

# AUDIO VIDEO SURROUND RECEIVER AR-304/KRF-A4020/ A4020E/A4020W SERVICE MANUAL

# KENWOOD

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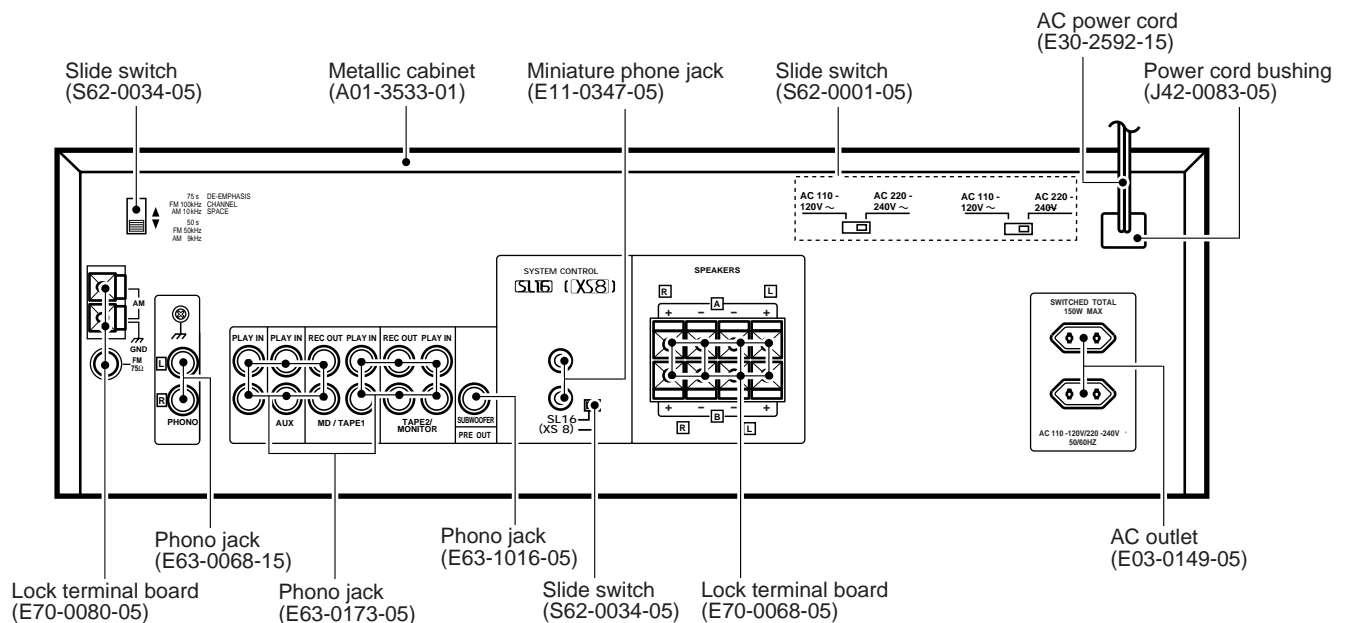
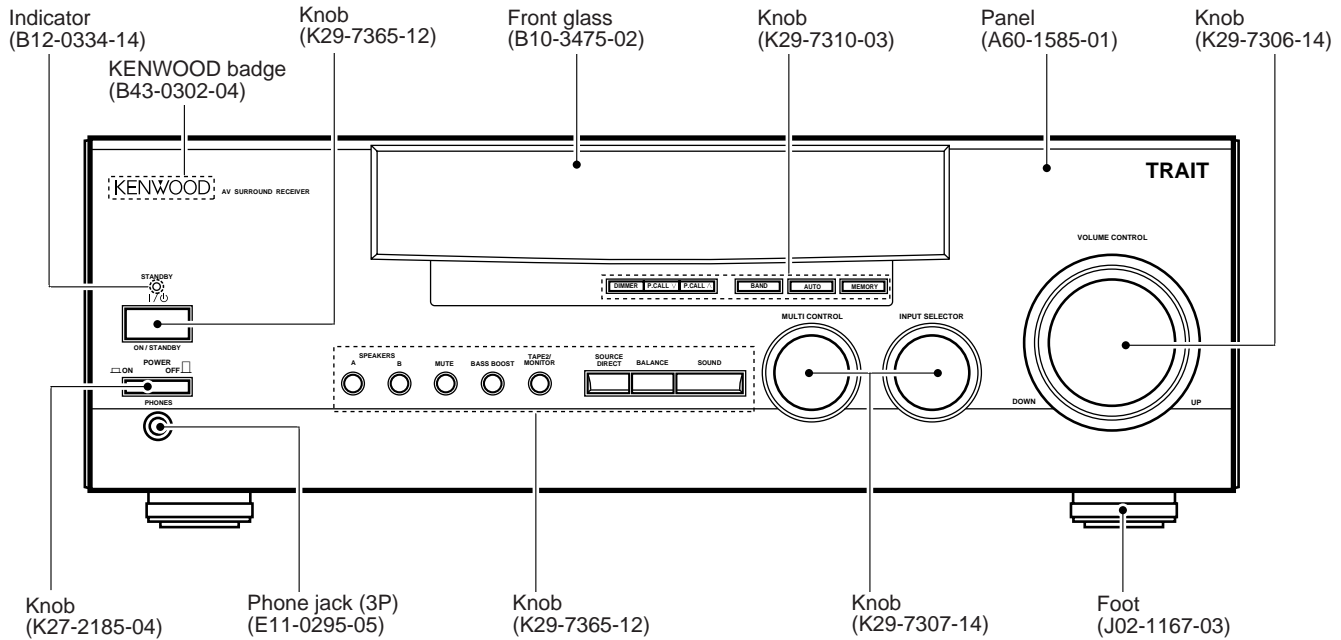


Illustration is KRF-A4020 Mtype.

Please check the tuner PCB number before change C42,43 and X1 with new one .

# AR-304/KRF-A4020

## CONTENTS / ACCESSORIES / CAUTIONS

### Contents

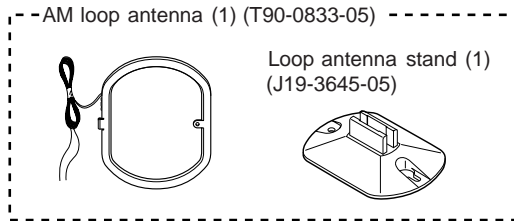
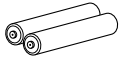
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### Accessories

FM indoor antenna (1)  
(T90-0836-05)

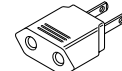


Batteries (R06/AA) (2)



Loop antenna stand (1)  
(J19-3645-05)

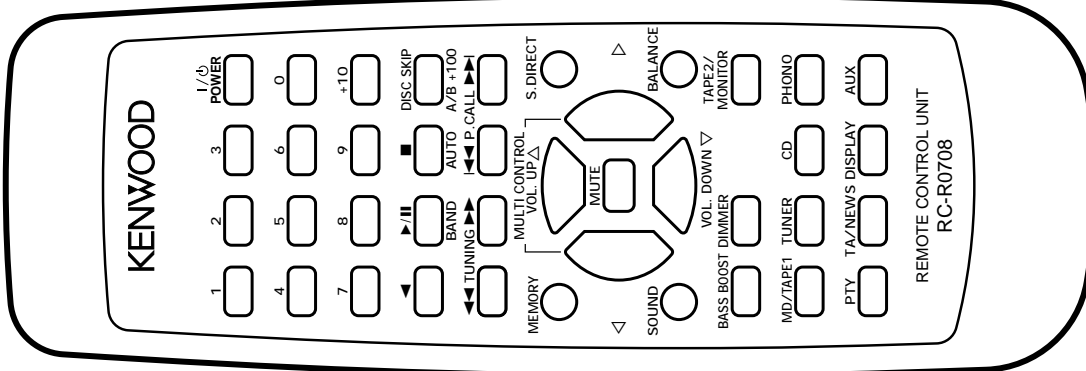
AC plug adaptor (1)  
(E03-0115-05)



\*Use to adapt the plug on the power cord to the shape of the wall outlet.  
(Accessory only for regions where use is necessary.)

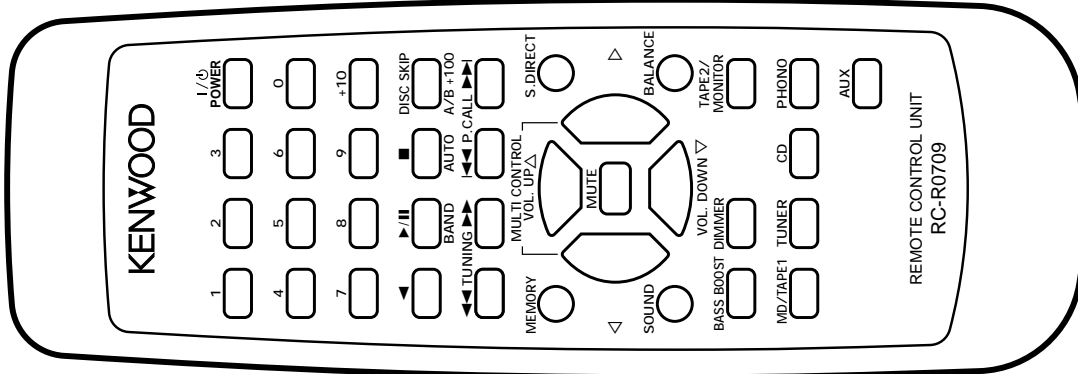
Remote control unit (1)  
(A70-1267-05) : RC-R0708....ETQE1

Battery cover (A09-1123-08)



Remote control unit (1)  
(A70-1266-05) : RC-R0709....KPMX

Battery cover (A09-1123-08)



### Cautions

#### Resetting the Microcomputer

If the microcomputer may malfunction (unit cannot be operated, or shows an erroneous display) if the power cord is unplugged while the power is ON, or due to some other external factor. If this happens, execute the following procedure to reset the microcomputer and return the unit to its normal operating condition.

For U.S.A. and Canada

Unplug the power cord from the wall outlet, then plug it back in while holding down the POWER key.

For other countries

With the power cord plugged in, turn the POWER key OFF. Then, while holding down the ON/STANDBY key, press POWER.

• Please note that resetting the microcomputer will clear the contents of the memory and returns the unit to the state it was in when it left the factory.

## CIRCUIT DESCRIPTION

### 1. BACK UP DATA AND INITIAL STATE

#### 1-1 BACK UP

##### (1) AMP

- POWER.....STANDBY
- INPUT SELECTOR .....TUNER
- BALANCE .....CENTER
- SPEAKER A RELAY .....ON
- SPEAKER B RELAY .....OFF
- VOLUME LEVEL.....-66dB
- BASS LEVEL .....0dB
- TREBLE LEVEL .....0dB
- INPUT LEVEL .....0dB
- BASS BOOST .....OFF
- SOURCE DIRECT .....OFF
- TAPE2/MONITOR .....OFF
- SL16/XS8 .....SL16

##### (2) TUNER

- BAND .....FM
- PRESET CHANNEL....."-"
- FREQUENCY.....LOWER LIMIT VALUE
  - K1 .....FM:87.50MHz/AM:530kHz
  - E1/E3 .....FM:87.50MHz/AM:531kHz
  - Q1 .....FM:65.00MHz/AM:531kHz
- AUTO/MANUAL .....AUTO
- DISPLAY MODE .....FREQUENCY
- E ON THRUST RECEIVING .....OFF  
MODE
- T1 VOLUME.....OFF(-66dB)

#### 1-2 INITIAL SETTING

The initial setting is performed when the AC power cord is plugged into the AC power wall out let while pressing the power (STANDBY) key.

### 2. DESTINATION LIST OF TUNER

DESTINATION	TUNER TYPE	BAND	RECEIVING FREQUENCY RANGE	CHANNEL SPACE	IF	PLL REFERENCE FREQUENCY	DSW3 (D507)	DSW2 (D505)	DSW1 (D504)	DSW0 (D510)
K,P	K1(1700)	FM AM	87.5MHz~108.0MHz 530kHz~1700kHz	100kHz 10kHz	+10.7MHz +450kHz	25kHz 10kHz	0	0	0	0
M,X	E1	FM AM	87.5MHz~108.0MHz 531kHz~1602kHz	50kHz 9kHz	+10.7MHz +450kHz	25kHz 9kHz	0	0	1	1
M	K2(1600)	FM AM	87.5MHz~108.0MHz 530kHz~1610kHz	100kHz 10kHz	+10.7MHz +450kHz	25kHz 10kHz	0	0	0	1
E,T	E3 RDS	FM AM	87.5MHz~108.0MHz 531kHz~1602kHz	50kHz 9kHz	+10.7MHz +450kHz	25kHz 9kHz	0	1	0	1
Q	Q1 RDS	FML FMH AM	65.0MHz~74.0MHz 87.5MHz~108MHz 531kHz~1602kHz	10kHz 50kHz 9kHz	+10.7MHz +10.7MHz 450kHz	5kHz 5kHz 9kHz	1	0	1	1

DSW0~DSW3(DIODE SW) \* O: NONE DIODE,1:ADD DIODE

### 3. TEST MODE

#### 3-1 SETTING

Turn the power ON while pressing the [BAND] key.

#### 3-2 CANCELLATION

Unplug the AC power cord from an AC power wall outlet.

#### 3-3 STARTING ACTIVE CONTENTS

- ① The power on state is entered when the power is tuned on while pressing the [BAND] key. All functions are initialized and activated in the all lighting mode.
- ② All lighting mode is canceled when any main unit's keys are pressed. The normal display obtained when the selector is set to TUNER then appears.
- ③ E2PROM check(E,T,Q,type only).  
Check the reading data and the writing data of the E2PROM after setting the test mode.  
Display shows blank if the reading data and writing data are the same. Display shows "LW" if the different data will be written to E2PROM.

#### 3-4 ACTIVE CONTENTS

- ① The mute control is not activated when the mode is switched.
- ② The test mode will be terminated by plugging it off the power source or by initializing it when all the settings will be initialized.
- ③ During the test mode, it can be operated in a special manner that is different from an ordinary operation by using the keys on the remote control or the main

body, specifically as shown in the following table (3-5 CONTENTS).

- ④ Channel space will be no changed in the test mode.

### 3-5 CONTENTS

#### 3-5-1 TUNER FUNCTION

WITH THE SELECTOR ON TUNER (E/T/Q TYPE ONLY)

OPERATION KEY	FUNCTION	FL DISPLAY	REMARKS
PTY	S LEVEL RF ATT	(EX.)	
		(1)(SLEVEL),(RF ATT)OFF	
		(2)(SLEVEL),(RF ATT)ON	
DISPLAY	P.CALL UP	P.CALL FREQUENCY	PI CODE ON/OFF
BASS BOOST TA/NEWS	P.CALL DOWN PI CODE		

#### 3-5-2 AMP FUNCTION

WITH THE SELECTOR ON SOMETHING OTHER THAN TUNER

- ① One touch max,min setting for Audio level.

KEY	MASTER VR.	SOUND KEY	
		BASS	TREBLE
BAND	-89dB	-10dB	-10dB
AUTO	0dB	+10dB	+10dB
MEMORY	-10dB	0dB	0dB

Bass and treble are selected when the sound key is pressed.

- ② Tuned light

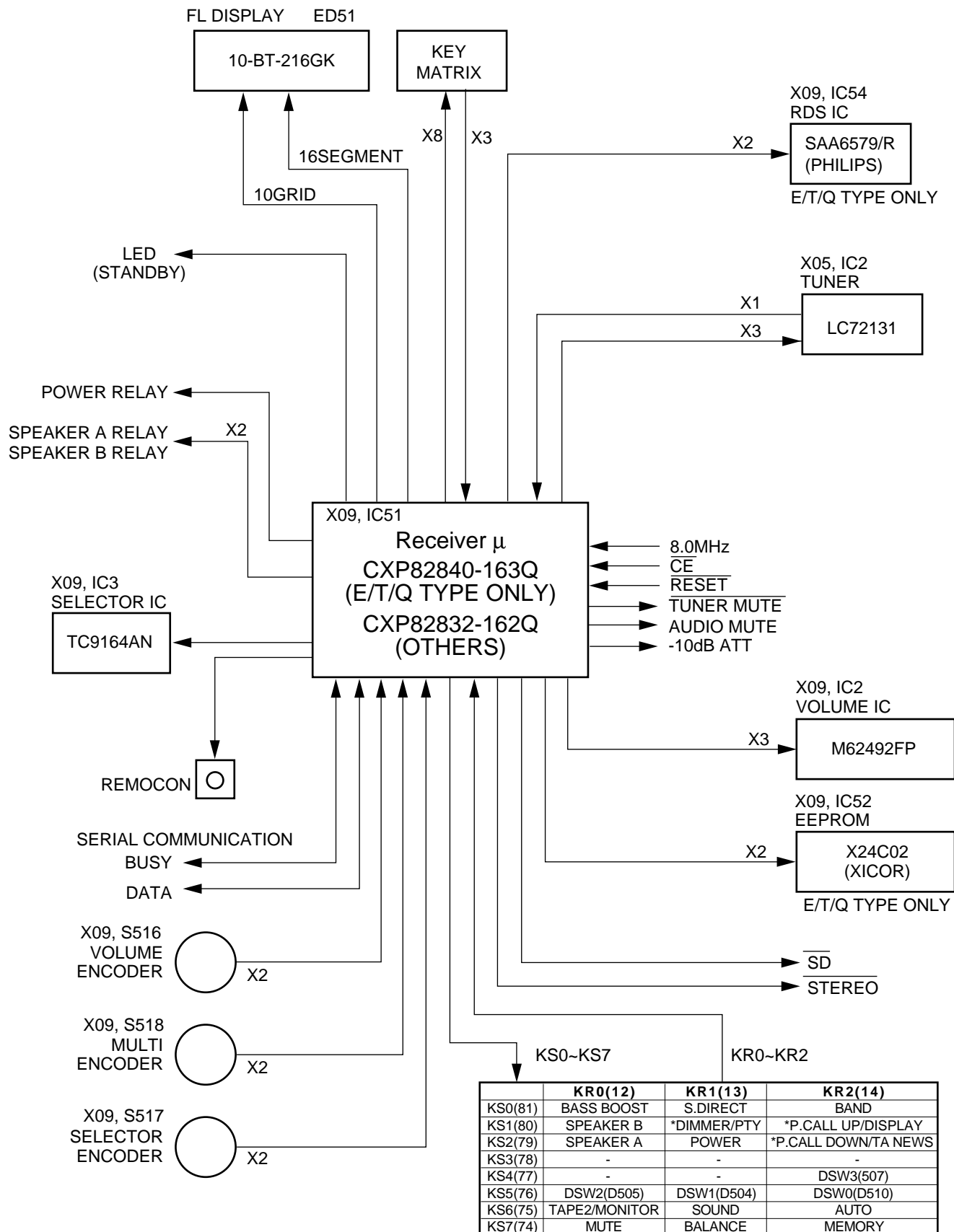
	XS8	SL16
XS8/SL16 SWITCH	TUNED LIGHTS OFF	TUNED LIGHTS ON

# AR-304/KRF-A4020

## CIRCUIT DESCRIPTION

### 4. Microprocessor CXP82840-163Q, CXP82832-162Q (X09, IC51)

#### 4-1 Microprocessor periphery block diagram diagram



PTY, DISPLAY and TA/NEWS keys are only RDS version(E/T/Q).

## CIRCUIT DESCRIPTION

## 4-2 Pin descriptions

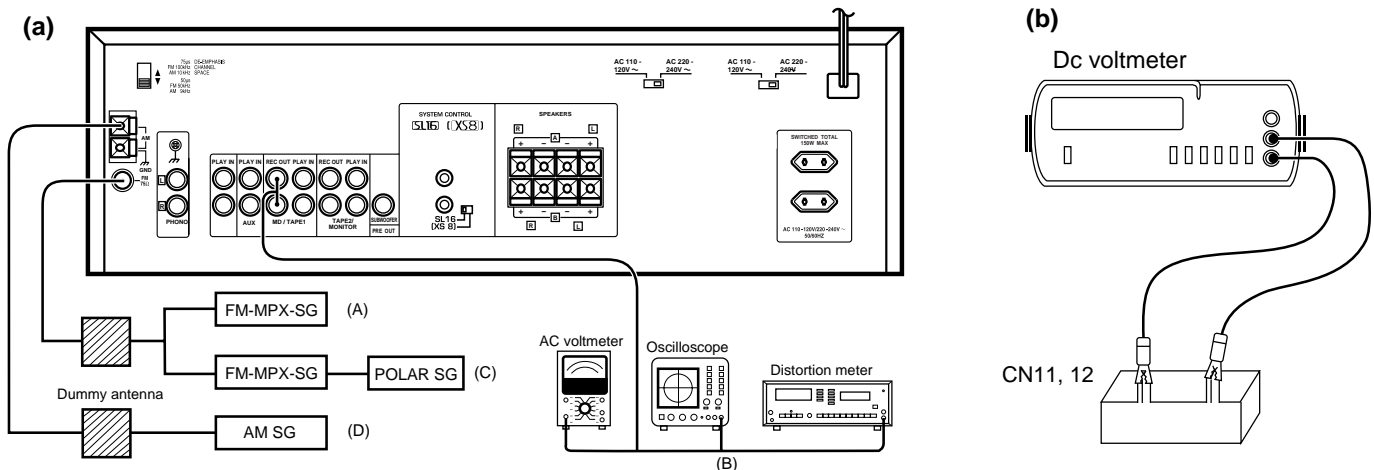
Pin No.	Pin name	I/O	Description	Active
1,2	G9,G10	O	FL grid control (9,10).	
3	NC	-	Unused.	
4	RDS,CK	I	RDS IC clock input control. (E/T/Q type only)	
5	RDS,DT	I	RDS IC data input control. (E/T/Q type only)	
6	NC	I	Unused.	
7	VOL.ENC.A	I	Volume encoder A (CW) signal.	
8	REMOCON	I	Remote control signal input.	
9	VOL.ENC.B	I	Volume encoder B (CCW) signal.	
10,11	NC	-	Unused.	
12~14	KR0~KR2	I	Key return (0~2).	
15	PROTECT	I	Protection detection signal input.	H: Protection ON
16	S.DATA	I/O	Serial communication data.	
17	S.BUSY	I/O	Serial communication busy.	
18	E2.DATA	I/O	E2 PROM data.	
19	E2.CLK	O	E2 PROM clock.	
20	SEL.ENC.A	I	Selector encoder A(CW) input.	
21	SEL.ENC.B	I	Selector encoder B(CCW) input.	
22	MULTI.ENC.A	I	Multi control encoder A(CW).	
23	MULTI.ENC.B	I	Multi control encoder B(CCW).	
24	8/16	I	Serial communication 8bit/16bit changeover.	
25~27	NC	-	Unused.	
28	VDD	-	Analog power supply (+5V).	
29	S.LEVEL	I	Signal level A/D input. (E/T/Q type only)	
30~32	NC	-	Unused.	
33	PLL.DO	I	PLL IC DO signal input. (E/T/Q type only)	
34	PLL.ST	I	TUNER stereo signal input.	L: STEREO
35	PLL.SD	I	TUNER SD signal input.	L: TUNED
36	RCV.CE	I	Receiver chip enable signal input.	L: ENABLE
37	AVSS	-	Analog ground.	
38	RESET	I	u-Com reset.	
39	EXTAL	I	Main clock(8MHZ).	
40	XTAL	-	Main clock(8MHZ).	
41	VSS	-	u-Com ground.	
42	TX	-	Unused.	
43	TEX	I	Ground.	
44	VDD	-	Analog power supply (+5V).	
45	VFDP	-	FL power supply(-33V).	
46	SEL.STB	O	TC9164AF strove.	H: LATCH
47	SEL/PLL.DT	O	Selector/PLL IC data signal output.	
48	SEL/PLL.CK	O	Selector/PLL IC clock signal output.	
49	PLL.CE	O	PLL IC CE signal output.	
50	T.MUTE	O	Tuner mute control.	L: MUTE ON
51	A.MUTE	O	Audio mute control.	L: MUTE ON
52	NC	-	Unused.	
53	10dB.ATT	O	Volume 10dB attenuator control.	L: ATT ON
54	VOL.DT	O	Volume IC(M62492FP) data control.	
55	VOL.CK	O	Volume IC(M62492FP) clock control.	
56	VOL.ST	O	Volume IC(M62492FP) strove control.	
57~59	NC	-	Unused.	
60	RELAY.A	O	SP. relay A control.	H: RELAY ON
61	RELAY.B	O	SP. relay B control.	H: RELAY ON
62,63	NC	-	Unused.	
64	POWER.RLY	O	Power relay control.	H: RELAY ON
65	STANDBY.LED	O	STANDBY LED control.	H: LED ON
66~71	NC	-	Unused.	
72	LIMITER	O	Output power control at SP. (A+B). K/M/X only.	
73	S.W MUTE	-	Unused.	
74,75	KS6/KS7	O	Key scan 6,7.	
76~81	P1/KS5~P6/KS0	O	FL segment 1~6/key scan 5~0.	
82~88	P7~P13	O	FL segment 7~13.	
89	VDD	O	u-Com +5V power supply.	
90~92	P14~P16	O	FL segment 14~16.	
93~100	G1~G8	O	FL GRID 1~8.	

# AR-304/KRF-A4020

## ADJUSTMENT

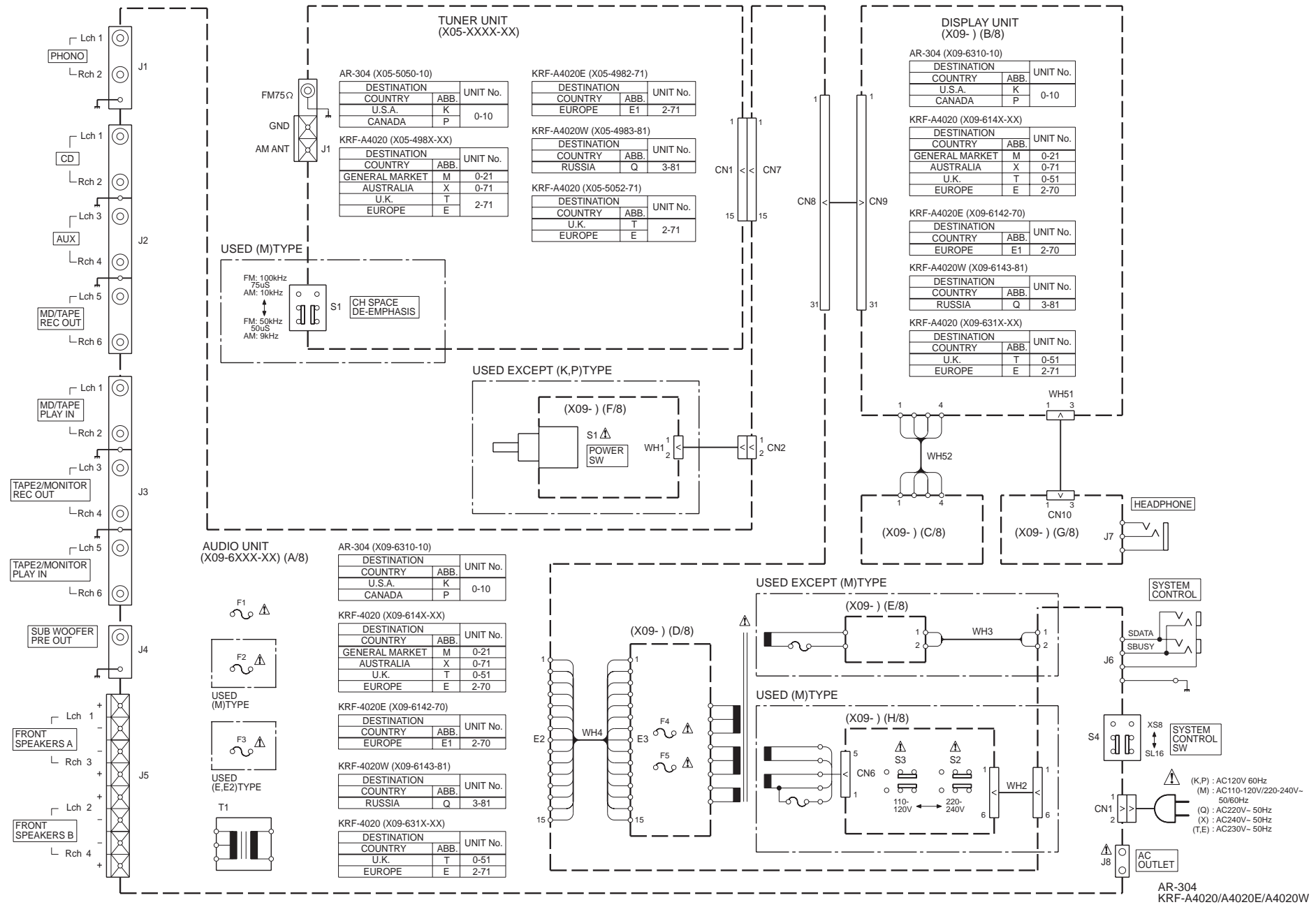
No.	ITEM	INPUT SETTINGS	OUTPUT SETTINGS	RECEIVER SETTINGS	ALIGNMENT POINTS	ALIGN FOR	FIG.
<b>FM SECTION : EXCEPT E,T,Q type      SELECTOR : FM</b>							
1	DISTORTION (STEREO)	(C) 98.0MHz 1kHz, ±68.25kHz dev. Selector : L or R Pilot : ±6.75kHz dev. 70dBf (ANT. input)	(B)	98.0MHz	IFT (TUNER UNIT: A1)	Minimum distortion (L or R)	(a)
2	TUNING LEVEL	(A) 98.0MHz MONO 1kHz, ±75kHz dev. 25dBf (ANT. input)	(B)	MONO 98.0MHz	VR1 (TUNER UNIT)	Adjust VR1 and stop at the point where ED51 (TUNED) goes on.	(a)
<b>FM SECTION : E,T,Q type only      SELECTOR : FM      ※Adjust NO.1 and NO.2 repeat.</b>							
1	DISCRIMINATOR	(A) 98.0MHz 1kHz, ±40kHz dev. 70dBf (ANT. input)	Connect a DC voltmeter between CN2 ① and CN2 ② (TUNER UNIT)	MONO 98.0MHz	L4 (TUNER UNIT)	0V	(a)
2	DISTORTION (MONO)	(A) 98.0MHz 1kHz, ±40kHz dev. MONO 70dBf (ANT. input)	(B)	MONO 98.0MHz	L5 (TUNER UNIT)	Minimum distortion	(a)
3	DISTORTION (STEREO)	(C) 98.0MHz 1kHz, ±40kHz dev. Selector : L or R Pilot : ±6kHz dev. 70dBf (ANT. input)	(B)	AUTO 98.0MHz	IFT (TUNER UNIT : A1)	Minimum distortion (L or R)	(a)
4	TUNING LEVEL	(A) 98.0MHz MONO 1kHz, ±40kHz dev. 25dBf (ANT. input)	(B)	MONO 98.0MHz	VR1 (TUNER UNIT)	Adjust VR1 and stop at the point where ED51 (TUNED) goes on.	(a)
<b>AUDIO SECTION</b>							
1	IDLE CURRENT	—	Connect a DC Volumeter across CN11 (L) CN12 (R)	Volume: 0	VR1 (L) VR2 (R)	11 mV	(b)

### SYSTEM CONNECTIONS



# AR-304/KRF-A4020

## WIRING DIAGRAM

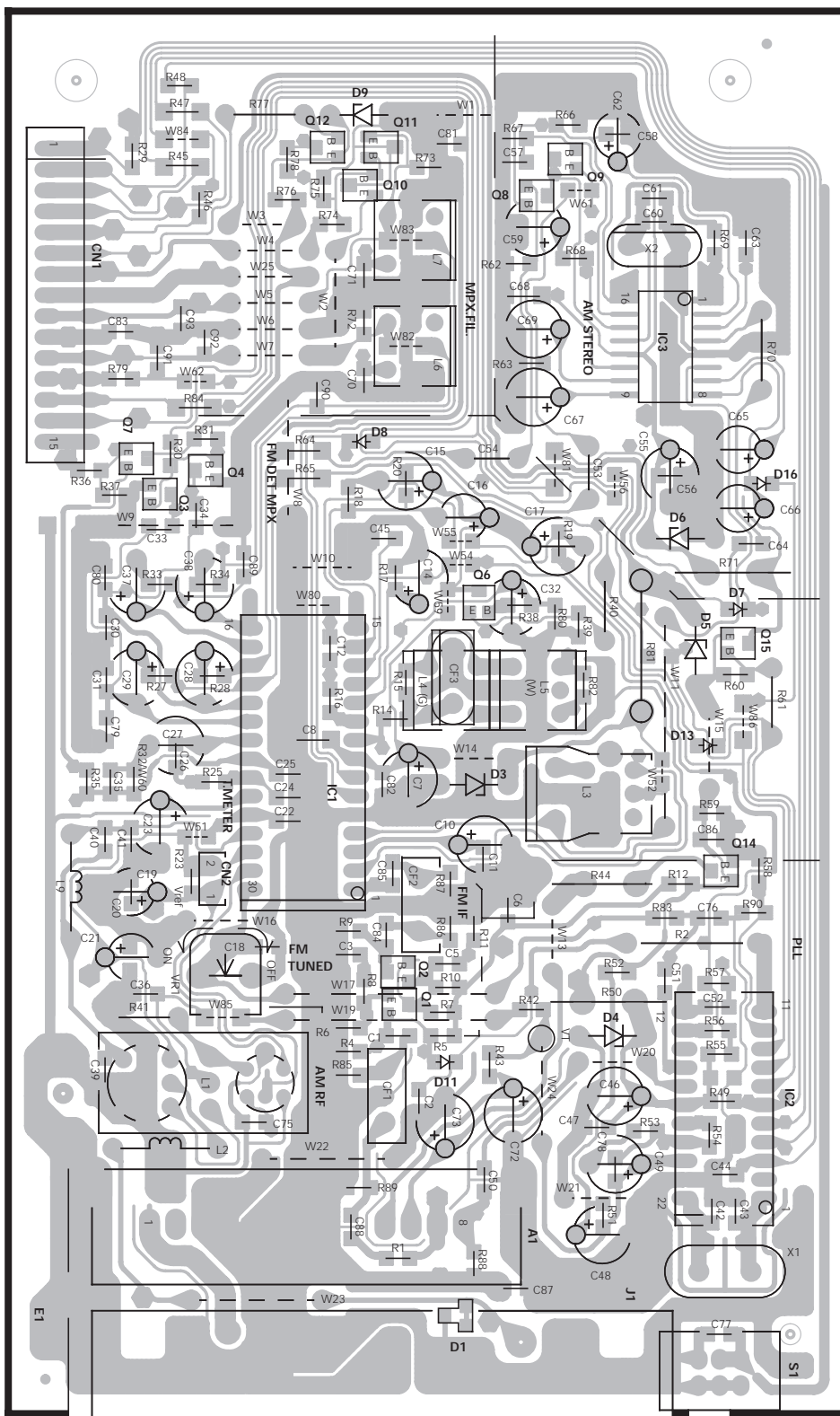


AR-304  
KRF-A4020/A4020E/A4020W

# PC BOARD(Component side view)

## TUNER UNIT

X05-498X-XX/X05-505X-XX

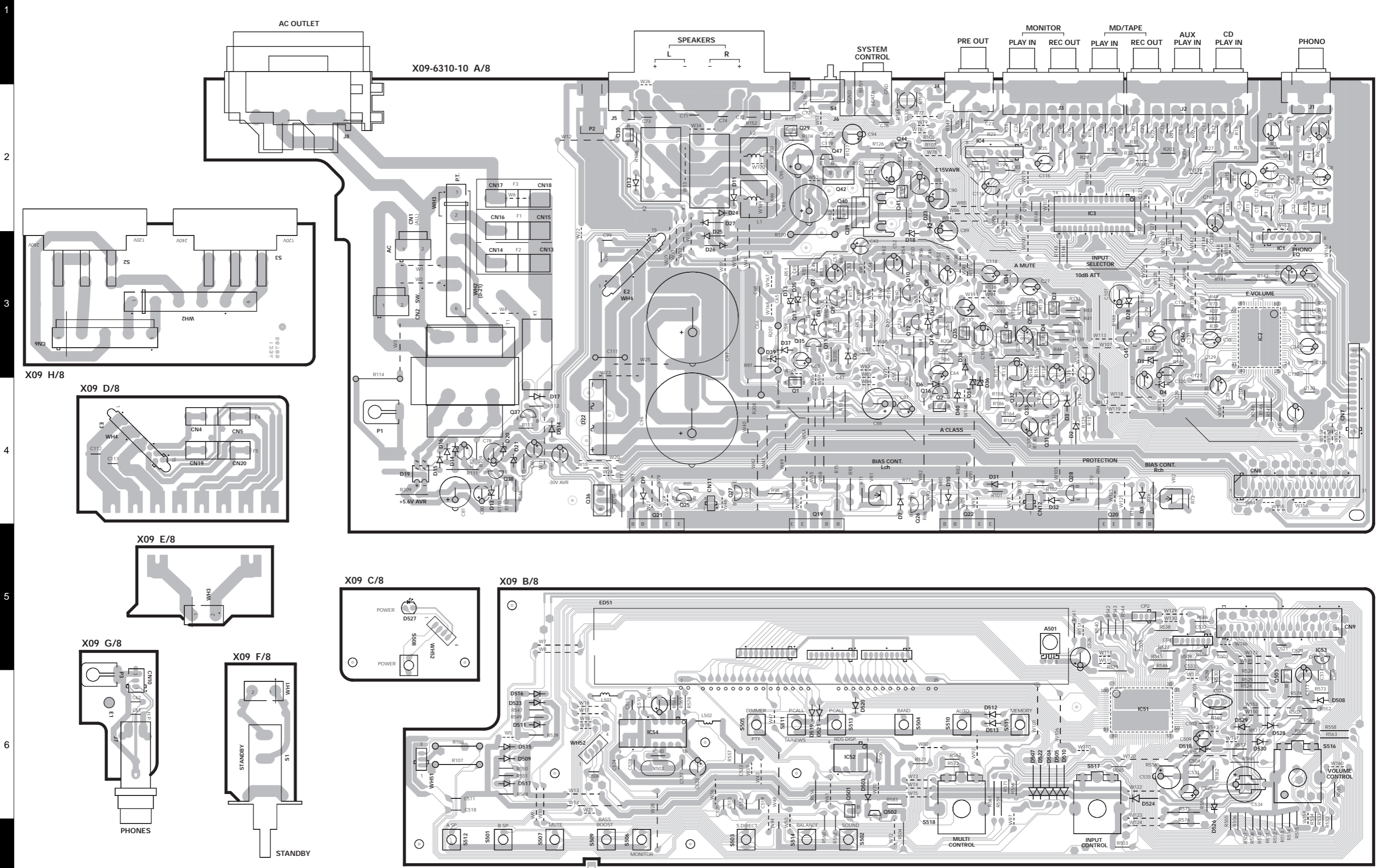


ANTENNA

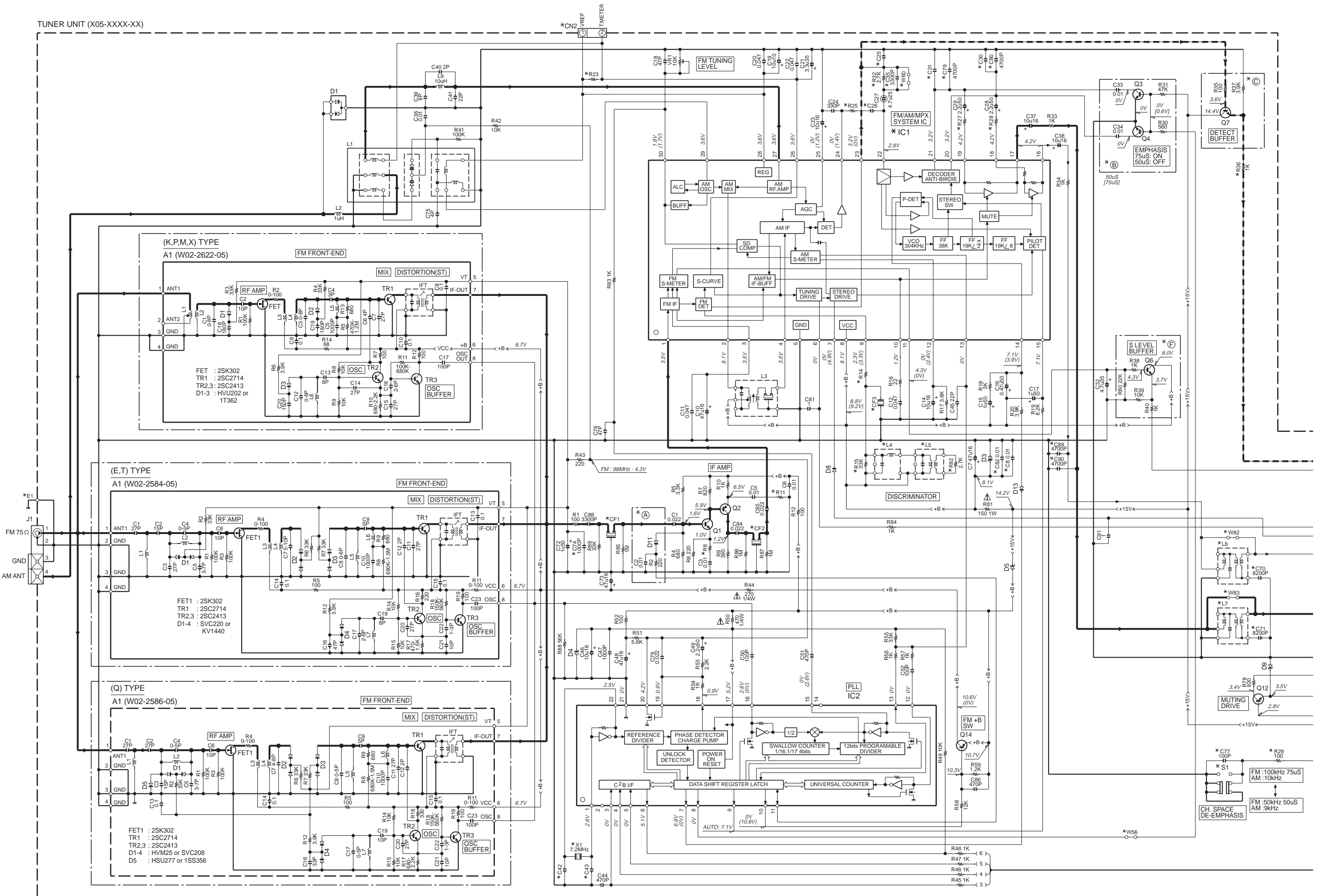
CH. SPACE  
DE-EMPHASIS



# PC BOARD(Component side view) AUDIO UNIT



Refer to the schematic diagram for the value of resistors and capacitors.



- IC1 : \*
- IC2 : LC72131
- Q1,3,4,6,7 : 2SC4081(R,S) or 2SC4116(Y,GR) or 2SD1819A(Q,R)
- Q2,12,14 : 2SA1576A(R,S) or 2SA1586(Y,GR)
- Q10,11 : 2SD1757K
- D1 : DA204U or MA143A or 1SS302
- D3 : RD8.2ES(B2) or MTZJ8.2(B) or 2SD1819A(Q,R)
- D4 : RD5.1ES(B2) or MTZJ5.1(B) or 2SD1757K
- D5 : RD2.7ES(B2) or MTZJ2.7(B) or 2SD1757K
- D8,11,13 : MA111
- D9 : RD3.3ES(B2) or MTZJ3.3(B) or 2SD1757K
- A1 : \*

AR-304 (X05-5050-10)

DESTINATION	UNIT No.	(A)	(C)	(F)	(B)	R8	R11	R14	R15,36,82	R23	R25	R27,28	R29	R72,73	C8,35,74,89,90	C25	C26	C30,31	C42	C43	C70,71,77,79,80,82
COUNTRY	ABB.	0-10		NO		33	270	NO	3.3K	18K	7.5K	YES	15K	YES	470P	0.022	0.033	27P	22P	NO	
U.S.A.	K																				
CANADA	P																				

DESTINATION	UNIT No.	A1	CF1,2	CF3	IC1	L4-7	CN2	W56	W60	W82,83	S1	E1	X1
COUNTRY	ABB.												
U.S.A.	K	W02-2622	L72-0596 (MS2)	YES	LA1838	NO	NO	NO	NO	NO	NO	F10-1108	L77-2187
CANADA	P												

KRF-A4020 (X05-498X-XX)

DESTINATION	UNIT No.	(A)	(C)	(F)	(B)	R8	R11	R14	R15,36,82	R23	R25	R27,28	R29	R72,73	C8,35,89,90	C25	C26	C30,31	C42	C43	C74	C77	C70,71,79,80,82		
COUNTRY	ABB.	0-21		NO		YES	33	33	270	NO	3.3K	18K	7.5K	YES	YES	8.2K	YES	470P	0.022	0.022	12P	10P	NO	YES	NO
GENERAL MARKET	M																								
AUSTRALIA	X	0-71																							
U.K.	T	2-71		YES		NO	10	22	100	YES	15K	27K	4.3K	NO	NO	3.9K	NO	180P	0.018				NO	YES	
EUROPE	E																								

DESTINATION	UNIT No.	A1	CF1,2	CF3	IC1	L4-7	CN2	W56	W60	W82,83	S1	E1	X1
COUNTRY	ABB.												
GENERAL MARKET	M	W02-2622	L72-0531 (MA5)	YES	LA1838	NO	NO	YES	NO	YES	YES	F10-1129	
AUSTRALIA	X	W02-2622	L72-0531 (MA5)	YES	LA1838	NO	NO	YES	NO	YES	YES	F10-1129	
U.K.	T	W02-2584	L72-0536 (MS3)	NO	LA1837	YES	YES	NO	YES	NO	NO	F10-1128	L77-2232
EUROPE	E	W02-2584	L72-0536 (MS3)	NO	LA1837	YES	YES	NO	YES	NO	NO	F10-1128	L77-2232

KRF-A4020E (X05-4982-71)

DESTINATION	UNIT No.	(A)	(C)	(F)	(B)	R8	R11	R14	R15,36,82	R23	R25	R27,28	R29	R72,73	C8,35,77,89,90	C25	C26	C30,31	C42	C43	C70,71,79,80,82	C74	
COUNTRY	ABB.	2-71		YES		NO	10	22	100	YES	15K	27K	4.3K	NO	3.9K	NO	180P	0.018	0.022	12P	10P	YES	NO
EUROPE	E1																						

DESTINATION	UNIT No.	A1	CF1,2	CF3	IC1	L4-7	CN2	W56,82,83	W60	S1	E1	X1	
COUNTRY	ABB.												
EUROPE	E1	W02-2584	L72-0536 (MS3)	NO	LA1837	YES	YES	NO	YES	NO	F10-1128	L77-2232	

KRF-A4020W (X05-4983-81)

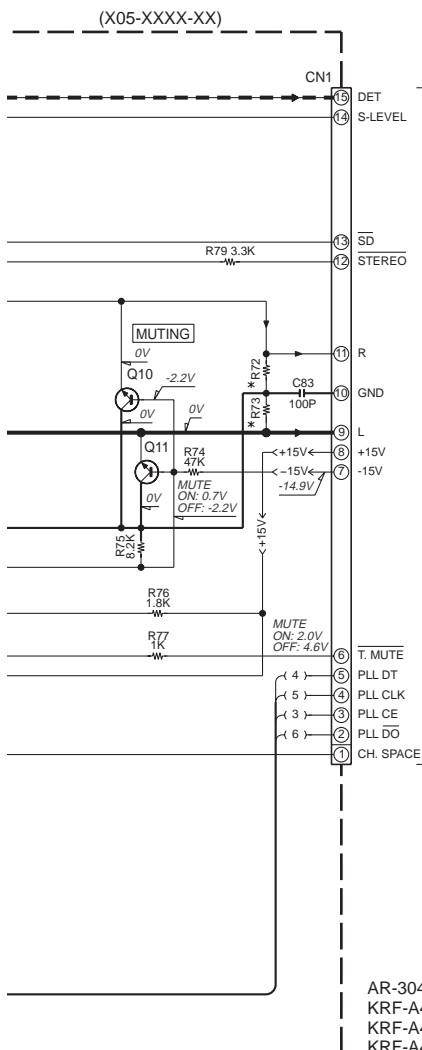
DESTINATION	UNIT No.	(A)	(C)	(F)	(B)	R8	R11	R14	R15,36,82	R23	R25	R27,28	R29	R72,73	C8,35,77,89,90	C25	C26	C30,31	C42	C43	C70,71,79,80,82	C74	
COUNTRY	ABB.	3-81		YES		NO	10	22	100	YES	15K	27K	4.3K	NO	3.9K	NO	180P	0.018	0.022	12P	10P	YES	NO
RUSSIA	Q																						

DESTINATION	UNIT No.	A1	CF1,2	CF3	IC1	L4-7	CN2	W56,82,83	W60	S1	E1	X1	
COUNTRY	ABB.												
RUSSIA	Q	W02-2586	L72-0536 (MS3)	NO	LA1837	YES	YES	NO	YES	NO	F10-1128	L77-2232	

KRF-A4020 (X05-5052-71)

DESTINATION	UNIT No.	(A)	(C)	(F)	(B)	R8	R11	R14	R15,36,82	R23	R25	R27,28	R29	R72,73	C8,35,77,89,90	C25	C26	C30,31	C42	C43	C70,71,79,80,82	C74	
COUNTRY	ABB.	2-71		YES		NO	10	22	100	YES	15K	27K	4.3K	NO	3.9K	NO	180P	0.018	0.022	27P	22P	YES	NO
U.K.	T																						
EUROPE	E																						

DESTINATION	UNIT No.	A1	CF1,2	CF3	IC1	L4-7	CN2	W56,82,83	W60	S1	E1	X1	
COUNTRY	ABB.												
U.K.	T	W02-2584	L72-0536 (MS3)	NO	LA1837	YES	YES	NO	YES	NO	F10-1109	L77-2187	
EUROPE	E	W02-2584	L72-0536 (MS3)	NO	LA1837	YES	YES	NO	YES	NO	F10-1109	L77-2187	



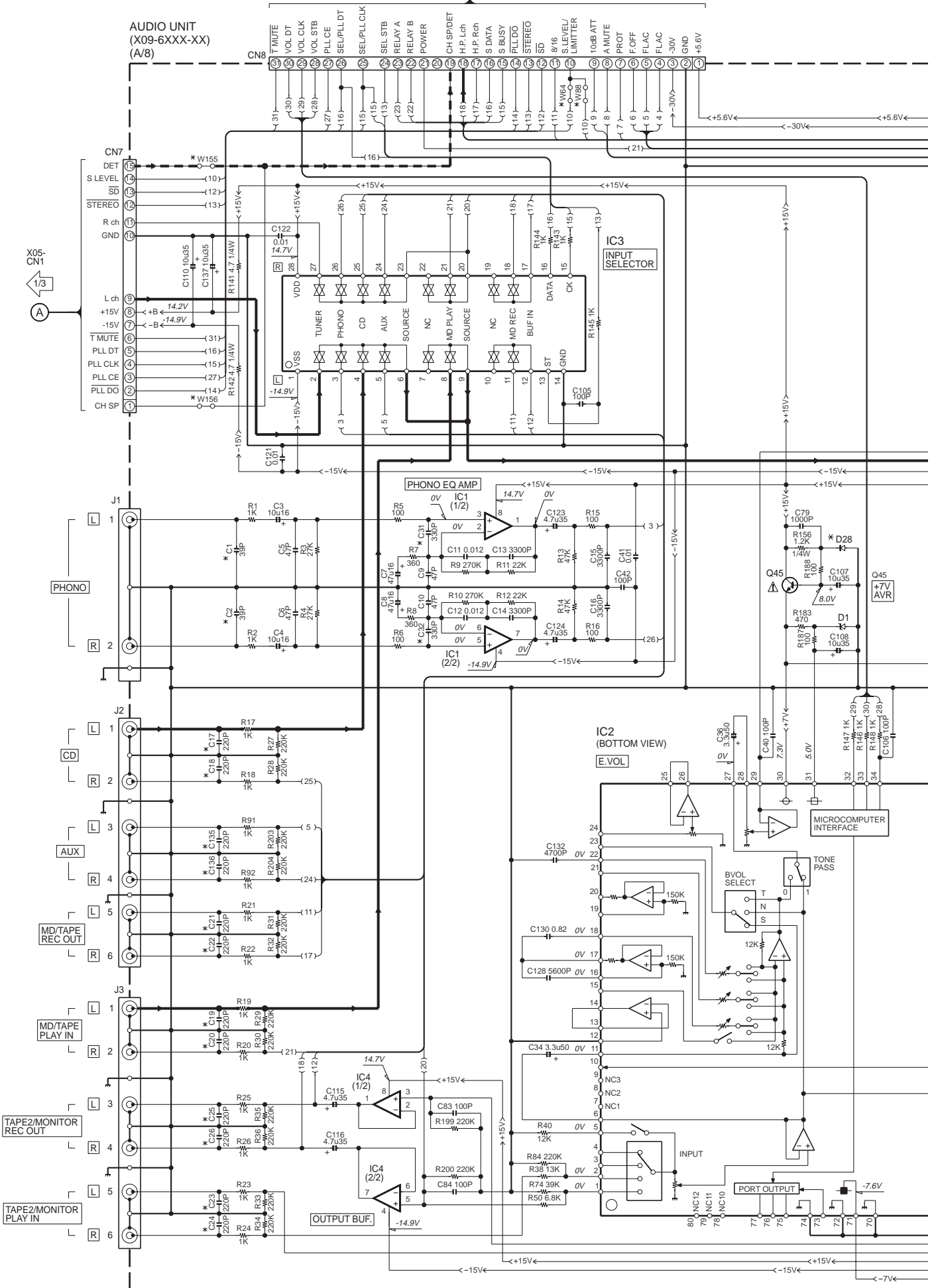
**CAUTION:** For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list).  $\Delta$  indicates safety critical components. For continued protection against risk of fire, replace only with same type and rating fuse(s). To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

The DC voltage is an actual reading measured with a high impedance type voltmeter as the AM/FM signal generator is specified to the conditions as shown in the list below. The measurement value may vary depending on the measuring instruments used or on the product. The value shown in ( ) is actual reading measured in the AM mode.

MODE	CARRIER	MODULATION		ANT INPUT
		FREQUENCY	DEVIATION	
FM	98MHz	1kHz	STEREO 67.5kHz 7.5kHz(Pilot)	60dB
AM	1000(999)kHz	400Hz	MONO 30% MOD	60dB

- AR-304(K,P) (1/3)
- KRF-A4020(M,X,T,E) (1/3)
- KRF-A4020E(E) (1/3)
- KRF-A4020W(Q) (1/3)

**AUDIO UNIT**  
(X09-6XXX-XX)  
(A/8)



X05-CN1  
1/3  
A

PHONO  
L 1  
R 2

CD  
L 1  
R 2

AUX  
L 3  
R 4

MD/TAPE REC OUT  
L 5  
R 6

MD/TAPE PLAY IN  
L 1  
R 2

TAPE2/MONITOR REC OUT  
L 3  
R 4

TAPE2/MONITOR PLAY IN  
L 5  
R 6

**PHONO EQ AMP**  
IC1 (1/2)  
IC1 (2/2)

**IC2 (BOTTOM VIEW)**  
E.VOL

**IC3**  
INPUT SELECTOR

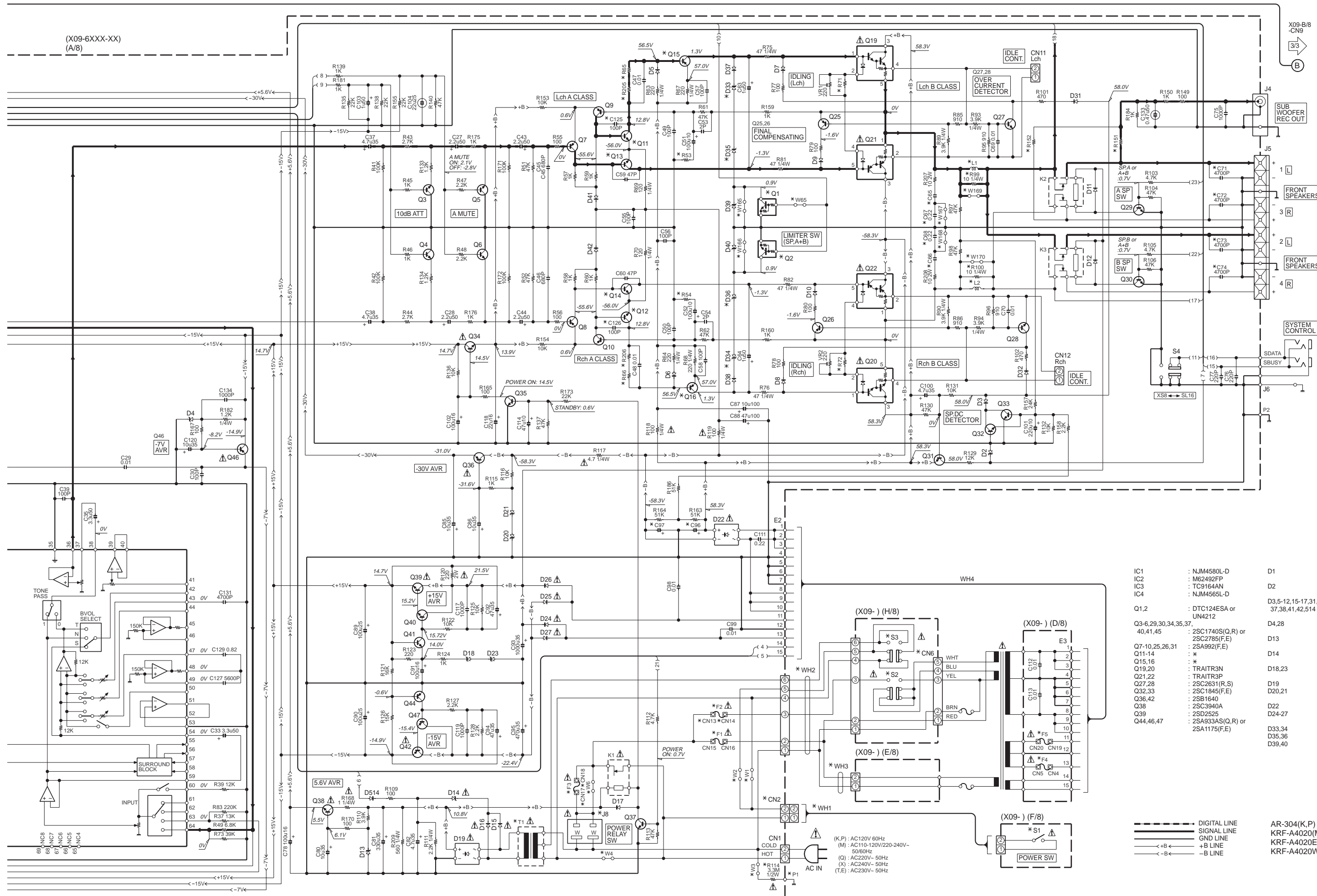
**OUTPUT BUF.**  
IC4 (1/2)  
IC4 (2/2)

**MICROCOMPUTER INTERFACE**  
Q45

**PORT OUTPUT**

1  
2  
3  
4  
5  
6  
7





AR-304 (X09-6310-10)

DESTINATION	COUNTRY	ABB.	UNIT No.	R53, 54	R65, 66, 67	R71, 72	R99, 100	R114, 115	R151, 152	C1, 2, 17-26, 31, 32, 37, 38, 41, 42, 51, 54	C65, 66	C96, 97	C125, 126	W1, 64, 155, 156, 166	W3, 4, 6, 65, 88, 167-170	CN2, 6, 13, 14, 17, 18	WH1, 2, 3	L1, 2	S1, 2, 3	P1	
U.S.A.	K	MTZJ13(B) or RD13E(S(B2))	0-10	200	205, 206	220	NO	YES	20K	NO	NO	YES	NO	NO	YES	NO	NO	NO	NO	NO	NO
CANADA	P											0.1	4700u75	YES	NO	YES	NO	NO	NO	NO	NO

DESTINATION	COUNTRY	ABB.	UNIT No.	D33, 34	D35, 36	D39, 40	Q1, 2	Q11-14	Q15, 16	F1	F2, 3	F4, 5	T1	J8
U.S.A.	K	MTZJ13(B) or RD13E(S(B2))	0-21	200	8.2K	220	NO	NO	20K	NO	NO	NO	NO	NO
U.K.	T	MTZJ15(B) or HZS15N(B2)	0-51	270	6.8K	150	YES	NO	15K	YES	NO	NO	NO	NO
EUROPE	E		2-70	270	6.8K	150	YES	NO	15K	YES	NO	NO	NO	NO

KRF-A4020 (X09-614X-XX)

DESTINATION	COUNTRY	ABB.	UNIT No.	R53, 54	R65, 66, 67	R71, 72	R99, 100	R114, 115	R151, 152	C1, 2, 17-26, 31, 32, 37, 38, 41, 42, 51, 54	C65, 66	C96, 97	C125, 126	W1, 64, 155, 156, 166	W2, 156, 167, 168	W3, 4, 6, 65, 88, 167-170	CN2, 6, 13, 14, 17, 18	WH1, 2, 3	L1, 2	S1, 2, 3	P1
U.S.A.	K	MTZJ13(B) or HZS13N(B2)	0-21	200	205, 206	220	NO	NO	20K	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
U.K.	T	MTZJ15(B) or HZS15N(B2)	0-51	270	6.8K	150	YES	NO	15K	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
EUROPE	E		2-70	270	6.8K	150	YES	NO	15K	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

DESTINATION	COUNTRY	ABB.	UNIT No.	D33, 34	D35, 36	D39, 40	Q1, 2	Q11-14	Q15, 16	F1	F2	F3	F4, 5	T1	J8
U.S.A.	K	MTZJ13(B) or HZS13N(B2)	0-21	200	8.2K	220	NO	NO	20K	NO	NO	NO	NO	NO	NO
U.K.	T	MTZJ15(B) or HZS15N(B2)	0-51	270	6.8K	150	YES	NO	15K	YES	NO	NO	NO	NO	NO
EUROPE	E		2-70	270	6.8K	150	YES	NO	15K	YES	NO	NO	NO	NO	NO

KRF-A4020E (X09-6142-70)

DESTINATION	COUNTRY	ABB.	UNIT No.	R53, 54	R65, 66, 67	R71, 72	R99, 100	R114, 115	R151, 152	C1, 2, 17-26, 31, 32, 37, 38, 41, 42, 51, 54	C65, 66	C96, 97	C125, 126	W1, 64, 155, 156, 166	W2, 3, 4, 6, 65, 88, 167, 170	CN2, 6, 13, 14, 17, 18	WH1, 2, 3	L1, 2	S1, 2, 3	P1	
U.S.A.	K	MTZJ13(B) or HZS13N(B2)	0-21	200	205, 206	220	NO	NO	20K	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
U.K.	T	MTZJ15(B) or HZS15N(B2)	0-51	270	6.8K	150	YES	NO	15K	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
EUROPE	E		2-70	270	6.8K	150	YES	NO	15K	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

DESTINATION	COUNTRY	ABB.	UNIT No.	D33, 34	D35, 36	D39, 40	Q1, 2	Q11-14	Q15, 16	F1	F2	F3	F4, 5	T1	J8
U.S.A.	K	MTZJ13(B) or HZS13N(B2)	0-21	200	8.2K	220	NO	NO	20K	NO	NO	NO	NO	NO	NO
U.K.	T	MTZJ15(B) or HZS15N(B2)	0-51	270	6.8K	150	YES	NO	15K	YES	NO	NO	NO	NO	NO
EUROPE	E		2-70	270	6.8K	150	YES	NO	15K	YES	NO	NO	NO	NO	NO

KRF-A4020W (X09-6143-81)

DESTINATION	COUNTRY	ABB.	UNIT No.	R53, 54	R65, 66, 67	R71, 72	R99, 100	R114, 115	R151, 152	C1, 2, 17-26, 31, 32, 37, 38, 41, 42, 51, 54	C65, 66	C96, 97	C125, 126	W1, 64, 155, 156, 166	W2, 3, 4, 6, 65, 88, 167, 170	CN2, 6, 13, 14, 17, 18	WH1, 2, 3	L1, 2	S1, 2, 3	P1	
U.S.A.	K	MTZJ13(B) or HZS13N(B2)	0-21	200	205, 206	220	NO	NO	20K	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
U.K.	T	MTZJ15(B) or HZS15N(B2)	0-51	270	6.8K	150	YES	NO	15K	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
EUROPE	E		2-70	270	6.8K	150	YES	NO	15K	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

DESTINATION	COUNTRY	ABB.	UNIT No.	D33, 34	D35, 36	D39, 40	Q1, 2	Q11-14	Q15, 16	F1	F2, 3	F4, 5	T1	J8
U.S.A.	K	MTZJ13(B) or HZS13N(B2)	0-21	200	8.2K	220	NO	NO	20K	NO	NO	NO	NO	NO
U.K.	T	MTZJ15(B) or HZS15N(B2)	0-51	270	6.8K	150	YES	NO	15K	YES	NO	NO	NO	NO
EUROPE	E		2-71	270	6.8K	150	YES	NO	15K	YES	NO	NO	NO	NO

KRF-A4020 (X09-631X-XX)

DESTINATION	COUNTRY	ABB.	UNIT No.	R53, 54	R65, 66, 67	R71, 72	R99, 100	R114, 115	R151, 152	C1, 2, 17-26, 31, 32, 37, 38, 41, 42, 51, 54	C65, 66	C96, 97	C125, 126	W1, 64, 155, 156, 166	W2, 3, 4, 6, 65, 88, 167, 170	CN2, 6, 13, 14, 17, 18	WH1, 2, 3	L1, 2	S1, 2, 3	P1	
U.S.A.	K	MTZJ13(B) or RD13E(S(B2))	0-10	200	205, 206	220	NO	NO	20K	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
U.K.	T	MTZJ15(B) or RD15E(S(B2))	0-51	270	6.8K	150	YES	NO	15K	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
EUROPE	E		2-71	270	6.8K	150	YES	NO	15K	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

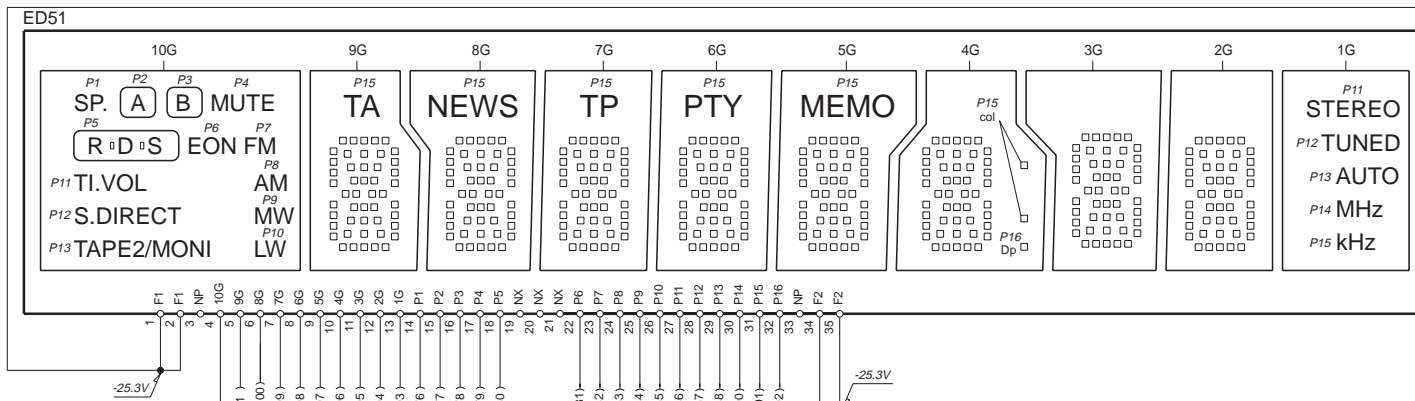
DESTINATION	COUNTRY	ABB.	UNIT No.	D33, 34	D35, 36	D39, 40	Q1, 2	Q11-14	Q15, 16	F1	F2	F3	F4, 5	T1	J8
U.S.A.	K	MTZJ13(B) or RD13E(S(B2))	0-10	200	8.2K	220	NO	NO	20K	NO	NO	NO	NO	NO	NO
U.K.	T	MTZJ15(B) or RD15E(S(B2))	0-51	270	6.8K	150	YES	NO	15K	YES	NO	NO	NO	NO	NO
EUROPE	E		2-71	270	6.8K	150	YES	NO	15K	YES	NO	NO	NO	NO	NO

- IC1 : NJM4580L-D
- IC2 : M62492FP
- IC3 : TC9164AN
- IC4 : NJM4565L-D
- Q1, 2 : DTC124ESA or UN4212
- Q3-6, 29, 30, 34, 35, 37, 40, 41, 45 : 2SC1740S(Q,R) or 2SC2785(F,E)
- Q7-10, 25, 26, 31 : 2SA992(F,E)
- Q11-14 : \*
- Q15, 16 : \*
- Q19, 20 : TRAITR3N
- Q21, 22 : TRAITR3P
- Q27, 28 : 2SC2631(R,S)
- Q32, 33 : 2SC1845(F,E)
- Q36, 42 : 2SB1640
- Q38 : 2SC3940A
- Q39 : 2SD2525
- Q44, 46, 47 : 2SA933AS(Q,R) or 2SA1175(F,E)
- D1 : MTZJ5.1(B) or RD5.1ES(B2)
- D2 : MTZJ4.7(B) or RD4.7ES(B2)
- D3, 5-12, 15-17, 31, 32, 37, 38, 41, 42, 51, 54 : HSS104A or 1SS133
- D4, 28 : MTZJ8.2(B) or RD8.2ES(B2)
- D13 : MTZJ6.2(B) or RD6.2ES(B2)
- D14 : MTZJ2.7(B) or RD2.7ES(B2)
- D18, 23 : MTZJ5.6(B) or RD5.6ES(B2)
- D19 : S1ZB20(4101)
- D20, 21 : MTZJ16(B) or RD16S(S(B2))
- D22 : D4SBL20UF03
- D24-27 : S5688B or 1SR139-400
- D33, 34 : \*
- D35, 36 : \*
- D39, 40 : MTZJ15(B) or RD15ES(B2)

**CAUTION:** For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list).  $\Delta$  indicates safety critical components. For continued protection against risk of fire, replace only with same type and rating fuse(s). To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

The DC voltage is an actual reading measured with a high impedance type voltmeter with no signal input. The measurement value may vary depending on the measuring instruments used or on the product.

AR-304(K,P) (2/3)  
 KRF-A4020(M,X,T,E) (2/3)  
 KRF-A4020E(E) (2/3)  
 KRF-A4020W(Q) (2/3)



KRF-A4020E (X09-6142-70)

DESTINATION	COUNTRY	ABB.	UNIT No.	R503	R504	R509	C503.521, 533.534	C529.530, 535-537	W28, 145	W72.114, 115,160	S505	S511	S513	D503, 504,507	D505, 510	Q502	IC51
EUROPE	E	1	2-70	YES	NO	YES	YES	NO	YES	NO	PTY	(RDS) DISPLAY	TA/ NEWS	NO	YES	NO	CXP82840-1630

KRF-A4020W (X09-6143-81)

DESTINATION	COUNTRY	ABB.	UNIT No.	R503	R504	R509	C503.521, 533.534, 536,537	C529, 535	W28, 145	W72.114, 115,160	S505	S511	S513	D503, 505, 507,510	D504, 510	Q502	IC51
RUSSIA	Q	3-81	YES	NO	YES	YES	YES	NO	YES	NO	PTY	(RDS) DISPLAY	TA/ NEWS	NO	YES	NO	CXP82840-163Q

KRF-A4020 (X09-614X-XX)

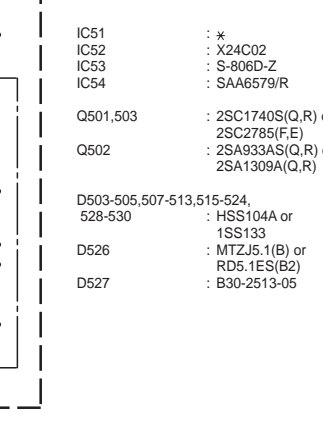
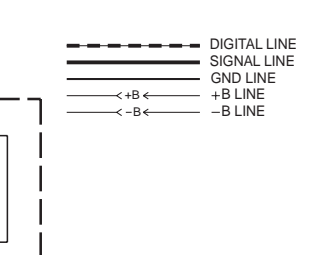
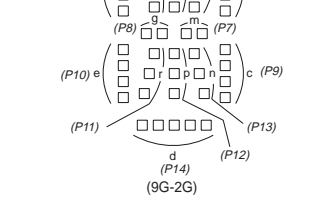
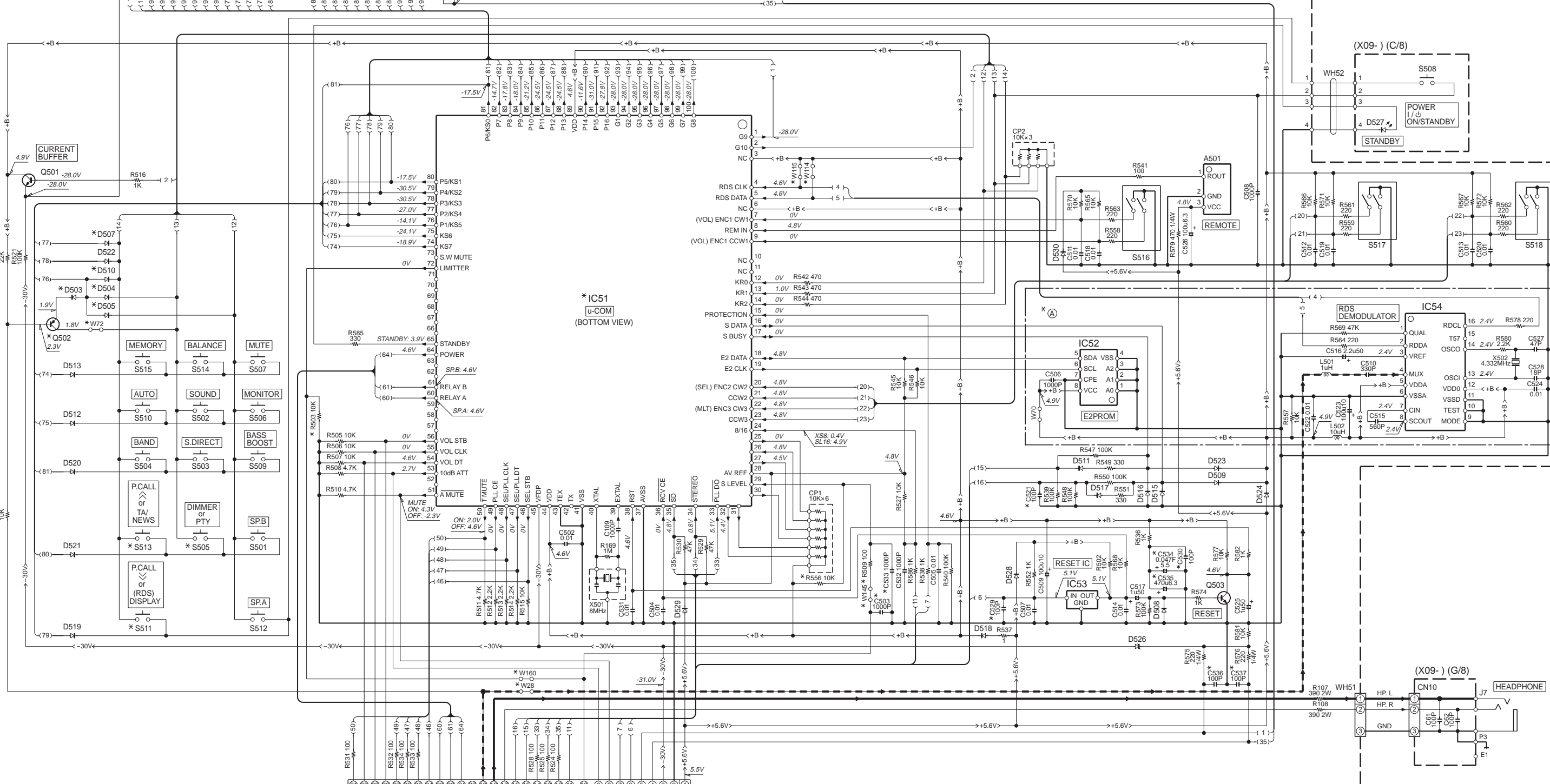
DESTINATION	COUNTRY	ABB.	UNIT No.	R503	R504	R509	C503.521, 533.534	C529	C530	C534	W28, 145	W72	W114, 115,160	S505	S511	S513	D503, 504, 505, 510	D507	D510	Q502	IC51	
GENERAL MARKET	M	0-21	NO	YES	YES	NO	NO	YES	NO	NO	NO	YES	NO	YES	DIMMER	PCALL	YES	NO	NO	NO	YES	CXP82832-162Q
AUSTRALIA	X	0-71	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	CXP82840-1630
U.K.	T	0-51	YES	NO	NO	YES	YES	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	CXP82840-1630
EUROPE	E	2-70	YES	NO	YES	YES	YES	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	CXP82840-1630

AR-304 (X09-6310-10)

DESTINATION	COUNTRY	ABB.	UNIT No.	R503	R504	R509	C503.521, 530,533,534	C529, 535-537	W28, 145	W72.114, 115,160	S505	S511	S513	D503-505, 507,510	D502	IC51
U.S.A.	K	0-10	NO	YES	NO	NO	NO	YES	NO	YES	DIMMER	PCALL	PCALL	NO	NO	CXP82832-162Q
CANADA	P	0-10	NO	YES	NO	NO	NO	YES	NO	YES	DIMMER	PCALL	PCALL	NO	NO	CXP82832-162Q

KRF-A4020 (X09-631X-XX)

DESTINATION	COUNTRY	ABB.	UNIT No.	R503	R504	R509	C503.521, 533.534	C529.530, 535-537	W28, 145	W72.114, 115,160	S505	S511	S513	D503, 504, 505, 510	D502	IC51	
U.K.	T	0-51	YES	NO	YES	YES	YES	NO	YES	NO	PTY	(RDS) DISPLAY	TA/ NEWS	NO	YES	NO	CXP82840-1630
EUROPE	E	2-71	YES	NO	YES	YES	YES	NO	YES	NO	PTY	(RDS) DISPLAY	TA/ NEWS	NO	YES	NO	CXP82840-1630



- 2SA1123
- 2SA992
- 2SC1845
- 2SC2631
- 2SC3940A
- 2SA1175
- 2SC2785
- DTC124ESA
- 2SC1740S
- 2SA1586
- 2SC4116
- 2SD1819A
- 2SC4081
- 2SD1757K
- TRAITR3N
- TRAITR3P
- X24C02
- SAA6579/R
- DA204U
- LC72131
- NJM4565L-D
- LA1837
- LA1838
- UN4212
- 2SA1309A
- NJM4580L-D



AR-304(K,P) (3/3)  
 KRF-A4020(M,X,T,E) (3/3)  
 KRF-A4020E(E) (3/3)  
 KRF-A4020W(Q) (3/3)

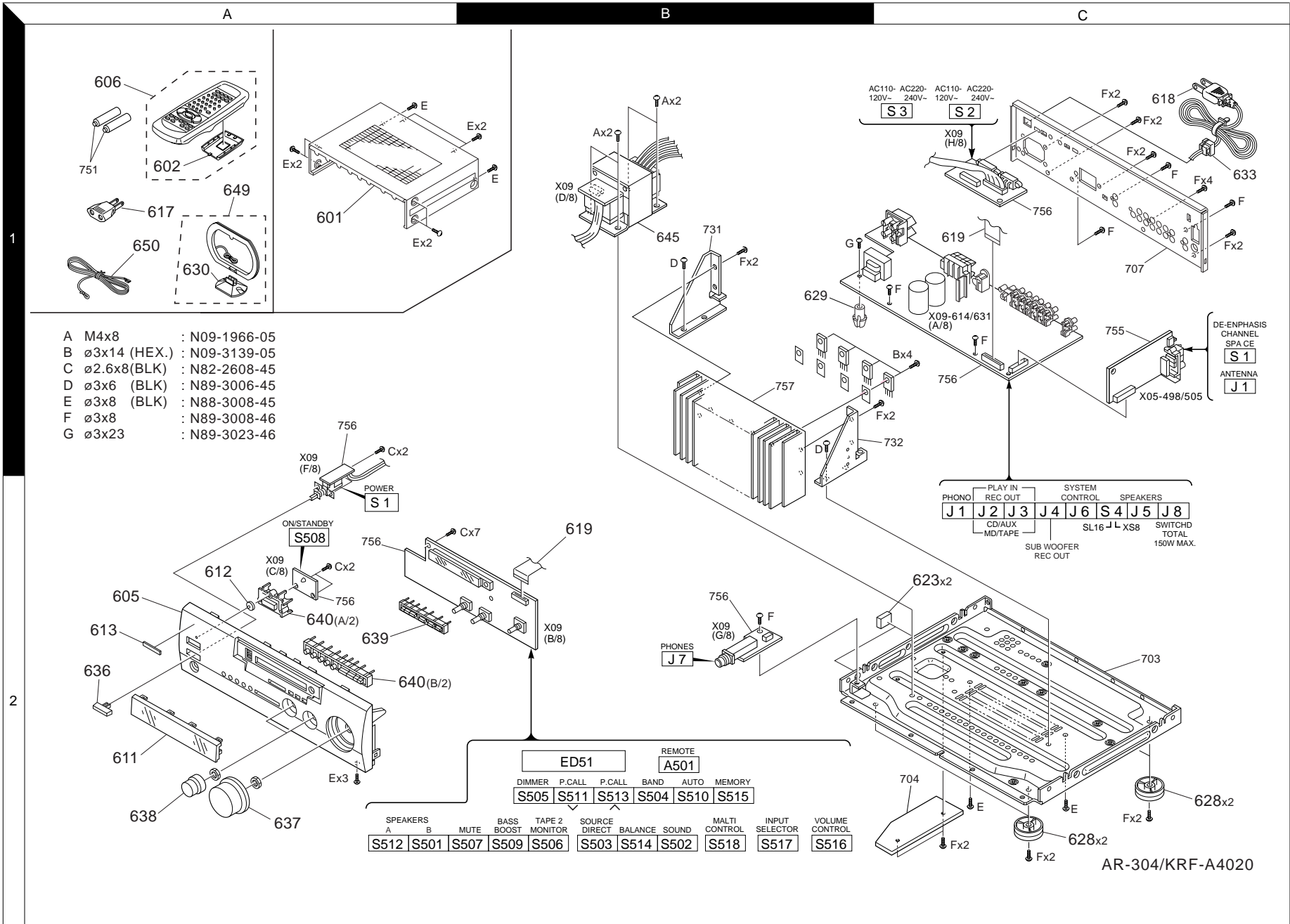
**CAUTION:** For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list).  $\Delta$  indicates safety critical components. For continued protection against risk of fire, replace only with same type and rating fuse(s). To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

The DC voltage is an actual reading measured with a high impedance type voltmeter with no signal input. The measurement value may vary depending on the measuring instruments used or on the product.

Parts with exploded numbers larger than 700 are not supplied.

EXPLODED VIEW (UNIT)

AR-304/KRF-A4020





\* New Parts  
 Parts without **Parts No.** are not supplied.  
 Les articles non mentionnés dans le **Parts No.** ne sont pas fournis.  
 Teile ohne **Parts No.** werden nicht geliefert.

①

Ref. No	Add-ress	New Parts	Parts No.	Description	Desti-nation	Re-marks
<b>AR-304/KRF-A4020/A4020E/A4020W</b>						
601	1A		A01-3533-01	METALLIC CABINET		
602	1A		A09-1123-08	BATTERY COVER		
605	2A	*	A60-1584-01	PANEL	KP	
605	2A	*	A60-1585-01	PANEL	MX	
605	2A	*	A60-1586-01	PANEL	Q	
605	2A	*	A60-1599-01	PANEL	ETE1	
606	1A	*	A70-1266-05	REMOTE CONTROLLER (RC-R0709)	KPMX	
606	1A	*	A70-1267-05	REMOTE CONTROLLER (RC-R0708)	ETQE1	
611	2A	*	B10-3475-02	FRONT GLASS		
612	2A		B12-0334-14	INDICATOR		
613	2A		B43-0302-04	KENWOOD BADGE		
-	-		B46-0096-53	WARRANTY CARD		
-	-		B46-0197-00	QUESTIONNAIRE CARD	X	
-	-		B46-0310-03	WARRANTY CARD	K	
-	-		B46-0330-03	WARRANTY CARD	ETQE1	
-	-		B46-0336-03	WARRANTY CARD	K	
-	-		B58-0945-03	CAUTION CARD	P	
-	-		B58-0964-13	CAUTION CARD (UL)	T	
-	-		B58-0964-13	CAUTION CARD (UL)	K	
-	-	*	B58-0965-13	CAUTION CARD (T,XtypePL)	TX	
-	-	*	B58-0966-13	CAUTION CARD (ELMtypePL)	EM	
-	-	*	B58-0967-03	CAUTION CARD (PtypePL)	P	
-	-	*	B58-1526-03	CAUTION CARD (P4,OR1,A4,1(Q))	Q	
-	-	*	B58-1607-03	CAUTION CARD	E1	
-	-	*	B60-4123-00	INSTRUCTION MANUAL (EN)	KPMX	
-	-	*	B60-4124-00	INSTRUCTION MANUAL (FR)	P	
-	-	*	B60-4125-00	INSTRUCTION MANUAL (ES/TC)	M	
-	-	*	B60-4126-00	INSTRUCTION MANUAL (FR/NE)	E	
-	-	*	B60-4127-00	INSTRUCTION MANUAL (IT/ES)	E	
-	-	*	B60-4128-00	INSTRUCTION MANUAL (GE)	E	
-	-	*	B60-4129-00	INSTRUCTION MANUAL (EN)	TOE1	
-	-	*	B60-4130-00	INSTRUCTION MANUAL (PL)	E1	
-	-	*	B60-4131-00	INSTRUCTION MANUAL (HU/CZ)	E1	
-	-	*	B60-4143-00	INSTRUCTION MANUAL (RU)	Q	
Δ 617	1A		E03-0115-05	AC PLUG ADAPTER	M	
Δ 618	1C		E30-2592-15	AC POWER CORD	M	
Δ 618	1C		E30-2717-05	AC POWER CORD	X	
Δ 618	1C		E30-2721-05	AC POWER CORD	T	
Δ 618	1C		E30-2842-05	AC POWER CORD	EQE1	
Δ 618	1C		E30-2909-05	AC POWER CORD	KP	
619	1C, 2B		E35-2262-05	FLAT CABLE		
623	2C		G11-2415-04	CUSHION		
-	-		H10-7554-02	POLYSTYRENE FOAMED FIXTURE		
-	-		H10-7555-02	POLYSTYRENE FOAMED FIXTURE		
-	-		H25-0232-04	PROTECTION BAG (235X350X0.03)		
-	-		H25-0232-04	PROTECTION BAG (235X350X0.03)	EQE1	
-	-		H25-0391-04	PROTECTION BAG	KPMX	
-	-		H25-0651-04	PROTECTION BAG	T	
-	-	*	H50-3218-14	ITEM CARTON CASE	KP	
-	-	*	H50-3219-04	ITEM CARTON CASE	M	
-	-	*	H50-3221-04	ITEM CARTON CASE	Q	
-	-	*	H50-3222-04	ITEM CARTON CASE	E1	

L : Scandinavia    K : USA    P : Canada    R : Mexico    C : China    I : Malaysia  
 Y : PX(Far East, Hawaii)    T : Europe    G : Germany    V : China(Shanghai)  
 Y : AAFES(Europe)    X : Australia    Q : Russia    H : Korea    M : Other Areas    Δ indicates safety critical components.

\* New Parts  
 Parts without **Parts No.** are not supplied.  
 Les articles non mentionnés dans le **Parts No.** ne sont pas fournis.  
 Teile ohne **Parts No.** werden nicht geliefert.

②

Ref. No	Add-ress	New Parts	Parts No.	Description	Desti-nation	Re-marks
-	-		H50-3256-04	ITEM CARTON CASE		ETX
628	2C		J02-1167-03	FOOT		ETQE1
628	2C		J02-1167-03	FOOT		MX
628	2C		J02-1405-03	FOOT (D=46,H=14.5,T)		KP
629	1B		J19-5787-04	UNIT HOLDER		KP
630	1A		J19-3645-05	ANTENNA STAND		
Δ 633	1C		J42-0083-05	POWER CORD BUSHING		
-	-		J61-0307-05	WIRE BAND		
636	2A		K27-2185-04	KNOB (POWER)		ETQE1
636	2A		K27-2185-04	KNOB (POWER)		MX
637	2A		K29-6880-04	KNOB (VOLUME CONTROL)		KP
637	2A		K29-7306-14	KNOB (VOLUME CONTROL)		ETQE1
637	2A		K29-7306-14	KNOB (VOLUME CONTROL)		MX
638	2A		K29-6881-04	KNOB (MULTI/INPUT CONTROL)		KP
638	2A		K29-7307-14	KNOB (MULTI/INPUT CONTROL)		ETQE1
638	2A		K29-7307-14	KNOB (MULTI/INPUT CONTROL)		MX
639	2A		K29-6898-03	KNOB (TUNER)		KP
639	2A		K29-6899-13	KNOB (TUNER)		ETQE1
639	2A		K29-7310-03	KNOB (TUNER)		MX
640	2A		K29-6939-12	KNOB		KP
640	2A		K29-7365-12	KNOB		ETQE1
640	2A		K29-7365-12	KNOB		MX
Δ 645	1B	*	L07-2637-05	POWER TRANSFORMER		KP
Δ 645	1B	*	L07-2639-05	POWER TRANSFORMER		M
Δ 645	1B	*	L07-2691-05	POWER TRANSFORMER		X
Δ 645	1B	*	L07-2692-05	POWER TRANSFORMER		Q
Δ 645	1B	*	L07-2707-05	POWER TRANSFORMER		ETE1
649	1A		T90-0833-05	LOOP ANTENNA		
650	1A		T90-0836-05	LEAD WIRE ANTENNA		
<b>TUNER UNIT (X05-498X-XX)</b>						
C42			CC73FCH1H120J	CHIP C	12PF	J
C43			CC73FCH1H100D	CHIP C	10PF	D
X1			L77-2232-05	CRYSTAL RESONATOR		
<b>TUNER UNIT (X05-505X-XX)</b>						
C1			CK73FB1H223K	CHIP C	0.022UF	K
C2			CK73FB1H103K	CHIP C	0.010UF	K
C3			CK73FB1H103K	CHIP C	0.010UF	K
C5, 6			CK73FB1H103K	CHIP C	0.010UF	K
C7			CE04LW1C470M	ELECTRO	47UF	16WV
C8			CK73EB1H103K	CHIP C	0.010UF	K
C10			CE04LW1C470M	ELECTRO	47UF	16WV
C11, 12			CK73FB1H473K	CHIP C	0.047UF	K
C14			CE04LW1C100M	ELECTRO	10UF	16WV
C15			CE04LW1H010M	ELECTRO	1.0UF	50WV
C16			C90-3251-05	ELECTRO	0.47UF	50WV
C17			CE04LW1H010M	ELECTRO	1.0UF	50WV
C18			CC73FCH1H470J	CHIP C	47PF	J
C19			C90-3217-05	ELECTRO	10UF	10WV
C20			CK73FB1H473K	CHIP C	0.047UF	K
C21			C90-3241-05	ELECTRO	3.3UF	35WV
C22			CK73FB1H473K	CHIP C	0.047UF	K
C23			CE04LW1C100M	ELECTRO	10UF	16WV

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Ref. No	Add-ress	New Parts	Parts No.	Description	Desti-nation	Re-marks
C24			CK73FB1H331K	CHIP C 330PF K		
C25			CC73FCH1H181J	CHIP C 180PF J	ETQE1	
C25			CC73FCH1H471J	CHIP C 470PF J	KPMX	
C26			CK73FB1H183K	CHIP C 0.018UF K	ETQE1	
C26			CK73FB1H223K	CHIP C 0.022UF K	KPMX	
C27			CE04HW1E4R7M	NP-ELEC 4.7UF 25WV		
C28, 29			CE04LW1H2R2M	ELECTRO 2.2UF 50WV		
C30, 31			CK73FB1H223K	CHIP C 0.022UF K	ETQE1	
C30, 31			CK73FB1H223K	CHIP C 0.022UF K	MX	
C30, 31			CK73FB1H333K	CHIP C 0.033UF K	KP	
C32			CE04LW1V4R7M	ELECTRO 4.7UF 35WV		
C33, 34			CK73FB1H103K	CHIP C 0.010UF K	M	
C35			CK73FB1H332K	CHIP C 3300PF K	KPMX	
C36			CK73FB1H103K	CHIP C 0.010UF K		
C37, 38			CE04LW1C100M	ELECTRO 10UF 16WV		
C39			CC73FCH1H060D	CHIP C 6.0PF D		
C40			CC73FCH1H020C	CHIP C 2.0PF C		
C41			CC73FCH1H220J	CHIP C 22PF J		
C42			CC73FCH1H270J	CHIP C 27PF J		
C43			CC73FCH1H220J	CHIP C 22PF J		
C44			CK73FB1H471K	CHIP C 470PF K		
C45			CC73FCH1H220J	CHIP C 22PF J		
C46			CE04LW1C100M	ELECTRO 10UF 16WV		
C47			CK73FB1H102K	CHIP C 1000PF K		
C48			CE04LW1C470M	ELECTRO 47UF 16WV		
C49			CE04LW1H2R2M	ELECTRO 2.2UF 50WV		
C50			CC73FSL1H101J	CHIP C 100PF J		
C51			CK73FB1H471K	CHIP C 470PF K		
C52			CC73FSL1H101J	CHIP C 100PF J		
C70, 71			CK73FB1H822K	CHIP C 8200PF K	ETQE1	
C72			CE04LW1H010M	ELECTRO 1.0UF 50WV		
C73			CE04LW1C470M	ELECTRO 47UF 16WV		
C74			CK73FB1H102K	CHIP C 1000PF K	KP	
C75			CC73FCH1H040C	CHIP C 4.0PF C		
C76			CC73FCH1H470J	CHIP C 47PF J		
C77			CC73FSL1H101J	CHIP C 100PF J	M	
C78			CK73FB1H223K	CHIP C 0.022UF K		
C79, 80			CK73FB1H472K	CHIP C 4700PF K	ETQE1	
C81			CK73FF1C105Z	CHIP C 1.0UF Z		
C82			CK73FB1H103K	CHIP C 0.010UF K	ETQE1	
C83			CC73FSL1H101J	CHIP C 100PF J		
C84, 85			CK73FB1H223K	CHIP C 0.022UF K		
C86			CK73FB1H471K	CHIP C 470PF K		
C88			CK73FB1H332K	CHIP C 3300PF K		
C89, 90			CK73FB1H472K	CHIP C 4700PF K	KPMX	
C91			CK73FF1C105Z	CHIP C 1.0UF Z		
CN1			E40-9831-05	SOCKET FOR PIN ASSY		
CN2			E40-4871-05	PIN ASSY	ETQE1	
J1			E70-0080-05	LOCK TERMINAL BOARD		
CF1, 2			L72-0531-05	CERAMIC FILTER	MX	
CF1, 2			L72-0536-05	CERAMIC FILTER	ETQE1	
CF1, 2			L72-0596-05	CERAMIC FILTER	KP	
CF3			L72-0607-05	CERAMIC FILTER	KPMX	
L1			L39-1366-05	COMBINATION COIL		

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L2			L40-1091-82	SMALL FIXED INDUCTOR(1.0UH)		
L3			L30-0911-05	AM IFT		
L4			L30-0950-05	FM IFT		ETQE1
L5			L30-0951-05	FM IFT		ETQE1
L6, 7			L79-1239-05	LC FILTER		ETQE1
L9			L40-1001-82	SMALL FIXED INDUCTOR(10UH)		
X1			L77-2187-05	CRYSTAL RESONATOR		
R1			RK73FB2A101J	CHIP R 100 J 1/10W		
R4			RK73FB2A681J	CHIP R 680 J 1/10W		
R5			RK73FB2A332J	CHIP R 3.3K J 1/10W		
R6			RK73FB2A221J	CHIP R 220 J 1/10W		
R7			RK73FB2A821J	CHIP R 820 J 1/10W		
R8			RK73FB2A100J	CHIP R 10 J 1/10W	ETQE1	
R8			RK73FB2A330J	CHIP R 33 J 1/10W	KPMX	
R9			RK73FB2A391J	CHIP R 390 J 1/10W		
R10			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R11			RK73FB2A220J	CHIP R 22 J 1/10W	ETQE1	
R11			RK73FB2A330J	CHIP R 33 J 1/10W	KPMX	
R12			RK73FB2A101J	CHIP R 100 J 1/10W		
R14			RK73FB2A101J	CHIP R 100 J 1/10W	ETQE1	
R14			RK73FB2A271J	CHIP R 270 J 1/10W	KPMX	
R15			RK73FB2A333J	CHIP R 33K J 1/10W	ETQE1	
R16			RK73FB2A220J	CHIP R 22 J 1/10W		
R17			RK73FB2A362J	CHIP R 3.6K J 1/10W		
R18			RK73FB2A302J	CHIP R 3.0K J 1/10W		
R19			RK73FB2A822J	CHIP R 8.2K J 1/10W		
R20			RK73FB2A392J	CHIP R 3.9K J 1/10W		
R23			RK73FB2A153J	CHIP R 15K J 1/10W	ETQE1	
R23			RK73FB2A332J	CHIP R 3.3K J 1/10W	KPMX	
R25			RK73FB2A183J	CHIP R 18K J 1/10W	KPMX	
R25			RK73FB2A273J	CHIP R 27K J 1/10W	ETQE1	
R27, 28			RK73FB2A432J	CHIP R 4.3K J 1/10W	ETQE1	
R27, 28			RK73FB2A752J	CHIP R 7.5K J 1/10W	KPMX	
R29			RK73FB2A101J	CHIP R 100 J 1/10W	M	
R30			RK73FB2A561J	CHIP R 560 J 1/10W	M	
R31			RK73FB2A473J	CHIP R 47K J 1/10W	M	
R32			RK73FB2A272J	CHIP R 2.7K J 1/10W	KPMX	
R33, 34			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R35			RK73FB2A101J	CHIP R 100 J 1/10W	ETQE1	
R36			RK73FB2A102J	CHIP R 1.0K J 1/10W	ETQE1	
R37			RK73FB2A392J	CHIP R 3.9K J 1/10W	ETQE1	
R38			RK73FB2A102J	CHIP R 1.0K J 1/10W	ETQE1	
R39			RK73FB2A103J	CHIP R 10K J 1/10W	ETQE1	
R42			RK73FB2A103J	CHIP R 10K J 1/10W		
R43			RK73FB2A221J	CHIP R 220 J 1/10W		
R44			RD14NB2E271J	RD 270 J 1/4W		
R45			RK73EB2B102J	CHIP R 1.0K J 1/8W		
R46			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R47			RK73EB2B102J	CHIP R 1.0K J 1/8W		
R48			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R49			RK73FB2A103J	CHIP R 10K J 1/10W		
R50			RD14NB2E471J	RD 470 J 1/4W		
R51			RK73FB2A562J	CHIP R 5.6K J 1/10W		
R52			RK73FB2A101J	CHIP R 100 J 1/10W		

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PARTS LIST

AR-304/KRF-A4020

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Ref. No	Add-ress	New Parts	Parts No.	Description	Desti-nation	Re-marks
R53			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R54			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R55			RK73FB2A333J	CHIP R 33K J 1/10W		
R56, 57			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R58			RK73FB2A123J	CHIP R 12K J 1/10W		
R59			RK73FB2A122J	CHIP R 1.2K J 1/10W		
R72, 73			RK73FB2A153J	CHIP R 15K J 1/10W	KP	
R72, 73			RK73FB2A392J	CHIP R 3.9K J 1/10W	ETQE1	
R72, 73			RK73FB2A822J	CHIP R 8.2K J 1/10W	MX	
R74			RK73FB2A473J	CHIP R 47K J 1/10W		
R75			RK73FB2A822J	CHIP R 8.2K J 1/10W		
R76			RK73FB2A182J	CHIP R 1.8K J 1/10W		
R78			RK73FB2A821J	CHIP R 820 J 1/10W		
R79			RK73FB2A332J	CHIP R 3.3K J 1/10W		
R80			RK73FB2A223J	CHIP R 22K J 1/10W	ETQE1	
△ R81			RS14KB3A151J	FL-PROOF RS 150 J 1W		
R82			RK73FB2A272J	CHIP R 2.7K J 1/10W	ETQE1	
R83			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R84			RK73EB2B102J	CHIP R 1.0K J 1/8W		
R85-87			RK73FB2A105J	CHIP R 1.0M J 1/10W		
R88			RK73FB2A563J	CHIP R 56K J 1/10W		
R89			RK73FB2A333J	CHIP R 33K J 1/10W		
VR1			R32-0037-05	SEMI FIXED VARIABLE RESISTOR		
W51, 52			R92-0670-05	CHIP R 0 OHM		
W54, 55			R92-0670-05	CHIP R 0 OHM		
W56			R92-0670-05	CHIP R 0 OHM	M	
W59			R92-0670-05	CHIP R 0 OHM		
W60			R92-0670-05	CHIP R 0 OHM	ETQE1	
W62			R92-0670-05	CHIP R 0 OHM		
W80			R92-0679-05	CHIP R 0 OHM		
W82, 83			R92-0679-05	CHIP R 0 OHM	KPMX	
W84, 85			R92-0679-05	CHIP R 0 OHM		
S1			S62-0034-05	SLIDE SWITCH	M	
D1			DA204U	DIODE		
D1			MA143A	DIODE		
D1			1SS302	DIODE		
D3			MTZJ8.2(B)	ZENER DIODE		
D3			RD8.2ES(B2)	ZENER DIODE		
D4			MTZJ5.1(B)	ZENER DIODE		
D4			RD5.1ES(B2)	ZENER DIODE		
D5			MTZJ2.7(B)	ZENER DIODE		
D5			RD2.7ES(B2)	ZENER DIODE		
D8			MA111	DIODE		
D9			MTZJ3.3(B)	ZENER DIODE		
D9			RD3.3ES(B2)	ZENER DIODE		
D11			MA111	DIODE	ETQE1	
D13			MA111	DIODE		
IC1			LA1837	ANALOGUE IC	ETQE1	
IC1			LA1838	ANALOGUE IC	KPMX	
IC2			LC72131	MOS-IC		
Q1			2SC4081(R,S)	TRANSISTOR		
Q1			2SC4116(Y,GR)	TRANSISTOR		
Q2			2SA1576A(R,S)	TRANSISTOR		

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Q2			2SA1586(Y,GR)	TRANSISTOR		
Q3, 4			2SC4081(R,S)	TRANSISTOR	M	
Q3, 4			2SD1819A(Q,GR)	TRANSISTOR	M	
Q6, 7			2SC4081(R,S)	TRANSISTOR	ETQE1	
Q6, 7			2SC4116(Y,GR)	TRANSISTOR	ETQE1	
Q10, 11			2SD1757K	TRANSISTOR		
Q12			2SA1576A(R,S)	TRANSISTOR		
Q12			2SA1586(Y,GR)	TRANSISTOR		
Q14			2SA1576A(R,S)	TRANSISTOR		
Q14			2SA1586(Y,GR)	TRANSISTOR		
A1			W02-2584-05	FM FRONT-END ASSY	ETE1	
A1			W02-2586-05	FM FRONT-END ASSY	Q	
A1			W02-2622-05	FM FRONT-END ASSY	KPMX	
<b>AUDIO UNIT (X09-614/631X-XX)</b>						
C1, 2			CC45FSL1H390J	CERAMIC 39PF J	ETQE1	
C3, 4			CE04KW1C100M	ELECTRO 10UF 16WV		
C5, 6			CC45FSL1H470J	CERAMIC 47PF J		
C7, 8			CE04KW1C470M	ELECTRO 47UF 16WV		
C9, 10			CC45FSL1H470J	CERAMIC 47PF J		
C11, 12			CQ93FMG1H123J	MYLAR 0.012UF J		
C13-16			CQ93FMG1H332J	MYLAR 3300PF J		
C17-26			CC45FSL1H221J	CERAMIC 220PF J	ETQE1	
C27, 28			CE04KW1H2R2M	ELECTRO 2.2UF 50WV		
C29			CK45FF1H103Z	CERAMIC 0.010UF Z		
C30			CC45FSL1H101J	CERAMIC 100PF J		
C31, 32			CC45FSL1H331J	CERAMIC 330PF J	ETQE1	
C33-36			CE04KW1H3R3M	ELECTRO 3.3UF 50WV		
C37, 38			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
C39, 40			CC45FSL1H101J	CERAMIC 100PF J		
C41			CK45FF1H103Z	CERAMIC 0.010UF Z		
C42			CC45FSL1H101J	CERAMIC 100PF J		
C43, 44			CE04KW1H2R2M	ELECTRO 2.2UF 50WV		
C45, 46			CK45FB1H681K	CERAMIC 680PF K		
C47, 48			CK45FF1H103Z	CERAMIC 0.010UF Z		
C49, 50			CC45FSL1H101J	CERAMIC 100PF J		
C51, 52			CE04KW1A101M	ELECTRO 100UF 10WV		
C53, 54			CC45FSL1H020C	CERAMIC 2.0PF C		
C55-58			CC45FSL1H101J	CERAMIC 100PF J		
C59, 60			CC45FSL2H470J	CERAMIC 47PF J		
C61, 62			CC45FSL1H101J	CERAMIC 100PF J		
C63, 64			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C65-68			CQ93FMG1H224J	MYLAR 0.22UF J	ETQE1	
C65-68			CQ93FMG1H224J	MYLAR 0.22UF J	MX	
C65, 66			CQ93FMG1H104J	MYLAR 0.10UF J	KP	
C69, 70			CK45FF1H103Z	CERAMIC 0.010UF Z		
C71-74			CK45FF1H472Z	CERAMIC 4700PF Z	ETQE1	
C75			CK45FB1H102K	CERAMIC 1000PF K		
C76, 77			CC45FSL1H221J	CERAMIC 220PF J		
C78			CE04KW1C101M	ELECTRO 100UF 16WV		
C79			CK45FB1H102K	CERAMIC 1000PF K		
C80			CE04KW1V100M	ELECTRO 10UF 35WV		
C81			CE04KW1V331M	ELECTRO 330UF 35WV		
C82			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
C83, 84			CC45FSL1H101J	CERAMIC 100PF J		

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C85, 86			CE04KW1V100M	ELECTRO 10UF 35WV		
C87			CE04KW2A100M	ELECTRO 10UF 100WV		
C88			CE04KW2A470M	ELECTRO 47UF 100WV		
C89, 90			CE04KW1E101M	ELECTRO 100UF 25WV		
C91			CE04KW1C101M	ELECTRO 100UF 16WV		
C92			CE04KW1V470M	ELECTRO 47UF 35WV		
C93			CE04KW1V102M	ELECTRO 1000UF 35WV		
C94			CE04KW1V470M	ELECTRO 47UF 35WV		
C95			CE04KW1V471M	ELECTRO 470UF 35WV		
C96, 97			C90-3832-05	ELECTRO 4700UF 75WV	KPMX	
C96, 97			C90-3833-05	ELECTRO 4700UF 63WV	ETQE1	
C98, 99			CK45FF1H103Z	CERAMIC 0.010UF Z		
C100			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
C101			CE04KW1A221M	ELECTRO 220UF 10WV		
C102			CE04KW1C101M	ELECTRO 100UF 16WV		
C103			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C104			CE04HW1E220M	NP-ELEC 22UF 25WV		
C105, 106			CC45FSL1H101J	CERAMIC 100PF J		
C107, 108			CE04KW1V100M	ELECTRO 10UF 35WV		
C109			CK45FB1H102K	CERAMIC 1000PF K		
C110			CE04KW1V100M	ELECTRO 10UF 35WV		
C111			C91-1480-05	MP 0.22UF 250WV		
C112, 113			CK45FF1H103Z	CERAMIC 0.010UF Z		
C114			CE04KW1A470M	ELECTRO 47UF 10WV		
C115, 116			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
C117			CK45FB1H102K	CERAMIC 1000PF K		
C118			CE04KW1C220M	ELECTRO 22UF 16WV		
C119			CK45FB1H102K	CERAMIC 1000PF K		
C120			CE04KW1V100M	ELECTRO 10UF 35WV		
C121, 122			CK45FF1H103Z	CERAMIC 0.010UF Z		
C123, 124			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
C125, 126			CC45FSL2H101J	CERAMIC 100PF J	KPMX	
C127, 128			CQ93FMG1H562J	MYLAR 5600PF J		
C129, 130			CF92FV1H824J	MF-C 0.82UF J		
C131, 132			CQ93FMG1H472J	MYLAR 4700PF J		
C133			CE04HW1HR47M	NP-ELEC 0.47UF 50WV		
C134			CK45FB1H102K	CERAMIC 1000PF K		
C135, 136			CC45FSL1H221J	CERAMIC 220PF J	ETQE1	
C137			CE04KW1V100M	ELECTRO 10UF 35WV		
C502			CK45FF1H103Z	CERAMIC 0.010UF Z		
C503			CK45FB1H102K	CERAMIC 1000PF K	ETQE1	
C504, 505			CK45FF1H103Z	CERAMIC 0.010UF Z		
C506			CK45FB1H102K	CERAMIC 1000PF K	ETQE1	
C507			CK45FF1H103Z	CERAMIC 0.010UF Z		
C508			CK45FB1H102K	CERAMIC 1000PF K		
C509			CE04KW1A101M	ELECTRO 100UF 10WV		
C510			CC45FSL1H331J	CERAMIC 330PF J	ETQE1	
C511-514			CK45FF1H103Z	CERAMIC 0.010UF Z		
C515			CK45FB1H561K	CERAMIC 560PF K	ETQE1	
C516			CE04KW1H2R2M	ELECTRO 2.2UF 50WV	ETQE1	
C517			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C518-520			CK45FF1H103Z	CERAMIC 0.010UF Z		
C521			CC45FSL1H101J	CERAMIC 100PF J	ETQE1	
C522			CK45FF1H103Z	CERAMIC 0.010UF Z	ETQE1	
C523			CE04KW1A101M	ELECTRO 100UF 10WV	ETQE1	

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Ref. No	Add-ress	New Parts	Parts No.	Description	Desti-nation	Re-marks
C524			CK45FF1H103Z	CERAMIC 0.010UF Z	ETQE1	
C525			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C526			C90-3214-05	ELECTRO 100UF 6.3WV		
C527			CC45FCH1H470J	CERAMIC 47PF J	ETQE1	
C528			CC45FCH1H180J	CERAMIC 18PF J	ETQE1	
C529			CC45FSL1H101J	CERAMIC 100PF J	KPMX	
C530			CC45FSL1H101J	CERAMIC 100PF J	Q	
C531			CK45FF1H103Z	CERAMIC 0.010UF Z		
C532			CK45FB1H102K	CERAMIC 1000PF K		
C533			CK45FB1H102K	CERAMIC 1000PF K	ETQE1	
C534			C90-1827-05	ELECTRO 0.047F 5.5WV	ETQE1	
C534			C90-1827-05	ELECTRO 0.047F 5.5WV	MX	
C535			CE04KW0J471M	ELECTRO 470UF 6.3WV	KP	
C536, 537			CC45FSL1H101J	CERAMIC 100PF J	Q	
$\Delta$ CN1			E40-4245-05	PIN ASSY	KP	
CN2			E40-4245-05	PIN ASSY	ETQE1	
CN2			E40-4245-05	PIN ASSY	MX	
CN6			E40-4281-05	PIN ASSY	M	
CN7			E40-9848-05	PIN ASSY		
CN8			E40-8319-05	FLAT CABLE CONNECTOR		
CN9			E40-8318-05	FLAT CABLE CONNECTOR		
CN10			E40-3247-05	PIN ASSY		
CN11, 12			E40-4871-05	PIN ASSY		
J1			E63-0068-15	PHONO JACK		
J2, 3			E63-0173-05	PHONO JACK		
J4			E63-1016-05	PHONO JACK		
J5			E70-0068-05	LOCK TERMINAL BOARD		
J6			E11-0347-05	MINIATURE PHONE JACK(2P)		
J7			E11-0295-05	PHONE JACK (3P)		
$\Delta$ J8			E03-0148-05	AC OUTLET	KP	
$\Delta$ J8			E03-0149-05	AC OUTLET	EQE1M	
$\Delta$ J8			E03-0310-05	AC OUTLET	T	
$\Delta$ J8			E03-0325-05	AC OUTLET	X	
$\Delta$ F1			F05-2525-05	FUSE(SEMK) (250V T2.5AL)	ETQE1	
$\Delta$ F1			F05-2525-05	FUSE(SEMK) (250V T2.5AL)	MX	
$\Delta$ F1			F50-0076-05	FUSE(5X20) (125V 6.3A)	KP	
$\Delta$ F1			F50-0100-05	FUSE(5X20) (250V T2.5AL)	ET	
$\Delta$ F2			F05-2525-05	FUSE(SEMK) (250V T2.5AL)	M	
$\Delta$ F3			F05-2525-05	FUSE(SEMK) (250V T2.5AL)	EE1	
$\Delta$ F3			F50-0100-05	FUSE(5X20) (250V T2.5AL)	E	
$\Delta$ F4, 5			F05-6313-05	FUSE(5X20) (250V 0.63A)	ETQE1	
$\Delta$ F4, 5			F05-6313-05	FUSE(5X20) (250V 0.63A)	MX	
$\Delta$ F4, 5			F50-0066-05	FUSE(5X20) (125V 1A)	MX	
$\Delta$ F4, 5			F50-0066-05	FUSE(5X20) (125V 1A)	KP	
$\Delta$ F4, 5		*	F50-0094-05	FUSE(5X20) (250V 0.63A)	ET	
-			J19-5879-13	HOLDER		
CN4, 5			J13-0075-05	FUSE CLIP		
CN13, 14			J13-0075-05	FUSE CLIP	M	
CN15, 16			J13-0075-05	FUSE CLIP		
CN17, 18			J13-0075-05	FUSE CLIP	EE1	
CN19, 20			J13-0075-05	FUSE CLIP		
E1			J11-0808-05	WIRE CLAMPER		
L1, 2			L39-0085-05	PHASE COMPENSATION COIL	ETQE1	
L501			L40-1091-82	SMALL FIXED INDUCTOR(1.0UH)	ETQE1	

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PARTS LIST

AR-304/KRF-A4020

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L502			L40-1001-82	SMALL FIXED INDUCTOR(10UH)	ETQE1	
Δ T1			L07-2127-05	POWER TRANSFORMER	KP	
Δ T1			L07-2129-05	POWER TRANSFORMER	ET	
Δ T1			L07-2568-05	POWER TRANSFORMER	M	
Δ T1			L07-2569-05	POWER TRANSFORMER	ETQE1X	
X501			L78-0290-05	RESONATOR (8MHZ)		
X502			L77-2206-05	CRYSTAL RESONATOR(4.332MHZ)	ETQE1	
CP1			R90-0810-05	MULTI-COMP 10K X6		
CP2			R90-0878-05	MULTI-COMP 10KX3		
R63, 64			RD14NB2E221J	RD 220 J 1/4W		
R67, 68			RD14NB2E221J	RD 220 J 1/4W		
R69, 70			RD14NB2E121J	RD 120 J 1/4W		
R75, 76			RD14NB2E470J	RD 47 J 1/4W		
R81, 82			RD14NB2E470J	RD 47 J 1/4W		
R89, 90			RD14NB2E392J	RD 3.9K J 1/4W		
R93, 94			RD14NB2E392J	RD 3.9K J 1/4W		
R99, 100			RD14NB2E100J	RD 10 J 1/4W	ETQE1	
R107, 108			RS14KB3D391J	FL-PROOF RS 390 J 2W		
R111			RD14NB2E222J	RD 2.2K J 1/4W		
Δ R114			R92-1844-05	CARBON 3.3M J 1/2W	KP	
Δ R117			RD14NB2E4R7J	RD 5 J 1/4W		
Δ R118, 119			RD14NB2E101J	RD 100 J 1/4W		
Δ R120			RS14KB3D221J	FL-PROOF RS 220 J 2W		
R141, 142			RD14NB2E4R7J	RD 5 J 1/4W		
R156			RD14NB2E122J	RD 1.2K J 1/4W		
Δ R168			RD14NB2E1R0J	RD 1 J 1/4W		
R182			RD14NB2E122J	RD 1.2K J 1/4W		
R207, 208			RS14KB3D100J	FL-PROOF RS 10 J 2W		
R209			RD14NB2E561J	RD 560 J 1/4W	ETQE1	
R209			RD14NB2E561J	RD 560 J 1/4W	KPX	
R575, 576			RD14NB2E221J	RD 220 J 1/4W		
VR1, 2			R32-0030-05	SEMI FIXED VARIABLE RESISTOR		
Δ K1			S76-0089-05	MAGNETIC RELAY		
K2, 3			S76-0076-05	MAGNETIC RELAY		
Δ S1			S68-0088-05	PUSH SWITCH (POWER)	ETQE1	
Δ S1			S68-0088-05	PUSH SWITCH (POWER)	MX	
Δ S2, 3			S62-0001-05	SLIDE SWITCH	M	
S4			S62-0034-05	SLIDE SWITCH		
S501-515			S70-0031-05	TACT SWITCH		
S516			T99-0602-05	ROTARY ENCODER		
S517, 518			T99-0605-05	ROTARY ENCODER		
D1			MTZJ5.1(B)	ZENER DIODE		
D1			RD5.1ES(B2)	ZENER DIODE		
D2			MTZJ4.7(B)	ZENER DIODE		
D2			RD4.7ES(B2)	ZENER DIODE		
D3			HSS104A	DIODE		
D3			1SS133	DIODE		
D4			MTZJ8.2(B)	ZENER DIODE		
D4			RD8.2ES(B2)	ZENER DIODE		
D5-12			HSS104A	DIODE		
D5-12			1SS133	DIODE		
D13			MTZJ6.2(B)	ZENER DIODE		
D13			RD6.2ES(B2)	ZENER DIODE		

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Δ D14			MTZJ2.7(B)	ZENER DIODE		
Δ D14			RD2.7ES(B2)	ZENER DIODE		
Δ D15-17			HSS104A	DIODE		
Δ D15-17			1SS133	DIODE		
Δ D18			MTZJ5.6(B)	ZENER DIODE		
D18			RD5.6ES(B2)	ZENER DIODE		
Δ D19			S1ZB20(4101)	DIODE		
D20, 21			MTZJ16(B)	ZENER DIODE		
D20, 21			RD16ES(B2)	ZENER DIODE		
Δ D22			D4SBL20UF03	DIODE		
D23			MTZJ5.6(B)	ZENER DIODE		
D23			RD5.6ES(B2)	ZENER DIODE		
Δ D24-27			S5688B	DIODE		
Δ D24-27			1SR139-400	DIODE		
D28			MTZJ8.2(B)	ZENER DIODE		
D28			RD8.2ES(B2)	ZENER DIODE		
D31, 32			HSS104A	DIODE		
D31, 32			1SS133	DIODE		KPMX
D33, 34			MTZJ13(B)	ZENER DIODE		ETQE1
D33, 34			MTZJ15(B)	ZENER DIODE		
D33, 34			RD13ES(B2)	ZENER DIODE		KPMX
D33, 34			RD15ES(B2)	ZENER DIODE		ETQE1
D35, 36			MTZJ18(B)	ZENER DIODE		KPMX
D35, 36			MTZJ20(B)	ZENER DIODE		ETQE1
D35, 36			RD18ES(B2)	ZENER DIODE		KPMX
D35, 36			RD20ES(B2)	ZENER DIODE		ETQE1
D37, 38			HSS104A	DIODE		
D37, 38			1SS133	DIODE		
D39, 40			MTZJ15(B)	ZENER DIODE		KPMX
D39, 40			RD15ES(B2)	ZENER DIODE		KPMX
D41, 42			HSS104A	DIODE		
D41, 42			1SS133	DIODE		
D503			HSS104A	DIODE		M
D503			1SS133	DIODE		M
D504			HSS104A	DIODE		QX
D504			1SS133	DIODE		QX
D505			HSS104A	DIODE		ETE1
D505			1SS133	DIODE		ETE1
D507			HSS104A	DIODE		Q
D507			1SS133	DIODE		Q
D508, 509			HSS104A	DIODE		
D508, 509			1SS133	DIODE		
D510			HSS104A	DIODE		ETQE1
D510			HSS104A	DIODE		MX
D510			1SS133	DIODE		ETQE1
D510			1SS133	DIODE		
D510			1SS133	DIODE		
D511-524			HSS104A	DIODE		
D511-524			1SS133	DIODE		
D526			MTZJ5.1(B)	ZENER DIODE		
D526			RD5.1ES(B2)	ZENER DIODE		
D527			B30-2513-05	LED(RED)		
D528-530			HSS104A	DIODE		
D528-530			1SS133	DIODE		
ED51			10-BT-216GK	INDICATOR TUBE		
IC1			NJM4580L-D	IC(OP AMP X2)		

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## PARTS LIST

AR-304/KRF-A4020

**HOW TO READ THE PARTS LIST**

**ABBREVIATION OF MODEL AND MASS PRODUCTION'S DESTINATIONS**

MODEL	CNT	Australia	Canada	China	England	Europe	Germany	Korea	Malaysia
	ABB.	X	P	C	T	E	G	H	I
AR-304	-	-	P	-	-	-	-	-	-
KRF-A4020	-	X	-	-	T	E	-	-	-
KRF-A4020E	-	-	-	-	-	E1	-	-	-
KRF-A4020W	-	-	-	-	-	-	-	-	-
MODEL	CNT	Mexico	PX/AAFES	Russia	Scandinavia	Shanghai	USA	Other area	
	ABB.	R	Y	Q	L	V	K	M	
AR-304	-	-	-	-	-	-	K	-	
KRF-A4020	-	-	-	-	-	-	-	M	
KRF-A4020E	-	-	-	-	-	-	-	-	
KRF-A4020W	-	-	-	Q	-	-	-	-	

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IC2			M62492FP	MOS-IC		
IC3			TC9164AN	MOS-IC		
IC4			NJM4565L-D	ANALOGUE IC		
IC51		*	CXP82832-162Q	MI-COM IC		KPMX
IC51		*	CXP82840-163Q	MI-COM IC		ETQE1
IC52			X24C02	IC(256X8BIT SERIAL EEPROM)		ETQE1
IC53			S-806D-Z	ANALOGUE IC		
IC54			SAA6579/R	ANALOGUE IC		ETQE1
Q1, 2			DTC124ESA	DIGITAL TRANSISTOR		KPMX
Q1, 2			UN4212	DIGITAL TRANSISTOR		KPMX
Q3-6			2SC1740S(Q,R)	TRANSISTOR		
Q3-6			2SC2785(F,E)	TRANSISTOR		
Q7-10			2SA992(F,E)	TRANSISTOR		
Q11-14			2SC1845(F,E)	TRANSISTOR		ETQE1
Q11-14			2SC2631(R,S)	TRANSISTOR		KPMX
Q15, 16			2SA1123(R,S)	TRANSISTOR		KPMX
Q15, 16			2SA992(F,E)	TRANSISTOR		ETQE1
Δ Q19, 20			TRAITR3N	TRANSISTOR		
Δ Q21, 22			TRAITR3P	TRANSISTOR		
Q25, 26			2SA992(F,E)	TRANSISTOR		
Q27, 28			2SC2631(R,S)	TRANSISTOR		
Q29, 30			2SC1740S(Q,R)	TRANSISTOR		
Q29, 30			2SC2785(F,E)	TRANSISTOR		
Q31			2SA992(F,E)	TRANSISTOR		
Q32, 33			2SC1845(F,E)	TRANSISTOR		
Δ Q34, 35			2SC1740S(Q,R)	TRANSISTOR		
Δ Q34, 35			2SC2785(F,E)	TRANSISTOR		
Δ Q36			2SB1640	TRANSISTOR		
Q37			2SC1740S(Q,R)	TRANSISTOR		
Q37			2SC2785(F,E)	TRANSISTOR		
Δ Q38			2SC3940A	TRANSISTOR		
Δ Q39			2SD2525	TRANSISTOR		
Q40, 41			2SC1740S(Q,R)	TRANSISTOR		
Q40, 41			2SC2785(F,E)	TRANSISTOR		
Δ Q42			2SB1640	TRANSISTOR		
Q44			2SA1175(F,E)	TRANSISTOR		
Q44			2SA933AS(Q,R)	TRANSISTOR		
Δ Q45			2SC1740S(Q,R)	TRANSISTOR		
Δ Q45			2SC2785(F,E)	TRANSISTOR		
Δ Q46, 47			2SA1175(F,E)	TRANSISTOR		
Δ Q46, 47			2SA933AS(Q,R)	TRANSISTOR		
Q501			2SC1740S(Q,R)	TRANSISTOR		
Q501			2SC2785(F,E)	TRANSISTOR		
Q502			2SA1309A(Q,R)	TRANSISTOR		M
Q502			2SA933AS(Q,R)	TRANSISTOR		M
Q503			2SC1740S(Q,R)	TRANSISTOR		
Q503			2SC2785(F,E)	TRANSISTOR		
A501			W02-2625-05	OPTIC RECEIVING MODULE		

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**PARTS LIST**

**AR-304/KRF-A4020**

# AR-304/KRF-A4020

## SPECIFICATIONS

### For U.S.A. and Canada

#### [ AUDIO section ]

Rated power output during STEREO operation

100 watts per channel minimum RMS, both channels driven, at 8  $\Omega$  from 40 Hz to 20 kHz with no more than 0.5 % total harmonic distortion. (FTC)

Total harmonic distortion ..... 0.02 % (1 kHz, 50 W, 8  $\Omega$ )  
Signal to noise ratio (IHF'66)  
PHONO (MM) ..... 75 dB  
CD ..... 92 dB  
Input sensitivity / impedance  
PHONO (MM) ..... 2.5 mV / 27 k $\Omega$   
CD ..... 200 mV / 47 k $\Omega$   
Output level / impedance  
TAPE REC ..... 200 mV / 2.2 k $\Omega$   
PRE OUT (SUBWOOFER) ..... 2 V / 2.2 k $\Omega$   
Tone control  
BASS .....  $\pm 9$  dB (at 100 Hz)  
TREBLE .....  $\pm 9$  dB (at 10 kHz)

#### [ FM tuner section ]

Tuning frequency range ..... 87.5 MHz ~ 108.0 MHz  
Usable sensitivity (MONO) ..... 1.6  $\mu$ V (75  $\Omega$ ) / 15.2 dBf  
(75 kHz DEV., SINAD 30 dB)

50dB quieting sensitivity  
STEREO ..... 31.6  $\mu$ V (75  $\Omega$ ) / 41.2 dBf  
Total harmonic distortion (1 kHz)  
MONO ..... 0.6 % (65 dBf input)  
STEREO ..... 0.7 % (65 dBf input)  
Signal to noise ratio (1 kHz, 75 kHz DEV.)  
MONO ..... 75 dB (65 dBf input)  
STEREO ..... 68 dB (65 dBf input)  
Stereo separation (1 kHz) ..... 38 dB  
Selectivity ( $\pm 400$  kHz) ..... 65 dB  
Frequency response ..... (30 Hz ~ 15kHz), +0.5 dB ~ -3.0 dB

#### [ AM tuner section ]

Tuning frequency range ..... 530 kHz ~ 1,700 kHz  
Usable sensitivity (30% mod., S/N 20 dB)  
..... 16  $\mu$ V / (600  $\mu$ V/m)  
Signal to noise ratio (30% mod. 1 mV input) ..... 50 dB

#### [ GENEAL ]

Power consumption ..... 2.8 A  
AC outlet  
SWITCHED ..... 2 (total 150 W, 1.25 A max.)  
Dimensions ..... W:440 mm (17-5/16")  
H:144 mm (5-11/16")  
D:390 mm (15-3/8")  
Weight (Net) ..... 8.0 kg (17.6 lb)

### For other countries

#### [ AUDIO section ]

Effective power output during STEREO operation

1kHz, 10% T.H.D., at 8  $\Omega$  ..... 140 W + 140 W

100 watts per channel minimum RMS, both channels driven, at 8  $\Omega$  from 40 Hz to 20 kHz with no more than 0.5 % total harmonic distortion. (FTC)

Total harmonic distortion ..... 0.02 % (1 kHz, 50W, 8  $\Omega$ )  
Signal to noise ratio (IHF'66)  
PHONO (MM) ..... 75 dB  
CD ..... 92 dB  
Input sensitivity / impedance  
PHONO (MM) ..... 2.5 mV / 27 k $\Omega$   
CD ..... 200 mV / 47 k $\Omega$   
Output level / impedance  
TAPE REC ..... 200 mV / 2.2 k $\Omega$   
PRE OUT (SUBWOOFER) ..... 2 V / 2.2 k $\Omega$   
Tone control  
BASS .....  $\pm 9$  dB (at 100 Hz)  
TREBLE .....  $\pm 9$  dB (at 10 kHz)

#### [ FM tuner section ]

Tuning frequency range ..... 87.5 MHz ~ 108.0 MHz  
Usable sensitivity ..... (MONO 1.6  $\mu$ V (75  $\Omega$ ) / 15.2 dBf  
(75 kHz DEV., SINAD 30 dB)

50dB quieting sensitivity  
STEREO ..... 31.6  $\mu$ V (75  $\Omega$ ) / 41.2 dBf  
Total harmonic distortion (1 kHz)  
MONO ..... 0.6 % (65 dBf input)  
STEREO ..... 0.7 % (65 dBf input)  
Signal to noise ratio (1 kHz, 75 kHz DEV.)  
MONO ..... 75 dB (65 dBf input)  
STEREO ..... 68 dB (65 dBf input)  
Stereo separation (1 kHz) ..... 38 dB  
Selectivity ( $\pm 400$  kHz) ..... 65 dB  
Frequency response ..... (30 Hz ~ 15kHz), +0.5 dB ~ -3.0 dB

#### [ AM tuner section ]

Tuning frequency range  
9 kHz step ..... 531 kHz ~ 1,602 kHz  
10 kHz step (except Australia) ..... 530 kHz ~ 1,610 kHz  
Usable sensitivity (30% mod., S/N 20 dB)  
..... 16  $\mu$ V / (600  $\mu$ V/m)  
Signal to noise ratio (30% mod. 1 mV input) ..... 50 dB

#### [ GENEAL ]

Power consumption ..... 280 W  
AC outlet  
SWITCHED (for Australia) ..... 1 (total 150 W max.)  
SWITCHED (except Australia) ..... 2 (total 150 W max.)  
Dimensions ..... W:440 mm (17-5/16")  
H:144 mm (5-11/16")  
D:390 mm (15-3/8")  
Weight (Net) ..... 8.0 kg (17.6 lb)

#### Notes:

1. KENWOOD follows a policy of continuous advancements in development. For this reason specifications may be changed without notice.
2. The full performance may not be exhibited in an extremely cold location (under a water-freezing temperature).

# AR-304/KRF-A4020

## SPECIFICATIONS

### FOR UK and Europe

#### [ AUDIO section ]

Rated power output during STEREO operation

(DIN) 1 kHz, 0.7 % at 4  $\Omega$  ..... 105 W + 105 W

(IEC) 63 kHz ~ 12.5 kHz, 0.5 % at 4  $\Omega$  ... 100 W + 100 W

Total harmonic distortion ..... 0.02 % (1 kHz, 50 W, 4  $\Omega$ )

Signal to noise ratio

PHONO (MM) ..... 75 dB (IHF'66)

55 dB (DIN 50mW output)

CD ..... 92 dB (IHF'66)

56 dB (DIN 50mW output)

Input sensitivity / impedance

PHONO (MM) ..... 2.5 mV / 27 k $\Omega$

CD ..... 200 mV / 47 k $\Omega$

Output level / impedance

TAPE REC ..... 200 mV / 2.2 k $\Omega$

PRE OUT (SUBWOOFER) ..... 2 V / 2.2 k $\Omega$

Tone control

BASS .....  $\pm 9$  dB (at 100 Hz)

TREBLE .....  $\pm 9$  dB (at 10 kHz)

#### [ FM tuner section ]

Tuning frequency range

U.K. and Europe ..... 87.5 MHz ~ 108.0 MHz

Russia ..... 87.5 MHz ~ 108.0 MHz (10 kHz STEP)

65.0 MHz ~ 74.0 MHz (50 kHz STEP)

Usable sensitivity (DIN, 75  $\Omega$ )

MONO ..... 1.2  $\mu$ V / 13.2 dBf (40 kHz DEV., S/N 26 dB)

STEREO ..... 45  $\mu$ V / 44.2 dBf (46 kHz DEV., S/N 46 dB)

Total harmonic distortion (DIN, 1 kHz)

MONO ..... 0.2% (65.2 dBf input)

STEREO ..... 0.8% (65.2 dBf input)

Signal to noise ratio (DIN weighted, 1 kHz)

U.K. and Europe

MONO ..... 65 dB (40 kHz DEV., S/N 26 dB, 65.2 dBf input)

STEREO ..... 58 dB (46 kHz DEV., S/N 46 dB, 65.2 dBf input)

Russia

MONO ..... 63 dB (40 kHz DEV., S/N 26 dB, 65.2 dBf input)

STEREO ..... 58 dB (46 kHz DEV., S/N 46 dB, 65.2 dBf input)

Stereo separation (DIN, 1 kHz) ..... 36 dB

Selectivity (DIN,  $\pm 300$  kHz) ..... 64 dB

Frequency response (30 Hz ~ 15kHz) ..... +0.5 dB ~ -3.0 dB

#### [ AM tuner section ]

Tuning frequency range ..... 531 kHz ~ 1,602 kHz

Usable sensitivity (30% mod., S/N 20 dB)

..... 16  $\mu$ V / (600  $\mu$ V/m)

Signal to noise ratio (30% mod., 1 mV input) ..... 50 dB

#### [ GENEAL ]

Power consumption ..... 280 W

AC outlet

SWITCHED ..... 2 (total 150 W max.)

Dimensions ..... W: 440mm

H : 144mm

D : 390mm

Weight (Net) ..... 8.0 kg

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#### Notes:

1. KENWOOD follows a policy of continuous advancements in development. For this reason specifications may be changed without notice.
2. The full performance may not be exhibited in an extremely cold location (under a water-freezing temperature).

# AR-304/KRF-A4020

**Note:**

Component and circuit are subject to modification to insure best operation under differing local conditions. This manual is based on General market(M) standard, and provides information on regional circuit modification through use of alternate schematic diagrams, and information on regional component variations through use of parts list.

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