

# KENWOOD

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# TK-3160

## SERVICE MANUAL

**SUPPLEMENT** E3 version

This TK-3160 service manual contains a number of sections which differ from the service manual (B51-8674-00) for the TK-3160. For items other than those in this TK-3160 service manual please refer to the service manual (B51-8674-00) for the TK-3160.

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**Does not come with antenna.  
Antenna is available as an option.**

### Service Manual List

Title	Parts number	Remarks	Destination
TK-3160	B51-8674-00		E, X2
TK-3160	B51-8681-00 (This service manual)	SUPPLEMENT	E3

# TK-3160

## GENERAL / SYSTEM SET-UP

### 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.

Unit		TX-RX Unit	Frequency range	Remarks
Model & destination				
TK-3160	E3	X57-6732-72	400~430MHz	IF1 : 49.95MHz LOC : 50.4MHz

### PERSONAL SAFETY

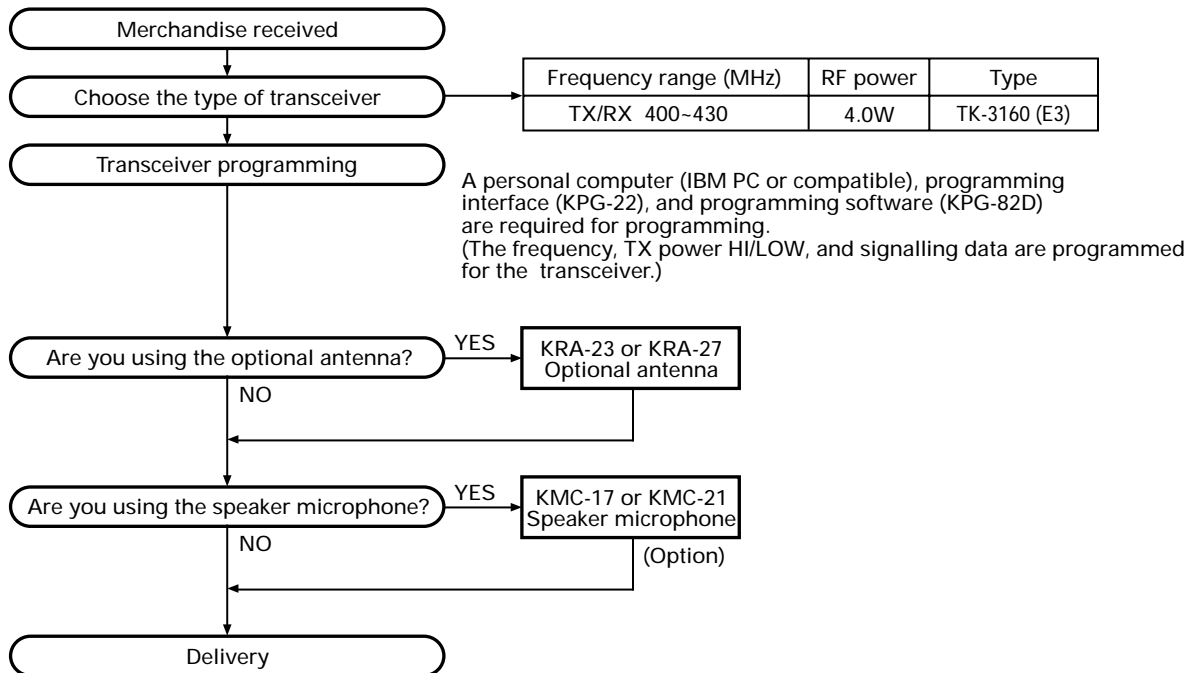
The following precautions are recommended for personal safety:

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

### SYSTEM SET-UP



## INSTALLATION

### INSTALLATION

#### 1. Optional Board

Remove the TX/RX unit from the radio before installing the optional board in the radio.

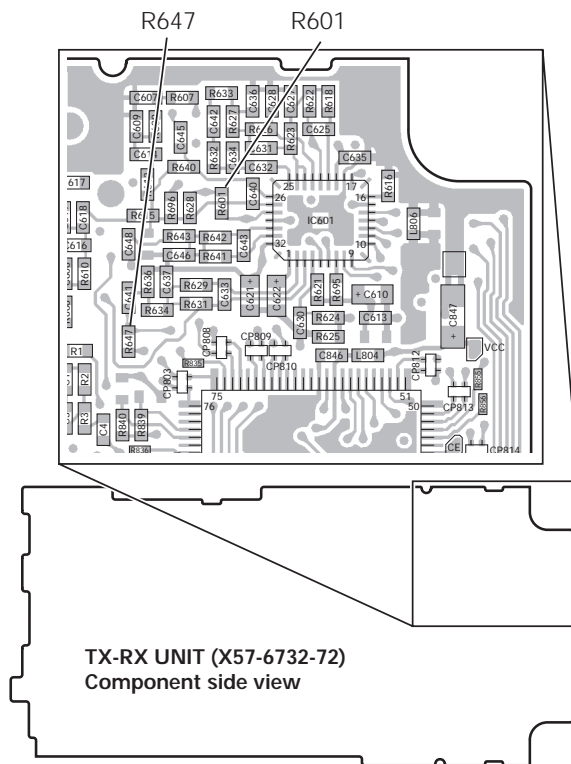
The procedure for removing the TX/RX unit is described in the DISASSEMBLY FOR REPAIR section in the Service Manual.

Install the optional board on the back of the TX/RX unit.

For details on installation of the optional board, refer to Installation Information supplied with the optional board.

When installing the optional board, also refer to the chart in TERMINAL FUNCTION section (page 4) given in the Service Manual.

**Note:** To install and use the Scrambler Board, remove "R601" and "R647" from the front of the TX/RX unit.



## TERMINAL FUNCTION

## ■ Solder point connection

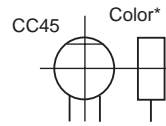
Designation	Function	Condition	Value
MIC_I	Mic input	Input sensitivity/Impedance (1kHz std. dev.)	7±3mVrms @22kΩ Load
MIC_O	Mic o utput	Output voltage/Impedance (1kHz 15mVrms mic input)	2.6±1.0mVrms @2.2kΩ Load
		Output voltage/Impedance (1kHz 100mVrms mic input)	90±20mVrms @100kΩ Load
RA_I	Receiver AF input	Input sensitivity/Impedance (1kHz rated AF power/Vol. MAX)	75±20mVrms @22kΩ Load
RA_O	Receiver AF output	Output voltage/Impedance (1kHz std. mod.)	150±50mVrms @2.2kΩ Load
		Output voltage/Impedance (1kHz system mod.)	290±50mVrms @100kΩ Load
A1	AUX1	Load >100kΩ	(Low) Vss ~ 0.4V (High) Vdd-0.8V ~ Vdd
A2	AUX2	Load >100kΩ	(Low) Vss ~ 0.4V (High) Vdd-0.8V ~ Vdd
A3	AUX3	Load >100kΩ	(Low) Vss ~ 0.4V (High) Vdd-0.8V ~ Vdd
A4	AUX4	Load >100kΩ	(Low) Vss ~ 0.4V (High) Vdd-0.8V ~ Vdd
A5	AUX5	Load >100kΩ	(Low) Vss ~ 0.4V (High) Vdd-0.8V ~ Vdd
A6	AUX6	Load >100kΩ	(Low) Vss ~ 0.4V (High) Vdd-0.8V ~ Vdd
SB	Switched B	Output Voltage/7mA load	DC (Battery terminal) ±0.5V
GND	GND		Vss
5C	DC 5V	Output Voltage/10mA load	5.0±0.5V
TXAFI	Transmit AF input	Input sensitivity/Impedance (1kHz std. dev.)	280±50mVrms @22kΩ Load
DEO	Discriminator signal output	Output voltage/Impedance (1kHz std. mod.)	280±50mVrms @2.2kΩ Load
LSDFO	Received sub-tone output	Output voltage/Impedance (150Hz 15% mod.)	180±50mVrms @2.2kΩ Load
ALT	Sidetone input	Input sensitivity/Impedance (1kHz rated AF power/Vol. MAX)	7±3mVrms @22kΩ Load

## PARTS LIST

### CAPACITORS

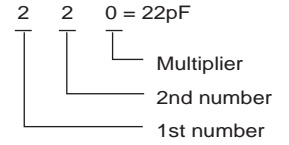
CC 45 TH 1H 220 J  
 1 2 3 4 5 6

- 1 = Type ... ceramic, electrolytic, etc.
- 2 = Shape ... round, square, ect.
- 3 = Temp. coefficient
- 4 = Voltage rating
- 5 = Value
- 6 = Tolerance



#### Capacitor value

- 010 = 1pF
- 100 = 10pF
- 101 = 100pF
- 102 = 1000pF = 0.001μF
- 103 = 0.01μF



#### Temperature coefficient

1st Word	C	L	P	R	S	T	U
Color*	Black	Red	Orange	Yellow	Green	Blue	Violet
ppm/°C	0	-80	-150	-220	-330	-470	-750

2nd Word	G	H	J	K	L
ppm/°C	±30	±60	±120	±250	±500

Example : CC45TH = -470 ± 60ppm/°C

#### Tolerance (More than 10pF)

Code	C	D	G	J	K	M	X	Z	P	No code
(%)	±0.25	±0.5	±2	±5	±10	±20	+40 -40	+80 -20	+100 -0	More than 10μF -10 ~ +50 Less than 4.7μF -10 ~ +75

#### (Less than 10pF)

Gode	B	C	D	F	G
(pF)	±0.1	±0.25	±0.5	±1	±2

#### Voltage rating

2nd word	A	B	C	D	E	F	G	H	J	K	V	
1st word	0	1.0	1.25	1.6	2.0	2.5	3.15	4.0	5.0	6.3	8.0	-
1	10	12.5	16	20	25	31.5	40	50	63	80	35	-
2	100	125	160	200	250	315	400	500	630	800	-	-
3	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	-	-

#### Chip capacitors

(EX) C C 7 3 F S L 1 H 0 0 0 J  
 1 2 3 4 5 6 7

(Chip)(CH,RH<UJ,SL)

(EX) C K 7 3 F F 1 H 0 0 0 Z  
 1 2 3 4 5 6 7

(Chip)(B,F)

- Refer to the table above.
- 1 = Type
  - 2 = Shape
  - 3 = Dimension
  - 4 = Temp. coefficient
  - 5 = Voltage rating
  - 6 = Value
  - 7 = Tolerance

#### Dimension (Chip capacitors)

Dimension code	L	W	T
Empty	5.6 ± 0.5	5.0 ± 0.5	Less than 2.0
A	4.5 ± 0.5	3.2 ± 0.4	Less than 2.0
B	4.5 ± 0.5	2.0 ± 0.3	Less than 2.0
C	4.5 ± 0.5	1.25 ± 0.2	Less than 1.25
D	3.2 ± 0.4	2.5 ± 0.3	Less than 1.5
E	3.0 ± 0.2	1.6 ± 0.2	Less than 1.25
F	2.0 ± 0.3	1.25 ± 0.2	Less than 1.25
G	1.6 ± 0.2	0.8 ± 0.2	Less than 1.0
H	1.0 ± 0.05	0.5 ± 0.05	0.5 ± 0.05

### RESISTORS

#### Chip resistor (Carbon)

(EX) R K 7 3 E B 2 B 0 0 0 J  
 1 2 3 4 5 6 7

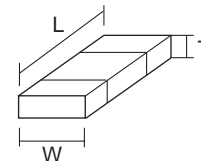
(Chip)(B,F)

#### Carbon resistor (Nomal type)

(EX) R D 1 4 B B 2 C 0 0 0 J  
 1 2 3 4 5 6 7

- 1 = Type
- 2 = Shape
- 3 = Dimension
- 4 = Temp. coefficient
- 5 = Rating wattage
- 6 = Value
- 7 = Tolerance

#### Dimension



#### Dimension (Chip resistor)

Dimension code	L	W	T
E	3.2 ± 0.2	1.6 ± 0.2	1.0
F	2.0 ± 0.3	1.25 ± 0.2	1.0
G	1.6 ± 0.2	0.8 ± 0.2	0.5 ± 0.1
H	1.0 ± 0.05	0.5 ± 0.05	0.35 ± 0.05

#### Rating wattage

Code	Wattage	Code	Wattage	Code	Wattage
1J	1/16W	2C	1/6W	3A	1W
2A	1/10W	2E	1/4W	3D	2W
2B	1/8W	2H	1/2W		

# TK-3160

## PARTS LIST

\* New Parts.  $\Delta$  indicates safety critical components.  
 Parts without **Parts No.** are not supplied.  
 Les articles non mentionnes 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  
 Y: AAFES (Europe)      X: Australia      M: Other Areas

### TK-3160 (Y50-579X-XX) TX-RX UNIT (X57-6732-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination
<b>TK-3160</b>					
1	1B		A02-3826-43	CABINET ASSY	
2	2B	*	A10-4068-41	CHASSIS	
3	3A		A82-0054-02	REAR PANEL	
4	3A		B01-0694-03	ESCUTCHEON	
5	2D		B09-0676-13	CAP                      ACCESSORY	
6	1C		B62-1788-00	INSTRUCTION MANUAL	
7	3B	*	B72-2255-04	MODEL NAME PLATE	E
7	3B	*	B72-2270-04	MODEL NAME PLATE	E3
8	3A		E04-0446-05	RF COAXIAL RECEPTACLE(SMA)	
10	2A		E37-1101-05	SPEAKER WIRE(RED)	
11	2A		E37-1102-05	SPEAKE WIRE(BLACK)	
12	3A		E72-0416-23	BATT TERMINAL BLOCK	
13	2B		G11-4090-04	SHEET(FINAL FET)	
14	3B		G11-4254-04	SHEET(PTT)	
15	3A		G11-4287-04	SHEET(BATT TERMINAL BLOCK)	
16	3A		G11-4289-04	SHEET(CHASSIS)	
20	1A		G11-4306-04	SHEET	
21	2A		G11-4312-04	SHEET	
22	2B		G13-2001-04	CUSHION(CHASSIS)	
23	2B	*	G13-2014-04	CUSHION(CHASSIS BOTTOM)	
24	2B		G13-2017-04	CUSHION	
25	2B		G13-2018-04	CUSHION	
26	3A		G13-2019-04	CUSHION	
27	2B		G13-2020-04	CUSHION	
28	3A	*	G13-2026-04	CUSHION	
29			G13-2027-04	CUSHION	
30	2B		G53-1580-03	PACKING(CHASSIS)	
31	1B		G53-1581-12	PACKING(SPEAKER)	
32	3A		G53-1582-03	PACKING(BATT TERMINAL BLOCK)	
33	3A		G53-1641-02	PACKING	
34	3C		H12-3150-02	PACKING FIXTURE	
35			H25-2345-04	PROTECTION BAG	
36	1D		H52-2000-02	ITEM CARTON CASE	
38	2A		J19-5454-03	HOLDER	
39	2D		J21-8464-04	HARDWARE FIXTURE    ACCESSORY	
40	2C		J29-0701-05	HOOK	
41	3A		J30-1275-14	SPACER(CH KNOB)	
42	1A		K29-9278-13	KNOB(VOLUME)	
43	3A		K29-9280-13	KNOB(CH SELECTOR)	
44	1B		K29-9332-03	KNOB(PTT)	
A	3A		N14-0583-04	CIRCULAR NUT(CH)	
B	3A		N14-0805-04	CIRCULAR NUT(VOLUME)	
C	3A		N30-2604-46	PAN HEAD MACHINE SCREW	
D	3B		N30-2612-46	PAN HEAD MACHINE SCREW	
E	3A,3B		N30-3006-45	PAN HEAD MACHINE SCREW	
F	2D		N35-3004-45	BINDING HEAD MACHINE SCREW	
G	3A,3B		N78-2040-46	PAN HEAD TAPTITE SCREW	
H	2A,2B		N83-2005-46	PAN HEAD TAPTITE SCREW	
45	2A		R31-0650-05	VARIABLE RESISTOR	
46	2A		S60-0420-05	ROTARY SWITCH	

Ref. No.	Address	New parts	Parts No.	Description	Destination
47	1B		T07-0369-05	SPEAKER	
<b>TX-RX UNIT (X57-6732-XX) -71 :E -72 :E3</b>					
D802			B30-2156-05	LED(RED)	
D803			B30-2157-05	LED(YELLOW)	
C1			CK73GB1H392K	CHIP C    3900PF    K	
C2			CK73GB1H471K	CHIP C    470PF    K	
C3			CK73GB1H103K	CHIP C    0.010UF    K	
C5			CK73GB1H471K	CHIP C    470PF    K	
C6			CK73GB1H103K	CHIP C    0.010UF    K	
C7			CK73GB1H471K	CHIP C    470PF    K	
C8			CC73GCH1H100D	CHIP C    10PF    D	
C9			CK73GB1H103K	CHIP C    0.010UF    K	
C10			CC73GCH1H100D	CHIP C    10PF    D	
C11 -13			CC73GCH1H101J	CHIP C    100PF    J	
C14			C92-0713-05	CHIP-TAN    10UF    6.3WV	
C15			CK73GB1H102K	CHIP C    1000PF    K	
C16			CC73GCH1H470J	CHIP C    47PF    J	
C18 ,19			CK73GB1C104K	CHIP C    0.10UF    K	
C20			CC73GCH1H100D	CHIP C    10PF    D	E3
C22			CK73GB1C104K	CHIP C    0.10UF    K	
C24			C92-0713-05	CHIP-TAN    10UF    6.3WV	
C25			CK73GB1H471K	CHIP C    470PF    K	
C27			CK73GB1H103K	CHIP C    0.010UF    K	
C28			CC73GCH1H560J	CHIP C    56PF    J	
C29			CK73GB1H471K	CHIP C    470PF    K	
C30			CC73GCH1H220J	CHIP C    22PF    J	
C31			CC73GCH1H560J	CHIP C    56PF    J	
C32			C92-0002-05	CHIP-TAN    0.22UF    35WV	
C33			CC73GCH1H470J	CHIP C    47PF    J	
C34			CK73GB1H471K	CHIP C    470PF    K	
C35			CC73GCH1H680J	CHIP C    68PF    J	
C36			C92-0585-05	CHIP-TAN    4.7UF    16WV	
C37			CK73GB1H103K	CHIP C    0.010UF    K	E
C37			CK73GB1H822K	CHIP C    8200PF    K	E3
C38 ,39			C92-0002-05	CHIP-TAN    0.22UF    35WV	
C40			CK73GB1H183K	CHIP C    0.018UF    K	
C41 ,42			CK73GB1A105K	CHIP C    1.0UF    K	
C43 ,44			CC73HCH1H101J	CHIP C    100PF    J	
C45			CC73HCH1H020B	CHIP C    2.0PF    B	E
C45			CC73HCH1H050B	CHIP C    5.0PF    B	E3
C46			CC73HCH1H220J	CHIP C    22PF    J	
C47			CK73GB1H471K	CHIP C    470PF    K	
C48			CC73HCH1H120J	CHIP C    12PF    J	E3
C48			CC73HCH1H150J	CHIP C    15PF    J	E
C49			CC73HCH1H330J	CHIP C    33PF    J	E
C49			CC73HCH1H390J	CHIP C    39PF    J	E3
C50			CC73HCH1H020C	CHIP C    2.0PF    C	E3
C50			CC73HCH1H070D	CHIP C    7.0PF    D	E
C51			CC73HCH1H180J	CHIP C    18PF    J	E
C51			CC73HCH1H220J	CHIP C    22PF    J	E3
C52			CC73GCH1H050C	CHIP C    5.0PF    C	E
C52			CC73GCH1H070D	CHIP C    7.0PF    D	E3
C53			CC73HCH1H040B	CHIP C    4.0PF    B	E

## PARTS LIST

TX-RX UNIT (X57-6732-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C53			CC73HCH1H050B	CHIP C 5.0PF B	E3	C295			CC73GCH1H270J	CHIP C 27PF J	E3
C54			CC73HCH1H020C	CHIP C 2.0PF C	E3	C296			CK73GB1H471K	CHIP C 470PF K	
C54			CC73HCH1H030C	CHIP C 3.0PF C	E	C297			CK73GB1H103K	CHIP C 0.010UF K	
C55 ,56			CC73HCH1H010B	CHIP C 1.0PF B		C298			CK73GB1C104K	CHIP C 0.10UF K	
C57			CC73GCH1H030C	CHIP C 3.0PF C	E	C299			CK73GB1A105K	CHIP C 1.0UF K	
C57			CC73GCH1H040C	CHIP C 4.0PF C	E3	C300			CC73GCH1H220J	CHIP C 22PF J	E
C58			CC73HCH1H050B	CHIP C 5.0PF B		C300			CC73GCH1H180J	CHIP C 18PF J	E3
C59			CC73GCH1H050C	CHIP C 5.0PF C	E	C301			CK73GB1H103K	CHIP C 0.010UF K	
C59			CC73GCH1H070D	CHIP C 7.0PF D	E3	C308			CC73GCH1H150J	CHIP C 15PF J	E3
C60			CC73HCH1H040B	CHIP C 4.0PF B	E	C308			CC73GCH1H270J	CHIP C 27PF J	E
C60			CC73HCH1H050B	CHIP C 5.0PF B	E3	C309			CK73GB1H471K	CHIP C 470PF K	
C61			CK73HB1H471K	CHIP C 470PF K		C326			CK73GB1H471K	CHIP C 470PF K	
C62			CC73HCH1H070B	CHIP C 7.0PF B	E	C333			CC73GCH1H040B	CHIP C 4.0PF B	E3
C62			CC73HCH1H090B	CHIP C 9.0PF B	E3	C341			CC73GCH1H150J	CHIP C 15PF J	E3
C63			CC73GCH1H100D	CHIP C 10PF D		C341			CC73GCH1H3R5B	CHIP C 3.5PF B	E
C64			CC73HCH1H050B	CHIP C 5.0PF B	E	C349			CC73GCH1H070B	CHIP C 7.0PF B	
C64			CC73HCH1H060B	CHIP C 6.0PF B	E3	C351			CC73GCH1H270J	CHIP C 27PF J	
C65			CC73HCH1H101J	CHIP C 100PF J		C352			CK73GB1H471K	CHIP C 470PF K	
C66			CC73HCH1H120J	CHIP C 12PF J		C353			CC73GCH1H040B	CHIP C 4.0PF B	
C67			CK73HB1H471K	CHIP C 470PF K		C355			CC73GCH1H050B	CHIP C 5.0PF B	
C68			CK73GB1H471K	CHIP C 470PF K		C356			CC73GCH1H101J	CHIP C 100PF J	
C69			CC73HCH1H070B	CHIP C 7.0PF B		C358			CC73GCH1H030B	CHIP C 3.0PF B	E
C70			CK73HB1H471K	CHIP C 470PF K		C358			CC73GCH1H040B	CHIP C 4.0PF B	E3
C71			CC73GCH1H0R5B	CHIP C 0.5PF B		C359			CC73GCH1H010B	CHIP C 1.0PF B	E3
C72			CC73HCH1H0R5B	CHIP C 0.5PF B		C359			CC73GCH1H1R5B	CHIP C 1.5PF B	E
C73			CK73GB1H471K	CHIP C 470PF K		C360			CC73GCH1H080B	CHIP C 8.0PF B	E3
C74			CC73HCH1H100D	CHIP C 10PF D		C360			CC73GCH1H3R5B	CHIP C 3.5PF B	E
C75 ,76			CK73HB1H471K	CHIP C 470PF K		C361			CC73GCH1H2R5B	CHIP C 2.5PF B	
C77			C92-0713-05	CHIP-TAN 10UF 6.3WV		C363			CC73GCH1H070B	CHIP C 7.0PF B	E3
C78			CK73HB1H471K	CHIP C 470PF K		C363			CC73GCH1H4R5B	CHIP C 4.5PF B	E
C80			CC73HCH1H070D	CHIP C 7.0PF D		C364			CC73GCH1H020B	CHIP C 2.0PF B	E
C82			CC73HCH1H330J	CHIP C 33PF J		C364			CC73GCH1H1R5B	CHIP C 1.5PF B	E3
C83 -85			CK73HB1H471K	CHIP C 470PF K		C368			CC73GCH1H100D	CHIP C 10PF D	E
C86			CC73HCH1H070D	CHIP C 7.0PF D		C368			CC73GCH1H150J	CHIP C 15PF J	E3
C92			CK73GB1H471K	CHIP C 470PF K		C371			CC73GCH1H010B	CHIP C 1.0PF B	E
C94 ,95			CK73HB1A104K	CHIP C 0.10UF K		C371			CC73GCH1H020B	CHIP C 2.0PF B	E3
C201 ,202			CK73GB1H471K	CHIP C 470PF K		C372			CK73GB1H471K	CHIP C 470PF K	
C205			CK73GB1A224K	CHIP C 0.22UF K		C401			CK73GB1H182K	CHIP C 1800PF K	
C223			CK73GB1H471K	CHIP C 470PF K		C402,403			CC73GCH1H331J	CHIP C 330PF J	
C224			CC73GCH1H070D	CHIP C 7.0PF D	E	C405			CC73GCH1H390J	CHIP C 39PF J	
C224			CC73GCH1H090D	CHIP C 9.0PF D	E3	C406			C92-0713-05	CHIP-TAN 10UF 6.3WV	
C226			CK73GB1H471K	CHIP C 470PF K		C407			CK73GB1H103K	CHIP C 0.010UF K	
C233			CK73GB1H471K	CHIP C 470PF K		C408			CK73GB1C104K	CHIP C 0.10UF K	
C241			CK73GB1H471K	CHIP C 470PF K		C409			CC73GCH1H680J	CHIP C 68PF J	
C242			CC73GCH1H060D	CHIP C 6.0PF D		C410			CK73GB1H471K	CHIP C 470PF K	
C243			CK73GB1C104K	CHIP C 0.10UF K		C411-413			CK73GB1C104K	CHIP C 0.10UF K	
C248			CC73GCH1H050C	CHIP C 5.0PF C		C414			CC73GCH1H100D	CHIP C 10PF D	
C249			CC73GCH1H130J	CHIP C 13PF J		C415			CK73GB1H471K	CHIP C 470PF K	
C255			CK73GB1H471K	CHIP C 470PF K		C416,417			CK73GB1H103K	CHIP C 0.010UF K	
C258			CK73GB1C104K	CHIP C 0.10UF K		C418			CK73GB1H471K	CHIP C 470PF K	
C280			CC73GCH1H330J	CHIP C 33PF J		C419			CC73GCH1H010B	CHIP C 1.0PF B	
C282			CC73GCH1H101J	CHIP C 100PF J	E3	C420			CK73GB1C104K	CHIP C 0.10UF K	
C282			CC73GCH1H220J	CHIP C 22PF J	E	C421			CC73GCH1H080B	CHIP C 8.0PF B	
C283			CC73GCH1H100D	CHIP C 10PF D		C422			CK73GB1H103K	CHIP C 0.010UF K	
C284			CC73GCH1H200J	CHIP C 20PF J		C424			CK73GB1H103K	CHIP C 0.010UF K	
C286			C92-0565-05	CHIP-TAN 6.8UF 10WV		C425			CC73GCH1H060D	CHIP C 6.0PF D	
C288			CK73GB1A105K	CHIP C 1.0UF K		C426			CC73GCH1H020B	CHIP C 2.0PF B	E
C290-293			CK73GB1H471K	CHIP C 470PF K		C426			CC73GCH1H2R5B	CHIP C 2.5PF B	E3
C294			CC73GCH1H101J	CHIP C 100PF J		C427			CC73GCH1H100D	CHIP C 10PF D	E3
C295			CC73GCH1H330J	CHIP C 33PF J	E	C427			CC73GCH1H120J	CHIP C 12PF J	E

E : TK-3160E E3 : TK-3160E3



## PARTS LIST

### TX-RX UNIT (X57-6732-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C428			CK73GB1H471K	CHIP C 470PF K		C609			CK73GB1H103K	CHIP C 0.010UF K	
C429			CC73GCH1H120J	CHIP C 12PF J		C610			C92-0714-05	CHIP-TAN 4.7UF 6.3WV	
C430			CK73GB1H471K	CHIP C 470PF K		C611			CK73GB1A105K	CHIP C 1.0UF K	
C431			CK73GB1H103K	CHIP C 0.010UF K		C613-615			CK73GB1C104K	CHIP C 0.10UF K	
C432			CK73GB1H471K	CHIP C 470PF K		C616			CK73GB1H332K	CHIP C 3300PF K	
C434			CC73GCH1H050B	CHIP C 5.0PF B	E	C618			CK73GB1C104K	CHIP C 0.10UF K	
C434			CC73GCH1H090B	CHIP C 9.0PF B	E3	C619			CK73GB1H392K	CHIP C 3900PF K	
C435			CK73GB1H471K	CHIP C 470PF K		C621,622			C92-0714-05	CHIP-TAN 4.7UF 6.3WV	
C439			CC73GCH1H180J	CHIP C 18PF J	E3	C624			CK73GB1C104K	CHIP C 0.10UF K	
C439			CK73GB1H471K	CHIP C 470PF K	E	C625			CC73GCH1H680J	CHIP C 68PF J	
C445			CC73GCH1H3R5B	CHIP C 3.5PF B		C627			CK73GB1E123K	CHIP C 0.012UF K	
C447			CC73GCH1H330J	CHIP C 33PF J		C628			CK73GB1H222K	CHIP C 2200PF K	
C448			CC73GCH1H030B	CHIP C 3.0PF B	E	C629			CK73GB1C104K	CHIP C 0.10UF K	
C448			CC73GCH1H4R5B	CHIP C 4.5PF B	E3	C630			CC73GCH1H101J	CHIP C 100PF J	
C456			CK73HB1H471K	CHIP C 470PF K		C631			CK73GB1E123K	CHIP C 0.012UF K	
C464			CC73GCH1H2R5B	CHIP C 2.5PF B	E	C632			CK73GB1C104K	CHIP C 0.10UF K	
C464			CC73GCH1H4R5B	CHIP C 4.5PF B	E3	C633			CC73GCH1H020B	CHIP C 2.0PF B	
C465			CC73GCH1H010B	CHIP C 1.0PF B	E	C634			CK73GB1H102K	CHIP C 1000PF K	
C465			CC73GCH1H1R5B	CHIP C 1.5PF B	E3	C635			CK73GB1C104K	CHIP C 0.10UF K	
C466			CC73GCH1H330J	CHIP C 33PF J		C636			CK73GB1C683K	CHIP C 0.068UF K	
C467			CK73HB1H471K	CHIP C 470PF K		C637			CC73GCH1H101J	CHIP C 100PF J	
C468			CC73GCH1H020B	CHIP C 2.0PF B	E	C638			CK73GB1H471K	CHIP C 470PF K	
C468			CC73GCH1H3R5B	CHIP C 3.5PF B	E3	C639			CC73GCH1H470J	CHIP C 47PF J	
C469			CC73GCH1H3R5B	CHIP C 3.5PF B	E3	C640			CC73GCH1H101J	CHIP C 100PF J	
C469			CC73GCH1H030B	CHIP C 3.0PF B	E	C641,642			CK73GB1C104K	CHIP C 0.10UF K	
C470			CK73HB1H471K	CHIP C 470PF K		C643			CC73GCH1H680J	CHIP C 68PF J	
C471			CC73GCH1H330J	CHIP C 33PF J		C645			CK73GB0J225K	CHIP C 2.2UF K	
C472			C92-0714-05	CHIP-TAN 4.7UF 6.3WV		C646			CK73GB1H821K	CHIP C 820PF K	
C473			CC73HCH1H060B	CHIP C 6.0PF B	E	C647			CK73GB1H471K	CHIP C 470PF K	
C473			CC73HCH1H070B	CHIP C 7.0PF B	E3	C648,649			CK73GB1C104K	CHIP C 0.10UF K	
C474,475			CK73GB1H471K	CHIP C 470PF K		C650			C92-0713-05	CHIP-TAN 10UF 6.3WV	
C478,479			CK73HB1H471K	CHIP C 470PF K		C652			CK73GB1H471K	CHIP C 470PF K	
C481			CK73GB1H471K	CHIP C 470PF K		C653			CK73GB1A224K	CHIP C 0.22UF K	
C482			CC73GCH1H120G	CHIP C 12PF G	E	C654			CK73GB1H103K	CHIP C 0.010UF K	
C482			CK73GB1H471K	CHIP C 470PF K	E3	C655			CK73GB1C223K	CHIP C 0.022UF K	
C483			CC73GCH1H040B	CHIP C 4.0PF B	E	C656			CK73GB1C104K	CHIP C 0.10UF K	
C483			CC73GCH1H060B	CHIP C 6.0PF B	E3	C657			CC73GCH1H470J	CHIP C 47PF J	
C484			CC73GCH1H330J	CHIP C 33PF J		C658			CK73GB1C104K	CHIP C 0.10UF K	
C485			CC73GCH1H030B	CHIP C 3.0PF B	E	C659			CK73GB1H103K	CHIP C 0.010UF K	
C485			CC73GCH1H2R5B	CHIP C 2.5PF B	E3	C660			CK73GB1A105K	CHIP C 1.0UF K	
C487			CK73GB1H471K	CHIP C 470PF K		C662,663			CK73GB1C104K	CHIP C 0.10UF K	
C488			CC73GCH1H030B	CHIP C 3.0PF B		C664			CK73GB1H102K	CHIP C 1000PF K	
C489			CC73GCH1H330J	CHIP C 33PF J		C665			CK73GB1H471K	CHIP C 470PF K	
C490			CC73GCH1H010B	CHIP C 1.0PF B	E3	C666			CK73GB1H471K	CHIP C 470PF K	
C491			CC73GCH1H050B	CHIP C 5.0PF B	E3	C668			CK73GB1H103K	CHIP C 0.010UF K	
C491			CC73GCH1H100D	CHIP C 10PF D	E	C669			CK73GB1H471K	CHIP C 470PF K	
C492			CC73GCH1H3R5B	CHIP C 3.5PF B	E	C671			CK73GB1C104K	CHIP C 0.10UF K	
C492			CC73GCH1H4R5B	CHIP C 4.5PF B	E3	C672,673			CK73GB1H392K	CHIP C 3900PF K	
C493			CK73GB1H471K	CHIP C 470PF K		C674			CC73GCH1H221J	CHIP C 220PF J	
C494			CK73GB1H103K	CHIP C 0.010UF K		C675,676			C92-0804-05	CHIP-TAN 1.5UF 15WV	
C495			CC73GCH1H010C	CHIP C 1.0PF C		C677			CK73GB1H332K	CHIP C 3300PF K	
C501			CK73GB1H471K	CHIP C 470PF K		C678			CK73FB1C474K	CHIP C 0.47UF K	
C504			CK73HB1H471K	CHIP C 470PF K		C679			CC73GCH1H101J	CHIP C 100PF J	
C506			CK73GB1A105K	CHIP C 1.0UF K		C680			C92-0560-05	CHIP-TAN 10UF 6.3WV	
C507			CK73GB0J225K	CHIP C 2.2UF K		C681			CK73GB1C223K	CHIP C 0.022UF K	
C508			CK73GB1H471K	CHIP C 470PF K		C684			CK73GB1C104K	CHIP C 0.10UF K	
C601			CK73GB1A224K	CHIP C 0.22UF K		C686			CK73GB1C473K	CHIP C 0.047UF K	
C605			C92-0632-05	CHIP-TAN 6.8UF 6.3WV		C687			C92-0560-05	CHIP-TAN 10UF 6.3WV	
C607			CK73GB1H103K	CHIP C 0.010UF K		C688			CC73GCH1H221J	CHIP C 220PF J	
C608			CK73GB1H392K	CHIP C 3900PF K		C689			CK73GB1C223K	CHIP C 0.022UF K	

## PARTS LIST

TX-RX UNIT (X57-6732-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C690			CK73GB1H102K	CHIP C 1000PF K		L7			L92-0138-05	FERRITE CHIP	
C691			C92-0665-05	TANTAL 100UF 6.3WV		L8			L40-1885-92	SMALL FIXED INDUCTOR(180NH)	
C692			CC73GCH1H221J	CHIP C 220PF J		L9			L40-2785-92	SMALL FIXED INDUCTOR(270NH)	
C693			CK73GB1H471K	CHIP C 470PF K		L10			L92-0163-05	BEADS CORE	
C695			CK73GB1H471K	CHIP C 470PF K		L11			L40-1885-92	SMALL FIXED INDUCTOR(180NH)	
C696			CK73GB1A224K	CHIP C 0.22UF K		L12			L40-2785-92	SMALL FIXED INDUCTOR(270NH)	
C801			CK73GB1A105K	CHIP C 1.0UF K		L14			L41-1578-14	SMALL FIXED INDUCTOR	E
C802			CK73GB1H103K	CHIP C 0.010UF K		L14			L41-1878-14	SMALL FIXED INDUCTOR	E3
C803,804			CK73GB1A105K	CHIP C 1.0UF K		L15			L41-1878-14	SMALL FIXED INDUCTOR	E
C805			CK73GB1H471K	CHIP C 470PF K		L15			L41-2278-14	SMALL FIXED INDUCTOR	E3
C807			CK73GB1H471K	CHIP C 470PF K		L16			L40-1275-92	SMALL FIXED INDUCTOR(12NH)	
C809			CK73GB1A105K	CHIP C 1.0UF K		L17, 18			L41-2285-03	SMALL FIXED INDUCTOR	
C811			CK73GB1C104K	CHIP C 0.10UF K		L19			L40-1875-92	SMALL FIXED INDUCTOR(18NH)	
C812			CK73GB1H103K	CHIP C 0.010UF K		L20, 21			L40-3391-86	SMALL FIXED INDUCTOR(3.3UH)	
C814			CK73GB1H103K	CHIP C 0.010UF K		L22			L92-0163-05	BEADS CORE	
C816,817			CK73GB1H471K	CHIP C 470PF K		L23			L40-2275-92	SMALL FIXED INDUCTOR(22NH)	E
C818			CK73GB1H103K	CHIP C 0.010UF K		L23			L40-2775-92	SMALL FIXED INDUCTOR(27NH)	E3
C819			CK73GB1H471K	CHIP C 470PF K		L25			L40-2275-92	SMALL FIXED INDUCTOR(22NH)	
C820,821			CK73GB1A105K	CHIP C 1.0UF K		L205			L40-1875-92	SMALL FIXED INDUCTOR(18NH)	
C822			CK73GB1H471K	CHIP C 470PF K		L207			L40-1875-92	SMALL FIXED INDUCTOR(18NH)	
C823			CK73GB1H103K	CHIP C 0.010UF K		L208			L92-0138-05	FERRITE CHIP	
C825			C92-0713-05	CHIP-TAN 10UF 6.3WV		L209			L40-8265-92	SMALL FIXED INDUCTOR(8.2NH)	
C828			CK73GB1H471K	CHIP C 470PF K		L213			L40-8265-92	SMALL FIXED INDUCTOR(8.2NH)	
C829			CK73HB1H471K	CHIP C 470PF K		L216			L40-1575-54	SMALL FIXED INDUCTOR(15NH)	
C830			CK73GB1C104K	CHIP C 0.10UF K		L217			L92-0149-05	FERRITE CHIP	
C832			CK73HB1H471K	CHIP C 470PF K		L218			L40-1263-92	SMALL FIXED INDUCTOR(1.2NH)	E
C833			CK73GB1A105K	CHIP C 1.0UF K		L218			L40-1563-92	SMALL FIXED INDUCTOR(1.5NH)	E3
C834			CK73GB1C104K	CHIP C 0.10UF K		L220			L34-4602-05	AIR-CORE COIL	
C835,836			CK73GB1A105K	CHIP C 1.0UF K		L221			L92-0149-05	FERRITE CHIP	
C837			CK73GB1H471K	CHIP C 470PF K		L222			L40-2285-54	SMALL FIXED INDUCTOR(220NH)	
C840			CK73GB1H471K	CHIP C 470PF K		L223			L34-4572-05	AIR-CORE COIL	
C841			CK73GB1H103K	CHIP C 0.010UF K		L224-226			L34-4564-05	AIR-CORE COIL	
C842			CC73GCH1H150J	CHIP C 15PF J		L227			L40-1092-81	SMALL FIXED INDUCTOR	
C843			CC73GCH1H030C	CHIP C 3.0PF C		L228			L41-3369-16	SMALL FIXED INDUCTOR	E3
C845			CC73GCH1H150J	CHIP C 15PF J		L401			L92-0138-05	FERRITE CHIP	
C846			CK73GB1H103K	CHIP C 0.010UF K		L402			L40-1875-92	SMALL FIXED INDUCTOR(18NH)	
C847			C92-0712-05	CHIP-TAN 22UF 6.3WV		L403			L40-5685-85	SMALL FIXED INDUCTOR(0.56UH)	
C849			CK73GB1H471K	CHIP C 470PF K		L404			L40-2785-92	SMALL FIXED INDUCTOR(270NH)	
C850			CK73GB1H103K	CHIP C 0.010UF K		L405			L40-2775-92	SMALL FIXED INDUCTOR(27NH)	E
C852,853			CK73GB1H471K	CHIP C 470PF K		L405			L40-3375-92	SMALL FIXED INDUCTOR(33NH)	E3
C854			CK73GB1H103K	CHIP C 0.010UF K		L407-409			L41-8268-14	SMALL FIXED INDUCTOR	
C861			CK73FB1A475K	CHIP C 4.7UF K		L410			L92-0138-05	FERRITE CHIP	
C862-865			CK73HB1H471K	CHIP C 470PF K		L411			L41-2285-03	SMALL FIXED INDUCTOR	
TC1_2			C05-0384-05	CERAMIC TRIMMER CAP(10PF)		L413,414			L41-8268-14	SMALL FIXED INDUCTOR	
9	3B		E37-1085-05	FLAT CABLE		L415			L41-4778-03	SMALL FIXED INDUCTOR	
J601			E11-0457-05	PHONE JACK		L416			L40-5681-86	SMALL FIXED INDUCTOR(0.56UH)	
F801			F53-0190-05	FUSE		L601			L92-0140-05	FERRITE CHIP	
			G11-4300-04	RUBBER CUSHION		L602			L92-0149-05	FERRITE CHIP	
		*	J99-0374-04	ADHESIVE TAPE		L801			L92-0149-05	FERRITE CHIP	
						L802			L92-0140-05	FERRITE CHIP	
CD401			L79-1582-05	TUNING COIL		L803-807			L92-0138-05	FERRITE CHIP	
CF401			L72-1015-05	CERAMIC FILTER		X1			L77-1932-05	TCXO (16.8MHZ)	
L1			L40-4795-85	SMALL FIXED INDUCTOR(4.7UH)		X801			L77-1933-05	CRYSTAL RESONATOR(7.3728MHZ)	
L2			L40-1575-92	SMALL FIXED INDUCTOR(15NH)	E3	XF401			L71-0617-25	MCF (49.95MHZ)	
L3			L40-1581-86	SMALL FIXED INDUCTOR(0.15UH)		CP1_2			RK75HA1J473J	CHIP-COM 47K J 1/16W	
L5			L92-0138-05	FERRITE CHIP		CP3_4			RK75HA1J102J	CHIP-COM 1.0K J 1/16W	
L6			L40-1085-92	SMALL FIXED INDUCTOR(100NH)		CP801,802			RK75HA1J473J	CHIP-COM 47K J 1/16W	
						CP803-805			RK75HA1J102J	CHIP-COM 1.0K J 1/16W	
						CP806			RK75HA1J473J	CHIP-COM 47K J 1/16W	

## PARTS LIST

### TX-RX UNIT (X57-6732-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
CP807			RK75HA1J102J	CHIP-COM 1.0K J 1/16W		R222			RK73GB1J331J	CHIP R 330 J 1/16W	
CP808			RK75HA1J472J	CHIP-COM 4.7K J 1/16W		R224			RK73GB1J220J	CHIP R 22 J 1/16W	
CP809-818			RK75HA1J102J	CHIP-COM 1.0K J 1/16W		R229			RK73GB1J331J	CHIP R 330 J 1/16W	
R1			RK73GB1J223J	CHIP R 22K J 1/16W		R230			RK73GB1J180J	CHIP R 18 J 1/16W	
R2			RK73GB1J103J	CHIP R 10K J 1/16W		R231,232			RK73GB1J331J	CHIP R 330 J 1/16W	
R3			RK73GB1J474J	CHIP R 470K J 1/16W		R234			RK73GB1J103J	CHIP R 10K J 1/16W	
R4			R92-1252-05	CHIP R 0 OHM J 1/16W		R235			RK73GB1J101J	CHIP R 100 J 1/16W	
R5			RK73GB1J224J	CHIP R 220K J 1/16W		R237			RK73GB1J123J	CHIP R 12K J 1/16W	E3
R6			RK73GB1J473J	CHIP R 47K J 1/16W		R237			RK73GB1J223J	CHIP R 22K J 1/16W	E
R7 ,8			R92-1252-05	CHIP R 0 OHM J 1/16W		R242			RK73GB1J563J	CHIP R 56K J 1/16W	E3
R9			RK73GB1J393J	CHIP R 39K J 1/16W		R242			RK73GB1J124J	CHIP R 120K J 1/16W	E
R12			RK73GB1J101J	CHIP R 100 J 1/16W		R247			RK73GB1J473J	CHIP R 47K J 1/16W	
R13			R92-1252-05	CHIP R 0 OHM J 1/16W		R251			R92-1252-05	CHIP R 0 OHM J 1/16W	
R14			RK73GB1J222J	CHIP R 2.2K J 1/16W		R252			RK73GB1J220J	CHIP R 22 J 1/16W	
R15			R92-1252-05	CHIP R 0 OHM J 1/16W		R253			R92-1252-05	CHIP R 0 OHM J 1/16W	
R16			RK73GB1J102J	CHIP R 1.0K J 1/16W		R255			R92-1252-05	CHIP R 0 OHM J 1/16W	
R17			RK73GB1J101J	CHIP R 100 J 1/16W		R256,257			RK73EB2ER39K	CHIP R 0.39 K 1/4W	
R18			RK73GB1J474J	CHIP R 470K J 1/16W		R259,260			RK73GB1J683J	CHIP R 68K J 1/16W	E3
R19			RK73GB1J100J	CHIP R 10 J 1/16W		R259,260			RK73GB1J473J	CHIP R 47K J 1/16W	E
R20 ,21			R92-1252-05	CHIP R 0 OHM J 1/16W		R261			RK73EB2ER39K	CHIP R 0.39 K 1/4W	
R22			RK73GB1J122J	CHIP R 1.2K J 1/16W		R262			R92-0670-05	CHIP R 0 OHM	
R23			RK73GB1J471J	CHIP R 470 J 1/16W	E3	R263			RK73GB1J101J	CHIP R 100 J 1/16W	
R23 ,24			RK73GB1J681J	CHIP R 680 J 1/16W	E	R264,265			RK73GH1J154D	CHIP R 150K D 1/16W	
R24			RK73GB1J102J	CHIP R 1.0K J 1/16W	E3	R267-270			RK73GH1J154D	CHIP R 150K D 1/16W	
R25			RK73GB1J103J	CHIP R 10K J 1/16W		R271			RK73GB1J103J	CHIP R 10K J 1/16W	
R26			RK73GB1J223J	CHIP R 22K J 1/16W		R272			RK73GB1J473J	CHIP R 47K J 1/16W	
R27			RK73GB1J103J	CHIP R 10K J 1/16W		R273			R92-1252-05	CHIP R 0 OHM J 1/16W	
R28			RK73GB1J393J	CHIP R 39K J 1/16W		R274			RK73GB1J105J	CHIP R 1.0M J 1/16W	
R29			RK73GB1J104J	CHIP R 100K J 1/16W	E	R275			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R29			RK73GB1J823J	CHIP R 82K J 1/16W	E3	R276,277			RK73GB1J104J	CHIP R 100K J 1/16W	
R30			RK73HB1J123J	CHIP R 12K J 1/16W	E3	R278			R92-0670-05	CHIP R 0 OHM	E
R30			RK73HB1J333J	CHIP R 33K J 1/16W	E	R279,280			RK73GB1J271J	CHIP R 270 J 1/16W	
R31			RK73GB1J560J	CHIP R 56 J 1/16W		R281,282			R92-1252-05	CHIP R 0 OHM J 1/16W	
R32			RK73HB1J153J	CHIP R 15K J 1/16W		R401			RK73GB1J100J	CHIP R 10 J 1/16W	
R33			RK73HB1J473J	CHIP R 47K J 1/16W		R403			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R34			RK73GB1J473J	CHIP R 47K J 1/16W		R404			RK73GB1J334J	CHIP R 330K J 1/16W	E
R35			RK73GB1J220J	CHIP R 22 J 1/16W		R404			RK73GB1J474J	CHIP R 470K J 1/16W	E3
R36			RK73HB1J100J	CHIP R 10 J 1/16W		R406			RK73GB1J332J	CHIP R 3.3K J 1/16W	
R37			RK73HB1J181J	CHIP R 180 J 1/16W		R407			RK73GB1J474J	CHIP R 470K J 1/16W	
R38			RK73HB1J100J	CHIP R 10 J 1/16W		R408			RK73GB1J332J	CHIP R 3.3K J 1/16W	
R39			RK73HB1J151J	CHIP R 150 J 1/16W		R409			RK73GB1J392J	CHIP R 3.9K J 1/16W	
R40			RK73GB1J102J	CHIP R 1.0K J 1/16W		R412			RK73GB1J122J	CHIP R 1.2K J 1/16W	E
R41			RK73GB1J154J	CHIP R 150K J 1/16W		R412			RK73GB1J331J	CHIP R 330 J 1/16W	E3
R43			RK73HB1J154J	CHIP R 150K J 1/16W		R413			RK73GB1J124J	CHIP R 120K J 1/16W	
R44			RK73HB1J472J	CHIP R 4.7K J 1/16W		R414			RK73GB1J681J	CHIP R 680 J 1/16W	
R46			RK73HB1J101J	CHIP R 100 J 1/16W		R415			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R47			RK73HB1J682J	CHIP R 6.8K J 1/16W		R416			RK73GB1J101J	CHIP R 100 J 1/16W	
R48			RK73HB1J103J	CHIP R 10K J 1/16W		R417			RK73GB1J470J	CHIP R 47 J 1/16W	
R49			RK73G1J333D	CHIP R 33K D 1/16W		R419			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R50			RK73HB1J331J	CHIP R 330 J 1/16W		R420			RK73GB1J151J	CHIP R 150 J 1/16W	
R51			RK73G1J104D	CHIP R 100K D 1/16W		R422			RK73GB1J104J	CHIP R 100K J 1/16W	
R55			RK73HB1J222J	CHIP R 2.2K J 1/16W		R423			RK73GB1J563J	CHIP R 56K J 1/16W	
R56			RK73HB1J470J	CHIP R 47 J 1/16W		R424			RK73HB1J104J	CHIP R 100K J 1/16W	
R57			R92-1368-05	CHIP R 0 OHM		R425			RK73GB1J563J	CHIP R 56K J 1/16W	
R58			RK73GB1J472J	CHIP R 4.7K J 1/16W		R427			R92-1252-05	CHIP R 0 OHM J 1/16W	
R202			RK73GB1J472J	CHIP R 4.7K J 1/16W		R430,431			RK73HB1J105J	CHIP R 1.0M J 1/16W	
R203			R92-1252-05	CHIP R 0 OHM J 1/16W		R438			RK73HB1J105J	CHIP R 1.0M J 1/16W	
R204			RK73GB1J153J	CHIP R 15K J 1/16W		R440			RK73HB1J181J	CHIP R 180 J 1/16W	E3
R207			RK73GB1J333J	CHIP R 33K J 1/16W		R440			RK73HB1J221J	CHIP R 220 J 1/16W	E
R215			R92-1252-05	CHIP R 0 OHM J 1/16W		R441			RK73HB1J151J	CHIP R 150 J 1/16W	E

## PARTS LIST

TX-RX UNIT (X57-6732-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R441			RK73HB1J470J	CHIP R 47 J 1/16W	E3	R661			RK73GB1J684J	CHIP R 680K J 1/16W	
R457			RK73HB1J104J	CHIP R 100K J 1/16W		R665			R92-1252-05	CHIP R 0 OHM J 1/16W	
R459			RK73GB1J104J	CHIP R 100K J 1/16W		R666			RK73GB1J822J	CHIP R 8.2K J 1/16W	
R460			RK73GB1J563J	CHIP R 56K J 1/16W	E3	R667			RK73GB1J104J	CHIP R 100K J 1/16W	
R460			RK73GB1J683J	CHIP R 68K J 1/16W	E	R668			RK73GB1J473J	CHIP R 47K J 1/16W	
R461			R92-1252-05	CHIP R 0 OHM J 1/16W		R669			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R462,463			RK73GB1J105J	CHIP R 1.0M J 1/16W		R670			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R464			R92-0670-05	CHIP R 0 OHM		R671			RK73GB1J683J	CHIP R 68K J 1/16W	
R465			RK73GB1J332J	CHIP R 3.3K J 1/16W		R672			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R469			RK73GB1J221J	CHIP R 220 J 1/16W		R673			RK73GB1J272J	CHIP R 2.7K J 1/16W	
R471			RK73GB1J104J	CHIP R 100K J 1/16W		R674			R92-1252-05	CHIP R 0 OHM J 1/16W	
R474			RK73GB1J103J	CHIP R 10K J 1/16W		R675			RK73GB1J822J	CHIP R 8.2K J 1/16W	
R475			RK73GB1J683J	CHIP R 68K J 1/16W		R676			RK73GB1J151J	CHIP R 150 J 1/16W	
R476			RK73GB1J103J	CHIP R 10K J 1/16W		R677-679			R92-1252-05	CHIP R 0 OHM J 1/16W	
R601			R92-1252-05	CHIP R 0 OHM J 1/16W		R681			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R602			RK73GB1J124J	CHIP R 120K J 1/16W	E3	R682			RK73GB1J100J	CHIP R 10 J 1/16W	
R602			RK73GB1J184J	CHIP R 180K J 1/16W	E	R683			RK73GB1J474J	CHIP R 470K J 1/16W	
R603			R92-1252-05	CHIP R 0 OHM J 1/16W		R684			RK73GB1J182J	CHIP R 1.8K J 1/16W	
R604			RK73GB1J184J	CHIP R 180K J 1/16W		R686			RK73GB1J471J	CHIP R 470 J 1/16W	
R607-609			RK73GB1J103J	CHIP R 10K J 1/16W		R687			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R610			RK73GB1J472J	CHIP R 4.7K J 1/16W		R688,689			RK73GB1J101J	CHIP R 100 J 1/16W	
R612			RK73GB1J273J	CHIP R 27K J 1/16W		R691			RK73GB1J333J	CHIP R 33K J 1/16W	
R613			RK73GB1J824J	CHIP R 820K J 1/16W		R692			R92-1252-05	CHIP R 0 OHM J 1/16W	
R615			RK73GB1J334J	CHIP R 330K J 1/16W		R693			RK73GB1J273J	CHIP R 27K J 1/16W	
R616			R92-1252-05	CHIP R 0 OHM J 1/16W		R694,695			R92-1252-05	CHIP R 0 OHM J 1/16W	
R617			RK73GB1J473J	CHIP R 47K J 1/16W		R696			RK73GB1J103J	CHIP R 10K J 1/16W	
R618			RK73G1J364D	CHIP R 360K D 1/16W		R697			R92-1252-05	CHIP R 0 OHM J 1/16W	
R621			RK73GB1J473J	CHIP R 47K J 1/16W		R698			RK73GB1J152J	CHIP R 1.5K J 1/16W	
R622			RK73GB1J684J	CHIP R 680K J 1/16W		R802			RK73GB1J101J	CHIP R 100 J 1/16W	
R623			RK73GB1J274G	CHIP R 270K G 1/16W		R803,804			R92-1252-05	CHIP R 0 OHM J 1/16W	
R624			RK73GB1J562J	CHIP R 5.6K J 1/16W		R805			RK73GB1J153J	CHIP R 15K J 1/16W	
R625			RK73GB1J563J	CHIP R 56K J 1/16W		R807			RK73GB1J103J	CHIP R 10K J 1/16W	
R626,627			RK73GB1J184J	CHIP R 180K J 1/16W		R808			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R628			RK73GB1J224J	CHIP R 220K J 1/16W		R809			RK73GB1J272J	CHIP R 2.7K J 1/16W	
R629			RK73GB1J394J	CHIP R 390K J 1/16W		R810			RK73GB1J334J	CHIP R 330K J 1/16W	
R630			RK73GB1J684J	CHIP R 680K J 1/16W		R811			RK73GB1J332J	CHIP R 3.3K J 1/16W	
R631			RK73GB1J394J	CHIP R 390K J 1/16W		R812			RK73GB1J334J	CHIP R 330K J 1/16W	
R632			RK73GB1J823J	CHIP R 82K J 1/16W		R813			RK73GB1J332J	CHIP R 3.3K J 1/16W	
R633			RK73GB1J223J	CHIP R 22K J 1/16W		R814			RK73GB1J153J	CHIP R 15K J 1/16W	
R634			RK73GB1J153J	CHIP R 15K J 1/16W		R815			R92-1252-05	CHIP R 0 OHM J 1/16W	
R636			RK73GB1J474J	CHIP R 470K J 1/16W		R816			RK73GB1J224J	CHIP R 220K J 1/16W	
R637			RK73GB1J394J	CHIP R 390K J 1/16W		R817			RK73GB1J272J	CHIP R 2.7K J 1/16W	
R639			RK73GB1J393J	CHIP R 39K J 1/16W		R818			RK73GB1J821J	CHIP R 820 J 1/16W	
R640			RK73GB1J184J	CHIP R 180K J 1/16W		R819			RK73GB1J103J	CHIP R 10K J 1/16W	
R641,642			RK73GB1J124J	CHIP R 120K J 1/16W		R820			RK73GB1J561J	CHIP R 560 J 1/16W	
R643			RK73GB1J184J	CHIP R 180K J 1/16W		R821			RK73GB1J331J	CHIP R 330 J 1/16W	
R644,645			RK73GB1J472J	CHIP R 4.7K J 1/16W		R823			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R646			RK73GB1J223J	CHIP R 22K J 1/16W		R824			RK73GB1J183J	CHIP R 18K J 1/16W	
R647			R92-1252-05	CHIP R 0 OHM J 1/16W		R825			RK73GB1J473J	CHIP R 47K J 1/16W	
R648			RK73GB1J103J	CHIP R 10K J 1/16W		R827			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R649			RK73GB1J104J	CHIP R 100K J 1/16W		R828			RK73GB1J332J	CHIP R 3.3K J 1/16W	
R650			RK73GB1J102J	CHIP R 1.0K J 1/16W		R829			RK73GB1J272J	CHIP R 2.7K J 1/16W	
R651			R92-1252-05	CHIP R 0 OHM J 1/16W		R830			RK73GB1J821J	CHIP R 820 J 1/16W	
R652			RK73GB1J273J	CHIP R 27K J 1/16W		R833,834			RK73GH1J474D	CHIP R 470K D 1/16W	
R653			RK73GB1J392J	CHIP R 3.9K J 1/16W		R835,836			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R654			RK73GB1J103J	CHIP R 10K J 1/16W		R839,840			RK73GB1J473J	CHIP R 47K J 1/16W	
R655,656			RK73GB1J105J	CHIP R 1.0M J 1/16W		R841			R92-1252-05	CHIP R 0 OHM J 1/16W	
R657			RK73GB1J332J	CHIP R 3.3K J 1/16W		R842			R92-1368-05	CHIP R 0 OHM	
R658			RK73GB1J103J	CHIP R 10K J 1/16W		R844			RK73GB1J473J	CHIP R 47K J 1/16W	
R660			RK73GB1J154J	CHIP R 150K J 1/16W		R845			R92-1368-05	CHIP R 0 OHM	

E : TK-3160E E3 : TK-3160E3

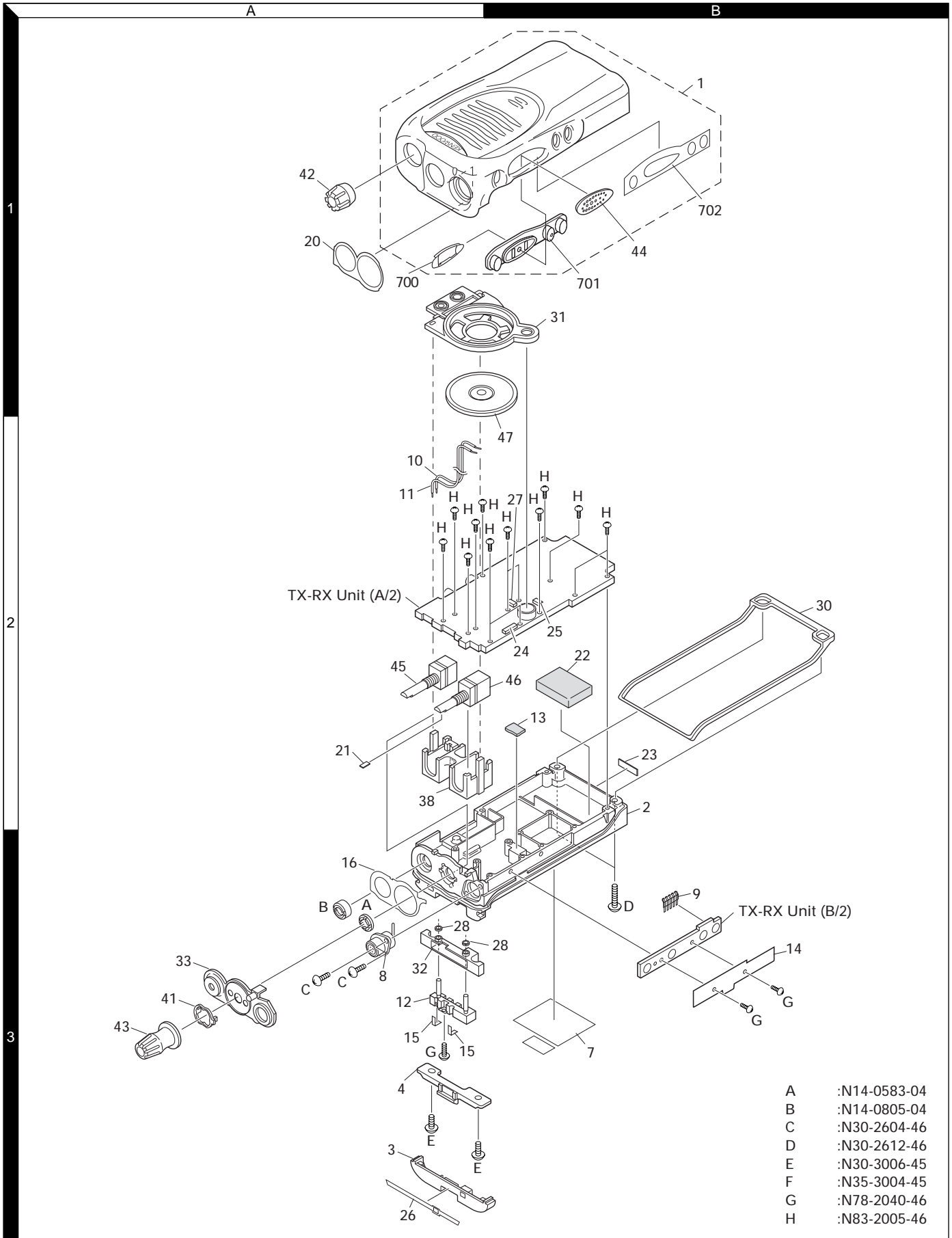
# TK-3160

## PARTS LIST

### TX-RX UNIT (X57-6732-XX)

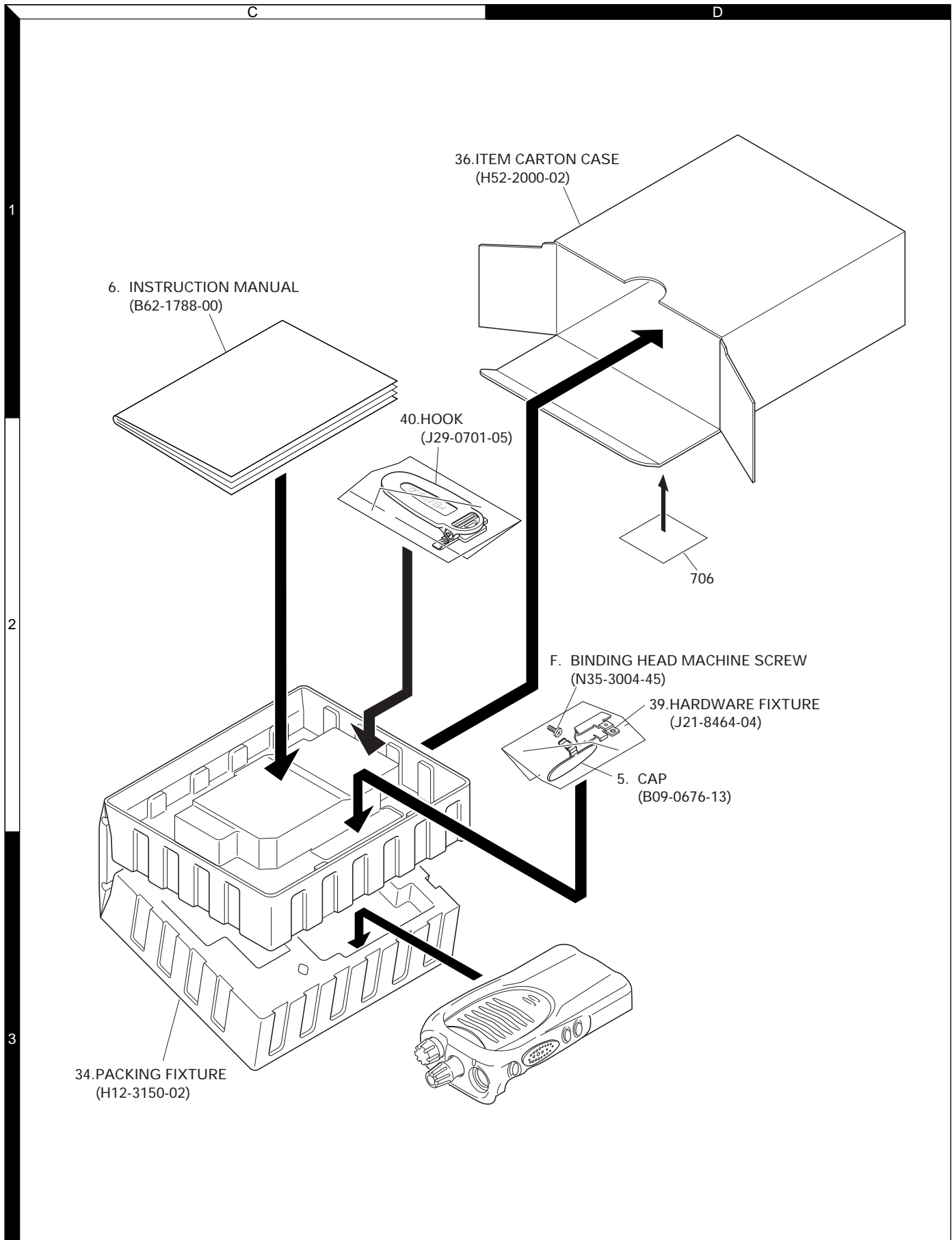
Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R847,848			RK73GB1J102J	CHIP R 1.0K J 1/16W		Q209			2SK879(GR)	FET	
R849			R92-1252-05	CHIP R 0 OHM J 1/16W		Q210			DTC114EE	DIGITAL TRANSISTOR	
R851			R92-1368-05	CHIP R 0 OHM		Q211			2SK3476	FET	
R852			RK73HB1J473J	CHIP R 47K J 1/16W		Q212			2SK1824	FET	
R854			RK73GB1J680J	CHIP R 68 J 1/16W		Q213			DTA144EE	DIGITAL TRANSISTOR	
R855-857			RK73HB1J102J	CHIP R 1.0K J 1/16W		Q401			DTA144EE	DIGITAL TRANSISTOR	
R858			R92-1368-05	CHIP R 0 OHM		Q402			2SC4649(N,P)	TRANSISTOR	
R859			RK73GB1J104J	CHIP R 100K J 1/16W		Q403			3SK318	FET	E3
R862			R92-1252-05	CHIP R 0 OHM J 1/16W		Q403,404			3SK318	FET	E3
VR1			R12-7491-05	TRIMMING POT.(68K/8)		Q404			3SK293	FET	
S802-805			S70-0457-05	TACT SWITCH		Q407,408			2SK1824	FET	
MIC60			T91-0543-05	MIC ELEMENT		Q601,602			2SK1824	FET	
D3 ,4			1SV325	VARIABLE CAPACITANCE DIODE		Q603			DTC144EE	DIGITAL TRANSISTOR	
D7			1SV325	VARIABLE CAPACITANCE DIODE		Q604			2SA1362(GR)	TRANSISTOR	
D9			1SV325	VARIABLE CAPACITANCE DIODE		Q605			2SC4116(Y)	TRANSISTOR	
D10			1SV278	VARIABLE CAPACITANCE DIODE		Q606			2SA1586(Y,GR)	TRANSISTOR	
D11			HSC277	DIODE		Q607			DTC144EE	DIGITAL TRANSISTOR	
D201			HSC277	DIODE		Q608			2SK1588	FET	
D203			HZU5CLL	ZENER DIODE		Q801			UMG3N	TRANSISTOR	
D204			HVC131	DIODE		Q802			UPA672T	FET	
D206			HVC131	DIODE		Q803			FP210	TRANSISTOR	
D208			HVC131	DIODE		Q804			UMG3N	TRANSISTOR	
D212			HVC131	DIODE		Q805			UMG9N	TRANSISTOR	
D401			HSC277	DIODE		Q806			KTA1298(Y)	TRANSISTOR	
D402-406			HVC369B	VARIABLE CAPACITANCE DIODE		Q807			UMG3N	TRANSISTOR	
D407			RB521S-30	DIODE		Q808,809			DTA123JE	DIGITAL TRANSISTOR	
D603-606			RB706F-40	DIODE		Q810			2SK1824	FET	
D801			RB521S-30	DIODE		TH1			B57331V2104J	THERMISTOR	
D805			1SR154-400	DIODE		TH600			B57331V2104J	THERMISTOR	
D812,813			015AZ6.8	ZENER DIODE							
IC1			MB15E03SL	MOS IC							
IC201			TA75W01FU	MOS IC							
IC401			TA31136FN	MOS IC							
IC601			AQUA	MOS IC							
IC602			TC75S51FE	MOS IC							
IC603			TC75W51FU	MOS IC							
IC604			TC75S51FE	MOS IC							
IC605			TA7368F	MOS IC							
IC801			XC6204B502MR	MOS IC							
IC802			PST9134NR	MOS IC							
IC803			XC61CN5002NR	MOS IC							
IC804			CAT24WC64JI	ROM IC							
IC805		*	30622MCA-8C1GP	MPU							
IC806			TC7W74FU	MOS IC							
Q1			DTC144EE	DIGITAL TRANSISTOR							
Q2 ,3			UMG9N	TRANSISTOR							
Q4			KTC4082	TRANSISTOR							
Q5 ,6			2SK508NV(K52)	FET							
Q7			2SC5108(Y)	TRANSISTOR							
Q8			2SJ347	FET							
Q9			2SC5108(Y)	TRANSISTOR							
Q10			2SC4617(S)	TRANSISTOR							
Q11			2SC5108(Y)	TRANSISTOR							
Q12			2SJ347	FET							
Q205			2SC5108(Y)	TRANSISTOR							
Q206			2SK3077	FET							
Q207			2SK2596	FET							
Q208			DTC114EE	DIGITAL TRANSISTOR							

## EXPLODED VIEW



- A :N14-0583-04
- B :N14-0805-04
- C :N30-2604-46
- D :N30-2612-46
- E :N30-3006-45
- F :N35-3004-45
- G :N78-2040-46
- H :N83-2005-46

## PACKING





# ADJUSTMENT

## Test Equipment Required for Alignment

Test Equipment	Major Specifications	
1. Standard Signal Generator (SSG)	Frequency Range Modulation Output	400 to 512MHz Frequency modulation and external modulation. -127dBm/0.1μV to greater than -47dBm/1mV
2. Power Meter	Input Impedance Operation Frequency Measurement Range	50Ω. 400 to 512MHz or more. Vicinity of 10W
3. Deviation Meter	Frequency Range	400 to 512MHz
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. Ammeter		5A.
8. AF Volt Meter (AF VTVM)	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. 8Ω Dummy Load		Approx. 8Ω, 3W.
12. Regulated Power Supply		5V to 10V, approx. 3A Useful if ammeter equipped.

## ■ The following parts are required for adjustment

### 1. Antenna connector adapter

The antenna connector of this radio uses an SMA terminal.

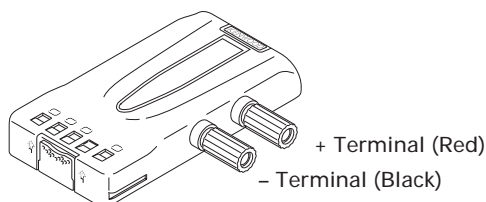
Use an antenna connector adapter [SMA(f) – BNC(f) or SMA(f) – N(f)] for adjustment. (The adapter is not provided as an option, so buy a commercially-available one.)

### 2. Repair Jig (Chassis)

Use jig (part No.: A10-4082-02) for repairing the TK-3160. Place the TX-RX unit on the jig and fit it with screws.

The jig facilitates the voltage check and protects the final amplifier FET when the voltage on the flow side of the TX-RX unit is checked during repairs.

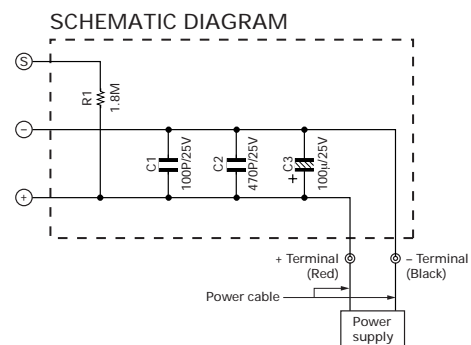
### 3. Battery Jig (W05-0909-00)



Connect the power cable properly between the battery jig installed in the transceiver and the power supply, and be sure output voltage and the power supply polarity prior to switching the power supply ON, otherwise over voltage and reverse connection may damage the transceiver, or the power supply or both.

When using the battery jig in user mode, the transceiver assumes that a lithium-ion battery pack is attached to the transceiver. In adjustment mode, battery type detection is not performed. Refer to page 10 for details.

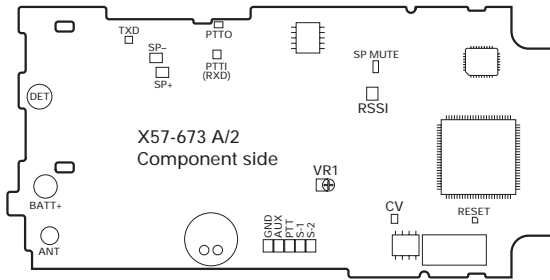
**Note:** When using the battery jig, you must measure the voltage at the terminals of the battery jig. Otherwise, a slight voltage drop may occur within the power cable, between the power supply and the battery jig, especially while the transceiver transmits.





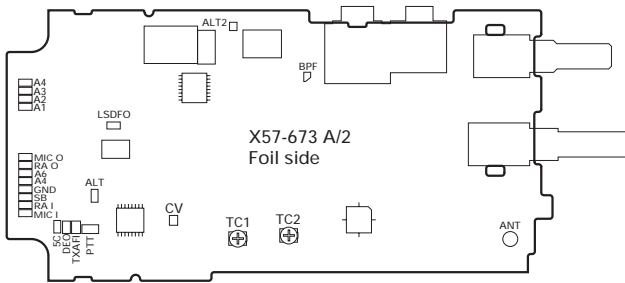
## ADJUSTMENT

### Adjustment points TX-RX unit (X57-673) Component side view



VR1 : Frequency adjustment  
RSSI : Band-pass wave form test point

### Foil Side View



TC1 : Transmit lock voltage adjustment  
TC2 : Receive lock voltage adjustment  
CV : Lock voltage adjustment terminal.

**Fig. 1 Adjustment points**

### ■ Frequency and signalling

The set 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.

#### Frequency (MHz) E3 type

Channel No.	RX Frequency	TX Frequency
1	415.050	415.100
2	400.050	400.100
3	429.950	429.900
4	415.000	415.000
5	415.200	415.200
6	415.400	415.400
7~16	—	—

#### Signalling

Signalling No.	RX	TX
1	None	None
2	None	100Hz Square Wave
3	QT 67.0Hz	QT 67.0Hz
4	QT 151.4Hz	QT 151.4Hz
5	QT 210.7Hz	QT 210.7Hz
6	QT 254.1Hz	QT 254.1Hz
7	DQT D023N	DQT D023N
8	DQT D754I	DQT D754I
9	DTMF 159D	DTMF 159D
10	None	DTMF tone 9
11	5 Tone: CCIR 1,2,3,4,5	5 Tone: CCIR 1,2,3,4,5
12	None	Single Tone:1000Hz
13	None	MSK
14	MSK Code	MSK Code

#### • 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 8Ω dummy load and connected to an AC voltmeter and an audio distortion meter or a SINAD measurement meter at all times during tuning.

#### Adjustment Frequency (E3 type)

TEST CH	E3	
	RX	TX
Center	415.050MHz	415.100MHz
Low	400.050MHz	400.100MHz
High	429.950MHz	429.900MHz
Low'	407.550MHz	407.600MHz
High'	422.550MHz	422.600MHz

## ADJUSTMENT


## Common Section

Item	Condition	Measurement		Adjustment		Specifications/ Remark
		Test equipment	Terminal	Parts	Method	
1.Setting	1) BATT terminal vorage:7.5V 2) SSG standard modulation [Wide] MOD:1kHz,DEV:3kHz [Narrow] MOD:1kHz,DEV:1.5kHz					
2.VCO lock voltage RX	1) CH:High	Power meter DVM	ANT CV	TC2	ADJ	3.5V $\pm$ 0.2V
	2) CH:Low				Check	0.6V or more
3.VCO lock voltage TX	3) CH:High PTT:ON			TC1	ADJ	3.5V $\pm$ 0.2V
	4) CH:Low PTT:ON				Check	0.6V or more

## Transmitter Section

Item	Condition	Measurement		Adjustment		Specifications/ Remark
		Test equipment	Terminal	Parts	Method	
1.Frequency Adjust	1) CH:Center 2) PTT:ON	Frequency counter	ANT	VR1		Center frequency $\pm$ 50Hz
2.High power Adjust [Wide]	TEST CH: Low Low' Center High' High (5 points) BATT terminal voltage:7.5V PTT:ON	Power meter Ampere meter		Programming Software:KPG-82D		4.0W $\pm$ 0.1W 2.0 A or less
3.Low power Adjust [Wide]	TEST CH: Low Low' Center High' High (5 points) BATT terminal voltage:7.5V PTT:ON					1.0W $\pm$ 0.1W 1.0 A or less
4.Max deviation Adjust [Wide]	TEST CH: Low Center High (3 points) AG:1kHz/150mV Dev meter filter LPF:15kHz HPF:OFF PTT:ON	Power meter Dev meter Oscilloscope AG AF VTVM	ANT SP/MIC connector		4.2kHz (According to the lager +,-)	$\pm$ 50Hz
	[Narrow]				TEST CH:Center PTT:ON	2.1kHz (According to the lager +,-)
5.VOX 1 Writing [Wide]	TEST CH:Center AG:1KHz/60mV					
6.VOX 10 Writing [Wide]	TEST CH:Center AG:1KHz/4.0mV					

## ADJUSTMENT

Item	Condition	Measurement		Adjustment		Specifications/ Remark												
		Test equipment	Terminal	Parts	Method													
7. DQT TCXO Balance Writing [Wide] [Narrow]	TEST CH: Center (Wide/Narrow)	Power meter Dev meter Oscilloscope AG AF VTVM	ANT	Programming Software:KPG-82D	Write	200 hex												
						120 hex												
8. DQT VCO Balance Adjust [Wide] [Narrow]	TEST CH: Low Center High (3 points) LPF:3kHz HPF:OFF PTT:ON				Power meter Dev meter Oscilloscope AG AF VTVM	ANT	Programming Software:KPG-82D	Make the demodulation wave into square waves										
									TEST CH: Center PTT:ON									
9. QT Deviation Adjust [Wide] [Narrow]	TEST CH: Low Center High (3 points) LPF:3kHz HPF:OFF PTT:ON				Power meter Dev meter Oscilloscope AG AF VTVM	ANT	Programming Software:KPG-82D	0.8kHz	±40Hz									
									TEST CH: Center PTT:ON	0.4kHz	±40Hz							
10. DQT Deviation Adjust [Wide] [Narrow]	TEST CH: Low Center High (3 points) LPF:3kHz HPF:OFF PTT:ON							Power meter Dev meter Oscilloscope AG AF VTVM	ANT	Programming Software:KPG-82D	0.75kHz	±40Hz						
												TEST CH:Center PTT:ON	0.35kHz	±40Hz				
11. Tone Deviation Adjust [Wide] [Narrow]	TEST CH: Center LPF:15kHz HPF:OFF PTT:ON										Power meter Dev meter Oscilloscope AG AF VTVM	ANT	Programming Software:KPG-82D	3.0kHz	±100Hz			
															TEST CH:Center PTT:ON	1.5kHz	±100Hz	
12. DTME Deviation Adjust [Wide] [Narrow]	TEST CH: Center LPF:15kHz HPF:OFF PTT:ON													Power meter Dev meter Oscilloscope AG AF VTVM	ANT	Programming Software:KPG-82D	3.0kHz	±100Hz
																		TEST CH: Center PTT:ON
13. MSK Deviation Adjust [Wide] [Narrow]	TEST CH: Low Center High (3 points) LPF:15kHz HPF:OFF PTT:ON	Power meter Dev meter Oscilloscope AG AF VTVM	ANT	Programming Software:KPG-82D													3.0kHz	±100Hz
																		TEST CH:Center PTT:ON

## ADJUSTMENT

Item	Condition	Measurement		Adjustment		Specifications/ Remark
		Test equipment	Terminal	Parts	Method	
14.BATT Detection Writing [Wide]	BATT terminal voltage:5.9V PTT:ON	Power meter DVM	ANT BATT terminal		Write	BATT terminal voltage:5.9V
15.BATT Detection Check	1) BATT terminal voltage:5.5V PTT:ON				Check	LED blinks
	2) BATT terminal voltage:7.5V PTT:ON					LED does not blink

## Receiver Section

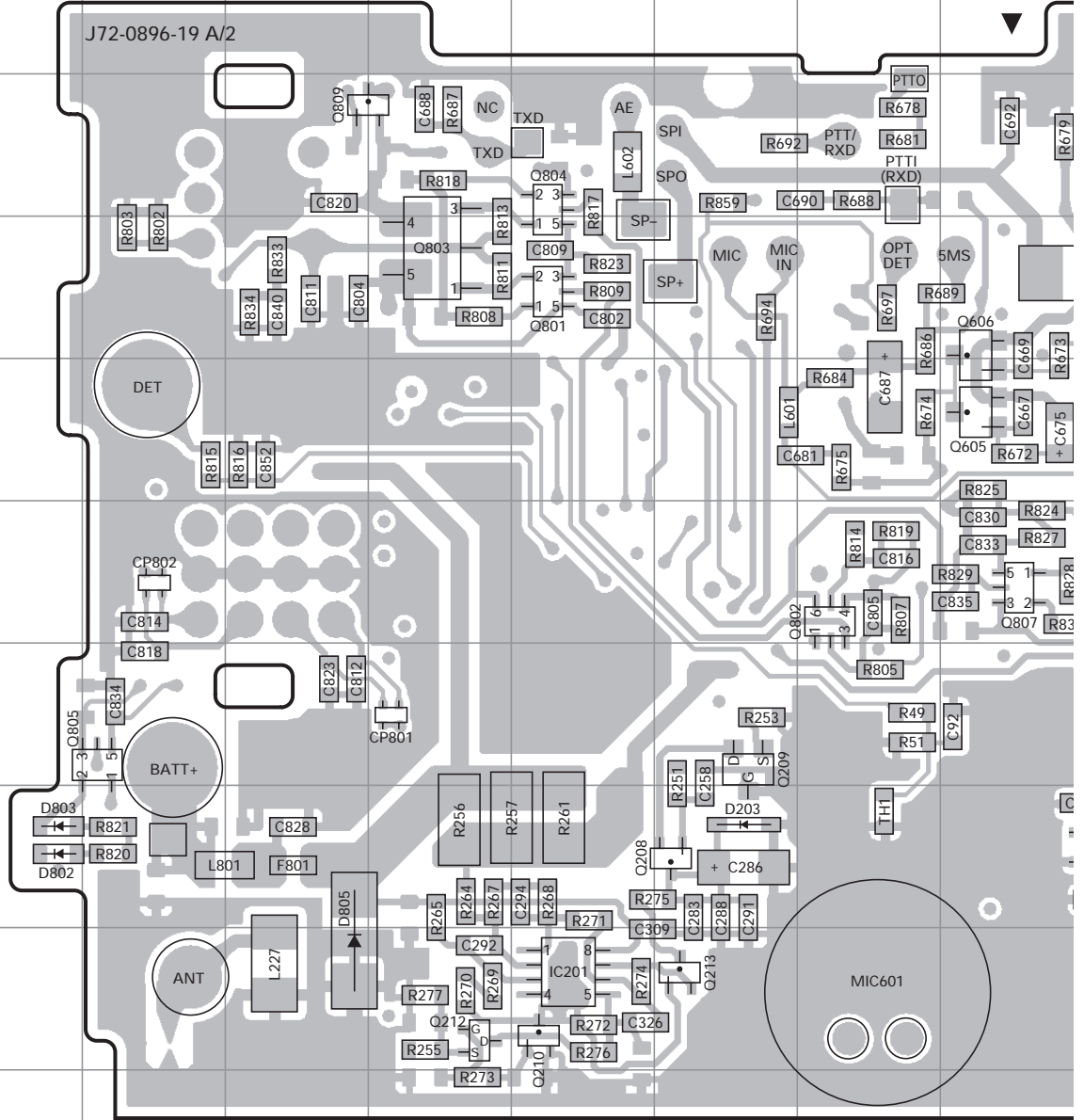
Item	Condition	Measurement		Adjustment		Specifications/ Remark
		Test equipment	Terminal	Parts	Method	
1.BPF Wave form ADJ [Wide]	TEST CH: Low Low' Center High' High (5 points) SSG oputut:-103 dBm(1.58μV)	SSG DVM Oscilloscope AF VTVM	ANT RSSI	Programming Software:KPG-82D	RSSI MAX	
2.Sesitivity check [Wide]	TEST CH: Low Low' Center High' High (5 points) SSG oputut:-116 dBm(0.35μV) SSG MOD:3kHz		ANT		Check	12dB SINAD or more
	[Narrow] TEST CH: Center SSG oputut:-115 dBm(0.4μV) SSG MOD:1.5kHz					
3.Squelch tight writing [Wide]	TEST CH: Center SSG oputut:-117 dBm(0.3μV) SSG MOD:3.0kHz			Programming Software:KPG-82D	Write	Squelch open
	[Narrow] TEST CH: Center SSG oputut:-116 dBm(0.35μV) SSG MOD:1.5kHz					Squelch open
4.Squelch threshold writing [Wide]	TEST CH: Center SSG oputut:-122 dBm(0.18μV) SSG MOD:3.0kHz					Squelch open
	[Narrow] TEST CH: Center SSG oputut:-121 dBm(0.2μV) SSG MOD:1.5kHz					Squelch open
5.RSSI writing [Wide]	TEST CH:Center SSG oputut:-124 dBm(0.14μV) SSG MOD:off					
	[Narrow] TEST CH:Center SSG oputut:-123 dBm(0.16μV) SSG MOD:off					

# TK-3160 PC BOARD

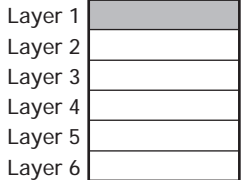
## TX-RX UNIT (X57-6732-XX) -71 : E -72 : E3 Component side view (J72-0896-19)

### TX-RX UNIT (X57-6732-XX)

Ref. NO.	Address
IC201	9G
IC601	4Q
IC602	6M
IC603	8M
IC604	6L
IC605	3L
IC802	8K
IC803	8K
IC804	9O
IC805	7Q
IC806	8R
Q1	7O
Q3	8O
Q208	8H
Q209	7H
Q210	9G
Q212	9F
Q213	9H
Q407	6M
Q408	9N
Q601	5M
Q602	2N
Q603	4M
Q604	3M
Q605	5J
Q606	4J
Q607	4M
Q608	4L
Q801	4G
Q802	6I
Q803	4F
Q804	3G
Q805	7D
Q806	6K
Q807	6J
Q809	3E
Q810	9R
D203	8H
D407	6M
D603	5M
D604	7K
D605	5K
D606	5K
D802	8C
D803	8C
D805	9E
D812	9K
D813	9K



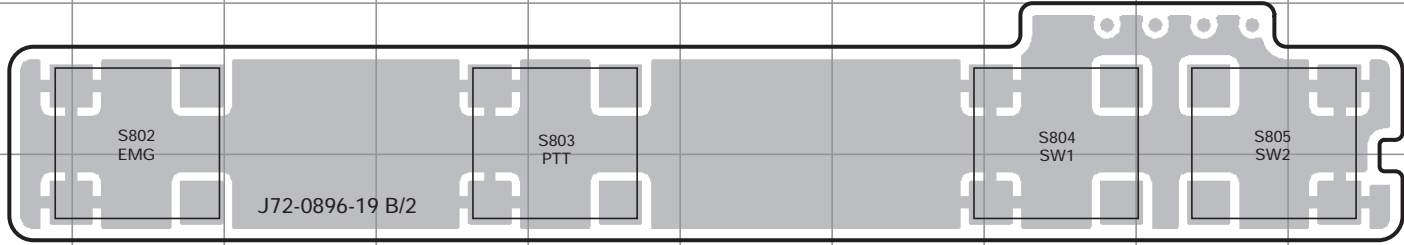
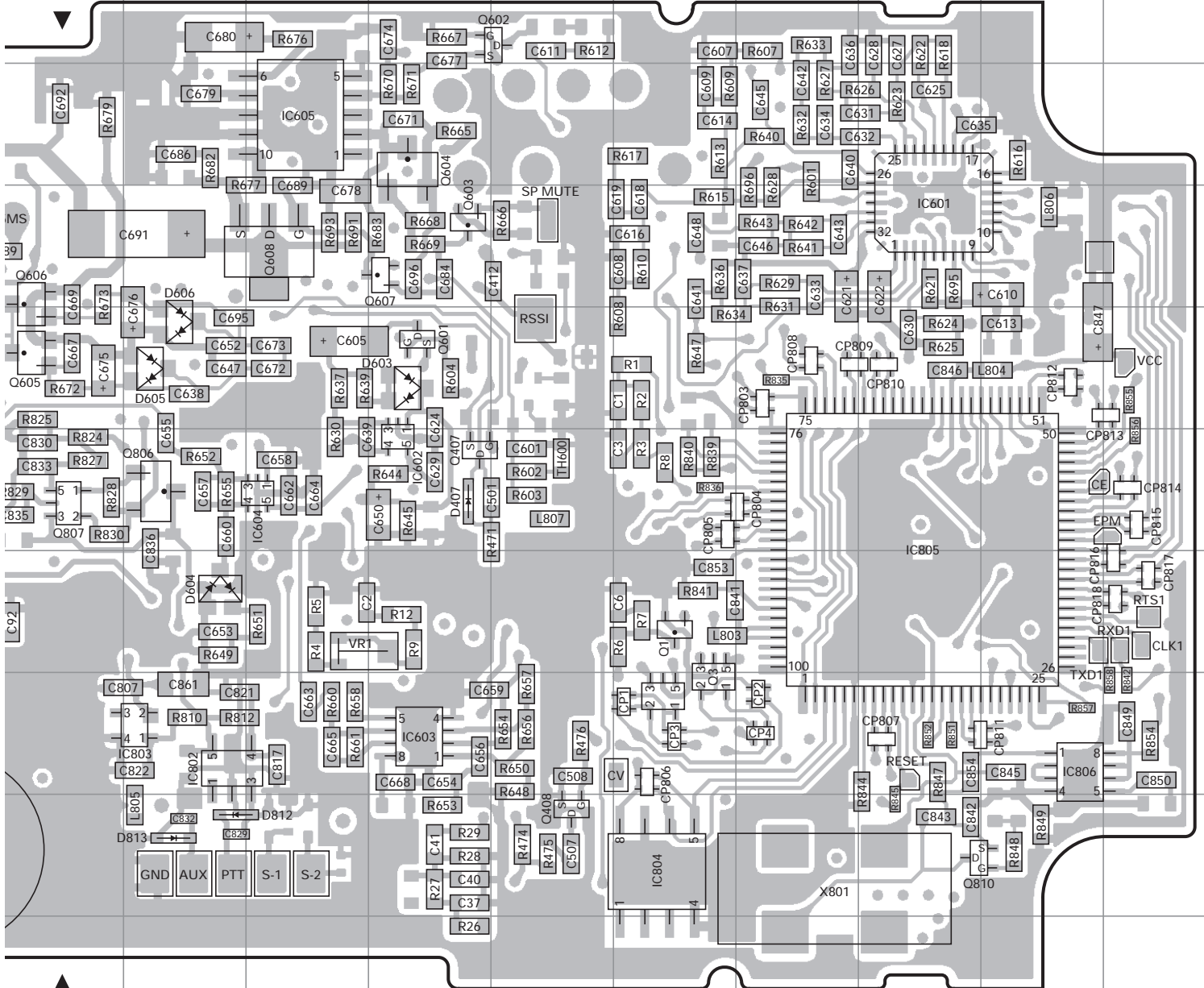
Component side



Foil side

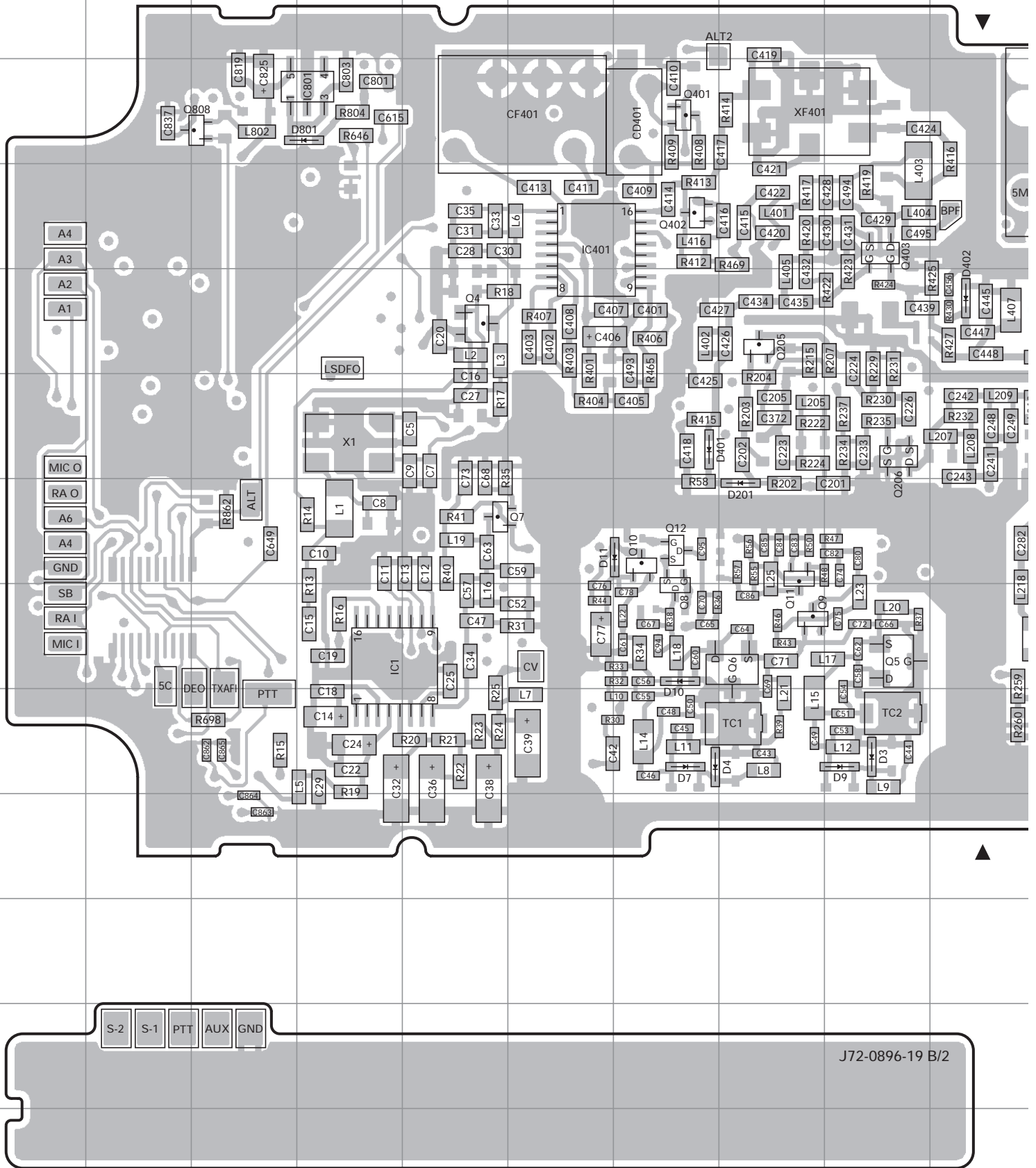
# PC BOARD TK-3160

TX-RX UNIT (X57-6732-XX) -71 : E -72 : E3  
Component side view (J72-0896-19)



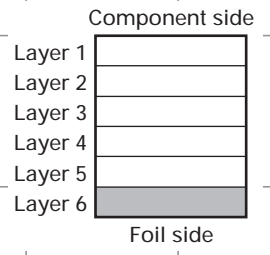
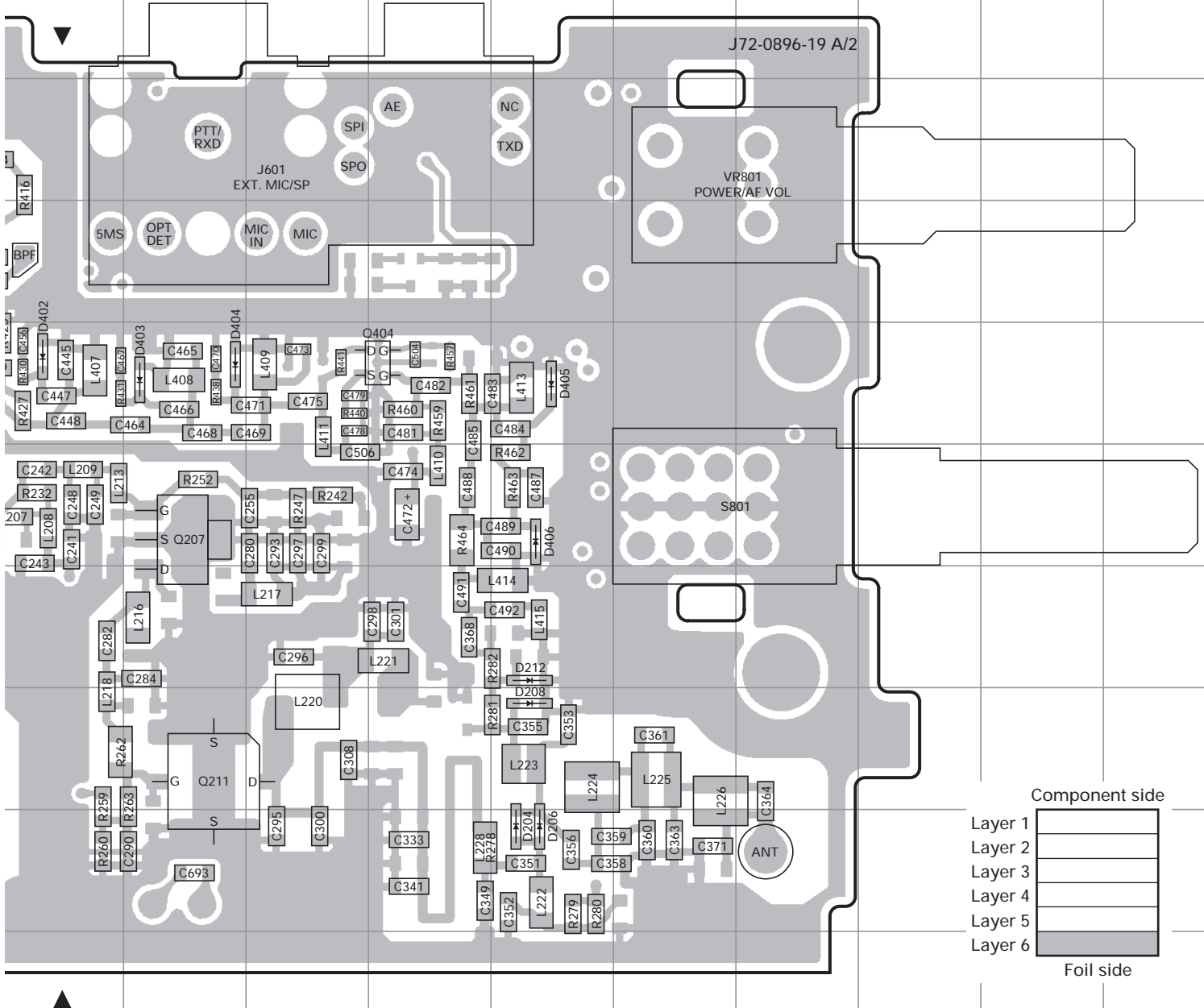
# TK-3160 PC BOARD

TX-RX UNIT (X57-6732-XX) -71 : E -72 : E3  
Foil side view (J72-0896-19)



# PC BOARD TK-3160

TX-RX UNIT (X57-6732-XX) -71 : E -72 : E3  
Foil side view (J72-0896-19)



TX-RX UNIT (X57-6732-XX)

Ref. NO.	Address	Ref. NO.	Address	Ref. NO.	Address
IC1	8D	Q207	6K	D204	9N
IC401	4F	Q211	8K	D206	9N
IC801	3D	Q401	3G	D208	8N
Q4	5E	Q402	4G	D212	7N
Q5	8I	Q403	4I	D401	6G
Q6	8H	Q404	5M	D402	5J
Q7	7E	Q808	3C	D403	5K
Q8	8G	D3	9I	D404	5K
Q9	8H	D4	9G	D405	5N
Q10	7G	D7	9G	D406	6N
Q11	7H	D9	9I	D801	3D
Q12	7G	D10	8G		
Q205	5H	D11	7G		
Q206	6I	D201	7H		



# TK-3160 PC BOARD

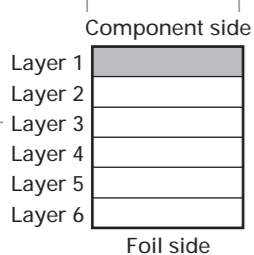
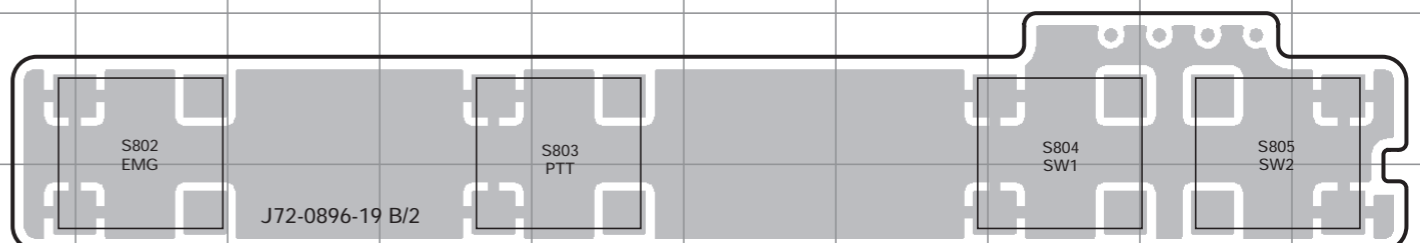
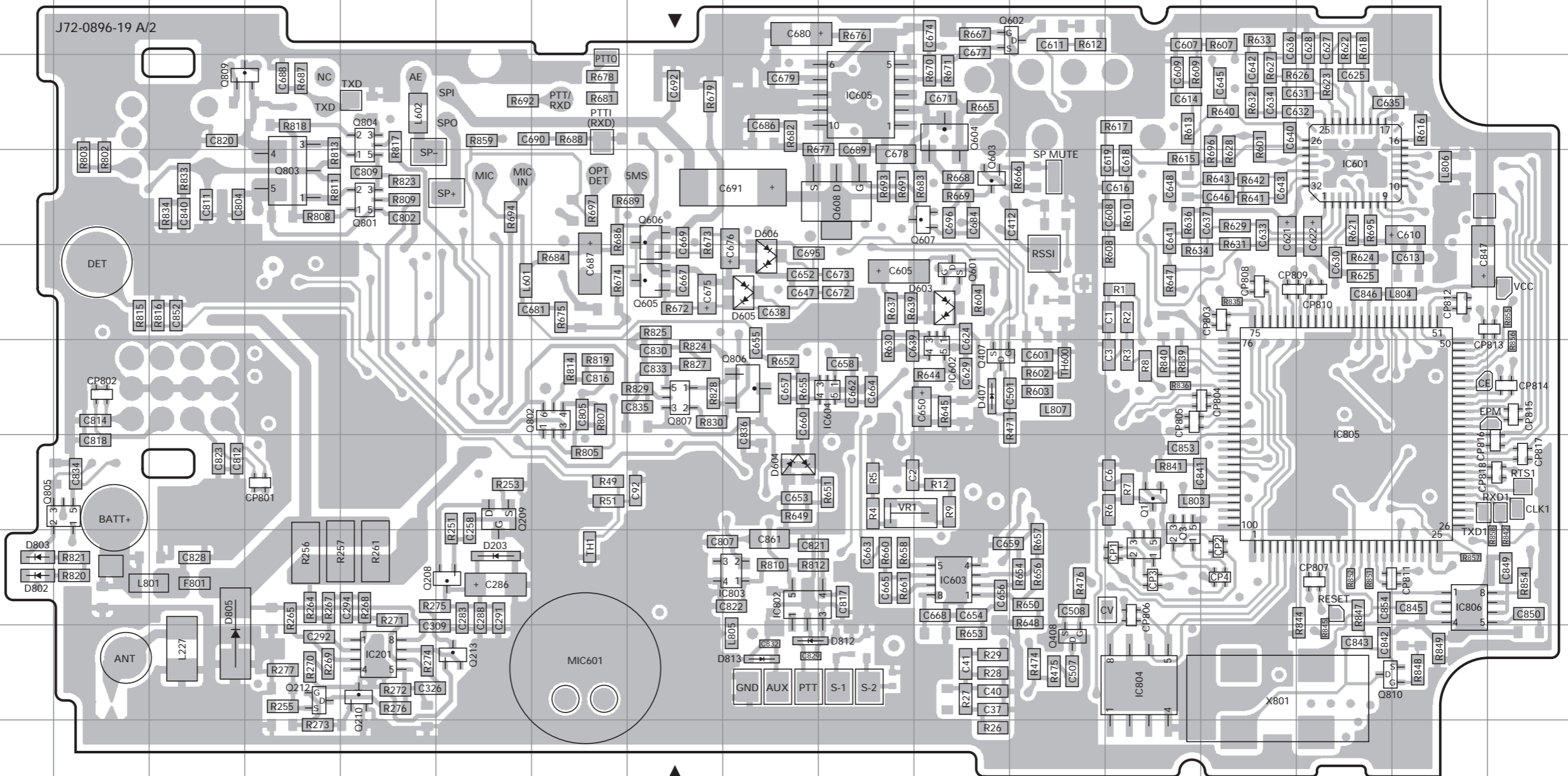
# PC BOARD TK-3160

TX-RX UNIT (X57-6732-XX) -71 : E -72 : E3  
Component side view (J72-0896-19)

TX-RX UNIT (X57-6732-XX) -71 : E -72 : E3  
Component side view (J72-0896-19)

TX-RX UNIT (X57-6732-XX)

Ref. NO.	Address
IC201	9G
IC601	4Q
IC602	6M
IC603	8M
IC604	6L
IC605	3L
IC802	8K
IC803	8K
IC804	9O
IC805	7Q
IC806	8R
Q1	7O
Q3	8O
Q208	8H
Q209	7H
Q210	9G
Q212	9F
Q213	9H
Q407	6M
Q408	9N
Q601	5M
Q602	2N
Q603	4M
Q604	3M
Q605	5J
Q606	4J
Q607	4M
Q608	4L
Q801	4G
Q802	6I
Q803	4F
Q804	3G
Q805	7D
Q806	6K
Q807	6J
Q809	3E
Q810	9R
D203	8H
D407	6M
D603	5M
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D802	8C
D803	8C
D805	9E
D812	9K
D813	9K

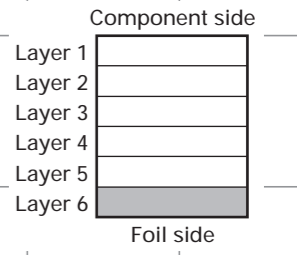
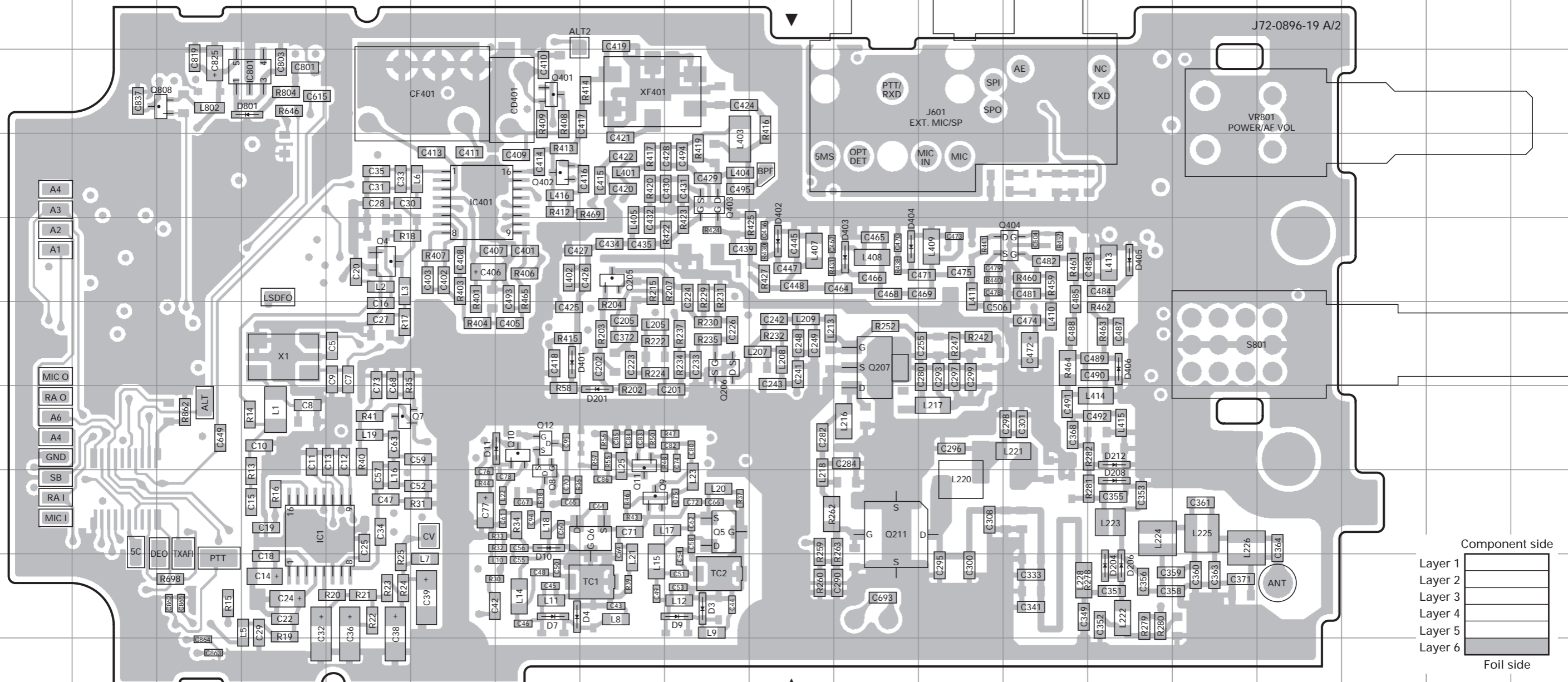


# TK-3160 PC BOARD

# PC BOARD TK-3160

TX-RX UNIT (X57-6732-XX) -71 : E -72 : E3  
Foil side view (J72-0896-19)

TX-RX UNIT (X57-6732-XX) -71 : E -72 : E3  
Foil side view (J72-0896-19)



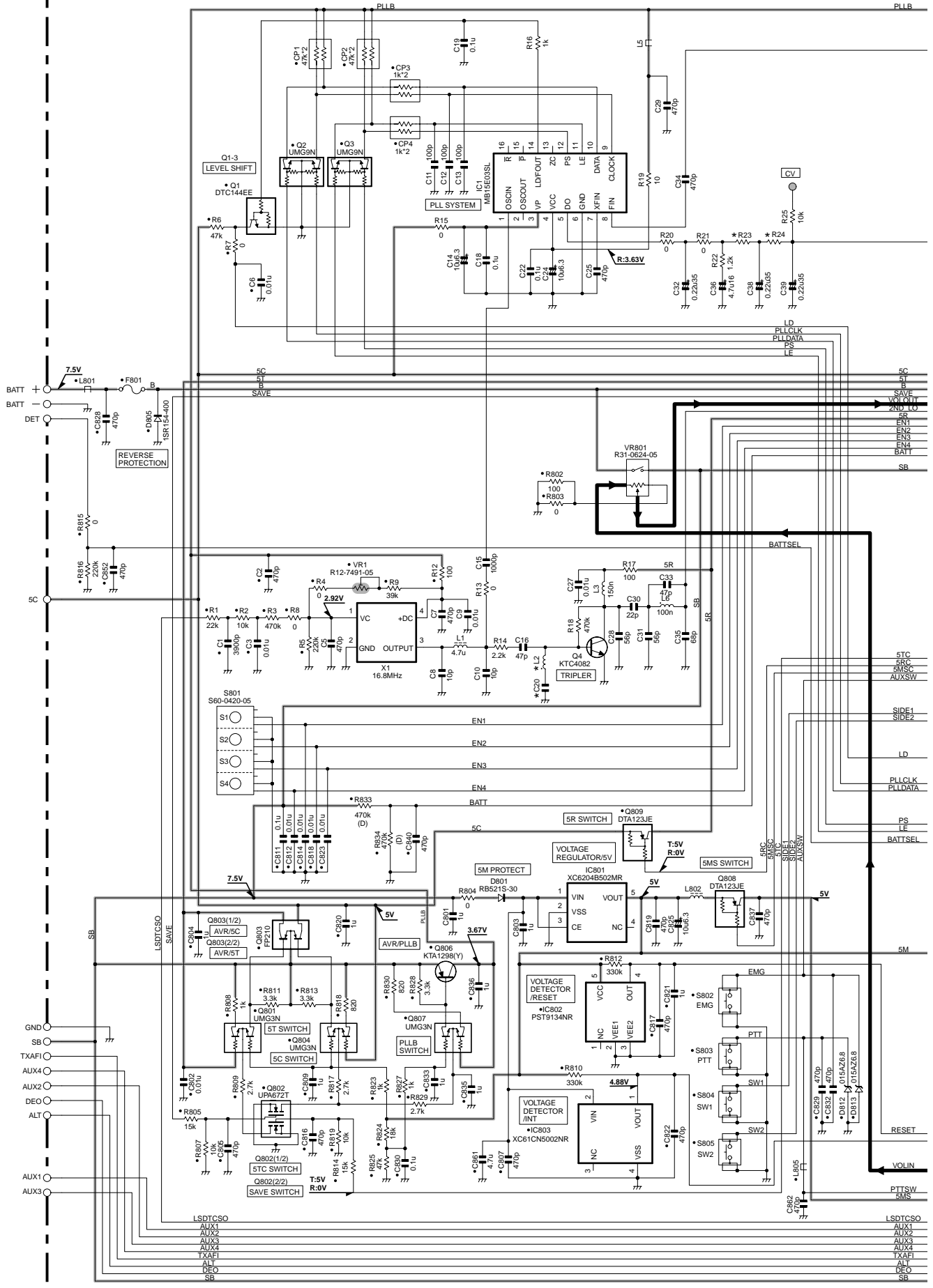
J72-0896-19 B/2

TX-RX UNIT (X57-6732-XX)

Ref. NO.	Address	Ref. NO.	Address	Ref. NO.	Address
IC1	8D	Q207	6K	D204	9N
IC401	4F	Q211	8K	D206	9N
IC801	3D	Q401	3G	D208	8N
Q4	5E	Q402	4G	D212	7N
Q5	8I	Q403	4I	D401	6G
Q6	8H	Q404	5M	D402	5J
Q7	7E	Q808	3C	D403	5K
Q8	8G	D3	9I	D404	5K
Q9	8H	D4	9G	D405	5N
Q10	7G	D7	9G	D406	6N
Q11	7H	D9	9I	D801	3D
Q12	7G	D10	8G		
Q205	5H	D11	7G		
Q206	6I	D201	7H		

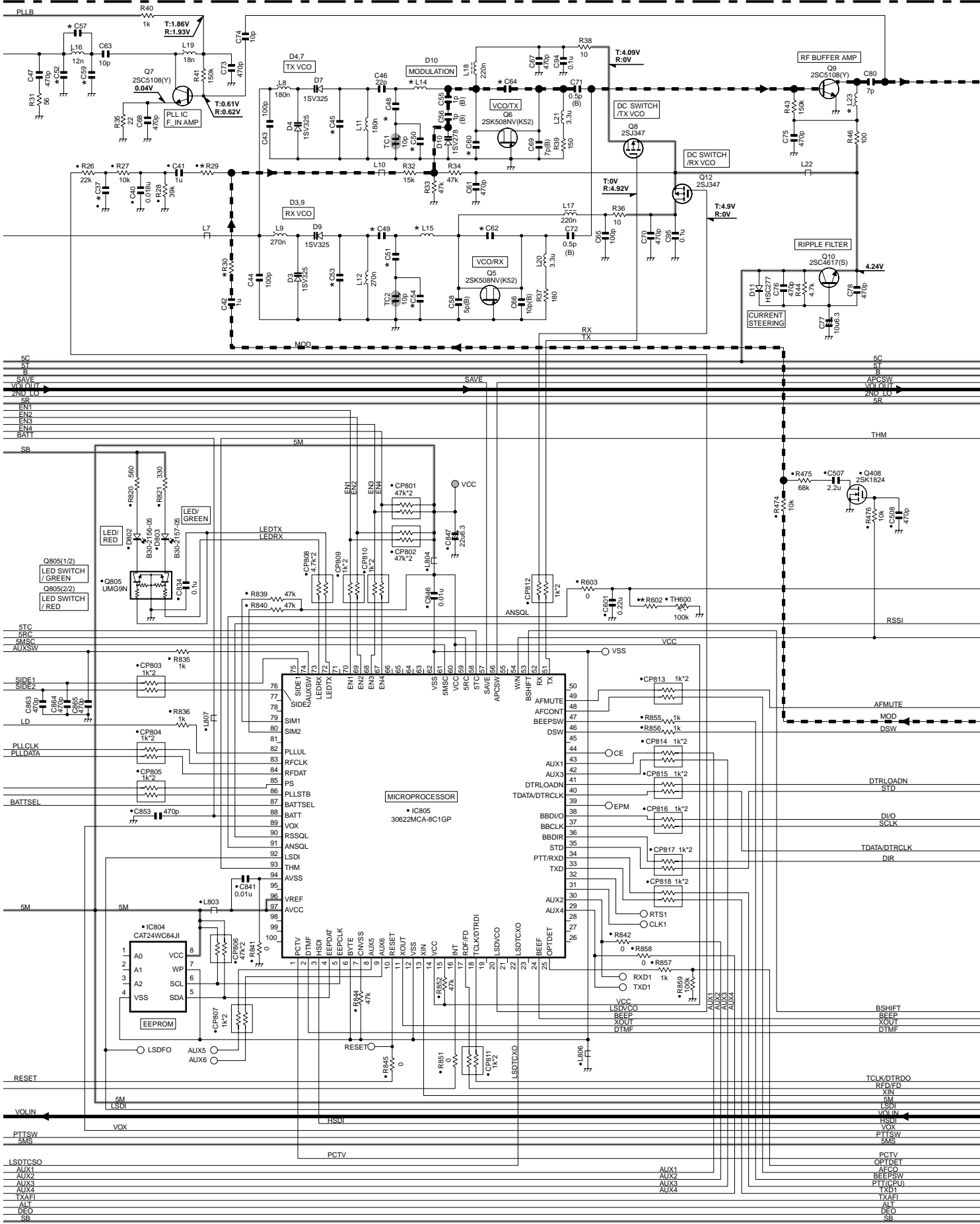
# TK-3160 SCHEMATIC DIAGRAM

TX-RX UNIT (X57-6732-XX)



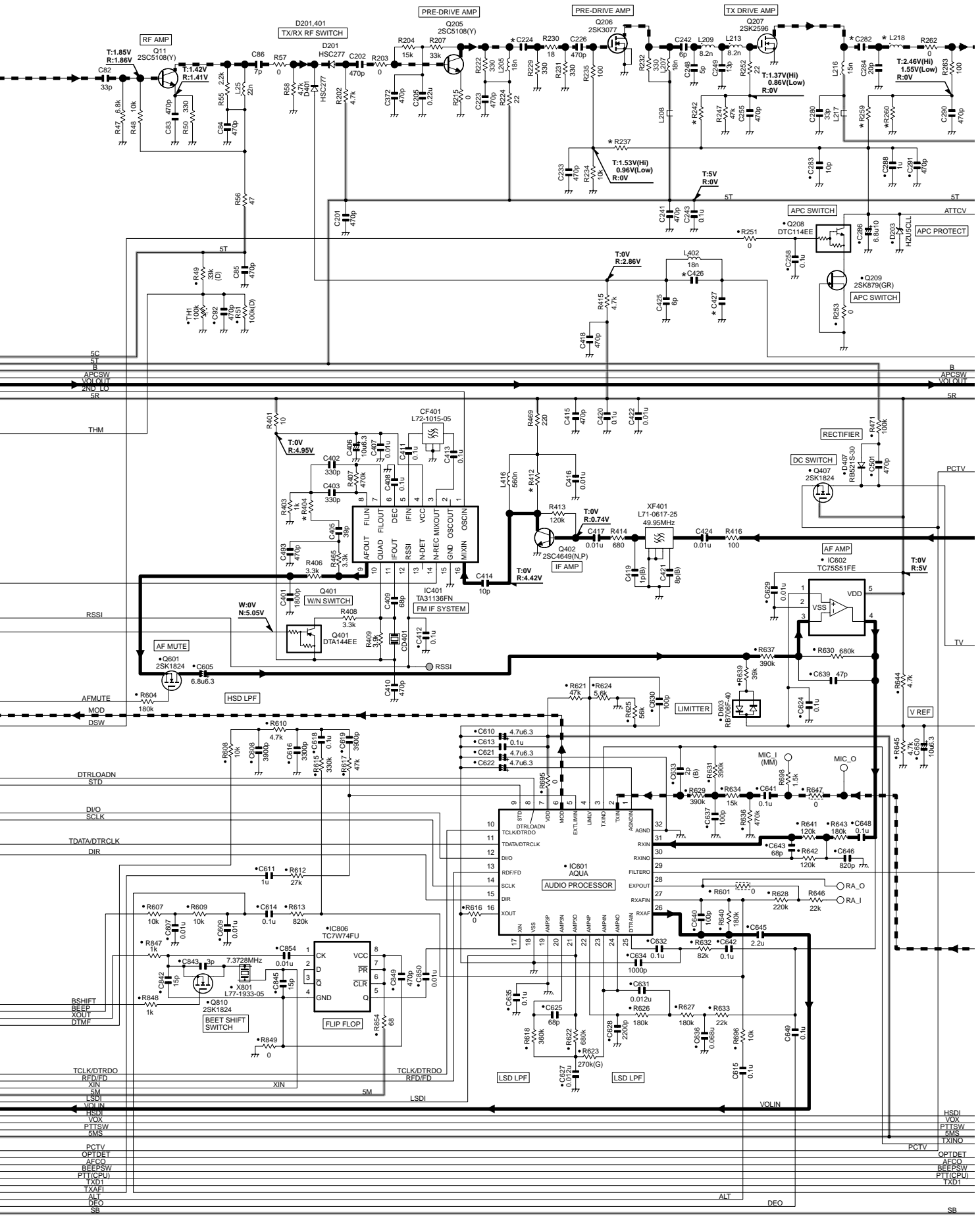
# SCHEMATIC DIAGRAM TK-3160

TX-RX UNIT (X57-6732-XX)



# TK-3160 SCHEMATIC DIAGRAM

TX-RX UNIT (X57-6732-XX)

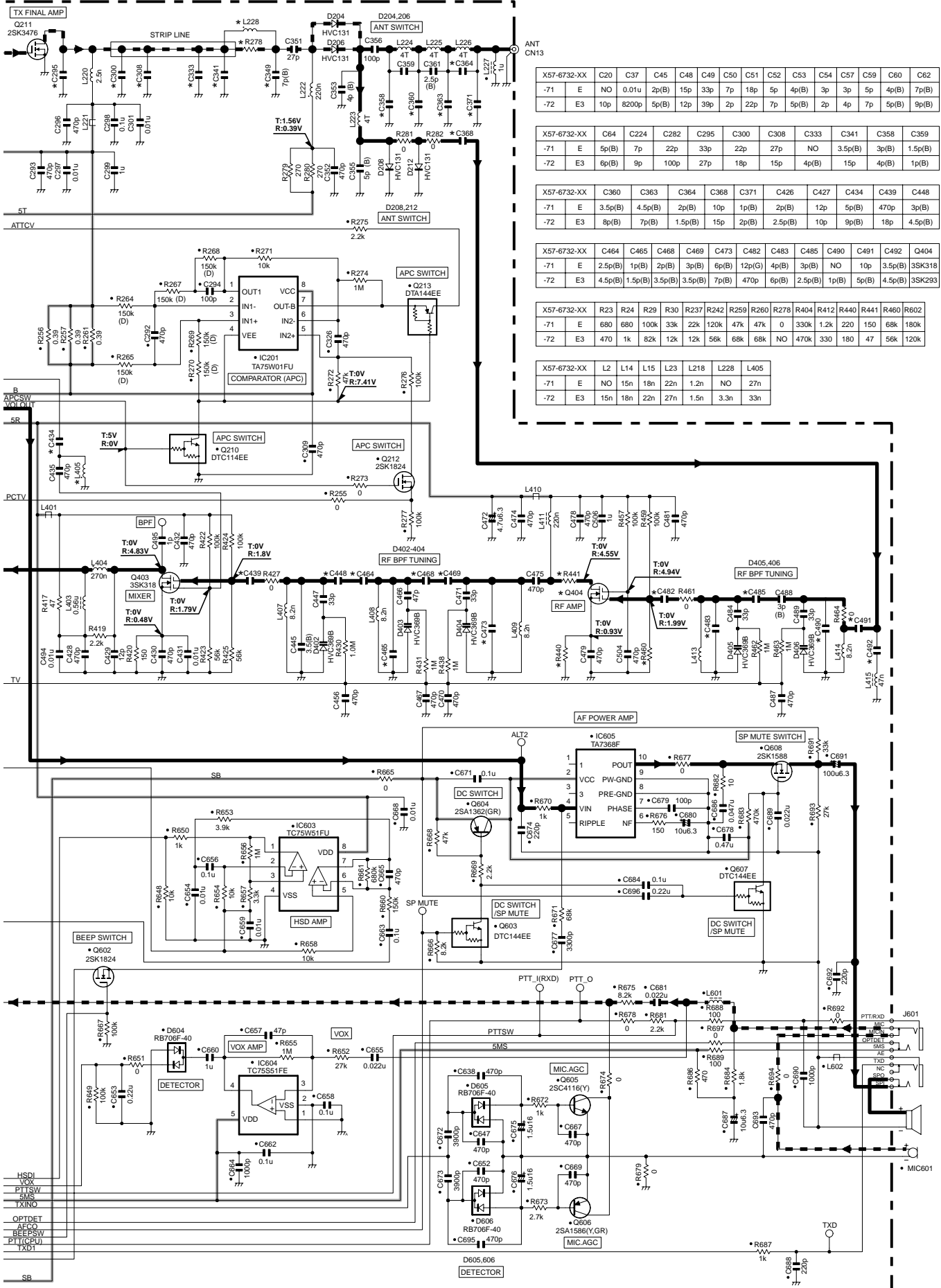




# SCHEMATIC DIAGRAM TK-3160

Note : The components marked with a dot (●) are parts of layer1.

## TX-RX UNIT (X57-6732-XX)



X57-6732-XX	C20	C37	C45	C48	C49	C50	C51	C52	C53	C54	C57	C59	C60	C62
-71	E	NO	0.01u	2p(B)	15p	33p	7p	18p	5p	4p(B)	3p	3p	5p	4p(B)
-72	E3	10p	8200p	5p(B)	12p	39p	2p	22p	7p	5p(B)	2p	4p	7p	5p(B)

X57-6732-XX	C64	C224	C282	C295	C300	C308	C333	C341	C358	C359	
-71	E	5p(B)	7p	22p	33p	22p	27p	NO	3.5p(B)	3p(B)	1.5p(B)
-72	E3	6p(B)	9p	100p	27p	18p	15p	4p(B)	15p	4p(B)	1p(B)

X57-6732-XX	C360	C363	C364	C368	C371	C426	C427	C434	C439	C448
-71	E	3.5p(B)	4.5p(B)	2p(B)	10p	1p(B)	2p(B)	12p	5p(B)	470p
-72	E3	8p(B)	7p(B)	1.5p(B)	15p	2p(B)	2.5p(B)	10p	9p(B)	18p

X57-6732-XX	C464	C465	C468	C469	C473	C482	C483	C485	C490	C491	C492	Q404
-71	E	2.5p(B)	1p(B)	2p(B)	3p(B)	6p(B)	12p(B)	4p(B)	3p(B)	NO	10p	3.5p(B)
-72	E3	4.5p(B)	1.5p(B)	3.5p(B)	3.5p(B)	7p(B)	470p	6p(B)	2.5p(B)	1p(B)	5p(B)	3SK293

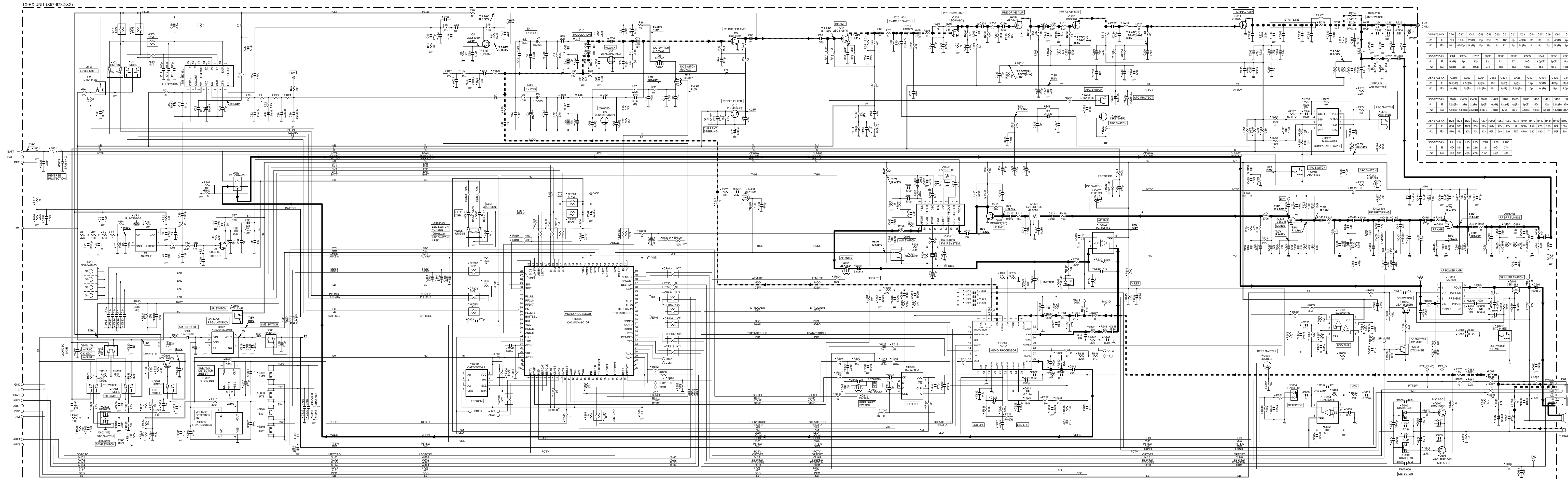
  

X57-6732-XX	R23	R24	R29	R30	R237	R242	R259	R260	R278	R404	R412	R440	R441	R460	R602
-71	E	880	680	100k	33k	22k	120k	47k	47k	0	330k	1.2k	220	150	68k
-72	E3	470	1k	82k	12k	12k	56k	68k	68k	NO	470k	330	180	47	56k

X57-6732-XX	L2	L14	L15	L23	L218	L228	L405
-71	E	NO	15n	18n	22n	1.2n	NO
-72	E3	15n	18n	22n	27n	1.5n	3.3n

# TK-3160 SCHEMATIC DIAGRAM



X57-6732-XX		C20	C27	C45	C48	C49	C50	C51	C52	C53	C54	C57	C59	C60	C62
-71	E	NO	0.01u	2p(B)	33p	7p	1p	5p	4p(B)	3p	5p	4p(B)	7p(B)		
-72	E3	E	1p	200p	500p	15p	22p	22p	22p	22p	22p	22p	22p	22p	22p

X57-6732-XX		C360	C363	C364	C368	C371	C426	C427	C434	C439	C448
-71	E	2.5p(B)	1p(B)	2p(B)	3p(B)	10p(B)	12p(B)	12p	NO	15p	3.5p(B)
-72	E3	4.5p(B)	1.5p(B)	3.5p(B)	7p(B)	47p	47p	47p	2.5p(B)	5p(B)	4.5p(B)

X57-6732-XX		C464	C465	C468	C469	C473	C482	C483	C485	C490	C491	C492	C494
-71	E	2.5p(B)	1p(B)	2p(B)	3p(B)	10p(B)	12p(B)	12p	NO	15p	3.5p(B)	3p(B)	1.5p(B)
-72	E3	4.5p(B)	1.5p(B)	3.5p(B)	7p(B)	47p	47p	47p	2.5p(B)	5p(B)	4.5p(B)	3p(B)	1.5p(B)

X57-6732-XX		L2	L14	L15	L23	L18	L28	L405
-71	E	NO	15n	18n	22n	1.2n	NO	27n
-72	E3	15n	18n	22n	27n	1.2n	3.3n	33n

# TK-3160

## SPECIFICATIONS

### General

Frequency Range .....	400~430MHz (E3)
Number of channels .....	Max. 16
Number of groups .....	Max. 16
Channel Spacing .....	20kHz, 25kHz (Wide) 12.5kHz (Narrow)
PLL Channel Stepping .....	5kHz, 6.25kHz
Operating Voltage .....	7.5 VDC $\pm$ 20%
Battery Life .....	More than 9 hours at 4 watts (5-5-90 duty cycle with KNB-24L battery)
Operating Temperature range .....	-30°C to +60°C (-22 °F to +140 °F)
Dimensions and Weight	
With KNB-24L (1400mAh battery) .....	56 (2-3/16) W x 109.3 (4-5/16) H x 34.5 (1-3/8) D mm (in) 290g (0.64lbs)
With KNB-25A (1200mAh battery) .....	56 (2-3/16) W x 109.3 (4-5/16) H x 40.7 (1-5/8) D mm (in) 355g (0.78lbs)
With KNB-26N (2000mAh battery) .....	56 (2-3/16) W x 109.3 (4-5/16) H x 40.7 (1-5/8) D mm (in) 400g (0.88lbs)

### Receiver (Measurements made per EIA standard EIA-603, EN 300 086, EN 300 113)

Sensitivity	
EIA 12dB SINAD .....	0.25 $\mu$ V (Wide)/ 0.32 $\mu$ V (Narrow)
EN 20dB SINAD .....	-4dB $\mu$ V (Wide)/ -3dB $\mu$ V (Narrow)
Selectivity (Wide/Narrow) .....	70dB/62dB
Intermodulation .....	65dB
Spurious response .....	70dB
Audio Power Output .....	500mW/8 $\Omega$
Frequency Stability .....	$\pm$ 2.5ppm
Channel Frequency Spread .....	30MHz (E3)

### Transmitter (Measurements made per EIA standard EIA-603, EN 300 086, EN 300 113)

RF Power output .....	4W/1W
Spurious and Harmonics .....	-36dBm 1GHz, -30dBm > 1GHz
Modulation Limiting (Wide 5k/Wide 4k/Narrow) .....	$\pm$ 5.0kHz/ $\pm$ 4.0kHz/ $\pm$ 2.5kHz
FM Noise (EIA) (Wide/Narrow) .....	45dB/43dB
Audio Distortion .....	Less than 5%
Frequency Stability .....	$\pm$ 2.5ppm
Channel Frequency Spread .....	30MHz (E3)

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