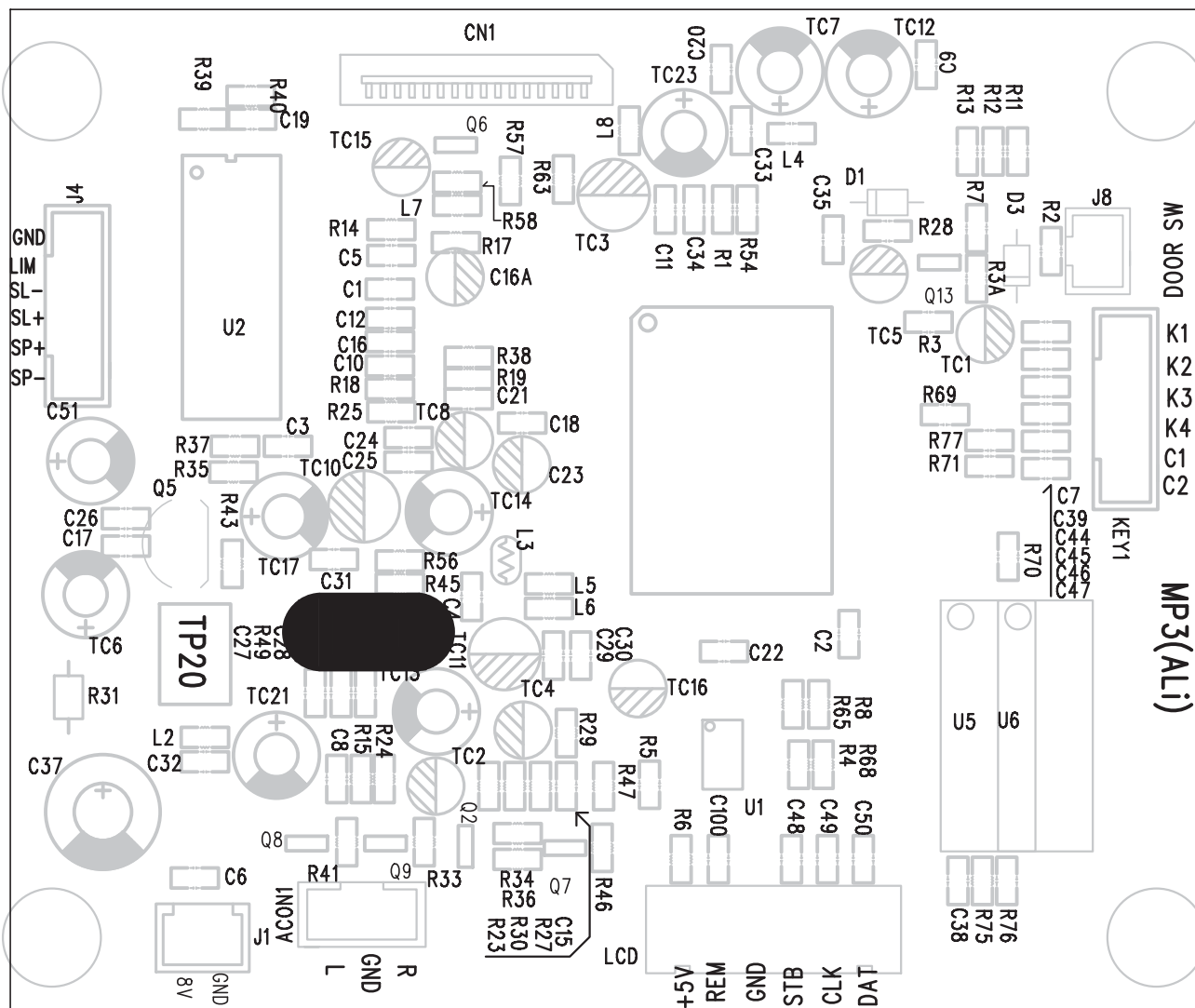
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MODEL:TP-603GW MP3(ALI) CE	
BOARD:TP-603GW MP3(ALI)LCD	
VERSION:001	DATE:2008/01/28

BOSONIC ELECTRONICS CO.,LTD
 MODEL:TP-603GW MP3(ALI) CE
 BOARD:TP-603GW MP3(AL)RADIO
 DATE:2008/01/28 VERSION:001

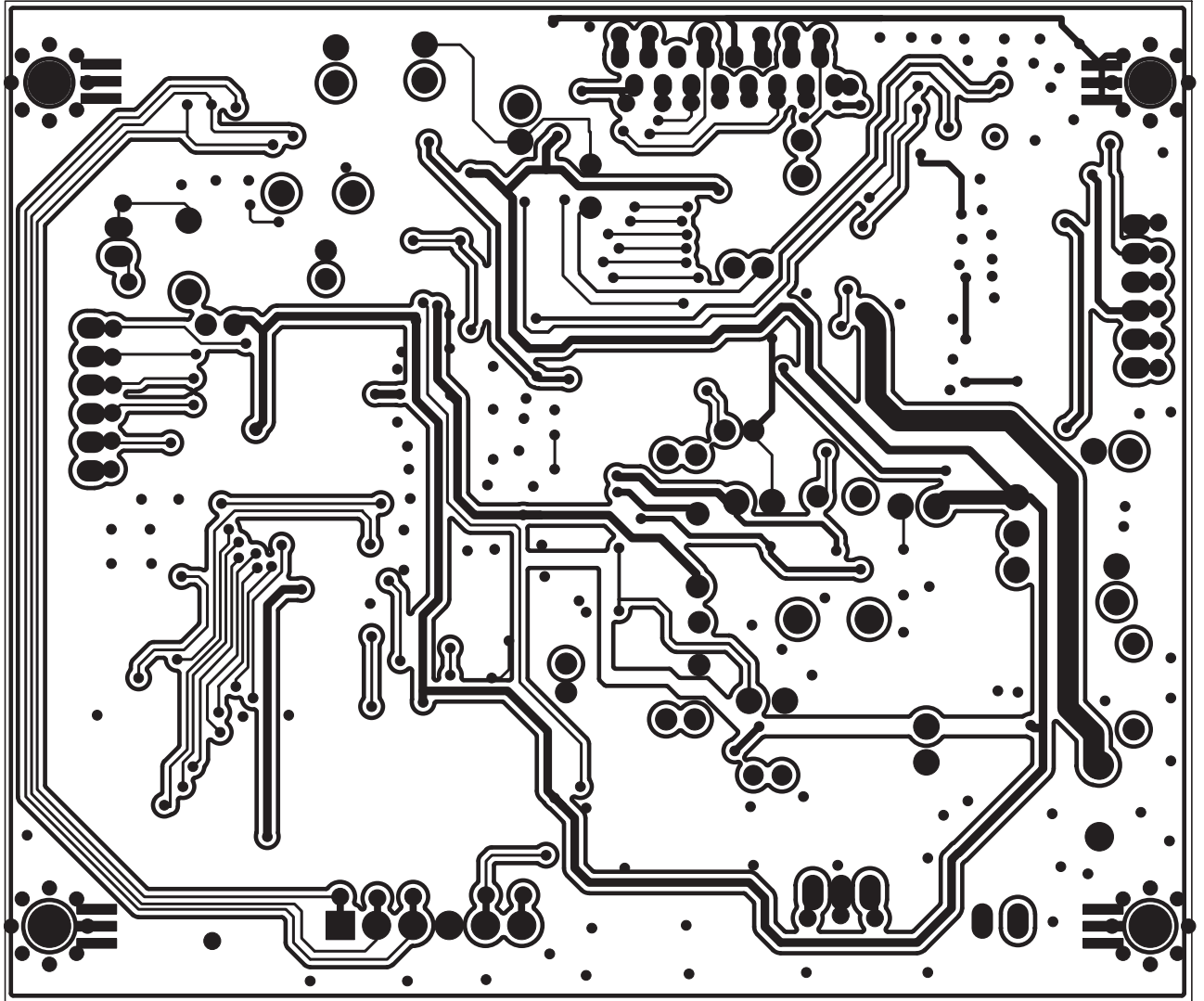




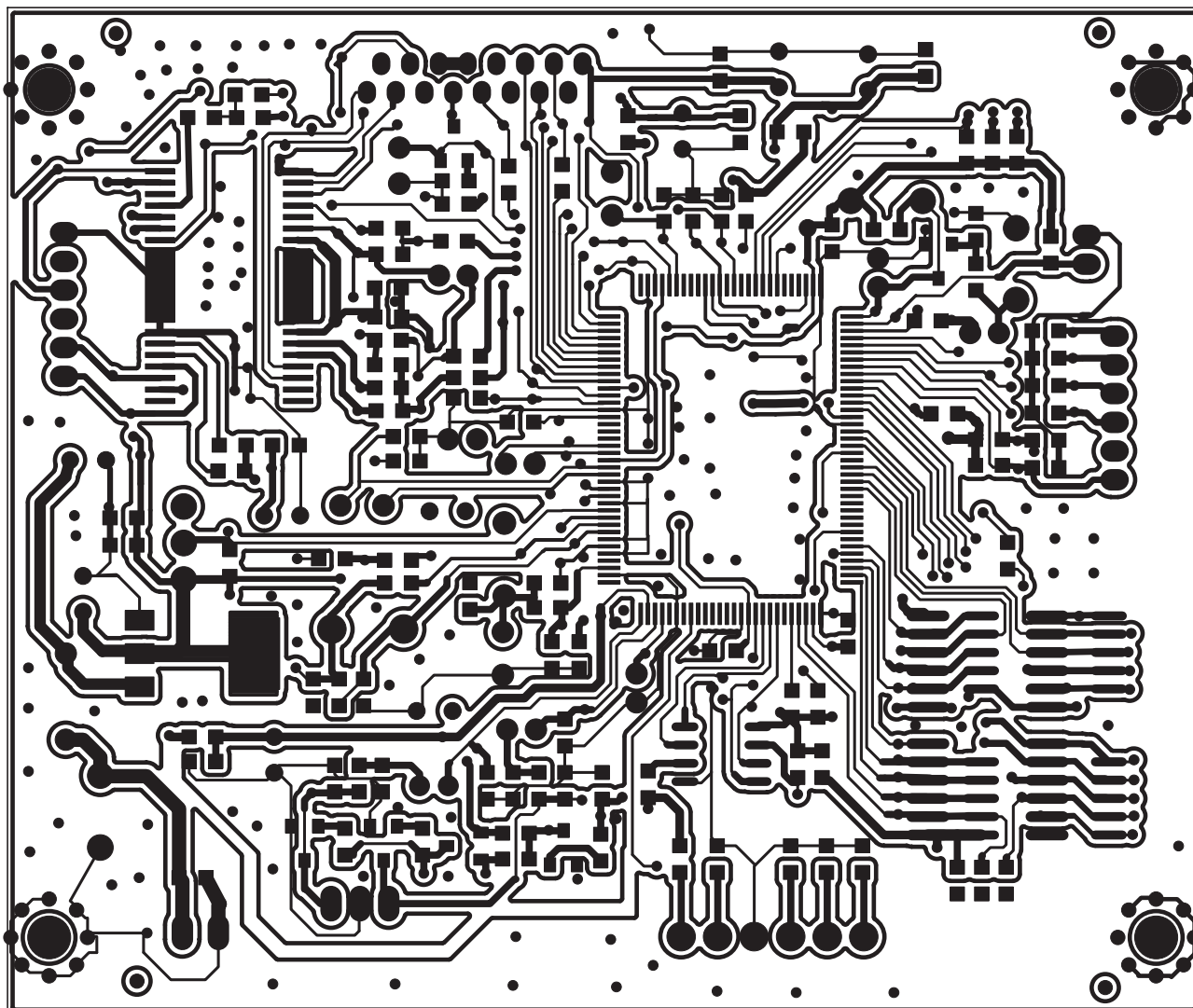
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MODEL:TP-603GW MP3(ALI) CE	
BOARD:TP-603GW MP3(ALI)RADIO	
VERSION:001	DATE:2008/01/28



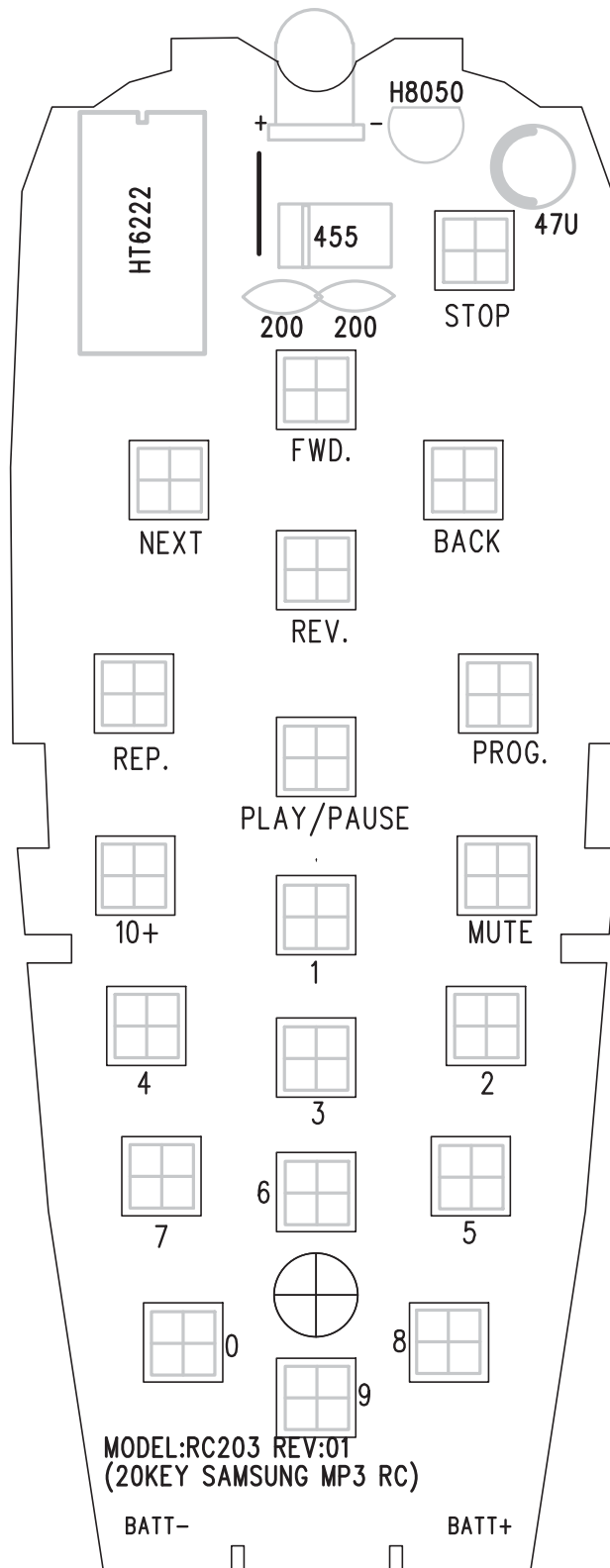
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MODEL:TP-603GW MP3(ALI) CE	
BOARD:TP-603GW MP3(ALI)KEY	
VERSION:001	DATE:2008/01/28



BOSONIC ELECTRONICS CO.,LTD
MODEL:TP-603GW MP3(ALI) CE
BOARD:TP-603GW MP3(ALI)KEY
DATE:2008/01/28 VERSION:001



BOSONIC ELECTRONICS CO.,LTD	
MODEL:TP-603GW MP3(ALI) CE	
BOARD:TP-603GW MP3(ALI)KEY	
VERSION:001	DATE:2008/01/28



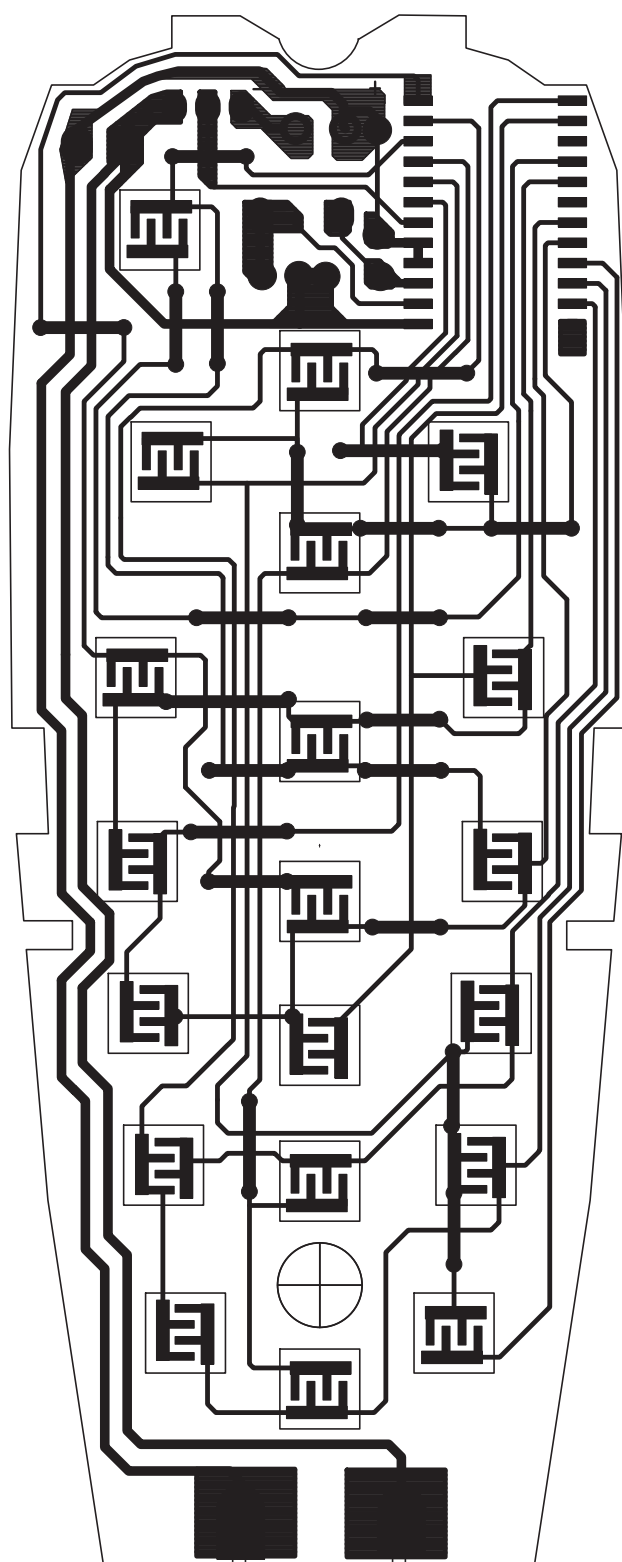
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MODEL:TP-603GW MP3(ALI) CE

BOARD:TP-603GW MP3(ALI)IR

DATE:2008/01/28

VERSION:001



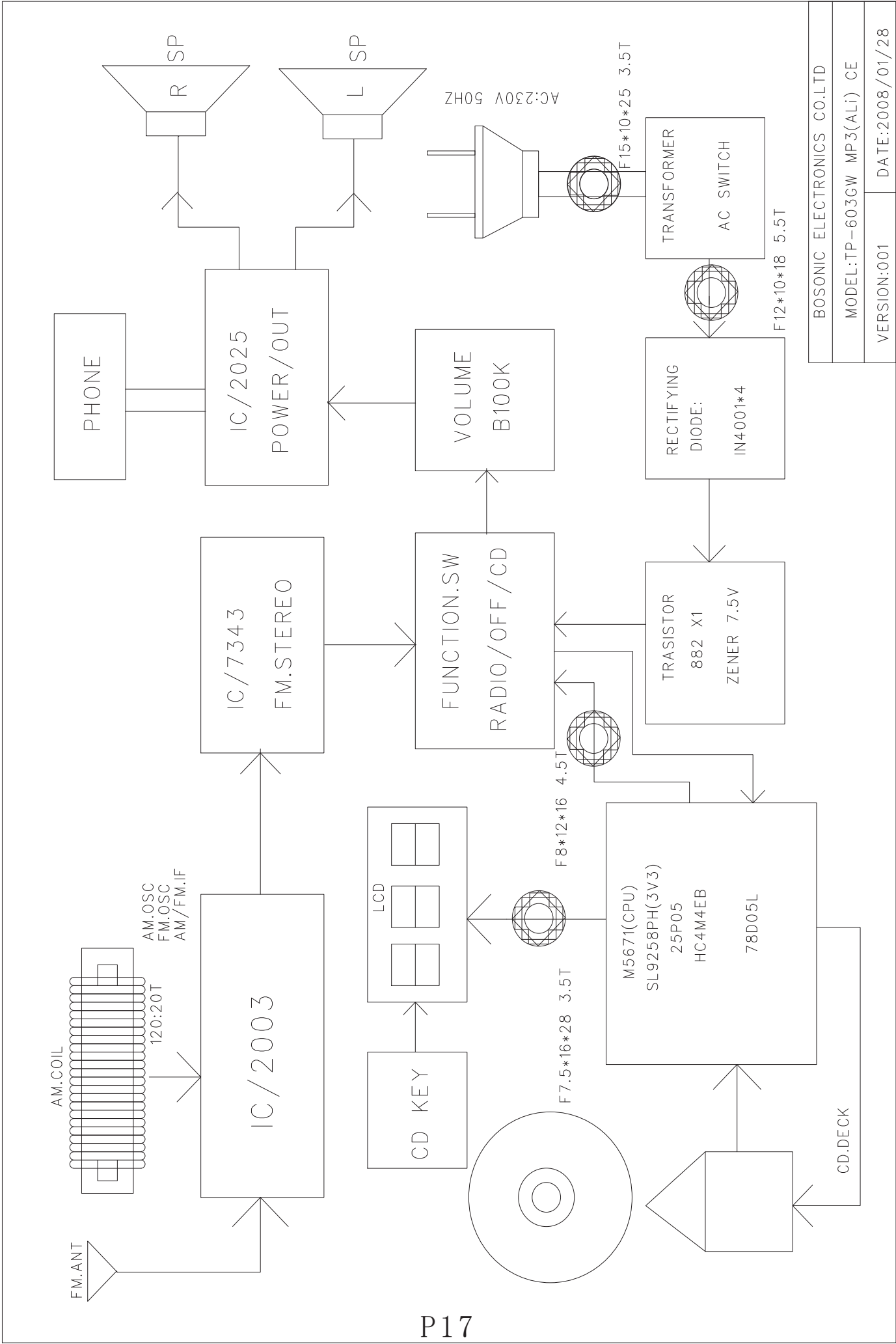
BOSONIC ELECTRONICS CO.,LTD

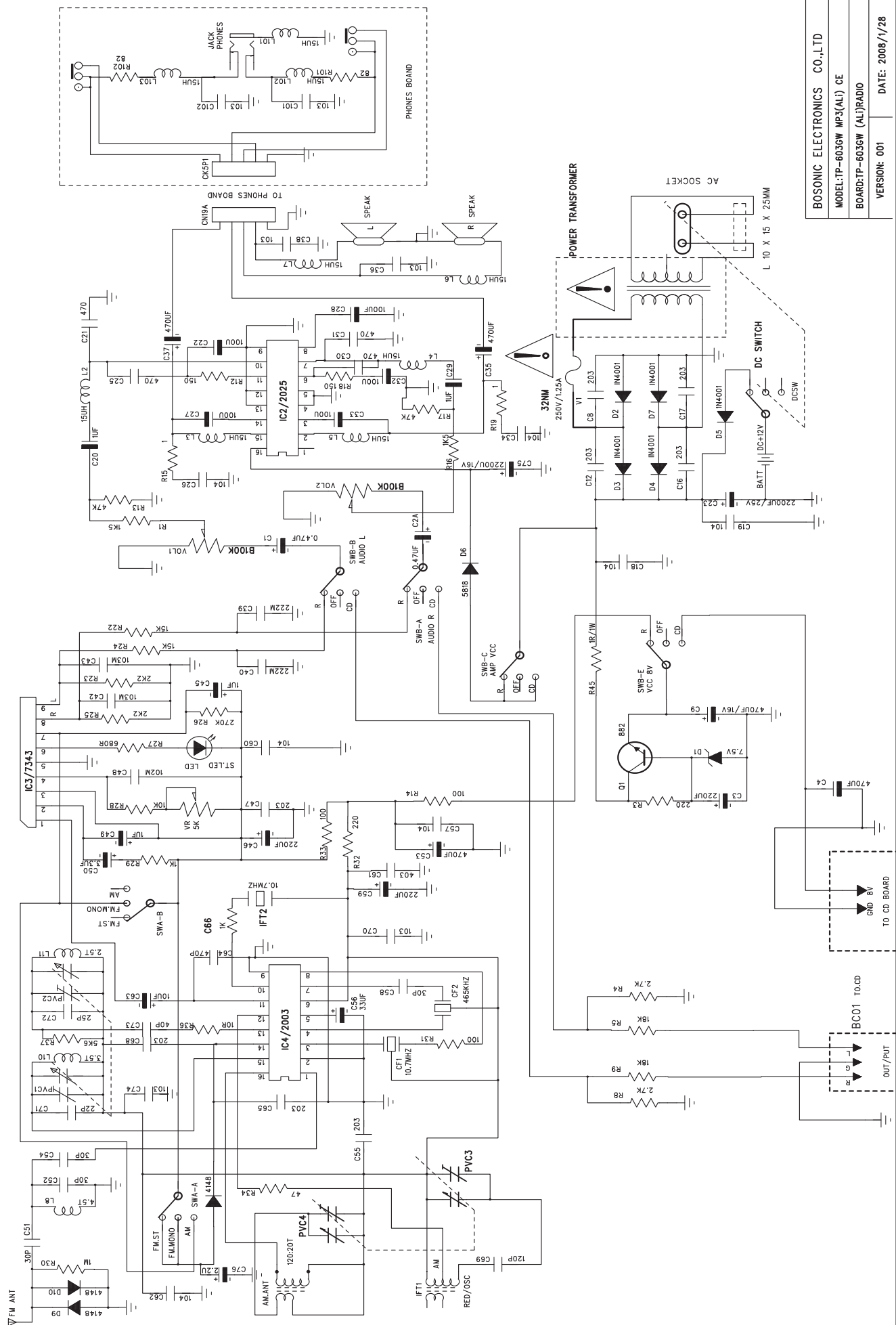
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BOARD:TP-603GW MP3(ALI)IR

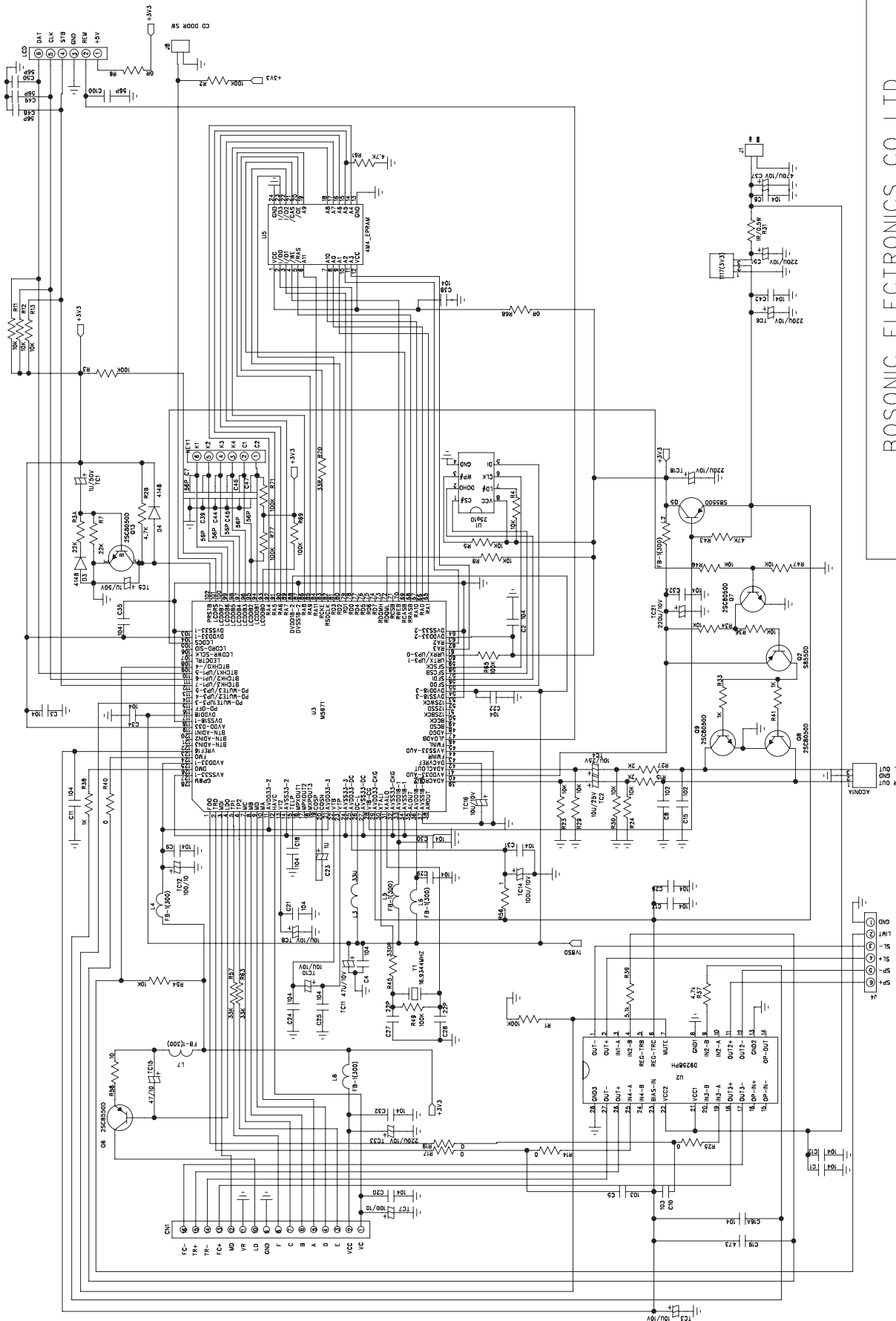
VERSION:001

DATE:2008/01/28





BOSONIC ELECTRONICS CO.,LTD
MODEL:TP-603GW MP3(ALI) CE
BOARD:TP-603GW (ALI)RADIO
VERSION: 001
DATE: 2008/1/28



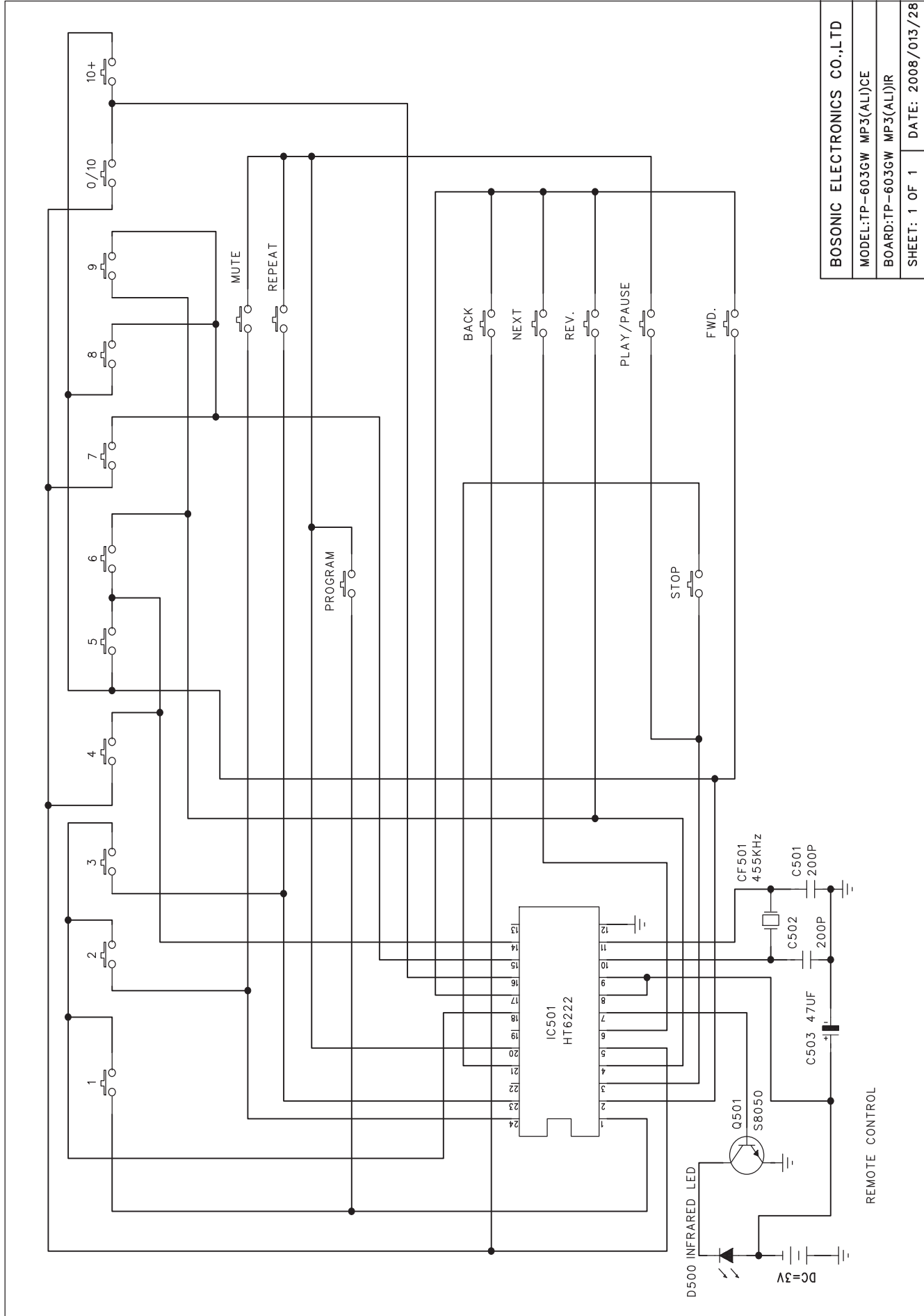
BOSONIC ELECTRONICS CO.,LTD

MODEL:TP-603GW MP3(ALI)CE

BOARD:TP-603GW MP3(ALI)M5671

VERSION:001

DATE:2008/01/28



BOSONIC ELECTRONICS CO.,LTD		
MODEL:TP-603GW MP3(AL)CE		
BOARD:TP-603GW MP3(AL)IR		
SHEET: 1 OF 1	DATE: 2008/013/28	

AM IF. ALIGNMENT

- 1, Set the FUNCTION switch to “RADIO” position.
- 2, Set the BAND switch to “AM” position.
- 3, Connect a SWEEPSCOPE OUTPUT to AM standard radiating loop antenna and match the direction for built-in ferrite bar of AM antenna.
- 4, Connect a SWEEPSCOPE INPUT to pin 8 or 9 of IC3 through a 1uf capacitor and GND.

STEP	SET SIGNAL	SET DIAL	ADJUST	ADJUST FOR
1	465KHz	LOW-END OF BAND	CF5 465KHz FILTER	CENTER & MAXIMUM OUTPUT

AM RF. ALIGNMENT

- 1, Connect a RF GENERATOR to the standard radiating loop antenna.
- 2, Connect a SCOPE and VTVM across the speaker output

STEP	SET	SET DIAL	ADJUST	ADJUST FOR
1	520KHz	LOW-END OF	FT5 (AM OSC)	MAXIMUM OUTPUT
2	1620KHz	HIGH-END OF	PVC3 (AM OSC)	MAXIMUM OUTPUT
3	REPEAT	STEP 1 & 2	TO MAXIMUM	
4	612KHz	NEAR 612KHz	AM COIL	MAXIMUM OUTPUT
5	1404KHz	NEAR 1404KHz	PVC4 (AM ANT)	MAXIMUM OUTPUT
	REPEAT	STEP 4 & 5	TO MAXIMUM	

FM IF. ALIGNMENT

- 1, Set the BAND switch to “FM” position.
- 2, Connect a SWEEPSCOPE OUTPUT to pin 15 of IC4 through a 20pf capacitor and GND.
- 3, Connect a SWEEPSCOPE INPUT to pin 8 or 9 of IC3 through a 1uf capacitor and GND.

STEP	SET SIGNAL	SET DIAL	ADJUST	ADJUST FOR
1	10.7MHz		CF4 & CF1	WITH 10.7MHz AT ZERO CROSSOVER & MAKE THE “S” CURVE TO FINER.

FM RF. ALIGNMENT

- 1, Connect a RF GENERATOR to the terminal of FM telescope antenna and GND.
- 2, Connect a SCOPE and VTVM across the speaker output.

STEP	SET SIGNAL	SET DIAL	ADJUST	ADJUST FOR
1	87.5MHZ	LOW-END OF BAND	L6 (FM OSC)	MAXIMUM OUTPUT
2	108MHZ	HIGH-END OF BAND	PVC2 (FM OSC TRIMMER)	MAXIMUM OUTPUT
3	REPEAT	STEP 1&2	TO MAXIMUM	
4	90.1MHZ	NEAR 106.1MHZ	L4 (FM SENS COIL)	MAXIMUM OUTPUT
5	106.1MHZ	NEAR 106.1MHZ	PVC1 (FM ANT TRIMMER)	MAXIMUM OUTPUT
6	REPEAT	STEP 4&5	TO MAXIMUM	

BOSONIC ELECTRONICS LTD.

BOM

NO:QWI-EN-007-246

VERSION:A/2

NO:PCD-6200MP3/RC 2B 1.2W CE BOM

Brand/Buyer's Model No: DAEWOO/TP-603GW

DATE:2007/08/02

ITEM	DESCRIPTION	QTY	LOCATION	
	RADIO PART			
1	RESISTOR 1Ω 1W	1	R45.	
2	RESISTOR 1Ω 1/16W	2	R15.R19	
3	RESISTOR 10Ω 1/16W	1	R36	
4	RESISTOR 47Ω 1/16W	1	R34	
5	RESISTOR 100Ω 1/4W	2	R14.R33	
6	RESISTOR 100Ω 1/16W	1	R31	
7	RESISTOR 150Ω 1/16W	2	R18.R12	
8	RESISTOR 220Ω 1/4W	2	R3.R32	
9	RESISTOR 1KΩ 1/16W	2	R29.C66	
10	RESISTOR 680Ω 1/16W	1	R27	
11	RESISTOR 1.5KΩ 1/16W	2	R1.R16	
12	RESISTOR 2.2KΩ 1/16W	2	R23.R25	
13	RESISTOR 5.6KΩ 1/16W	1	R37	
14	RESISTOR 2.7KΩ 1/16W	2	R4.R8	
15	RESISTOR 10KΩ 1/16W	1	R28	
16	RESISTOR 15KΩ 1/16W	2	R22.R24	
17	RESISTOR 18KΩ 1/16W	2	R5.R9	
18	RESISTOR 47KΩ 1/16W	2	R13.R17	
19	RESISTOR 270KΩ 1/16W	1	R26	
20	RESISTOR 1M 1/16W	1	R30	
21	CERAMIC CAP 22PF	1	C71	
22	CERAMIC CAP 25PF	1	C72	
23	CERAMIC CAP 30PF	4	C51.C52.C54.C58	
24	CERAMIC CAP 40PF	1	C73	
25	CERAMIC CAP 120PF	1	C69	
26	CERAMIC CAP103 (0.01UF)	4	C70.C74.C36.C38	
27	CERAMIC CAP 470PF	5	C64.C21.C25.C30.C31	
28	CERAMIC CAP 203P(0.02UF)	8	C8.C12.C16.C17.C47.C55.C65.C68	
29	CERAMIC CAP 403P(0.04UF)	1	C61	
30	CERAMIC CAP 104P(0.1UF) 50V	7	C18.C19.C26.C34.C57.C60.C62	
31	MYLAP CAP 102(0.001UF)	1	C48	
32	MYLAP CAP 222P(0.0022UF)	2	C39.C40	
33	MYLAP CAP 103P(0.01UF)	2	C42.C43	
34	ELECT CAP 0.47UF/50V	2	C1.C2	
35	ELECT CAP 1UF/50V	4	C20.C29.C45.C49	
36	ELECT CAP 2.2UF/50V	1	C76	
37	ELECT CAP 3.3UF/50V	1	C50	
38	ELECT CAP 10UF/25V	1	C63	
39	ELECT CAP 33UF/16V	1	C56	
40	ELECT CAP 100UF/16V	5	C22.C27.C28.C32.33	
41	ELECT CAP 220UF/16V	3	C3.C46.C59	
42	ELECT CAP 470UF/16V	5	C4.C9.C35.C37.C53	
43	ELECT CAP 2200UF/16V 10X20mm	1	C75	
44	ELECT CAP 2200UF/25V	1	C23	
45	I.C CD2003GP	1	IC4	
46	I.C LS 7343	1	IC3	

BOSONIC ELECTRONICS LTD.

BOM

NO:QWI-EN-007-246

VERSION:A/2

DATE:2007/08/02

NO:PCD-6200MP3/RC 2B 1.2W CE BOM

Brand/Buyer's Model No: DAEWOO/TP-603GW

ITEM	DESCRIPTION	QTY	LOCATION	
47	I.C LS 2025	1	IC2	
48	PVC (88-108)MHz	1	PVC1.PVC2.PVC3.PVC4	
49	AM COIL 120:20T L=120MM	1		
50	FERRITE BAR 5*13*55	1		
51	FM COIL 2.5T*4.5*0.7MM	1	L11	
52	FM COIL 3.5T*4.5*0.7MM	1	L12	
53	FM COIL 4.5T*4.5*0.7MM	1	L8	
54	I.F.T 10MM RED 與900ST一樣	1		
55	CER. FILTE 465 KHZ 3PIN	1		
56	CER. FILTE 10.7MHZ 3PINS	1		
57	CER. FILTE 10.7MHZ 2PINS JT10.7M G3	1		
58	SEMI-FIXED 5K 8MM	1		
59	MAGNETISM BEAD 10uH 4T	2	L2.L3	
60	MAGNETISM BEAD T351503-2.5TS	4	L4.L5.L6.L7	
61	FUSE 1.25A 250V 4*11MM	1		
62	VOL F-122KGP B100K L25FCx12(K)	1		
63	SLIDESWITCH SS63D01-G12-S	1		
64	SLIDESWITCH SS43D01-G12-S	1		
65	ZENER DIODE 7.5V	1	D1	
66	DIODE IN4001	5	D2.D3.D4.D5.D7	
67	DIODE IN5818	1	D6	
68	ZNENR DIODE 1N4148	3	D9.D10.D11	
69	TRANSISTOR 882	1	Q1	
70	EYELET 2*4mm	8		
71	HEAT SINK	1		
72	HEAT SINK	1		
	LCD PART			
73	RESISTOR 1KΩ 1/16W	1		
74	RESISTOR 6.8KΩ 1/16W	1		
75	CERAMIC CAP 0.01UF(103)	1		
76	ELECT CAP 100UF/10V	1		
77	LED RED 3MM	1		
78	LCD	1		
79	LED 3MM 3BB4SD43	1		
80	RESISTOR 100Ω 1/4W	1		
81	IC SM1621	1		
	KEY PART			
82	PCB PCD-6200MP3 (Ali) KEY R R1	1		
83	PCB PCD-6200MP3 (Ali) KEY L R1	1		
84	TACT SWITCH:TS-1150-250	6		
	ALi(MP3)解码板			
85	CHIP CAP 0603 22P ±5%	2	C27 C28	
86	CHIP CAP 0603 56P ±5%	10	C39 C44 C45 C46 C47 C48 C49C50 C7 C100	
87	CHIP CAP 0603 0.01UF(102) ±5%	2	C8 C15	
88	CHIP CAP 0603 0.01UF(103) ±5%	2	C10, C5	
89	CHIP CAP 0603 0.047UF(473) ±5%	1	C19	

BOSONIC ELECTRONICS LTD.

BOM

NO:QWI-EN-007-246

VERSION:A/2

DATE:2007/08/02

NO:PCD-6200MP3/RC 2B 1.2W CE BOM

Brand/Buyer's Model No: DAEWOO/TP-603GW

ITEM	DESCRIPTION	QTY	LOCATION	
90	CHIP CAP 0603 0.1UF(104) ±5%	25	C1 C11 C12 C16 C17 C18 C2 C20 C21 C22 C24 C25 C26 C29 C3 C30 C31 C32 C33 C34 C35 C38 C4 C6 C9	
91	MINI ELECT CAP 1UF/50V 4*7	3	C23 TC1 TC5	
92	MINI ELECT CAP 10U/25V 4*7	6	TC10 TC16 TC2 TC3 TC4 TC8	
93	MINI ELECT CAP 47U/10V 4*7	2	TC11 TC15	
94	MINI ELECT CAP 100U/10V 5*7	6	TC12 TC13 TC14 TC21 TC23 TC7	
95	MINI ELECT CAP 220U/16V 5*7	3	C51 TC17 TC6	
96	MINI ELECT CAP 470U/10V 8*7	1	C37	
97	CHIP RESISTOR 0603 0 Ω ±5%	7	R14 R17 R19 R25 R40 R6 R68	
98	CHIP RESISTOR 0603 1 Ω ±5%	1	R56	
99	CHIP RESISTOR 0603 15 Ω ±5%	1	R58	
100	CHIP RESISTOR 0603 33 Ω ±5%	1	R70	
101	CHIP RESISTOR 0603 330 Ω ±5%	1	R45	
102	CHIP RESISTOR 0603 1K Ω ±5%	3	R38 R41 R33	
103	CHIP RESISTOR 0603 2K Ω ±5%	2	R15 R27	
104	CHIP RESISTOR 0603 4.7K Ω ±5%	3	R28 R37 R76	
105	CHIP RESISTOR 0603 5.1K Ω ±5%	1	R39	
106	CHIP RESISTOR 0603 10K Ω ±5%	12	R23 R24 R29 R30 R34 R36 R4 R46 R47 R5 R54 R8	
107	CHIP RESISTOR 0603 22K Ω ±5%	2	R3A R7	
108	CHIP RESISTOR 0603 33K Ω ±5%	2	R57 R63	
109	CHIP RESISTOR 0603 47K Ω ±5%	1	R43	
110	CHIP RESISTOR 0603 100K Ω ±5%	11	R1 R11 R12 R13 R2 R3 R49 R65 R69 R71 R77	
111	RESISTOR 1R 1/2W	1	R31	
112	DIOD 1N4148	2	D1 D3	
113	TRANSISTOR 8050 SMT	4	Q13 Q7 Q8 Q9	
114	TRANSISTOR 8550	1	Q5	
115	TRANSISTOR 8550 SMT	3	Q2 Q6	
116	33UH CHOKE COIL	1	L3	
117	CHIP COIL 0603 300 ±5%	5	L2 L4 L5 L6 L7	
118	CHIP COIL 0603 10UH ±5%	1	L8	
119	CERAMIC RESONATOR :16.9344MHz	1	Y1	
120	HY5117404B(EDO RAM)	1	U5	
121	25P05	1	U1	
122	L1117(3.3v)	1	TP20	
123	M5671(CPU)	1	U3	
124	D9258PH(3V3)	1	U2	
	CD DOOR			
125	PCB PCD-6200 CD DOOR	1		
126	SW LF-101D-R-N	1		
	PHONES			
127	PCB PCD-6200 PHONES	1		
128	PHONE JACK ST-202-SWD-B	1		
129	RESISTOR 82 Ω 1/16W	2	R101.R102	
130	CERAMIC CAP 0.01UF (103)	2	C101.C102	

BOSONIC ELECTRONICS LTD.
BOM

NO:QWI-EN-007-246

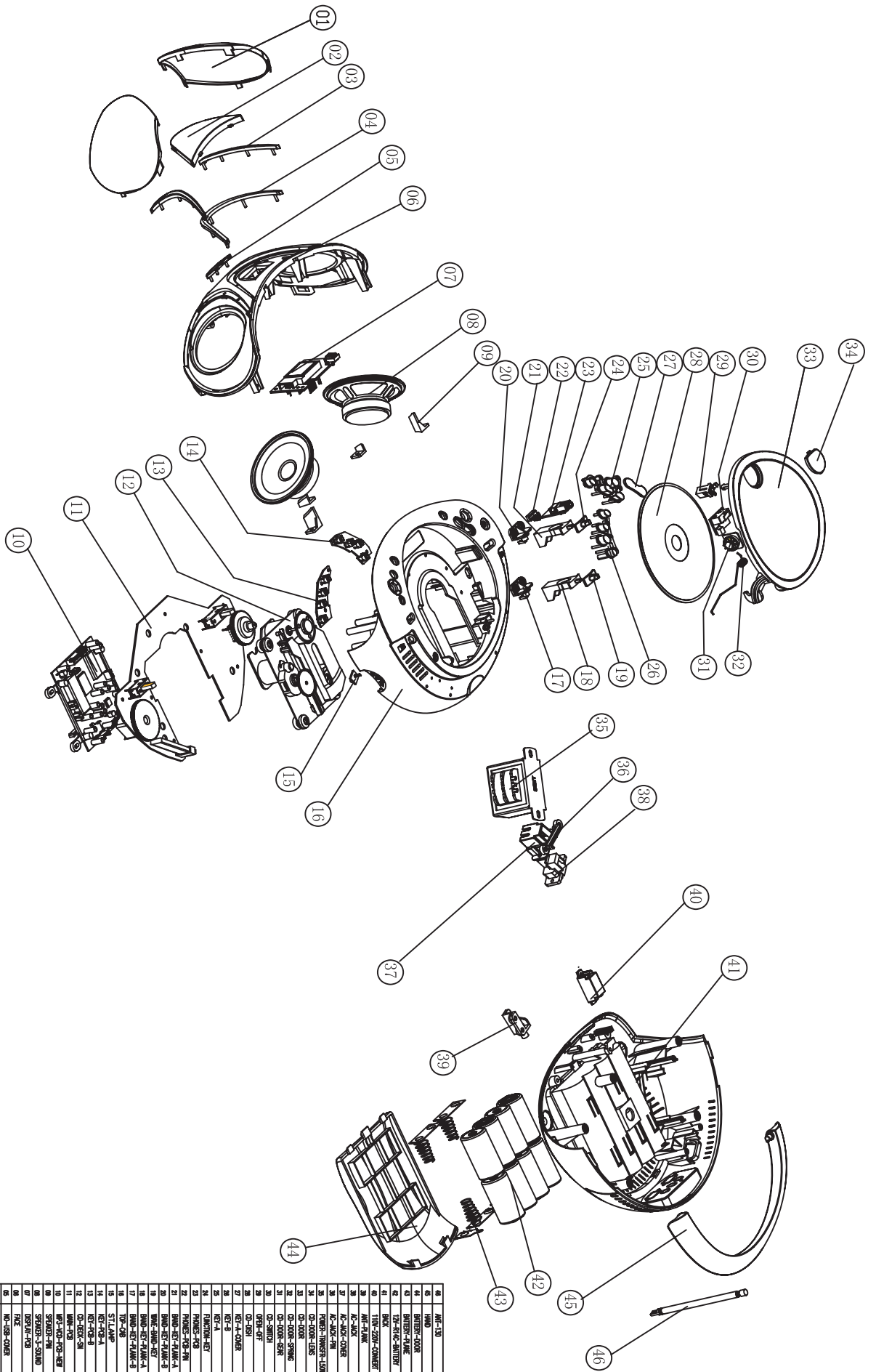
VERSION:A/2

DATE:2007/08/02

NO:PCD-6200MP3/RC 2B 1.2W CE BOM

Brand/Buyer's Model No: DAEWOO/TP-603GW

ITEM	DESCRIPTION	QTY	LOCATION	
131	TINCT COIL 15UH 1/4W	3	L101.L102.L103	
	ELSE PART 1			
132	SPEAKER 8OHM 3W 3INCH 45MA	2		
134	CD MECHANISUM	1		
137	POWER TRANSFOR BOS413-A9C6K3 AC:230V/50Hz	1		
	REMOTE TX			
147	CERAMIC CAP 200PF	2		
148	ELECT CAP 47UF/16V	1		
149	TRANSISTOR 8050	1		
150	METAL WIRE 0.5X40MM	1		
151	INFRARED EMITTING DIODE	1		
152	CER RESONATOR:455KHZ 2PINS	1		
153	IC HT6222	1		
154	BATTERY PLATE	1set		



BOSONIC		DATE : 2005/09/12
DRAW NO :	CHK BY :	DATE :
REV NO :	APP BY :	DATE :
DESCRIPTION :	SCALE : 1:1	SCALE : 1:1
ITEM NAME : EXPOSED DRAWING	TOLERANCE : ±0.15	TOLERANCE : ±0.15
UNLESS OTHERWISE SPECIFIED	FINISH :	FINISH :
INTERVAL :		
Total Number of Assembly		2
01	SPK-100-100	1
02	SPK-100-100	1
03	SPK-100-100	1
04	SPK-100-100	1
05	SPK-100-100	1
06	SPK-100-100	1
07	SPK-100-100	1
08	SPK-100-100	1
09	SPK-100-100	1
10	SPK-100-100	1
11	SPK-100-100	1
12	SPK-100-100	1
13	SPK-100-100	1
14	SPK-100-100	1
15	SPK-100-100	1
16	SPK-100-100	1
17	SPK-100-100	1
18	SPK-100-100	1
19	SPK-100-100	1
20	SPK-100-100	1
21	SPK-100-100	1
22	SPK-100-100	1
23	SPK-100-100	1
24	SPK-100-100	1
25	SPK-100-100	1
26	SPK-100-100	1
27	SPK-100-100	1
28	SPK-100-100	1
29	SPK-100-100	1
30	SPK-100-100	1
31	SPK-100-100	1
32	SPK-100-100	1
33	SPK-100-100	1
34	SPK-100-100	1
35	SPK-100-100	1
36	SPK-100-100	1
37	SPK-100-100	1
38	SPK-100-100	1
39	SPK-100-100	1
40	SPK-100-100	1
41	SPK-100-100	1
42	SPK-100-100	1
43	SPK-100-100	1
44	SPK-100-100	1
45	SPK-100-100	1
46	SPK-100-100	1