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PKT-23

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GENERAL

INTRODUCTION

SCOPE OF THIS MANUAL

This manual is intended for use by experienced technicians familiar with similar types of commercial grade communications equipment. It contains all required service information for the equipment and is current as of the publication date. Changes which may occur after publication are covered by either Service Bulletins or Manual Revisions. These are issued as required.

ORDERING REPLACEMENT PARTS

When ordering replacement parts or equipment information, the full part identification number should be included. This applies to all parts : components, kits, or chassis. If the part number is not known, include the chassis or kit number of which it is a part, and a sufficient description of the required component for proper identification.

PERSONAL SAFETY

The following precautions are recommended for personal safety:

- DO NOT transmit until all RF connectors are verified secure and any open connectors are properly terminated.
- SHUT OFF and DO NOT operate this equipment near electrical blasting caps or in an explosive atmosphere.
- This equipment should be serviced by a qualified technician only.

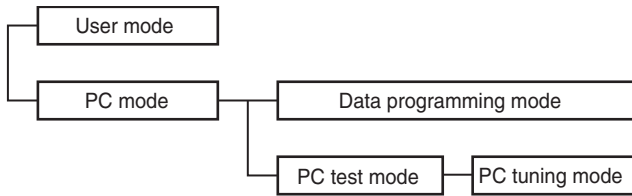
SERVICE

This transceiver is designed for easy servicing. Refer to the schematic diagrams, printed circuit board views, and alignment procedures contained within.

Model	TX-RX unit	TX-RX unit For service	Frequency range	Remarks
PKT-23	X57-8980-10	X57-8980-11	440~480MHz	K Type

REALIGNMENT

1. Modes



Mode	Function
User mode	For normal use.
PC mode	Used for communication between the transceiver and PC.
Data programming mode	Used to read and write frequency data and other features to and from the transceiver.
PC test mode	Used to check the transceiver using the PC. This feature is included in the FPU.

2. How to Enter Each Mode

Mode	Operation
User mode	Power ON
PC mode	Received commands from PC

3. PC Mode

3-1. Preface

The transceiver is programmed by using a personal computer, a programming interface (Micro-USB interface cable) and FPU programming software .

The programming software can be used with a PC. Figure 1 shows the setup of a PC for programming.

3-2. Connection Procedure

1. Connect the transceiver to the personal computer with the interface cable.

Note:

- You must install the USB driver in the computer to use the USB programming interface cable . (Micro-USB)
2. When data is read from the transceiver, the red LED lights.
When data is written to the transceiver, the green LED lights.

3-3. USB programming cable Description (Commercial micro-USB cable)

The micro-USB is a cable which connects to a USB port on a computer.

When using the micro-USB cable, install the supplied CD-ROM (with driver software) in the computer. The driver runs under Windows XP, Vista, 7 or 8.

3-4 Programming Software KPG-172D Description

The KPG-172D is the programming software for the transceiver supplied on a CD-ROM. This software runs under windows XP, Vista, 7 or 8 on a PC. The software on this disk allows a user to program the transceiver via Programming interface cable (commercial micro-USB cable).

Note:

- Use the FPU that matches the market when you first set the market code and model name/frequency data to the service unit. The unit set by mistake cannot be restored.
- The item of "Tuning Data" of a new function is added to KPG-172D.
In the Tuning Data dialog box, adjustment data in the transceiver can be read into KPG-172D, and the read adjustment data can be saved as a file by a service engineer. The saved adjustment data file can be load into KPG-172D, and written into the transceiver.
Please be sure to all adjustment item after data Writing.

3-5. Programming with PC

If data is transferred to the transceiver from a PC with the FPU, the data for each set can be modified.

In this mode, it operates in a USB format from a micro-USB jack.

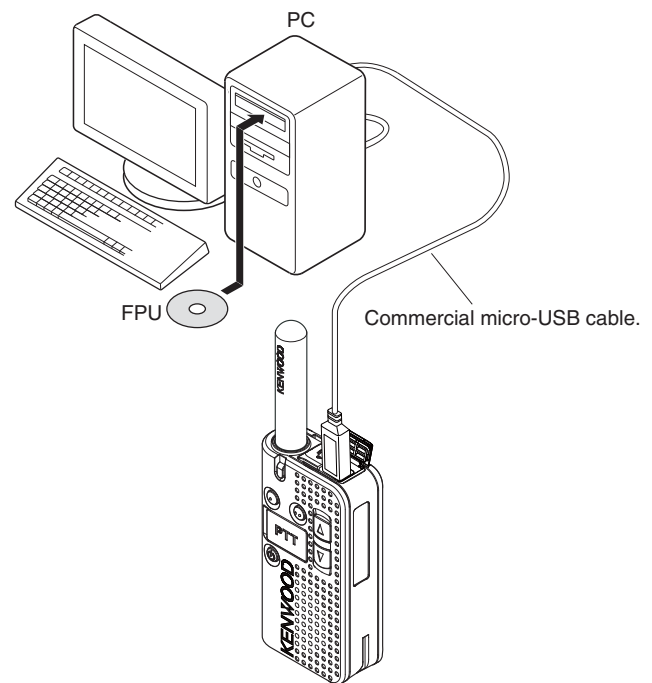


Fig.1

REALIGNMENT

BRS Frequency Table

Note

Frequencies indicated by an asterisk * in the following table may be susceptible to interference from other frequencies.

If interference occurs, change to a different frequency in the following table.

No.	Operating frequency 450-470 [MHz]	No.	Operating frequency 450-470 [MHz]
1	464.5000	46	466.3375
2	464.5500	47	466.3625
3	467.7625	48	467.7875*
4	467.8125*	49	467.8375
5	467.8500	50	467.8625
6	467.8750	51	467.8875
7	467.9000	52	467.9125
8	467.9250	53	469.4875*
9	461.0375	54	469.5125
10	461.0625*	55	469.5375
11	461.0875*	56	469.5625*
12	461.1125*	57	462.1875
13	461.1375	58	462.4625
14	461.1625	59	462.4875
15	461.1875	60	462.5125
16	461.2125	61	467.1875
17	461.2375	62	467.4625*
18	461.2625	63	467.4875
19	461.2875	64	467.5125
20	461.3125	65	451.1875
21	461.3375	66	451.2375
22	461.3625	67	451.2875
23	462.7625	68	451.3375
24	462.7875	69	451.4375
25	462.8125	70	451.5375
26	462.8375*	71	451.6375
27	462.8625	72	452.3125
28	462.8875	73	452.5375
29	462.9125	74	452.4125
30	464.4875	75	452.5125
31	464.5125	76	452.7625
32	464.5375	77	452.8625
33	464.5625	78	456.1875
34	466.0375	79	456.2375
35	466.0625	80	456.2875
36	466.0875	81	456.3375
37	466.1125	82	456.4375
38	466.1375	83	456.5375
39	466.1625	84	456.6375
40	466.1875*	85	457.3125*
41	466.2125	86	457.4125
42	466.2375	87	457.5125*
43	466.2625	88	457.7625
44	466.2875	89	457.8625
45	466.3125		

SEMICONDUCTOR DATA

MCU:2134CKNFPKFGA (TX-RX unit IC3)

Pin No.	Signal Name	I/O	Function
1	TRWP	O	Transceiver IC chip select
2	PDN	O	Deep sleep select
3	VREF	-	+3.3V
4	MODE	-	Reserve
5	SQIN	I	SQ status level
6	BLUE	O	Blue LED control ("H": ON)
7	RESET	I	Reset
8	XOUT	-	12MHz resonator
9	Vss/AVSS	-	Ground
10	XIN	I	12MHz resonator
11	Vcc/AVCC	-	+3.3V
12	SP_MUTE	O	AF mute control (active : Low)
13	INT_MUTE	O	INT AF mute control (active : Low)
14	ATT1	O	Voice guide level attenuator 1
15	ATT2	O	Voice guide level attenuator 2
16	MIC_ATT	O	MIC sensitivity attenuator
17	DC_DET	O	Charging voltage detection
18	USB_VBUS	-	+3.3V
19	USB_DM	I/O	USB data line +
20	USB_DP	I/O	USB data line -
21	USB_VCC	-	+3.3V
22	USB_DPUPE	I	PC connect detection
23	NC	-	Not connect
24	NC	-	Not connect

Pin No	Signal Name	I/O	Function
25	DCSW	O	APC discharge control (active : HI)
26	PF2	I	PF2 key (active : Low)
27	CHG	I	Battery charge state
28	33TC/T/R	O	33T control (active : Low)
29	33MC	O	33M control (active : HI)
30	OPTDET	I	EXT SP/MIC detection (active : Low)
31	POWER	I	Power key (active : HI)
32	HL_TYPE	I	H/L control
33	DOWN	I	Down key (active : Low)
34	UP	I	Up key (active : Low)
35	PTT	I	PTT key (active : Low)
36	PF1	I	PF1 key (active : Low)
37	P_TEMP	I	Temperture detection (TX PA)
38	CURRENT	I	Batrry level detection (at TX)
39	BATT	I	Batrry level detection
40	VOICE_DATA	O	Voice guide announce
41	EXTPTT	I	Reserve
42	STBY	O	AF AMP power supply control (active : HI)
43	VOX	O	VOX control
44	QTIN	I	QT status level
45	RED	O	Red LED control ("H": ON)
46	GREEN	O	Green LED control ("H": ON)
47	SCLK	O	Serial clock
48	SDIO	I/O	Serial data

COMPONENTS DESCRIPTION

TX-RX unit (X57-8980-10)

Ref. No.	Part Name	Description
IC2	IC	Reset(for MCU)
IC3	IC	MCU
IC100	IC	Transceiver system
IC200	IC	A/2 : MIC AMP, B/2 : Buffer AMP
IC201	IC	AF Power AMP
IC300	IC	Battery charge system
IC301	IC	3.3V regulator
Q3	FET	DC Switch
Q101	FET	DC Switch
Q200	Transistor	Switch (voice ATT 1)
Q201	Transistor	Switch (voice ATT 2)
Q203	Transistor	MIC sensitivity switch
Q205	FET	Switch (AF mute)
Q206	Transistor	Switch (SP mute)
Q210	FET	AF AMP DC Switch
Q300	FET	DC Switch (33T)
Q301	Transistor	DC Switch (charge control)
Q302	Transistor	DC Switch
Q303	FET	DC Switch (charge control)
Q402	Transistor	LED switch (blue)
Q403	Transistor	LED switch (red)
Q404	Transistor	LED switch (green)
Q501	Transistor	TX pre-drive AMP
Q502	FET	TX drive AMP
Q503	Transistor	DC Switch (HI/Low)
Q504	FET	TX final AMP
Q505	Transistor	APC discharge switch
Q506	FET	DC Switch (current detection)
Q507	FET	RX RF AMP
Q508	FET	DC Switch (HI/Low)
D200	Zener diode	Over voltage protection
D201	Diode	Reverse current prevention
D240,241	Diode	Surge protection
D300	Zener diode	Over voltage protection
D301	Zener diode	Surge protection
D302,303	Diode	OR (IC301 STBY line)
D304	Diode	Reverse voltage prevention
D305,306	Diode	OR (IC300 input)
D309	Zener diode	Over voltage protection
D310	Diode	Reverse voltage prevention
D402	LED	LED (red/green/blue)
D501,502	Diode	ANT switch
D510	Diode	Surge protection

PARTS LIST

* New Parts. Δ indicates safety critical components.

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.

L : Scandinavia

K : USA

P : Canada

Y : PX (Far East, Hawaii)

T : England

E : Europe

C : China

X : Australia

M : Other Areas

PKT-23

TX-RX UNIT (X57-8980-10)

Ref. No.	Address	Parts No.	Description	Desti- nation
PKT-23				
1	3B	A02-4238-03	PLASTIC CABINET ASSY(FRONT)	
2	1A	A02-4241-03	PLASTIC CABINET(REAR)	
3	2A	J21-8684-02	FRAME	
4	3B	B09-0763-03	CAP(PHONE/USB)	
5	3B	B43-1699-04	BADGE(PROTALK)	
6	3A	E37-1684-05	PROCESSED LEAD WIRE(SP)	
7	1A	F07-1973-03	COVER (BATTERY)	
8	2B	F07-1977-03	COVER(ANT)	
9	2A	F20-3412-04	INSULATION SHEET(FRAME)	
10	2A	G10-1324-04	FIBROUS SHEET(J201 UP)	
11	2B	G10-1378-04	FIBROUS SHEET(ANT)	
12	2A	G11-4429-04	RUBBER SHEET(FRAME)	
13	2A	G53-2232-03	PACKING(BATTERY)	
-	-	H52-2770-03	ITEM CARTON CASE	
14	2A	J9K-0002-00	ADHESIVE SHEET(J201 LOW)	
15	2B	K29-9637-02	KEY TOP	
A,B	2A	N80-2005-48	PAN HEAD TAPTITE SCREW(PCB/REAR)	
C	1A	N80-2008-43	PAN HEAD TAPTITE SCREW(REAR)	
16	3B	T07-0787-15	SPEAKER	
17	2B	T90-1141-05	ANTENNA ELEMENT	
ACCESSORY				
		B62-2576-00	INSTRUCTION MANUAL ACCESSORY	
		J29-0764-05	BELT CLIP ACCESSORY	
		N99-2092-05	SCREW SET ACCESSORY	
		H52-2770-03	ITEM CARTON CASE ACCESSORY	
		W08-1350-05	AC ADAPTER(KSC-44SL) ACCESSORY	
		W08-1351-05	CHARGER(KSC-44CR) ACCESSORY	
18	1A	KNB-71L (SALES ORDER)	BATTERY PACK ACCESSORY	
		X57-8980-11	TX-RX UNIT(FOR SERVICE)	
TX-RX UNIT (X57-8980-10)				
D402		B30-2355-05	LED(RED/GREEN/BLUE)	
C9		CC73HCH1H471J	CHIP C 470PF J	
C12		CK73HB1A105K	CHIP C 1.0UF K	
C13		CC73HCH1H471J	CHIP C 470PF J	
C14		CK73HB1A105K	CHIP C 1.0UF K	
C15		CK73HB1E104K	CHIP C 0.10UF K	
C16		CK73FB0J106K	CHIP C 10UF K	
C18		CK73HB1H103K	CHIP C 0.010UF K	
C19		CK73HB1E104K	CHIP C 0.10UF K	
C20-22		CC73HCH1H471J	CHIP C 470PF J	
C23		CK73HB1E104K	CHIP C 0.10UF K	
C45		CC73HCH1H471J	CHIP C 470PF J	
C100		CC73HCH1H471J	CHIP C 470PF J	
C101		CK73HB1E104K	CHIP C 0.10UF K	
C102		CC73HCH1H471J	CHIP C 470PF J	
C103		CK73HB1E104K	CHIP C 0.10UF K	
C104		CK73FB0J226M	CHIP C 22UF M	
C105		CC73HCH1H471J	CHIP C 470PF J	
C106		CK73HB1E104K	CHIP C 0.10UF K	
C107		CC73HCH1H471J	CHIP C 470PF J	

Ref. No.	Address	Parts No.	Description	Desti- nation
C108		CK73HB1E104K	CHIP C 0.10UF K	
C109		CC73HCH1H471J	CHIP C 470PF J	
C110		CK73HB1E104K	CHIP C 0.10UF K	
C201		CK73HB1E104K	CHIP C 0.10UF K	
C202		CK73HB1A105K	CHIP C 1.0UF K	
C208		CK73FB0J106K	CHIP C 10UF K	
C209,210		CK73HB1E104K	CHIP C 0.10UF K	
C211,212		CK73HB1A105K	CHIP C 1.0UF K	
C213		CK73HB1E104K	CHIP C 0.10UF K	
C214		CK73FB0J226M	CHIP C 22UF M	
C215		CC73HCH1H471J	CHIP C 470PF J	
C216		CK73HB1A105K	CHIP C 1.0UF K	
C217		CK73HB1E223K	CHIP C 0.022UF K	
C219,220		CK73HB1A224K	CHIP C 0.22UF K	
C221		CK73FB0J106K	CHIP C 10UF K	
C223-225		CC73HCH1H471J	CHIP C 470PF J	
C227		CC73HCH1H471J	CHIP C 470PF J	
C229		CC73HCH1H470J	CHIP C 47PF J	
C241,242		CC73HCH1H471J	CHIP C 470PF J	
C244,245		CC73HCH1H471J	CHIP C 470PF J	
C252		CK73HB1A224K	CHIP C 0.22UF K	
C260		CC73HCH1H471J	CHIP C 470PF J	
C301		CK73HB1A105K	CHIP C 1.0UF K	
C308		CK73HB1A105K	CHIP C 1.0UF K	
C310		CK73HB1A105K	CHIP C 1.0UF K	
C317		CK73HB1A105K	CHIP C 1.0UF K	
C319		CC73HCH1H471J	CHIP C 470PF J	
C320		CK73HB1A105K	CHIP C 1.0UF K	
C323		CC73HCH1H471J	CHIP C 470PF J	
C327		CC73HCH1H471J	CHIP C 470PF J	
C328		CK73HB1A105K	CHIP C 1.0UF K	
C333		CC73HCH1H471J	CHIP C 470PF J	
C349		CK73FB1A475K	CHIP C 4.7UF K	
C350		CC73HCH1H471J	CHIP C 470PF J	
C351		CK73GB0J225K	CHIP C 2.2UF K	
C500		CC73HCH1H471J	CHIP C 470PF J	
C503		CC73HCH1H080B	CHIP C 8.0PF B	
C504		CC73HCH1H330J	CHIP C 33PF J	
C505		CC73HCH1H040B	CHIP C 4.0PF B	
C506,507		CC73HCH1H471J	CHIP C 470PF J	
C510,511		CC73HCH1H471J	CHIP C 470PF J	
C512		CK73HB1E104K	CHIP C 0.10UF K	
C513		CC73HCH1H471J	CHIP C 470PF J	
C514		CK73HB1E104K	CHIP C 0.10UF K	
C515		CC73HCH1H221J	CHIP C 220PF J	
C517		CC73HCH1H270J	CHIP C 27PF J	
C518		CC73HCH1H080B	CHIP C 8.0PF B	
C519		CC73HCH1H270J	CHIP C 27PF J	
C520,521		CC73HCH1H471J	CHIP C 470PF J	
C522		CK73HB1E104K	CHIP C 0.10UF K	
C523		CK73HB1H103K	CHIP C 0.010UF K	
C525,526		CC73HCH1H471J	CHIP C 470PF J	
C528		CC73GCH1H150J	CHIP C 15PF J	
C529		CC73GCH1H180J	CHIP C 18PF J	
C530,531		CC73HCH1H471J	CHIP C 470PF J	

If a part reference number is listed in a shaded box, that part does not come with the PCB.

PARTS LIST

TX-RX UNIT (X57-8980-10)

Ref. No.	Address	Parts No.	Description	Destination	Ref. No.	Address	Parts No.	Description	Destination
C533		CC73HCH1H060B	CHIP C 6.0PF B		X1		L77-3126-05	TCXO(25.6MHZ)	
C534		CC73HCH1H471J	CHIP C 470PF J		X2		L78-1438-05	RESONATOR(12.00MHZ)	
C535		CC73GCH1H181J	CHIP C 180PF J		R3		RK73HB1J473J	CHIP R 47K J 1/16W	
C536		CC73HCH1H471J	CHIP C 470PF J		R6		RK73HB1J473J	CHIP R 47K J 1/16W	
C537		CC73GCH1H050B	CHIP C 5.0PF B		R8-10		RK73HB1J473J	CHIP R 47K J 1/16W	
C539		CC73GCH1H1R5B	CHIP C 1.5PF B		R13		RK73HH1J153D	CHIP R 15K D 1/16W	
C540		CC73HCH1H471J	CHIP C 470PF J		R14		RK73HB1J473J	CHIP R 47K J 1/16W	
C541		CC73GCH1H080B	CHIP C 8.0PF B		R18		RK73HH1J393D	CHIP R 39K D 1/16W	
C542		CC73HCH1H471J	CHIP C 470PF J		R32		RK73HB1J334J	CHIP R 330K J 1/16W	
C543		CC73GCH1H020B	CHIP C 2.0PF B		R44		RK73HB1J472J	CHIP R 4.7K J 1/16W	
C544		CC73GCH1H040B	CHIP C 4.0PF B		R60		RK73HB1J103J	CHIP R 10K J 1/16W	
C546,547		CK73HB1E104K	CHIP C 0.10UF K		R62		RK73HB1J471J	CHIP R 470 J 1/16W	
C548		CC73HCH1H271J	CHIP C 270PF J		R83		RK73GB2A000J	CHIP R 0 J 1/10W	
C549		CC73HCH1H471J	CHIP C 470PF J		R100		RK73HB1J473J	CHIP R 47K J 1/16W	
C550		CC73HCH1H271J	CHIP C 270PF J		R101,102		RK73HB1J103J	CHIP R 10K J 1/16W	
C551,552		CC73HCH1H471J	CHIP C 470PF J		R201		RK73HB1J103J	CHIP R 10K J 1/16W	
C553		CC73HCH1H150J	CHIP C 15PF J		R202		RK73HB1J331J	CHIP R 330 J 1/16W	
C554		CC73HCH1H180J	CHIP C 18PF J		R203		RK73HB1J561J	CHIP R 560 J 1/16W	
C555		CK73HB1E104K	CHIP C 0.10UF K		R206		RK73HB1J271J	CHIP R 270 J 1/16W	
C556		CC73HCH1H471J	CHIP C 470PF J		R207		RK73HB1J332J	CHIP R 3.3K J 1/16W	
C558		CC73HCH1H471J	CHIP C 470PF J		R212		RK73HB1J471J	CHIP R 470 J 1/16W	
C559		CC73HCH1H050B	CHIP C 5.0PF B		R213		RK73HB1J182J	CHIP R 1.8K J 1/16W	
C560		CC73HCH1H030B	CHIP C 3.0PF B		R214		RK73HH1J473D	CHIP R 47K D 1/16W	
C562,563		CC73HCH1H120J	CHIP C 12PF J		R215		RK73HB1J183J	CHIP R 18K D 1/16W	
C565		CC73HCH1H1R5B	CHIP C 1.5PF B		R216		RK73HB1J223J	CHIP R 22K D 1/16W	
C566		CC73HCH1H271J	CHIP C 270PF J		R217		RK73HH1J473D	CHIP R 47K D 1/16W	
C567		CK73HB1E104K	CHIP C 0.10UF K		R218		RK73HB1J103J	CHIP R 10K J 1/16W	
CN305		E40-6957-05	PIN ASSY(3P)		R219		RK73HB1J473J	CHIP R 47K J 1/16W	
CN306		E23-1262-05	TERMINAL(CHARGER +)		R220		RK73HB1J683J	CHIP R 68K J 1/16W	
CN307		E23-1167-05	TERMINAL(GND)		R221		RK73HB1J000J	CHIP R 0 J 1/16W	
CN308		E23-1262-05	TERMINAL(CHARGER -)		R222		RK73HB1J222J	CHIP R 2.2K J 1/16W	
CN314		E23-1167-05	TERMINAL(GND)		R223		RK73HB1J122J	CHIP R 1.2K J 1/16W	
J201	2A	E11-0725-05	3.5D PHONE JACK(EXT SP/MIC)		R224		RK73HB1J821J	CHIP R 820 J 1/16W	
J300		E58-0566-05	RECTANGULAR RECEPTACLE		R225		RK73HB1J473J	CHIP R 47K J 1/16W	
F1		F53-0487-05	FUSE(1.6A)		R226		RK73HB1J102J	CHIP R 1.0K J 1/16W	
F2		F53-0498-05	FUSE(1.0A)		R227		RK73HB1J150J	CHIP R 15 J 1/16W	
F3		F53-0286-05	FUSE(2.5A)		R230		RK73HB1J474J	CHIP R 470K J 1/16W	
L1		L92-0163-05	BEADS CORE		R231		RK73HB1J273J	CHIP R 27K J 1/16W	
L100		L92-0163-05	BEADS CORE		R233		RK73HB1J474J	CHIP R 470K J 1/16W	
L200,201		L92-0163-05	BEADS CORE		R234		RK73HB1J473J	CHIP R 47K J 1/16W	
L501		L40-1275-71	SMALL FIXED INDUCTOR(12NH)		R236		RK73HB1J102J	CHIP R 1.0K J 1/16W	
L502		L40-2275-71	SMALL FIXED INDUCTOR(22NH)		R237		RK73HB1J101J	CHIP R 100 J 1/16W	
L503		L40-6865-71	SMALL FIXED INDUCTOR(6.8NH)		R244		RK73HB1J152J	CHIP R 1.5K J 1/16W	
L504		L41-2275-74	SMALL FIXED INDUCTOR(22NH)		R245		RK73HB1J273J	CHIP R 27K J 1/16W	
L505		L41-2263-53	SMALL FIXED INDUCTOR(2.2NH)		R250		RK73HB1J103J	CHIP R 10K J 1/16W	
L506		L41-1563-53	SMALL FIXED INDUCTOR(1.5NH)		R252		RK73HB1J474J	CHIP R 470K J 1/16W	
L507		L41-2285-53	SMALL FIXED INDUCTOR(220NH)		R260		RK73HB1J104J	CHIP R 100K J 1/16W	
L508		L34-4572-05	AIR-CORE COIL(4T)		R301		RK73HB1J104J	CHIP R 100K J 1/16W	
L509		L41-2263-14	SMALL FIXED INDUCTOR(2.2NH)		R302		RK73HB1J152J	CHIP R 1.5K J 1/16W	
L510		L41-3385-14	SMALL FIXED INDUCTOR(330NH)		R303		RK73HB1J104J	CHIP R 100K J 1/16W	
L511		L34-4572-05	AIR-CORE COIL(4T)		R311		RK73HB1J124J	CHIP R 120K J 1/16W	
L512		L41-2285-53	SMALL FIXED INDUCTOR(220NH)		R312		RK73HB1J683J	CHIP R 68K J 1/16W	
L513		L34-4572-05	AIR-CORE COIL(4T)		R313,314		RK73HB1J270J	CHIP R 27 J 1/16W	
L514		L41-1275-53	SMALL FIXED INDUCTOR(12NH)		R330,331		RK73HB1J153J	CHIP R 15K J 1/16W	
L515		L34-4572-05	AIR-CORE COIL(4T)		R332		RK73HB1J104J	CHIP R 100K J 1/16W	
L516		L40-3363-71	SMALL FIXED INDUCTOR(3.3NH)		R334		RK73HB1J104J	CHIP R 100K J 1/16W	
L517		L40-1275-71	SMALL FIXED INDUCTOR(12NH)		R340		RK73HB1J154J	CHIP R 150K J 1/16W	
L518		L41-8268-14	SMALL FIXED INDUCTOR(8.2NH)		R341		RK73HB1J104J	CHIP R 100K J 1/16W	
					R344		RK73HB1J563J	CHIP R 56K J 1/16W	

PARTS LIST

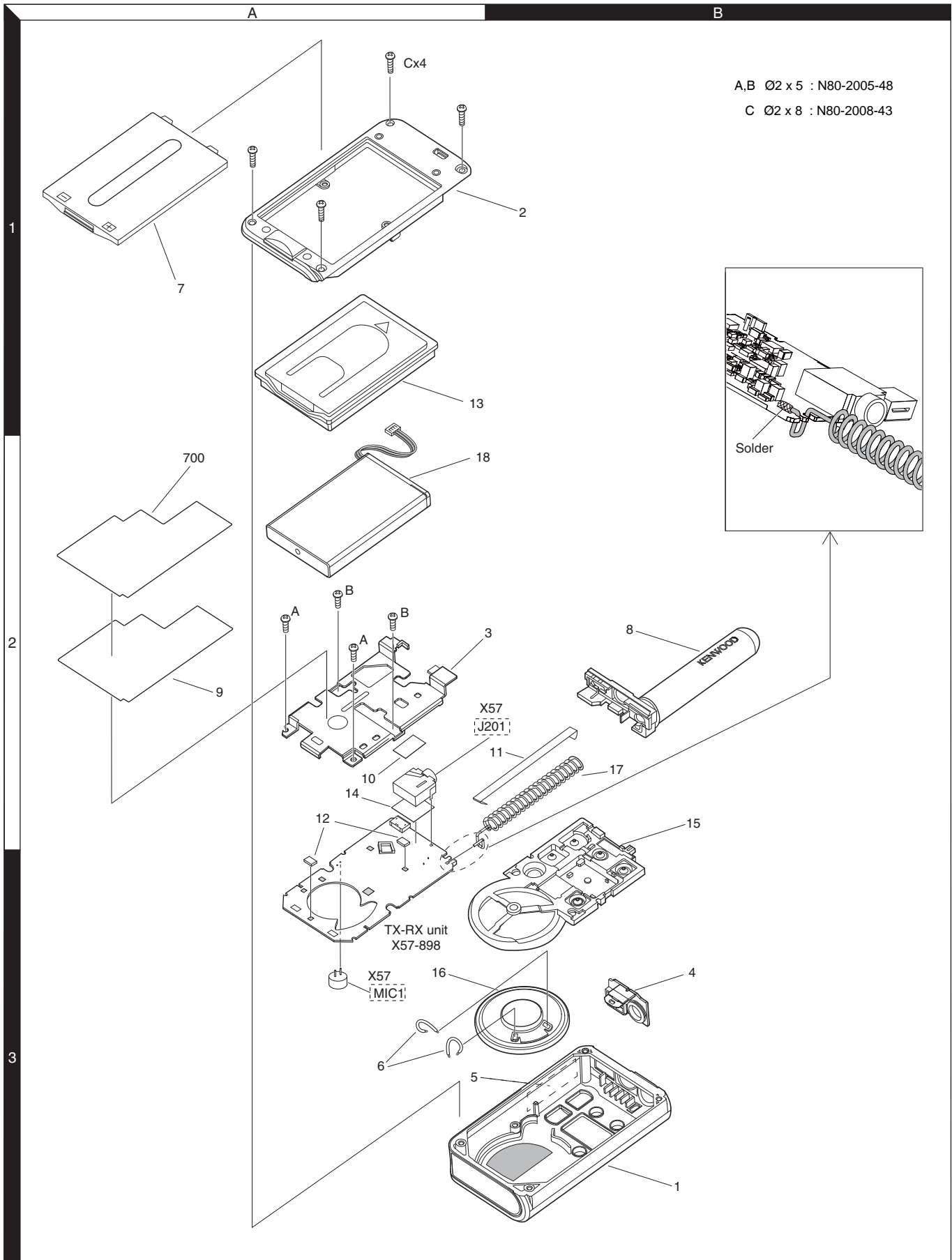
TX-RX UNIT (X57-8980-10)

Ref. No.	Address	Parts No.	Description	Desti- nation	Ref. No.	Address	Parts No.	Description	Desti- nation
R345		RK73HB1J822J	CHIP R 8.2K J 1/16W		D501,502		RN142S	DIODE	
R348		RK73HB1J223J	CHIP R 22K J 1/16W		D510		EZJZOV500AA	VARIATOR	
R349		RK73HH1J821D	CHIP R 820 D 1/16W		IC2		BU4827F	MOS-IC	
R350		RK73HH1J332D	CHIP R 3.3K D 1/16W		IC3		2134CKNFPKFGA	MCU	
R351		RK73HB1J103J	CHIP R 10K J 1/16W		IC100		Note 1	MOS-IC	
R402		RK73HB1J151J	CHIP R 150 J 1/16W		IC200		BA3404FVM	MOS-IC	
R403		RK73HB1J271J	CHIP R 270 J 1/16W		IC201		BD5638NUX	MOS-IC	
R404		RK73HB1J101J	CHIP R 100 J 1/16W		IC300		BQ24086DRCR	MOS-IC	
R505		RK73HB1J150J	CHIP R 15 J 1/16W		IC301		BU33TD3WG	MOS-IC	
R506		RK73HB1J102J	CHIP R 1.0K J 1/16W		Q3		EM6M2	FET	
R507		RK73HB1J222J	CHIP R 2.2K J 1/16W		Q101		RE1C001UN	FET	
R508		RK73HB1J101J	CHIP R 100 J 1/16W		Q200,201		LTC014EEBFS8	TRANSISTOR	
R509		RK73HB1J821J	CHIP R 820 J 1/16W		Q203		LTC014EEBFS8	TRANSISTOR	
R511		RK73HB1J100J	CHIP R 10 J 1/16W		Q205		US6K4	FET	
R512		RK73HB1J153J	CHIP R 15K J 1/16W		Q206		LTC014EEBFS8	TRANSISTOR	
R513		RK73HB1J104J	CHIP R 100K J 1/16W		Q210		RE1C001ZP	FET	
R514		RK73HB1J183J	CHIP R 18K J 1/16W		Q300		SSM3J36TUT	FET	
R515		RK73HB1J223J	CHIP R 22K J 1/16W		Q301		LTC014EEBFS8	TRANSISTOR	
R516		RK73HB1J473J	CHIP R 47K J 1/16W		Q302		LTC044EEBFS8	TRANSISTOR	
R517		RK73HB1J121J	CHIP R 120 J 1/16W		Q303		RE1C001UN	FET	
R518		RK73HB1J104J	CHIP R 100K J 1/16W		Q402-404		LTC023JEBFS8	TRANSISTOR	
R519		RK73HB1J331J	CHIP R 330 J 1/16W		Q501		2SC4926YD	TRANSISTOR	
R520		RK73HB1J393J	CHIP R 39K J 1/16W		Q502		RFM01U7P	FET	
R521		RK73HB1J473J	CHIP R 47K J 1/16W		Q503		LTC014EEBFS8	TRANSISTOR	
R522		RK73HH1J393D	CHIP R 39K D 1/16W		Q504		RFM03U3CT	FET	
R523		RK73HH1J153D	CHIP R 15K D 1/16W		Q505		LTC014EEBFS8	TRANSISTOR	
R524		R92-3637-05	CHIP R 0.39 J 1/3W		Q506		EM6M2	FET	
R525		RK73HB1J121J	CHIP R 120 J 1/16W		Q507		BF5020W	FET	
R526		R92-3637-05	CHIP R 0.39 J 1/3W		Q508		EM6K34	FET	
R527		RK73HB1J470J	CHIP R 47 J 1/16W		TH500		B57331V2104J	THERMISTOR(100K)	
R528		R92-3637-05	CHIP R 0.39 J 1/3W						
R529		RK73HB1J470J	CHIP R 47 J 1/16W						
R530		RK73HB1J000J	CHIP R 0 J 1/16W						
R531		RK73HB1J470J	CHIP R 47 J 1/16W						
R532		RK73HB1J104J	CHIP R 100K J 1/16W						
R533		RK73HB1J101J	CHIP R 100 J 1/16W						
R534		RK73HB1J104J	CHIP R 100K J 1/16W						
R535		RK73HB1J823J	CHIP R 82K J 1/16W						
R536		RK73HB1J154J	CHIP R 150K J 1/16W						
R537		RK73HB1J473J	CHIP R 47K J 1/16W						
R538		RK73HB1J560J	CHIP R 56 J 1/16W						
R539		RK73HB1J000J	CHIP R 0 J 1/16W						
R540		RK73HB1J332J	CHIP R 3.3K J 1/16W						
R543		RK73HB1J473J	CHIP R 47K J 1/16W						
R544		RK73HB1J222J	CHIP R 2.2K J 1/16W						
S1		S70-0519-05	TACT SWITCH(PF2)						
S2		S70-0516-05	TACT SWITCH(PTT)						
S3-6		S70-0519-05	TACT SWITCH(UP/DN/PF1/POWER)						
MIC1	3A	T91-0651-15	MIC ELEMENT						
D200		DZ2J062(M)	ZENER DIODE						
D201		RB531SM-30	DIODE						
D240,241		AVRM10080MAAB	VARIATOR						
D300		DZ2J062(M)	ZENER DIODE						
D301		RSB12JS2	ZENER DIODE						
D302,303		DAN222WM	DIODE						
D304		GN1G	DIODE						
D305,306		RB055L-30	DIODE						
D309		DZ2J062(M)	ZENER DIODE						
D310		GN1G	DIODE						

If a part reference number is listed in a shaded box, that part does not come with the PCB.
Note 1: This part cannot be replaced. Therefore, this part is not supplied as a service part.

PKT-23

EXPLODED VIEW



10 Parts with the exploded numbers larger than 700 are not supplied.
If a part reference number is listed in a box on the exploded view of the PCB, that part does not come with the PCB.
These parts must be ordered separately.

ADJUSTMENT

Test Equipment Required for Alignment

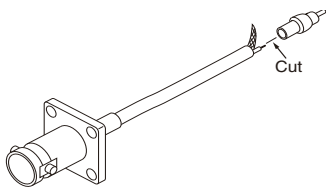
Test Equipment	Major Specifications	
1. Standard Signal Generator (SSG)	Frequency Range Modulation Output	400 to 500MHz Frequency modulation and external modulation -127dBm/0.1μV to greater than -47dBm/1mV
2. RF Power Meter	Input Impedance Operation Frequency Measurement Range	50Ω 400 to 500MHz Vicinity of 10W
3. Deviation Meter	Frequency Range	400 to 500MHz
4. Digital Volt Meter (DVM)	Measuring Range Input Impedance	10mV to 10V DC High input impedance for minimum circuit loading
5. Oscilloscope		DC through 30MHz
6. High Sensitivity Frequency Counter	Frequency Range Frequency Stability	10Hz to 1000MHz 0.2ppm or less
7. DC Ammeter		5A
8. AF Volt Meter (AF VM)	Frequency Range Voltage Range	50Hz to 10kHz 1mV to 10V
9. Audio Generator (AG)	Frequency Range Output	50Hz to 5kHz or more 0 to 1V
10. Distortion Meter	Capability Input Level	3% or less at 1kHz 50mV to 10Vrms
11. Spectrum Analyzer	Measuring Range	10kHz to 1GHz or more
12. Tracking Generator	Center frequency Output Voltage	50kHz to 600MHz 100mV or more
13. 32Ω Dummy Load		Approx. 32Ω, 0.5W
14. Regulated Power Supply		2V to 5V, approx. 3A Useful if ammeter equipped

The test equipment which is not used for adjustment is contained in this table.

Service Jig

■ ANT cable (E30-3418-25)

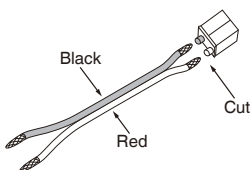
Modify the cable as shown below.



Solder the ANT cable to the ANT terminal on the TX-RX unit.

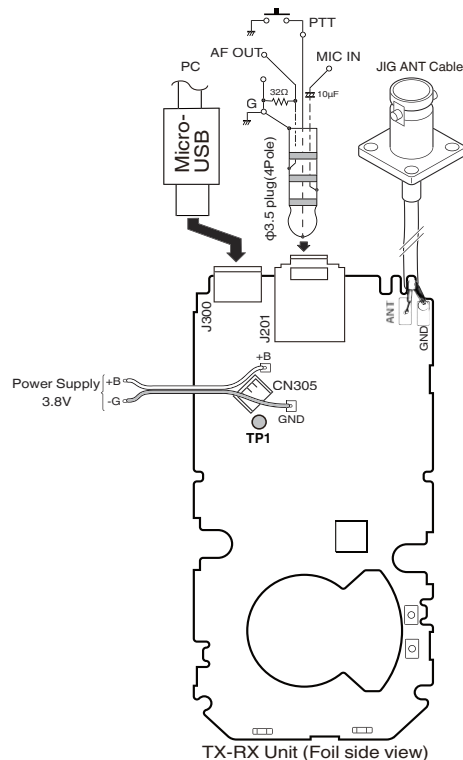
■ Power supply cable (E37-1124-05)

Modify the cable as shown below.



Solder the power supply cable to the power supply terminal on the TX-RX unit.

■ Measuring instrument connection diagram



ADJUSTMENT

Removing the Antenna Element from the TX-RX unit

1. Remove the solder of the two speaker lead wires (①).
2. Lift the TX-RX unit as shown in Fig. 1 (②).

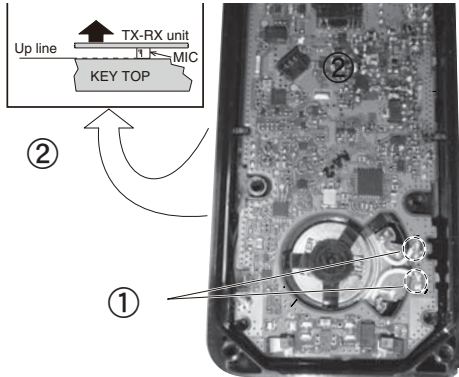


Fig.1

3. TX-RX unit is pulled out 1 cm (③).

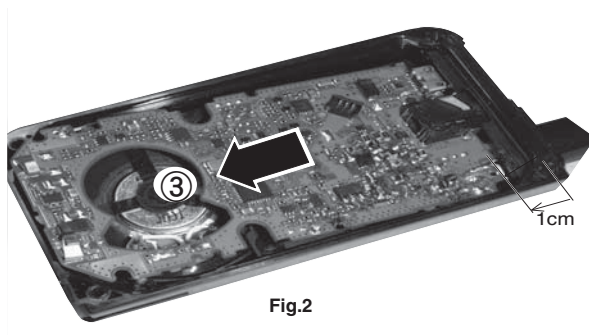


Fig.2

4. Remove the solder from the antenna element using a soldering iron then pull out the TX-RX unit off (④).

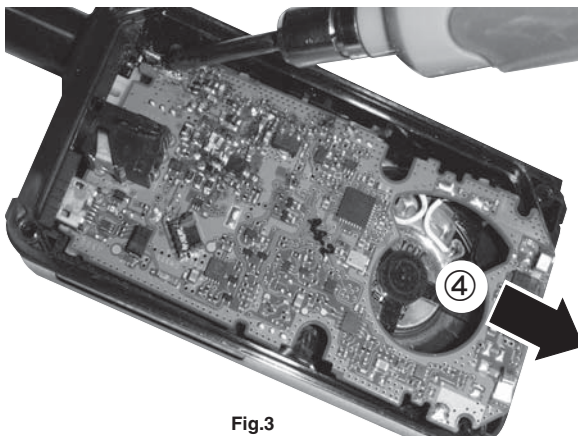


Fig.3

Note : Do not check High Transmit power in the state where there is no frame.

Frequency and Signaling

The transceiver has been adjusted for the frequencies shown in the following table. When required, re-adjust them following the adjustment procedure to obtain the frequencies you want in actual operation.

■ Test Frequency (MHz)

CH	RX Frequency	TX Frequency
1	460.05000	460.10000
2	440.05000	440.10000
3	479.95000	479.90000
4	460.00000	460.00000
5	460.20000	460.20000
6	460.40000	460.40000
7,8	-	-

■ Signaling

No.	RX (Decode)	TX (Encode)
1	None	None
2	QT 67.0Hz	QT 67.0Hz
3	QT 151.4Hz	QT 151.4Hz
4	QT 210.7Hz	QT 210.7Hz
5	QT 254.1Hz	QT 254.1Hz
6	DQT D023N	DQT D023N
7	DQT D754I	DQT D754I

Preparations for Tuning the Transceiver

Before attempting to tune the transceiver, connect the unit to a suitable power supply.

Whenever the transmitter is tuned, the unit must be connected to a suitable dummy load (i.e. power meter).

The speaker output connector must be terminated with a 32Ω dummy load and connected to an AC voltmeter and an audio distortion meter or a SINAD measurement meter.

■ Adjustment frequency (MHz)

Tuning point	RX	TX
Low	440.05000	440.10000
Center	460.05000	460.10000
High	479.95000	479.90000

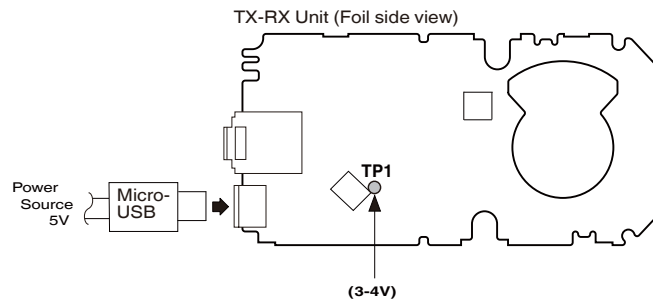
ADJUSTMENT

Check Section

Item	Condition	Measurement			Adjustment			Specifications / Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Setting	1) BATT terminal voltage: 3.8V 2) SSG standard modulation MOD: 1kHz, DEV: 1.5kHz				TX-RX			
2. Frequency	1) Test Channel : 1 Signaling :1 TX Power : Low Press [Transmit] button.	f. counter	TX-RX	ANT-JIG	TX-RX	FPU	Check	440.100MHz ±2.5ppm
3. High Transmit Power *Note 1	1) Test Channel : 1 Signaling :1 TX Power : High Press [Transmit] button.	Power meter Ammeter					Check	1.5W ±0.1W
4. Low Transmit Power	1) Test Channel : 1 Signaling :1 TX Power : Low Press [Transmit] button.							0.5W ±0.1W
5. Maximum Deviation	1) Test Channel : 1 Signaling :1 TX Power : Low Press [Transmit] button. AG: 1kHz/100mV Deviation meter filter LPF: 15kHz, HPF: OFF	Deviation meter Power meter Oscilloscope AG AF VM		ANT-JIG MIC-JIG	TX-RX	FPU		2.1kHz ±100Hz (According to the larger +, -)
6. MIC Sensitivity [Normal]	1) Test Channel : 1 Signaling :1 TX Power : Low Press [Transmit] button. AG: 1kHz Deviation meter filter LPF: 15kHz, HPF: OFF							14mV ±5.0mV
7. Sensitivity (Receiver)	1)SSG output: -118dBm (0.28µV) VOL position : "4"	SSG DVM Oscilloscope AF VM Distortion meter Dummy load :32Ω	TX-RX	ANT-JIG EXT-Phone	TX-RX	FPU	Check	12dB SINAD or more
8.Squelch Level 2	1)SSG output: -118dBm (0.28µV)							Squelch : open
9.Squelch Level 2	1)SSG output: -128dBm (0.089µV)							Squelch : close

***Note 1:** Do not check High Transmit power in the state where there is no frame.

***Note 2:** The When you exchange charge IC (IC300) and a peripheral part, check that the voltage of TP1 is 3V to 4V.
(Setting from the USB connector to 5V power supply source)



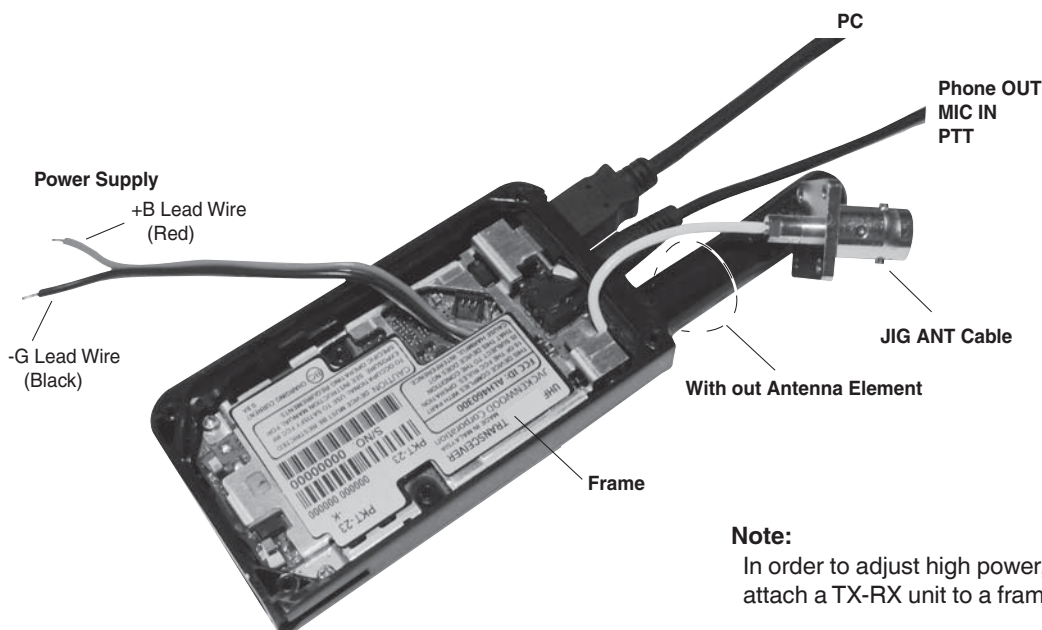
ADJUSTMENT

Adjustment Section

Item	Condition	Measurement			Adjustment			Specifications / Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1 High Transmit Power and Protective Current *Note	1) Adj item: Low, Center, High (3 points) BATT terminal voltage: 3.8V Press [Transmit] button.	Power meter Ammeter	TX-RX	ANT-JIG		FPU	1.5W	±0.1W 1.8A or less
2. Low Transmit Power	1) Adj item: Low, Center, High (3 points) BATT terminal voltage: 3.8V Press [Transmit] button.						0.5W	
3. Maximum Deviation [Narrow]	1) Adj item: Center, Low, High (3 points) AG: 1kHz/100mV Deviation meter filter LPF: 15kHz HPF: OFF Press [Transmit] button.						2.1kHz (According to the lager +, -)	±100Hz
4. Battery Reference Level	1) BATT terminal voltage: 3.8V	DVM	TX-RX	BATT terminal		FPU	Write	BATT terminal voltage: 3.8V
< Check > 5. Battery Detection (User mode)	1) BATT terminal voltage: 3.1V PTT: ON	DVM Power meter		ANT			Check	LED blinks No transmit power
	2) BATT terminal voltage: 3.4V PTT: ON			BATT terminal				

• It is not necessary to adjust the fixed values for the DQT-DEV, QT-DEV, MIC, and SQL sensitivity.

***Note:** Do not adjust High Transmit power without connecting TX Power meter or 50 ohm dummy load to the ANT terminal.
Do not adjust High Transmit power in the state where there is no frame.



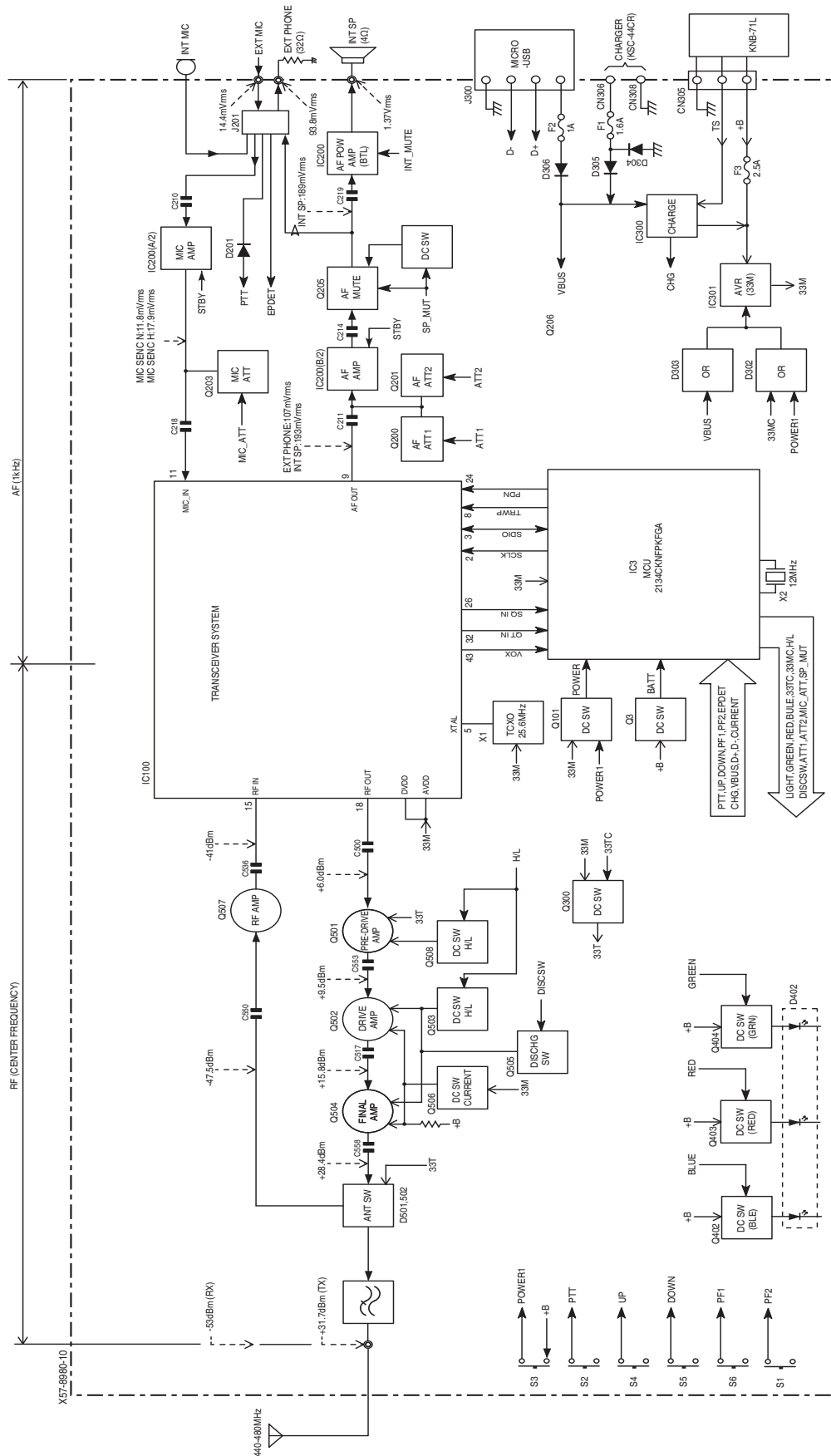
BLOCK & LEVEL DIAGRAM

Receiver Section

- To make measurements in the AF section, connect the AC level meter. (ANT input: -53dBm, 1kHz FM, 1.5kHz Dev.)
- In the RF section, use a high impedance probe. (ANT input: -53dBm, MOD off).
- Volume position (EXT PHONE: 77, INT SP: 77)

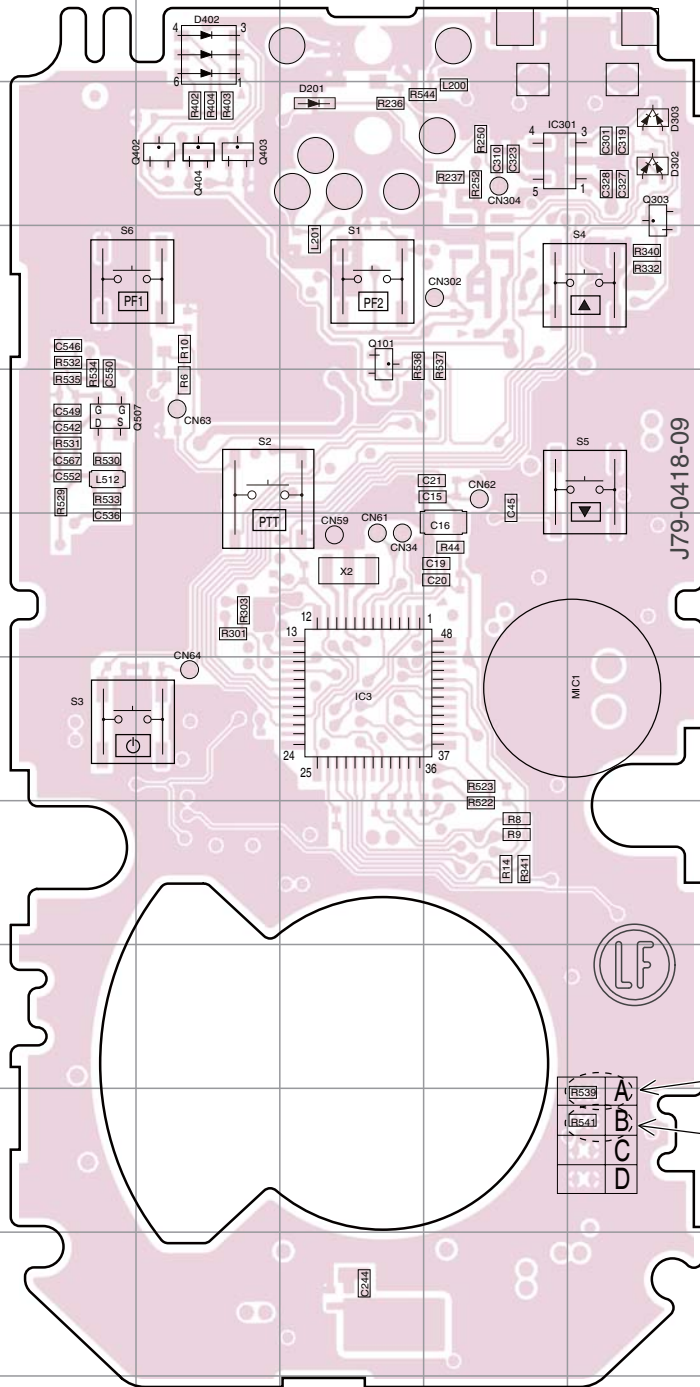
Transmitter Section

- AG is set to the MIC input, becomes 1.5kHz Dev. at 1kHz MOD. (Narrow)
- To make measurements in the AF section, connect the AC level meter.
- In the RF section, use a 100pF coupling capacitor.



PKT-23 PC BOARD

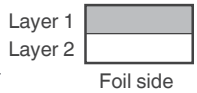
TX-RX UNIT (X57-8980-10) Component side view (J79-0418-09)



440-480 MHz

Note : for service unit

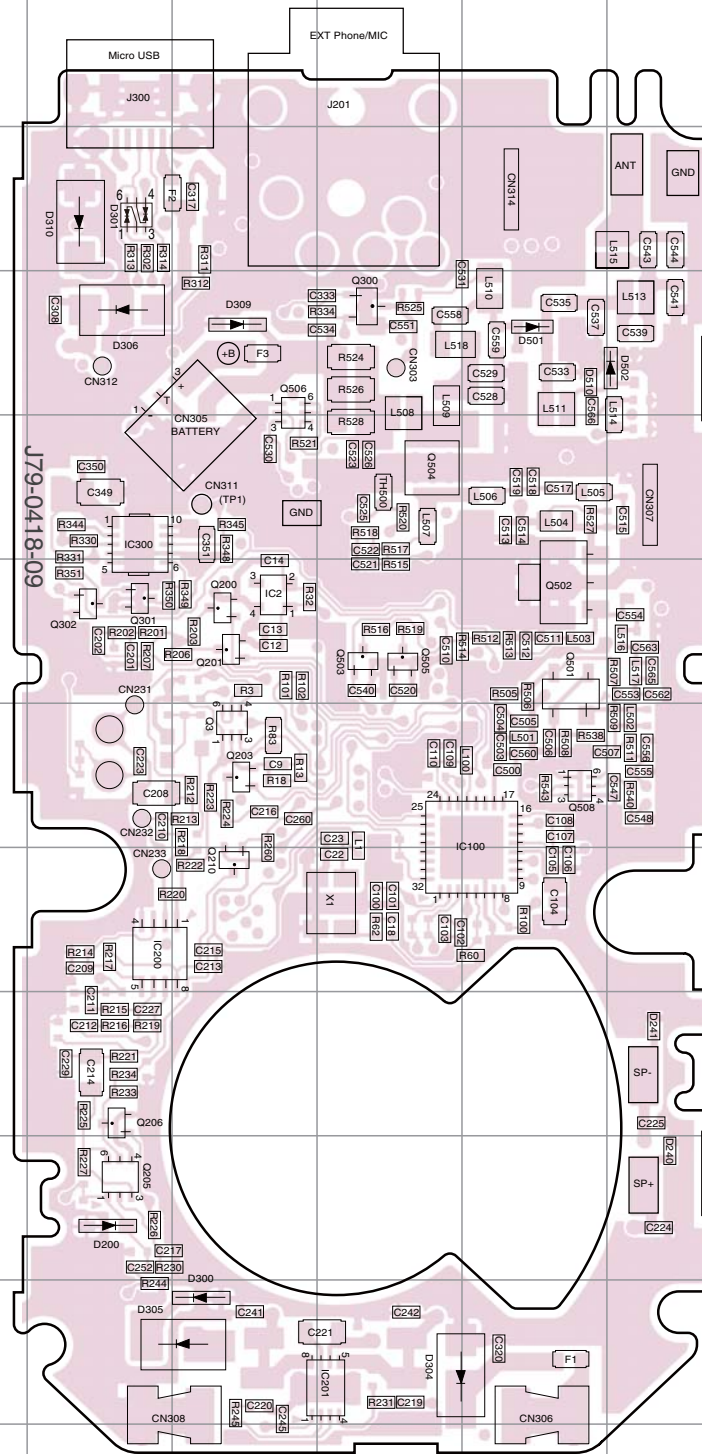
Component side



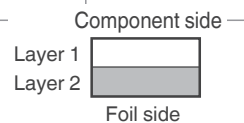
Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC3	7E	Q101	5E	Q403	3D	D201	3E	D402	3D
IC301	3F	Q303	4G	Q404	3D	D302	3G		
		Q402	3D	Q507	5C	D303	3G		

PC BOARD PKT-23

TX-RX UNIT (X57-8980-10) Foil side view (J79-0418-09)

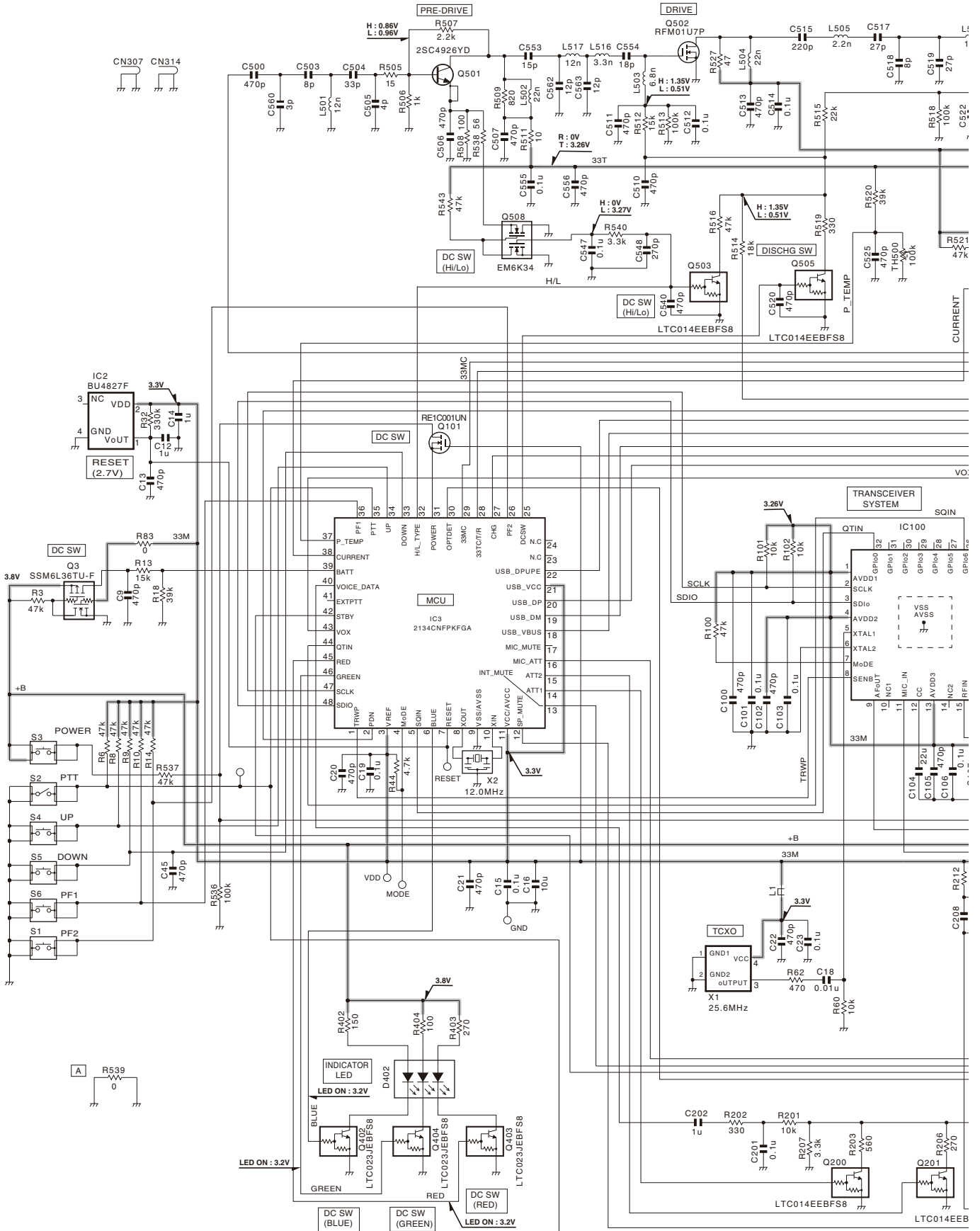


Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC2	6E	Q3	7E	Q300	4F	Q505	6F	D200	10D	D306	4D
IC100	8G	Q200	6E	Q301	6D	Q506	5E	D240	10H	D309	4F
IC200	8D	Q201	6E	Q302	6D	Q508	7G	D241	9H	D310	3D
IC201	11F	Q203	7E	Q501	7H			D300	11E	D501	4G
IC300	6D	Q205	10D	Q502	6G			D301	5G	D502	4H
		Q206	10D	Q503	6F			D304	11E	D510	4G
		Q210	8E	Q504	5F			D305	11E		

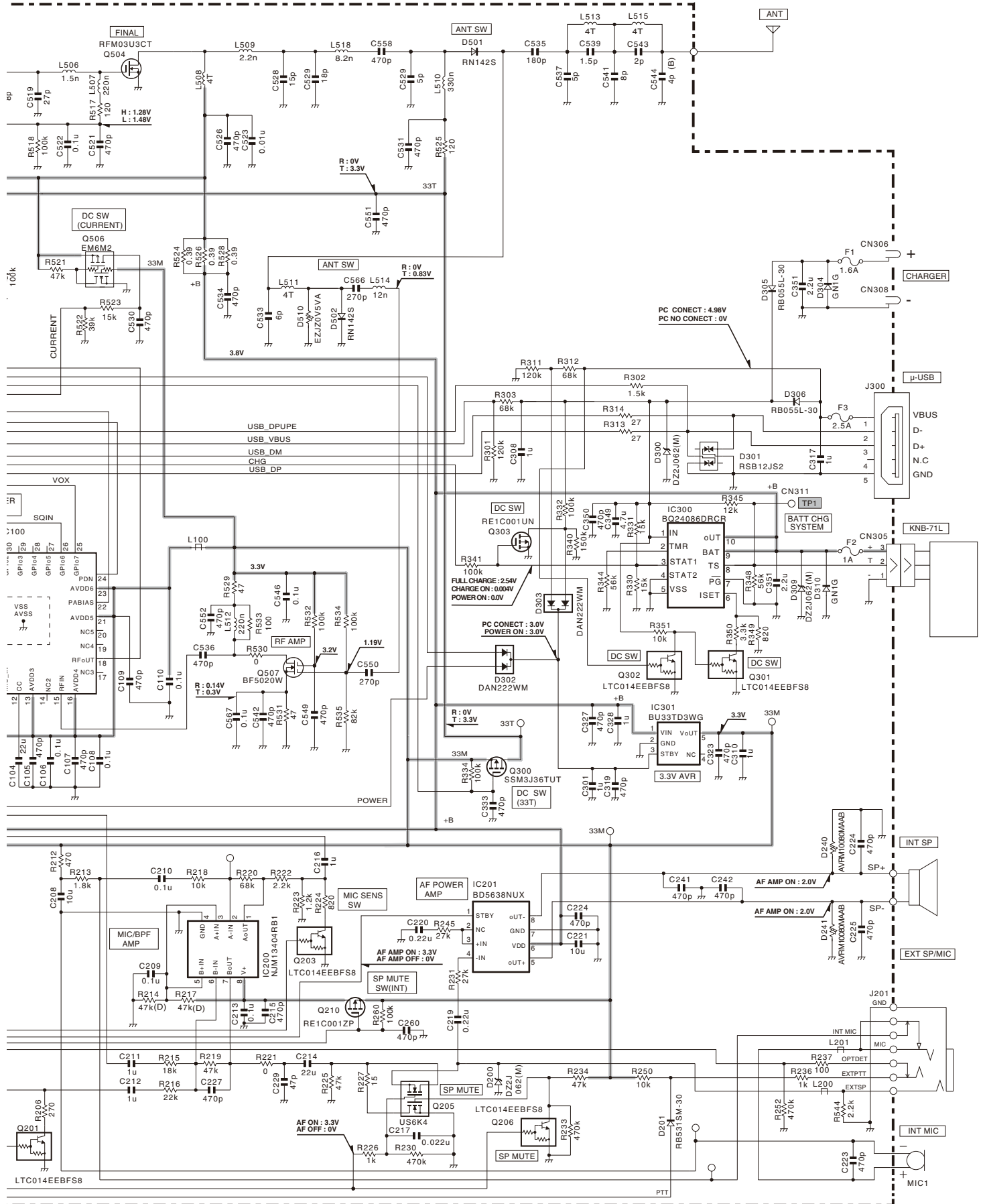


PKT-23 SCHEMATIC DIAGRAM

TX-RX UNIT (X57-8980-10)



SCHEMATIC DIAGRAM PKT-23



OPTIONAL ACCESSORIES

KNB-71L (Li-ion Battery Pack)

■ External View



■ Specifications

Nominal Voltage3.7V
 Nominal Capacity 1430mAh

Note:

The ambient temperature should be between 0°C and 40°C while charging is in progress.
 Charging outside this range may not fully charge the battery.

KSC-44CR (Rapid Charger)

■ External View



■ Specifications

Input5.5V ± 5% VDC 800mA
 Output5.5V ± 5% VDC 800mA

KSC-44SL (AC Adapter)

■ External View



■ Specifications

Input100-240VAC 50/60Hz
 Output5.5V ± 5% VDC 800mA

KSC-44ML (AC Adapter)

■ External View



■ Specifications

Input100-127VAC 50/60Hz
 Output5.5V ± 5% VDC 800mA x 6 (4.8A)

REPLACING THE BATTERY PACK

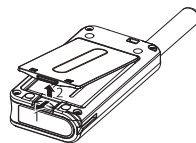
Replace an expired battery pack with a newly purchased KNB-71L battery pack.



- ◆ Do not disassemble the battery pack.
- ◆ Be sure to follow local laws concerning the disposal of battery packs.

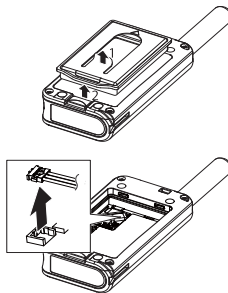
1 Pull back the battery pack latch, then remove the battery cover from the transceiver.

- When using the belt clip [page 6], be sure to remove it before removing the battery cover.



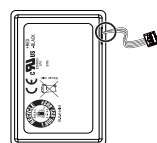
2 Lift the battery pack and its packing away from the transceiver.

- Lift the battery pack cable and remove the connector from the PCB terminal.



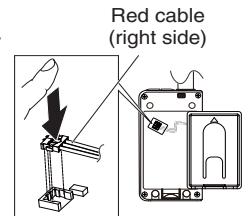
3 Remove the old battery pack from the packing and insert the new battery pack.

- Pass the battery pack cable through the hole in the packing.



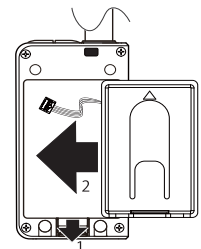
4 Insert the connector of the new battery pack into the PCB terminal by pressing down on it.

- Match the direction of the connector and insert it vertically.



5 Pull back the battery pack latch, then insert the battery pack into position.

- Failure to pull back the battery pack latch will cause the battery pack to be misaligned.



6 Replace the battery cover over the battery pack.

- Ensure that the battery pack latch locks the cover in place.

SPECIFICATIONS

General

Operation Frequency Range	440~480MHz
Number of Channels	Max. 4
Channel Spacing	12.5kHz
PLL Channel Stepping	5kHz, 6.25kHz
Operating Voltage	3.8V DC (3.4V-4.2V)
Battery Life	approx. 15 hours at 1.5 watts (5-5-90 duty cycle. Battery save : ON, W/Audio Acc)
Operating Temperature Range	-10°C to +60°C
Frequency Stability	±2.5ppm
Channel Frequency Spread	40MHz
Dimensions (Dimensions not including protrusions)	46 W x 85 H x 21 D mm (1.81 x 3.35 x 0.83 in),
Weight	approx. 110g (3.9oz)(W/Battery)

Receiver (Measurements made per TIA/EIA-603)

Sensitivity	
EIA 12dB SINAD	0.22µV
Selectivity	60dB
Intermodulation Distortion	50dB
Audio Output	300mW at 4Ω (INT Speaker.VOL position : "7") 0.1mW at 32Ω (EXT Phone.VOL position : "7")

Transmitter (Measurements made per TIA/EIA-603)

RF Output Power	1.5W/0.5W
Spurious Response	55dB
Modulation	11K0F3E
FM Hum & Noise	50dB
Modulation Distortion	Less than 5%

Measurements made per TIA/EIA-603 and specifications shown are typical.

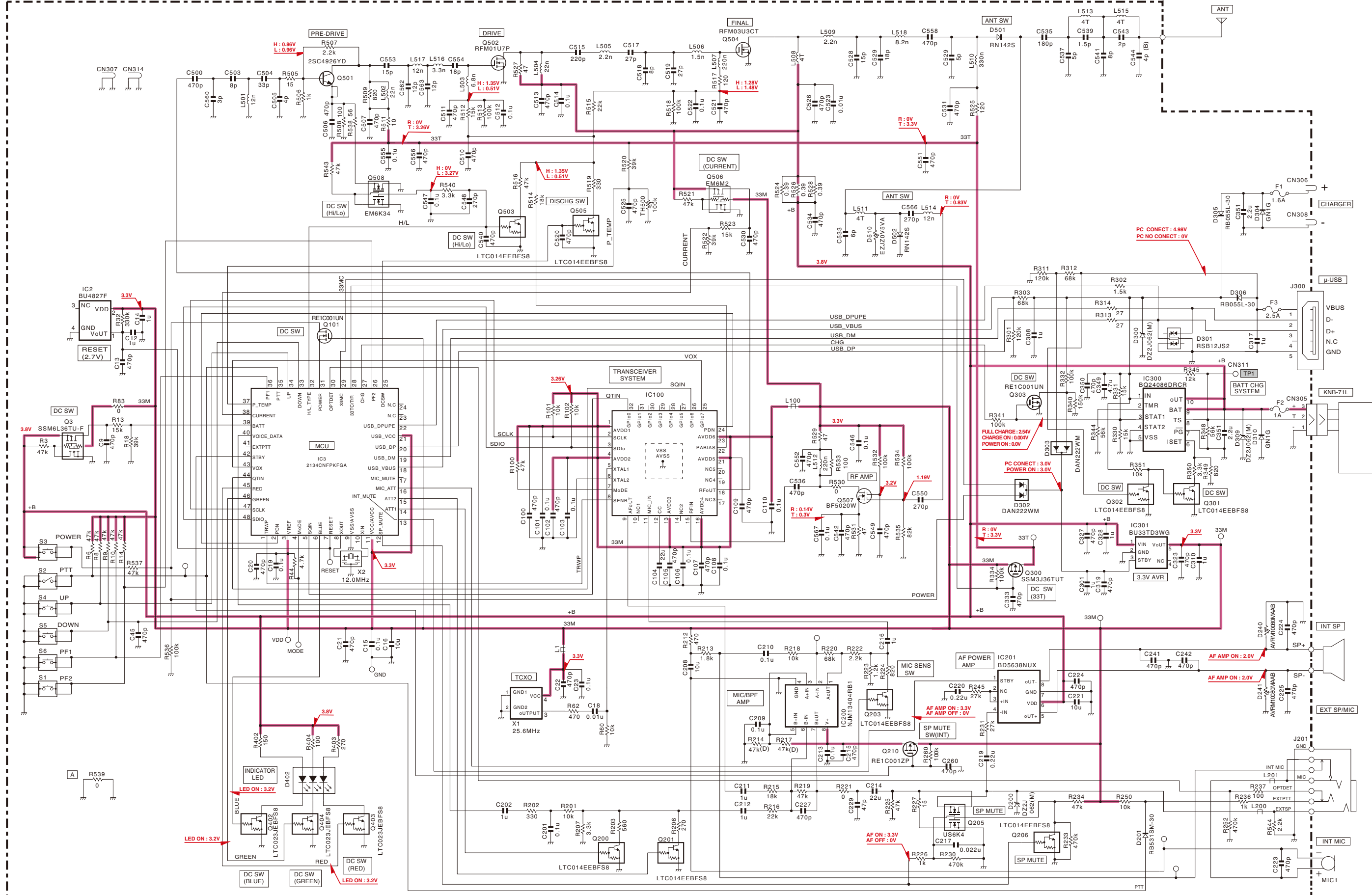
JVC KENWOOD Corporation reserves the right to change specifications without prior notice or obligation.

KENWOOD

JVC KENWOOD Corporation
Communications Equipment Div

SCHEMATIC DIAGRAM PKT-23

TX-RX UNIT (X57-8980-10)



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