

AR-304/KRF-A4020/ A4020E/A4020W

SERVICE MANUAL

KENWOOD

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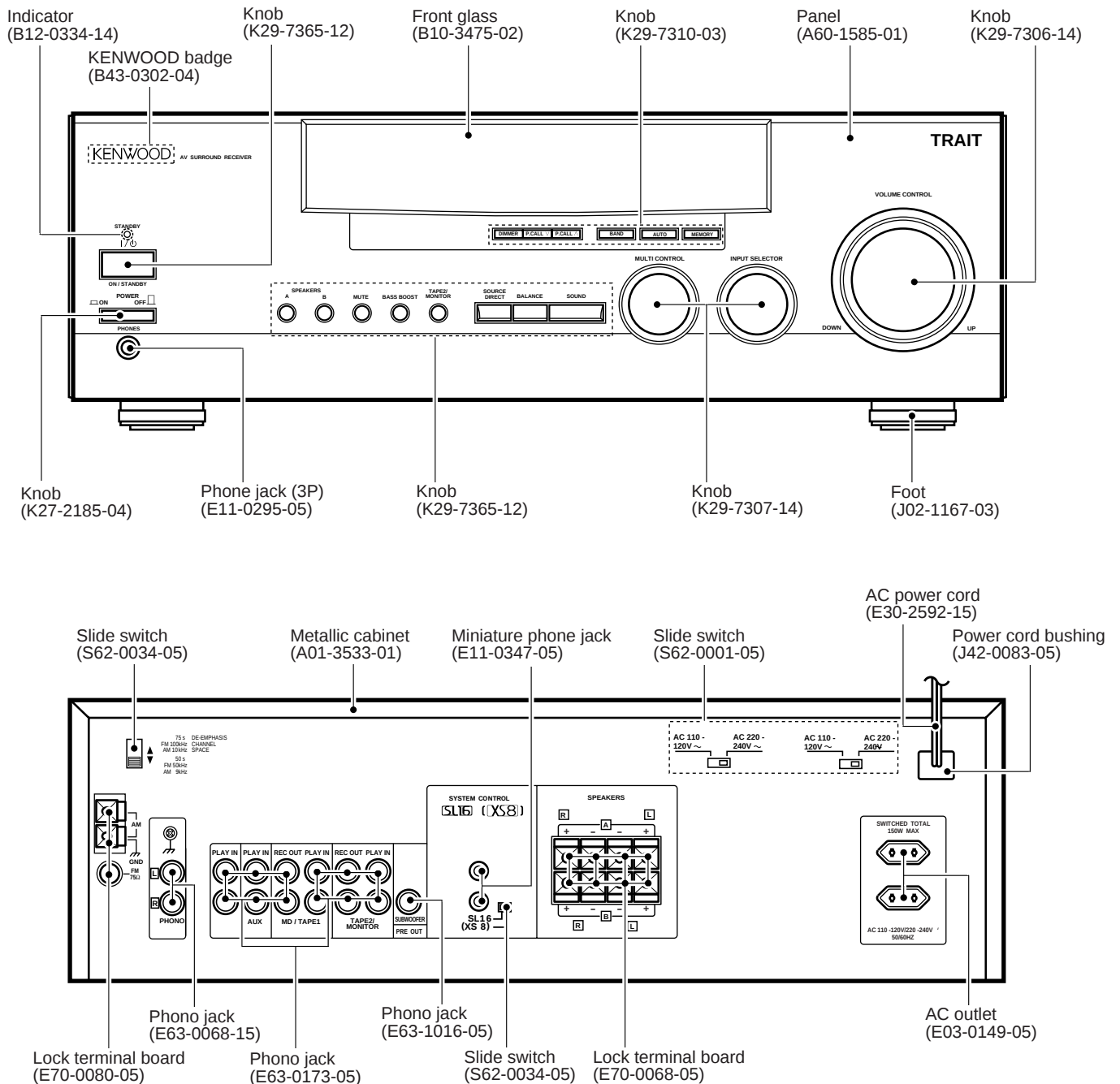


Illustration is KRF-A4020 Mtype.

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)

--AM loop antenna (1) (T90-0833-05) --

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 SELECTORTUNER
- BALANCECENTER
- SPEAKER A RELAYON
- SPEAKER B RELAYOFF
- VOLUME LEVEL-66dB
- BASS LEVEL0dB
- TREBLE LEVEL0dB
- INPUT LEVEL0dB
- BASS BOOSTOFF
- SOURCE DIRECTOFF
- TAPE2/MONITOROFF
- SL16/XS8SL16

(2) TUNER

- BANDFM
- PRESET CHANNEL....."-"
- FREQUENCY.....LOWER LIMIT VALUE
 - K1FM:87.50MHz/AM:530kHz
 - E1/E3FM:87.50MHz/AM:531kHz
 - Q1FM:65.00MHz/AM:531kHz
- AUTO/MANUALAUTO
- DISPLAY MODEFREQUENCY
- E ON THRUST RECEIVINGOFF
- 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 (3)(NORMAL),(RF)ATT OFF	(1) (2) → (3) CYCLE
DISPLAY	P.CALL UP	P.CALL FREQUENCY PI 0000	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

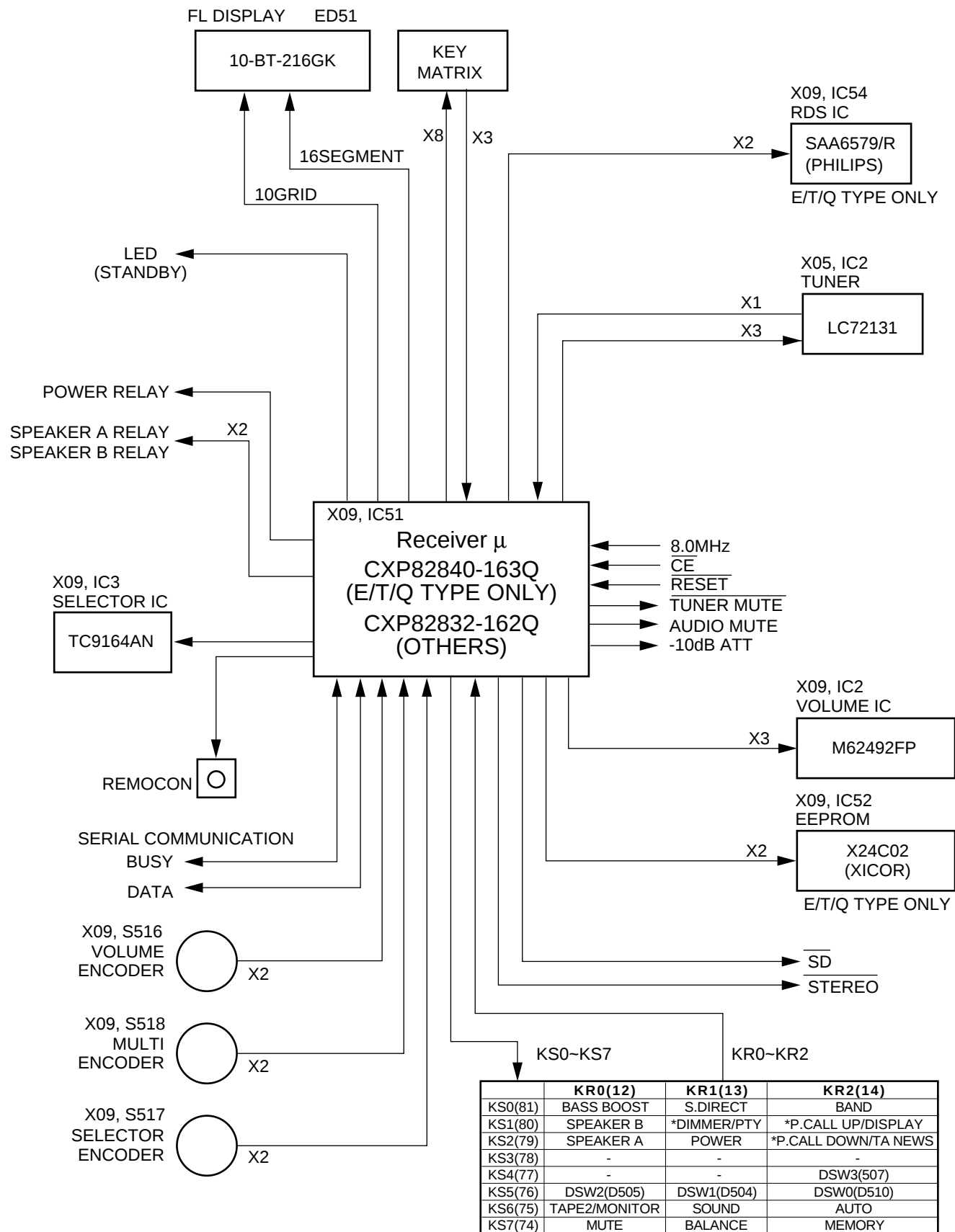
	XS8	SL16
XS8/SL16 SWITCH	TUNED LIGHTS OFF	TUNED LIGHTS ON

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

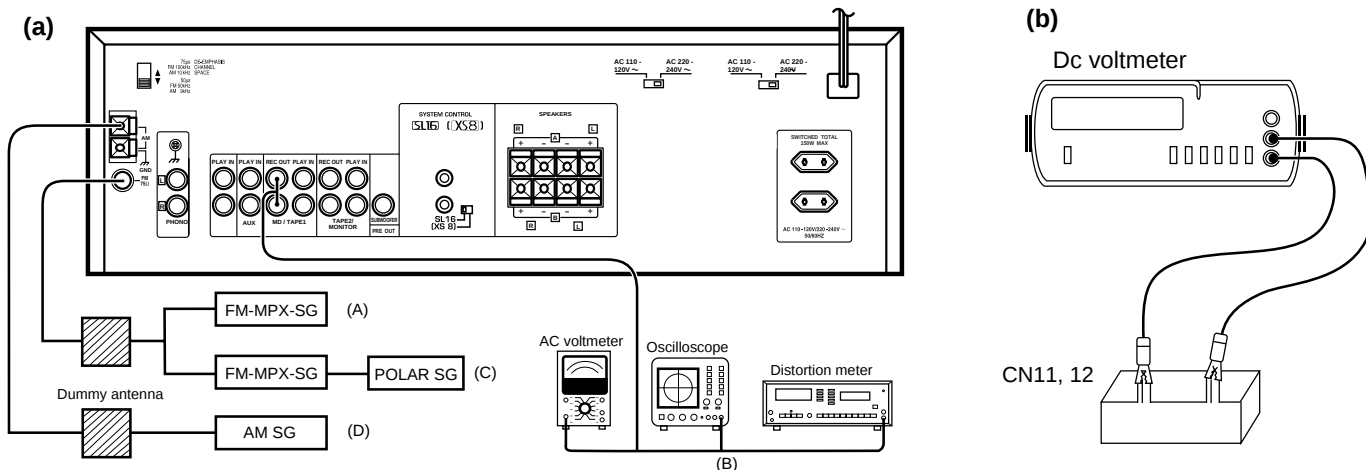
Pin No.	Pin name	I/O	Description	Active
1,2	G9,G10	O	FL grid control (9,10).	
3	NC	-	Unused.	
4	RDS,CK	I	RDS IC clock input control. (E/T/Q type only)	
5	RDS,DT	I	RDS IC data input control. (E/T/Q type only)	
6	NC	I	Unused.	
7	VOL.ENC.A	I	Volume encoder A (CW) signal.	
8	REMOCON	I	Remote control signal 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.	

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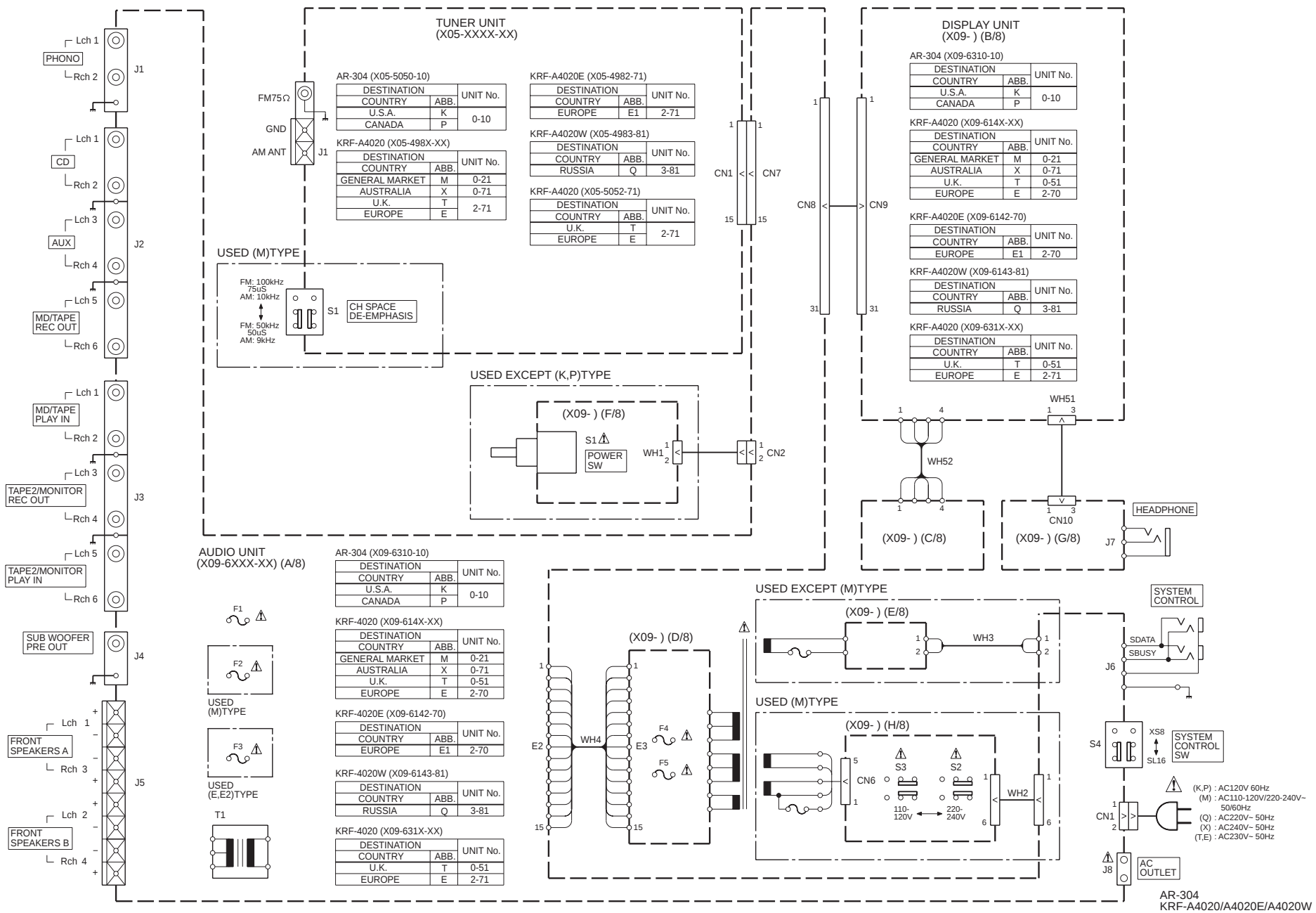
ADJUSTMENT

No.	ITEM	INPUT SETTINGS	OUTPUT SETTINGS	RECEIVER SETTINGS	ALIGNMENT POINTS	ALIGN FOR	FIG.
FM SECTION : EXCEPT E,T,Q type SELECTOR : FM							
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)
FM SECTION : E,T,Q type only SELECTOR : FM ※Adjust NO.1 and NO.2 repeat.							
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)
AUDIO SECTION							
1	IDLE CURRENT	—	Connect a DC Volumeter across CN11 (L) CN12 (R)	Volume: 0	VR1 (L) VR2 (R)	11 mV	(b)

SYSTEM CONNECTIONS



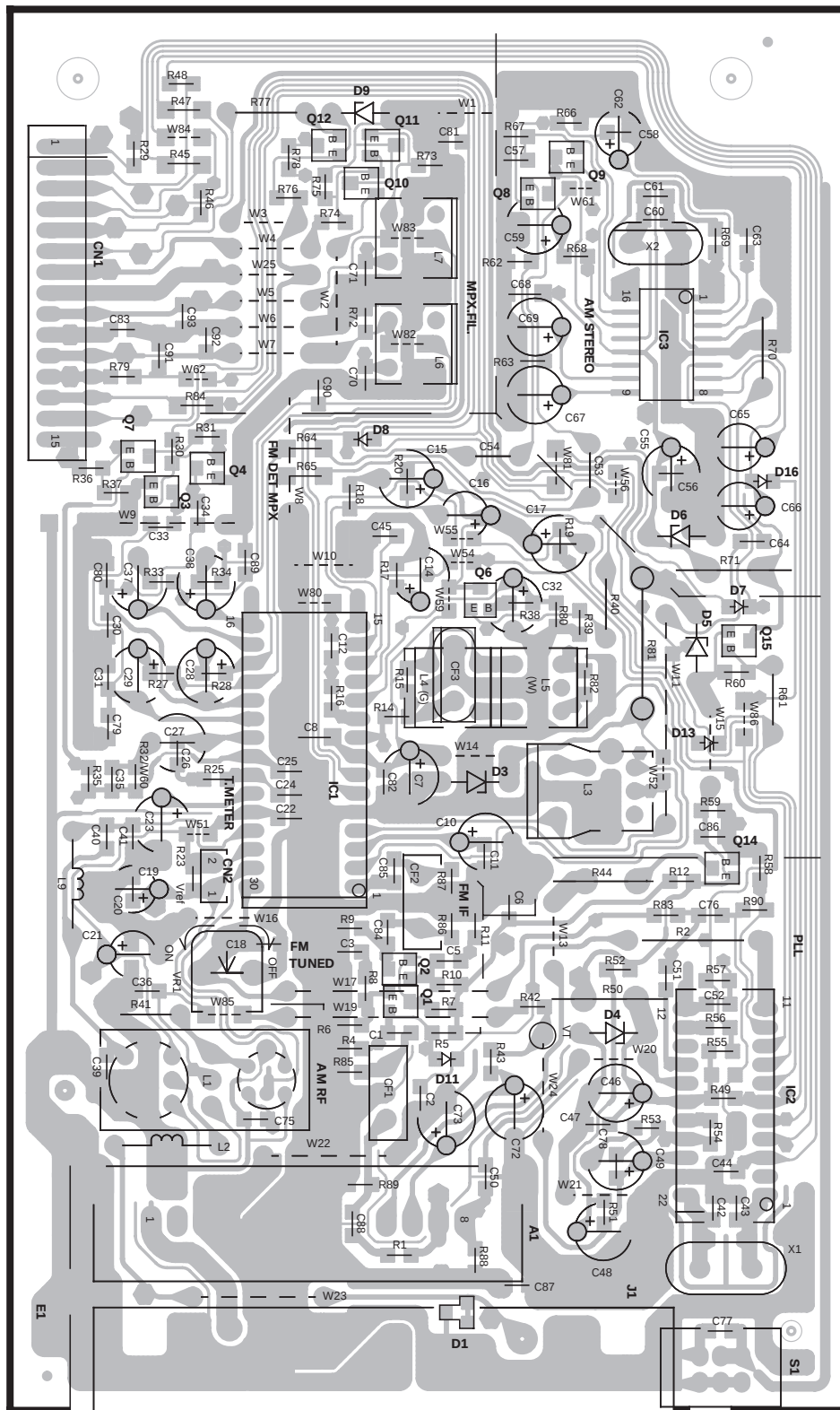
WIRING DIAGRAM



PC BOARD(Component side view)

TUNER UNIT

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



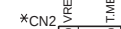
ANTENNA

CH. SPACE
DE-EMPHASIS

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

1
2
3
4
5
6
7





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

D4 : RD5.1ES(B2) or MTZJ5.1(B) or

D5 : RD2.7ES(B2) or MTZJ2.7(B) or

D8,11,13 : MA111

D9 : RD3.3ES(B2) or MTZJ3.3(B) or

A1 : *

AR-304 (X05-5050-10)

DESTINATION		UNIT No.	(A)	(B)	(C)	(F)	R8, 11	R14	R15,29, 36,82	R23	R25	R27, 28	R32	R72, 73	C8,35, 74,89,90	C25	C26	C30, 31	C42	C43	C70,71,77, 79,80,82
COUNTRY	ABB.																				
U.S.A.	K	0-10	NO				33	270	NO	3.3K	18K	7.5K	YES	15K	YES	470P	0.022	0.033	27P	22P	NO
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	YES	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	R32	R72, 73	C8, 35, 77, 89, 90	C25	C26	C30, 31	C42	C43	C74	C77	C70, 71, 79, 80, 82
COUNTRY	ABB.																				
GENERAL MARKET	M	0-21	NO	YES	33	33	270	NO	3.3K	18K	7.5K	YES	YES	8.2K	YES	470P	0.022			YES	NO
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	0.022	12P	10P	NO
EUROPE	E																				YES

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												L77-2232
U.K.	T	W02-2584	L72-0536 (MS3)	NO	LA1837	YES	YES	NO	YES	NO	NO	F10-1128	
EUROPE	E												

KRF-A4020E (X05-4982-71)

DESTINATION		UNIT No.	(A)	(C)	(F)	(B)	R8	R11	R14	R15, 36, 82	R23	R25	R27, 28	R29, 32	R72, 73	C8, 35, 77, 89, 90	C25	C26	C30, 31	C42	C43	C70, 71, 79, 80, 82	C74
COUNTRY	ABB.																						
EUROPE	E1	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

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, 32	R29, 73	R72, 73	C8, 35, 77, 89, 90	C25	C26	C30, 31	C42	C43	C70, 71, 79, 80, 82	C74
COUNTRY	ABB.																						
RUSSIA	Q	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

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, 32	R72, 73	C8, 35, 77, 89, 90	C25	C26	C30, 31	C42	C43	C70, 71, 79, 80, 82	C74
COUNTRY	ABB.																						
U.K.	T	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
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											

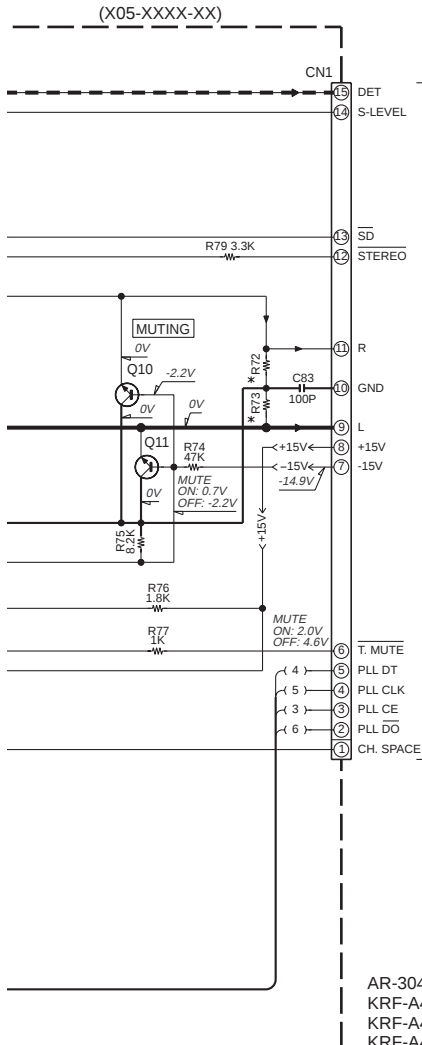
--- DIGITAL LINE

--- SIGNAL LINE

--- GND LINE

--- +B LINE

--- -B LINE



AR-304(K,P) (1/3)

KRF-A4020(M,X,T,E) (1/3)

KRF-A4020E(E) (1/3)

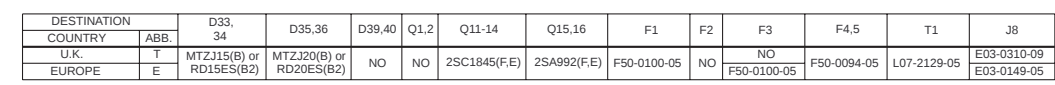
KRF-A4020W(Q) (1/3)

CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). Δ 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





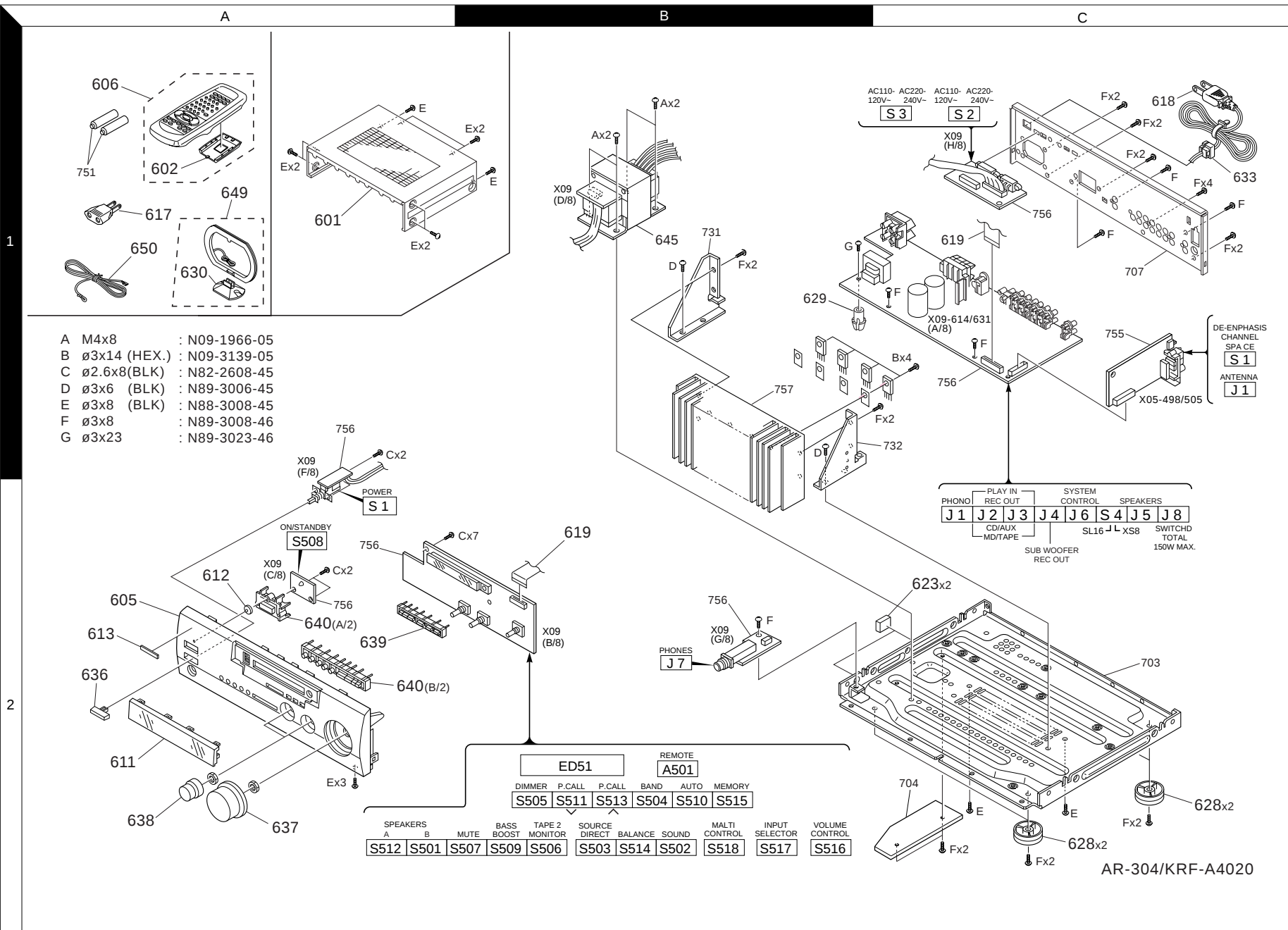
DIGITAL LINE
 SIGNAL LINE
 GND LINE
 +B LINE
 -B LINE



AR-304/KRF-A4020
KENWOOD

EXPLODED VIEW (UNIT)

Parts with exploded numbers larger than 700 are not supplied.



* 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
AR-304/KRF-A4020/A4020E/A4020W						
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	
-					K	
-			B46-0310-03	WARRANTY CARD	ETQE1	
-			B46-0330-03	WARRANTY CARD	K	
-			B46-0336-03	WARRANTY CARD	P	
-			B58-0945-03	CAUTION CARD	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,ORI,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)	TQE1	
-		*	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)	EQE1	
-			H25-0232-04	PROTECTION BAG (235X350X0.03)	KPMX	
-			H25-0391-04	PROTECTION BAG		
-			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	

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-			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		
TUNER UNIT (X05-498X-XX)						
C42			CC73FCH1H120J	CHIP C 12PF J		
C43			CC73FCH1H100D	CHIP C 10PF D		
X1			L77-2232-05	CRYSTAL RESONATOR		
TUNER UNIT (X05-505X-XX)						
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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C24			CK73FB1H331K	CHIP C 330PF K	ETQE1 KPMX ETQE1 KPMX	
C25			CC73FCH1H181J	CHIP C 180PF J		
C25			CC73FCH1H471J	CHIP C 470PF J		
C26			CK73FB1H183K	CHIP C 0.018UF K		
C26			CK73FB1H223K	CHIP C 0.022UF K		
C27			CE04HW1E4R7M	NP-ELEC 4.7UF 25WV	ETQE1 MX KP	
C28, 29			CE04LW1H2R2M	ELECTRO 2.2UF 50WV		
C30, 31			CK73FB1H223K	CHIP C 0.022UF K		
C30, 31			CK73FB1H223K	CHIP C 0.022UF K		
C30, 31			CK73FB1H333K	CHIP C 0.033UF K		
C32			CE04LW1V4R7M	ELECTRO 4.7UF 35WV	M KPMX	
C33, 34			CK73FB1H103K	CHIP C 0.010UF K		
C35			CK73FB1H332K	CHIP C 3300PF K		
C36			CK73FB1H103K	CHIP C 0.010UF K		
C37, 38			CE04LW1C100M	ELECTRO 10UF 16WV		
C39			CC73FCH1H060D	CHIP C 6.0PF D	ETQE1	
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	ETQE1	
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	ETQE1	
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		
C72			CE04LW1H010M	ELECTRO 1.0UF 50WV	KP	
C73			CE04LW1C470M	ELECTRO 47UF 16WV		
C74			CK73FB1H102K	CHIP C 1000PF K		
C75			CC73FCH1H040C	CHIP C 4.0PF C		
C76			CC73FCH1H470J	CHIP C 47PF J		
C77			CC73FSL1H101J	CHIP C 100PF J	M ETQE1	
C78			CK73FB1H223K	CHIP C 0.022UF K		
C79, 80			CK73FB1H472K	CHIP C 4700PF K		
C81			CK73FF1C105Z	CHIP C 1.0UF Z		
C82			CK73FB1H103K	CHIP C 0.010UF K		
C83			CC73FSL1H101J	CHIP C 100PF J	KPMX	
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		
C91			CK73FF1C105Z	CHIP C 1.0UF Z		
CN1			E40-9831-05	SOCKET FOR PIN ASSY	ETQE1	
CN2			E40-4871-05	PIN ASSY		
J1			E70-0080-05	LOCK TERMINAL BOARD		
CF1, 2			L72-0531-05	CERAMIC FILTER	MX ETQE1 KP KPMX	
CF1, 2			L72-0536-05	CERAMIC FILTER		
CF1, 2			L72-0596-05	CERAMIC FILTER		
CF3			L72-0607-05	CERAMIC FILTER		
L1			L39-1366-05	COMBINATION COIL		

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L2			L40-1091-82	SMALL FIXED INDUCTOR(1.0UH)	ETQE1 ETQE1 ETQE1	
L3			L30-0911-05	AM IFT		
L4			L30-0950-05	FM IFT		
L5			L30-0951-05	FM IFT		
L6, 7			L79-1239-05	LC FILTER		
L9			L40-1001-82	SMALL FIXED INDUCTOR(10UH)	ETQE1	
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	ETQE1	
R7			RK73FB2A821J	CHIP R 820 J 1/10W		
R8			RK73FB2A100J	CHIP R 10 J 1/10W		
R8			RK73FB2A330J	CHIP R 33 J 1/10W		
R9			RK73FB2A391J	CHIP R 390 J 1/10W		
R10			RK73FB2A102J	CHIP R 1.0K J 1/10W	ETQE1	
R11			RK73FB2A220J	CHIP R 22 J 1/10W		
R11			RK73FB2A330J	CHIP R 33 J 1/10W		
R12			RK73FB2A101J	CHIP R 100 J 1/10W		
R14			RK73FB2A101J	CHIP R 100 J 1/10W		
R14			RK73FB2A271J	CHIP R 270 J 1/10W	ETQE1	
R15			RK73FB2A333J	CHIP R 33K J 1/10W		
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	ETQE1	
R20			RK73FB2A392J	CHIP R 3.9K J 1/10W		
R23			RK73FB2A153J	CHIP R 15K J 1/10W		
R23			RK73FB2A332J	CHIP R 3.3K J 1/10W		
R25			RK73FB2A183J	CHIP R 18K J 1/10W		
R25			RK73FB2A273J	CHIP R 27K J 1/10W	ETQE1	
R27, 28			RK73FB2A432J	CHIP R 4.3K J 1/10W		
R27, 28			RK73FB2A752J	CHIP R 7.5K J 1/10W		
R29			RK73FB2A101J	CHIP R 100 J 1/10W		
R30			RK73FB2A561J	CHIP R 560 J 1/10W		
R31			RK73FB2A473J	CHIP R 47K J 1/10W	KPMX	
R32			RK73FB2A272J	CHIP R 2.7K J 1/10W		
R33, 34			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R35			RK73FB2A101J	CHIP R 100 J 1/10W		
R36			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R37			RK73FB2A392J	CHIP R 3.9K J 1/10W	ETQE1	
R38			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R39			RK73FB2A103J	CHIP R 10K J 1/10W		
R42			RK73FB2A103J	CHIP R 10K J 1/10W		
R43			RK73FB2A221J	CHIP R 220 J 1/10W		
R44			RD14NB2E271J	RD 270 J 1/4W	ETQE1	
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	ETQE1	
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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R53 R54 R55 R56, 57 R58			RK73FB2A222J RK73FB2A102J RK73FB2A333J RK73FB2A102J RK73FB2A123J	CHIP R 2.2K J 1/10W CHIP R 1.0K J 1/10W CHIP R 33K J 1/10W CHIP R 1.0K J 1/10W CHIP R 12K J 1/10W		
R59 R72, 73 R72, 73 R72, 73 R74			RK73FB2A122J RK73FB2A153J RK73FB2A392J RK73FB2A822J RK73FB2A473J	CHIP R 1.2K J 1/10W CHIP R 15K J 1/10W CHIP R 3.9K J 1/10W CHIP R 8.2K J 1/10W CHIP R 47K J 1/10W	KP ETQE1 MX	
R75 R76 R78 R79 R80			RK73FB2A822J RK73FB2A182J RK73FB2A821J RK73FB2A332J RK73FB2A223J	CHIP R 8.2K J 1/10W CHIP R 1.8K J 1/10W CHIP R 820 J 1/10W CHIP R 3.3K J 1/10W CHIP R 22K J 1/10W		ETQE1
Δ R81 R82 R83 R84 R85~87			RS14KB3A151J RK73FB2A272J RK73FB2A102J RK73EB2B102J RK73FB2A105J	FL-PROOF RS 150 J 1W CHIP R 2.7K J 1/10W CHIP R 1.0K J 1/10W CHIP R 1.0K J 1/8W CHIP R 1.0M J 1/10W		ETQE1
R88 R89 VR1 W51, 52 W54, 55			RK73FB2A563J RK73FB2A333J R32-0037-05 R92-0670-05 R92-0670-05	CHIP R 56K J 1/10W CHIP R 33K J 1/10W SEMI FIXED VARIABLE RESISTOR CHIP R 0 OHM CHIP R 0 OHM		
W56 W59 W60 W62 W80			R92-0670-05 R92-0670-05 R92-0670-05 R92-0670-05 R92-0679-05	CHIP R 0 OHM CHIP R 0 OHM CHIP R 0 OHM CHIP R 0 OHM CHIP R 0 OHM	M ETQE1	
W82, 83 W84, 85			R92-0679-05 R92-0679-05	CHIP R 0 OHM CHIP R 0 OHM	KPMX	
S1			S62-0034-05	SLIDE SWITCH	M	
D1 D1 D1 D3 D3			DA204U MA143A 1SS302 MTZJ8.2(B) RD8.2ES(B2)	DIODE DIODE DIODE ZENER DIODE ZENER DIODE		
D4 D4 D5 D5 D8			MTZJ5.1(B) RD5.1ES(B2) MTZJ2.7(B) RD2.7ES(B2) MA111	ZENER DIODE ZENER DIODE ZENER DIODE ZENER DIODE DIODE		
D9 D9 D11 D13 IC1			MTZJ3.3(B) RD3.3ES(B2) MA111 MA111 LA1837	ZENER DIODE ZENER DIODE DIODE DIODE ANALOGUE IC		ETQE1 ETQE1
IC1 IC2 Q1 Q1 Q2			LA1838 LC72131 2SC4081(R,S) 2SC4116(Y,GR) 2SA1576A(R,S)	ANALOGUE IC MOS-IC TRANSISTOR TRANSISTOR TRANSISTOR	KPMX	

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

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

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

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Δ 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		
Δ 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		KPMX
D33, 34			RD13ES(B2)	ZENER DIODE		ETQE1
D33, 34			RD15ES(B2)	ZENER DIODE		KPMX
D35, 36			MTZJ18(B)	ZENER DIODE		ETQE1
D35, 36			MTZJ20(B)	ZENER DIODE		KPMX
D35, 36			RD18ES(B2)	ZENER DIODE		
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			1SS133	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	
Q19, 20	Δ		TRAITR3N	TRANSISTOR		
Q21, 22	Δ		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		
Q34, 35	Δ		2SC1740S(Q,R)	TRANSISTOR		
Q34, 35	Δ		2SC2785(F,E)	TRANSISTOR		
Q36	Δ		2SB1640	TRANSISTOR		
Q37			2SC1740S(Q,R)	TRANSISTOR		
Q37			2SC2785(F,E)	TRANSISTOR		
Q38	Δ		2SC3940A	TRANSISTOR		
Q39	Δ		2SD2525	TRANSISTOR		
Q40, 41			2SC1740S(Q,R)	TRANSISTOR		
Q40, 41			2SC2785(F,E)	TRANSISTOR		
Q42	Δ		2SB1640	TRANSISTOR		
Q44			2SA1175(F,E)	TRANSISTOR		
Q44			2SA933AS(Q,R)	TRANSISTOR		
Q45	Δ		2SC1740S(Q,R)	TRANSISTOR		
Q45	Δ		2SC2785(F,E)	TRANSISTOR		
Q46, 47	Δ		2SA1175(F,E)	TRANSISTOR		
Q46, 47	Δ		2SA933AS(Q,R)	TRANSISTOR		
Q501			2SC1740S(Q,R)	TRANSISTOR		
Q501			2SC2785(F,E)	TRANSISTOR		
Q502			2SA1309A(Q,R)	TRANSISTOR		
Q502			2SA933AS(Q,R)	TRANSISTOR	M	
Q503			2SC1740S(Q,R)	TRANSISTOR	M	
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 Ω 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 Ω)
Signal to noise ratio (IHF'66)
PHONO (MM) 75 dB
CD 92 dB
Input sensitivity / impedance
PHONO (MM) 2.5 mV / 27 k Ω
CD 200 mV / 47 k Ω
Output level / impedance
TAPE REC 200 mV / 2.2 k Ω
PRE OUT (SUBWOOFER) 2 V / 2.2 k Ω
Tone control
BASS ± 9 dB (at 100 Hz)
TREBLE ± 9 dB (at 10 kHz)

[FM tuner section]

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

50dB quieting sensitivity
STEREO 31.6 μ V (75 Ω) / 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 (± 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 μ V / (600 μ 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 Ω 140 W + 140 W

100 watts per channel minimum RMS, both channels driven, at 8 Ω 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 Ω)
Signal to noise ratio (IHF'66)
PHONO (MM) 75 dB
CD 92 dB
Input sensitivity / impedance
PHONO (MM) 2.5 mV / 27 k Ω
CD 200 mV / 47 k Ω
Output level / impedance
TAPE REC 200 mV / 2.2 k Ω
PRE OUT (SUBWOOFER) 2 V / 2.2 k Ω
Tone control
BASS ± 9 dB (at 100 Hz)
TREBLE ± 9 dB (at 10 kHz)

[FM tuner section]

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

50dB quieting sensitivity
STEREO 31.6 μ V (75 Ω) / 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 (± 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 μ V / (600 μ 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 Ω 105 W + 105 W

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

Total harmonic distortion 0.02 % (1 kHz, 50 W, 4 Ω)

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 Ω

CD 200 mV / 47 k Ω

Output level / impedance

TAPE REC 200 mV / 2.2 k Ω

PRE OUT (SUBWOOFER) 2 V / 2.2 k Ω

Tone control

BASS ± 9 dB (at 100 Hz)

TREBLE ± 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 Ω)

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

STEREO 45 μ 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, ± 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 μ V / (600 μ 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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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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