

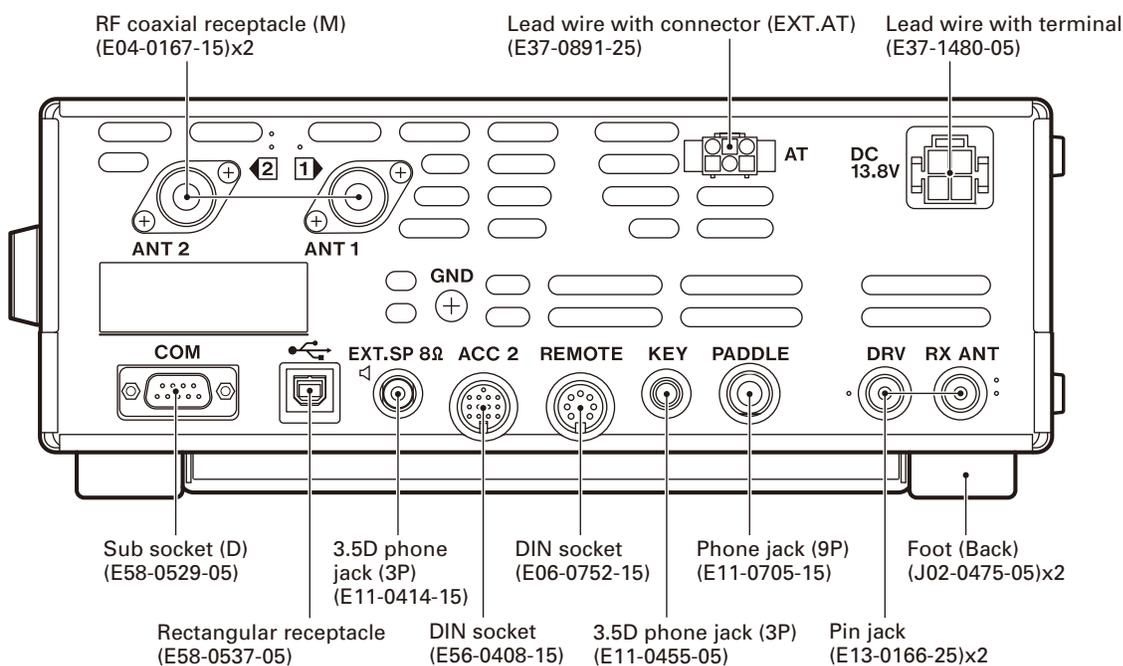
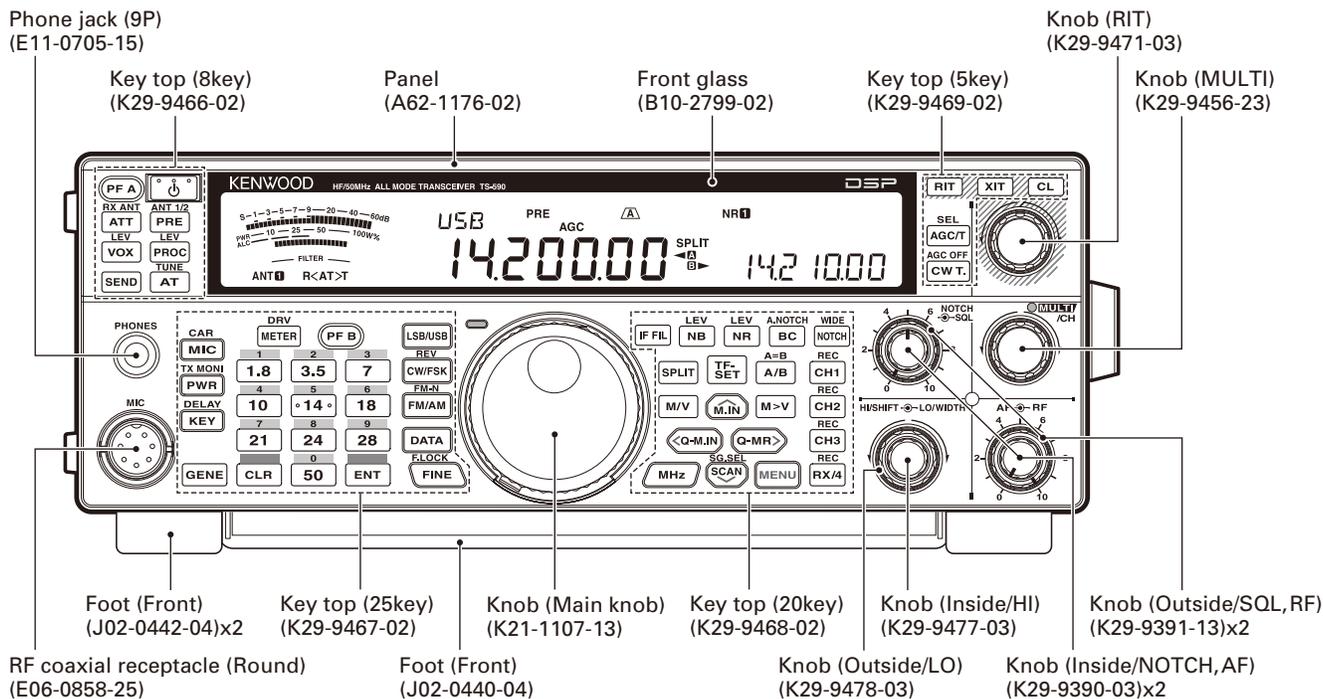
TS-590S

SERVICE MANUAL

KENWOOD

Kenwood Corporation

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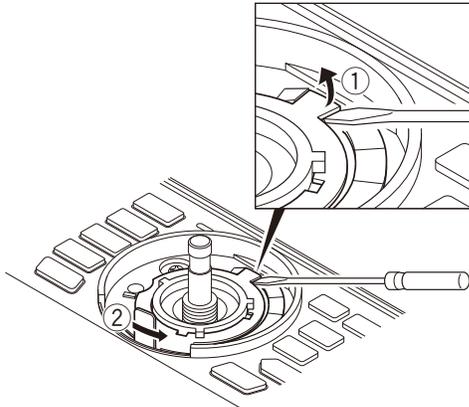
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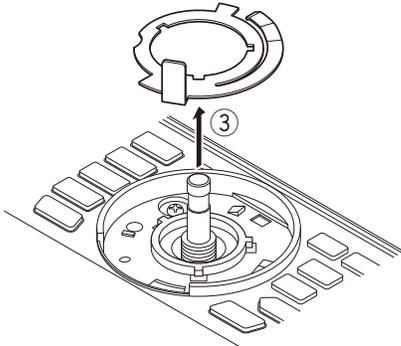
DISASSEMBLY FOR REPAIR

Removing the torque changeover lever (G02-1858-03)

1. Insert the tip of a flat-head screwdriver (or other implement) under the tab of the torque changeover lever, then lift the tab using the tip of the flat-head screwdriver. (①)
Caution: Be careful not to damage the panel when lifting it.
2. Turn the lever section of the torque changeover lever to the right, as in the position described in step 1. (②)

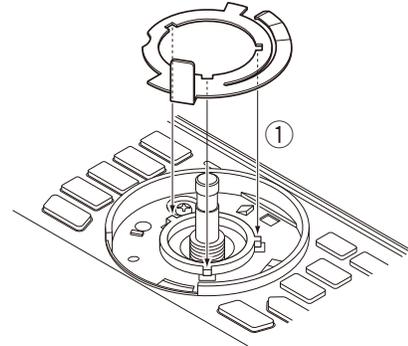


3. Lift the torque changeover lever and remove it from the panel. (③)

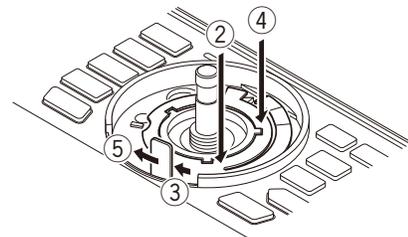


Mounting the torque changeover lever (G02-1858-03)

1. Insert the torque changeover lever by aligning the three tabs of the panel. (①)

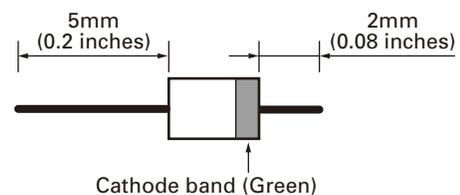


2. Slightly turn the lever section of the torque changeover lever to the left (③) while pressing the surface near the tab at the lower right of the torque changeover lever (②).
Caution: Confirm that the torque changeover lever is caught by the lower right tab of the panel.
3. Turn the lever section of the torque changeover lever to the left (⑤) while pressing the surface near the tab at the upper right of the torque changeover lever (④), then mount it onto the panel.



Procedures when Replacing the Diode (1SR139-400) for hand mounting

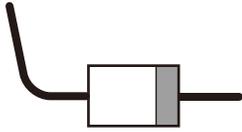
1. When replacing the diode (D304: 1SR139-400) used by the Control unit (A/3) (PCB number: J79-0279-09), cut the leg of a new diode.



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DISASSEMBLY FOR REPAIR

2. Bend the leg of the diode as shown in the figure.

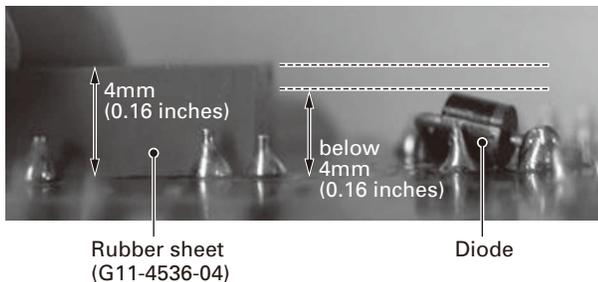
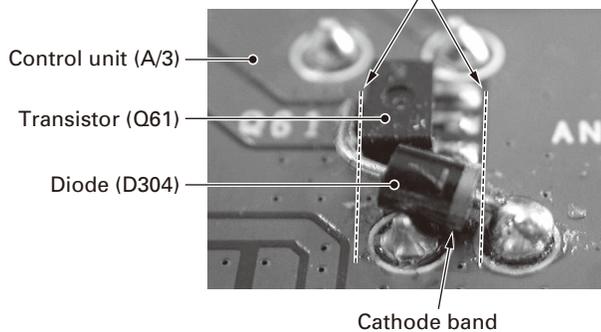


3. Solder the diode between Q61 (Collector) and the solder pad (Base) of the Control unit (A/3), as shown in the figure.

Note:

- 1) Confirm the direction of the cathode band when installing the diode.
- 2) Install the diode so that it is positioned on the dotted line.
- 3) Install the diode so that its height from the surface of the PCB is 4mm (0.16 inches) or less (Height of rubber sheet (G11-4536-04): 4mm (0.16 inches)).

Install the diode so that it is positioned on the dotted line.

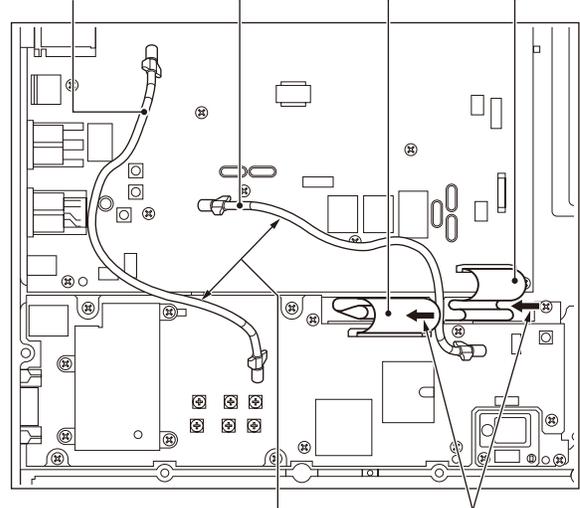


Precautions for Reassembly

Perform the following steps when assembling the bottom side of the transceiver.

1. Separate the two coaxial cables (E37-1495-05, E37-1496-05) as shown in the figure.
2. Push the two flat cables (E37-1491-05, E37-1492-05) into the gap of the chassis so they do not come into contact with the cabinet.

Coaxial cable (E37-1495-05) Coaxial cable (E37-1496-05) Flat cable (E37-1492-05) Flat cable (E37-1491-05)

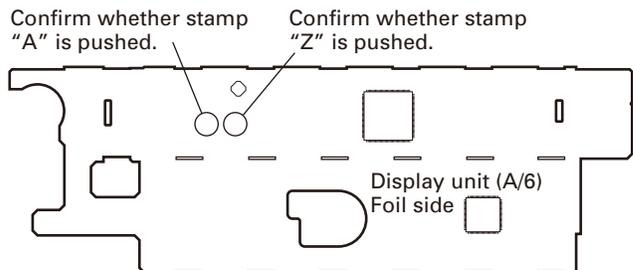


Separate the two coaxial cables Push the flat cables into the gap of the chassis

Caution for Replacing the LED (B30-2322-05, B30-2323-05)

When replacing the "B30-2322-05" or "B30-2323-05" LED used by the Display unit (A/6), order and replace the LED for service into which the rank is divided according to brightness, according to the following procedures, so that the brightness of the LED backlight remains uniform after replacing the LED.

1. Confirm whether the "A" or "Z" stamp is pushed on the foil side of Display unit (A/6).



2. Order and replace the LED for service as shown in the following table according to whether stamp "A" or "Z" exists or not.

Service LED part number for B30-2322-05 (Amber)		Service LED part number for B30-2323-05 (Green)	
Stamp "A" exists	Stamp "A" does not exist	Stamp "Z" exists	Stamp "Z" does not exist
W05-1636-00 (High brightness)	W05-1637-00 (Low and medium brightness)	W05-1638-00 (High brightness)	W05-1639-00 (Low and medium brightness)

CIRCUIT DESCRIPTION

Frequency Configuration

Figure 1 shows the frequency configuration of this transceiver.

While transmitting, FM mode operates in a double conversion and other modes (AM, SSB, CW, FSK) operate in a triple conversion.

While receiving, the first IF operates in 73.095MHz triple conversion. In modes other than FM, the third IF is 24kHz, and the IF signal is converted by an A/D converter and input

into DSP. The FM mode is detected in the FM IC, and the audio signal is converted by an A/D converter and input into the DSP. Under the following conditions, the first IF operates its reception in 11.374MHz double conversion.

- 1) Modes other than AM or FM
- 2) Amateur band within the 1.8/3.5/7/14/21MHz bands
- 3) DSP filter's bandwidth is 2.7kHz or lower

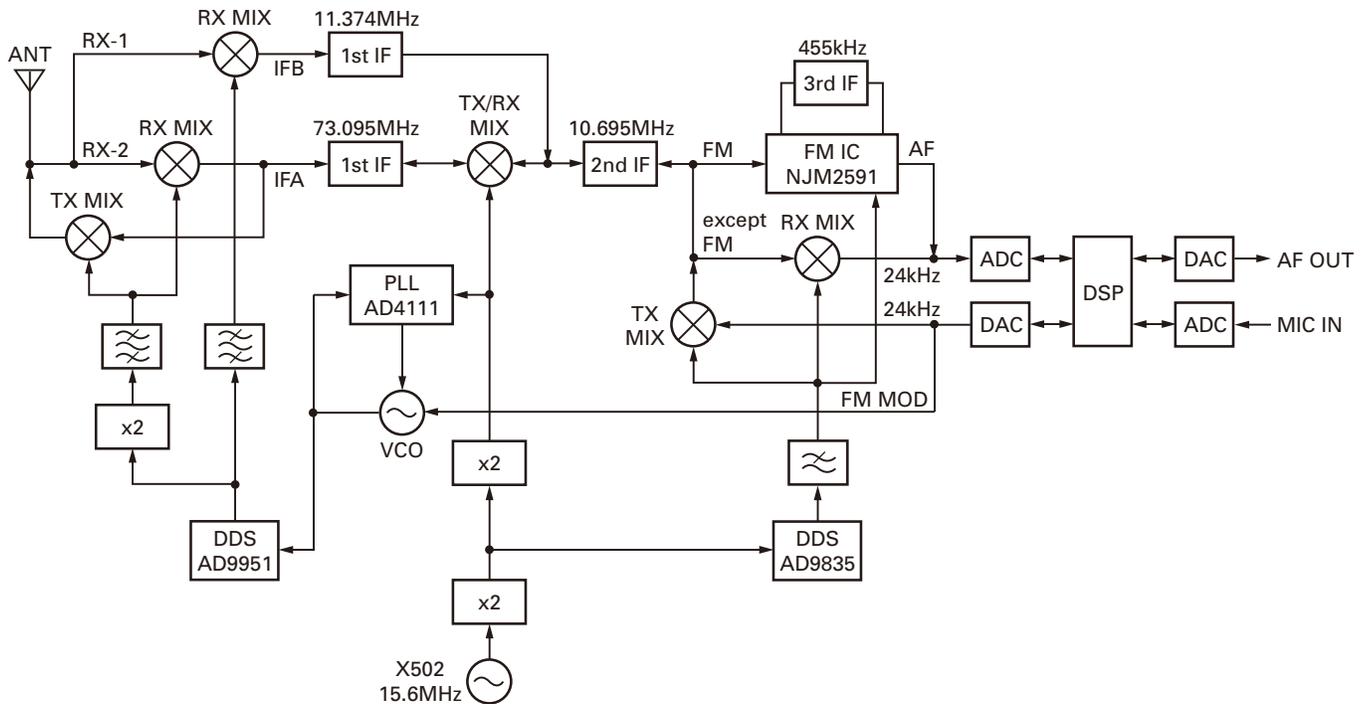


Fig. 1 Frequency configuration

Reference Signal Generator

The reference frequency (fstd), which is used to control the individual LO frequencies, oscillates at 15.6MHz in a crystal oscillation circuit (X502, Q501). This 15.6MHz signal passes through a buffer (Q502) and is doubled in a multiplier (Q503) to generate a 31.2MHz signal. The 31.2MHz signal is used as a reference signal for LO3 (the third local oscillator) DDS (IC601). The 31.2MHz signal is doubled in multipliers (Q504, Q505) to generate a 62.4MHz signal. The 62.4MHz signal is used as a reference signal for LO1 (the first local oscillator) PLL (IC801).

The SO-3 (TCXO unit: 15.6MHz) is configured as an option in this transceiver, so that you can replace the crystal oscillation circuit (X502, Q501) with the SO-3. When using the SO-3, remove the CN903 and CN904 short jumper wires in order to stop the operation of the crystal oscillation circuit (X502, Q501).

LO1/ LO2/ LO3

■ LO1 (the first local oscillator)

The VCO (Q806) oscillates at 196.8MHz. Only the double frequency component, 393.6MHz, of this VCO's oscillation output is extracted and input into PLL (IC801) pin 6. This input signal is divided into 1/N within the PLL. Also, the 62.4MHz signal (15.6MHz reference frequency x 4) is input into PLL pin 8 and divided into 1/R within the PLL. By a phase comparator in the PLL, the frequency divided into 1/N and the frequency divided into 1/R are compared, and then the frequency is locked. The comparison frequency (f₀) at this time is 120kHz when transmitting FM, and 2.4MHz otherwise.

393.6MHz signal locked by PLL (IC801) would be used as reference by DDS (IC803). The output signal from DDS (IC803) is 12.495MHz to 32.195MHz when RX-1 path is selected, amplified at the broad band amplifier (IC804),

CIRCUIT DESCRIPTION

and then goes through BPF and is output as LO1. When RX-2 path is selected or when transmitting, 36.5625MHz to 66.5475MHz is output, amplified by the broad band amplifier (IC804), and then doubled in the multiplier (D652), goes through BPF, and is output as 73.120MHz to 133.095MHz LO1.

LO2 (the second local oscillator)

The reference oscillating circuit's output signal 15.6MHz passes through a buffer (Q502) and is doubled in a multiplier (Q503) to generate a 31.2MHz signal. The 31.2MHz signal is also used as the DDS (IC601)'s reference

frequency, and therefore its resistance is divided. Then, the 31.2MHz signal is doubled in multipliers (Q504, Q505) to generate a 62.4MHz signal.

The 62.4MHz signal's high harmonic is cut in the BPF and the signal is amplified in the amplifier (Q506) to generate LO2. If IFB is selected, the diode switch (D501) cuts the LO2 output.

LO3 (the third local oscillator)

The LO3 used in the modulator and the detector is generated in the DDS (IC601). The DDS output signal passes through the buffer (Q602) and LPF to generate LO3.

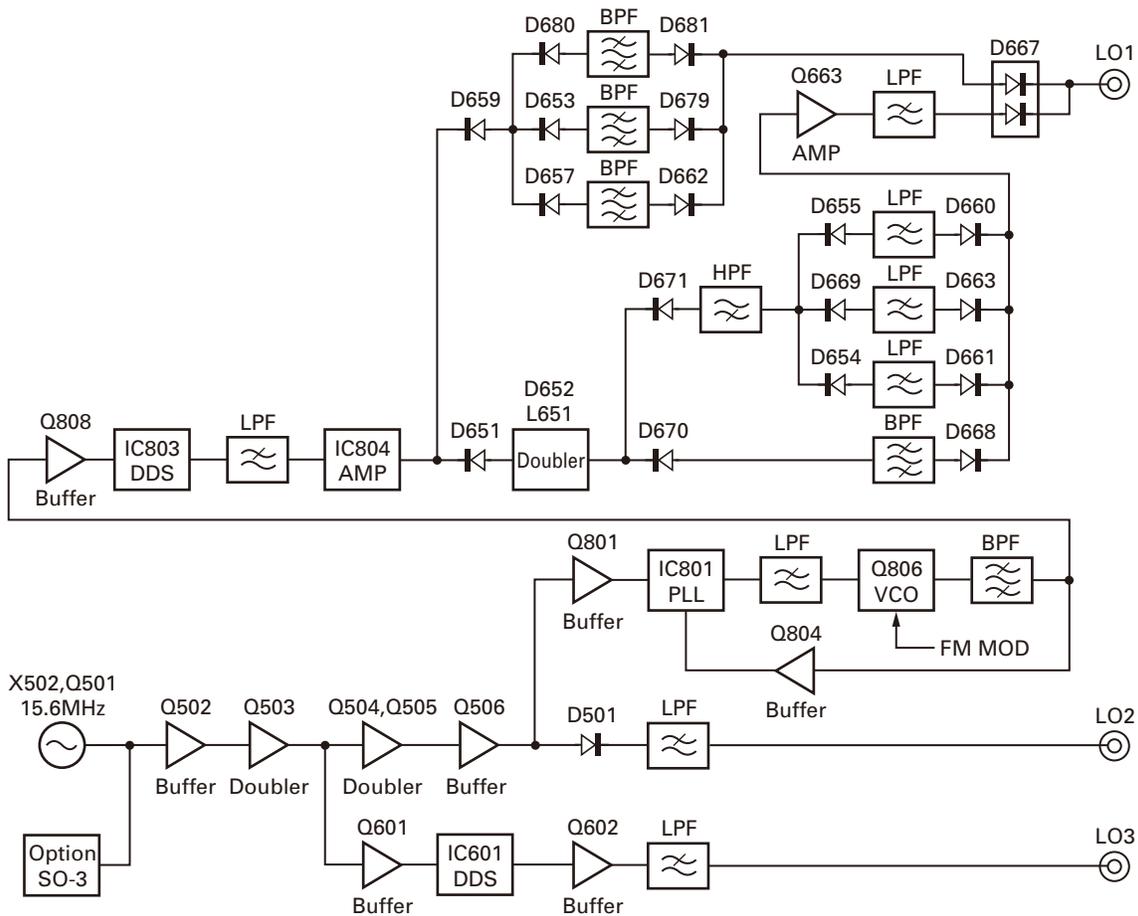


Fig. 2 Reference signal generator, LO1/ LO2/ LO3

CIRCUIT DESCRIPTION

● IF=73M

Frequency: 0.03~60MHz

HF TX/RX LO1		DDS AD9951 (DEN1)									
		USB		LSB		CW		CW-R		CWN	
		RX	TX	RX	TX	RX	TX	RX	TX	RX	TX
Filter offset 1		+1.5k	+1.5k	-1.5k	-1.5k	0	0	0	0	0	0
RIT		(Δ RIT)	-	(Δ RIT)	-	(Δ RIT)	-	(Δ RIT)	-	(Δ RIT)	-
XIT		-	(Δ XIT)	-	(Δ XIT)	-	(Δ XIT)	-	(Δ XIT)	-	(Δ XIT)
CAR correction	IF10M_2.7k	+(CAR1)	+(CAR1)	-(CAR1)	-(CAR1)	+(CAR1)	+(CAR1)	+(CAR1)	+(CAR1)	-	-

HF TX/RX LO1		DDS AD9951 (DEN1)									
		CWN-R		FSK		FSK-R		AM		FM	
		RX	TX	RX	TX	RX	TX	RX	TX	RX	TX
Filter offset 1		0	0	-(SHIFT/2)	-(SHIFT/2)	-(SHIFT/2)	-(SHIFT/2)	0	0	0	0
RIT		(Δ RIT)	-	(Δ RIT)	-	(Δ RIT)	-	(Δ RIT)	-	(Δ RIT)	-
XIT		-	(Δ XIT)	-	(Δ XIT)	-	(Δ XIT)	-	(Δ XIT)	-	(Δ XIT)
CAR correction	IF10M_2.7k	-	-	-	-	-	-	-	-	-	-

● IF=11M

Frequency: 0.03~21.5MHz (Amateur bands within 1.8/3.5/7/14/21MHz band only)

HF TX/RX LO1		DDS AD9951 (DEN1)							
		USB	LSB	CW	CW-R	CWN	CWN-R	FSK	FSK-R
		RX	RX	RX	RX	RX	RX	RX	RX
Filter offset 1		+1.5k	-1.5k	0	0	0	0	-(SHIFT/2)	-(SHIFT/2)
RIT		(Δ RIT)	(Δ RIT)	(Δ RIT)	(Δ RIT)	(Δ RIT)	(Δ RIT)	(Δ RIT)	(Δ RIT)
CAR correction	IF11M_2.7k	+(CAR2)	-(CAR2)	+(CAR2)	+(CAR2)	-	-	-	-
	IF11M_500	+(CAR3)	-(CAR3)	+(CAR3)	+(CAR3)	-	-	-	-

(Δ RIT): RIT frequency variable amount (-9.99~+9.99kHz)

(Δ XIT): XIT frequency variable amount (-9.99~+9.99kHz)

(SHIFT): FSK shift width frequency (170Hz, 200Hz, 425Hz, 850Hz, Initial value:170Hz)

CAR correction: SSB IF-Filter adjustment volume. 0 when using Narrow option filter.

(CAR1): IF 10.695MHz, SSB Normal filter compensation value

(CAR2): IF 11.374MHz, Normal filter compensation value

(CAR3): IF 11.374MHz, Narrow filter compensation value

Table 1-1 LO1 frequency shift data

CIRCUIT DESCRIPTION

LO3		DDS AD9835 (DEN2)											
		USB			LSB			CW		CW-R		CWN	
		RX			TX	RX	TX	RX	TX	RX	TX	RX	TX
		IF73M		IF11M									
RX<21.3M, 21.5≤RX	21.3≤RX, RX<21.5												
Filter offset 1		-46.5k	+1.5k	-46.5k	-46.5k	-1.5k	-1.5k	0	0	0	0	0	0
CW pitch		-	-	-	-	-	-	-	-	-	-	-	-
FSK tone		-	-	-	-	-	-	-	-	-	-	-	-
CAR cor- rection	IF10M_2.7k	+(CAR1)			+(CAR1)	-(CAR1)	-(CAR1)	+(CAR1)	+(CAR1)	+(CAR1)	+(CAR1)	-	-
	IF11M_2.7k			+(CAR2)	+(CAR2)	-(CAR2)		+(CAR2)		+(CAR2)		-	-
	IF11M_500			+(CAR3)	+(CAR3)	-(CAR3)		+(CAR3)		+(CAR3)		-	-
LO3		DDS AD9835 (DEN2)											
		CWN-R		FSK		FSK-R		AM		FM			
		RX	TX	RX	TX	RX	TX	RX	TX	RX	TX		
		Filter offset 1	0	0	0	0	0	0	0	0	0	0	
CW pitch		-	-	-	-	-	-	-	-	-	-	-	
FSK tone		-	-	-	-	-	-	-	-	-	-	-	
CAR cor- rection	IF10M_2.7k	-	-	-	-	-	-	-	-	-	-	-	
	IF11M_2.7k	-	-	-	-	-	-	-	-	-	-	-	
	IF11M_500	-	-	-	-	-	-	-	-	-	-	-	

CAR correction: SSB IF-Filter adjustment volume. 0 when using Narrow option filter.

(CAR1): IF 10.695MHz, SSB Normal filter compensation value

(CAR2): IF 11.374MHz, Normal filter compensation value

(CAR3): IF 11.374MHz, Narrow filter compensation value

Table 1-2 LO3 frequency shift data

Receiver Circuit

In an amateur frequency band or mode that requires anti-proximate interference, the receive signal passes through the double conversion RX-1 path, and in other frequency bands and modes, it passes through the triple conversion RX-2 path. (Refer to table 2)

Mode		SSB	CW	FSK	AM	FM
RX-1 path	Conversion method	Double			-	
	IF fre- quency	1st	11.374MHz			-
		2nd	24kHz			-
RX-2 path	Conversion method	Triple				
	IF fre- quency	1st	73.095MHz			
		2nd	10.695MHz			
		3rd	24kHz			455kHz

Table 2 Mode, conversion method, and IF frequency

■ From the antenna terminal to the preamplifier (Q236)

The receive signal from the antenna terminals (ANT1/ANT2) passes through the antenna changeover relay (K44) in the Final unit (X45-391 A/2), the antenna tuner's IN/THROUGH changeover relay (K45), the transmission/reception changeover relay (K46), and an image filter, and is sent from CN51 to the TX-RX unit (X57-785 A/2)'s CN100 (RAT) through a co-axial cable.

The signal input into the TX-RX unit passes through the RX ANT changeover relay (K101) and enters the attenuator circuit (ATT) which is approximately 12dB. This can be switched to approximately 20dB by removing the CN101 short jumper. Then, the signal passes through LPF for IF trap, the surge absorption limiter, and the BC band attenuating circuit (removes 30kHz to 1.705MHz), and enters the BPF. In the BC band attenuating circuit, in order to avoid interference by high-output broadcasting stations, 11.7MHz and 15.5MHz trap circuit is inserted into E type only.

CIRCUIT DESCRIPTION

The BPF divides in the range as shown in table 3. The BC band's BPF includes ATT for avoiding cross-modulation by medium wave band high-output station (ATT ON: CN102=open, CN103=short, ATT OFF: CN102=short, CN103=open). The transmit signal also passes through the BPF when transmitting.

The preamplifier (Q236) receives the signal passed through the BPF. In this model, it is an emitter grounding circuit which uses a bipolar transistor. Q239 switches the emitter's returning amount to adjust the gain. Approximately 20dB is gained in 21.5 to 60MHz and approximately 12dB in other frequencies. The preamplifier circuit can be passed by turning off the PRE display with the preamplifier key.

Band	Filter range
135kHz	30~522kHz
BC	522kHz~1.705MHz
1.8MHz	1.705~2.5MHz
3.5MHz	2.5~4.1MHz
5MHz	4.1~6.9MHz
7MHz	6.9~7.5MHz
10MHz	7.5~10.5MHz
	10.5~13.9MHz
14MHz	13.9~14.5MHz
	14.5~21.5MHz
18MHz	
21MHz	
28MHz	21.5~30.0MHz
50MHz (TX)	49.0~54.0MHz
50MHz (RX)	30.0~60.0MHz

Table 3 BPF range

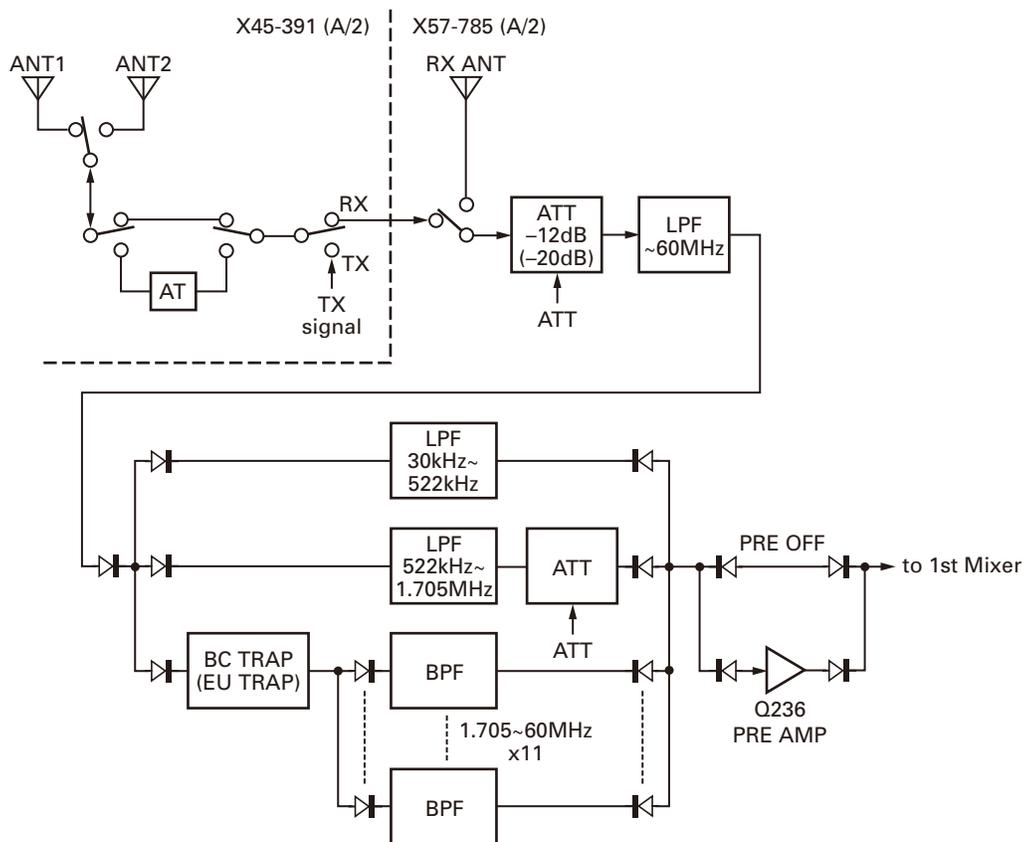


Fig. 3 From antenna terminal to preamplifier (Q236)

CIRCUIT DESCRIPTION

■ From the preamplifier (Q236) to the second IF frequency (10.695MHz/11.374MHz)

The signal from the preamplifier (Q236) output to the second IF amplifier 1 (Q451) is spread into 2 paths: RX-1 and RX-2, depending on the frequency band (refer to table 4). The RX-1 path is selected when the "L" signal is added to Q273, and the RX-2 path is selected if the "H" signal is added.

The RX-1 path signal passes through the LPF for IF trap, is integrated with LO1 (12.495 to 32.195MHz) in the quad-balance first mixer (Q263 to Q266), and is then converted to the first IF (11.374MHz). The first IF signal passes through the 2-pole MCF (XF301) and enters the second IF amplifier 1 (Q451).

The RX-2 path signal passes through the LPF for IF trap, is integrated with LO1 (73.120 to 133.095MHz) in the quad-balance first mixer (Q321 to Q324), and is then converted to the first IF (73.095MHz). The first IF signal passes through the 2-pole MCF (XF371), and by the trans-feedback type NFB (negative feedback) first IF amplifier (Q391), is amplified by approximately 12dB. The amplified signal is mixed with LO2 (62.4MHz) in the second mixer (D422, D423), converted to the second IF (10.695MHz), and then enters the second IF amplifier 1 (Q451). The second mixer is a passive type that uses a diode, and is a bilateral circuit that converts both receive signal's frequency at the time of reception and transmission signal's frequency at the time of transmission.

The second IF signal that passed through the RX-1 or RX-2 path is amplified by approximately 13dB in the second

IF amplifier 1 (Q451), and is then divided into 2 paths: the NB (noise blanker) circuit and the blanking circuit (D461 to D464). Blanking is carried out by D461 to D464.

Then, the second IF signal passes through the IF filter. One of 5 filters is selected, depending on the frequency and the mode (refer to table 5).

The second IF signal that passed through the IF filter enters the AGC circuit (diode ATT circuit: D522 to D524). The AGC voltage output from the DSP is added to D522 to D524, the change of AGC voltage changes the current on the pin diode and controls the attenuation of the signal passing through. And, the second IF amplifier 2 (Q541) and the second IF amplifier 3 (Q521, Q522) altogether amplify by the total of approximately 32dB, and the signal passes through the simplified diode ATT circuit (D525). The voltage determined in the adjustment mode is added to D525, and adjusts the difference of the total gains of the RX-1 and RX-2 paths.

IF frequency	IF filter	Mode				
		FM	AM	SSB	FSK	CW
10.695MHz	15kHz	✓	✓			
	6kHz		✓	✓		
	2.7kHz			✓	✓	✓
11.374MHz	2.7kHz			✓	✓	✓
	500Hz			✓	✓	✓

Table 5 Selecting an IF filter

Band	BPF selection classification	IF switching frequency criteria	IF frequency			
			TX IF	RX IF		
135kHz	$f < 522\text{kHz}$	$f < 522\text{kHz}$	73M	73M	RX-2	
BC	$0.522 \leq f < 1.705\text{MHz}$	$0.522 \leq f < 1.705\text{MHz}$		73M	RX-2	
1.8MHz	$1.705 \leq f < 2.50\text{MHz}$	$1.705 \leq f < 2.10\text{MHz}$		11M	RX-1	
		$2.10 \leq f < 3.40\text{MHz}$		73M	RX-2	
3.5MHz	$2.50 \leq f < 4.10\text{MHz}$	$3.40 \leq f < 4.10\text{MHz}$		11M	RX-1	
5MHz	$4.10 \leq f < 6.90\text{MHz}$	$4.10 \leq f < 6.90\text{MHz}$		73M	RX-2	
7MHz	$6.90 \leq f < 7.50\text{MHz}$	$6.90 \leq f < 7.50\text{MHz}$		11M	RX-1	
10MHz	$7.50 \leq f < 10.5\text{MHz}$	$7.50 \leq f < 10.5\text{MHz}$		73M	RX-2	
		$10.5 \leq f < 13.9\text{MHz}$		73M	RX-2	
14MHz	$13.9 \leq f < 14.5\text{MHz}$	$13.9 \leq f < 14.5\text{MHz}$		11M	RX-1	
		$14.5 \leq f < 20.9\text{MHz}$		73M	RX-2	
18MHz	$14.5 \leq f < 21.5\text{MHz}$	$20.9 \leq f < 21.5\text{MHz}$		11M	RX-1	
21MHz				73M	RX-2	
28MHz	$21.5 \leq f < 30.0\text{MHz}$	$21.5 \leq f < 30.0\text{MHz}$		73M	RX-2	
50MHz (TX)	$49.0 \leq f < 54.0\text{MHz}$	$49.0 \leq f < 54.0\text{MHz}$		-	-	
50MHz (RX)	$30.0 \leq f < 60.0\text{MHz}$	$30.0 \leq f < 60.0\text{MHz}$		-	73M	RX-2

Table 4 Criteria for selecting the RX-1 or RX-2 path

CIRCUIT DESCRIPTION

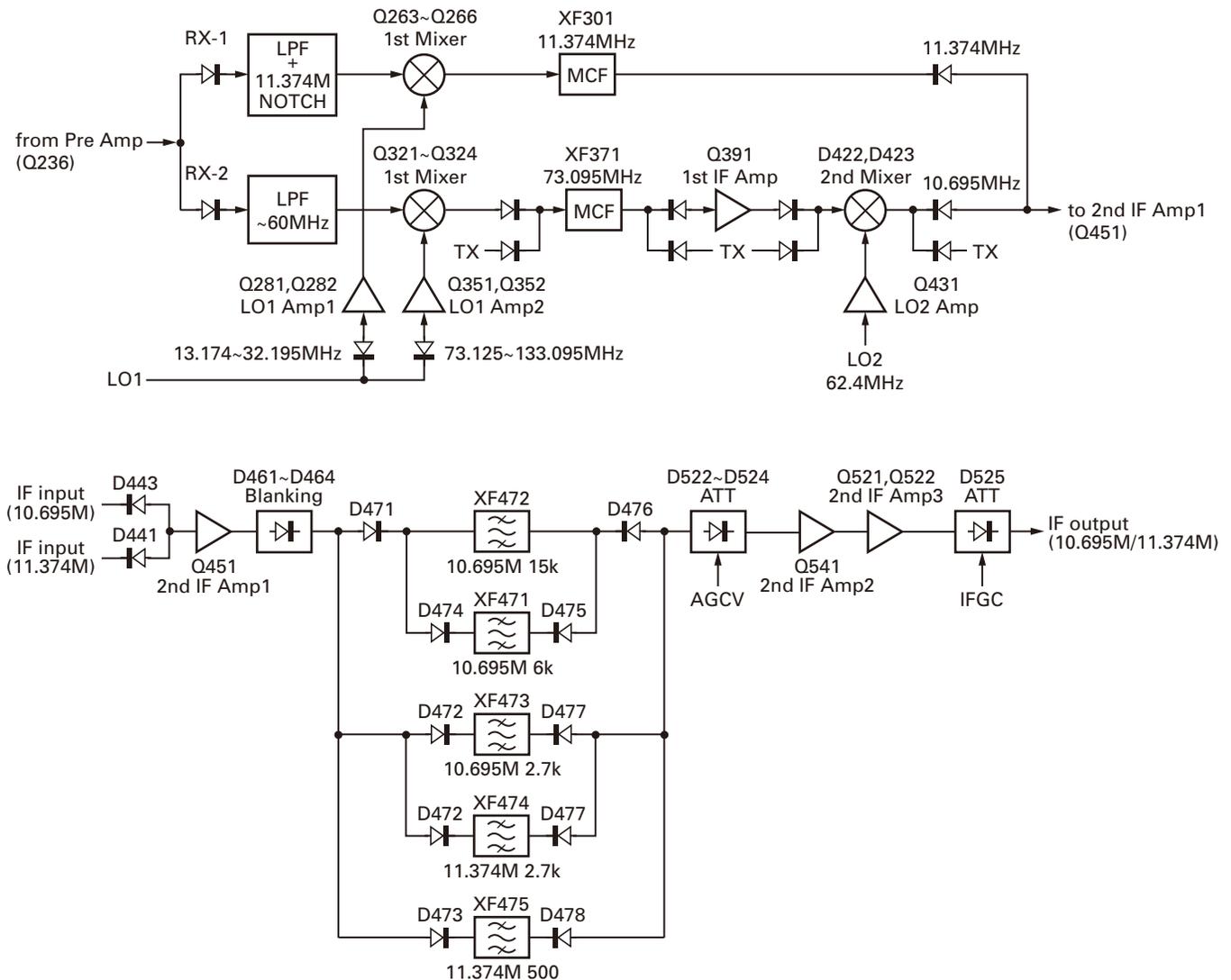


Fig. 4 From the preamplifier (Q236) to the second IF frequency (10.695MHz/11.374MHz)

■ From the second IF to the AF output

The signal that passed through D525 then goes through D526 and enters the FM wave detecting IC (IC591) in FM mode, and the AM/SSB/CW/FSK wave detecting mixer (D551, D552) in other modes.

The FM mode signal is mixed with LO3 (10.240MHz) in the FM detecting IC (IC591), and converted into the third IF (455kHz). The third IF signal passes through the ceramic filter (CF591), demodulated into audio signals, and is then amplified by the FM AF amplifier (IC592).

Signals of modes other than FM are mixed with LO3 (RX-1 path: 11.398MHz, RX-2 path: 10.719MHz) in the AM/SSB/CW/FSK wave detecting mixer (D551, D552), are converted into the third IF (24kHz), and are then amplified by the third IF amplifier (Q551).

Signals of FM mode and modes other than FM are sent from the TX-RX unit (X57-785 A/2) RIF connector (CN600) to the Control unit (X53-446 A/3)'s CN61.

The signal input into the Control unit (X53-446 A/3) is amplified in the operation amplifier (IC64, IC65), A/D conversion is carried out by the A/D converter (IC66), and then the DSP (IC301) filtering, volume control, subtone decoding, etc. are carried out. The output signal from the DSP is converted by the D/A converter (IC72), amplified as an audio signal in the AF power amplifier (IC67), and is then sent from the Control unit (X53-446 A/3) AF connector (CN65) to the TX-RX unit (X57-785 A/2) CN3, and output to the PHONES jack (J951) (first priority), EXT.SP jack (J1) (second priority), or internal speaker (third priority).

CIRCUIT DESCRIPTION

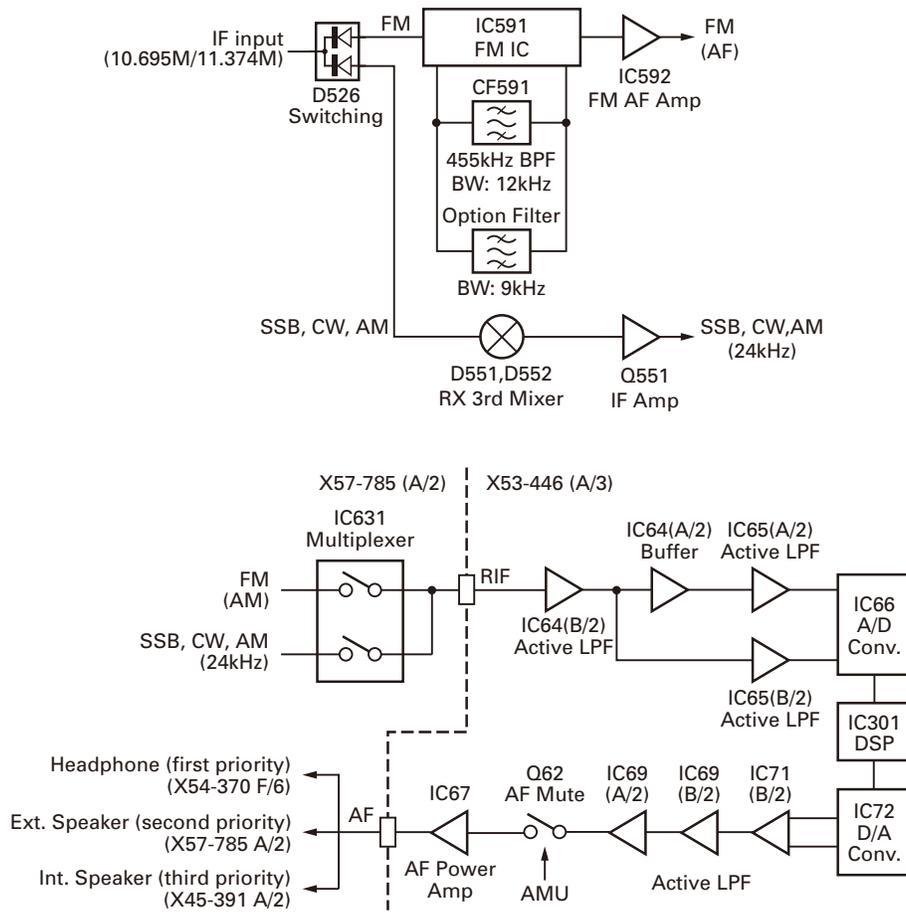


Fig. 5 From second IF to AF output

First Mixer

There are 2 types of first mixers: for IF frequency 11.374MHz RX-1 path, and for IF frequency 73.095MHz RX-2 path.

The first mixer for the RX-1 path is a quad-balance type mixer by MOS FET (Q263 to Q266), and mixes with LO1 (12.495 to 32.195MHz) which is approximately +18dBm, and converts into the first IF (11.374MHz). Approximately 2.6V bias is added to LO1 in order to suppress distortion.

The first mixer for the RX-2 path is a quad-balance type mixer by MOS FET (Q321 to Q324), and mixes with LO1

(73.120 to 133.095MHz) which is approximately +18dBm, and converts into the first IF (73.095MHz). No bias is added to this LO1.

The volume resistance (VR261, VR321) within the first mixer circuit is used to adjust mixer balance. After replacing the MOS FET (Q263~Q266, Q321~Q324), transformer (L261, L262, L264, L323, L324, L326), volume resistance (VR261, VR321), or TX-RX unit (X57-785 A/2), adjust the mixer balance in the adjustment mode.

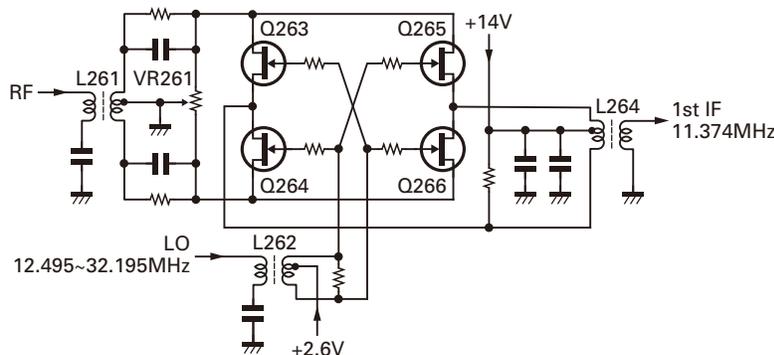


Fig. 6 First mixer circuit of the RX-1 path

CIRCUIT DESCRIPTION

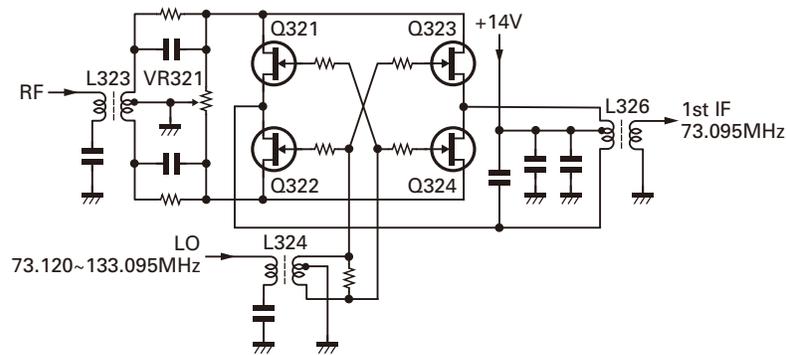


Fig. 7 First mixer circuit of the RX-2 path

MCF Adjustment

There are 2 types of MCFs: for IF frequency 11.374MHz RX-1 path, and for IF frequency 73.095MHz RX-2 path.

The RX-1 path MCF (XF301) is a filter which consists of a 2-pole MCF, whose center frequency is 11.374MHz and passband width is 6kHz. Since the XF301 terminal impedance is 1k Ω , the impedance is converted using variable coils (L301, L302).

The MCF can be adjusted by connecting a tracking generator to the MCF adjustment connector (CN301, CN302), and then rotating the variable coil (L301, L302). After replacing the MCF (XF301), variable coil (L301, L302), or TX-RX unit (X57-785 A/2), adjust the MCF in the adjustment mode.

The RX-2 path MCF (XF371) is a filter which consists of a 2-pole MCF, whose center frequency is 73.095MHz and passband width is 15kHz. Since the XF371 terminal impedance is 2.5k Ω , the impedance is converted using variable coils (L326, L374, L375, L376).

The MCF can be adjusted by connecting a tracking generator to the MCF adjustment connector (CN303, CN304), and then rotating the variable coil (L326, L374, L375, L376). After replacing the MCF (XF371), variable coil (L326, L374, L375, L376), or TX-RX unit (X57-785 A/2), adjust the MCF in the adjustment mode.

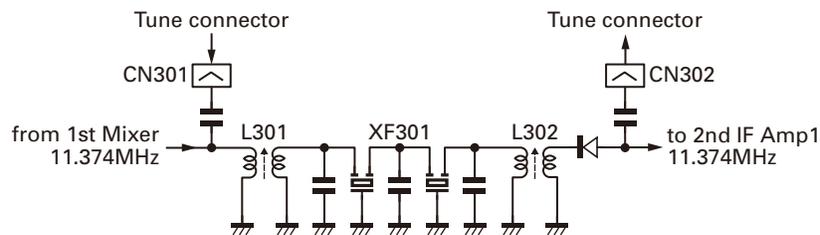


Fig. 8 RX-1 path MCF circuit

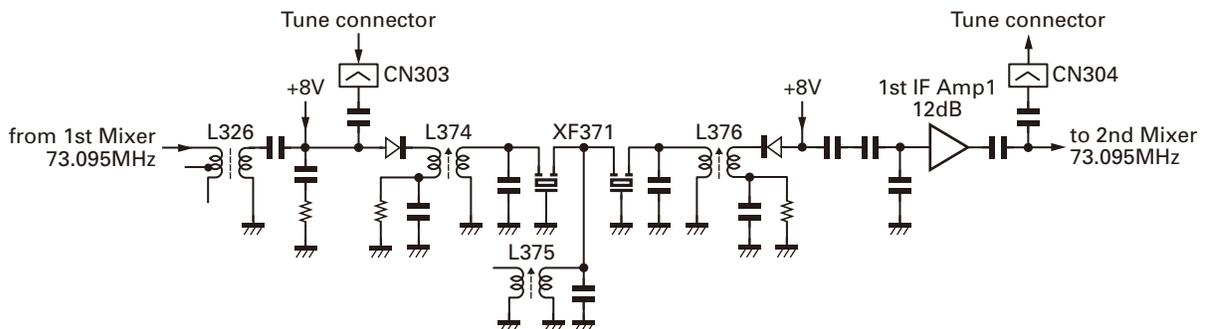


Fig. 9 RX-2 path MCF circuit

CIRCUIT DESCRIPTION

IF Filter

The IF filter includes a DSP digital filter as well as multiple analog filters in the IF stage to have sufficient tolerance for unnecessary signals.

In the RX-1 path with enhanced anti-proximate interference, the MCF (XF301) and crystal filter (XF474, XF475) are

inserted for the first IF (11.374MHz). In the RX-2 path, MCF (XF371) for the first IF (73.095MHz), a crystal filter (XF473) or MCF (XF471, XF472) for the second IF (10.695MHz), and a ceramic filter (CF591) for the third IF (455kHz: FM only).

Item	XF301: L71-0656-15	XF474: L71-0657-05	XF475: L71-0658-05
Nominal center frequency	11.374MHz	11.374MHz	11.374MHz
Pass bandwidth	±3kHz or more at 6dB	±1.35kHz or more at 6dB	±250Hz or more at 6dB
Attenuation bandwidth	±17.5kHz or less at 60dB	±4kHz or less at 60dB	±0.75kHz or less at 60dB
Ripple	1dB or less	2dB or less	2dB or less
Insertion loss	3dB or less	6dB or less	Within 6±3dB
Guaranteed attenuation	70dB or more at fo±1MHz	80dB or more at fo±1MHz	80dB or more at fo±1MHz
Center frequency deviation	±500Hz at 6dB	±150Hz at 6dB	±150Hz at 6dB
Terminating impedance	1kΩ // 6pF	900Ω // 9pF	100Ω // 90pF

Item	XF371: L71-0605-05	XF472: L71-0230-15	XF471: L71-0664-05	XF473: L71-0569-15
Nominal center frequency	73.095MHz	10.695MHz	10.695MHz	10.695MHz
Pass bandwidth	±7.5kHz or more at 3dB	±7.5kHz or more at 3dB	±3kHz or more at 6dB	±1.35kHz or more at 6dB
Attenuation bandwidth	±35kHz or less at 40dB	±25kHz or less at 18dB	±40kHz or less at 60dB	±300kHz or less at 60dB
Ripple	1dB or less	0.5dB or less	2dB or less	2dB or less
Insertion loss	3dB or less	2dB or less	3dB or less	6dB or less
Guaranteed attenuation	70dB or more at fo+(500~1000kHz) 70dB or more at fo-(200~1000kHz)	30dB or more at fo±1MHz	60dB or more at fo±1MHz	60dB or more at fo±300kHz
Center frequency deviation	±1.5kHz at 3dB	-	±1kHz at 6dB	±150Hz or less at 6dB
Terminating impedance	2.5kΩ // -0.5pF	3kΩ // 2pF	1.2kΩ // 6pF	1.2kΩ // 7pF

Item	CF591: L72-0998-05
Nominal center frequency	455kHz
Pass bandwidth	±6kHz or less at 6dB
Attenuation bandwidth	±12.5kHz or less at 50dB
Ripple	2dB or less
Insertion loss	6dB or less
Guaranteed attenuation	35dB or more at fo±100kHz
Center frequency deviation	±1.0kHz
Terminating impedance	2kΩ

Table 6 IF filter

CIRCUIT DESCRIPTION

Noise Blanker Circuit (NB Circuit)

■ Noise detection circuit

The Noise detecting circuit is the circuit that removes short frequency pulse noise.

The 10.695MHz or 11.374MHz IF signal passes through the buffer (Q641) in the TX-RX unit (X57-785 A/2), and is sent from CN674 to the NB unit (X57-785 B/2) CN667 (NB IF) through a co-axial cable.

The signal input into the NB unit (X57-785 B/2) is amplified by the 4 stage amplifier (Q651, Q652, Q653, Q663, Q664, Q666), passes through the buffer (Q670), and then noise-detected by D662. This noise-detected voltage switches Q669, turns Q671 ON, attenuates the IF signal in the blanking circuit (D461 to D464) depending on the noise, and removes the pulse noise.

When long-frequency signal is input, the AGC functions

and the gains of the NB amplifier 2 (Q652, Q653), NB amplifier 3 (Q663, Q664), and NB amplifier 4 (Q666) are lowered, which results in low detecting voltage, and Q671 is not turned ON. Thus, the IF signal is not attenuated. Because the AGC time constant is large, a pulse with short frequency does not let the AGC function and lower the detecting voltage, Q671 becomes ON and the blanking circuit can function.

When the NB function is turned ON, the threshold variable direct current "NBL" is added to the Q669 emitter from the D/A converter (IC13). By changing the emitter's voltage, the NB effect can be adjusted. Also, when the IF signal is 10.695MHz, Q654, Q665, and Q668 becomes ON and the NB amplifier 2, NB amplifier 3, and NB amplifier 4's tuning point changes.

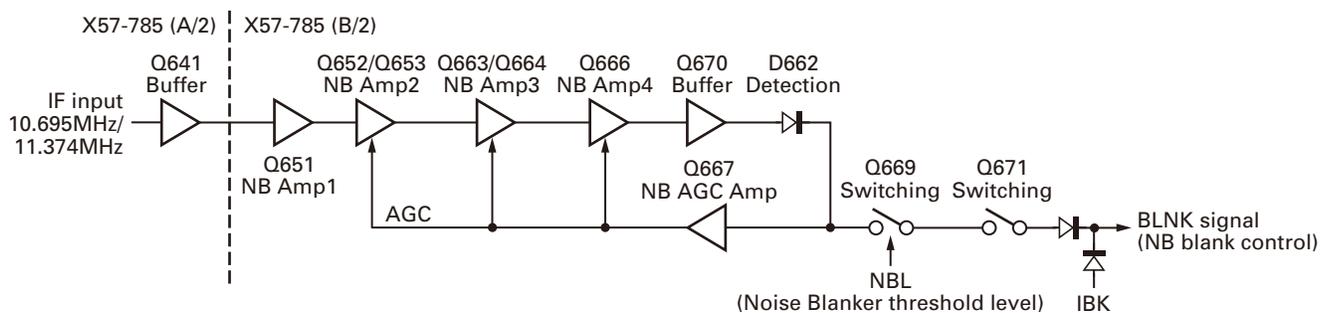


Fig. 10 Noise detection circuit

■ Blanking circuit

The Noise blanking circuit is a circuit which attenuates the IF signal by the signal detected in the noise detection circuit and removes pulse noise.

If pulse noise is not detected in the NB unit, BLNK turns to "H", Q456 turns to ON and Q455 turns to OFF. Also, diodes D461 to D464 turn OFF and the IF signal is attenuated.

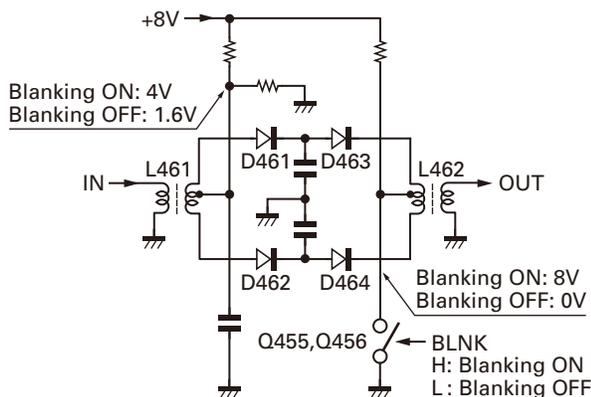


Fig. 11 Blanking circuit

Transmitter Circuit

■ From transmission signal (TIF) to drive output

The path of the transmission signal (TIF) is divided by the analog switch (IC68) in the Control unit (X53-446 A/3) in accordance with whether it's FM mode or a mode other than FM.

In FM mode, the transmission signal is switched by the analog switch (IC68), and the frequency is modulated in audio signals into the LO1 (first local oscillator signal). In modes other than FM, the transmission signal is switched by the analog switch (IC68), and then input into the balanced mixer (IC701). The 24kHz IF signal and LO3 (third local oscillator signal) are input into this balanced mixer to generate the 10.695MHz IF signal.

The 10.695MHz transmission IF signal passes through the IF filter (XF471) with the 6kHz bandwidth, and controls the transmission IF amplifier's (Q721) second gate by the ALC voltage and adjusts the gain. The pin diode (D721) operates the variable attenuator by current control, and changes the transmission IF signal gain. This variable gain provides the TGC function which controls each band's transmission gain.

CIRCUIT DESCRIPTION

The 10.695MHz transmission IF signal is converted to 73.095MHz by the mixer (D422, D423). The impedance is made variable by the current that passes through the pin diode (D741), and thus the level of the 73.095MHz transmission IF signal level changed. This level variance corrects the transmission signal gain (PGC function) at the time of power control.

The transmission signal which passed MCF (XF371) with the bandwidth 15kHz is converted to the target transmission frequency in the final transmit mixer (IC761). This MCF (XF371) helps reduce proximate spurious components. The signal from the final transmit mixer passes through the receive BPF, and is amplified to the power needed to drive the final circuit in the drive amplifier (Q783).

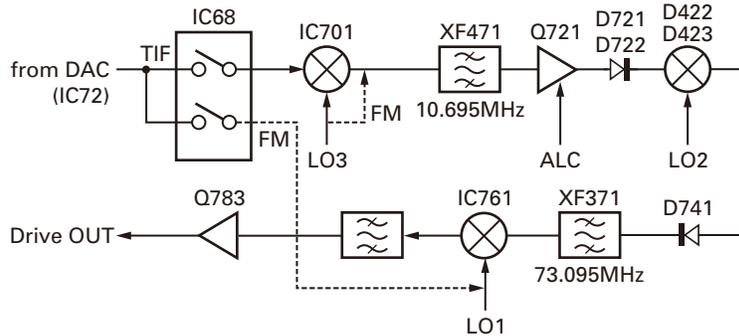


Fig. 12 From transmission signal (TIF) to drive output

■ From the drive output to the antenna terminal

The transmit signal sent from the TX-RX unit (X57-785 A/2) to the CN2 (TXRF) of the Final unit (X45-391 A/2) is amplified to the designated power in the final stage, passes through the LPF, and is then output from the antenna terminal. This unit includes a relay antenna tuner circuit that operates in all bands.

The transmit signal input into the Final unit (X45-391 A/2) CN2 is amplified by the pre-drive amplifier (Q1, Q2) and the drive amplifier (Q3, Q4). Then, the signal's high harmonic is eliminated in the LPF and the signal goes through the progressive wave/reflected wave detection circuit, amplitude phase detection circuit for the antenna tuner, transmit/receive changeover relay (K46), antenna tuner IN/THROUGH changeover relay (K45), antenna changeover relay (K44), and finally, output through the ANT1 or ANT2 antenna terminal. In order to reduce the transmit/receive changeover relay's operational noise, relays are in a separate unit (X45-391 B/2).

The antenna tuner tunes by the combination of the condenser and the coil. Its operation is the same as in previous models. IC6's phase error signal switches the input side condenser of the tuning circuit, and the IC5 amplitude difference signal switches the output side condenser. The SWR is decided by calculating the voltage of the progressive wave and the reflected wave with the main MCU (X53-446 IC306).

This model includes a current protection circuit. The current running in the final portion is converted to the potential difference of the 1mΩ resistance inserted into a power line, and the potential difference is detected at IC4. When the potential difference is larger than designated, IC4 output activates the ALC protection function. This ALC protection function controls so that the current would not exceed the predetermined value when the current at the final portion is increased for some unexpected reason. There are other protection circuits the same as the ones included in the previous models.

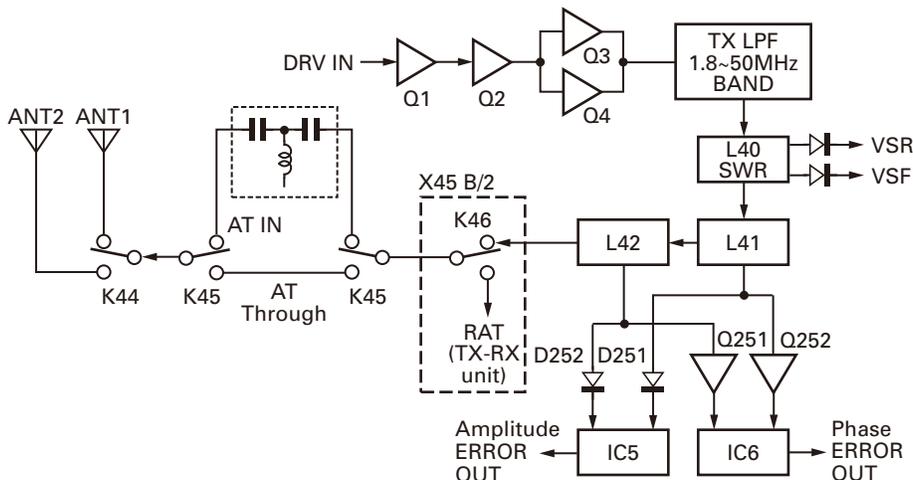


Fig. 13 From the drive output to the antenna terminal

CIRCUIT DESCRIPTION

■ Transmit power control

Transmit power control is done in the same way as in the previous models; the ALC circuit controls the ALC voltage using the progressive wave voltage (VSF) and keeps a constant output.

The voltage detected in the Final unit (X45-391 A/2) progressive wave voltage and reflection wave voltage (VSR) detection circuits is sent to the TX-RX unit's (X57-785 A/2) CN5. The progressive wave voltage is divided into a suitable voltage by the resistance, and input into the differential amplifiers consisting of Q803 and Q804.

If the progressive wave voltage rises, the emitter voltage also rises, and Q804 base current decreases and Q804 collector voltage rises. If this collector voltage exceeds approximately 2.4V (Q805's VBE and VE added), Q805's base current starts to flow, and the collector voltage where the ALC time constant CR is selected decreases. This collector voltage is buffered in Q806, the voltage is shifted in D811, and matched with the keying control voltage by Q807 and D812 to generate the ALC voltage. If the ALC voltage (2.7V

when the ALC voltage is not added) goes down, the IF amplifier's (Q721) second gate voltage goes down and the gain is decreased.

When transmitting AM, Q802 is turned on approximately 20ms after transmission, and the ALC voltage is controlled with the average power. The Q804 base voltage, which would be ALC's reference voltage, is controlled by the adjustment value (POC) from the main MCU, and output from pin 5 of the D/A converter (IC13).

SWR protection is controlled by the reflection wave voltage. The reflection wave voltage is divided by the resistance and input into IC801. If it exceeds the designated voltage, IC801's output controls the ALC voltage and lowers the power.

The PWR (power) meter is amplified from the progressive wave voltage, the SWR meter is amplified from the reflection wave voltage, and the ALC meter is amplified from the ALC voltage each by the relevant operation amplifier and then input into the A/D converter and displayed on each meter.

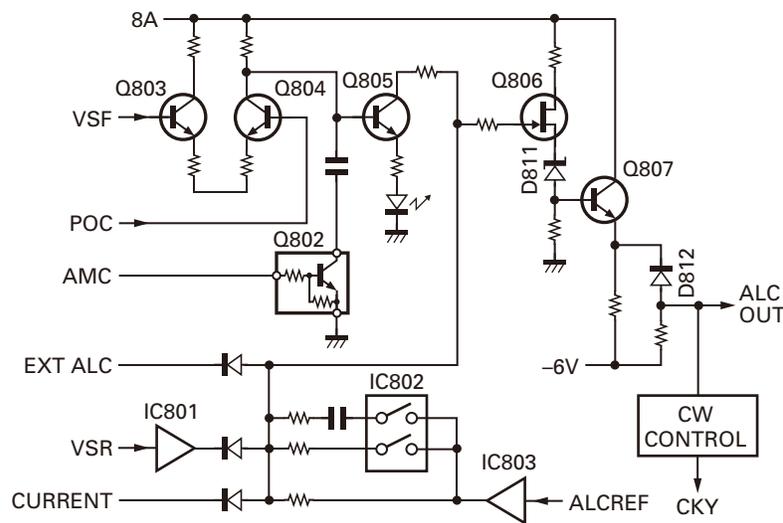


Fig. 14 Transmit power control

DAC (IC75, IC78) and ADC (IC83) Signal Path

■ Outline

DAC (IC75) communicates signals with ACC2 and the Optional unit (VGS-1). DAC (IC78) communicates signals with USB. ADC (IC83) communicates signals with ACC2/USB and the Optional unit (VGS-1). The signal path of DAC (IC75, IC78) and ADC (IC83) vary depending on each status of transmit/receive.

■ Functions relating to transmission

1) Modulation input path

Each output signal from the analog switch (IC80) passes through the active filter (IC81) and then enters ADC (IC83) and is sent to DSP (IC301).

- The signal sent from the USB (UAO) is output from pin 6 to pin 5 of the analog switch.
- The signal sent from the ACC2 (ANI) is output from pin 2 to pin 1 of the analog switch.
- The message output signal (VAO) from the Optional unit (VGS-1) passes, without going through the analog switch, through the active filter (IC82), and then input into ADC.

CIRCUIT DESCRIPTION

2) Modulation output path

The AF signal processed in DSP (IC301) is output as analog in DAC (IC75, IC78) and then amplified by the active filter (IC73, IC76).

- The signal that passed through the active filter (IC73) is sent to ACC2 output signal (ANO).
- The signal that passed through the active filter (IC76) is sent to USB output signal (UAI).

3) Recoding a message

Signals input from the microphone are processed in ADC (IC66), passed through DSP, and then enter DAC (IC75).

The signals output from DAC (IC75) pin 11 are sent to the Optional unit (VGS-1) and recorded.

■ Constant received audio recording function

1) Recording

A part of received audio signal is processed in ADC (IC66), goes through DSP (IC301), and then enters DAC (IC75). The signals output from DAC (IC75) pin 11 are sent to the Optional unit (VGS-1) and recorded. The recording level is automatically compensated to become constant and you cannot randomly change the level.

2) Playback

The output signal (VAO) from the Optional unit (VGS-1) is input into ADC (IC83), goes through DSP (IC301), and output as AF from DAC (IC72). Playback volume is controlled by DSP.

■ Other functions

1) Playing a message (monitor)

The output signal (VAO) from the Optional unit (VGS-1) is input into ADC (IC83), goes through DSP (IC301), and output as AF from DAC (IC72). Playback audio is controlled by DSP.

2) Playing a pre-recorded voice message

The above-mentioned signal path is also used for playing a pre-recorded voice message.

Digital Control Circuit

■ Outline

The digital control circuit consists of the Control unit's (X53-446 A/3) main MCU (IC306), EEPROM (IC309), reset IC (IC307), and DSP (IC301). (Refer to Fig. 15)

■ Main MCU and its periphery

The main MCU (IC306) operates at the power supply voltage of 3.3V, and the clock frequency of 22.1184MHz which is 11.0592MHz doubled in the main MCU. Around the main MCU, EEPROM for backup, power supply voltage monitoring circuit which includes a reset circuit, 3-state output buffer (IC311) for DSP control are connected. When the power supply is OFF, the mode is switched to stop mode in order to reduce the standby current.

■ Around the DSP

The DSP (IC301) operates at the power supply voltage of 3.3V and 1.25V and clock frequency of 221.184MHz which is 24.576MHz multiplied by 9 in the DSP. Around DSP, flash memory (IC302) for storing programs, and DAC (IC66, IC83) and DAC (IC72, IC75, IC78) for controlling signals are connected.

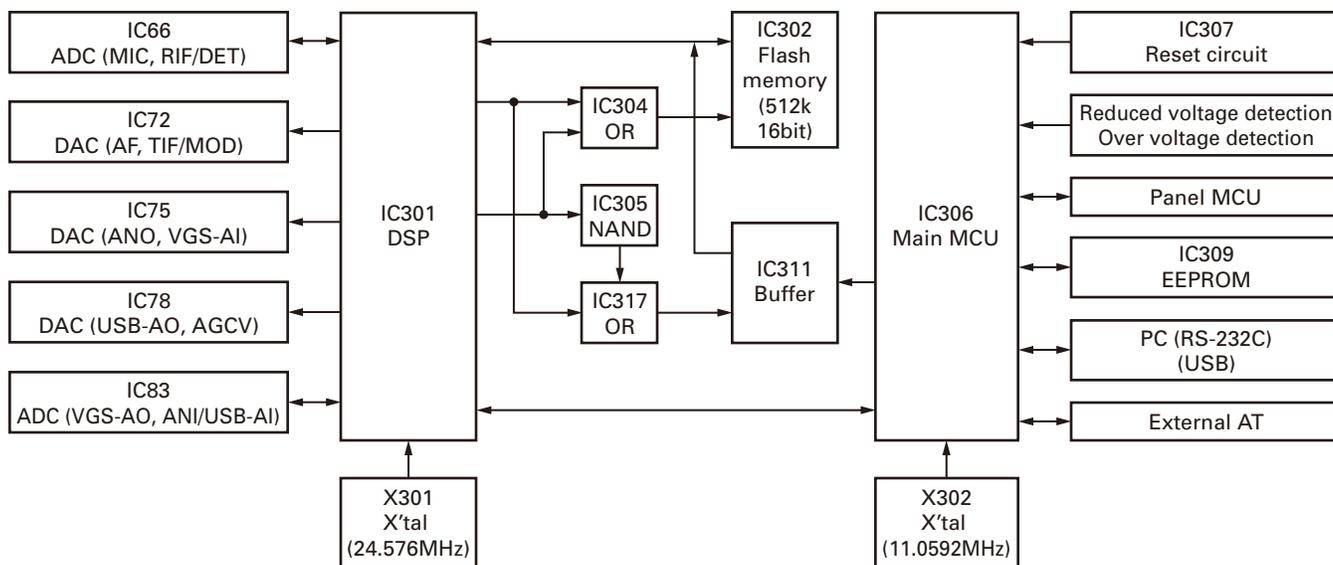


Fig. 15 Digital control circuit

CIRCUIT DESCRIPTION

Display Circuit

The Display unit (X54-370) consists of the panel MCU (IC103) and the peripheral circuits, LCD display, and LED including LCD back light. Communication with the main MCU (X53-446 IC306) is carried out in PTXD, PRXD, PCTS, PRTS. (Transmission speed: 115200bps)

■ Circuits around the panel MCU

The 33C power supply (3.3V) sent from the transceiver is used as the power supply for the digital portion. The panel MCU clock is 11.0592MHz (X101). The reset signal is controlled from the main MCU. Also, the panel MCU accepts the key matrix, various encoders, and volume.

■ LCD driver

The LCD driver used is LC75897PW (IC101). In accordance with the IC's specification, the 5V power supply for the LCD needs to be input after VDD (3.3V), a power supply switch circuit (Q102) for turning 5V ON after 3.3V occurs. In order to reliably control the power ON sequence, such control is executed by the panel MCU. (Frame frequency: 97.66Hz, duty: 1/3, bias: 1/3)

■ LED

LCD back light uses 54 LEDs for 1 color, and amber or green can be chosen by the menu. There are 5 steps of the back light luminance: 4 steps with the dimmer and OFF. Because the drive transistors (Q101, Q103, Q104, Q105) cannot be directly controlled with the panel MCU because of the quantity of LEDs, logic ICs (IC102, IC104) are used as a buffer. LCD back light's default value is amber. LED at times of transmit/receive is controlled by the panel MCU.

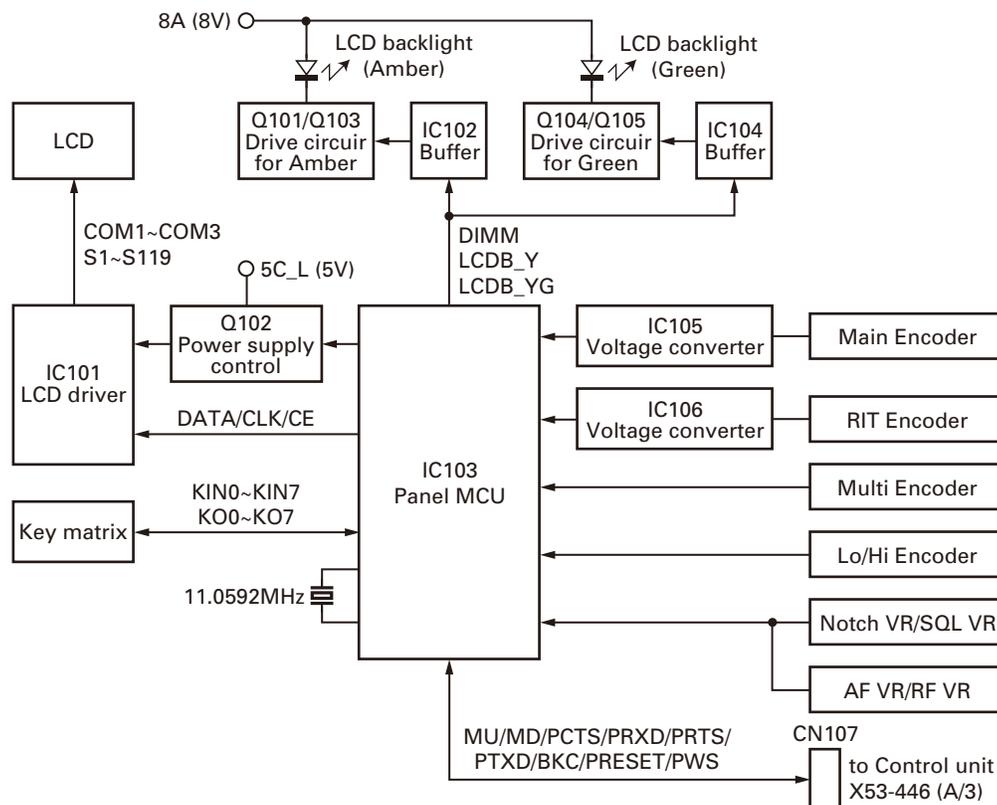


Fig. 16 Display circuit

COMPONENTS DESCRIPTION

Final unit (X45-391X-XX)

Ref. No.	Use / Function	Operation / Condition / Compatibility
IC1	Shift register	BPF switching
IC2,3	OP amplifier	VSF detection
IC4	Drain current detection	Current detection
IC5,6	OP amplifier	VSF detection
IC7	Shift register	Q1: AT switching Q2: ANT switching Q4: BPF switching Q5: FAN control Q6: FAN control Q8: AT control
IC8~10	Shift register	AT control
Q1,2	Pre-drive amplifier	HF band amplifier
Q3,4	Drive amplifier	HF band push-pull amplifier
Q5	Switching	Power supply control of 14S
Q101	Switching	Over voltage detection
Q251,252	Amplifier	VSF signal amplifier
Q253,254	Switching	Relay (K46) control
Q501~508	Switching	Filter switching depending on band
Q509,510	Switching	FAN control
Q511	Switching	Power supply control of 14S
Q513	Switching	AT control
Q514,515	Switching	Relay (K45) control
Q516	Switching	FAN control
Q517,518	Switching	AT control
Q519	Switching	Relay (K44) control
Q520	Switching	FAN control
Q521~524	Switching	AT control
Q525,526	Switching	AT relay operation stops when power is ON
Q527~544	Switching	AT control
D1,2	Attenuator	RF power control
D51,52	Protection	Surge protection
D101	Protection	Reverse connection protection
D102~110	Reverse voltage prevention	Surge protection
D111	Protection	Over voltage protection
D251~253	Detection	RF power control
D254	Protection	Surge protection
D255	Detection	RF power control
D256,257	Protection	Surge protection
D258	Switch	
D301~325	Protection	Surge protection
D501~503	Protection	Surge protection

Control unit (X53-446X-XX)

Ref. No.	Use / Function	Operation / Condition / Compatibility
IC1	3.3V switching regulator	3.3V switching regulator (Digital circuit)
IC2	8V switching regulator	8V switching regulator (Analog circuit for TX-RX, Display and Control unit)
IC3	8V AVR	8V voltage regulator (Local unit X53 B/3)
IC4	3.3V AVR	3.3V voltage regulator (Main MCU and RS-232C circuit)
IC5	5V AVR	5V voltage regulator (Analog circuit)
IC6	1.25V AVR	1.25V voltage regulator power supply (DSP)
IC61	OP amplifier	Isolation amplifier for MIC signal
IC62,63	OP amplifier	Active filter for MIC signal
IC64,65	OP amplifier	Active filter for RIF signal
IC66	A/D converter	A/D converter for MIC and RIF signal
IC67	AF amplifier	
IC68	Analog switch	FMOD and TIF signal ON/OFF switch
IC69	OP amplifier	Active filter for AF signal
IC70	OP amplifier	Active filter for FMOD and TIF signal
IC71	OP amplifier	Active filter for FMOD, TIF and AF signal
IC72	D/A converter	D/A converter for FMOD, TIF and AF signal
IC73	OP amplifier	Active filter for ANO signal
IC74	OP amplifier	Active filter for VAI signal
IC75	D/A converter	D/A converter for ANO and VAI signal
IC76	OP amplifier	Active filter for UAI signal
IC77	OP amplifier	Buffer for AGCV signal and reference voltage source
IC78	D/A converter	D/A converter for UAI and AGCV signal
IC79	OP amplifier	Active filter for AN1 signal
IC80	Analog switch	ANI and UAO signal switch
IC81	OP amplifier	Active filter for ANI and UAO signal
IC82	OP amplifier	Active filter for VAO signal
IC83	A/D converter	A/D converter for ANI, UAO and VAO signal
IC301	DSP	Digital signal
IC302	Flash memory	Program for DSP
IC304	OR gate IC	FCS control
IC305	NAND gate IC	Inverter for A(23) signal
IC306	MCU	Main microcomputer
IC307	Reset IC	MCU reset signal

COMPONENTS DESCRIPTION

Ref. No.	Use / Function	Operation / Condition / Compatibility
IC308	OR gate IC	Buffer for VBINT signal
IC309	EEPROM	
IC310	Analog multiplexer	A/D port selection of MCU
IC311	Buffer with 3-state output	Data control of DSP
IC312	Buffer	Voltage conversion: 5V → 3.3V (for TTI and TSI signal)
IC313	Buffer	Voltage conversion: 3.3V → 5V (for TTO and TSO signal)
IC314	Buffer	Buffer for CLK signal
IC315	Reset IC	BKC detection
IC316	OR gate IC	Delay time control of FOE
IC317	OR gate IC	Logic IC for IC311 control
IC501,502	Buffer	Voltage conversion: 3.3V → 5V
IC504	5V AVR	5V voltage regulator
IC505	3.3V AVR	3.3V voltage regulator
IC601	DDS	LO3 generator
IC651	Shift register	Q1: I/O update Q2: FM_TX Q3: IFB Q4: IFA Q5: BPF1 Q6: BPF2 Q7: BPF3 Q8: BPF4
IC801	PLL	LO1 reference generator
IC802	1.8V AVR	1.8V voltage regulator
IC803	DDS	LO1 generator
IC804	Amplifier	Wide band amplifier
IC901	Level converter	RS-232C level converter
IC902	OP amplifier	USB audio amplifier
IC903	CODEC	USB audio IC
IC904	AND gate	USB audio IC control
IC905	USB hub	
IC906	USB-UART bridge	
Q1~4	Switching	Power supply control of 3.3V (ON when power is ON)
Q61	Ripple filter	For audio amplifier VCC
Q62	Switching	Detection signal mute switch
Q63,64	Switching	FMOD and TIF signal ON/OFF analog switch control (IC68)
Q65	Buffer	Buffer amplifier for ANO output
Q66,67	Switching	ANI and UAO signal ON/OFF analog switch control (IC80)
Q501	Crystal oscillation circuit	Crystal oscillation circuit (15.6MHz)
Q502	Buffer	15.6MHz buffer
Q503	Doubler	Frequency doubler (15.6MHz x 2 = 31.2MHz)

Ref. No.	Use / Function	Operation / Condition / Compatibility
Q504,505	Doubler	Frequency doubler (31.2MHz x 2 = 62.4MHz)
Q506	Amplifier	LO2 output amplifier
Q601	Buffer	DDS reference buffer
Q602	Buffer	LO3 output buffer
Q651,652	Switching	BPF4 selection switch
Q653,654	Switching	IFB selection switch
Q655,656	Switching	BPF1 selection switch
Q657,658	Switching	IFA selection switch
Q659,660	Switching	BPF2 selection switch
Q661,662	Switching	BPF3 selection switch
Q663	Amplifier	LO1 output amplifier
Q664	Switching	LO1 output LPF cutoff control switch
Q801	Buffer	PLL reference buffer
Q802	Switching	FM modulation switch
Q803	Switching	PLL LPF cutoff control switch
Q804	Amplifier	PLL F-in amplifier
Q805	Filter	Ripple filter
Q806	VCO	
Q807	Amplifier	VCO amplifier
Q808	Amplifier	DDS reference amplifier
Q901	Switching	RS-232C IC power supply control switch
Q902	Switching	USB IC power supply control switch
Q903	Switching	USB audio IC active signal switch
Q904	Switching	USB-UART bridge IC active Signal Switch
D1	Switching	Catch diode for 3.3V switching regulator
D2	Switching	Catch diode for 8V switching regulator
D3~6	Voltage shift	Temperature compensation
D7~9	Reverse current prevention	For MIC data
D61	Poly-switch	Current limit
D62	Reverse current prevention	For MIC supply (8V)
D101	Mute	For AF mute
D301	6.2V zener diode	Voltage shift
D302	Reverse current prevention	For SS signal
D304	Switching	
D501	Switching	LO2 output switch
D651	Switching	IFA selection switch
D652	Doubler	DDS output frequency doubler
D653	Switching	LO1 BPF3 selection switch

COMPONENTS DESCRIPTION

Ref. No.	Use / Function	Operation / Condition / Compatibility
D654	Switching	LO1 BPF2 selection switch
D655	Switching	LO1 BPF4 selection switch
D656	Switching	BPF2/ BPF3 selection signal control
D657	Switching	LO1 BPF1/ BPF2 selection switch
D659	Switching	IFB selection switch
D660	Switching	LO1 BPF4 selection switch
D661	Switching	LO1 BPF2 selection switch
D662	Switching	LO1 BPF1/ BPF2 selection switch
D663	Switching	LO1 BPF3 selection switch
D664,665	Switching	LPF cutoff switching
D666	Switching	LO1 BPF4 selection switch
D667	Switching	IFA/ IFB selection switch
D668	Switching	LO1 BPF1 selection switch
D669	Switching	LO1 BPF3 selection switch
D670	Switching	LO1 BPF1 selection switch
D671	Switching	BPF2/ BPF3/ BPF4 selection switch
D672	Switching	BPF1/ BPF2 selection switch
D673,675,677	Switching	BPF cutoff control
D678	Switching	LO1 BPF2 selection switch
D679	Switching	LO1 BPF3 selection switch
D680,681	Switching	LO1 BPF4 selection switch
D682	Switching	LO1 BPF1 selection switch
D683	Switching	LO1 BPF3 selection switch
D801	Variable capacitance diode	FM modulation control
D802,803	Variable capacitance diode	VCO control
D901	Protection	Surge protection
D902	Protection	Voltage protection
D903	Protection	Reverse current protection

Display unit (X54-3700-00)

Ref. No.	Use / Function	Operation / Condition / Compatibility
IC101	LCD driver	
IC102	Buffer	LCD backlight dimmer control
IC103	MCU	Panel microcomputer
IC104	Buffer	LCD backlight dimmer control
IC105,106	Buffer	Voltage conversion: 5V → 3.3V
Q101	Driver	LCD backlight dimmer control
Q102	Switching	5V power supply switch
Q103~105	Driver	LCD backlight dimmer control
Q106	Driver	LED (D214, D215) control
Q107	Driver	LED (D961) control
D101~115	LED (Green)	LCD backlight
D116~122	Reverse current prevention	Key matrix

Ref. No.	Use / Function	Operation / Condition / Compatibility
D123~160	LED (Green)	LCD backlight
D161~213	LED (Amber)	LCD backlight
D214	LED (Green)	Lights during reception
D215	LED (Red)	Lights during transmission
D216	LED (Green)	LCD backlight
D217	LED (Amber)	LCD backlight
D218	Reverse current prevention	Reduced voltage detection interrupt
D961	LED (Orange)	ON when Mulch encoder is active

TX-RX unit (X57-785X-XX)

Ref. No.	Use / Function	Operation / Condition / Compatibility
IC11	Shift register	Q1: FIL[1] "H" when 15kHz IF filter is selected Q2: FIL[2] "H" when 6kHz IF filter is selected Q3: FIL[3] "H" when 2.7kHz IF filter is selected Q4: FIL[4] "H" when 500Hz IF filter is selected Q5: RXFM "H" when RX FM mode is selected Q6: TXFM "H" when TX FM mode is selected Q7: HFRGC "H" when receiving 21.5~30MHz and PRE "H" are selected Q8: 50RGC "H" when receiving 30~60MHz and PRE "H" are selected
IC12	Shift register	Q1: DRVO "H" when drive output is selected Q2: 1STIF "H" when RX 1st IF of 73.095MHz is selected Q3: 455FIL "L" when 455kHz FM narrow filter is selected Q4: ALCS "H" when TX SSB/ AM mode are selected Q5: AMC "H" when AM TX is selected Q6: RLSW "H" when linear amplifier usage is selected in HF or 50MHz band Q7: LINEAR "H" when linear amplifier usage is selected in either band
IC13	D/A convertor	Ao1: AGC_REF AGC reference voltage Ao2: IFGC RX IF gain control voltage Ao3: ALC_REF ALC reference voltage Ao4: TGC TX band gain control voltage Ao5: POC TX power control voltage Ao6: PGC TX power gain control voltage

COMPONENTS DESCRIPTION

Ref. No.	Use / Function	Operation / Condition / Compatibility
IC13	D/A convertor	Ao7: PRO SWR protection control voltage Ao8: NBL NB level control voltage
IC14	Shift register	Q1: BPF[5] "H" when BPF of 5M band is selected Q2: BPF[4] "H" when BPF of 3.5M band is selected Q3: BPF[3] "H" when BPF of 1.8M band is selected Q4: BPF[2] "H" when BPF of BC band (522k~1.705MHz) is selected Q5: BPF[1] "H" when BPF of BC band (30~522kHz) is selected Q6: ATT "L" when attenuator is ON Q7: RXANT "H" when receiving under 30MHz and external RX antenna is ON Q8: PRE "H" when receiving preamplifier is ON
IC15	Shift register	Q1: BPF[13] "H" when BPF of 50M band is selected Q2: BPF[12] "H" when BPF of 30~60M band is selected Q3: BPF[11] "H" when BPF of 28M band is selected Q4: BPF[10] "H" when BPF of 21M band is selected Q5: BPF[9] "H" when BPF of 14M band is selected Q6: BPF[8] "H" when BPF of 11M band is selected Q7: BPF[7] "H" when BPF of 10M band is selected Q8: BPF[6] "H" when BPF of 7M band is selected
IC521	OP amplifier	A/2: AGC Voltage and AGC reference voltage amplifier B/2: Not used
IC591	RX FM IC	RX FM Detection
IC592	OP amplifier	A/2: RX FM Noise squelch voltage amplifier B/2: RX FM AF signal amplifier
IC631	Multiplexer	Receiver output, FM (AF) and SSB/AM/ CW/ FSK (IF) changeover
IC701	TX Mixer	Transmission mixer (24kHz → 10.695MHz)
IC761	TX Mixer	Transmission mixer (73.095MHz → HF)
IC801	OP amplifier	ALC protection
IC802	Multiplexer	ALC protection time constant changeover
IC803	OP amplifier	ALC protection
IC861	OP amplifier	Amplifier for meter
Q12	Buffer	Buffer amplifier for ANO output
Q13	Switching	External squelch output (open collector)

Ref. No.	Use / Function	Operation / Condition / Compatibility
Q14	Buffer	Buffer amplifier for PKS input signal
Q15	Switching	ON when relay for HF band linear is used
Q16	Switching	ON when relay for HF band linear is transmission
Q17	Switching	ON when relay for HF band linear is used
Q101	Switching	Dedicated external RX antenna changeover relay (K101) control (ON when external RX antenna is selected)
Q102	Switching	ATT changeover relay (K102) control (OFF when ATT is ON)
Q103	Mute	Mutes reception path during transmission (ON during transmission)
Q131~143	Switching	RF BPF selection
Q236	Amplifier	Preamplifier (HF~21.5MHz: 12dB, 21.5~60MHz: 20dB)
Q239	Switching	Preamplifier gain control (ON receiving at 21.5~60MHz)
Q263~266	RX mixer	Receiving 1st mixer (HF → 11.374MHz)
Q267	Switching	Power supply control of preamplifier (ON when preamplifier is ON)
Q268	Switching	Power supply control of preamplifier (ON when preamplifier is OFF)
Q269	Switching	Power supply control of preamplifier (ON when preamplifier is ON)
Q270	Switching	Power supply control of preamplifier (ON when preamplifier is OFF)
Q271	Switching	Power supply control of RX 1st IF circuit (ON when RX 1st IF of 73.095MHz is selected)
Q272	Switching	Power supply control of RX 1st IF circuit (ON when RX 1st IF of 11.374MHz is selected)
Q273	Switching	Power supply control of RX 1st IF circuit (ON when RX 1st IF of 73.095MHz is selected)
Q274	Switching	Power supply control of RX 1st IF circuit (ON when RX 1st IF of 11.374MHz is selected)
Q281,282	Amplifier	RX LO1 amplifier (RX 1st IF of 11.374MHz is selected)
Q301	Switching	ON when RX 1st IF of 11.374MHz is selected
Q321~324	RX mixer	Receiving 1st mixer (HF → 73.095MHz)
Q351,352	Amplifier	RX LO1 amplifier (RX 1st IF of 73.095MHz is selected)
Q391	Amplifier	RX 1st IF amplifier (RX 1st IF of 73.095MHz is selected)
Q421	Switching	Gain correction between 1st IF (ON when TX or RX 1st IF of 73.095MHz are selected)

COMPONENTS DESCRIPTION

Ref. No.	Use / Function	Operation / Condition / Compatibility
Q431	Amplifier	LO2 amplifier (ON when TX or RX 1st IF of 73.095MHz are selected)
Q451	Amplifier	RX 2nd IF amplifier 1 (10.695MHz/ 11.374MHz)
Q453	Switching	Gain correction between bands (ON when receiving 21.5~30MHz and PRE "H" are selected)
Q454	Switching	Gain correction between bands (ON when receiving 30~60MHz and PRE "H" are selected)
Q455,456	Switching	ON when BLNK signal is "H"
Q471~477	Switching	IF filter selection
Q521,522	Amplifier	RX 2nd IF amplifier 3 (10.695MHz/ 11.374MHz)
Q541	Amplifier	RX 2nd IF amplifier 2 (10.695MHz/ 11.374MHz)
Q551	Amplifier	RX 3rd IF amplifier (24kHz)
Q571	Amplifier	LO3 amplifier (ON when RX AM/SSB/ CW/ FSK mode is selected)
Q591	Switching	Power supply control of FM circuit (ON when RX FM mode is selected)
Q631	Switching	Receiver output, FM (AF) and SSB/ AM/ CW (IF) changeover multiplexer (IC631) control
Q641	Buffer	Noise blanker input buffer
Q651	Amplifier	Noise blanker IF amplifier 1 (10.695M/ 11.374MHz)
Q652,653	Amplifier	Noise blanker IF amplifier 2 (10.695MHz/ 11.374MHz) Gain is controlled according to the NB voltage
Q654	Switching	ON when Noise Blanker IF of 10.695MHz is selected
Q660~662	DC-DC oscillator	-6V generation
Q663,664	Amplifier	Noise blanker IF amplifier 3 (10.695M/ 11.374MHz) Gain is controlled according to the NB voltage
Q665	Switching	ON when Noise blanker IF of 10.695MHz is selected
Q666	Amplifier	Noise blanker IF amplifier 4 (10.695M/ 11.374MHz) Gain is controlled according to the NB voltage
Q667	Amplifier	Noise blanker AGC control amplifier
Q668	Switching	ON when noise blanker IF of 10.695MHz is selected
Q669	Switching	Audio mute signal generation
Q670	Buffer	Noise Blanker IF buffer
Q671	Switching	Audio mute signal generation
Q702	Buffer	TX IF buffer (10.695MHz)

Ref. No.	Use / Function	Operation / Condition / Compatibility
Q721	Amplifier	TX IF amplifier (10.695MHz) Gain is controlled according to the ALC voltage
Q741	Switching	Transmission IF mute control (Mute when ON)
Q742	Amplifier	TX IF amplifier (73.095MHz)
Q781	Switching	ON when drive output is selected
Q782	Switching	ON when ANT connector output is selected
Q783	Amplifier	TX drive output amplifier
Q784	Switching	Power supply control of TXB to Final unit (X45 A/2) (ON when ANT connector output is selected)
Q801	Switching	ALC protection time constant changeover switch
Q802	Switching	On in AM mode, makes it an average value type ALC
Q803~807	Amplifier	ALC amplifier
Q841	Switching	Keying control
Q842	Buffer	ALC keying control
Q861,862	Switching	Cancels the time constant for VSF and VSR voltage lines during antenna tuning
Q903~905	Switching	Power supply control of TXB (ON during transmission)
Q906,907	Switching	Power supply control of RXB (ON during reception)
Q908	Switching	Power supply control of RX 1st IF circuit (ON when RX 1st IF of 11.374MHz is selected)
Q909	Switching	Power supply control of RX 1st IF circuit (ON when RX 1st IF of 73.095MHz is selected)
Q910	Switching	Power supply control of RX 1st IF circuit (ON when RX 1st IF of 11.374MHz is selected)
Q911	Switching	Power supply control of RX 1st IF circuit (ON when RX 1st IF of 73.095MHz is selected)
Q915	Switching	Power supply control of FM circuit (ON when RX FM mode is selected)
Q916	Switching	Power supply control of 3rd IF circuit (ON when RX AM/SSB/ CW/ FSK mode is selected)
Q917,918	Switching	Power supply control of FM circuit (ON when TX FM mode is selected)
Q920	Switching	Power supply control of RX circuit (ON during reception)
Q925	Switching	RX power supply control (ON during transmission)
D11,12	Clipper	External modulation input

COMPONENTS DESCRIPTION

Ref. No.	Use / Function	Operation / Condition / Compatibility
D13	Reverse current prevention	External standby
D14	Surge protection	ACC2 connector (5-pin SQC)
D15	Surge protection	ACC2 connector (9-pin PKS)
D17	Reverse current prevention	
D18	Surge absorption	Relay (K11)
D20~23	Reverse current prevention	Paddle/key control line
D24	Surge protection	ACC2 connector (2-pin RTTY)
D101	Surge absorption	External RX antenna terminal
D102	Surge absorption	Relay (K101)
D103	Surge absorption	Relay (K102)
D104~107	Surge absorption	Internal circuit protection
D108	Switching	RX/TX changeover, ON during reception
D109,110	Switching	ON when receiving over 1.705MHz is selected
D131	Switching	ON when BPF of 522kHz~1.705MHz is selected
D132	Switching	ON when BPF of 13.9~14.5MHz is selected
D133	Switching	ON when BPF of 49~54MHz is selected (TX only)
D134	Switching	ON when BPF of 6.9~7.5MHz is selected
D135	Switching	ON when BPF of 30~522kHz is selected
D136	Switching	ON when BPF of 1.705~2.5MHz is selected
D137	Switching	ON when BPF of 2.5~4.1MHz is selected
D138	Switching	ON when BPF of 4.1~6.9MHz is selected
D139	Switching	ON when BPF of 7.5~10.5MHz is selected
D140	Switching	ON when BPF of 10.5~13.9MHz is selected
D141	Switching	ON when BPF of 14.5~21.5MHz is selected
D142	Switching	ON when BPF of 21.5~30MHz is selected
D143	Switching	ON when BPF of 30~60MHz are selected
D144	Switching	ON when BPF of 522kHz~1.705MHz is selected
D145	Switching	ON when BPF of 30~522kHz is selected
D146	Switching	ON when BPF of 1.705~2.5MHz is selected
D147	Switching	ON when BPF of 2.5~4.1MHz is selected

Ref. No.	Use / Function	Operation / Condition / Compatibility
D148	Switching	ON when BPF of 4.1~6.9MHz is selected
D149	Switching	ON when BPF of 6.9~7.5MHz is selected
D150	Switching	ON when BPF of 7.5~10.5MHz is selected
D151	Switching	ON when BPF of 10.5~13.9MHz is selected
D152	Switching	ON when BPF of 14.5~21.5MHz is selected
D153	Switching	ON when BPF of 21.5~30MHz is selected
D154	Switching	ON when BPF of 30~60MHz are selected
D155	Switching	ON when BPF of 13.9~14.5MHz is selected
D156	Switching	ON when BPF of 49~54MHz is selected (TX only)
D231	Switching	ON when receiving preamplifier is OFF
D232	Switching	ON when receiving preamplifier is ON
D233	Switching	ON when receiving preamplifier is OFF
D234	Switching	ON when receiving preamplifier is ON
D235	Reverse current prevention	1/2: Receiving ON at 21.5~30MHz 2/2: Receiving ON at 30~60MHz
D261,281	Switching	ON when RX 1st IF of 11.374MHz is selected
D321	Switching	ON when RX 1st IF of 73.095MHz is selected
D323	Switching	1/2: RX/TX changeover, ON during reception 2/2: RX/TX changeover, ON during transmission
D351	Switching	ON when RX 1st IF of 73.095MHz is selected
D371	Switching	1/2: RX/TX changeover, ON during transmission 2/2: RX/TX changeover, ON during reception
D421	Switching	1/2: RX/TX changeover, ON during reception 2/2: RX/TX changeover, ON during transmission
D422,423	RX/TX Mixer	Receiving 2nd/ Transmission mixer (RX: 73.095MHz → 10.695MHz, TX: 10.695MHz → 73.095MHz)
D431	Switching	1/2: RX/TX changeover, ON during transmission 2/2: RX/TX changeover, ON during reception
D441	Switching	ON when RX 1st IF of 11.374MHz is selected

COMPONENTS DESCRIPTION

Ref. No.	Use / Function	Operation / Condition / Compatibility
D443	Switching	ON when RX 1st IF of 73.095MHz is selected
D461~464	Noise Blanking	ON when BLNK signal is "H"
D471	Switching	1/2: ON when 15kHz IF filter is selected 2/2: ON when 6kHz IF filter is selected
D472	Switching	1/2: ON when 10.695MHz 2.7kHz IF filter is selected 2/2: ON when 11.374MHz 2.7kHz IF filter is selected
D473	Switching	ON when 500Hz IF filter is selected
D474,475	Switching	1/2: RX/TX changeover, ON during reception 2/2: RX/TX changeover, ON during transmission
D476	Switching	1/2: ON when 15kHz IF filter is selected 2/2: ON when 6kHz IF filter is selected
D477	Switching	1/2: ON when 10.695MHz 2.7kHz IF filter is selected 2/2: ON when 11.374MHz 2.7kHz IF filter is selected
D478	Switching	ON when 500Hz IF filter is selected
D521	Voltage shift	Reference voltage of AGC control attenuator
D522~524	Attenuator	AGC control attenuator
D525	Attenuator	IF gain adjustment
D526	Switching	1/2: ON when RX FM mode is selected 2/2: ON when RX AM/ SSB/ CW/ FSK mode are selected
D551,552	RX Mixer	Receiving 3rd mixer (10.695MHz/ 11.374MHz → 24kHz)
D571	Switching	1/2: ON when RX FM mode is selected 2/2: ON when RX AM/ SSB/ CW/ FSK mode is selected
D586,587	Clipper	FM detection IC input
D660	-6V DC/DC	Stabilizes negative power source to -6V
D661	Rectifier	Creates negative voltage
D662	Detection	Noise blanker switching pulse detection
D663	Reverse current prevention	Main IBK and NB mute signal matching, main side mute when ON
D701	Switching	1/2: ON when TX AM/ SSB/ CW/ FSK mode is selected 2/2: No connection
D702	Reverse current prevention	ON during TX FM mode
D721	Attenuator	TGC control attenuator

Ref. No.	Use / Function	Operation / Condition / Compatibility
D722,723	Switching	RX/TX changeover, ON during transmission
D741	Attenuator	PGC control attenuator
D761,762	Switching	RX/TX changeover, ON during transmission
D781	Switching	1/2: ON when drive output is selected 2/2: ON when ANT connector is selected
D782	Switching	ON when transmitting over 1.705MHz
D783	Switching	ON when transmitting from 30~522kHz
D799,800	Surge absorption	Drive output terminal
D801	Power control	
D802	Reverse current prevention	External ALC voltage
D803	Reverse current prevention	VSR signal line
D806	Reverse current prevention	External ALC voltage
D807	Current protection	Reduce power at over current
D808	Power control	Reduce power at high voltage
D809	Reverse current prevention	VSR signal line
D810~812	Voltage shift	Creates a reference voltage
D813	Power control	ALC signal line
D841~843	Reverse current prevention	CKY signal line
D861,862	Reverse current prevention	Meter circuit

SEMICONDUCTOR DATA

Main MCU: F3651RDFCKDTA (Control unit IC306)

Pin No.	Name	I/O	Function
1	VREF	I	A/D standard voltage input
2	AVCC	I	Analog power supply input
3	DSIN	I	DSP data input
4	DSOUT	O	DSP data output
5	DCLK	O	DSP clock
6	DSCS	O	DSP chip select
7	TDET	I	CTCSS detect signal input from DSP H: Detect
8	VMIC	I	VOX transmit (MIC) signal input from DSP H: Active
9	VANI	I	VOX transmit (ANI) signal input from DSP H: Active
10	DHLT	I	DSP check signal input H: Ready
11	DRST	O	DSP reset output L: Reset
12	UL	I	Unlock detection L: Unlock
13	BYTE	I	Single chip mode selection (Vss connection)
14	CNVSS	I	For production
15	DRET	O	Communication re-start request to DSP
16	PHDET	I	Phone jack connection detection L: Detect
17	RESET	I	For reset L: Reset
18	XOUT	O	System clock output (11.0592MHz)
19	VSS	-	GND
20	XIN	I	System clock input (11.0592MHz)
21	VCC1	-	Power supply input
22	NMI	I	Not used (VCC connection)
23	DREQ	I	Communication request from DSP
24	PWS	I	Power switch input L: Push
25	UVBINT	I	USB connection interrupt input H: Connect
26	UCTS	I	RTS signal input from USB-serial bridge
27	URXD	I	Serial data input from USB-serial bridge
28	URTS	O	RTS signal output to USB-serial bridge
29	UTXD	O	Serial data output to USB-serial bridge
30	NC	O	Not used
31	DCFV	O	Oscillator frequency output for DC/DC converter
32	ABK2	O	Audio blanking signal output for ACC2 and USB H: AF blanking
33	ABK1	O	Audio blanking signal output H: AF blanking
34,35	NC	O	Not used
36	ETXD	O	For production
37	VCC1	-	Power supply input
38	ERXD	I	For production

Pin No.	Name	I/O	Function
39	VSS	-	GND
40	SCLK	O	For production
41	BUSY	O	For production
42	PTXD	O	Serial data output for Panel MCU
43	PRXD	I	Serial data input from Panel MCU
44	PRTS	O	RTS signal output for Panel MCU
45	PCTS	I	RTS signal input from Panel MCU
46	PRST	O	Reset signal output for Panel MCU
47	TYPX	I	Type detection
48	TYPY	I	Type detection
49	TYP3	I	Type detection
50	TYP2	I	Type detection
51	TYP1	I	Type detection
52	EPM	O	For production
53	TYP0	I	Type detection
54	EEN	O	EEPROM enable
55	EDA	I	EEPROM data input
56	ECK	O	EEPROM clock
57	ESI	O	EEPROM data output
58	VEN	O	VGS-1 enable
59	VRST	O	VGS-1 reset
60	VPLY	I	VGS-1 playback signal input
61	ECE	O	For production
62	VBSY	I	VGS-1 busy signal input
63	SS	I	PTT (SS) signal input L: Transmit
64	FPRG	I	Firmware programming mode detection
65	AMU	O	Audio mute H: Mute
66	PHD	I	Phase comparison detection for AT
67	AMD	I	Amplitude comparison detection for AT
68	PSC	O	Power switch control H: Power ON
69	TCS	O	AT tuning instruction H: During AT tuning
70	SQC	O	Squelch signal H: Close, L: Open
71	PHPWS	O	Power switch control H: Power ON
72	ATPWS	O	Shift and store bus register for AT control signal H: Valid
73,74	NC	O	Not used
75	PKP	O	Crossband repeater operation instruction L: Crossband repeater operation
76	PKSR	I	Packet transmit/ Crossband transmit instruction Normal H: Transmit, Crossband repeater L: Transmit
77	KEY	I	Key down signal L: Key down
78	KYS	I	Key jack connection detection H: Key jack connection
79	DASH	I	Electronic key dash signal L: Dash ON
80	DOT	I	Electronic Key dot Signal L: Dot ON

SEMICONDUCTOR DATA

Pin No.	Name	I/O	Function
81	TTO	O	External AT control
82	TSO	O	External AT control
83	TTI	I	External AT control
84	TSI	I	External AT control
85	VCC2	I	Power supply input
86	MODSEL	O	Modulation selection L: TIF, H: FM modulation
87	VSS	-	GND
88	ANISEL	O	ACC2 audio/USB audio selection L: ACC2 audio, H: USB audio
89	BEEP	O	Beep pattern instruction H: Beep output
90	BKC	I	Reduced voltage detection interrupt H→L: Interrupt
91	IBK	O	IF blanking signal output H: Blanking
92	TLN2	O	Transmit line select 2 for DSP
93	TLN1	O	Transmit line select 1 for DSP
94	TXC	O	Transmit circuit power control H: Transmit circuit power is ON
95	CKY	O	Transmit power output control H: Transmit output
96	NC	I	Not used (External pull up)
97	BOVR	I	Over voltage detection interrupt H→L: Interrupt
98	STPC	I	Interrupt for returning from sleep mode (PC control) L→H: Interrupt
99	STS	O	RS-232C IC power control H: Power ON
100	CTXD	O	Serial data output for RS-232C IC
101	CRXD	I	Serial data input from RS-232C IC
102	CRTS	O	RTS signal output for RS-232C IC
103	CCTS	I	RTS signal input from RS-232C IC
104	LDAT	O	Serial data output for Control unit (LO) (X53 B/3)
105	LCLK	O	Serial clock output for Control unit (LO) (X53 B/3)
106	LEN	O	PLL IC enable
107	DEN1	O	DDS IC (AD9951YSVZ) enable
108	DEN2	O	DDS IC (AD9835BRUZ) enable
109	SEN	O	8-bit shift and register enable (Control unit (LO) X53 B/3)
110	IEN1	O	8-bit shift and register enable (TX-RX unit X57 A/2)
111	IEN2	O	8-bit shift and register enable (TX-RX unit X57 A/2)
112	IEN3	O	D/A converter enable (TX-RX unit X57 A/2)
113	FEN2	O	8-bit shift and register enable (Final unit X45 A/2)
114	DRES	O	DDS IC (AD9951YSVZ) reset output H: Reset

Pin No.	Name	I/O	Function
115	FEN1	O	8-bit shift and register enable (Final unit X45 A/2)
116	CLK	O	Serial clock output
117	DATA	O	Serial data output
118	ADC1	O	Multiplexer control signal 1
119	ADC2	O	Multiplexer control signal 2
120	AXC	I	Multiplexer X line input
121	AYC	I	Multiplexer Y line input
122	IDT	I	Current detection
123	VDT	I	Power supply voltage detection (Not used)
124	VSF	I	Forward wave voltage
125	VSR	I	Reflected wave voltage
126	FSQL	I	Squelch voltage
127	AVSS	-	Analog GND
128	FSM	I	S-meter voltage

Panel MCU: F364AEDFBKDU (Display unit IC103)

Pin No.	Name	I/O	Function
1,2	NC	O	Not used
3	LCD_B_U	O	LCD backlight amber L: Light
4	LCD_B_G	O	LCD backlight green L: Light
5	CHLED	O	MULTI/CH encoder LED H: Light
6	BYTE	I	Single chip mode selection (Vss con- nection)
7	CNVSS	I	For production
8,9	NC	O	Not used
10	RESET	I	For reset L: Reset
11	XOUT	O	System clock output (11.0592MHz)
12	VSS	-	GND
13	XIN	I	System clock input (11.0592MHz)
14	VCC	I	Power supply input
15	NC	I	Not used (External pull up)
16	LOENCA	I	Low cut encoder pulse A input
17	HIENCA	I	Hi cut encoder pulse A input
18	MULA	I	MULTI encoder pulse A input
19	M-ENCB	I	Main encoder pulse B input
20	M-ENCA	I	Main encoder pulse A input
21	RIT-ENCB	I	RIT encoder pulse B input
22	RIT-ENCA	I	RIT encoder pulse A input
23	NC	I	Not used (External pull down)
24	DIMMER	O	LCD backlight (PWM)
25	NC	I	Not used (External pull down)
26~28	NC	O	Not used
29	E8TXD	O	For production

SEMICONDUCTOR DATA

Pin No.	Name	I/O	Function
30	E8RXD	O	For production
31	E8CLK	O	For production
32	E8BSY	O	For production
33	TXD0	O	The serial port for connection with the main unit
34	RXD0	I	The serial port for connection with the main unit
35	RTS	O	RTS port for connection with the main unit
36	CTS	I	CTS port for connection with the main unit
37,38	NC	O	Not used
39	E8EPM	I	For production
40~43	NC	O	Not used
44	E8CE	I	For production
45~49	NC	O	Not used
50	LOENCB	I	Low cut encoder pulse B input
51	HIENCB	I	Hi cut encoder pulse B input
52	CHENCB	I	MULTI/CH encoder B input
53	LCDDATA	O	LCD driver data output
54	LCDCLK	O	LCD driver clock output
55	LCDCS	O	LCD driver chip select output
56	LCDINH	O	Segment display off control output
57	LCDPOW	O	VLCD power control H: Power supply
58,59	NC	O	Not used
60	VCC	I	Power supply input
61	NC	O	Not used
62	VSS	-	GND
63	NC	O	Not used
64~70	KO6~KO0	O	Key scan output bit 6~0
71	PBKC	I	Reduced voltage detection interrupt
72~78	NC	O	Not used
79~86	KI7~KI0	I	Key scan input bit 7~0
87,88	NC	O	Not used
89	MU	I	MIC up key input (A/D)
90	MD	I	MIC down key input (A/D)
91	NVOL	I	NOTCH volume input (A/D)
92	SVOL	I	SQ volume input (A/D)
93	AFVOL	I	AF volume input (A/D)
94	AVSS	-	Analog GND
95	RFVOL	I	RF volume input (A/D)
96	VREF	I	A/D standard voltage input
97	AVCC	I	Analog power supply input
98	NC	O	Not used
99	TXL	O	TX LED output H: Light
100	BUSYL	O	BUSY LED output H: Light

DSP: DC6726BRFPA225 (Control unit IC301)

Pin No.	Port Name	I/O	Function
1	VSS	-	GND
2	MCLKT	O	Master clock for D/A converter
3	TXC	I	Detection of Reception or Transmission
4	CKY	I	Detection of transmit or Not transmit
5	DHLT	O	DSP check signal to Main MCU
6	VSS	-	GND
7	DREQ	O	Communication request to Main MCU
8	CVDD	I	Core power supply (1.2V)
9	VMIC	O	VOX transmit (MIC) signal output to Main MCU
10	DVDD	I	I/O power supply (3.3V)
11	VANI	O	VOX transmit (ANI) signal output to Main MCU
12	TDET	O	CTCSS detection output to Main MCU
13	VSS	-	GND
14	DRST	I	DSP reset
15	VSS	-	GND
16	CVDD	I	Core power supply (1.2V)
17	CLKIN	I	GND
18	VSS	-	GND
19	TMS	I	For CN305
20	CVDD	I	Core power supply (1.2V)
21	TRST	I	For CN305
22	OSCVSS	-	Oscillator GND
23	OSCIN	I	Oscillator input
24	OSCOUT	O	Oscillator output
25	OSCVDD	I	Oscillator CVDD
26	VSS	-	GND
27	PLLHV	I	PLL DVDD (3.3V)
28	TDI	I	For CN305
29	TDO	O	For CN305
30	VSS	-	GND
31	DVDD	I	I/O power supply (3.3V)
32	EMU[0]	I/O	For CN305
33	CVDD	I	Core power supply (1.2V)
34	EMU[1]	I/O	For CN305
35	TCK	I	For CN305
36	VSS	-	GND
37	NC	O	Not used
38	WE	O	Write enable for flash memory
39	NC	O	Not used
40	VSS	-	GND
41	DQ[7]	I/O	Data bus for flash memory
42	DVDD	I	I/O power supply (3.3V)

SEMICONDUCTOR DATA

Pin No.	Port Name	I/O	Function
43	DQ[6]	I/O	Data bus for flash memory
44	CVDD	I	Core power supply (1.2V)
45	DQ[5]	I/O	Data bus for flash memory
46	DQ[4]	I/O	Data bus for flash memory
47	VSS	-	GND
48	DQ[3]	I/O	Data bus for flash memory
49	DQ[2]	I/O	Data bus for flash memory
50	DVDD	I	I/O power supply (3.3V)
51	DQ[1]	I/O	Data bus for flash memory
52	DQ[0]	I/O	Data bus for flash memory
53	CVDD	I	Core power supply (1.2V)
54	VSS	-	GND
55	DQ[15]	I/O	Data bus for flash memory
56	DQ[14]	I/O	Data bus for flash memory
57	CVDD	I	Core power supply (1.2V)
58	DQ[13]	I/O	Data bus for flash memory
59	DQ[12]	I/O	Data bus for flash memory
60	DVDD	I/O	I/O power supply (3.3V)
61	DQ[11]	I/O	Data bus for flash memory
62	VSS	-	GND
63	DQ[10]	I/O	Data bus for flash memory
64	DQ[9]	I/O	Data bus for flash memory
65	CVDD	I	Core power supply (1.2V)
66	DQ[8]	I/O	Data bus for flash memory
67	NC	O	Not used
68	DVDD	I	I/O power supply (3.3V)
69	VSS	-	GND
70,71	NC	O	Not used
72	VSS	-	GND
73	DVDD	I	I/O power supply (3.3V)
74	A[12]	O	Address bus for flash memory
75	A[10]	O	Address bus for flash memory
76	A[9]	O	Address bus for flash memory
77	CVDD	I	Core power supply (1.2V)
78	VSS	-	GND
79	A[8]	O	Address bus for flash memory
80	A[7]	O	Address bus for flash memory
81	DVDD	I	I/O power supply (3.3V)
82	VSS	-	GND
83	A[6]	O	Address bus for flash memory
84	A[5]	O	Address bus for flash memory
85	CVDD	I	Core power supply (1.2V)
86	A[4]	O	Address bus for flash memory
87	VSS	-	GND
88	A[3]	O	Address bus for flash memory

Pin No.	Port Name	I/O	Function
89	A[2]	O	Address bus for flash memory
90	CVDD	I	Core power supply (1.2V)
91	A[1]	O	Address bus for flash memory
92	DVDD	I	I/O power supply (3.3V)
93	A[11]	O	Address bus for flash memory
94	A[0]	O	Address bus for flash memory
95	VSS	-	GND
96	A[23]	O	Selection for extension I/O port
97,98	NC	O	Not used
99	VSS	-	GND
100	CS	O	Chip select for flash memory
101	CVDD	I	Core power supply (1.2V)
102	NC	O	Not used
103	DVDD	I	I/O power supply (3.3V)
104	OE	O	Output enable for flash memory
105	RYBY	I	Ready/ Busy signal for flash memory
106	VSS	-	GND
107	DSCS	I	SPI0 slave chip select for Main MCU interface
108	DCLK	I	SPI0 serial clock for Main MCU interface
109	VSS	-	GND
110	DSOUT	I	SPI0 data input for Main MCU interface
111	DSIN	O	SPI0 data output for Main MCU interface
112	DVDD	I	I/O power supply (3.3V)
113	SDTI0	I	Serial data input from A/D converter (IC66)
114	VSS	-	GND
115	SDTI1	I	Serial data input from A/D converter (IC83)
116	SDTO0	O	Serial data output for D/A converter (IC72)
117	SDTO1	O	Serial data output for D/A converter (IC75)
118	VSS	-	GND
119	SDTO2	O	Serial data output for D/A converter (IC78)
120	NC	O	Not used
121	PDN	O	Reset for A/D converter and D/A converter
122	NC	O	Not used
123	CVDD	I	Core power supply (1.2V)
124	VSS	-	GND
125	DVDD	I	I/O power supply (3.3V)
126,127	NC	O	Not used
128	CVDD	I	Core power supply (1.2V)

SEMICONDUCTOR DATA

Pin No.	Port Name	I/O	Function
129	VSS	-	GND
130	A[13]	O	Address bus for flash memory
131	A[14]	O	Address bus for flash memory
132	CVDD	I	Core power supply (1.2V)
133	VSS	-	GND
134	A[15]	O	Address bus for flash memory
135	A[16]	O	Address bus for flash memory
136	DVDD	I	I/O power supply (3.3V)
137	A[17]	O	Address bus for flash memory

Pin No.	Port Name	I/O	Function
138	A[18]	O	Address bus for flash memory
139	BCKX0RT	I	Bit clock reception
140	VSS	-	GND
141	FSX0RT	I	Frame synchronous reception
142	BCKX0RT	O	Bit clock transmission for A/D converter and D/A converter
143	MCLKR	O	Master clock for A/D converter
144	FSX0RT	O	Frame synchronous transmission for A/D converter and D/A converter

Extended I/O Port

■ Final unit (X45-391 A/2)

Pin No.	Pin name	Port name	Function	Active level	Condition
IC1: TC74HC4094AFF (Shift register) Enable: FEN1					
4	Q1	2L	1.8M LPF relay	H	$1.705 \leq f < 2.50$ (MHz)
5	Q2	7L	7M LPF relay	H	$5.50 \leq f < 7.50$ (MHz)
6	Q3	14L	14M LPF relay	H	$10.5 \leq f < 14.50$ (MHz)
7	Q4	3L	3.5M LPF relay	H	$2.50 \leq f < 4.00$ (MHz)
14	Q5	28L	24M/28M LPF relay	H	$21.50 \leq f < 30.0$ (MHz)
13	Q6	10L	10M LPF relay	H	$7.50 \leq f < 10.50$ (MHz)
12	Q7	21L	18M/21M LPF relay	H	$14.50 \leq f < 21.50$ (MHz)
11	Q8	5L	5M LPF relay	H	$4.00 \leq f < 5.50$ (MHz)
IC7: TC74HC4094AFF (Shift register) Enable: FEN1					
4	Q1	ATS	In/Through switching relay	H	L: Through, H: In
5	Q2	ANT2	HF ANT2 switching relay	L	L: ANT1, H: ANT2
6	Q3	NC			
7	Q4	50L	50M LPF relay	H	$49.0 \leq f < 54.0$ (MHz)
14	Q5	FANL	Low speed/High speed	H	When the FAN rotates, at either low or high speed, it becomes active.
13	Q6	FANH	High speed	H	When the FAN rotates at high speed, it becomes active.
12	Q7	NC			
11	Q8	L (1)	50M coil	H	$49.0 \leq f < 54.0$ (MHz)
IC8: TC74HC4094AFF (Shift register) Enable: FEN2					
4	Q1	CI (1)	2.5p capacitor switching	H	Phase difference correction C1 On: Active, Off: Inactive
5	Q2	CI (2)	5p capacitor switching	H	Phase difference correction C2 On: Active, Off: Inactive
6	Q3	CI (3)	10p capacitor switching	H	Phase difference correction C3 On: Active, Off: Inactive
7	Q4	CI (4)	18p capacitor switching	H	Phase difference correction C4 On: Active, Off: Inactive
14	Q5	CI (5)	39p capacitor switching	H	Phase difference correction C5 On: Active, Off: Inactive
13	Q6	CI (6)	75p capacitor switching	H	Phase difference correction C6 On: Active, Off: Inactive

SEMICONDUCTOR DATA

Pin No.	Pin name	Port name	Function	Active level	Condition
12	Q7	CI (7)	150p capacitor switching	H	Phase difference correction C7 On: Active, Off: Inactive
11	Q8	CI (8)	300p capacitor switching	H	Phase difference correction C8 On: Active, Off: Inactive
IC9: TC74HC4094AFF (Shift register) Enable: FEN1					
4	Q1	L (2)	28M coil	H	$25.50 \leq f < 30.0$ (MHz)
5	Q2	L (3)	24.9M coil	H	$21.50 \leq f < 25.50$ (MHz)
6	Q3	L (4)	18M/21M coil	H	$14.50 \leq f < 21.50$ (MHz)
7	Q4	L (5)	14M coil	H	$10.50 \leq f < 14.50$ (MHz)
14	Q5	L (6)	10M coil	H	$7.50 \leq f < 10.50$ (MHz)
13	Q6	L (7)	7M coil	H	$6.90 \leq f < 7.50$ (MHz)
12	Q7	L (8)	5M coil	H	$4.50 \leq f < 6.90$ (MHz)
11	Q8	L (9)	3.5M coil	H	$2.50 \leq f < 4.50$ (MHz)
IC10: TC74HC4094AFF (Shift register) Enable: FEN2					
4	Q1	CO(1)	2.5p capacitor switching	H	Amplitude difference correction C1 On: Active, Off: Inactive
5	Q2	CO(2)	5p capacitor switching	H	Amplitude difference correction C2 On: Active, Off: Inactive
6	Q3	CO(3)	10p capacitor switching	H	Amplitude difference correction C3 On: Active, Off: Inactive
7	Q4	CO(4)	18p capacitor switching	H	Amplitude difference correction C4 On: Active, Off: Inactive
14	Q5	CO(5)	39p capacitor switching	H	Amplitude difference correction C5 On: Active, Off: Inactive
13	Q6	CO(6)	75p capacitor switching	H	Amplitude difference correction C6 On: Active, Off: Inactive
12	Q7	CO(7)	150p capacitor switching	H	Amplitude difference correction C7 On: Active, Off: Inactive
11	Q8	CO(8)	300p capacitor switching	H	Amplitude difference correction C8 On: Active, Off: Inactive

■ Control (Local) unit (X53-446 B/3)

Pin No.	Pin name	Port name	Function	Active level	Condition
IC651: TC74HC4094AFF (Shift register) Enable: EN1					
4	Q1	L_IJUP	AD9951(DDS) data update		
5	Q2	TXFM	FM modulation switch	L	
6	Q3	IFB	IF11M selection	L	When the RX-1 is selected, it becomes active.
7	Q4	IFA	IF73M selection	L	When the RX-2 is selected, it becomes active.
14	Q5	BPF1	LO1 filter selection	L	RX-1: $1.705 \leq f < 2.1$ (MHz), RX-2: $0.03 \leq f < 10$ (MHz)
13	Q6	BPF2	LO1 filter selection	L	RX-1: $3.4 \leq f < 4.1$ (MHz), RX-2: $10 \leq f < 16$ (MHz)
12	Q7	BPF3	LO1 filter selection	L	RX-1: $6.9 \leq f < 7.5$ (MHz), RX-2: $16 \leq f < 30$ (MHz)
11	Q8	BPF4	LO1 filter selection	L	RX-1: $13.9 \leq f < 21.5$ (MHz), RX-2: $30 \leq f < 60$ (MHz)

■ TX-RX unit (X57-785 A/2)

Pin No.	Pin name	Port name	Function	Active level	Condition
IC11: TC74HC4094AFF (Shift register) Enable: IEN2					
4	Q1	FIL[1]	IF filter 15kHz	H	IF: 10.695MHz
5	Q2	FIL[2]	IF filter 6kHz	H	IF: 10.695MHz
6	Q3	FIL[3]	IF filter 2.7kHz	H/L	1st IF 10.695MHz: H, 11.374MHz: L

SEMICONDUCTOR DATA

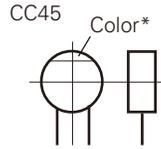
Pin No.	Pin name	Port name	Function	Active level	Condition
7	Q4	FIL[4]	IF filter 500Hz	H	IF: 11.374MHz
14	Q5	RXFM	RX mode: FM	H	
13	Q6	TXFM	TX mode: FM	H	
12	Q7	HFRGC	HF RX gain	H	$21.5\text{MHz} \leq f < 30.0\text{MHz}$ & Pre-AMP ON
11	Q8	50RGC	50M RX gain	H	$30.0\text{MHz} \leq f < 60\text{MHz}$ & Pre-AMP ON
IC12: TC74HC4094AFF (Shift register) Enable: IEN2					
4	Q1	DRVO	Drive output switch	L	
5	Q2	1STIF	1st IF switch	H/L	73.095MHz: H, 11.374MHz: L
6	Q3	455FIL	(RX) 455kHz FM filter	H/L	Wide: H, Narrow: L
7	Q4	ALCS	C810 discharge switch	H	Before AT tuning
14	Q5	AMC	AM ALC time constant switch	H/L	Slow: H, Fast: L
13	Q6	RLSW	TX-B output switch	H	Linear ON and TXB: H
12	Q7	LINEAR	Liner Relay Switch	H	Linear relay control ON: H
11	Q8	NC			
IC13: M62353AGPDF5J (D/A converter) Enable: IEN3					
15	Ao1	AGC_REF	AGC reference voltage		
2	Ao2	IFGC	RX IF gain		
3	Ao3	ALC_REF	ALC reference voltage		
4	Ao4	TGC	Transmit gain control voltage		
5	Ao5	POC	Power control voltage		
6	Ao6	PGC	RF gain control voltage		
7	Ao7	PRO	Protection control reference voltage		
10	Ao8	NBL (TX: IDP)	RX: NB threshold voltage, TX: ID threshold voltage		
IC14: TC74HC4094AFF (Shift register) Enable: IEN1					
4	Q1	BPF[5]	BPF selection	H	$4.10 \leq f < 6.90$ (MHz)
5	Q2	BPF[4]	BPF selection	H	$2.50 \leq f < 4.10$ (MHz)
6	Q3	BPF[3]	BPF selection	H	$1.705 \leq f < 2.50$ (MHz)
7	Q4	BPF[2]	BPF selection	H	$0.522 \leq f < 1.705$ (MHz)
14	Q5	BPF[1]	BPF selection	H	$0.03 \leq f < 0.522$ (MHz)
13	Q6	ATT	ATT switch	L	
12	Q7	RXANT	RX ANT switch	H	$f \leq 30.0\text{MHz}$ & EXT RX ANT ON
11	Q8	PRE	Pre-AMP switch	H	
IC15: TC74HC4094AFF (Shift register) Enable: IEN1					
4	Q1	BPF[13]	BPF selection	H	$49.0 \leq f < 54.0$ (MHz), Only TX
5	Q2	BPF[12]	BPF selection	H	$30.0 \leq f < 60.0$ (MHz)
6	Q3	BPF[11]	BPF selection	H	$21.5 \leq f < 30.0$ (MHz)
7	Q4	BPF[10]	BPF selection	H	$14.5 \leq f < 21.5$ (MHz)
14	Q5	BPF[9]	BPF selection	H	$13.9 \leq f < 14.5$ (MHz)
13	Q6	BPF[8]	BPF selection	H	$10.5 \leq f < 13.9$ (MHz)
12	Q7	BPF[7]	BPF selection	H	$7.50 \leq f < 10.5$ (MHz)
11	Q8	BPF[6]	BPF selection	H	$6.90 \leq f < 7.50$ (MHz)

PARTS LIST

CAPACITORS

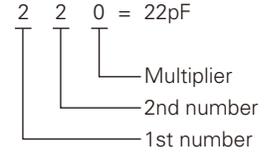
$\frac{C}{1} \frac{C}{2} \frac{45}{3} \frac{TH}{4} \frac{1H}{5} \frac{220}{6} \frac{J}{6}$

- 1 = Type ... ceramic, electrolytic, etc.
- 2 = Shape ... round, square, etc.
- 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 -20	+80 -20	+100 -0	More than 10μF : -10~+50 Less than 4.7μF : -10~+75

(Less than 10pF)

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

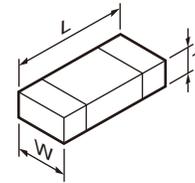
• Voltage rating

1st word \ 2nd word	A	B	C	D	E	F	G	H	J	K	V
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	2150	4000	5000	6300	8000	-

• Chip capacitors

- (EX) $\frac{C}{1} \frac{C}{2} \frac{73}{3} \frac{F}{4} \frac{SL}{5} \frac{1H}{6} \frac{000}{7} \frac{J}{7}$ → Refer to the table above.
- (Chip) (CH, RH, UJ, SL)
- 1 = Type
 - 2 = Shape
 - 3 = Dimension
 - 4 = Temp. coefficient
 - 5 = Voltage rating
 - 6 = Value
 - 7 = Tolerance
- (EX) $\frac{C}{1} \frac{K}{2} \frac{73}{3} \frac{F}{4} \frac{F}{5} \frac{1H}{6} \frac{000}{7} \frac{Z}{7}$
- (Chip) (B, F)

• Dimension



Chip capacitor

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	3.2±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

Chip resistor

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		

RESISTORS

• Chip resistor (Carbon)

- (EX) $\frac{R}{1} \frac{D}{2} \frac{73}{3} \frac{E}{4} \frac{B}{5} \frac{2B}{6} \frac{000}{7} \frac{J}{7}$
- (Chip) (B, F)

• Carbon resistor (Normal type)

- (EX) $\frac{R}{1} \frac{D}{2} \frac{14}{3} \frac{B}{4} \frac{B}{5} \frac{2C}{6} \frac{000}{7} \frac{J}{7}$

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

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

Y : PX (Far East, Hawaii)

C : China

K : USA

T : England

X : Australia

P : Canada

E : Europe

M : Other Areas

TS-590S

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
TS-590S											
1	1B	*	A01-2222-01	METALLIC CABINET (UPPER)		58	2C	*	F10-3136-03	SHIELDING COVER (VGS-1)	
2	1D	*	A01-2223-01	METALLIC CABINET (LOWER)		59	1G		F52-0038-05	FUSE (BLADE TYPE) (4A) ACCESSORY	
3	2F	*	A22-2525-01	SUB PANEL		60	1G,2G		F52-0044-05	FUSE (BLADE TYPE) (25A) ACCESSORY	
4	3F	*	A62-1176-02	PANEL		62	3F		G02-0505-05	KNOB SPRING (INSIDE-KONB)	
6	2C		B09-0355-05	CAP (DSUB-COM)		63	2D		G02-0791-14	FLAT SPRING (X53A:AUDIO IC)	
7	3E	*	B10-2799-02	FRONT GLASS		64	3E	*	G02-1858-03	FLAT SPRING (TORQUE)	
8	3F	*	B11-1879-03	ILLUMINATION GUIDE (TX/RX)		65	1A	*	G02-1860-04	EARTH SPRING (HF-FINAL)	
9	3F	*	B11-1880-03	ILLUMINATION GUIDE (MULTI)		66	3F		G09-0405-05	KNOB SPRING (ENC-KNOB)	
-			B42-5650-04	SERIAL NUMBER STICKER		67	1A,1B		G10-1277-04	FIBROUS SHEET (CABINET)	
-			B42-7003-04	RATING LABEL (DC CORD)	E	68	3E	*	G10-1812-04	FIBROUS SHEET (TORQUE)	
-			B42-7019-04	STANDARD LABEL (FCC)	K	69	1G		G11-2698-04	SHEET ACCESSORY	
-			B42-7070-04	STANDARD LABEL (FCC)	K	70	3E	*	G11-4509-04	SHEET (FRONT GLASS)	
14	3E	*	B43-1644-04	BADGE		71	2C	*	G11-4510-04	RUBBER SHEET (X53B:DDS)	
15	1H	*	B52-0622-00	SCHEMATIC DIAGRAM ACCESSORY	K	72	1A	*	G11-4520-04	SHEET (FINAL-RELAY)	
16	1H	*	B52-0623-00	SCHEMATIC DIAGRAM ACCESSORY	K	73	2D	*	G11-4535-04	SHEET (X53A:DCDC-COIL)	
17	1H	*	B62-2243-00	INSTRUCTION MANUAL (ENGLISH)		74	3D	*	G11-4536-04	RUBBER SHEET (X53A PCB)	
18	1H	*	B62-2244-00	INSTRUCTION MANUAL (FRENCH)		76	2A		G13-1793-04	CUSHION (UNDER SP)	
19	1H	*	B62-2245-00	INSTRUCTION MANUAL (SPANISH)	E	77	2B		G13-1855-04	CUSHION (SP)	
20	1H	*	B62-2246-00	INSTRUCTION MANUAL (GERMAN)	E	78	2E	*	G13-2300-04	CUSHION (LCD)	
21	1H	*	B62-2247-00	INSTRUCTION MANUAL (ITALIAN)	E	79	1A	*	G13-2301-04	CUSHION (TOP RELAY)	
22	1H	*	B62-2248-00	INSTRUCTION MANUAL (DUTCH)	E	80	1A	*	G13-2304-04	CUSHION (RELAY)	
24	2B		E04-0167-15	RF COAXIAL RECEPTACLE (M)		81	2D	*	G13-2312-04	CUSHION (X53A:DCDC-COIL)	
25	1G		E07-0751-15	DIN PLUG (7P) ACCESSORY		82	2B	*	G13-2341-04	CUSHION (TOP FFC)	
27	1G		E07-1351-15	DIN PLUG (13P) ACCESSORY		83	1B,2B	*	G13-2343-04	CUSHION (TOP SHIELD)	
28	3B		E23-1164-04	EARTH LUG (ANT)		85	2G	*	H10-6650-01	POLYSTYRENE FOAMED FIXTURE (F)	
29	2G		E30-3489-15	DC CORD (DC SUPPLY) ACCESSORY		86	2H	*	H10-6651-02	POLYSTYRENE FOAMED FIXTURE (R)	
30	2B	*	E37-0891-25	LEAD WIRE WITH CONNECTOR (EXT.AT)		87	2H	*	H20-1451-04	PROTECTION COVER	
31	2A	*	E37-0959-15	LEAD WIRE WITH CONNECTOR (SP)		88	1G		H25-0029-04	PROTECTION BAG (60/110/0.07)	
-		*	E37-1487-05	LEAD WIRE WITH CONNECTOR (X53A-X45A)		89	2G		H25-0796-04	PROTECTION BAG	
33	2A,3D	*	E37-1488-05	FLAT CABLE (X57A-X45A)		90	1G		H25-2013-04	PROTECTION BAG (80*180 T=0.08)	
34	2A,2C	*	E37-1489-05	FLAT CABLE (X53A-X45A)		91	1H		H25-2352-04	PROTECTION BAG (250/350/0.07)	
35	3A,2C,1F	*	E37-1490-05	FLAT CABLE (X54A-X53A)		92	3G	*	H52-2377-02	ITEM CARTON CASE	K
36	2C,3D	*	E37-1491-05	FLAT CABLE (X57A-X53A)		92	3G	*	H52-2378-02	ITEM CARTON CASE	E
37	2C	*	E37-1492-05	FLAT CABLE (X53A-X53B)		94	1C		J02-0440-04	FOOT (FRONT)	
38	2A,3D	*	E37-1493-05	LEAD WIRE WITH MINIPIN PLUG (TXRF)		95	1A,1B,1D		J02-0441-15	FOOT (SIDE)	
39	1A,3D	*	E37-1494-05	LEAD WIRE WITH MINIPIN PLUG (RAT)		96	1C		J02-0442-04	FOOT (FRONT)	
40	2C,3D	*	E37-1495-05	LEAD WIRE WITH MINIPIN PLUG (LO1)		97	1D		J02-0475-05	FOOT (BACK)	
41	2C,3D	*	E37-1496-05	LEAD WIRE WITH MINIPIN PLUG (LO2)		-			J61-0307-05	BAND	
42	2C,3D	*	E37-1497-05	LEAD WIRE WITH MINIPIN PLUG (LO3)		100	1B		K01-0427-05	HANDLE	
-		*	E37-1499-05	LEAD WIRE WITH CONNECTOR (X57A-X53A)		101	3E	*	K21-1107-13	KNOB (MAIN KNOB)	
-		*	E37-1500-05	LEAD WIRE WITH CONNECTOR (RIF)		102	3F		K29-9390-03	KNOB (INSIDE/NOTCH,AF)	
-		*	E37-1501-05	LEAD WIRE WITH CONNECTOR (TIF)		103	3F	*	K29-9391-13	KNOB (OUTSIDE/SQ,RF)	
-		*	E37-1502-05	LEAD WIRE WITH CONNECTOR (AF)		104	3F	*	K29-9456-23	KNOB (MULTI)	
-		*	E37-1503-05	LEAD WIRE WITH CONNECTOR (PHONE)		105	3E	*	K29-9465-03	KNOB RING (MAIN KNOB)	
-		*	E37-1505-05	LEAD WIRE WITH CONNECTOR (X57A-X57B)		106	2F	*	K29-9466-02	KEY TOP (8KEY)	
-		*	E37-1506-05	LEAD WIRE WITH CONNECTOR (MIC)		107	2F	*	K29-9467-02	KEY TOP (25KEY)	
50	2F	*	E37-1507-05	LEAD WIRE WITH CONNECTOR (MULTI)		108	3F	*	K29-9468-02	KEY TOP (20KEY)	
51	3A,3D	*	E37-1530-05	LEAD WIRE WITH CONNECTOR (NBIF)		109	3F	*	K29-9469-02	KEY TOP (5KEY)	
53	3D		F09-0453-05	CAP (DIN-ACC2,REMOTE)		110	3F	*	K29-9471-03	KNOB (RIT)	
54	3A		F09-0478-05	FANMOTOR		111	3F	*	K29-9477-03	KNOB (INSIDE/HI)	
55	1A		F10-2330-13	SHIELDING COVER (AT)		112	3F	*	K29-9478-03	KNOB (OUTSIDE/LO)	
56	1A		F10-3116-04	SHIELDING COVER (FINAL-RELAY)		114	1G		L79-1408-05	LINE FILTER ACCESSORY	E
57	2B	*	F10-3134-02	SHIELDING PLATE (FINAL)		A	3E	*	N09-6602-05	SPECIAL SCREW (PANEL)	

PARTS LIST

TS-590S FINAL UNIT (X45-391X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
B	3D		N15-1040-48	FLAT WASHER (GND)		C46		*	C93-1807-05	CHIP C	0.01UF J
C	2F		N19-0673-15	SPECIAL WASHER (RIT-ENC)		C47			CK73FB1E104K	CHIP C	0.10UF K
D	1F		N33-2606-43	OVAL HEAD MACHINE SCREW (X54A)		C48,49		*	C93-1807-05	CHIP C	0.01UF J
E	3A,1B,1C,1D		N33-3006-43	OVAL HEAD MACHINE SCREW (CABINET)		C50			CK73GB1H102K	CHIP C	1000PF K
F	2C		N35-2604-43	BINDING HEAD MACHINE SCREW (X53B)		C51			CK73GB1H103K	CHIP C	0.010UF K
G	1C,1D		N35-3008-41	BINDING HEAD MACHINE SCREW (FOOT)		C52			CD04BC1E221M	ELECTRO	220UF 25WV
H	3A		N35-3020-48	BINDING HEAD MACHINE SCREW (FAN)		C53			CK73FB1C105K	CHIP C	1.0UF K
J	3D		N35-4010-48	BINDING HEAD MACHINE SCREW (GND)		C54,55			CK73EB1H104K	CHIP C	0.10UF K
K	1A,2A		N67-2608-48	PAN HEAD SEMS SCREW (FINAL-TR)		C56			CK73GB1H102K	CHIP C	1000PF K
L	3E	*	N77-3006-43	HEXAGON SOCKET HEAD SET SCREW		C57			CK73GB1H103K	CHIP C	0.010UF K
M	2A,2B,2C,3D		N87-2608-48	BRAZIER HEAD TAPTITE SCREW (PCB)		C58			CK73FB1C105K	CHIP C	1.0UF K
116	1G		N99-0331-15	SCREW SET ACCESSORY		C59,60			CM73F2H331J	CHIP C	330PF J
120	2A	*	T07-0765-25	SPEAKER		C62,63			CM73F2H471J	CHIP C	470PF J
121	2G		T91-0352-55	MICROPHONE ACCESSORY		C64,65			CK73FB1E104K	CHIP C	0.10UF K
123	1F		W02-1836-15	ENCODER (MAIN)		C66			CK73EF1V225Z	CHIP C	2.2UF Z
124	2F		W02-3727-05	ENCODER (RIT)		C67			CK73FB1E104K	CHIP C	0.10UF K
D101-115		*	W05-1638-00	X54A SERVICE LED (GREEN) Z		C68		*	C93-1807-05	CHIP C	0.01UF J
D101-115		*	W05-1639-00	X54A SERVICE LED (GREEN)		C69,70			CK73FB1H102K	CHIP C	1000PF K
D123-160		*	W05-1638-00	X54A SERVICE LED (GREEN) Z		C71			C93-0553-05	CHIP C	3.0PF C
D123-160		*	W05-1639-00	X54A SERVICE LED (GREEN)		C72			CK73FB1H103K	CHIP C	0.010UF K
D161-213		*	W05-1636-00	X54A SERVICE LED (AMBER) A		C73			CK73FB1H102K	CHIP C	1000PF K
D161-213		*	W05-1637-00	X54A SERVICE LED (AMBER)		C74			CK73FB1E104K	CHIP C	0.10UF K
D216		*	W05-1638-00	X54A SERVICE LED (GREEN) Z		C75-77			CK73FB1H102K	CHIP C	1000PF K
D216		*	W05-1639-00	X54A SERVICE LED (GREEN)		C101		*	C93-1819-05	CHIP C	470PF J
D217		*	W05-1636-00	X54A SERVICE LED (AMBER) A		C102-110			CK73FB1H103K	CHIP C	0.010UF K
D217		*	W05-1637-00	X54A SERVICE LED (AMBER)		C111			CK73GB1H103K	CHIP C	0.010UF K
FINAL UNIT (X45-391X-XX) 0-11: K 2-71: E						C112-122			CK73FB1H103K	CHIP C	0.010UF K
C1		*	CD04BQ1H220M	ELECTRO	22UF 50WV	C124			CK73FB1E104K	CHIP C	0.10UF K
C2			CD04AY1E470M	ELECTRO	47UF 25WV	C126-131			CK73FB1H103K	CHIP C	0.010UF K
C3		*	CD04BQ1H220M	ELECTRO	22UF 50WV	C132			CK73GB1H103K	CHIP C	0.010UF K
C4			CD04AZ1E471M	ELECTRO	470UF 25WV	C133-135			CK73FB1H103K	CHIP C	0.010UF K
C5			CD04AY1E470M	ELECTRO	47UF 25WV	C151			C93-0555-05	CHIP C	5.0PF C
C6			CD04AZ1E471M	ELECTRO	470UF 25WV	C156			C93-0568-05	CHIP C	47PF J
C7			CD04AY1E470M	ELECTRO	47UF 25WV	C157			C93-0558-05	CHIP C	8.0PF D
C15			CC73GCH1H101J	CHIP C	100PF J	C158,159		*	C93-1811-05	CHIP C	100PF J
C21			CC73GCH1H470J	CHIP C	47PF J	C160		*	C93-1816-05	CHIP C	270PF J
C22			CK73GB1H104K	CHIP C	0.10UF K	C161			C93-0565-05	CHIP C	27PF J
C23			CK73GB1H103K	CHIP C	0.010UF K	C162		*	C93-1816-05	CHIP C	270PF J
C24			CK73FB1E475K	CHIP C	4.7UF K	C163			C93-0558-05	CHIP C	8.0PF D
C25			CK73GB1H104K	CHIP C	0.10UF K	C164			C93-0567-05	CHIP C	39PF J
C27			CK73GB1H104K	CHIP C	0.10UF K	C165			C93-0569-05	CHIP C	56PF J
C29			CK73GB1H103K	CHIP C	0.010UF K	C166			C93-0562-05	CHIP C	15PF J
C30,31			CK73GB1H104K	CHIP C	0.10UF K	C167		*	C93-1820-05	CHIP C	560PF J
C32			CK73GB1E105K	CHIP C	1.0UF K	C168		*	C93-1816-05	CHIP C	270PF J
C33			CK73FB1E475K	CHIP C	4.7UF K	C169			C93-0568-05	CHIP C	47PF J
C34			CC73GCH1H101J	CHIP C	100PF J	C170		*	C93-1816-05	CHIP C	270PF J
C35			CK73GB1H103K	CHIP C	0.010UF K	C171			C93-0569-05	CHIP C	56PF J
C36			CC73GCH1H221J	CHIP C	220PF J	C172		*	C93-1811-05	CHIP C	100PF J
C37			CK73FB1E104K	CHIP C	0.10UF K	C173			CK73GB1H103K	CHIP C	0.010UF K
C38			CK73GB1E105K	CHIP C	1.0UF K	C174		*	C93-1811-05	CHIP C	100PF J
C39			CK73EB1H104K	CHIP C	0.10UF K	C175			C93-0565-05	CHIP C	27PF J
C40			CK73GB1H102K	CHIP C	1000PF K	C176			C93-0567-05	CHIP C	39PF J
C41			CK73FB1E104K	CHIP C	0.10UF K	C177			C93-0559-05	CHIP C	9.0PF D
C42		*	C93-1816-05	CHIP C	270PF J	C178			C93-0570-05	CHIP C	68PF J
C43			CK73FB1H103K	CHIP C	0.010UF K	C179		*	C93-1811-05	CHIP C	100PF J
C44		*	C93-1815-05	CHIP C	220PF J	C180-182		*	C93-1813-05	CHIP C	150PF J
						C183		*	C93-1820-05	CHIP C	560PF J
						C184			C93-0570-05	CHIP C	68PF J
						C185			C93-0566-05	CHIP C	33PF J
						C186,187			C93-0562-05	CHIP C	15PF J

PARTS LIST

FINAL UNIT (X45-391X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C188			C93-0571-05	CHIP C 82PF J		C269			CK73FB1H103K	CHIP C 0.010UF K	
C189			C93-0565-05	CHIP C 27PF J		C270			CK73GB1H103K	CHIP C 0.010UF K	
C190			C93-0563-05	CHIP C 18PF J		C271			C93-0554-05	CHIP C 4.0PF C	
C191			C93-0560-05	CHIP C 10PF D		C272			CC73FCH1H680J	CHIP C 68PF J	
C192			C93-0570-05	CHIP C 68PF J		C273			CK73GB1H103K	CHIP C 0.010UF K	
C193		*	C93-1823-05	CHIP C 1000PF J		C275			CK73FB1H102K	CHIP C 1000PF K	
C194		*	C93-1820-05	CHIP C 560PF J		C277-280			CK73GB1H103K	CHIP C 0.010UF K	
C195		*	C93-1823-05	CHIP C 1000PF J		C281,282			CK73FB1H103K	CHIP C 0.010UF K	
C196		*	C93-1817-05	CHIP C 330PF J		C283			CK73GB1H103K	CHIP C 0.010UF K	
C197		*	C93-1815-05	CHIP C 220PF J		C301			CK73FB1H102K	CHIP C 1000PF K	
C198			CK73GB1H103K	CHIP C 0.010UF K		C302			CK73FB1E104K	CHIP C 0.10UF K	
C199			CK73GB1H104K	CHIP C 0.10UF K		C303,304			CK73FB1H103K	CHIP C 0.010UF K	
C200			C93-0558-05	CHIP C 8.0PF D		C305-316			C91-3115-05	HV C 10PF 2KV	
C201		*	C93-1811-05	CHIP C 100PF J		C317-322			CK73FB1H103K	CHIP C 0.010UF K	
C202		*	C93-1823-05	CHIP C 1000PF J		C323-326			C91-3115-05	HV C 10PF 2KV	
C203			C93-0568-05	CHIP C 47PF J		C327-332			CK73FB1H103K	CHIP C 0.010UF K	
C204		*	C93-1816-05	CHIP C 270PF J		C333,334			C91-3126-05	HV C 10PF 3KV	
C205		*	C93-1815-05	CHIP C 220PF J		C335-340			CK73FB1H103K	CHIP C 0.010UF K	
C206		*	C93-1820-05	CHIP C 560PF J		C341,342			C91-3127-05	HV C 18PF 3KV	
C207		*	C93-1813-05	CHIP C 150PF J		C343-348			CK73FB1H103K	CHIP C 0.010UF K	
C208			CK73GB1H103K	CHIP C 0.010UF K		C349-352			C91-3127-05	HV C 18PF 3KV	
C209		*	C93-1811-05	CHIP C 100PF J		C353-358			CK73FB1H103K	CHIP C 0.010UF K	
C210			C93-0564-05	CHIP C 22PF J		C359-362			C91-3123-05	HV C 150PF 3KV	
C211			C93-0570-05	CHIP C 68PF J		C363-368			CK73FB1H103K	CHIP C 0.010UF K	
C212			C93-0565-05	CHIP C 27PF J		C369,370			C91-3123-05	HV C 150PF 3KV	
C213		*	C93-1812-05	CHIP C 120PF J		C371-376			CK73FB1H103K	CHIP C 0.010UF K	
C214,215			C93-0569-05	CHIP C 56PF J		C377-380			C91-3123-05	HV C 150PF 3KV	
C217			C93-0565-05	CHIP C 27PF J		C381-386			CK73FB1H103K	CHIP C 0.010UF K	
C218			C93-0570-05	CHIP C 68PF J		C501			CK73FB1H103K	CHIP C 0.010UF K	
C219			C93-0571-05	CHIP C 82PF J		C502,503			CK73FB1H102K	CHIP C 1000PF K	
C220,221		*	C93-1811-05	CHIP C 100PF J		C504-506			CC73FCH1H101J	CHIP C 100PF J	
C222			C93-0554-05	CHIP C 4.0PF C		C507			CK73FB1H102K	CHIP C 1000PF K	
C223			C93-0565-05	CHIP C 27PF J		C508			CK73FB1H103K	CHIP C 0.010UF K	
C224			C93-0568-05	CHIP C 47PF J		C510			CK73FB1H103K	CHIP C 0.010UF K	
C225			C93-0565-05	CHIP C 27PF J		C511-514			CK73FB1H102K	CHIP C 1000PF K	
C226			C93-0564-05	CHIP C 22PF J		C515			CC73FCH1H221J	CHIP C 220PF J	
C228		*	C93-1819-05	CHIP C 470PF J		C516			CK73FB1H102K	CHIP C 1000PF K	
C229		*	C93-1812-05	CHIP C 120PF J		C517			CC73FCH1H221J	CHIP C 220PF J	
C230,231		*	C93-1816-05	CHIP C 270PF J		C518,519			CK73GB1H102K	CHIP C 1000PF K	
C232			C93-0565-05	CHIP C 27PF J		C520			CK73FB1H103K	CHIP C 0.010UF K	
C233		*	C93-1823-05	CHIP C 1000PF J		C521			CC73FCH1H221J	CHIP C 220PF J	
C234		*	C93-1816-05	CHIP C 270PF J		C523,524			CC73FCH1H221J	CHIP C 220PF J	
C236		*	C93-1816-05	CHIP C 270PF J		C525-527			CK73FB1H102K	CHIP C 1000PF K	
C237			C93-0568-05	CHIP C 47PF J		C528			CK73GB1H102K	CHIP C 1000PF K	
C238			C93-0564-05	CHIP C 22PF J		C529			CK73FB1H102K	CHIP C 1000PF K	
C239			C93-0568-05	CHIP C 47PF J		C530			CK73GB1H102K	CHIP C 1000PF K	
C240		*	C93-1813-05	CHIP C 150PF J		C531			CK73FB1E104K	CHIP C 0.10UF K	
C241			C93-0565-05	CHIP C 27PF J		C532,533			CK73FB1H102K	CHIP C 1000PF K	
C242			C93-0571-05	CHIP C 82PF J		C534			CK73GB1H103K	CHIP C 0.010UF K	
C243			C93-0563-05	CHIP C 18PF J		C535-537			CC73FCH1H101J	CHIP C 100PF J	
C252			CK73FB1H102K	CHIP C 1000PF K		C538,539			CK73FB1H103K	CHIP C 0.010UF K	
C253,254			CK73GB1H103K	CHIP C 0.010UF K		C540-542			CC73FCH1H101J	CHIP C 100PF J	
C255			C93-0554-05	CHIP C 4.0PF C		C543,544			CK73FB1H103K	CHIP C 0.010UF K	
C256			CC73FCH1H470J	CHIP C 47PF J		C545,546			CC73GCH1H221J	CHIP C 220PF J	
C258,259			CK73GB1H103K	CHIP C 0.010UF K		C547			C93-0564-05	CHIP C 22PF J	
C260			CC73GCH1H470J	CHIP C 47PF J		TC1			C05-0370-05	CERAMIC TRIMMER CAPACITOR (20P)	
C263,264			CK73GB1H103K	CHIP C 0.010UF K		CN2			E04-0154-05	PIN SOCKET	
C265			CC73GCH1H080D	CHIP C 8.0PF D		CN3			E40-6528-05	PIN ASSY	
C266			CC73GCH1H470J	CHIP C 47PF J		CN4			E40-6526-05	PIN ASSY	
C267			CK73GB1H102K	CHIP C 1000PF K							

PARTS LIST

FINAL UNIT (X45-391X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
CN5		*	E40-6873-05	FLAT CABLE CONNECTOR		L50			L34-4628-05	AIR-CORE COIL	
CN6,7			E41-1682-05	PIN ASSY		L51,52			L34-4490-05	AIR-CORE COIL	
CN8			E40-6525-05	PIN ASSY		L53		*	L39-1568-05	TOROIDAL COIL	
CN9		*	E40-6881-05	FLAT CABLE CONNECTOR		L101-109			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
CN10,11			E04-0154-05	PIN SOCKET		L251			L33-0695-05	SMALL FIXED INDUCTOR (1000UH)	
CN51			E04-0190-05	PIN SOCKET		L252		*	L41-1585-32	SMALL FIXED INDUCTOR (0.15UH)	
CN52			E41-1682-05	PIN ASSY		L254			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
CN259,260			E23-1310-05	TEST TERMINAL		L255			L33-0695-05	SMALL FIXED INDUCTOR (1000UH)	
CN529			E23-1310-05	TEST TERMINAL		L257			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
W1	2B	*	E37-1480-05	LEAD WIRE WITH TERMINAL		L259,260			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
W2	2A	*	E37-1508-15	LEAD WIRE WITH MINIPIN PLUG		L304			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
W3	1A	*	E37-1479-15	LEAD WIRE WITH MINIPIN PLUG		L306-308			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
W6		*	E37-1486-05	LEAD WIRE WITH CONNECTOR		L310-312			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
F1			F53-0391-05	FUSE (UL,CSA) (10A)		L314-316			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
F2		*	F53-0401-05	FUSE (5A)		L318-320			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
F3			F53-0306-05	FUSE (UL,CSA) (5A)		L322-324			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
F4	2A		F52-0038-05	FUSE (BLADE TYPE) (4A/32V)		L326-328			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
CN21,22			J13-0410-05	FUSE HOLDER		L330-332			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
L2,3			L92-0447-05	BEADS CORE		L334-336			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
L4		*	L33-1552-05	SMALL FIXED INDUCTOR (22UH)		L501,502			L41-1005-33	SMALL FIXED INDUCTOR (10UH)	
L5			L41-2775-33	SMALL FIXED INDUCTOR (0.027UH)		L503,504			L92-0641-05	FERRITE CORE	
L6,7			L92-0641-05	FERRITE CORE		L505-507			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
L8			L39-1434-25	TOROIDAL COIL		L508			L41-4785-33	SMALL FIXED INDUCTOR (0.47UH)	
L9			L39-1451-05	TOROIDAL COIL		L509			L34-4811-05	AIR-CORE COIL	
L10		*	L39-1569-05	TOROIDAL COIL		R1			RK73EB2E101J	CHIP R 100 J 1/4W	
L11		*	L34-4928-05	COIL		R2			RK73GB2A680J	CHIP R 68 J 1/10W	
L15		*	L39-1550-05	TOROIDAL COIL		R3			RK73GB2A121J	CHIP R 120 J 1/10W	
L16			L39-0421-04	COIL		R4			RK73GB2A470J	CHIP R 47 J 1/10W	
L17		*	L34-4925-05	AIR-CORE COIL		R5			RK73GB2A471J	CHIP R 470 J 1/10W	
L18			L39-1456-15	TOROIDAL COIL		R6			RK73GB2A472J	CHIP R 4.7K J 1/10W	
L19			L34-1282-05	AIR-CORE COIL		R7			RK73GB2A100J	CHIP R 10 J 1/10W	
L20		*	L34-4926-05	AIR-CORE COIL		R8			R92-3625-05	RESISTOR 0.1 J 0.33W	
L21			L39-1259-15	TOROIDAL COIL		R9			RK73FB2B221J	CHIP R 220 J 1/8W	
L22		*	L39-1547-05	TOROIDAL COIL		R10			RK73FB2B000J	CHIP R 0.0 J 1/8W	
L23			L34-1282-05	AIR-CORE COIL		R11			RK73FB2B121J	CHIP R 120 J 1/8W	
L24,25			L39-1457-15	TOROIDAL COIL		R12			RK73EB2E330J	CHIP R 33 J 1/4W	
L26			L39-1221-15	TOROIDAL COIL		R13			RK73GB2A472J	CHIP R 4.7K J 1/10W	
L27			L39-1519-15	TOROIDAL COIL		R14			RK73EB2E5R6J	CHIP R 5.6 J 1/4W	
L28		*	L39-1570-05	TOROIDAL COIL		R15,16			R92-3625-05	RESISTOR 0.1 J 0.33W	
L29		*	L39-1549-05	TOROIDAL COIL		R17			RS14DB3A151J	FL-PROOF RS 150 J 1W	
L30			L39-1260-15	TOROIDAL COIL		R18,19			RK73FB2B102J	CHIP R 1.0K J 1/8W	
L31		*	L39-1546-05	TOROIDAL COIL		R20,21			RS14DB3A470J	FL-PROOF RS 47 J 1W	
L32			L39-1405-15	TOROIDAL COIL		R22,23			RK73FB2B152J	CHIP R 1.5K J 1/8W	
L33			L39-1457-15	TOROIDAL COIL		R24			RK73FB2B471J	CHIP R 470 J 1/8W	
L34			L39-1221-15	TOROIDAL COIL		R25,26			RK73FB2B472J	CHIP R 4.7K J 1/8W	
L35		*	L34-4925-05	AIR-CORE COIL		R27-32			RK73EB2E1R0J	CHIP R 1.0 J 1/4W	
L36			L34-1281-05	AIR-CORE COIL		R33,34			RS14DB3D180J	FL-PROOF RS 18 J 2W	
L37			L39-1456-15	TOROIDAL COIL		R35			RK73FB2B471J	CHIP R 470 J 1/8W	
L38		*	L34-4927-05	AIR-CORE COIL		R36			RS14DB3A4R7J	FL-PROOF RS 4.7 J 1W	
L39			L34-1231-15	AIR-CORE COIL		R37		*	R92-3632-05	RESISTOR 0.001 J 1W	
L40			L39-0480-15	TOROIDAL COIL		R50,51		*	R92-0150-05	JUMPER REST 0 OHM	
L41			L39-1442-05	TOROIDAL COIL		R55			RS14DB3D8R2J	FL-PROOF RS 8.2 J 2W	
L42			L39-1443-05	TOROIDAL COIL		R56			RS14DB3D470J	FL-PROOF RS 47 J 2W	
L43		*	L33-1488-05	SMALL FIXED INDUCTOR (10UH)		R101			RK73GB2A222J	CHIP R 2.2K J 1/10W	
L44,45			L39-1440-15	TOROIDAL COIL		R102			RK73GH2A152D	CHIP R 1.5K D 1/10W	
L46			L34-4633-05	AIR-CORE COIL		R104,105			RK73GB2A103J	CHIP R 10K J 1/10W	
L47			L34-4630-05	AIR-CORE COIL		R251			RK73FB2B103J	CHIP R 10K J 1/8W	
L48,49			L34-4490-05	AIR-CORE COIL		R252,253			RK73GB2A102J	CHIP R 1.0K J 1/10W	
						R254,255			RK73FB2B101J	CHIP R 100 J 1/8W	

PARTS LIST

FINAL UNIT (X45-391X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R256			RK73FB2B100J	CHIP R 10 J 1/8W		K44,45			S76-0424-05	RELAY	
R257,258			RK73GB2A104J	CHIP R 100K J 1/10W		K46			S76-0402-05	RELAY	
R259,260			RK73GB2A103J	CHIP R 10K J 1/10W		D1,2			DAN202U	DIODE	
R261,262			RK73GB2A471J	CHIP R 470 J 1/10W		D51,52			DSA301LA	DIODE	
R263,264			RK73GB2A102J	CHIP R 1.0K J 1/10W		D101			Z5W27V	SURGE ABSORBER	
R265,266			RK73RB2H330J	CHIP R 33 J 1/2W		D102			DAN202U	DIODE	
R267,268			RK73GB2A105J	CHIP R 1.0M J 1/10W		D103-108	*		MC2858-T111	DIODE	
R269			RK73FB2B000J	CHIP R 0.0 J 1/8W		D109			DAN202U	DIODE	
R270			RK73FB2B103J	CHIP R 10K J 1/8W		D110	*		MC2858-T111	DIODE	
R271			RK73FB2B000J	CHIP R 0.0 J 1/8W		D111	*		DZ2S160M	ZENER DIODE	
R272			RK73GB2A223J	CHIP R 22K J 1/10W		D251,252			HSM88ASR-E	DIODE	
R273			R92-1316-05	CHIP R 39 J 1W		D253			1SS348-F	DIODE	
R274,275			RK73GB2A103J	CHIP R 10K J 1/10W		D254	*		MC2858-T111	DIODE	
R276			RK73FB2B101J	CHIP R 100 J 1/8W		D255			1SS348-F	DIODE	
R277			RK73GB2A223J	CHIP R 22K J 1/10W		D256			DAN202U	DIODE	
R278,279			RK73FB2B101J	CHIP R 100 J 1/8W		D257	*		MC2858-T111	DIODE	
R280-283			RK73FB2B104J	CHIP R 100K J 1/8W		D258			EDZ5.1B	ZENER DIODE	
R284			RK73GB2A103J	CHIP R 10K J 1/10W		D301,302	*		MC2858-T111	DIODE	
R285			RK73GB2A222J	CHIP R 2.2K J 1/10W		D303-306			DAN202U	DIODE	
R501-503			RK73FB2B101J	CHIP R 100 J 1/8W		D307,308	*		MC2858-T111	DIODE	
R513-515			RK73GB2A101J	CHIP R 100 J 1/10W		D309,310			DAN202U	DIODE	
R518,519			RK73GB2A101J	CHIP R 100 J 1/10W		D311	*		MC2858-T111	DIODE	
R520			RK73PB2H2R2J	CHIP R 2.2 J 1/2W		D312-315			DAN202U	DIODE	
R521			RK73GB2A223J	CHIP R 22K J 1/10W		D316,317	*		MC2858-T111	DIODE	
R522			RK73GB2A103J	CHIP R 10K J 1/10W		D318,319			DAN202U	DIODE	
R523,524			RK73GB2A102J	CHIP R 1.0K J 1/10W		D320	*		MC2858-T111	DIODE	
R525-527			RK73FB2B101J	CHIP R 100 J 1/8W		D321,322			DAN202U	DIODE	
R528			RK73GB2A104G	CHIP R 100K G 1/10W		D323	*		MC2858-T111	DIODE	
R529			RK73GB2A103J	CHIP R 10K J 1/10W		D324,325			DAN202U	DIODE	
R530-532			RK73FB2B101J	CHIP R 100 J 1/8W		D501			DAN202U	DIODE	
R533-536			RK73EB2E000J	CHIP R 0.0 J 1/4W		D502,503			DA221	DIODE	
R540,541			RK73GB2A221J	CHIP R 220 J 1/10W		IC1			TC74HC4094AFF	MOS-IC	
R542			RK73FB2B101J	CHIP R 100 J 1/8W		IC2,3			TC7SHU04F-F	MOS-IC	
R543,544			RK73GB2A100J	CHIP R 10 J 1/10W		IC4	*		INA193AIDBVT	ANALOGUE IC	
VR1,2		*	R12-6736-05	TRIMMING POT. (2.2K)		IC5			TA75S393F-F	MOS-IC	
VR3,4			R12-6740-05	TRIMMING POT. (10K)		IC6			TC7WH74FU-F	MOS-IC	
VR5			R12-6742-05	TRIMMING POT. (22K)		IC7-10			TC74HC4094AFF	MOS-IC	
K1,2			S51-1420-05	RELAY		Q1			RD06HHF1-102	FET	
K3-9			S76-0423-05	RELAY		Q2			RD16HHF1-102	FET	
K10			S51-1420-05	RELAY		Q3,4			RD100HHF1-102	FET	
K11-16			S76-0423-05	RELAY		Q5	*		TPCA8104	FET	
K17			S51-1420-05	RELAY		Q101			2SC5383-T111	TRANSISTOR	
K18			S76-0423-05	RELAY		Q251,252	*		2SK1740-4	FET	
K19,20			S76-0415-05	RELAY		Q253	*		RT5P431C-T112	TRANSISTOR	
K21,22			S76-0460-05	RELAY		Q254			2SC5383-T111	TRANSISTOR	
K23			S76-0415-05	RELAY		Q501-508	*		RT1N234U-T111	TRANSISTOR	
K24,25			S76-0460-05	RELAY		Q509,510	*		RT5P431C-T112	TRANSISTOR	
K26			S76-0415-05	RELAY		Q511	*		RT1N234U-T111	TRANSISTOR	
K27,28			S76-0460-05	RELAY		Q513	*		RT1N234U-T111	TRANSISTOR	
K29			S76-0415-05	RELAY		Q514	*		RT5P431C-T112	TRANSISTOR	
K30,31			S76-0460-05	RELAY		Q515-524	*		RT1N234U-T111	TRANSISTOR	
K32			S76-0415-05	RELAY		Q525,526	*		INK0010AU1-T1	FET	
K33,34			S76-0460-05	RELAY		Q527-544	*		RT1N234U-T111	TRANSISTOR	
K35			S76-0415-05	RELAY		TH1			NCP18XH103F0S	THERMISTOR	
K36,37			S76-0460-05	RELAY							
K38			S76-0415-05	RELAY							
K39,40			S76-0460-05	RELAY							
K41			S76-0415-05	RELAY							
K42,43			S76-0460-05	RELAY							

PARTS LIST

CONTROL UNIT (X53-446X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
CONTROL UNIT (X53-446X-XX) 0-11: K 2-71: E						C106			CK73GB1H223K	CHIP C	0.022UF K
C1			CK73GB1H104K	CHIP C	0.10UF K	C107			CK73GB1H104K	CHIP C	0.10UF K
C2			CK73EB1E225K	CHIP C	2.2UF K	C109			CK73GB1E105K	CHIP C	1.0UF K
C3,4		*	CD04BQ1V101M	ELECTRO	100UF 35WV	C110			CK73GB1H332K	CHIP C	3300PF K
C5-7			CK73EB1E225K	CHIP C	2.2UF K	C111,112			CK73GB1H104K	CHIP C	0.10UF K
C8			CK73GB1H102K	CHIP C	1000PF K	C113			CK73GB1H152K	CHIP C	1500PF K
C9			CK73GB1A474K	CHIP C	0.47UF K	C114,115			CK73GB1E105K	CHIP C	1.0UF K
C10			CK73GB1C225K	CHIP C	2.2UF K	C116			CK73GB1H103K	CHIP C	0.010UF K
C11			CC73GCH1H101J	CHIP C	100PF J	C117,118			CK73GB1H222K	CHIP C	2200PF K
C12			CK73EB1E225K	CHIP C	2.2UF K	C119,120			CK73GB1H104K	CHIP C	0.10UF K
C13			CC73GCH1H471J	CHIP C	470PF J	C121,122			CC73GCH1H471J	CHIP C	470PF J
C14-16			CK73EB1E106K	CHIP C	10UF K	C123			CK73GB1H103K	CHIP C	0.010UF K
C17			CK73GB1H104K	CHIP C	0.10UF K	C126			CK73FB0J106K	CHIP C	10UF K
C18-21		*	CD04BQ1V101M	ELECTRO	100UF 35WV	C127			CK73GB1H104K	CHIP C	0.10UF K
C22-24			CK73EB1E225K	CHIP C	2.2UF K	C128			CK73GB1H122K	CHIP C	1200PF K
C25			CK73GB1H102K	CHIP C	1000PF K	C129			CK73GB1H104K	CHIP C	0.10UF K
C26			CK73GB1A474K	CHIP C	0.47UF K	C130			CC73GCH1H560J	CHIP C	56PF J
C27			CK73GB1C225K	CHIP C	2.2UF K	C131,132			CK73FB0J106K	CHIP C	10UF K
C28			CC73GCH1H101J	CHIP C	100PF J	C133			CK73GB1H103K	CHIP C	0.010UF K
C29			CC73GCH1H471J	CHIP C	470PF J	C134,135			CC73GCH1H821J	CHIP C	820PF J
C30			CK73EB1E106K	CHIP C	10UF K	C136,137			CK73GB1H104K	CHIP C	0.10UF K
C31-33			CK73GB1H104K	CHIP C	0.10UF K	C138,139			CC73GCH1H121J	CHIP C	120PF J
C34			CK73GB1H104K	CHIP C	0.10UF K	C140			CK73GB1H103K	CHIP C	0.010UF K
C35,36		*	CD04BQ1V101M	ELECTRO	100UF 35WV	C145			CK73GB1H104K	CHIP C	0.10UF K
C37			CK73GB1H103K	CHIP C	0.010UF K	C146			CK73FB0J106K	CHIP C	10UF K
C38			CK73GB1E105K	CHIP C	1.0UF K	C147			CK73GB1H104K	CHIP C	0.10UF K
C39			CK73EB1A106K	CHIP C	10UF K	C148			CK73FB0J106K	CHIP C	10UF K
C41			CK73GB1H104K	CHIP C	0.10UF K	C149			CC73GCH1H470J	CHIP C	47PF J
C42			CK73GB1E105K	CHIP C	1.0UF K	C150			CK73GB1H222K	CHIP C	2200PF K
C43			CK73GB1H104K	CHIP C	0.10UF K	C151			CK73GB1C224K	CHIP C	0.22UF K
C44			C92-0889-05	ELECTRO	330UF 6.3WV	C152,153			CK73GB1H104K	CHIP C	0.10UF K
C45			CK73GB1H104K	CHIP C	0.10UF K	C154,155			CK73FB0J106K	CHIP C	10UF K
C46			CK73GB1E105K	CHIP C	1.0UF K	C156			CD04AZ1E221M	ELECTRO	220UF 25WV
C47			CK73GB1H104K	CHIP C	0.10UF K	C157			CD04AZ1E471M	ELECTRO	470UF 25WV
C48			CE32CL1C470M	CHIP EL	47UF 16WV	C158		*	C90-4155-05	ELECTRO	1000UF 16WV
C49			CK73GB1H104K	CHIP C	0.10UF K	C159			CK73GB1H104K	CHIP C	0.10UF K
C50			CK73GB1H102K	CHIP C	1000PF K	C160			CE32CL1H4R7M	CHIP EL	4.7UF 50WV
C51			CK73GB1H104K	CHIP C	0.10UF K	C161			CK73GB1H473K	CHIP C	0.047UF K
C52-54			CK73EB1E106K	CHIP C	10UF K	C162			CK73GB1E105K	CHIP C	1.0UF K
C55-62			CK73GB1E105K	CHIP C	1.0UF K	C163			CK73GB1H182K	CHIP C	1800PF K
C63,64			CK73GB1H104K	CHIP C	0.10UF K	C164			CK73GB1H103K	CHIP C	0.010UF K
C65			CK73GB1E105K	CHIP C	1.0UF K	C166			CK73GB1C225K	CHIP C	2.2UF K
C66-69			CK73GB1H102K	CHIP C	1000PF K	C167			CK73GB1H222K	CHIP C	2200PF K
C70			CK73GB1A105K	CHIP C	1.0UF K	C168			CK73GB1H122K	CHIP C	1200PF K
C71-77			CK73GB1H102K	CHIP C	1000PF K	C169,170			CK73GB1H104K	CHIP C	0.10UF K
C78			CK73GB1E105K	CHIP C	1.0UF K	C171			CC73GCH1H331J	CHIP C	330PF J
C79			CK73GB1H102K	CHIP C	1000PF K	C172			CC73GCH1H470J	CHIP C	47PF J
C80			CK73FB0J106K	CHIP C	10UF K	C173			CK73GB1C225K	CHIP C	2.2UF K
C81			CK73GB1H102K	CHIP C	1000PF K	C174			CK73GB1E105K	CHIP C	1.0UF K
C82			CK73FB0J106K	CHIP C	10UF K	C175			CC73GCH1H331J	CHIP C	330PF J
C83			CK73GB1E105K	CHIP C	1.0UF K	C176			CC73GCH1H101J	CHIP C	100PF J
C84-86			CK73GB1H102K	CHIP C	1000PF K	C177,178			CK73GB1H103K	CHIP C	0.010UF K
C87			CK73GB1E105K	CHIP C	1.0UF K	C179,180			CK73GB1H104K	CHIP C	0.10UF K
C88			CK73GB1H102K	CHIP C	1000PF K	C181			CK73GB1H222K	CHIP C	2200PF K
C90-93			CK73GB1H102K	CHIP C	1000PF K	C182			CC73GCH1H681J	CHIP C	680PF J
C96,97			CD04AZ1E471M	ELECTRO	470UF 25WV	C183			CK73GB1C225K	CHIP C	2.2UF K
C98,99			CK73FB1E104K	CHIP C	0.10UF K	C184			CK73GB1E105K	CHIP C	1.0UF K
C100			CK73GB1H223K	CHIP C	0.022UF K	C185			CK73GB1H103K	CHIP C	0.010UF K
C102			CK73GB1H104K	CHIP C	0.10UF K	C186			CC73GCH1H221J	CHIP C	220PF J
C104			CK73GB1H103K	CHIP C	0.010UF K	C187			CC73GCH1H681J	CHIP C	680PF J

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Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C188			CC73GCH1H680J	CHIP C 68PF J		C259			CK73GB1E105K	CHIP C 1.0UF K	
C189			CC73GCH1H101J	CHIP C 100PF J		C260			CC73GCH1H471J	CHIP C 470PF J	
C190			CK73GB1H152K	CHIP C 1500PF K		C261			CK73GB1H104K	CHIP C 0.10UF K	
C191			CC73GCH1H331J	CHIP C 330PF J		C262			CK73GB1H222K	CHIP C 2200PF K	
C192			CK73GB1H104K	CHIP C 0.10UF K		C263,264			CK73GB1E105K	CHIP C 1.0UF K	
C193			CK73FB0J106K	CHIP C 10UF K		C265			CK73GB1H222K	CHIP C 2200PF K	
C196			CK73GB1H102K	CHIP C 1000PF K		C266			CK73GB1H103K	CHIP C 0.010UF K	
C197			CK73GB1C225K	CHIP C 2.2UF K		C267			CK73GB1H104K	CHIP C 0.10UF K	
C198			CK73GB1A105K	CHIP C 1.0UF K		C268			CC73GCH1H471J	CHIP C 470PF J	
C199,200			CK73GB1C225K	CHIP C 2.2UF K		C269			CK73GB1E105K	CHIP C 1.0UF K	
C201			CK73GB1H332K	CHIP C 3300PF K		C270			CC73GCH1H471J	CHIP C 470PF J	
C202			CK73GB1H104K	CHIP C 0.10UF K		C271			CK73GB1H104K	CHIP C 0.10UF K	
C203			CC73GCH1H331J	CHIP C 330PF J		C272			CK73GB1H222K	CHIP C 2200PF K	
C204			CK73GB1C225K	CHIP C 2.2UF K		C273			CK73GB1E105K	CHIP C 1.0UF K	
C205			CC73GCH1H331J	CHIP C 330PF J		C274			CK73GB1H104K	CHIP C 0.10UF K	
C206			CK73GB1H104K	CHIP C 0.10UF K		C275			CK73FB0J106K	CHIP C 10UF K	
C207			CK73GB1H103K	CHIP C 0.010UF K		C276			CK73GB1H104K	CHIP C 0.10UF K	
C208			CK73GB1H332K	CHIP C 3300PF K		C277			CK73FB0J106K	CHIP C 10UF K	
C209			CK73GB1C225K	CHIP C 2.2UF K		C278			CK73GB1H104K	CHIP C 0.10UF K	
C210			CK73GB1E105K	CHIP C 1.0UF K		C279			CK73FB0J106K	CHIP C 10UF K	
C211			CK73GB1H222K	CHIP C 2200PF K		C280			CK73GB1H104K	CHIP C 0.10UF K	
C212			CK73GB1H104K	CHIP C 0.10UF K		C281			CK73FB0J106K	CHIP C 10UF K	
C213			CC73GCH1H471J	CHIP C 470PF J		C283			CK73GB1H104K	CHIP C 0.10UF K	
C214			CK73GB1E105K	CHIP C 1.0UF K		C285			CK73GB1H104K	CHIP C 0.10UF K	
C215			CC73GCH1H471J	CHIP C 470PF J		C286,287			CK73EB1A106K	CHIP C 10UF K	
C216			CK73GB1H104K	CHIP C 0.10UF K		C289			CK73FB0J106K	CHIP C 10UF K	
C217			CK73GB1H103K	CHIP C 0.010UF K		C290,291			CK73GB1E105K	CHIP C 1.0UF K	
C218			CK73GB1H222K	CHIP C 2200PF K		C292			CK73FB0J106K	CHIP C 10UF K	
C219			CK73GB1E105K	CHIP C 1.0UF K		C293			CK73GB1H103K	CHIP C 0.010UF K	
C220			CK73FB0J106K	CHIP C 10UF K		C295			CE32BM1C101M	CHIP EL 100UF 16WV	
C221			CK73GB1H104K	CHIP C 0.10UF K		C297		*	CD04B01C471M	ELECTRO 470UF 16WV	
C222			CK73FB0J106K	CHIP C 10UF K		C299,300			CK73GB1H102K	CHIP C 1000PF K	
C225			CK73GB1E105K	CHIP C 1.0UF K		C301		*	CD04B01C471M	ELECTRO 470UF 16WV	
C226			CC73GCH1H821J	CHIP C 820PF J		C302-304			CC73GCH1H101J	CHIP C 100PF J	
C227			CK73GB1H104K	CHIP C 0.10UF K		C305			C93-0912-05	CHIP C 100UF M	
C228			CC73GCH1H151J	CHIP C 150PF J		C306-308			CK73GB1H104K	CHIP C 0.10UF K	
C229			CK73GB1E105K	CHIP C 1.0UF K		C310-313			CK73GB1H104K	CHIP C 0.10UF K	
C230			CC73GCH1H151J	CHIP C 150PF J		C314,315			CC73GCH1H101J	CHIP C 100PF J	
C231			CK73GB1H104K	CHIP C 0.10UF K		C316-319			CK73GB1H104K	CHIP C 0.10UF K	
C232			CK73GB1H103K	CHIP C 0.010UF K		C320			CK73GB1H102K	CHIP C 1000PF K	
C233			CC73GCH1H821J	CHIP C 820PF J		C321-324			CK73GB1H104K	CHIP C 0.10UF K	
C234			CK73GB1E105K	CHIP C 1.0UF K		C325			CC73GCH1H471J	CHIP C 470PF J	
C235			CK73GB1H103K	CHIP C 0.010UF K		C326			CC73GCH1H050B	CHIP C 5.0PF B	
C236			CK73GB1H104K	CHIP C 0.10UF K		C327			CK73GB1H104K	CHIP C 0.10UF K	
C237			CK73FB0J106K	CHIP C 10UF K		C328			CC73GCH1H050B	CHIP C 5.0PF B	
C239			CK73GB1H102K	CHIP C 1000PF K		C329			CC73GCH1H471J	CHIP C 470PF J	
C240			CK73GB1H104K	CHIP C 0.10UF K		C330-344			CK73GB1H104K	CHIP C 0.10UF K	
C241-243			CK73FB0J106K	CHIP C 10UF K		C345,346			CK73GB1H102K	CHIP C 1000PF K	
C244			CK73GB1H104K	CHIP C 0.10UF K		C347			CK73GB1H104K	CHIP C 0.10UF K	
C247			CK73GB1H104K	CHIP C 0.10UF K		C348,349			CC73GCH1H030B	CHIP C 3.0PF B	
C248			CK73FB0J106K	CHIP C 10UF K		C350			CK73GB1E105K	CHIP C 1.0UF K	
C249			CK73GB1H222K	CHIP C 2200PF K		C351			CK73GB1H102K	CHIP C 1000PF K	
C250			CK73GB1E105K	CHIP C 1.0UF K		C352-362			CK73GB1H104K	CHIP C 0.10UF K	
C251			CC73GCH1H331J	CHIP C 330PF J		C363			CK73GB1E105K	CHIP C 1.0UF K	
C252,253			CK73GB1H103K	CHIP C 0.010UF K		C364			CK73GB1H104K	CHIP C 0.10UF K	
C254			CK73GB1E105K	CHIP C 1.0UF K		C365,366			CK73GB1E105K	CHIP C 1.0UF K	
C255			CK73GB1H222K	CHIP C 2200PF K		C367,368			CK73GB1H102K	CHIP C 1000PF K	
C256			CK73GB1H103K	CHIP C 0.010UF K		C371			CK73GB1H102K	CHIP C 1000PF K	
C257			CK73GB1H104K	CHIP C 0.10UF K		C373			CK73GB1H102K	CHIP C 1000PF K	
C258			CC73GCH1H471J	CHIP C 470PF J		C375			CK73GB1H102K	CHIP C 1000PF K	

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Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C377			CK73GB1H102K	CHIP C 1000PF K		C534,535			CC73GCH1H101J	CHIP C 100PF J	
C379,380			CC73GCH1H331J	CHIP C 330PF J		C536,537			CK73GB1H103K	CHIP C 0.010UF K	
C381,382			CC73GCH1H101J	CHIP C 100PF J		C538			CS77BA1A100M	CHIP TNL 10UF 10WV	
C385			CK73GB1H102K	CHIP C 1000PF K		C539			CK73GB1H103K	CHIP C 0.010UF K	
C386-388			CK73GB1H222K	CHIP C 2200PF K		C540			CC73GCH1H080B	CHIP C 8.0PF B	
C389-391			CK73GB1H102K	CHIP C 1000PF K		C542			CC73GCH1H151J	CHIP C 150PF J	
C392			CK73GB1H222K	CHIP C 2200PF K		C543			CC73GCH1H390J	CHIP C 39PF J	
C393-395			CK73GB1H102K	CHIP C 1000PF K		C544,545			CK73GB1H103K	CHIP C 0.010UF K	
C396			CK73GB1H222K	CHIP C 2200PF K		C546			CC73GCH1H050B	CHIP C 5.0PF B	
C397			CK73GB1H102K	CHIP C 1000PF K		C547			CK73GB1H103K	CHIP C 0.010UF K	
C399			CK73GB1H102K	CHIP C 1000PF K		C548			CK73GB1H473K	CHIP C 0.047UF K	
C400			CK73GB1H222K	CHIP C 2200PF K		C549			CC73GCH1H470J	CHIP C 47PF J	
C402			CK73GB1H102K	CHIP C 1000PF K		C550			CK73GB1H103K	CHIP C 0.010UF K	
C403			CK73GB1H222K	CHIP C 2200PF K		C551			CC73GCH1H470J	CHIP C 47PF J	
C404-406			CK73GB1H102K	CHIP C 1000PF K		C552			CK73GB1H103K	CHIP C 0.010UF K	
C407			CK73GB1H222K	CHIP C 2200PF K		C553			CC73GCH1H390J	CHIP C 39PF J	
C408			CK73GB1H102K	CHIP C 1000PF K		C554			CC73GCH1H040B	CHIP C 4.0PF B	
C409			CK73GB1H222K	CHIP C 2200PF K		C555			CK73GB1H391K	CHIP C 390PF K	
C416,417			CK73GB1H102K	CHIP C 1000PF K		C556			CC73GCH1H150J	CHIP C 15PF J	
C418			CK73GB1H222K	CHIP C 2200PF K		C557			CC73GCH1H821J	CHIP C 820PF J	
C419-422			CK73GB1H102K	CHIP C 1000PF K		C558			CC73GCH1H150J	CHIP C 15PF J	
C423,424			CK73GB1H222K	CHIP C 2200PF K		C559			CK73GB1H391K	CHIP C 390PF K	
C425			CK73GB1H102K	CHIP C 1000PF K		C560			CK73GB1H103K	CHIP C 0.010UF K	
C426			CK73GB1H222K	CHIP C 2200PF K		C561			CC73GCH1H101J	CHIP C 100PF J	
C427			CK73GB1E105K	CHIP C 1.0UF K		C562			CK73GB1H472K	CHIP C 4700PF K	
C428			CK73GB1H102K	CHIP C 1000PF K		C563			CK73GB1H473K	CHIP C 0.047UF K	
C429			CK73GB1E105K	CHIP C 1.0UF K		C564			CK73GB1H102K	CHIP C 1000PF K	
C430			CK73GB1H102K	CHIP C 1000PF K		C565			CK73GB1H472K	CHIP C 4700PF K	
C437			CK73GB1H102K	CHIP C 1000PF K		C566			CK73GB1H473K	CHIP C 0.047UF K	
C439			CK73GB1H102K	CHIP C 1000PF K		C567			CK73GB1H102K	CHIP C 1000PF K	
C441			CK73GB1H102K	CHIP C 1000PF K		C568			CC73GCH1H680J	CHIP C 68PF J	
C445			CK73GB1H102K	CHIP C 1000PF K		C569			CC73GCH1H120J	CHIP C 12PF J	
C450			CK73GB1H102K	CHIP C 1000PF K		C570			CC73GCH1H271J	CHIP C 270PF J	
C453			CK73GB1H102K	CHIP C 1000PF K		C571			CC73GCH1H080B	CHIP C 8.0PF B	
C455			CK73GB1H102K	CHIP C 1000PF K		C572			CC73GCH1H271J	CHIP C 270PF J	
C457			CK73GB1H102K	CHIP C 1000PF K		C573			CC73GCH1H120J	CHIP C 12PF J	
C460			CK73GB1H102K	CHIP C 1000PF K		C574			CC73GCH1H680J	CHIP C 68PF J	
C465			CK73GB1E105K	CHIP C 1.0UF K		C575			CK73GB1H102K	CHIP C 1000PF K	
C466			CK73GB1H102K	CHIP C 1000PF K		C576			CK73GB1H103K	CHIP C 0.010UF K	
C467			CK73GB1E105K	CHIP C 1.0UF K		C577			CK73GB1H102K	CHIP C 1000PF K	
C468			CK73GB1H102K	CHIP C 1000PF K		C578			CK73GB1H472K	CHIP C 4700PF K	
C469			CK73GB1E105K	CHIP C 1.0UF K		C579			CK73GB1H473K	CHIP C 0.047UF K	
C470			CK73GB1H102K	CHIP C 1000PF K		C580			CK73GB1H102K	CHIP C 1000PF K	
C471			CK73GB1H104K	CHIP C 0.10UF K		C581			CC73GCH1H390J	CHIP C 39PF J	
C473			CK73GB1E105K	CHIP C 1.0UF K		C582			CC73GCH1H680J	CHIP C 68PF J	
C474,475			CK73GB1H102K	CHIP C 1000PF K		C583			CC73GCH1H390J	CHIP C 39PF J	
C483			CK73GB1H104K	CHIP C 0.10UF K		C584,585			CK73GB1H102K	CHIP C 1000PF K	
C486-488			CK73GB1H104K	CHIP C 0.10UF K		C586			CC73GCH1H560J	CHIP C 56PF J	
C489			CK73GB1E105K	CHIP C 1.0UF K		C588			CK73GB1A105K	CHIP C 1.0UF K	
C490			C93-0912-05	CHIP C 100UF M		C589			CK73GB1H103K	CHIP C 0.010UF K	
C491-493			CK73GB1H104K	CHIP C 0.10UF K		C590			CE32CL1H4R7M	CHIP EL 4.7UF 50WV	
C494			CK73GB1H102K	CHIP C 1000PF K		C591,592			CK73GB1H102K	CHIP C 1000PF K	
C495			CK73EB1A106K	CHIP C 10UF K		C593			CE32CL1H4R7M	CHIP EL 4.7UF 50WV	
C496			CK73GB1H102K	CHIP C 1000PF K		C594,595			CK73GB1H102K	CHIP C 1000PF K	
C501			CK73GB1H102K	CHIP C 1000PF K		C596			CE32CL1H4R7M	CHIP EL 4.7UF 50WV	
C505			CC73GCH1H470J	CHIP C 47PF J		C598			CK73GB1H102K	CHIP C 1000PF K	
C506,507			CC73GCH1H101J	CHIP C 100PF J		C601			CK73GB1H472K	CHIP C 4700PF K	
C508-521			CK73GB1H102K	CHIP C 1000PF K		C602			CK73GB1H102K	CHIP C 1000PF K	
C523-529			CK73GB1H102K	CHIP C 1000PF K		C604			CK73GB1H102K	CHIP C 1000PF K	
C530,531			CC73GCH1H101J	CHIP C 100PF J		C605			CC73GCH1H390J	CHIP C 39PF J	

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Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C606			CC73GCH1H680J	CHIP C 68PF J		C699			CK73GB1H103K	CHIP C 0.010UF K	
C607			CS77BA1A100M	CHIP TNTL 10UF 10WV		C700			CC73GCH1H180J	CHIP C 18PF J	
C608			CK73GB1H472K	CHIP C 4700PF K		C701			CC73GCH1H1R5B	CHIP C 1.5PF B	
C610,611			CK73GB1H103K	CHIP C 0.010UF K		C702			CC73GCH1H270J	CHIP C 27PF J	
C612			CS77BA1A100M	CHIP TNTL 10UF 10WV		C703			CC73GCH1H330J	CHIP C 33PF J	
C613			CK73GB1C473K	CHIP C 0.047UF K		C704			CK73GB1H102K	CHIP C 1000PF K	
C615			CC73GCH1H101J	CHIP C 100PF J		C705			CC73GCH1H090B	CHIP C 9.0PF B	
C616			CK73GB1H103K	CHIP C 0.010UF K		C706			CK73GB1H102K	CHIP C 1000PF K	
C617-619			CK73GB1H473K	CHIP C 0.047UF K		C707			CC73GCH1H090B	CHIP C 9.0PF B	
C620			CK73GB1H391K	CHIP C 390PF K		C708			CC73GCH1H270J	CHIP C 27PF J	
C621			CC73GCH1H330J	CHIP C 33PF J		C709			CC73GCH1H560J	CHIP C 56PF J	
C622			CC73GCH1H561J	CHIP C 560PF J		C710			CC73GCH1H470J	CHIP C 47PF J	
C623			CC73GCH1H820J	CHIP C 82PF J		C711			CC73GCH1H560J	CHIP C 56PF J	
C624			CC73GCH1H331J	CHIP C 330PF J		C712			CC73GCH1H040B	CHIP C 4.0PF B	
C648			CK73GB1H102K	CHIP C 1000PF K		C713			CC73GCH1H150J	CHIP C 15PF J	
C649			CC73GCH1H560J	CHIP C 56PF J		C714			CC73GCH1H680J	CHIP C 68PF J	
C650			CC73GCH1H181J	CHIP C 180PF J		C715,716			CC73GCH1H470J	CHIP C 47PF J	
C651			CK73GB1H102K	CHIP C 1000PF K		C717			CC73GCH1H220J	CHIP C 22PF J	
C652,653			CK73GB1H103K	CHIP C 0.010UF K		C718			CC73GCH1H080B	CHIP C 8.0PF B	
C654			CK73GB1H102K	CHIP C 1000PF K		C719			CC73GCH1H121J	CHIP C 120PF J	
C655,656			CK73GB1H103K	CHIP C 0.010UF K		C720			CC73GCH1H470J	CHIP C 47PF J	
C657			CC73GCH1H560J	CHIP C 56PF J		C721			CC73GCH1H040B	CHIP C 4.0PF B	
C658			CC73GCH1H181J	CHIP C 180PF J		C722			CC73GCH1H560J	CHIP C 56PF J	
C659			CC73GCH1H270J	CHIP C 27PF J		C723			CC73GCH1H150J	CHIP C 15PF J	
C660			CK73GB1H103K	CHIP C 0.010UF K		C724			CC73GCH1H680J	CHIP C 68PF J	
C661			CC73GCH1H221J	CHIP C 220PF J		C725			CC73GCH1H330J	CHIP C 33PF J	
C662,663			CK73GB1H103K	CHIP C 0.010UF K		C726			CC73GCH1H030B	CHIP C 3.0PF B	
C664			CC73GCH1H270J	CHIP C 27PF J		C727			CC73GCH1H270J	CHIP C 27PF J	
C665			CC73GCH1H181J	CHIP C 180PF J		C728			CC73GCH1H151J	CHIP C 150PF J	
C666			CK73GB1H103K	CHIP C 0.010UF K		C729			CK73GB1H102K	CHIP C 1000PF K	
C667			CC73GCH1H820J	CHIP C 82PF J		C730			CC73GCH1H680J	CHIP C 68PF J	
C668			CC73GCH1H560J	CHIP C 56PF J		C732			CC73GCH1H060B	CHIP C 6.0PF B	
C669			CK73GB1H103K	CHIP C 0.010UF K		C733			CC73GCH1H560J	CHIP C 56PF J	
C670			CC73GCH1H560J	CHIP C 56PF J		C734			CC73GCH1H330J	CHIP C 33PF J	
C671			CK73GB1H103K	CHIP C 0.010UF K		C735			CC73GCH1H030B	CHIP C 3.0PF B	
C672			CC73GCH1H270J	CHIP C 27PF J		C736			CC73GCH1H270J	CHIP C 27PF J	
C673			CC73GCH1H330J	CHIP C 33PF J		C738			CC73GCH1H121J	CHIP C 120PF J	
C674			CC73GCH1H100C	CHIP C 10PF C		C739			CC73GCH1H220J	CHIP C 22PF J	
C675			CC73GCH1H680J	CHIP C 68PF J		C740			CC73GCH1H680J	CHIP C 68PF J	
C676			CC73GCH1H560J	CHIP C 56PF J		C741,742			CK73GB1H102K	CHIP C 1000PF K	
C677,678			CK73GB1H103K	CHIP C 0.010UF K		C743			CC73GCH1H121J	CHIP C 120PF J	
C679			CC73GCH1H270J	CHIP C 27PF J		C744			CC73GCH1H470J	CHIP C 47PF J	
C680			CC73GCH1H080B	CHIP C 8.0PF B		C745			CC73GCH1H030B	CHIP C 3.0PF B	
C681			CK73GB1H103K	CHIP C 0.010UF K		C746			CC73GCH1H560J	CHIP C 56PF J	
C682			CC73GCH1H680J	CHIP C 68PF J		C748-751			CK73GB1H102K	CHIP C 1000PF K	
C683			CC73GCH1H560J	CHIP C 56PF J		C752			CC73GCH1H101J	CHIP C 100PF J	
C684			CC73GCH1H270J	CHIP C 27PF J		C753-755			CK73GB1H102K	CHIP C 1000PF K	
C685			CC73GCH1H100C	CHIP C 10PF C		C756			CK73GB1H472K	CHIP C 4700PF K	
C686			CK73GB1H103K	CHIP C 0.010UF K		C757-760			CK73GB1H102K	CHIP C 1000PF K	
C687			CC73GCH1H270J	CHIP C 27PF J		C761			CC73GCH1H390J	CHIP C 39PF J	
C688			CK73GB1H103K	CHIP C 0.010UF K		C762			CK73GB1H102K	CHIP C 1000PF K	
C689			CC73GCH1H561J	CHIP C 560PF J		C763			CK73GB1H472K	CHIP C 4700PF K	
C690			CK73GB1H103K	CHIP C 0.010UF K		C764			CK73GB1H102K	CHIP C 1000PF K	
C691,692			CC73GCH1H820J	CHIP C 82PF J		C765			CC73GCH1H220J	CHIP C 22PF J	
C693			CC73GCH1H681J	CHIP C 680PF J		C766			CC73GCH1H240J	CHIP C 24PF J	
C694			CC73GCH1H680J	CHIP C 68PF J		C767			CK73GB1H472K	CHIP C 4700PF K	
C695			CC73GCH1H820J	CHIP C 82PF J		C768			CC73GCH1H120J	CHIP C 12PF J	
C696			CK73GB1H103K	CHIP C 0.010UF K		C769			CC73GCH1H180J	CHIP C 18PF J	
C697			CC73GCH1H181J	CHIP C 180PF J		C770			CC73GCH1H330J	CHIP C 33PF J	
C698			CC73GCH1H561J	CHIP C 560PF J		C771			CC73GCH1H470J	CHIP C 47PF J	

PARTS LIST

CONTROL UNIT (X53-446X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C772			CC73GCH1H220J	CHIP C 22PF J		C856			CK73EB1E106K	CHIP C 10UF K	
C773			CC73GCH1H330J	CHIP C 33PF J		C857			CC73GCH1H220J	CHIP C 22PF J	
C774			CC73GCH1H100C	CHIP C 10PF C		C858			CC73GCH1H030B	CHIP C 3.0PF B	
C775			CC73GCH1H120J	CHIP C 12PF J		C859			CC73GCH1H560J	CHIP C 56PF J	
C776			CC73GCH1H180J	CHIP C 18PF J		C860			CC73GCH1H101J	CHIP C 100PF J	
C777			CC73GCH1H150J	CHIP C 15PF J		C861			CS77BA1A100M	CHIP TNTL 10UF 10WV	
C778			CC73GCH1H220J	CHIP C 22PF J		C862			CK73GB1C104K	CHIP C 0.10UF K	
C779,780			CK73GB1H102K	CHIP C 1000PF K		C863			CC73GCH1H150J	CHIP C 15PF J	
C781-783			CC73GCH1H470J	CHIP C 47PF J		C864			CC73GCH1H030B	CHIP C 3.0PF B	
C784,785			CK73GB1H102K	CHIP C 1000PF K		C865-872			CK73GB1C104K	CHIP C 0.10UF K	
C786			CK73GB1H103K	CHIP C 0.010UF K		C873			CK73GB1A105K	CHIP C 1.0UF K	
C801			CK73FB1H153K	CHIP C 0.015UF K		C874,875			CC73GCH1H180J	CHIP C 18PF J	
C802			CK73GB1H472K	CHIP C 4700PF K		C876			CC73GCH1H330J	CHIP C 33PF J	
C803			CK73GB1H102K	CHIP C 1000PF K		C877			CK73GB1H102K	CHIP C 1000PF K	
C804			CS77CA1ER47M	CHIP TNTL 0.47UF 25WV		C878			CC73GCH1H120J	CHIP C 12PF J	
C805			CK73GB1A105K	CHIP C 1.0UF K		C879			CK73GB1C104K	CHIP C 0.10UF K	
C806			CK73GB1H102K	CHIP C 1000PF K		C880			CC73GCH1H470J	CHIP C 47PF J	
C807			CK73GB1H473K	CHIP C 0.047UF K		C881,882			CK73GB1C104K	CHIP C 0.10UF K	
C808			CK73GB1H102K	CHIP C 1000PF K		C883			CC73GCH1H390J	CHIP C 39PF J	
C809			CK73FB1H153K	CHIP C 0.015UF K		C884			CC73GCH1H470J	CHIP C 47PF J	
C810			CC73GCH1H390J	CHIP C 39PF J		C885,886			CK73GB1H102K	CHIP C 1000PF K	
C811			CK73FB1H153K	CHIP C 0.015UF K		C887			CK73GB1C104K	CHIP C 0.10UF K	
C812			CK73GB1A105K	CHIP C 1.0UF K		C888			CK73GB1H102K	CHIP C 1000PF K	
C813			CS77BA1A100M	CHIP TNTL 10UF 10WV		C889,890			CC73GCH1H060B	CHIP C 6.0PF B	
C814			CK73GB1C104K	CHIP C 0.10UF K		C891			CC73GCH1H080B	CHIP C 8.0PF B	
C815			CS77BA1A100M	CHIP TNTL 10UF 10WV		C892			CK73GB1H102K	CHIP C 1000PF K	
C816			CC73GCH1H680J	CHIP C 68PF J		C895			CC73GCH1H330J	CHIP C 33PF J	
C817			CK73GB1C104K	CHIP C 0.10UF K		C901-903			CC73GCH1H101J	CHIP C 100PF J	
C818			CC73GCH1H101J	CHIP C 100PF J		C904,905			CK73GB1H102K	CHIP C 1000PF K	
C819			CK73GB1C104K	CHIP C 0.10UF K		C908-915			CK73GB1H102K	CHIP C 1000PF K	
C820,821			CC73GCH1H101J	CHIP C 100PF J		C916			CK73GB1H472K	CHIP C 4700PF K	
C822			CK73GB1C104K	CHIP C 0.10UF K		C917,918			CK73GB1A105K	CHIP C 1.0UF K	
C823			CK73GB1H102K	CHIP C 1000PF K		C919,920			CK73GB1H102K	CHIP C 1000PF K	
C824			CC73GCH1H120J	CHIP C 12PF J		C921-925			CK73GB1A105K	CHIP C 1.0UF K	
C825			CS77BA1A100M	CHIP TNTL 10UF 10WV		C926			CK73GB1H102K	CHIP C 1000PF K	
C826			CK73GB1C104K	CHIP C 0.10UF K		C927			CK73GB1H104K	CHIP C 0.10UF K	
C827			CC73GCH1H471J	CHIP C 470PF J		C928			CK73GB1A105K	CHIP C 1.0UF K	
C828			CS77BA1A100M	CHIP TNTL 10UF 10WV		C929			CK73GB1H102K	CHIP C 1000PF K	
C829			CK73GB1H472K	CHIP C 4700PF K		C930,931			CK73GB1A105K	CHIP C 1.0UF K	
C830			CS77BA1A100M	CHIP TNTL 10UF 10WV		C932			CC73GCH1H222J	CHIP C 2200PF J	
C831			CC73GCH1H150J	CHIP C 15PF J		C933			CK73GB1H102K	CHIP C 1000PF K	
C832			CC73GCH1H120J	CHIP C 12PF J		C934			CK73FB0J106K	CHIP C 10UF K	
C833			CC73GCH1H390J	CHIP C 39PF J		C935			CK73GB1H102K	CHIP C 1000PF K	
C835			CC73GCH1HR75B	CHIP C 0.75PF B		C936,937			CK73FB0J106K	CHIP C 10UF K	
C836			CC73GCH1H090B	CHIP C 9.0PF B		C938,939			CK73GB1H102K	CHIP C 1000PF K	
C837			CK73GB1H103K	CHIP C 0.010UF K		C940,941			CK73FB0J106K	CHIP C 10UF K	
C838			CC73GCH1H150J	CHIP C 15PF J		C942,943			CC73GCH1H150J	CHIP C 15PF J	
C839			CK73GB1H102K	CHIP C 1000PF K		C944			CK73GB1H102K	CHIP C 1000PF K	
C840			CK73GB1H473K	CHIP C 0.047UF K		C945			CK73FB0J106K	CHIP C 10UF K	
C841,842			CC73GCH1H120J	CHIP C 12PF J		C946			CK73GB1H102K	CHIP C 1000PF K	
C843			CC73GCH1H030B	CHIP C 3.0PF B		C947			CK73FB0J106K	CHIP C 10UF K	
C844			CK73GB1H103K	CHIP C 0.010UF K		C948-951			CK73GB1H104K	CHIP C 0.10UF K	
C845			CC73GCH1H471J	CHIP C 470PF J		C952			CK73GB1A105K	CHIP C 1.0UF K	
C846			CC73GCH1H120J	CHIP C 12PF J		C953			CC73GCH1H050B	CHIP C 5.0PF B	
C847,848			CK73GB1H102K	CHIP C 1000PF K		C954			CK73GB1A105K	CHIP C 1.0UF K	
C849,850			CK73EB1E106K	CHIP C 10UF K		C955			CC73GCH1H050B	CHIP C 5.0PF B	
C851			CK73GB1H102K	CHIP C 1000PF K		C956,957			CK73GB1H104K	CHIP C 0.10UF K	
C852			CC73GCH1H101J	CHIP C 100PF J		C958			CK73GB1H102K	CHIP C 1000PF K	
C853,854			CC73GCH1H150J	CHIP C 15PF J		C959			CK73GB1A105K	CHIP C 1.0UF K	
C855			CC73GCH1H101J	CHIP C 100PF J		C960-962			CK73GB1H104K	CHIP C 0.10UF K	

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Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C964			CK73GB1A105K	CHIP C 1.0UF K		L508			L41-3375-33	SMALL FIXED INDUCTOR (0.033UH)	
C965			CK73GB1H104K	CHIP C 0.10UF K		L509			L41-1595-33	SMALL FIXED INDUCTOR (1.5UH)	
C966			CK73GB1E105K	CHIP C 1.0UF K		L510			L41-6875-33	SMALL FIXED INDUCTOR (0.068UH)	
C968-970			CK73GB1E105K	CHIP C 1.0UF K		L511			L41-1005-33	SMALL FIXED INDUCTOR (10UH)	
C971			CC73GCH1H330J	CHIP C 33PF J		L512			L41-1095-33	SMALL FIXED INDUCTOR (1.0UH)	
TC501			C05-0384-05	CERAMIC TRIMMER CAPACITOR (10P)		L513			L41-1085-33	SMALL FIXED INDUCTOR (0.1UH)	
TC801			C05-0384-05	CERAMIC TRIMMER CAPACITOR (10P)		L514			L41-4785-33	SMALL FIXED INDUCTOR (0.47UH)	
-			E18-0254-05	SOCKET		L515			L41-2275-33	SMALL FIXED INDUCTOR (0.022UH)	
CN1,2			E40-6526-05	PIN ASSY		L516			L41-8285-33	SMALL FIXED INDUCTOR (0.82UH)	
CN61,62			E40-6525-05	PIN ASSY		L517			L41-2275-33	SMALL FIXED INDUCTOR (0.022UH)	
CN63		*	E40-6879-05	FLAT CABLE CONNECTOR		L518			L41-4785-33	SMALL FIXED INDUCTOR (0.47UH)	
CN64			E41-1687-05	PIN ASSY		L519			L41-1085-33	SMALL FIXED INDUCTOR (0.1UH)	
CN65			E40-6525-05	PIN ASSY		L520			L41-1095-33	SMALL FIXED INDUCTOR (1.0UH)	
CN301		*	E41-1948-05	FLAT CABLE CONNECTOR		L521,522			L41-1585-33	SMALL FIXED INDUCTOR (0.15UH)	
CN302			E40-6656-05	PIN ASSY		L523			L41-2295-33	SMALL FIXED INDUCTOR (2.2UH)	
CN303			E40-6745-05	FLAT CABLE CONNECTOR		L524,525			L40-2285-92	SMALL FIXED INDUCTOR (220NH)	
CN305			E40-6727-05	FLAT CABLE CONNECTOR		L601			L41-1095-33	SMALL FIXED INDUCTOR (1.0UH)	
CN502			E40-6745-05	FLAT CABLE CONNECTOR		L602			L41-1585-33	SMALL FIXED INDUCTOR (0.15UH)	
CN503			E41-1684-05	PIN ASSY		L603,604			L41-1005-33	SMALL FIXED INDUCTOR (10UH)	
CN508			E04-0191-05	PIN SOCKET		L605			L41-8285-33	SMALL FIXED INDUCTOR (0.82UH)	
CN601			E04-0191-05	PIN SOCKET		L606			L41-5685-33	SMALL FIXED INDUCTOR (0.56UH)	
CN654			E04-0191-05	PIN SOCKET		L651		*	L39-1480-15	TOROIDAL COIL	
CN901			E40-6357-05	PIN ASSY		L652			L41-1085-33	SMALL FIXED INDUCTOR (0.1UH)	
CN903,904			E40-5487-05	PIN ASSY		L653			L41-8275-33	SMALL FIXED INDUCTOR (0.082UH)	
J901			E58-0529-05	SUB SOCKET (D)		L654			L41-1085-33	SMALL FIXED INDUCTOR (0.1UH)	
J902		*	E58-0537-05	RECTANGULAR RECEPTACLE		L655			L40-1288-67	SMALL FIXED INDUCTOR (120NH)	
W504		*	E37-1498-05	LEAD WIRE WITH CONNECTOR		L656,657			L41-1085-14	SMALL FIXED INDUCTOR (100NH)	
202	2D	*	F20-3401-04	INSULATING SHEET		L658			L40-3391-86	SMALL FIXED INDUCTOR (3.3UH)	
F901		*	F53-0317-15	FUSE (500MA)		L659			L40-1288-67	SMALL FIXED INDUCTOR (120NH)	
L2,3		*	L33-1548-05	CHOKO COIL		L660,661			L41-1085-14	SMALL FIXED INDUCTOR (100NH)	
L4		*	L33-1553-05	CHOKO COIL		L662			L41-3385-33	SMALL FIXED INDUCTOR (0.33UH)	
L5,6		*	L33-1548-05	CHOKO COIL		L663			L41-4785-33	SMALL FIXED INDUCTOR (0.47UH)	
L7		*	L33-1553-05	CHOKO COIL		L664			L41-2785-33	SMALL FIXED INDUCTOR (0.27UH)	
L8			L92-0639-05	CHIP FERRITE		L665			L41-6878-14	SMALL FIXED INDUCTOR (68NH)	
L11			L33-2600-05	CHOKO COIL		L666			L41-1085-14	SMALL FIXED INDUCTOR (100NH)	
L13			L33-2600-05	CHOKO COIL		L667			L41-6878-14	SMALL FIXED INDUCTOR (68NH)	
L15-18			L92-0641-05	FERRITE CORE		L668		*	L34-4936-05	COIL	
L19			L41-1005-39	SMALL FIXED INDUCTOR (10UH)		L669			L41-5678-14	SMALL FIXED INDUCTOR (56NH)	
L20,21		*	L33-1554-05	CHOKO COIL		L670			L41-2285-14	SMALL FIXED INDUCTOR (220NH)	
L61-63			L92-0467-05	CHIP FERRITE		L671		*	L34-4936-05	COIL	
L64		*	L33-1553-05	CHOKO COIL		L672			L40-1288-67	SMALL FIXED INDUCTOR (120NH)	
L65,66			L92-0639-05	CHIP FERRITE		L673		*	L34-4936-05	COIL	
L68			L92-0467-05	CHIP FERRITE		L674			L41-5678-14	SMALL FIXED INDUCTOR (56NH)	
L69			L92-0639-05	CHIP FERRITE		L675			L41-2785-14	SMALL FIXED INDUCTOR (270NH)	
L301,302		*	L33-1554-05	CHOKO COIL		L676,677		*	L34-4936-05	COIL	
L303		*	L79-1940-05	FILTER		L678			L41-1085-14	SMALL FIXED INDUCTOR (100NH)	
L305			L92-0639-05	CHIP FERRITE		L679			L41-5678-14	SMALL FIXED INDUCTOR (56NH)	
L307			L92-0639-05	CHIP FERRITE		L680			L41-2785-14	SMALL FIXED INDUCTOR (270NH)	
L402-405			L92-0639-05	CHIP FERRITE		L681		*	L34-4936-05	COIL	
L407			L92-0639-05	CHIP FERRITE		L682			L41-1085-14	SMALL FIXED INDUCTOR (100NH)	
L408		*	L33-1554-05	CHOKO COIL		L683			L41-2285-14	SMALL FIXED INDUCTOR (220NH)	
L409-420			L92-0180-05	CHIP FERRITE		L684			L41-8275-14	SMALL FIXED INDUCTOR (82NH)	
L501			L92-0639-05	CHIP FERRITE		L685			L41-6878-14	SMALL FIXED INDUCTOR (68NH)	
L502			L41-1015-33	SMALL FIXED INDUCTOR (100UH)		L686			L41-1895-33	SMALL FIXED INDUCTOR (1.8UH)	
L503			L41-1595-33	SMALL FIXED INDUCTOR (1.5UH)		L687			L40-3391-86	SMALL FIXED INDUCTOR (3.3UH)	
L504			L41-2295-33	SMALL FIXED INDUCTOR (2.2UH)		L688			L41-1095-33	SMALL FIXED INDUCTOR (1.0UH)	
L505			L34-4816-05	COIL		L689			L41-3385-33	SMALL FIXED INDUCTOR (0.33UH)	
L506			L41-6875-33	SMALL FIXED INDUCTOR (0.068UH)		L690			L41-3975-33	SMALL FIXED INDUCTOR (0.039UH)	
L507			L41-1895-33	SMALL FIXED INDUCTOR (1.8UH)		L691			L41-3375-33	SMALL FIXED INDUCTOR (0.033UH)	
						L692			L41-6878-14	SMALL FIXED INDUCTOR (68NH)	

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Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
L693			L41-4785-33	SMALL FIXED INDUCTOR (0.47UH)		R11,12			RK73EB2E000J	CHIP R 0.0 J 1/4W	
L696			L41-1895-33	SMALL FIXED INDUCTOR (1.8UH)		R13			RK73GB2A000J	CHIP R 0.0 J 1/10W	
L697			L41-1085-14	SMALL FIXED INDUCTOR (100NH)		R14			RK73GB2A473J	CHIP R 47K J 1/10W	
L698			L40-1288-67	SMALL FIXED INDUCTOR (120NH)		R15			RK73GB2A103J	CHIP R 10K J 1/10W	
L801			L41-1095-33	SMALL FIXED INDUCTOR (1.0UH)		R16			RK73GB2A184J	CHIP R 180K J 1/10W	
L802,803			L41-1005-33	SMALL FIXED INDUCTOR (10UH)		R17			RK73GB2A103J	CHIP R 10K J 1/10W	
L804			L41-1585-33	SMALL FIXED INDUCTOR (0.15UH)		R18			RK73GB2A101J	CHIP R 100 J 1/10W	
L805			L41-2285-33	SMALL FIXED INDUCTOR (0.22UH)		R19			RK73GH2A124D	CHIP R 120K D 1/10W	
L806			L41-1005-33	SMALL FIXED INDUCTOR (10UH)		R20			RK73GH2A133D	CHIP R 13K D 1/10W	
L807			L41-2295-09	SMALL FIXED INDUCTOR (2200NH)		R22			RK73EB2E000J	CHIP R 0.0 J 1/4W	
L808			L41-1005-33	SMALL FIXED INDUCTOR (10UH)		R25			RK73FB2B000J	CHIP R 0.0 J 1/8W	
L809			L41-2798-08	SMALL FIXED INDUCTOR (2.7UH)		R26			RK73EB2E000J	CHIP R 0.0 J 1/4W	
L810			L34-4612-05	AIR-CORE COIL		R27			RK73GB2A473J	CHIP R 47K J 1/10W	
L811,812			L41-5698-08	SMALL FIXED INDUCTOR (5.6UH)		R28			RK73GB2A103J	CHIP R 10K J 1/10W	
L813			L40-3375-92	SMALL FIXED INDUCTOR (33NH)		R29			RK73EB2E000J	CHIP R 0.0 J 1/4W	
L814			L41-3375-33	SMALL FIXED INDUCTOR (0.033UH)		R30			RK73GB2A103J	CHIP R 10K J 1/10W	
L815			L41-1275-33	SMALL FIXED INDUCTOR (0.012UH)		R31			RK73EB2E000J	CHIP R 0.0 J 1/4W	
L816			L41-5675-33	SMALL FIXED INDUCTOR (0.056UH)		R33-36			RK73PB2H1R0J	CHIP R 1.0 J 1/2W	
L817			L92-0639-05	CHIP FERRITE		R37			RK73PB2H101J	CHIP R 100 J 1/2W	
L818			L41-3369-16	SMALL FIXED INDUCTOR (3.3NH)		R43,44		*	RK73PB2H6R8J	CHIP R 6.8 J 1/2W	
L819			L41-1005-33	SMALL FIXED INDUCTOR (10UH)		R45			RK73PB2H101J	CHIP R 100 J 1/2W	
L820		*	L41-6869-43	SMALL FIXED INDUCTOR (6.8NH)		R46			RK73GH2A333D	CHIP R 33K D 1/10W	
L821			L41-5675-33	SMALL FIXED INDUCTOR (0.056UH)		R47			RK73GH2A622D	CHIP R 6.2K D 1/10W	
L822			L41-1005-33	SMALL FIXED INDUCTOR (10UH)		R48			RK73GB2A000J	CHIP R 0.0 J 1/10W	
L823			L41-1275-33	SMALL FIXED INDUCTOR (0.012UH)		R49			RK73PB2H2R2J	CHIP R 2.2 J 1/2W	
L824		*	L39-1480-15	TOROIDAL COIL		R61,62			RK73GB2A000J	CHIP R 0.0 J 1/10W	
L825			L40-1588-67	SMALL FIXED INDUCTOR (150NH)		R63,64			RK73GB2A470J	CHIP R 47 J 1/10W	
L826			L40-1088-67	SMALL FIXED INDUCTOR (100NH)		R65-71			RK73GB2A101J	CHIP R 100 J 1/10W	
L827			L41-3391-08	SMALL FIXED INDUCTOR (3.3NH)		R72-74			RK73GB2A470J	CHIP R 47 J 1/10W	
L828			L40-8278-67	SMALL FIXED INDUCTOR (82NH)		R75			RK73GB2A223J	CHIP R 22K J 1/10W	
L829			L41-1895-33	SMALL FIXED INDUCTOR (1.8UH)		R77			RK73GB2A223J	CHIP R 22K J 1/10W	
L830-833			L41-1575-06	SMALL FIXED INDUCTOR (15NH)		R79,80			RK73GB2A334J	CHIP R 330K J 1/10W	
L840			L41-1895-33	SMALL FIXED INDUCTOR (1.8UH)		R81			RK73GB2A472J	CHIP R 4.7K J 1/10W	
L903-905			L92-0639-05	CHIP FERRITE		R82,83			RK73GB2A222J	CHIP R 2.2K J 1/10W	
L906			L41-2295-33	SMALL FIXED INDUCTOR (2.2UH)		R85			RK73GB2A184J	CHIP R 180K J 1/10W	
L907-913			L92-0639-05	CHIP FERRITE		R86,87			RK73GB2A223J	CHIP R 22K J 1/10W	
L916			L33-2375-05	CHOKE COIL		R88,89			RK73GB2A183J	CHIP R 18K J 1/10W	
L917		*	L33-1554-05	CHOKE COIL		R91,92			RK73GB2A103J	CHIP R 10K J 1/10W	
L919,920			L41-2295-33	SMALL FIXED INDUCTOR (2.2UH)		R94,95			RK73GB2A183J	CHIP R 18K J 1/10W	
X301		*	L77-3054-05	CRYSTAL RESONATOR (24.576MHZ)		R96,97			RK73GB2A223J	CHIP R 22K J 1/10W	
X302		*	L77-3069-05	CRYSTAL RESONATOR (11.0592MHZ)		R98-101			RK73GB2A183J	CHIP R 18K J 1/10W	
X502			L77-1906-05	CRYSTAL RESONATOR (15.6MHZ)		R104,105			RK73GB2A100J	CHIP R 10 J 1/10W	
X901		*	L77-3053-05	CRYSTAL RESONATOR (12MHZ)		R106			RK73GB2A682J	CHIP R 6.8K J 1/10W	
X902		*	L77-3052-05	CRYSTAL RESONATOR (24MHZ)		R108,109			RK73GB2A223J	CHIP R 22K J 1/10W	
CP301,302			RK74GB1J473J	CHIP-COM 47K J 1/16W		R110			RK73GB2A682J	CHIP R 6.8K J 1/10W	
CP304,305			RK74GB1J473J	CHIP-COM 47K J 1/16W		R111			RK73GB2A333J	CHIP R 33K J 1/10W	
CP310			RK74GB1J473J	CHIP-COM 47K J 1/16W		R112,113			RK73GB2A103J	CHIP R 10K J 1/10W	
CP314-316			RK74GB1J473J	CHIP-COM 47K J 1/16W		R115,116			RK73GB2A333J	CHIP R 33K J 1/10W	
CP317-320			RK74GB1J470J	CHIP-COM 47 J 1/16W		R117,118			RK73GB2A223J	CHIP R 22K J 1/10W	
CP321			RK75GB1JR00	CHIP-COM 0.00 1/16W		R119			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R1			RK73GB2A473J	CHIP R 47K J 1/10W		R120,121			RK73GB2A333J	CHIP R 33K J 1/10W	
R2			RK73GB2A000J	CHIP R 0.0 J 1/10W		R122			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R3			RK73EB2E000J	CHIP R 0.0 J 1/4W		R125,126			RK73GB2A220J	CHIP R 22 J 1/10W	
R4			RK73GB2A103J	CHIP R 10K J 1/10W		R127			RK73GB2A151J	CHIP R 150 J 1/10W	
R5			RK73GB2A184J	CHIP R 180K J 1/10W		R128			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R6			RK73GB2A103J	CHIP R 10K J 1/10W		R129			RK73GB2A4R7J	CHIP R 4.7 J 1/10W	
R7			RK73GB2A101J	CHIP R 100 J 1/10W		R130			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R8			RK73GH2A393D	CHIP R 39K D 1/10W		R131			RK73GB2A682J	CHIP R 6.8K J 1/10W	
R9			RK73GH2A123D	CHIP R 12K D 1/10W		R132			RK73GB2A000J	CHIP R 0.0 J 1/10W	
						R133			RK73GB2A104J	CHIP R 100K J 1/10W	

PARTS LIST

CONTROL UNIT (X53-446X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R134			RK73GB2A103J	CHIP R 10K J 1/10W		R249,250			RK73GB2A183J	CHIP R 18K J 1/10W	
R135			RK73GB2A102J	CHIP R 1.0K J 1/10W		R252,253			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R136			RK73GB2A103J	CHIP R 10K J 1/10W		R254			RK73GB2A332J	CHIP R 3.3K J 1/10W	
R137			RK73GB2A000J	CHIP R 0.0 J 1/10W		R255,256			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R140			RK73GB2A472J	CHIP R 4.7K J 1/10W		R257			RK73GB2A103J	CHIP R 10K J 1/10W	
R141			RK73GB2A123J	CHIP R 12K J 1/10W		R258			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R142			RK73GB2A183J	CHIP R 18K J 1/10W		R259,260			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R143			RK73GB2A123J	CHIP R 12K J 1/10W		R261-266			RK73GB2A103J	CHIP R 10K J 1/10W	
R144			RK73GB2A223J	CHIP R 22K J 1/10W		R267,268			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R145			RK73GB2A822J	CHIP R 8.2K J 1/10W		R269			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R146-149			RK73GB2A223J	CHIP R 22K J 1/10W		R270-273			RK73GB2A473J	CHIP R 47K J 1/10W	
R152			RK73GB2A123J	CHIP R 12K J 1/10W		R300			RK73GB2A473J	CHIP R 47K J 1/10W	
R153			RK73GB2A183J	CHIP R 18K J 1/10W		R303			RK73GB2A101J	CHIP R 100 J 1/10W	
R154			RK73GB2A153J	CHIP R 15K J 1/10W		R306			RK73GB2A473J	CHIP R 47K J 1/10W	
R155			RK73GB2A223J	CHIP R 22K J 1/10W		R309			RK73GB2A470J	CHIP R 47 J 1/10W	
R158			RK73GB2A472J	CHIP R 4.7K J 1/10W		R312-314			RK73GB2A470J	CHIP R 47 J 1/10W	
R159			RK73GB2A822J	CHIP R 8.2K J 1/10W		R315			RK73GB2A473J	CHIP R 47K J 1/10W	
R160			RK73GB2A123J	CHIP R 12K J 1/10W		R316			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R161,162			RK73GB2A682J	CHIP R 6.8K J 1/10W		R317			RK73GB2A470J	CHIP R 47 J 1/10W	
R163			RK73GB2A183J	CHIP R 18K J 1/10W		R320			RK73GB2A470J	CHIP R 47 J 1/10W	
R164			RK73GB2A682J	CHIP R 6.8K J 1/10W		R321			RK73GB2A473J	CHIP R 47K J 1/10W	
R165			RK73GB2A123J	CHIP R 12K J 1/10W		R322			RK73GB2A470J	CHIP R 47 J 1/10W	
R166,167			RK73GB2A103J	CHIP R 10K J 1/10W		R323			RK73GB2A473J	CHIP R 47K J 1/10W	
R169,170			RK73GB2A393J	CHIP R 39K J 1/10W		R324			RK73GB2A470J	CHIP R 47 J 1/10W	
R171,172			RK73GB2A103J	CHIP R 10K J 1/10W		R325			RK73GB2A473J	CHIP R 47K J 1/10W	
R174-176			RK73GB2A103J	CHIP R 10K J 1/10W		R326			RK73GB2A470J	CHIP R 47 J 1/10W	
R177			RK73GB2A101J	CHIP R 100 J 1/10W		R327			RK73GB2A473J	CHIP R 47K J 1/10W	
R178			RK73GB2A471J	CHIP R 470 J 1/10W		R328			RK73GB2A470J	CHIP R 47 J 1/10W	
R179			RK73GB2A104J	CHIP R 100K J 1/10W		R329			RK73GB2A473J	CHIP R 47K J 1/10W	
R181			RK73GB2A104J	CHIP R 100K J 1/10W		R330			RK73GB2A470J	CHIP R 47 J 1/10W	
R182			RK73GB2A822J	CHIP R 8.2K J 1/10W		R331			RK73GB2A473J	CHIP R 47K J 1/10W	
R183,184			RK73GB2A183J	CHIP R 18K J 1/10W		R332,333			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R185,186			RK73GB2A223J	CHIP R 22K J 1/10W		R334-336			RK73GB2A470J	CHIP R 47 J 1/10W	
R188,189			RK73GB2A183J	CHIP R 18K J 1/10W		R339			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R190			RK73GB2A822J	CHIP R 8.2K J 1/10W		R341			RK73GB2A473J	CHIP R 47K J 1/10W	
R192-194			RK73GB2A183J	CHIP R 18K J 1/10W		R343			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R195,196			RK73GB2A223J	CHIP R 22K J 1/10W		R344			RK73GB2A470J	CHIP R 47 J 1/10W	
R198			RK73GB2A822J	CHIP R 8.2K J 1/10W		R345-348			RK73GB2A473J	CHIP R 47K J 1/10W	
R199,200			RK73GB2A683J	CHIP R 68K J 1/10W		R355			RK73GB2A473J	CHIP R 47K J 1/10W	
R205-207			RK73GB2A183J	CHIP R 18K J 1/10W		R357			RK73GB2A473J	CHIP R 47K J 1/10W	
R208,209			RK73GB2A223J	CHIP R 22K J 1/10W		R365			RK73GB2A105J	CHIP R 1.0M J 1/10W	
R211-213			RK73GB2A183J	CHIP R 18K J 1/10W		R366			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R214			RK73GB2A000J	CHIP R 0.0 J 1/10W		R367			RK73GB2A473J	CHIP R 47K J 1/10W	
R216			RK73GB2A103J	CHIP R 10K J 1/10W		R370			RK73GB2A330J	CHIP R 33 J 1/10W	
R217,218			RK73GB2A223J	CHIP R 22K J 1/10W		R372			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R222			RK73GB2A104J	CHIP R 100K J 1/10W		R375			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R223			RK73GB2A103J	CHIP R 10K J 1/10W		R378			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R224			RK73GB2A102J	CHIP R 1.0K J 1/10W		R380,381			RK73GB2A105J	CHIP R 1.0M J 1/10W	
R226,227			RK73GB2A223J	CHIP R 22K J 1/10W		R382			RK73GB2A473J	CHIP R 47K J 1/10W	
R229-234			RK73GB2A183J	CHIP R 18K J 1/10W		R383			RK73GB2A101J	CHIP R 100 J 1/10W	
R236			RK73GB2A223J	CHIP R 22K J 1/10W		R384-386			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R237			RK73GB2A183J	CHIP R 18K J 1/10W		R387			RK73GB2A101J	CHIP R 100 J 1/10W	
R238			RK73GB2A223J	CHIP R 22K J 1/10W		R388			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R239,240			RK73GB2A183J	CHIP R 18K J 1/10W		R389			RK73GB2A154J	CHIP R 150K J 1/10W	
R242			RK73GB2A473J	CHIP R 47K J 1/10W		R390			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R243			RK73GB2A103J	CHIP R 10K J 1/10W		R391			RK73GB2A473J	CHIP R 47K J 1/10W	
R244			RK73GB2A473J	CHIP R 47K J 1/10W		R393			RK73GB2A105J	CHIP R 1.0M J 1/10W	
R246			RK73GB2A223J	CHIP R 22K J 1/10W		R394,395			RK73GB2A473J	CHIP R 47K J 1/10W	
R247			RK73GB2A183J	CHIP R 18K J 1/10W		R397-399			RK73GB2A102J	CHIP R 1.0K J 1/10W	E
R248			RK73GB2A223J	CHIP R 22K J 1/10W		R397,398			RK73GB2A102J	CHIP R 1.0K J 1/10W	K

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Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R403			RK73GB2A473J	CHIP R 47K J 1/10W		R612			RK73GB2A104J	CHIP R 100K J 1/10W	
R405			RK73GB2A102J	CHIP R 1.0K J 1/10W		R614			RK73GB2A391J	CHIP R 390 J 1/10W	
R406			RK73GB2A473J	CHIP R 47K J 1/10W		R615			RK73GB2A470J	CHIP R 47 J 1/10W	
R407			RK73GB2A101J	CHIP R 100 J 1/10W		R616,617			RK73GB2A153J	CHIP R 15K J 1/10W	
R408-411			RK73GB2A473J	CHIP R 47K J 1/10W		R618			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R412,413			RK73GB2A105J	CHIP R 1.0M J 1/10W		R619			RK73GB2A332J	CHIP R 3.3K J 1/10W	
R414			RK73GB2A473J	CHIP R 47K J 1/10W		R621			RK73GB2A332J	CHIP R 3.3K J 1/10W	
R415,416			RK73GB2A103J	CHIP R 10K J 1/10W		R624			RK73GB2A332J	CHIP R 3.3K J 1/10W	
R417,418			RK73GB2A101J	CHIP R 100 J 1/10W		R625			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R419-423			RK73GB2A473J	CHIP R 47K J 1/10W		R626			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R424			RK73GB2A000J	CHIP R 0.0 J 1/10W		R627			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R425			RK73GB2A103J	CHIP R 10K J 1/10W		R630			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R426			RK73GB2A183J	CHIP R 18K J 1/10W		R632			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R439-494			RK73GB2A101J	CHIP R 100 J 1/10W		R633,634			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R495			RK73GB2A473J	CHIP R 47K J 1/10W		R636-640			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R497			RK73GB2A473J	CHIP R 47K J 1/10W		R648			RK73GB2A821J	CHIP R 820 J 1/10W	
R498			RK73GB2A472J	CHIP R 4.7K J 1/10W		R649,650			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R499			RK73GB2A473J	CHIP R 47K J 1/10W		R651-654			RK73GB2A101J	CHIP R 100 J 1/10W	
R501-527			RK73GB2A101J	CHIP R 100 J 1/10W		R655			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R528			RK73GB2A103J	CHIP R 10K J 1/10W		R657			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R530			RK73GB2A223J	CHIP R 22K J 1/10W		R658,659			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R531			RK73GB2A101J	CHIP R 100 J 1/10W		R660			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R532			RK73GB2A222J	CHIP R 2.2K J 1/10W		R661,662			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R537			RK73GB2A100J	CHIP R 10 J 1/10W		R663			RK73GB2A821J	CHIP R 820 J 1/10W	
R538			RK73GB2A101J	CHIP R 100 J 1/10W		R667			RK73GB2A104J	CHIP R 100K J 1/10W	
R539			RK73GB2A822J	CHIP R 8.2K J 1/10W		R668			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R540			RK73GB2A153J	CHIP R 15K J 1/10W		R669			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R541			RK73GB2A391J	CHIP R 390 J 1/10W		R671			RK73GB2A821J	CHIP R 820 J 1/10W	
R542			RK73GB2A181J	CHIP R 180 J 1/10W		R672-676			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R543			RK73GB2A224J	CHIP R 220K J 1/10W		R679			RK73GB2A471J	CHIP R 470 J 1/10W	
R544			RK73GB2A470J	CHIP R 47 J 1/10W		R680			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R545-547			RK73GB2A180J	CHIP R 18 J 1/10W		R681			RK73GB2A120J	CHIP R 12 J 1/10W	
R548			RK73GB2A153J	CHIP R 15K J 1/10W		R682			RK73GB2A821J	CHIP R 820 J 1/10W	
R549			RK73GB2A682J	CHIP R 6.8K J 1/10W		R684			RK73GB2A471J	CHIP R 470 J 1/10W	
R550			RK73GB2A470J	CHIP R 47 J 1/10W		R685			RK73GB2A271J	CHIP R 270 J 1/10W	
R551			RK73GB2A271J	CHIP R 270 J 1/10W		R686			RK73GB2A121J	CHIP R 120 J 1/10W	
R552			RK73GB2A470J	CHIP R 47 J 1/10W		R687			RK73GB2A151J	CHIP R 150 J 1/10W	
R553			RK73GB2A153J	CHIP R 15K J 1/10W		R688			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R554			RK73GB2A682J	CHIP R 6.8K J 1/10W		R689			RK73GB2A121J	CHIP R 120 J 1/10W	
R555			RK73GB2A271J	CHIP R 270 J 1/10W		R690			RK73GB2A180J	CHIP R 18 J 1/10W	
R556,557			RK73GB2A180J	CHIP R 18 J 1/10W		R691			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R558			RK73GB2A470J	CHIP R 47 J 1/10W		R692			RK73GB2A470J	CHIP R 47 J 1/10W	
R559,560			RK73GB2A682J	CHIP R 6.8K J 1/10W		R693			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R561			RK73GB2A101J	CHIP R 100 J 1/10W		R694			RK73GB2A390J	CHIP R 39 J 1/10W	
R562			RK73GB2A102J	CHIP R 1.0K J 1/10W		R695			RK73GB2A470J	CHIP R 47 J 1/10W	
R563			RK73GB2A820J	CHIP R 82 J 1/10W		R696			RK73GB2A271J	CHIP R 270 J 1/10W	
R564			RK73GB2A121J	CHIP R 120 J 1/10W		R697			RK73GB2A121J	CHIP R 120 J 1/10W	
R565			RK73GB2A820J	CHIP R 82 J 1/10W		R698,699			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R567			RK73GB2A101J	CHIP R 100 J 1/10W		R700			RK73GB2A121J	CHIP R 120 J 1/10W	
R568			RK73GB2A102J	CHIP R 1.0K J 1/10W		R701			RK73GB2A151J	CHIP R 150 J 1/10W	
R569			RK73GB2A272J	CHIP R 2.7K J 1/10W		R702			RK73GB2A153J	CHIP R 15K J 1/10W	
R601			RK73GB2A561J	CHIP R 560 J 1/10W		R704			RK73GB2A821J	CHIP R 820 J 1/10W	
R602			RK73GB2A683J	CHIP R 68K J 1/10W		R705,706			RK73GB2A470J	CHIP R 47 J 1/10W	
R604			RK73GB2A000J	CHIP R 0.0 J 1/10W		R707			RK73GB2A101J	CHIP R 100 J 1/10W	
R605			RK73GB2A102J	CHIP R 1.0K J 1/10W		R708			RK73GB2A104J	CHIP R 100K J 1/10W	
R606			RK73GB2A392J	CHIP R 3.9K J 1/10W		R711			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R607,608			RK73GB2A102J	CHIP R 1.0K J 1/10W		R713			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R609			RK73GB2A560J	CHIP R 56 J 1/10W		R714,715			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R610			RK73GB2A331J	CHIP R 330 J 1/10W		R716			RK73GB2A271J	CHIP R 270 J 1/10W	
R611			RK73GB2A101J	CHIP R 100 J 1/10W		R718			RK73GB2A180J	CHIP R 18 J 1/10W	

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Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R720			RK73GB2A271J	CHIP R 270 J 1/10W		R876			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R722			RK73GB2A152J	CHIP R 1.5K J 1/10W		R878			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R724			RK73GB2A821J	CHIP R 820 J 1/10W		R879			RK73GB2A101J	CHIP R 100 J 1/10W	
R725			RK73GB2A102J	CHIP R 1.0K J 1/10W		R880			RK73GB2A680J	CHIP R 68 J 1/10W	
R727			RK73GB2A104J	CHIP R 100K J 1/10W		R881			RK73GB2A101J	CHIP R 100 J 1/10W	
R728			RK73GB2A152J	CHIP R 1.5K J 1/10W		R882			RK73GB2A100J	CHIP R 10 J 1/10W	
R729			RK73GB2A821J	CHIP R 820 J 1/10W		R883			RK73GB2A101J	CHIP R 100 J 1/10W	
R801			RK73GB2A000J	CHIP R 0.0 J 1/10W		R884			RK73GB2A123J	CHIP R 12K J 1/10W	
R802			RK73GB2A180J	CHIP R 18 J 1/10W		R885			RK73GB2A392J	CHIP R 3.9K J 1/10W	
R803			RK73GB2A000J	CHIP R 0.0 J 1/10W		R886			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R804			RK73GB2A470J	CHIP R 47 J 1/10W		R900-904			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R805			RK73GB2A153J	CHIP R 15K J 1/10W		R905,906			RK73GB2A101J	CHIP R 100 J 1/10W	
R806			RK73GB2A682J	CHIP R 6.8K J 1/10W		R907			RK73GB2A104J	CHIP R 100K J 1/10W	
R807			RK73GB2A272J	CHIP R 2.7K J 1/10W		R908,909			RK73GB2A101J	CHIP R 100 J 1/10W	
R808			RK73GB2A101J	CHIP R 100 J 1/10W		R910-913			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R809			RK73GB2A221J	CHIP R 220 J 1/10W		R914			RK73GB2A562J	CHIP R 5.6K J 1/10W	
R810			RK73GB2A104J	CHIP R 100K J 1/10W		R915			RK73GB2A223J	CHIP R 22K J 1/10W	
R811			RK73GB2A000J	CHIP R 0.0 J 1/10W		R916,917			RK73GB2A103J	CHIP R 10K J 1/10W	
R812			RK73GB2A472J	CHIP R 4.7K J 1/10W		R918,919			RK73GB2A153J	CHIP R 15K J 1/10W	
R813			RK73GB2A221J	CHIP R 220 J 1/10W		R920			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R815			RK73GB2A103J	CHIP R 10K J 1/10W		R921,922			RK73GB2A105J	CHIP R 1.0M J 1/10W	
R816			RK73GB2A000J	CHIP R 0.0 J 1/10W		R923,924			RK73GB2A220J	CHIP R 22 J 1/10W	
R818,819			RK73GB2A122J	CHIP R 1.2K J 1/10W		R925			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R820,821			RK73GB2A101J	CHIP R 100 J 1/10W		R926			RK73GB2A103J	CHIP R 10K J 1/10W	
R822,823			RK73GB2A153J	CHIP R 15K J 1/10W		R927			RK73GB2A151J	CHIP R 150 J 1/10W	
R824			RK73GB2A472J	CHIP R 4.7K J 1/10W		R928			RK73GB2A101J	CHIP R 100 J 1/10W	
R825-829			RK73GB2A101J	CHIP R 100 J 1/10W		R929			RK73GB2A103J	CHIP R 10K J 1/10W	
R832			RK73GB2A473J	CHIP R 47K J 1/10W		R930			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R833			RK73GB2A470J	CHIP R 47 J 1/10W		R931			RK73GH2A123D	CHIP R 12K D 1/10W	
R835			RK73GB2A180J	CHIP R 18 J 1/10W		R932			RK73GB2A103J	CHIP R 10K J 1/10W	
R836			RK73GB2A104J	CHIP R 100K J 1/10W		R933,934			RK73GB2A105J	CHIP R 1.0M J 1/10W	
R837			RN73GH1J221D	CHIP R 220 D 1/16W		R935			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R838,839			RK73GB2A180J	CHIP R 18 J 1/10W		R937			RK73GB2A103J	CHIP R 10K J 1/10W	
R840			RN73GH1J151D	CHIP R 150 D 1/16W		R939			RK73GB2A105J	CHIP R 1.0M J 1/10W	
R841			RK73GB2A470J	CHIP R 47 J 1/10W		R941			RK73GB2A473J	CHIP R 47K J 1/10W	
R843			RK73GB2A102J	CHIP R 1.0K J 1/10W		R943			RK73GB2A473J	CHIP R 47K J 1/10W	
R844			RK73GB2A101J	CHIP R 100 J 1/10W		R946			RK73GB2A473J	CHIP R 47K J 1/10W	
R846			RK73GB2A273J	CHIP R 27K J 1/10W		R947			RK73GB2A104J	CHIP R 100K J 1/10W	
R847			RK73GB2A393J	CHIP R 39K J 1/10W		R948			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R849			RK73GB2A102J	CHIP R 1.0K J 1/10W		R949			RK73GB2A103J	CHIP R 10K J 1/10W	
R850,851			RK73GB2A153J	CHIP R 15K J 1/10W		R950,951			RK73GB2A104J	CHIP R 100K J 1/10W	
R852			RK73GB2A101J	CHIP R 100 J 1/10W		R952			RK73GB2A473J	CHIP R 47K J 1/10W	
R853			RK73GB2A331J	CHIP R 330 J 1/10W		R953			RK73GB2A103J	CHIP R 10K J 1/10W	
R854			RK73GB2A101J	CHIP R 100 J 1/10W		R957			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R856			RK73GB2A000J	CHIP R 0.0 J 1/10W		R958,959			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R858,859			RK73GB2A000J	CHIP R 0.0 J 1/10W		R960-963			RK73GB2A101J	CHIP R 100 J 1/10W	
R860			RK73GB2A102J	CHIP R 1.0K J 1/10W		R968			R92-1061-05	JUMPER REST 0 OHM	E
R861			RK73GB2A101J	CHIP R 100 J 1/10W		R970,971			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R863			RK73GB2A000J	CHIP R 0.0 J 1/10W		D1,2			RB060L-40	DIODE	
R864,865			RK73GB2A151J	CHIP R 150 J 1/10W		D3-6			1SR154-400	DIODE	
R866			RK73GB2A000J	CHIP R 0.0 J 1/10W		D7-9			1SS348-F	DIODE	
R867			RK73GB2A101J	CHIP R 100 J 1/10W		D61			MINISMD C05002F	VARISTOR	
R868			RK73GB2A000J	CHIP R 0.0 J 1/10W		D62			1SS355	DIODE	
R869			RK73GB2A101J	CHIP R 100 J 1/10W		D101			1SS388F	DIODE	
R870			RK73GB2A000J	CHIP R 0.0 J 1/10W		D301			O2DZ6.2F-Y	ZENER DIODE	
R871			RK73GB2A101J	CHIP R 100 J 1/10W		D302			1SS348-F	DIODE	
R872			RK73GB2A000J	CHIP R 0.0 J 1/10W		D304			1SR139-400	DIODE	
R873			RK73GB2A470J	CHIP R 47 J 1/10W		D501			HVC131	DIODE	
R874			RK73GB2A392J	CHIP R 3.9K J 1/10W		D651			HVC131	DIODE	
R875			RK73GB2A180J	CHIP R 18 J 1/10W							

PARTS LIST

CONTROL UNIT (X53-446X-XX)
DISPLAY UNIT (X54-3700-00)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
D652			RB715F	DIODE		IC803		*	AD9951YSVZ	MOS-IC	
D653-655			HVC131	DIODE		IC804			UPC2710TB-A	ANALOGUE IC	
D656		*	MC2858-T111	DIODE		IC901			ADM3202ARUZ	MOS-IC	
D657			HVC131	DIODE		IC902			TC75S51FE(F)	MOS-IC	
D659-663			HVC131	DIODE		IC903		*	PCM2903B	MOS-IC	
D664-666			HSC277	DIODE		IC904			TC7SH08FU-F	MOS-IC	
D667			1SV312-F	DIODE		IC905		*	USB2512BI	MOS-IC	
D668-671			HVC131	DIODE		IC906		*	CP2102SX0567	MOS-IC	
D672		*	MC2858-T111	DIODE		Q1			RT1N141U-T111	TRANSISTOR	
D673			HSC277	DIODE		Q2,3		*	TPC6111-F	FET	
D675			HSC277	DIODE		Q4			RT1N430M-T111	TRANSISTOR	
D677,678			HSC277	DIODE		Q61			2SC5566-E	TRANSISTOR	
D679-681			HVC131	DIODE		Q62			2SK1824-A	FET	
D682,683			HSC277	DIODE		Q63		*	RT1N234U-T111	TRANSISTOR	
D801-803			1SV283F	VARIABLE CAPACITANCE DIODE		Q64		*	RT5P431C-T112	TRANSISTOR	
D901		*	RSB12JS2	ZENER DIODE		Q65			2SC5383-T111	TRANSISTOR	
D902			HZU3BLL	ZENER DIODE		Q66		*	RT1N234U-T111	TRANSISTOR	
D903			1SS388F	DIODE		Q67		*	RT5P431C-T112	TRANSISTOR	
IC1,2			LT3685EMSE	ANALOGUE IC		Q501,502			2SC5383-T111	TRANSISTOR	
IC3			BA00DD0WHFP	ANALOGUE IC		Q503			2SC5108(Y)F	TRANSISTOR	
IC4			TA48M033F-F	ANALOGUE IC		Q504,505			2SC4617(R)	TRANSISTOR	
IC5			TA4805BF	MOS-IC		Q506			2SC4649(N,P)	TRANSISTOR	
IC6		*	XC6220B12BPR-G	MOS-IC		Q601,602			2SC5383-T111	TRANSISTOR	
IC61-65			NJM2732V	BI-POLAR IC		Q651			RT1P141U-T111	TRANSISTOR	
IC66		*	AK5385BVF	MOS-IC		Q652			RT1N441U-T111	TRANSISTOR	
IC67			LA4425A	MOS-IC		Q653			RT1P141U-T111	TRANSISTOR	
IC68			TC7W66FK-F	MOS-IC		Q654			RT1N441U-T111	TRANSISTOR	
IC69-71			NJM2732V	BI-POLAR IC		Q655			RT1P141U-T111	TRANSISTOR	
IC72			AK4382AVT	MOS-IC		Q656			RT1N441U-T111	TRANSISTOR	
IC73,74			NJM2100V-ZB	MOS-IC		Q657			RT1P141U-T111	TRANSISTOR	
IC75			AK4387ET	MOS-IC		Q658			RT1N441U-T111	TRANSISTOR	
IC76,77			NJM2100V-ZB	MOS-IC		Q659			RT1P141U-T111	TRANSISTOR	
IC78			AK4387ET	MOS-IC		Q660			RT1N441U-T111	TRANSISTOR	
IC79			NJM2732V	BI-POLAR IC		Q661			RT1P141U-T111	TRANSISTOR	
IC80			TC7W66FK-F	MOS-IC		Q662			RT1N441U-T111	TRANSISTOR	
IC81			NJM2732V	BI-POLAR IC		Q663			2SC5108(Y)F	TRANSISTOR	
IC82			NJM2100V-ZB	MOS-IC		Q664			RN47A5-F	TRANSISTOR	
IC83		*	WM782SEDSRV	MOS-IC		Q801			2SC4649(N,P)	TRANSISTOR	
IC301		*	DC6726BRFPA225	MICROPROCESSOR IC		Q802			2SJ243-A	FET	
IC302		*	29LV800CBKDNA	ROM IC		Q803			UMX2N	TRANSISTOR	
IC304			TC7SH32FU-F	MOS-IC		Q804			2SC5108(Y)F	TRANSISTOR	
IC305			TC7SH00FU-F	MOS-IC		Q805			2SC5383-T111	TRANSISTOR	
IC306		*	F3651RDFCKDTA	MICROCONTROLLER IC		Q806			MCH3914(7)-H	FET	
IC307			BU4829FVE	MOS-IC		Q807,808			2SC5108(Y)F	TRANSISTOR	
IC308			TC7SH32FU-F	MOS-IC		Q901			RN47A5-F	TRANSISTOR	
IC309		*	HN58X25128FPIE	ROM IC		Q902-904			HN7G01FU-F	TRANSISTOR	
IC310			TC74HC4052AFT	MOS-IC							
IC311			HD74LV541AT	MOS-IC							
IC312			HD74LV2G34AUS	MOS-IC							
IC313			TC7WTT125FUF	MOS-IC							
IC314			HD74LV2G34AUS	MOS-IC							
IC315			BU4829FVE	MOS-IC							
IC316,317			TC7SH32FU-F	MOS-IC							
IC501,502			TC7WTT125FUF	MOS-IC							
IC504			TA4805BF	MOS-IC							
IC505			TA48M033F-F	ANALOGUE IC							
IC601			AD9835BRUZ	MOS-IC							
IC651			TC74HC4094AFF	MOS-IC							
IC801		*	ADF411BRUZ	MOS-IC							
IC802		*	XC6219B182PR-G	MOS-IC							
DISPLAY UNIT (X54-3700-00)											
301			B11-1878-02	ILLUMINATION GUIDE							
302	1E	*	B11-1882-03	FILTER							
303	1E	*	B38-0934-05	LCD							
D101-115		*	B30-2323-05	LED (GREEN)							
D123-160		*	B30-2323-05	LED (GREEN)							
D161-213		*	B30-2322-05	LED (AMBER)							
D214			B30-2167-05	LED (GR)							
D215			B30-2168-05	LED (R)							
D216		*	B30-2323-05	LED (GREEN)							
D217		*	B30-2322-05	LED (AMBER)							

PARTS LIST

DISPLAY UNIT (X54-3700-00)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
D961			B30-2146-05	LED (OR)		X101		*	L77-3069-05	CRYSTAL RESONATOR (11.0592MHZ)	
C101			CK73GB1H102K	CHIP C 1000PF K		CP101,102			RK74GB1J102J	CHIP-COM 1.0K J 1/16W	
C102			CK73FBOJ106K	CHIP C 10UF K		CP103,104			RK74GB1J103J	CHIP-COM 10K J 1/16W	
C103			CK73GB1H102K	CHIP C 1000PF K		CP105			RK74GB1J473J	CHIP-COM 47K J 1/16W	
C104			CK73FBOJ106K	CHIP C 10UF K		CP106			RK74GB1J101J	CHIP-COM 100 J 1/16W	
C105,106			CK73GB1H104K	CHIP C 0.10UF K		CP107			RK74GB1J473J	CHIP-COM 47K J 1/16W	
C107			CK73GB1H103K	CHIP C 0.010UF K		R101,102			RK73GB2A472J	CHIP R 4.7K J 1/10W	
C108			CK73GB1H471K	CHIP C 470PF K		R103			RK73GB2A473J	CHIP R 47K J 1/10W	
C109			CK73GB1H102K	CHIP C 1000PF K		R104			RK73GB2A472J	CHIP R 4.7K J 1/10W	
C110-112			CK73GB1H104K	CHIP C 0.10UF K		R105			RK73GB2A103J	CHIP R 10K J 1/10W	
C113			CK73GB1H102K	CHIP C 1000PF K		R106-108			RK73GB2A680J	CHIP R 68 J 1/10W	
C114			CK73GB1H104K	CHIP C 0.10UF K		R109			RK73GB2A103J	CHIP R 10K J 1/10W	
C115			C93-0912-05	CHIP C 100UF M		R110,111			RK73GB2A680J	CHIP R 68 J 1/10W	
C116			CK73GB1H102K	CHIP C 1000PF K		R112			RK73GB2A000J	CHIP R 0.0 J 1/10W	
C117,118			CC73GCH1H030B	CHIP C 3.0PF B		R113-119			RK73GB2A680J	CHIP R 68 J 1/10W	
C119-121			CK73GB1H104K	CHIP C 0.10UF K		R120			RK73GB2A473J	CHIP R 47K J 1/10W	
C122-124			CK73GB1H102K	CHIP C 1000PF K		R121			RK73GB2A103J	CHIP R 10K J 1/10W	
C125			CK73GB1A105K	CHIP C 1.0UF K		R122,123			RK73GB2A680J	CHIP R 68 J 1/10W	
C126,127			CK73GB1H102K	CHIP C 1000PF K		R124			RK73GB2A000J	CHIP R 0.0 J 1/10W	
C128			CK73GB1A105K	CHIP C 1.0UF K		R125			RK73GB2A680J	CHIP R 68 J 1/10W	
C129-136			CK73GB1H102K	CHIP C 1000PF K		R126,127			RK73GB2A473J	CHIP R 47K J 1/10W	
C137			CK73GB1A105K	CHIP C 1.0UF K		R128			RK73GB2A680J	CHIP R 68 J 1/10W	
C138-150			CK73GB1H102K	CHIP C 1000PF K		R130			RK73GB2A473J	CHIP R 47K J 1/10W	
C151-153			CE32BM1C101M	CHIP EL 100UF 16VW		R131,132			RK73GB2A680J	CHIP R 68 J 1/10W	
C154,155			C93-0912-05	CHIP C 100UF M		R133-135			RK73GB2A473J	CHIP R 47K J 1/10W	
C157			CK73GB1H222K	CHIP C 2200PF K		R136			RK73GB2A102J	CHIP R 1.0K J 1/10W	
C159			CK73GB1H222K	CHIP C 2200PF K		R137			RK73GB2A473J	CHIP R 47K J 1/10W	
C161			CK73GB1H222K	CHIP C 2200PF K		R138			RK73GB2A000J	CHIP R 0.0 J 1/10W	
C163			CK73GB1H222K	CHIP C 2200PF K		R139-141			RK73GB2A473J	CHIP R 47K J 1/10W	
C164			CK73GB1H103K	CHIP C 0.010UF K		R142			RK73GB2A121J	CHIP R 120 J 1/10W	
C169			CK73GB1H103K	CHIP C 0.010UF K		R143			RK73GB2A000J	CHIP R 0.0 J 1/10W	
C171			CK73GB1H103K	CHIP C 0.010UF K		R144,145			RK73GB2A121J	CHIP R 120 J 1/10W	
C950,951			CK73GB1H103K	CHIP C 0.010UF K		R146			RK73GB2A103J	CHIP R 10K J 1/10W	
C952-955			CK73FB1C105K	CHIP C 1.0UF K		R147,148			RK73GB2A121J	CHIP R 120 J 1/10W	
C956-959			CK73GB1H103K	CHIP C 0.010UF K		R149			RK73GB2A000J	CHIP R 0.0 J 1/10W	
C973			CK73GB1A474K	CHIP C 0.47UF K		R150-153			RK73GB2A121J	CHIP R 120 J 1/10W	
304	2F		E23-1176-04	EARTH LUG		R154-159			RK73GB2A473J	CHIP R 47K J 1/10W	
305	1E	*	E29-1230-04	INTER CONNECTOR		R160			RK73GB2A105J	CHIP R 1.0M J 1/10W	
306	2F		E37-1511-05	PROCESSED LEAD WIRE		R161			RK73GB2A154J	CHIP R 150K J 1/10W	
CN101			E40-6727-05	FLAT CABLE CONNECTOR		R162,163			RK73GB2A102J	CHIP R 1.0K J 1/10W	
CN102			E40-6527-05	PIN ASSY		R164-166			RK73GB2A121J	CHIP R 120 J 1/10W	
CN103			E41-1684-05	PIN ASSY		R167			RK73GB2A103J	CHIP R 10K J 1/10W	
CN104		*	E41-1775-05	PIN ASSY		R168,169			RK73GB2A121J	CHIP R 120 J 1/10W	
CN105			E40-6765-05	PIN ASSY		R170			RK73GB2A000J	CHIP R 0.0 J 1/10W	
CN106			E40-6708-05	PIN ASSY		R171			RK73GB2A105J	CHIP R 1.0M J 1/10W	
CN107		*	E40-6879-05	FLAT CABLE CONNECTOR		R172			RK73GB2A121J	CHIP R 120 J 1/10W	
CN951			E41-1687-05	PIN ASSY		R173			RK73GB2A473J	CHIP R 47K J 1/10W	
CN953			E40-6766-05	PIN ASSY		R174			RK73GB2A000J	CHIP R 0.0 J 1/10W	
CN964			E41-1701-05	PIN ASSY		R175-177			RK73GB2A121J	CHIP R 120 J 1/10W	
CN965		*	E41-1775-05	PIN ASSY		R178			RK73GB2A102J	CHIP R 1.0K J 1/10W	
CN966			E40-6710-05	PIN ASSY		R179,180			RK73GB2A561J	CHIP R 560 J 1/10W	
J950	2F		E06-0858-25	RF COAXIAL RECEPTACLE (ROUND)		R181-190			RK73GB2A101J	CHIP R 100 J 1/10W	
J951	2F	*	E11-0705-15	PHONE JACK (9P)		R191,192			RK73GB2A473J	CHIP R 47K J 1/10W	
307	1E	*	J21-8620-13	MOUNTING HARDWARE		R193-209			RK73GB2A101J	CHIP R 100 J 1/10W	
L101-105			L92-0639-05	CHIP FERRITE		R210,211			RK73GB2A470J	CHIP R 47 J 1/10W	
L106		*	L33-1556-05	CHOKE COIL		R212-215			RK73GB2A101J	CHIP R 100 J 1/10W	
L107,108		*	L33-1554-05	CHOKE COIL		R216			RK73GB2A121J	CHIP R 120 J 1/10W	
L109		*	L92-0639-05	CHIP FERRITE		R217			RK73GB2A000J	CHIP R 0.0 J 1/10W	
						R218-221			RK73GB2A102J	CHIP R 1.0K J 1/10W	

PARTS LIST

DISPLAY UNIT (X54-3700-00)

TX-RX UNIT (X57-785X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R952-955			RK73FB2B470J	CHIP R 47 J 1/8W		C107			CC73GCH1H560J	CHIP C 56PF J	
R975			R92-1205-05	CHIP R 120 J 1/4W		C108			CK73GB1H102K	CHIP C 1000PF K	
R977			R92-1205-05	CHIP R 120 J 1/4W		C109			CC73GCH1H090D	CHIP C 9.0PF D	
VR953,954	1F	*	R31-0677-05	VARIABLE RESISTOR		C110			CC73GCH1H560J	CHIP C 56PF J	
S101-156			S70-0475-15	TACT SWITCH		C111			CK73GB1H104K	CHIP C 0.10UF K	
S952	2F		T99-0653-05	ROTARY ENCODER		C112			CK73EB1H104K	CHIP C 0.10UF K	
D116-122			MA2S111-F	DIODE		C113			CK73GB1H102K	CHIP C 1000PF K	
D218			1SS388F	DIODE		C114			CK73EB1H104K	CHIP C 0.10UF K	
IC101		*	LC75897PW	MOS-IC		C115-118			CK73GB1H103K	CHIP C 0.010UF K	
IC102			TC7W125FU-F	MOS-IC		C119			CK73GB1E105K	CHIP C 1.0UF K	
IC103		*	F364AEDFBK0UA	MICROCONTROLLER IC		C120			CK73GB1H104K	CHIP C 0.10UF K	
IC104			TC7W125FU-F	MOS-IC		C121			CC73GCH1H152J	CHIP C 1500PF J	
IC105,106			HD74LV2G34AUS	MOS-IC		C122		*	CC73FCH1H472J	CHIP C 4700PF J	
Q101			2SD2114K(W)	TRANSISTOR		C123			CC73GCH1H152J	CHIP C 1500PF J	
Q102			RN47A5-F	TRANSISTOR		C127			CC73GCH1H180J	CHIP C 18PF J	
Q103-105			2SD2114K(W)	TRANSISTOR		C128,129			CC73GCH1H271J	CHIP C 270PF J	
Q106			UMG1N	TRANSISTOR		C130			CC73GCH1H330J	CHIP C 33PF J	
Q107			RT1N141U-T111	TRANSISTOR		C131			CC73GCH1H222J	CHIP C 2200PF J	
S953	1F	*	W02-3737-05	ENCODER		C132		*	CC73FCH1H472J	CHIP C 4700PF J	
TX-RX UNIT (X57-785X-XX) 0-11: K 2-71: E						C133			CC73GCH1H221J	CHIP C 220PF J	
D521			B30-2001-05	LED (RE)		C134,135			CK73GB1H104K	CHIP C 0.10UF K	
D810			B30-2001-05	LED (RE)		C136			CC73GCH1H120J	CHIP C 12PF J	
C10,11			CK73GB1E105K	CHIP C 1.0UF K		C137			CC73GCH1H222J	CHIP C 2200PF J	
C12			CK73GB1H102K	CHIP C 1000PF K		C138			CK73GB1H103K	CHIP C 0.010UF K	
C15			CK73GB1H103K	CHIP C 0.010UF K		C139		*	CC73FCH1H392J	CHIP C 3900PF J	
C17			CK73GB1H103K	CHIP C 0.010UF K		C140			CK73GB1H104K	CHIP C 0.10UF K	
C19			CK73GB1H103K	CHIP C 0.010UF K		C141			CC73GCH1H222J	CHIP C 2200PF J	
C21			CK73GB1H103K	CHIP C 0.010UF K		C142			CK73GB1H104K	CHIP C 0.10UF K	
C23			CK73GB1H103K	CHIP C 0.010UF K		C143			CC73GCH1H102J	CHIP C 1000PF J	
C25			CK73GB1H103K	CHIP C 0.010UF K		C144			CK73GB1H104K	CHIP C 0.10UF K	
C27			CK73GB1H103K	CHIP C 0.010UF K		C145			CC73GCH1H102J	CHIP C 1000PF J	
C39,40			CK73GB1H103K	CHIP C 0.010UF K		C146			CK73GB1H104K	CHIP C 0.10UF K	
C42,43			CK73GB1H104K	CHIP C 0.10UF K		C147			CC73GCH1H102J	CHIP C 1000PF J	
C49,50			CK73GB1H104K	CHIP C 0.10UF K		C148			CK73GB1H104K	CHIP C 0.10UF K	
C52			CD04AZ1V101M	ELECTRO 100UF 35WV		C149			CC73GCH1H271J	CHIP C 270PF J	
C54			CS77CA1A4R7M	CHIP TNTL 4.7UF 10WV		C150			CK73GB1H104K	CHIP C 0.10UF K	
C56			CK73GB1E105K	CHIP C 1.0UF K		C151			CC73GCH1H151J	CHIP C 150PF J	
C57			CS77CA1A4R7M	CHIP TNTL 4.7UF 10WV		C152			CK73GB1H104K	CHIP C 0.10UF K	
C58			CK73FB1H102K	CHIP C 1000PF K		C153			CC73GCH1H220J	CHIP C 22PF J	
C59			CK73GB1H103K	CHIP C 0.010UF K		C154			CK73GB1H104K	CHIP C 0.10UF K	
C60			CK73GB1H102K	CHIP C 1000PF K		C155,156			CC73GCH1H102J	CHIP C 1000PF J	
C61,62			CK73FB1H102K	CHIP C 1000PF K		C157			CC73GCH1H100D	CHIP C 10PF D	
C63			CK73GB1H102K	CHIP C 1000PF K		C158			CC73GCH1H040C	CHIP C 4.0PF C	
C64,65			CK73GB1H103K	CHIP C 0.010UF K		C159			CK73GB1E105K	CHIP C 1.0UF K	
C66-78			CK73GB1H104K	CHIP C 0.10UF K		C160-166			CC73GCH1H102J	CHIP C 1000PF J	
C79		*	CK45FE3A222Z	CERAMIC 2200PF Z		C167,168			CK73GB1H104K	CHIP C 0.10UF K	
C80			CK73FB1H103K	CHIP C 0.010UF K		C169			CK73GB1H103K	CHIP C 0.010UF K	
C81-83			CK73FB1H102K	CHIP C 1000PF K		C170			CK73GB1H223K	CHIP C 0.022UF K	
C84			CK73GB1H103K	CHIP C 0.010UF K		C171			CK73GB1E105K	CHIP C 1.0UF K	
C85-88			CK73GB1H102K	CHIP C 1000PF K		C172			CC73GCH1H040C	CHIP C 4.0PF C	
C97			CK73GB1E105K	CHIP C 1.0UF K		C173			CC73GCH1H102J	CHIP C 1000PF J	
C98			CK73GB1H102K	CHIP C 1000PF K		C174			CC73GCH1H561J	CHIP C 560PF J	
C101-104			CK73GB1H103K	CHIP C 0.010UF K		C175			CC73GCH1H271J	CHIP C 270PF J	
C106			CD04AZ1E471M	ELECTRO 470UF 25WV		C176			CC73GCH1H121J	CHIP C 120PF J	
						C177			CC73GCH1H820J	CHIP C 82PF J	
						C178			CC73GCH1H680J	CHIP C 68PF J	
						C179			CC73GCH1H390J	CHIP C 39PF J	
						C180			CC73GCH1H470J	CHIP C 47PF J	
						C181			CC73GCH1H102J	CHIP C 1000PF J	
						C182			CC73GCH1H100D	CHIP C 10PF D	

PARTS LIST

TX-RX UNIT (X57-785X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C183,184			CC73GCH1H102J	CHIP C 1000PF J		C281			CK73GB1H103K	CHIP C 0.010UF K	
C185			CK73GB1E105K	CHIP C 1.0UF K		C282,283			CK73GB1H104K	CHIP C 0.10UF K	
C186-190			CC73GCH1H102J	CHIP C 1000PF J		C284			CK73GB1H103K	CHIP C 0.010UF K	
C191			CK73GB1H102K	CHIP C 1000PF K		C286			CK73GB1H472K	CHIP C 4700PF K	
C192,193			CC73GCH1H102J	CHIP C 1000PF J		C287			CK73GB1H103K	CHIP C 0.010UF K	
C194,195			CK73GB1H103K	CHIP C 0.010UF K		C288			CK73GB1H104K	CHIP C 0.10UF K	
C196,197			CK73GB1H104K	CHIP C 0.10UF K		C289			CK73GB1H472K	CHIP C 4700PF K	
C198			CC73GCH1H060D	CHIP C 6.0PF D		C290			CK73GB1H104K	CHIP C 0.10UF K	
C199		*	CC73FCH1H332J	CHIP C 3300PF J		C301			CC73GCH1H150J	CHIP C 15PF J	
C200			CK73GB1H104K	CHIP C 0.10UF K		C302			CC73GCH1H390J	CHIP C 39PF J	
C201			CC73GCH1H222J	CHIP C 2200PF J		C303			CC73GCH1H470J	CHIP C 47PF J	
C202			CK73GB1H104K	CHIP C 0.10UF K		C305			CC73GCH1H220J	CHIP C 22PF J	
C203			CC73GCH1H102J	CHIP C 1000PF J		C307			CK73GB1H103K	CHIP C 0.010UF K	
C204			CK73GB1H104K	CHIP C 0.10UF K		C321			CC73GCH1H560J	CHIP C 56PF J	
C205			CC73GCH1H102J	CHIP C 1000PF J		C322			CC73GCH1H330J	CHIP C 33PF J	
C206			CK73GB1H104K	CHIP C 0.10UF K		C323			CC73GCH1H820J	CHIP C 82PF J	
C207			CC73GCH1H102J	CHIP C 1000PF J		C324			CC73GCH1H390J	CHIP C 39PF J	
C208			CK73GB1H104K	CHIP C 0.10UF K		C325			CC73GCH1H270J	CHIP C 27PF J	
C209			CC73GCH1H331J	CHIP C 330PF J		C326-328			CK73GB1H104K	CHIP C 0.10UF K	
C210			CK73GB1H104K	CHIP C 0.10UF K		C330			CK73GB1H103K	CHIP C 0.010UF K	
C211			CC73GCH1H181J	CHIP C 180PF J		C335			CC73GCH1H020C	CHIP C 2.0PF C	
C212			CK73GB1H104K	CHIP C 0.10UF K		C336			CK73GB1H104K	CHIP C 0.10UF K	
C214			CK73GB1H104K	CHIP C 0.10UF K		C337			CC73GCH1H471J	CHIP C 470PF J	
C215			CK73GB1E105K	CHIP C 1.0UF K		C338			CK73GB1H102K	CHIP C 1000PF K	
C216			CK73GB1H104K	CHIP C 0.10UF K		C339			CK73GB1H103K	CHIP C 0.010UF K	
C231			CK73GB1H103K	CHIP C 0.010UF K		C341			CK73GB1H102K	CHIP C 1000PF K	
C232			CK73GB1E105K	CHIP C 1.0UF K		C342			CC73GCH1H020C	CHIP C 2.0PF C	
C233			CC73GCH1H102J	CHIP C 1000PF J		C343,344			CC73GCH1H102J	CHIP C 1000PF J	
C234			CK73GB1E105K	CHIP C 1.0UF K		C350			CC73GCH1H180J	CHIP C 18PF J	
C235			CK73GB1H103K	CHIP C 0.010UF K		C351			CK73GB1H103K	CHIP C 0.010UF K	
C236			CC73GCH1H101J	CHIP C 100PF J		C352,353			CK73GB1H104K	CHIP C 0.10UF K	
C237			CK73GB1H104K	CHIP C 0.10UF K		C354			CC73GCH1H060D	CHIP C 6.0PF D	
C238			CK73GB1H102K	CHIP C 1000PF K		C355			CK73GB1H103K	CHIP C 0.010UF K	
C239			CK73GB1H472K	CHIP C 4700PF K		C356			CK73GB1H472K	CHIP C 4700PF K	
C240			CK73GB1E105K	CHIP C 1.0UF K		C357			CK73GB1H103K	CHIP C 0.010UF K	
C241,242			CK73GB1H103K	CHIP C 0.010UF K		C358,359			CK73GB1H104K	CHIP C 0.10UF K	
C243,244			CK73GB1E105K	CHIP C 1.0UF K		C360			CK73GB1H472K	CHIP C 4700PF K	
C245			CC73GCH1H102J	CHIP C 1000PF J		C361,362			CC73GCH1H270J	CHIP C 27PF J	
C246			CK73GB1H103K	CHIP C 0.010UF K		C363			CK73GB1H104K	CHIP C 0.10UF K	
C247			CK73GB1E105K	CHIP C 1.0UF K		C373			CK73GB1H102K	CHIP C 1000PF K	
C248			CC73GCH1H102J	CHIP C 1000PF J		C374,375			CC73GCH1H010C	CHIP C 1.0PF C	
C249			CK73GB1H103K	CHIP C 0.010UF K		C377			CK73GB1H102K	CHIP C 1000PF K	
C250			CC73GCH1H470J	CHIP C 47PF J		C391,392			CK73GB1H103K	CHIP C 0.010UF K	
C251,252			CC73GCH1H560J	CHIP C 56PF J		C395			CK73GB1E105K	CHIP C 1.0UF K	
C253			CC73GCH1H820J	CHIP C 82PF J		C396			CC73GCH1H090D	CHIP C 9.0PF D	
C254			CC73GCH1H680J	CHIP C 68PF J		C397			CK73GB1H103K	CHIP C 0.010UF K	
C255,256			CC73GCH1H330J	CHIP C 33PF J		C398			CK73GB1E105K	CHIP C 1.0UF K	
C257			CC73GCH1H151J	CHIP C 150PF J		C399			CK73GB1H103K	CHIP C 0.010UF K	
C258			CC73GCH1H470J	CHIP C 47PF J		C401			CK73GB1H103K	CHIP C 0.010UF K	
C259			CC73GCH1H221J	CHIP C 220PF J		C402			CC73GCH1H020C	CHIP C 2.0PF C	
C260			CC73GCH1H681J	CHIP C 680PF J		C412,413			CK73GB1H103K	CHIP C 0.010UF K	
C261-263			CK73GB1H104K	CHIP C 0.10UF K		C421			CK73GB1H103K	CHIP C 0.010UF K	
C265			CK73GB1H103K	CHIP C 0.010UF K		C423			CC73GCH1H220J	CHIP C 22PF J	
C266			CK73GB1H102K	CHIP C 1000PF K		C424-426			CK73GB1H103K	CHIP C 0.010UF K	
C268			CK73GB1H104K	CHIP C 0.10UF K		C428,429			CC73GCH1H330J	CHIP C 33PF J	
C269			CE32CL1C100M	CHIP EL 10UF 16WV		C431			CK73GB1H103K	CHIP C 0.010UF K	
C270			CK73GB1H104K	CHIP C 0.10UF K		C432			CK73GB1H102K	CHIP C 1000PF K	
C272			CC73GCH1H471J	CHIP C 470PF J		C433			CK73GB1H103K	CHIP C 0.010UF K	
C273			CK73GB1H102K	CHIP C 1000PF K		C434			CC73GCH1H090D	CHIP C 9.0PF D	
C274			CK73GB1H103K	CHIP C 0.010UF K		C435			CK73GB1H103K	CHIP C 0.010UF K	

PARTS LIST

TX-RX UNIT (X57-785X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C436			CK73GB1E105K	CHIP C 1.0UF K		C555			CC73GCH1H101J	CHIP C 100PF J	
C440,441			CC73GCH1H151J	CHIP C 150PF J		C556			CK73GB1E105K	CHIP C 1.0UF K	
C442-449			CK73GB1H103K	CHIP C 0.010UF K		C557			CK73GB1H103K	CHIP C 0.010UF K	
C450			CC73GCH1H150J	CHIP C 15PF J		C558-560			CK73GB1E105K	CHIP C 1.0UF K	
C451-453			CK73GB1H103K	CHIP C 0.010UF K		C569			CK73GB1H103K	CHIP C 0.010UF K	
C454			CK73GB1H104K	CHIP C 0.10UF K		C570			CK73GB1E105K	CHIP C 1.0UF K	
C455			CK73GB1E105K	CHIP C 1.0UF K		C571-575			CK73GB1H103K	CHIP C 0.010UF K	
C456,457			CK73GB1H103K	CHIP C 0.010UF K		C576			CK73GB1H102K	CHIP C 1000PF K	
C458			CC73GCH1H121J	CHIP C 120PF J		C577			CK73GB1H103K	CHIP C 0.010UF K	
C459			CK73GB1E105K	CHIP C 1.0UF K		C578			CC73GCH1H121J	CHIP C 120PF J	
C460			CC73GCH1H101J	CHIP C 100PF J		C579			CC73GCH1H181J	CHIP C 180PF J	
C461			CC73GCH1H820J	CHIP C 82PF J		C580			CC73GCH1H331J	CHIP C 330PF J	
C462,463			CK73GB1H103K	CHIP C 0.010UF K		C581			CK73GB1H102K	CHIP C 1000PF K	
C464			CC73GCH1H820J	CHIP C 82PF J		C591			CK73GB1H104K	CHIP C 0.10UF K	
C465			CC73GCH1H101J	CHIP C 100PF J		C592			CE32CL1C220M	CHIP EL 22UF 16WV	
C466			CK73GB1H104K	CHIP C 0.10UF K		C593			CK73GB1H103K	CHIP C 0.010UF K	
C467			CK73GB1H102K	CHIP C 1000PF K		C594			CE32CL1C220M	CHIP EL 22UF 16WV	
C468,469			CC73GCH1H100D	CHIP C 10PF D		C595			CK73GB1H104K	CHIP C 0.10UF K	
C470			CC73GCH1H151J	CHIP C 150PF J		C597-599			CK73GB1H104K	CHIP C 0.10UF K	
C471-475			CK73GB1H103K	CHIP C 0.010UF K		C600			CK73GB1H103K	CHIP C 0.010UF K	
C476			CC73GCH1H820J	CHIP C 82PF J		C601			CC73GCH1H820J	CHIP C 82PF J	
C477			CC73GCH1H880J	CHIP C 68PF J		C602-606			CK73GB1H104K	CHIP C 0.10UF K	
C478			CC73GCH1H820J	CHIP C 82PF J		C608,609			CK73GB1H104K	CHIP C 0.10UF K	
C479			CC73GCH1H101J	CHIP C 100PF J		C610			CC73GCH1H270J	CHIP C 27PF J	
C480			CK73GB1H103K	CHIP C 0.010UF K		C611,612			CC73GCH1H271J	CHIP C 270PF J	
C481,482			CC73GCH1H390J	CHIP C 39PF J		C613			CC73GCH1H391J	CHIP C 390PF J	
C483			CC73GCH1H470J	CHIP C 47PF J		C614			CK73FB1A106K	CHIP C 10UF K	
C484			CC73GCH1H220J	CHIP C 22PF J		C615,616			CK73GB1E105K	CHIP C 1.0UF K	
C485			CC73GCH1H030C	CHIP C 3.0PF C		C618			CC73GCH1H331J	CHIP C 330PF J	
C486			CC73GCH1H060D	CHIP C 6.0PF D		C619			CK73GB1H104K	CHIP C 0.10UF K	
C490			CC73GCH1H180J	CHIP C 18PF J		C620			CK73GB1H223K	CHIP C 0.022UF K	
C494,495			CC73GCH1H060D	CHIP C 6.0PF D		C621			CK73GB1H222K	CHIP C 2200PF K	
C496			CC73GCH1H220J	CHIP C 22PF J		C625-628			CK73GB1H103K	CHIP C 0.010UF K	
C497			CC73GCH1H390J	CHIP C 39PF J		C630			CK73FB1A106K	CHIP C 10UF K	
C498			CC73GCH1H470J	CHIP C 47PF J		C631			CK73GB1E105K	CHIP C 1.0UF K	
C499			CC73GCH1H270J	CHIP C 27PF J		C632			CK73FB1A106K	CHIP C 10UF K	
C500			CK73GB1H103K	CHIP C 0.010UF K		C633			CK73GB1H103K	CHIP C 0.010UF K	
C501			CC73GCH1H820J	CHIP C 82PF J		C634			CK73GB1E105K	CHIP C 1.0UF K	
C502			CC73GCH1H680J	CHIP C 68PF J		C635,636			CK73GB1H103K	CHIP C 0.010UF K	
C503			CC73GCH1H121J	CHIP C 120PF J		C638			CK73GB1H102K	CHIP C 1000PF K	
C504			CC73GCH1H101J	CHIP C 100PF J		C639,640			CK73GB1H103K	CHIP C 0.010UF K	
C505-509			CK73GB1H103K	CHIP C 0.010UF K		C648			CC73GCH1H100D	CHIP C 10PF D	
C521			CC73GCH1H271J	CHIP C 270PF J		C649			CC73GCH1H020C	CHIP C 2.0PF C	
C522			CC73GCH1H681J	CHIP C 680PF J		C650			CK73GB1H103K	CHIP C 0.010UF K	
C523-530			CK73GB1H103K	CHIP C 0.010UF K		C651			CK73GB1H102K	CHIP C 1000PF K	
C531			CK73GB1E105K	CHIP C 1.0UF K		C652,653			CK73GB1H103K	CHIP C 0.010UF K	
C532			CK73GB1H104K	CHIP C 0.10UF K		C654			CC73GCH1H470J	CHIP C 47PF J	
C533-536			CK73GB1H103K	CHIP C 0.010UF K		C656			CK73GB1H103K	CHIP C 0.010UF K	
C537			CK73GB1H104K	CHIP C 0.10UF K		C657			CK73GB1E105K	CHIP C 1.0UF K	
C538			CK73GB1E105K	CHIP C 1.0UF K		C658			CC73GCH1H430J	CHIP C 43PF J	
C539			CK73GB1H103K	CHIP C 0.010UF K		C659			CC73GCH1H080D	CHIP C 8.0PF D	
C540			CK73GB1H104K	CHIP C 0.10UF K		C660			CK73GB1H222K	CHIP C 2200PF K	
C541-543			CK73GB1H103K	CHIP C 0.010UF K		C661			CK73GB1H332K	CHIP C 3300PF K	
C544			CC73GCH1H151J	CHIP C 150PF J		C662			CD04AZ1H470M	ELECTRO 47UF 50WV	
C545			CK73GB1H103K	CHIP C 0.010UF K		C663			CK73GB1H103K	CHIP C 0.010UF K	
C546			CK73GB1H104K	CHIP C 0.10UF K		C664,665			CD04AZ1H470M	ELECTRO 47UF 50WV	
C547,548			CK73GB1H103K	CHIP C 0.010UF K		C666			CK73GB1H103K	CHIP C 0.010UF K	
C551			CK73GB1H103K	CHIP C 0.010UF K		C668			CK73GB1H103K	CHIP C 0.010UF K	
C552			CC73GCH1H470J	CHIP C 47PF J		C670,671			CK73GB1H103K	CHIP C 0.010UF K	
C553,554			CK73GB1H103K	CHIP C 0.010UF K		C673			CK73GB1H103K	CHIP C 0.010UF K	

PARTS LIST

TX-RX UNIT (X57-785X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C674			CS77CA1VR47M	CHIP TNTL 0.47UF 35WV		C787			CC73GCH1H180J	CHIP C 18PF J	
C675			CK73GB1H103K	CHIP C 0.010UF K		C788			CK73GB1H103K	CHIP C 0.010UF K	
C679,680			CK73GB1H103K	CHIP C 0.010UF K		C789			CC73GCH1H390J	CHIP C 39PF J	
C681			CC73GCH1H100D	CHIP C 10PF D		C790			CK73GB1H104K	CHIP C 0.10UF K	
C682			CK73GB1H103K	CHIP C 0.010UF K		C791			CK73GB1E105K	CHIP C 1.0UF K	
C683			CK73GB1H102K	CHIP C 1000PF K		C792	*		CE32CL1V4R7M	CHIP EL 4.7UF 35WV	
C684			CK73GB1H103K	CHIP C 0.010UF K		C793			CC73GCH1H820J	CHIP C 82PF J	
C686			CK73GB1E105K	CHIP C 1.0UF K		C794			CK73GB1H104K	CHIP C 0.10UF K	
C687			CK73GB1H103K	CHIP C 0.010UF K		C795			CK73GB1H103K	CHIP C 0.010UF K	
C688			CE32CL1C470M	CHIP EL 47UF 16WV		C796			CK73GB1H104K	CHIP C 0.10UF K	
C689			CK73GB1E105K	CHIP C 1.0UF K		C797			CK73GB1E105K	CHIP C 1.0UF K	
C691			CC73GCH1H360J	CHIP C 36PF J		C798			CK73GB1H103K	CHIP C 0.010UF K	
C692			CC73GCH1H390J	CHIP C 39PF J		C799	*		CE32CL1V4R7M	CHIP EL 4.7UF 35WV	
C693			CC73GCH1H100D	CHIP C 10PF D		C800			CC73GCH1H150J	CHIP C 15PF J	
C694			CC73GCH1H090D	CHIP C 9.0PF D		C802,803			CK73GB1H104K	CHIP C 0.10UF K	
C701			CC73GCH1H100D	CHIP C 10PF D		C804			CK73GB1H102K	CHIP C 1000PF K	
C702			CK73GB1E105K	CHIP C 1.0UF K		C805			CC73GCH1H101J	CHIP C 100PF J	
C703			CK73GB1H473K	CHIP C 0.047UF K		C806,807			CK73GB1H103K	CHIP C 0.010UF K	
C704			CK73GB1E105K	CHIP C 1.0UF K		C808			CC73GCH1H101J	CHIP C 100PF J	
C705			CC73GCH1H180J	CHIP C 18PF J		C809			CK73GB1H103K	CHIP C 0.010UF K	
C706-713			CK73GB1H103K	CHIP C 0.010UF K		C810			CE32CL1C100M	CHIP EL 10UF 16WV	
C714			CE32CL1C100M	CHIP EL 10UF 16WV		C812			CK73GB1C474K	CHIP C 0.47UF K	
C715,716			CK73GB1H103K	CHIP C 0.010UF K		C813			CC73GCH1H101J	CHIP C 100PF J	
C717			CC73GCH1H102J	CHIP C 1000PF J		C814			CK73GB1H223K	CHIP C 0.022UF K	
C720			CK73GB1E105K	CHIP C 1.0UF K		C815			CK73GB1H473K	CHIP C 0.047UF K	
C721-723			CK73GB1H103K	CHIP C 0.010UF K		C816			CK73GB1E105K	CHIP C 1.0UF K	
C724			CC73GCH1H050C	CHIP C 5.0PF C		C817			CK73GB1H103K	CHIP C 0.010UF K	
C725			CC73GCH1H560J	CHIP C 56PF J		C818	*		CE32CL1V4R7M	CHIP EL 4.7UF 35WV	
C726			CK73GB1E105K	CHIP C 1.0UF K		C819			CK73GB1H103K	CHIP C 0.010UF K	
C728,729			CK73GB1H103K	CHIP C 0.010UF K		C820			CC73GCH1H101J	CHIP C 100PF J	
C731,732			CK73GB1H103K	CHIP C 0.010UF K		C821	*		CE32CL1V4R7M	CHIP EL 4.7UF 35WV	
C733			CC73GCH1H220J	CHIP C 22PF J		C822			CK73GB1H103K	CHIP C 0.010UF K	
C734			CK73GB1H103K	CHIP C 0.010UF K		C823			CC73GCH1H101J	CHIP C 100PF J	
C735			CC73GCH1H330J	CHIP C 33PF J		C824-826			CK73GB1H103K	CHIP C 0.010UF K	
C741-743			CK73GB1H102K	CHIP C 1000PF K		C827			CC73GCH1H101J	CHIP C 100PF J	
C744			CK73GB1H103K	CHIP C 0.010UF K		C841			CK73GB1H333K	CHIP C 0.033UF K	
C745			CC73GCH1H470J	CHIP C 47PF J		C842			CK73GB1H103K	CHIP C 0.010UF K	
C746			CK73GB1H102K	CHIP C 1000PF K		C843			CK73GB1H333K	CHIP C 0.033UF K	
C747			CK73GB1H104K	CHIP C 0.10UF K		C844			CK73GB1H103K	CHIP C 0.010UF K	
C748			CK73GB1H102K	CHIP C 1000PF K		C845			CC73GCH1H471J	CHIP C 470PF J	
C749			CK73GB1H103K	CHIP C 0.010UF K		C846,847			CK73GB1H104K	CHIP C 0.10UF K	
C751			CK73GB1E105K	CHIP C 1.0UF K		C861			CK73GB1H103K	CHIP C 0.010UF K	
C762			CK73GB1H103K	CHIP C 0.010UF K		C862-864			CK73GB1H104K	CHIP C 0.10UF K	
C763			CK73GB1H104K	CHIP C 0.10UF K		C865			CK73GB1H103K	CHIP C 0.010UF K	
C764			CK73GB1H103K	CHIP C 0.010UF K		C866			CK73GB1H102K	CHIP C 1000PF K	
C765			CK73GB1H104K	CHIP C 0.10UF K		C867			CK73GB1H103K	CHIP C 0.010UF K	
C766,767			CK73GB1H103K	CHIP C 0.010UF K		C901			CK73GB1H102K	CHIP C 1000PF K	
C768			CC73GCH1H040C	CHIP C 4.0PF C		C902			CK73GB1H104K	CHIP C 0.10UF K	
C769			CC73GCH1H471J	CHIP C 470PF J		C903			CE32CL1C220M	CHIP EL 22UF 16WV	
C770-772			CK73GB1H103K	CHIP C 0.010UF K		C904	*		CD04BQ1C471M	ELECTRO 470UF 16WV	
C773			CK73GB1H104K	CHIP C 0.10UF K		C905			CK73GB1H104K	CHIP C 0.10UF K	
C774			CC73GCH1H010C	CHIP C 1.0PF C		C906			CK73GB1H102K	CHIP C 1000PF K	
C775			CK73GB1H104K	CHIP C 0.10UF K		C908			CE32CL1C220M	CHIP EL 22UF 16WV	
C776			CK73GB1H103K	CHIP C 0.010UF K		C909,910			CK73GB1H104K	CHIP C 0.10UF K	
C780			CK73GB1H102K	CHIP C 1000PF K		C911			CE32CL1C220M	CHIP EL 22UF 16WV	
C781,782			CK73GB1E105K	CHIP C 1.0UF K		C912			CK73GB1H102K	CHIP C 1000PF K	
C783			CK73GB1H103K	CHIP C 0.010UF K		C920			CK73GB1H102K	CHIP C 1000PF K	
C784			CK73GB1H102K	CHIP C 1000PF K		C921			CE32CL1C220M	CHIP EL 22UF 16WV	
C785			CK73GB1H103K	CHIP C 0.010UF K		C922			CK73GB1H104K	CHIP C 0.10UF K	
C786			CK73GB1H102K	CHIP C 1000PF K		C923,924			CK73GB1H102K	CHIP C 1000PF K	

PARTS LIST

TX-RX UNIT (X57-785X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C926			CE32CL1C220M	CHIP EL 22UF 16WV		L136			L33-0695-05	SMALL FIXED INDUCTOR (1000UH)	
C927			CK73GB1H104K	CHIP C 0.10UF K		L137			L40-1892-14	SMALL FIXED INDUCTOR (1.8UH)	
C928			CK73GB1C224K	CHIP C 0.22UF K		L138			L40-1292-14	SMALL FIXED INDUCTOR (1.2UH)	
C929			CE32CL1C220M	CHIP EL 22UF 16WV		L139			L40-1092-14	SMALL FIXED INDUCTOR (1.0UH)	
C930			CK73GB1H104K	CHIP C 0.10UF K		L140			L40-3382-14	SMALL FIXED INDUCTOR (330NH)	
C931			CK73GB1H103K	CHIP C 0.010UF K		L141-144			L40-2282-14	SMALL FIXED INDUCTOR (220NH)	
TC101,102			C05-0379-05	CERAMIC TRIMMER CAPACITOR (30P)	E	L145			L40-1501-14	SMALL FIXED INDUCTOR (15UH)	
TC105			C05-0378-05	CERAMIC TRIMMER CAPACITOR (20P)		L146			L33-0695-05	SMALL FIXED INDUCTOR (1000UH)	
CN1			E40-6526-05	PIN ASSY		L147			L40-6891-14	SMALL FIXED INDUCTOR (6.8UH)	
CN2			E40-6656-05	PIN ASSY		L148			L40-5691-14	SMALL FIXED INDUCTOR (5.6UH)	
CN3			E40-6525-05	PIN ASSY		L149			L40-3391-14	SMALL FIXED INDUCTOR (3.3UH)	
CN4			E41-1684-05	PIN ASSY		L150			L34-4831-05	COIL	
CN5		*	E40-6726-05	FLAT CABLE CONNECTOR		L151			L40-2792-14	SMALL FIXED INDUCTOR (2.7UH)	
CN100			E04-0191-05	PIN SOCKET		L152			L40-2292-14	SMALL FIXED INDUCTOR (2.2UH)	
CN101-103			E40-5487-05	PIN ASSY		L153			L34-4832-05	COIL	
CN200			E04-0191-05	PIN SOCKET		L154		*	L41-1098-60	SMALL FIXED INDUCTOR (1UH)	
CN201			E40-6852-05	PIN ASSY		L155			L40-1292-14	SMALL FIXED INDUCTOR (1.2UH)	
CN300			E04-0191-05	PIN SOCKET		L156			L40-2282-14	SMALL FIXED INDUCTOR (220NH)	
CN301-304			E40-6852-05	PIN ASSY		L157			L40-1592-14	SMALL FIXED INDUCTOR (1.5UH)	
CN400			E04-0191-05	PIN SOCKET		L158			L40-1501-14	SMALL FIXED INDUCTOR (15UH)	
CN500,501			E18-0254-05	SOCKET		L159			L40-1892-14	SMALL FIXED INDUCTOR (1.8UH)	
CN600			E40-6525-05	PIN ASSY		L160			L40-1292-14	SMALL FIXED INDUCTOR (1.2UH)	
CN650			E40-6533-05	PIN ASSY		L161			L40-1092-14	SMALL FIXED INDUCTOR (1.0UH)	
CN663			E40-6533-05	PIN ASSY		L162			L40-3382-14	SMALL FIXED INDUCTOR (330NH)	
CN667			E04-0191-05	PIN SOCKET		L163-166			L40-2282-14	SMALL FIXED INDUCTOR (220NH)	
CN674			E04-0191-05	PIN SOCKET		L167			L34-4831-05	COIL	
CN700			E40-6525-05	PIN ASSY		L168			L34-4832-05	COIL	
CN800			E04-0191-05	PIN SOCKET		L170			L33-0695-05	SMALL FIXED INDUCTOR (1000UH)	
J1			E11-0414-15	3.5D PHONE JACK (3P)		L171,172			L34-4608-15	AIR-CORE COIL	
J2			E56-0408-15	DIN SOCKET		L231			L33-0695-05	SMALL FIXED INDUCTOR (1000UH)	
J3			E06-0752-15	DIN SOCKET		L232			L40-2282-14	SMALL FIXED INDUCTOR (220NH)	
J4			E11-0455-05	3.5D PHONE JACK (3P)		L233			L33-0695-05	SMALL FIXED INDUCTOR (1000UH)	
J5		*	E11-0705-15	PHONE JACK (9P)		L234		*	L39-1556-05	TOROIDAL COIL	
J100		*	E13-0166-25	PIN JACK		L235			L41-1005-33	SMALL FIXED INDUCTOR (10UH)	
J800		*	E13-0166-25	PIN JACK		L236			L41-1585-33	SMALL FIXED INDUCTOR (0.15UH)	
F1		*	F53-0388-05	FUSE (1.25A)		L237			L33-0695-05	SMALL FIXED INDUCTOR (1000UH)	
F901		*	F53-0316-15	FUSE (375MA)		L251,252		*	L41-2288-60	SMALL FIXED INDUCTOR (220NH)	
F911		*	F53-0316-15	FUSE (375MA)		L253		*	L34-4935-05	COIL	
F921		*	F53-0316-15	FUSE (375MA)		L254		*	L41-2288-60	SMALL FIXED INDUCTOR (220NH)	
CF591			L72-0998-05	CERAMIC FILTER		L255		*	L34-4935-05	COIL	
L11,12			L41-1005-33	SMALL FIXED INDUCTOR (10UH)		L261		*	L39-1554-05	TOROIDAL COIL	
L13			L41-1095-33	SMALL FIXED INDUCTOR (1.0UH)		L262		*	L39-1480-15	TOROIDAL COIL	
L14-17			L40-1085-92	SMALL FIXED INDUCTOR (100NH)		L263			L41-1015-33	SMALL FIXED INDUCTOR (100UH)	
L18		*	L33-1557-05	CHOKE COIL		L264		*	L39-1555-05	TOROIDAL COIL	
L19		*	L33-1554-05	CHOKE COIL		L281			L41-1015-33	SMALL FIXED INDUCTOR (100UH)	
L21-26			L92-0639-05	CHIP FERRITE		L283			L41-1015-33	SMALL FIXED INDUCTOR (100UH)	
L101,102			L41-2215-32	SMALL FIXED INDUCTOR (220UH)		L284			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
L103		*	L41-1585-32	SMALL FIXED INDUCTOR (0.15UH)		L301,302		*	L34-4937-05	COIL	
L104			L41-1005-33	SMALL FIXED INDUCTOR (10UH)		L321		*	L41-1288-60	SMALL FIXED INDUCTOR (120NH)	
L105			L33-0695-05	SMALL FIXED INDUCTOR (1000UH)		L322		*	L41-1088-60	SMALL FIXED INDUCTOR (100NH)	
L106			L40-6891-14	SMALL FIXED INDUCTOR (6.8UH)		L323		*	L39-1493-15	TOROIDAL COIL	
L107		*	L33-1547-05	SMALL FIXED INDUCTOR (1000UH)	E	L324		*	L39-1480-15	TOROIDAL COIL	
L108			L40-6891-14	SMALL FIXED INDUCTOR (6.8UH)	E	L325			L41-1015-33	SMALL FIXED INDUCTOR (100UH)	
L109			L40-5691-14	SMALL FIXED INDUCTOR (5.6UH)		L326			L34-4709-05	COIL	
L110		*	L33-1547-05	SMALL FIXED INDUCTOR (1000UH)		L327			L41-1005-33	SMALL FIXED INDUCTOR (10UH)	
L131,132			L40-6891-14	SMALL FIXED INDUCTOR (6.8UH)		L351			L41-1005-33	SMALL FIXED INDUCTOR (10UH)	
L133			L34-4831-05	COIL		L353			L41-1015-33	SMALL FIXED INDUCTOR (100UH)	
L134			L34-4832-05	COIL		L354			L41-4785-33	SMALL FIXED INDUCTOR (0.47UH)	
L135			L34-4833-05	COIL		L355			L41-1095-33	SMALL FIXED INDUCTOR (1.0UH)	
						L356			L40-1088-67	SMALL FIXED INDUCTOR (100NH)	

PARTS LIST

TX-RX UNIT (X57-785X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
L374-376			L34-4818-05	COIL		L741			L41-1085-33	SMALL FIXED INDUCTOR (0.1UH)	
L391			L41-1015-33	SMALL FIXED INDUCTOR (100UH)		L742			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
L393			L41-1005-33	SMALL FIXED INDUCTOR (10UH)		L743			L41-1005-33	SMALL FIXED INDUCTOR (10UH)	
L394		*	L39-1553-05	TOROIDAL COIL		L761			L41-1015-33	SMALL FIXED INDUCTOR (100UH)	
L397			L41-1005-33	SMALL FIXED INDUCTOR (10UH)		L762			L39-1476-05	TOROIDAL COIL	
L421,422			L39-1255-15	TOROIDAL COIL		L763		*	L39-1480-15	TOROIDAL COIL	
L431			L41-4785-33	SMALL FIXED INDUCTOR (0.47UH)		L764			L41-4785-33	SMALL FIXED INDUCTOR (0.47UH)	
L432			L40-1288-67	SMALL FIXED INDUCTOR (120NH)		L765			L41-1005-33	SMALL FIXED INDUCTOR (10UH)	
L451-453			L41-1015-33	SMALL FIXED INDUCTOR (100UH)		L781			L41-2785-33	SMALL FIXED INDUCTOR (0.27UH)	
L454		*	L41-1098-60	SMALL FIXED INDUCTOR (1UH)		L782			L41-1085-33	SMALL FIXED INDUCTOR (0.1UH)	
L455			L41-1015-33	SMALL FIXED INDUCTOR (100UH)		L783,784			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
L456		*	L41-1098-60	SMALL FIXED INDUCTOR (1UH)		L785			L33-0695-05	SMALL FIXED INDUCTOR (1000UH)	
L461		*	L39-1480-15	TOROIDAL COIL		L786			L41-1085-33	SMALL FIXED INDUCTOR (0.1UH)	
L462		*	L39-1571-05	TOROIDAL COIL		L841			L41-1015-33	SMALL FIXED INDUCTOR (100UH)	
L471-473			L41-1015-33	SMALL FIXED INDUCTOR (100UH)		L903			L41-1005-33	SMALL FIXED INDUCTOR (10UH)	
L474,475			L41-6895-33	SMALL FIXED INDUCTOR (6.8UH)		XF301		*	L71-0656-15	MCF (11.374MHZ)	
L476			L41-5695-33	SMALL FIXED INDUCTOR (5.6UH)		XF371			L71-0605-05	MCF (73.095MHZ)	
L477,478			L41-1005-33	SMALL FIXED INDUCTOR (10UH)		XF471		*	L71-0664-05	MCF (10.695MHZ)	
L479			L41-6895-33	SMALL FIXED INDUCTOR (6.8UH)		XF472		*	L71-0230-15	MCF (10.695MHZ)	
L480			L41-5695-33	SMALL FIXED INDUCTOR (5.6UH)		XF473			L71-0569-15	CRYSTAL FILTER (10.695MHZ)	
L481			L41-6895-33	SMALL FIXED INDUCTOR (6.8UH)		XF474		*	L71-0657-05	CRYSTAL FILTER (11.374MHZ)	
L482-484			L41-1015-33	SMALL FIXED INDUCTOR (100UH)		XF475		*	L71-0658-05	CRYSTAL FILTER (11.374MHZ)	
L485		*	L41-2298-60	SMALL FIXED INDUCTOR (2.2UH)		R11			RK73GB2A103J	CHIP R 10K J 1/10W	
L486			L41-2295-33	SMALL FIXED INDUCTOR (2.2UH)		R12-17			RK73GB2A101J	CHIP R 100 J 1/10W	
L521			L41-8285-33	SMALL FIXED INDUCTOR (0.82UH)		R21			RK73GB2A104J	CHIP R 100K J 1/10W	
L522,523			L41-1015-33	SMALL FIXED INDUCTOR (100UH)		R22			RK73GB2A123J	CHIP R 12K J 1/10W	
L524		*	L39-1558-05	TOROIDAL COIL		R23			RK73GB2A101J	CHIP R 100 J 1/10W	
L525			L41-1015-33	SMALL FIXED INDUCTOR (100UH)		R24			RK73GB2A471J	CHIP R 470 J 1/10W	
L526,527			L41-1005-33	SMALL FIXED INDUCTOR (10UH)		R25			RK73GB2A392J	CHIP R 3.9K J 1/10W	
L528			L41-1015-33	SMALL FIXED INDUCTOR (100UH)		R26			RK73GB2A562J	CHIP R 5.6K J 1/10W	
L541			L41-6885-33	SMALL FIXED INDUCTOR (0.68UH)		R27			RK73GB2A474J	CHIP R 470K J 1/10W	
L542			L41-1015-33	SMALL FIXED INDUCTOR (100UH)		R28			RK73GB2A2R2J	CHIP R 2.2 J 1/10W	
L551			L41-1005-33	SMALL FIXED INDUCTOR (10UH)		R29-32			RK73GB2A103J	CHIP R 10K J 1/10W	
L552			L39-1255-15	TOROIDAL COIL		R33			RK73GB2A223J	CHIP R 22K J 1/10W	
L571,572			L41-1005-33	SMALL FIXED INDUCTOR (10UH)		R34			RK73GB2A221J	CHIP R 220 J 1/10W	
L573			L41-3385-33	SMALL FIXED INDUCTOR (0.33UH)		R35			RK73GB2A153J	CHIP R 15K J 1/10W	
L591			L41-1005-33	SMALL FIXED INDUCTOR (10UH)		R36			RK73GB2A000J	CHIP R 0.0 J 1/10W	
L592			L41-1085-33	SMALL FIXED INDUCTOR (0.1UH)		R37			RK73GB2A472J	CHIP R 4.7K J 1/10W	
L593			L41-1005-33	SMALL FIXED INDUCTOR (10UH)		R38			RK73GB2A103J	CHIP R 10K J 1/10W	
L594			L41-4705-33	SMALL FIXED INDUCTOR (47UH)		R39,40			RK73GB2A101J	CHIP R 100 J 1/10W	
L595			L34-4787-05	COIL		R41			RK73GB2A223J	CHIP R 22K J 1/10W	
L641			L41-1085-33	SMALL FIXED INDUCTOR (0.1UH)		R42			RK73GB2A102J	CHIP R 1.0K J 1/10W	
L651			L41-4795-33	SMALL FIXED INDUCTOR (4.7UH)		R51			RK73GB2A101J	CHIP R 100 J 1/10W	
L652			L41-4705-33	SMALL FIXED INDUCTOR (47UH)		R52			RK73GB2A472J	CHIP R 4.7K J 1/10W	
L653		*	L34-4935-05	COIL		R101			RK73FB2B473J	CHIP R 47K J 1/8W	
L654			L41-2285-33	SMALL FIXED INDUCTOR (0.22UH)		R102			RK73EB2E560J	CHIP R 56 J 1/4W	
L660		*	L33-1549-05	CHOKE COIL		R103			RK73EB2E471J	CHIP R 470 J 1/4W	
L661,662			L33-0695-05	SMALL FIXED INDUCTOR (1000UH)		R104			RK73EB2E181J	CHIP R 180 J 1/4W	
L663			L41-4705-33	SMALL FIXED INDUCTOR (47UH)		R105			RK73GB2A472J	CHIP R 4.7K J 1/10W	
L664,665		*	L34-4935-05	COIL		R106			RK73GB2A101J	CHIP R 100 J 1/10W	
L701			L41-1015-33	SMALL FIXED INDUCTOR (100UH)		R107,108			RK73GB2A222J	CHIP R 2.2K J 1/10W	
L702			L41-1005-33	SMALL FIXED INDUCTOR (10UH)		R109			RK73FB2B680J	CHIP R 68 J 1/8W	
L703			L40-1001-86	SMALL FIXED INDUCTOR (10UH)		R110			RK73GB2A560J	CHIP R 56 J 1/10W	
L705			L41-1005-33	SMALL FIXED INDUCTOR (10UH)		R131-143			RK73GB2A103J	CHIP R 10K J 1/10W	
L721,722			L41-1015-33	SMALL FIXED INDUCTOR (100UH)		R144			RK73EB2E680J	CHIP R 68 J 1/4W	
L723			L41-3395-33	SMALL FIXED INDUCTOR (3.3UH)		R145			RK73GB2A471J	CHIP R 470 J 1/10W	
L724			L41-1015-33	SMALL FIXED INDUCTOR (100UH)		R146			RK73FB2B330J	CHIP R 33 J 1/8W	
L725,726			L41-4705-33	SMALL FIXED INDUCTOR (47UH)		R147-155			RK73GB2A330J	CHIP R 33 J 1/10W	
L727			L41-1005-33	SMALL FIXED INDUCTOR (10UH)		R156,157			RK73EB2E680J	CHIP R 68 J 1/4W	
L728			L41-1015-33	SMALL FIXED INDUCTOR (100UH)							

PARTS LIST

TX-RX UNIT (X57-785X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R158			RK73EB2E560J	CHIP R 56 J 1/4W		R408			RK73GB2A471J	CHIP R 470 J 1/10W	
R159-167			RK73EB2E680J	CHIP R 68 J 1/4W		R421			RK73GB2A331J	CHIP R 330 J 1/10W	
R168			RK73GB2A330J	CHIP R 33 J 1/10W		R422			RK73GB2A271J	CHIP R 270 J 1/10W	
R169			RK73EB2E680J	CHIP R 68 J 1/4W		R423			RK73GB2A330J	CHIP R 33 J 1/10W	
R170-182			RK73FB2B330J	CHIP R 33 J 1/8W		R424			RK73GB2A221J	CHIP R 220 J 1/10W	
R212-215			RK73GB2A472J	CHIP R 4.7K J 1/10W		R431			RK73GB2A330J	CHIP R 33 J 1/10W	
R217-220			RK73GB2A472J	CHIP R 4.7K J 1/10W		R432			RK73GB2A124J	CHIP R 120K J 1/10W	
R231			RK73FB2B221J	CHIP R 220 J 1/8W		R433			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R232			RK73GB2A682J	CHIP R 6.8K J 1/10W		R434			RK73GB2A100J	CHIP R 10 J 1/10W	
R235			RK73GB2A122J	CHIP R 1.2K J 1/10W		R436,437			RK73GB2A220J	CHIP R 22 J 1/10W	
R236			RK73GB2A471J	CHIP R 470 J 1/10W		R438			RK73GB2A331J	CHIP R 330 J 1/10W	
R237			RK73GB2A821J	CHIP R 820 J 1/10W		R439			RK73GB2A180J	CHIP R 18 J 1/10W	
R238			RK73GB2A120J	CHIP R 12 J 1/10W		R440			RK73GB2A331J	CHIP R 330 J 1/10W	
R239			RK73FB2B390J	CHIP R 39 J 1/8W		R451			RK73EB2E471J	CHIP R 470 J 1/4W	
R240			RK73GB2A151J	CHIP R 150 J 1/10W		R452			RK73GB2A392J	CHIP R 3.9K J 1/10W	
R241,242			RK73EB2E121J	CHIP R 120 J 1/4W		R453			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R243			RK73GB2A682J	CHIP R 6.8K J 1/10W		R454			RK73GB2A821J	CHIP R 820 J 1/10W	
R244			RK73GB2A562J	CHIP R 5.6K J 1/10W		R455			RK73GB2A220J	CHIP R 22 J 1/10W	
R245			RK73GB2A181J	CHIP R 180 J 1/10W		R457			RK73GB2A8R2J	CHIP R 8.2 J 1/10W	
R246			RK73GB2A470J	CHIP R 47 J 1/10W		R458			RK73GB2A103J	CHIP R 10K J 1/10W	
R247			RK73GB2A271J	CHIP R 270 J 1/10W		R460			RK73GB2A101J	CHIP R 100 J 1/10W	
R248			RK73FB2B221J	CHIP R 220 J 1/8W		R461,462			RK73GB2A120J	CHIP R 12 J 1/10W	
R249			RK73GB2A271J	CHIP R 270 J 1/10W		R463			RK73GB2A331J	CHIP R 330 J 1/10W	
R261			RK73FB2B471J	CHIP R 470 J 1/8W		R464,465			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R263,264			RK73EB2E331J	CHIP R 330 J 1/4W		R466			RK73GB2A221J	CHIP R 220 J 1/10W	
R265,266			RK73GB2A100J	CHIP R 10 J 1/10W		R467			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R267			RK73GB2A271J	CHIP R 270 J 1/10W		R468			RK73GB2A221J	CHIP R 220 J 1/10W	
R268			RK73GB2A000J	CHIP R 0.0 J 1/10W		R471			RK73GB2A391J	CHIP R 390 J 1/10W	
R269-271			RK73GB2A100J	CHIP R 10 J 1/10W		R472,473			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R272			RK73GB2A821J	CHIP R 820 J 1/10W		R474			RK73GB2A561J	CHIP R 560 J 1/10W	
R273			RK73GB2A332J	CHIP R 3.3K J 1/10W		R477,478			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R274			RK73GB2A182J	CHIP R 1.8K J 1/10W		R479			RK73GB2A220J	CHIP R 22 J 1/10W	
R281			RK73GB2A471J	CHIP R 470 J 1/10W		R480			RK73GB2A681J	CHIP R 680 J 1/10W	
R282			RK73GB2A561J	CHIP R 560 J 1/10W		R481-485			RK73GB2A101J	CHIP R 100 J 1/10W	
R283			RK73GB2A151J	CHIP R 150 J 1/10W		R486			RK73GB2A681J	CHIP R 680 J 1/10W	
R284			RK73GB2A681J	CHIP R 680 J 1/10W		R487			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R285,286			RK73GB2A8R2J	CHIP R 8.2 J 1/10W		R488			RK73GB2A220J	CHIP R 22 J 1/10W	
R287			RK73FB2B100J	CHIP R 10 J 1/8W		R489			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R289			RK73GB2A000J	CHIP R 0.0 J 1/10W		R491			RK73GB2A391J	CHIP R 390 J 1/10W	
R321			RK73FB2B471J	CHIP R 470 J 1/8W		R492,493			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R323,324			RK73GB2A681J	CHIP R 680 J 1/10W		R494			RK73GB2A561J	CHIP R 560 J 1/10W	
R325,326			RK73GB2A100J	CHIP R 10 J 1/10W		R496-500			RK73GB2A101J	CHIP R 100 J 1/10W	
R327			RK73GB2A271J	CHIP R 270 J 1/10W		R501,502			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R329-331			RK73GB2A100J	CHIP R 10 J 1/10W		R503,504			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R336			RK73GB2A331J	CHIP R 330 J 1/10W		R505-509			RK73GB2A103J	CHIP R 10K J 1/10W	
R337			RK73GB2A102J	CHIP R 1.0K J 1/10W		R520			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R352			RK73EB2E471J	CHIP R 470 J 1/4W		R521			RK73FB2B331J	CHIP R 330 J 1/8W	
R355			RK73GB2A471J	CHIP R 470 J 1/10W		R522			RK73GB2A182J	CHIP R 1.8K J 1/10W	
R356,357			RK73GB2A151J	CHIP R 150 J 1/10W		R523			RK73FB2B471J	CHIP R 470 J 1/8W	
R358,359			RK73GB2A8R2J	CHIP R 8.2 J 1/10W		R524			RK73GB2A820J	CHIP R 82 J 1/10W	
R360			RK73EB2E100J	CHIP R 10 J 1/4W		R525			RK73GB2A101J	CHIP R 100 J 1/10W	
R361			RK73GB2A560J	CHIP R 56 J 1/10W		R526			RK73GB2A333J	CHIP R 33K J 1/10W	
R362,363			RK73GB2A121J	CHIP R 120 J 1/10W		R527,528			RK73GB2A103J	CHIP R 10K J 1/10W	
R371,372			RK73GB2A331J	CHIP R 330 J 1/10W		R529			RK73GB2A220J	CHIP R 22 J 1/10W	
R392			RK73GB2A471J	CHIP R 470 J 1/10W		R530			RK73GB2A561J	CHIP R 560 J 1/10W	
R393			RK73FB2B220J	CHIP R 22 J 1/8W		R531			RK73GB2A151J	CHIP R 150 J 1/10W	
R394			RK73GB2A101J	CHIP R 100 J 1/10W		R532			RK73GB2A122J	CHIP R 1.2K J 1/10W	
R395			RK73GB2A222J	CHIP R 2.2K J 1/10W		R533,534			RK73GB2A4R7J	CHIP R 4.7 J 1/10W	
R396			RK73GB2A681J	CHIP R 680 J 1/10W		R535			RK73GB2A100J	CHIP R 10 J 1/10W	
R398			RK73GB2A000J	CHIP R 0.0 J 1/10W		R536			RK73GB2A220J	CHIP R 22 J 1/10W	

PARTS LIST

TX-RX UNIT (X57-785X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
R537			RK73GB2A101J	CHIP R 100 J 1/10W		R646			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R538			RK73GB2A331J	CHIP R 330 J 1/10W		R648			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R539			RK73GB2A151J	CHIP R 150 J 1/10W		R650			RK73GB2A221J	CHIP R 220 J 1/10W	
R540			RK73GB2A471J	CHIP R 470 J 1/10W		R651			RK73GB2A104J	CHIP R 100K J 1/10W	
R542			RK73GB2A222J	CHIP R 2.2K J 1/10W		R652			RK73GB2A221J	CHIP R 220 J 1/10W	
R543			RK73GB2A471J	CHIP R 470 J 1/10W		R653,654			RK73GB2A101J	CHIP R 100 J 1/10W	
R544			RK73GB2A103J	CHIP R 10K J 1/10W		R655			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R545			RK73GB2A100J	CHIP R 10 J 1/10W		R656			RK73GB2A473J	CHIP R 47K J 1/10W	
R546,547			RK73GB2A120J	CHIP R 12 J 1/10W		R657			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R548			RK73GB2A271J	CHIP R 270 J 1/10W		R658			RK73GB2A101J	CHIP R 100 J 1/10W	
R549			RK73GB2A180J	CHIP R 18 J 1/10W		R659			RK73GB2A182J	CHIP R 1.8K J 1/10W	
R550			RK73GB2A271J	CHIP R 270 J 1/10W		R660			RK73GB2A223J	CHIP R 2.7K J 1/10W	
R551			RK73GB2A471J	CHIP R 470 J 1/10W		R661			RK73GB2A473J	CHIP R 47K J 1/10W	
R552,553			RK73GB2A221J	CHIP R 220 J 1/10W		R662,663			RK73GB2A223J	CHIP R 22K J 1/10W	
R554			RK73GB2A472J	CHIP R 4.7K J 1/10W		R664			RK73GB2A471J	CHIP R 470 J 1/10W	
R555			RK73GB2A224J	CHIP R 220K J 1/10W		R665			RK73GB2A221J	CHIP R 220 J 1/10W	
R556			RK73GB2A102J	CHIP R 1.0K J 1/10W		R666			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R557			RK73GB2A332J	CHIP R 3.3K J 1/10W		R667			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R560			RK73GB2A330J	CHIP R 33 J 1/10W		R668			RK73GB2A101J	CHIP R 100 J 1/10W	
R571			RK73GB2A471J	CHIP R 470 J 1/10W		R669			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R572			RK73GB2A271J	CHIP R 270 J 1/10W		R670			RK73GB2A473J	CHIP R 47K J 1/10W	
R573			RK73GB2A180J	CHIP R 18 J 1/10W		R671			RK73GB2A223J	CHIP R 22K J 1/10W	
R574			RK73GB2A271J	CHIP R 270 J 1/10W		R672			RK73GB2A473J	CHIP R 47K J 1/10W	
R575			RK73GB2A392J	CHIP R 3.9K J 1/10W		R673			RK73GB2A683J	CHIP R 68K J 1/10W	
R576			RK73GB2A222J	CHIP R 2.2K J 1/10W		R674			RK73GB2A103J	CHIP R 10K J 1/10W	
R577			RK73GB2A391J	CHIP R 390 J 1/10W		R675			RK73GB2A223J	CHIP R 22K J 1/10W	
R578			RK73EB2E221J	CHIP R 220 J 1/4W		R676			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R579			RK73GB2A101J	CHIP R 100 J 1/10W		R677			RK73GB2A473J	CHIP R 47K J 1/10W	
R581			RK73GB2A000J	CHIP R 0.0 J 1/10W		R678			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R586			RK73GB2A153J	CHIP R 15K J 1/10W		R679			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R592			RK73GB2A473J	CHIP R 47K J 1/10W		R680			RK73GB2A153J	CHIP R 15K J 1/10W	
R593			RK73GB2A471J	CHIP R 470 J 1/10W		R681			RK73GB2A103J	CHIP R 10K J 1/10W	
R595			RK73GB2A000J	CHIP R 0.0 J 1/10W		R682			RK73GB2A221J	CHIP R 220 J 1/10W	
R601			RK73GB2A681J	CHIP R 680 J 1/10W		R683			RK73GB2A333J	CHIP R 33K J 1/10W	
R603,604			RK73GB2A000J	CHIP R 0.0 J 1/10W		R684			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R609			RK73GB2A334J	CHIP R 330K J 1/10W		R685			RK73GB2A563J	CHIP R 56K J 1/10W	
R610			RK73GB2A000J	CHIP R 0.0 J 1/10W		R686			RK73GB2A101J	CHIP R 100 J 1/10W	
R611			RK73GB2A223J	CHIP R 22K J 1/10W		R687			RK73GB2A681J	CHIP R 680 J 1/10W	
R612			RK73GB2A122J	CHIP R 1.2K J 1/10W		R689,690			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R614			RK73GB2A333J	CHIP R 33K J 1/10W		R691			RK73GB2A473J	CHIP R 47K J 1/10W	
R615			RK73GB2A102J	CHIP R 1.0K J 1/10W		R692			RK73GB2A220J	CHIP R 22 J 1/10W	
R616			RK73GB2A104J	CHIP R 100K J 1/10W		R693-695			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R617			RK73GB2A684J	CHIP R 680K J 1/10W		R701			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R618			RK73GB2A682J	CHIP R 6.8K J 1/10W		R702			RK73GB2A331J	CHIP R 330 J 1/10W	
R620			RK73GB2A223J	CHIP R 22K J 1/10W		R703			RK73GB2A562J	CHIP R 5.6K J 1/10W	
R621			RK73GB2A473J	CHIP R 47K J 1/10W		R705,706			RK73GB2A471J	CHIP R 470 J 1/10W	
R622			RK73GB2A223J	CHIP R 22K J 1/10W		R707			RK73GB2A681J	CHIP R 680 J 1/10W	
R623			RK73GB2A183J	CHIP R 18K J 1/10W		R708			RK73GB2A101J	CHIP R 100 J 1/10W	
R624			RK73GB2A273J	CHIP R 27K J 1/10W		R709			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R625			RK73GB2A223J	CHIP R 22K J 1/10W		R710			RK73GB2A224J	CHIP R 220K J 1/10W	
R626			RK73GB2A103J	CHIP R 10K J 1/10W		R711			RK73GB2A331J	CHIP R 330 J 1/10W	
R628			RK73GB2A683J	CHIP R 68K J 1/10W		R712			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R629			RK73GB2A684J	CHIP R 680K J 1/10W		R713			RK73GB2A820J	CHIP R 82 J 1/10W	
R632			RK73GB2A103J	CHIP R 10K J 1/10W		R714			RK73GB2A471J	CHIP R 470 J 1/10W	
R633-636			RK73GB2A473J	CHIP R 47K J 1/10W		R715			RK73GB2A182J	CHIP R 1.8K J 1/10W	
R640			RK73GB2A154J	CHIP R 150K J 1/10W		R716			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R641			RK73GB2A000J	CHIP R 0.0 J 1/10W		R721			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R642			RK73GB2A101J	CHIP R 100 J 1/10W		R722			RK73GB2A103J	CHIP R 10K J 1/10W	
R643			RK73GB2A471J	CHIP R 470 J 1/10W		R723			RK73GB2A822J	CHIP R 8.2K J 1/10W	
R644			RK73GB2A101J	CHIP R 100 J 1/10W		R724			RK73GB2A562J	CHIP R 5.6K J 1/10W	

PARTS LIST

TX-RX UNIT (X57-785X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R725,726			RK73GB2A471J	CHIP R 470 J 1/10W		R807			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R727			RK73GB2A102J	CHIP R 1.0K J 1/10W		R808			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R728			RK73GB2A331J	CHIP R 330 J 1/10W		R809			RK73GB2A182J	CHIP R 1.8K J 1/10W	
R729			RK73GB2A470J	CHIP R 47 J 1/10W		R810			RK73GB2A273J	CHIP R 27K J 1/10W	
R730			RK73GB2A101J	CHIP R 100 J 1/10W		R811,812			RK73GB2A104J	CHIP R 100K J 1/10W	
R731			RK73GB2A330J	CHIP R 33 J 1/10W		R813			RK73GB2A105J	CHIP R 1.0M J 1/10W	
R732			RK73GB2A104J	CHIP R 100K J 1/10W		R814,815			RK73GB2A104J	CHIP R 100K J 1/10W	
R733			RK73GB2A393J	CHIP R 39K J 1/10W		R816			RK73GB2A471J	CHIP R 470 J 1/10W	
R734			RK73GB2A223J	CHIP R 22K J 1/10W		R817			RK73GB2A101J	CHIP R 100 J 1/10W	
R735			RK73GB2A471J	CHIP R 470 J 1/10W		R818			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R736			RK73GB2A224J	CHIP R 220K J 1/10W		R819			RK73GB2A822J	CHIP R 8.2K J 1/10W	
R737			RK73GB2A332J	CHIP R 3.3K J 1/10W		R820			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R738			RK73GB2A102J	CHIP R 1.0K J 1/10W		R821			RK73GB2A103J	CHIP R 10K J 1/10W	
R741			RK73GB2A000J	CHIP R 0.0 J 1/10W		R822			RK73GB2A471J	CHIP R 470 J 1/10W	
R742			RK73GB2A331J	CHIP R 330 J 1/10W		R823			RK73GB2A153J	CHIP R 15K J 1/10W	
R744			RK73GB2A470J	CHIP R 47 J 1/10W		R824			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R745			RK73GB2A100J	CHIP R 10 J 1/10W		R825			RK73GB2A104J	CHIP R 100K J 1/10W	
R746			RK73GB2A332J	CHIP R 3.3K J 1/10W		R826			RK73GB2A103J	CHIP R 10K J 1/10W	
R747			RK73GB2A182J	CHIP R 1.8K J 1/10W		R827			RK73GB2A100J	CHIP R 10 J 1/10W	
R748			RK73GB2A471J	CHIP R 470 J 1/10W		R828			RK73GB2A105J	CHIP R 1.0M J 1/10W	
R749			RK73GB2A103J	CHIP R 10K J 1/10W		R829			RK73GB2A334J	CHIP R 330K J 1/10W	
R750			RK73GB2A470J	CHIP R 47 J 1/10W		R830			RK73GB2A333J	CHIP R 33K J 1/10W	
R751			RK73GB2A331J	CHIP R 330 J 1/10W		R831			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R752			RK73GB2A000J	CHIP R 0.0 J 1/10W		R832			RK73GB2A331J	CHIP R 330 J 1/10W	
R753			RK73GB2A472J	CHIP R 4.7K J 1/10W		R833			RK73GB2A104J	CHIP R 100K J 1/10W	
R762			RK73GB2A101J	CHIP R 100 J 1/10W		R834			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R763			RK73GB2A470J	CHIP R 47 J 1/10W		R835			RK73GB2A104J	CHIP R 100K J 1/10W	
R764			RK73EB2E820J	CHIP R 82 J 1/4W		R836			RK73GB2A153J	CHIP R 15K J 1/10W	
R765			RK73GB2A681J	CHIP R 680 J 1/10W		R837			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R766			RK73GB2A102J	CHIP R 1.0K J 1/10W		R838			RK73GB2A332J	CHIP R 3.3K J 1/10W	
R767			RK73GB2A471J	CHIP R 470 J 1/10W		R839			RK73GB2A101J	CHIP R 100 J 1/10W	
R768			RK73GB2A102J	CHIP R 1.0K J 1/10W		R840			RK73GB2A332J	CHIP R 3.3K J 1/10W	
R769			RK73GB2A000J	CHIP R 0.0 J 1/10W		R841			RK73GB2A100J	CHIP R 10 J 1/10W	
R770			RK73GB2A331J	CHIP R 330 J 1/10W		R842			RK73GB2A822J	CHIP R 8.2K J 1/10W	
R771			RK73GB2A680J	CHIP R 68 J 1/10W		R843			RK73GB2A100J	CHIP R 10 J 1/10W	
R772			RK73GB2A471J	CHIP R 470 J 1/10W		R844			RK73GB2A334J	CHIP R 330K J 1/10W	
R780			RK73GB2A472J	CHIP R 4.7K J 1/10W		R845			RK73GB2A103J	CHIP R 10K J 1/10W	
R781			RK73GB2A103J	CHIP R 10K J 1/10W		R846			RK73GB2A223J	CHIP R 22K J 1/10W	
R782			RK73FB2B821J	CHIP R 820 J 1/8W		R847			RK73GB2A104J	CHIP R 100K J 1/10W	
R783,784			RK73GB2A103J	CHIP R 10K J 1/10W		R848			RK73GB2A123J	CHIP R 12K J 1/10W	
R785			RK73FB2B821J	CHIP R 820 J 1/8W		R849			RK73GB2A474J	CHIP R 470K J 1/10W	
R786			RK73GB2A6R8J	CHIP R 6.8 J 1/10W		R850			RK73GB2A333J	CHIP R 33K J 1/10W	
R787			RK73GB2A821J	CHIP R 820 J 1/10W		R851,852			RK73GB2A334J	CHIP R 330K J 1/10W	
R788,789			RK73GB2A100J	CHIP R 10 J 1/10W		R853			RK73GB2A223J	CHIP R 22K J 1/10W	
R790			RK73GB2A471J	CHIP R 470 J 1/10W		R854-856			RK73GB2A473J	CHIP R 47K J 1/10W	
R791			RK73GB2A102J	CHIP R 1.0K J 1/10W		R857			RK73GB2A330J	CHIP R 33 J 1/10W	
R792			RK73GB2A471J	CHIP R 470 J 1/10W		R858			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R793			RK73GB2A151J	CHIP R 150 J 1/10W		R859			RK73GB2A103J	CHIP R 10K J 1/10W	
R794			RK73GB2A471J	CHIP R 470 J 1/10W		R860			RK73GB2A154J	CHIP R 150K J 1/10W	
R795			RK73GB2A124J	CHIP R 120K J 1/10W		R862			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R796			RK73GB2A184J	CHIP R 180K J 1/10W		R863			RK73GB2A474J	CHIP R 470K J 1/10W	
R797			RK73GB2A563J	CHIP R 56K J 1/10W		R864			RK73GB2A183J	CHIP R 18K J 1/10W	
R798			RK73GB2A154J	CHIP R 150K J 1/10W		R865			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R800			RK73FB2B473J	CHIP R 47K J 1/8W		R866			RK73GB2A223J	CHIP R 22K J 1/10W	
R801			RK73GB2A102J	CHIP R 1.0K J 1/10W		R867			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R802			RK73GB2A473J	CHIP R 47K J 1/10W		R868			RK73GB2A473J	CHIP R 47K J 1/10W	
R803			RK73GB2A683J	CHIP R 68K J 1/10W		R869			RK73GB2A103J	CHIP R 10K J 1/10W	
R804			RK73GB2A334J	CHIP R 330K J 1/10W		R870			RK73GB2A104J	CHIP R 100K J 1/10W	
R805			RK73GB2A000J	CHIP R 0.0 J 1/10W		R871			RK73GB2A224J	CHIP R 220K J 1/10W	
R806			RK73GB2A273J	CHIP R 27K J 1/10W		R872			RK73GB2A104J	CHIP R 100K J 1/10W	

PARTS LIST

TX-RX UNIT (X57-785X-XX)

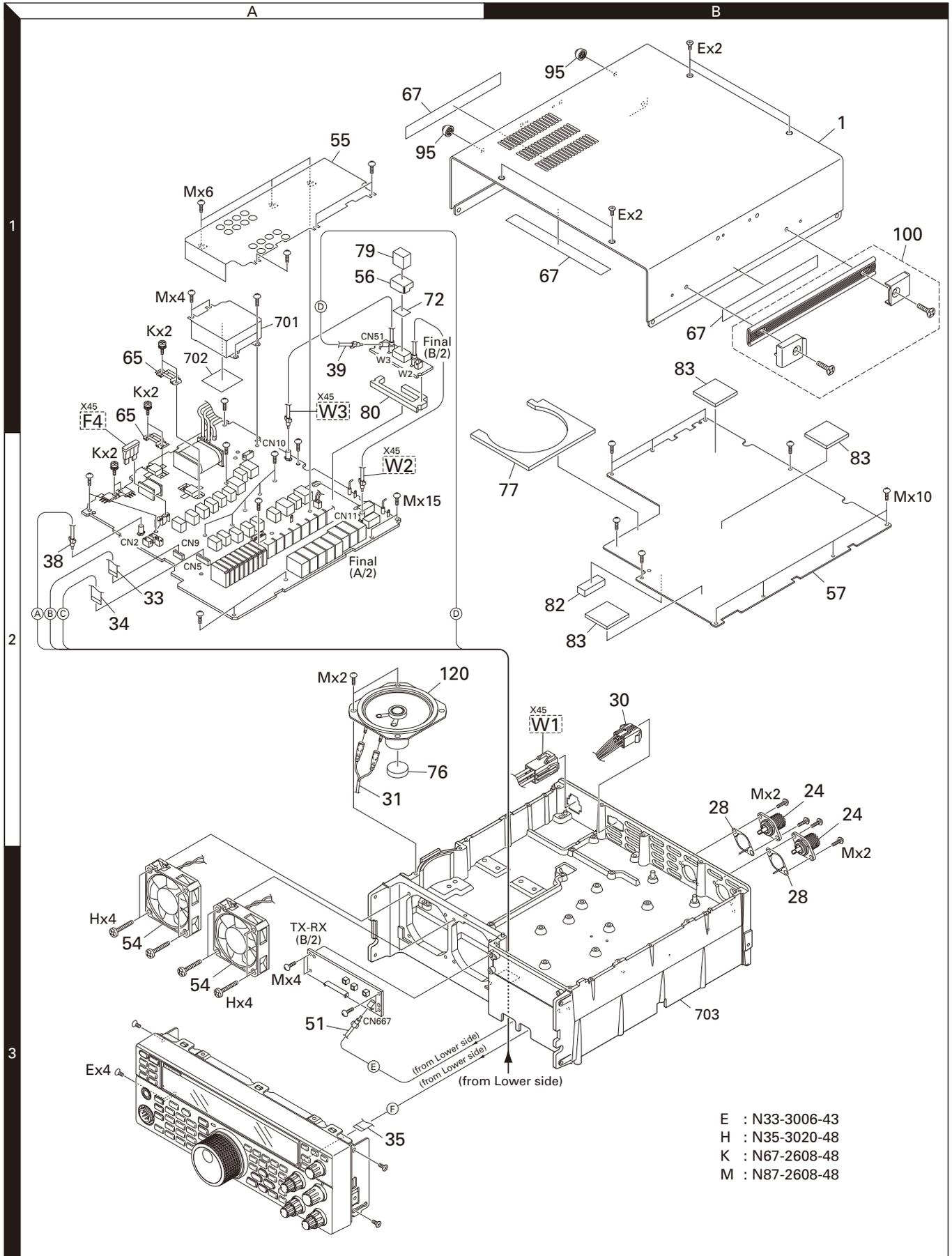
Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R873			RK73GB2A273J	CHIP R 27K J 1/10W		D431			MC2848-T111	DIODE	
R874			RK73GB2A222J	CHIP R 2.2K J 1/10W		D441			HVC131	DIODE	
R875			RK73GB2A182J	CHIP R 1.8K J 1/10W		D443			HVC131	DIODE	
R876			RK73GB2A394J	CHIP R 390K J 1/10W		D461-464			HVC131	DIODE	
R877			RK73GB2A333J	CHIP R 33K J 1/10W		D471,472			1SV312-F	DIODE	
R878			RK73GB2A184J	CHIP R 180K J 1/10W		D473			HVC131	DIODE	
R879			RK73GB2A224J	CHIP R 220K J 1/10W		D474-477			1SV312-F	DIODE	
R880			RK73GB2A101J	CHIP R 100 J 1/10W		D478			HVC131	DIODE	
R881			RK73GB2A104J	CHIP R 100K J 1/10W		D522-525			L204BBB	DIODE	
R882			RK73GB2A274J	CHIP R 270K J 1/10W		D526	*		MC2858-T111	DIODE	
R883			RK73GB2A000J	CHIP R 0.0 J 1/10W		D551,552			HSM88ASR-E	DIODE	
R884			RK73GB2A221J	CHIP R 220 J 1/10W		D571	*		MC2858-T111	DIODE	
R901,902			RK73GB2A102J	CHIP R 1.0K J 1/10W		D586,587			1SS226-F	DIODE	
R903			RK73GB2A103J	CHIP R 10K J 1/10W		D660			UDZW6.2(B)	ZENER DIODE	
R905,906			RK73GB2A102J	CHIP R 1.0K J 1/10W		D661			1SS226-F	DIODE	
R907-909			RK73GB2A473J	CHIP R 47K J 1/10W		D662			RB706F-40	DIODE	
R910,911			RK73GB2A103J	CHIP R 10K J 1/10W		D663			1SV312-F	DIODE	
R916			RK73GB2A103J	CHIP R 10K J 1/10W		D701	*		MC2858-T111	DIODE	
R917			RK73GB2A102J	CHIP R 1.0K J 1/10W		D702			MA2S111-F	DIODE	
R918,919			RK73GB2A473J	CHIP R 47K J 1/10W		D721,722			RN731V	DIODE	
R920			RK73GB2A103J	CHIP R 10K J 1/10W		D723			HVC131	DIODE	
R921			RK73GB2A102J	CHIP R 1.0K J 1/10W		D741			RN731V	DIODE	
R922			RK73GB2A471J	CHIP R 470 J 1/10W		D761,762			HVC131	DIODE	
R923			RK73GB2A103J	CHIP R 10K J 1/10W		D781			1SV312-F	DIODE	
R924			RK73GB2A102J	CHIP R 1.0K J 1/10W		D782,783			HVC131	DIODE	
R925			RK73GB2A473J	CHIP R 47K J 1/10W		D799,800			EDZ18B	ZENER DIODE	
R927			RK73GB2A473J	CHIP R 47K J 1/10W		D801			EDZ5.1B	ZENER DIODE	
R936			RK73GB2A103J	CHIP R 10K J 1/10W		D802			MA2S111-F	DIODE	
R937,938			RK73GB2A222J	CHIP R 2.2K J 1/10W		D803			1SS388F	DIODE	
R939			RK73GB2A473J	CHIP R 47K J 1/10W		D806			UDZW10(B)	ZENER DIODE	
VR261			R32-0346-05	SEMI FIXED VARIABLE RESISTOR		D807-809			MA2S111-F	DIODE	
VR321			R32-0346-05	SEMI FIXED VARIABLE RESISTOR		D811	*		DZ2J033M	ZENER DIODE	
K11			S51-1420-05	RELAY		D812,813			MA2S111-F	DIODE	
K101,102			S76-0459-05	RELAY		D841-843			MA2S111-F	DIODE	
D11,12			1SS226-F	DIODE		D861,862			1SS388F	DIODE	
D13			MA2S111-F	DIODE		IC11,12			TC74HC4094AFF	MOS-IC	
D14			EDZ18B	ZENER DIODE		IC13			M62353AGPDF5J	MOS-IC	
D15	*		EDZ4.3B	ZENER DIODE		IC14,15			TC74HC4094AFF	MOS-IC	
D17			MA2S111-F	DIODE		IC521			NJM12904V	MOS-IC	
D18						IC591			NJM2591V	BI-POLAR IC	
D20-23	*		MC2858-T111	DIODE		IC592			NJM2732V	BI-POLAR IC	
D24			MA2S111-F	DIODE		IC631			TC4W53FU-F	MOS-IC	
D101			DA221	DIODE		IC701			TA4107F-F	MOS-IC	
D102,103	*		DSP-301N	SURGE ABSORBER		IC761			TA4107F-F	MOS-IC	
D104			MC2858-T111	DIODE		IC801			NJM12904V	MOS-IC	
D105,106			V08(G)	DIODE		IC802			TC4W53FU-F	MOS-IC	
D107			RLS245	DIODE		IC803			NJM12904V	MOS-IC	
D108-110			V08(G)	DIODE		IC861			NJM12904V	MOS-IC	
D131-156			HVC131	DIODE		Q12			2SC5383-T111	TRANSISTOR	
D231-234			HVC131	DIODE		Q13			RT1N436U-T111	TRANSISTOR	
D235	*		MC2858-T111	DIODE		Q14			2SK1824-A	FET	
D261			HVC131	DIODE		Q15			RT1N141U-T111	TRANSISTOR	
D281			HVC131	DIODE		Q16			RT1N436U-T111	TRANSISTOR	
D321			HVC131	DIODE		Q17			2SB1188(Q,R)	TRANSISTOR	
D323			1SV312-F	DIODE		Q101,102	*		RT5N234C-T112	TRANSISTOR	
D351			HVC131	DIODE		Q103	*		2SC6046-T112	TRANSISTOR	
D371			1SV312-F	DIODE		Q131-143			RT1N436U-T111	TRANSISTOR	
D421			1SV312-F	DIODE		Q236	*		2SC5551AF	TRANSISTOR	
D422,423			HSM88ASR-E	DIODE		Q239	*		RT1N436U-T111	TRANSISTOR	
						Q263-266	*		2SK1740-4	FET	

PARTS LIST

TX-RX UNIT (X57-785X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
Q267			2SB1694	TRANSISTOR		Q925			RT1N436U-T111	TRANSISTOR	
Q268		*	INK0010AU1-T1	FET		TH421			157-101-65001	THERMISTOR	
Q269			RT1N436U-T111	TRANSISTOR		TH460			157-101-65001	THERMISTOR	
Q270,271			2SB1694	TRANSISTOR		TH531			157-101-65001	THERMISTOR	
Q272		*	INK0010AU1-T1	FET		TH591,592			NCP18WB473JOS	THERMISTOR	
Q273			RT1N436U-T111	TRANSISTOR		TH701			157-302-65801	THERMISTOR	
Q274			2SB1694	TRANSISTOR		TH702,703			157-102-65001	THERMISTOR	
Q281,282		*	2SC5551AF	TRANSISTOR		TH721			157-302-65801	THERMISTOR	
Q301			RT1N141U-T111	TRANSISTOR		TH722			157-101-65001	THERMISTOR	
Q321-324		*	2SK1740-4	FET							
Q351,352		*	2SC5551AF	TRANSISTOR							
Q391		*	2SC5551AF	TRANSISTOR							
Q421			RT1N141U-T111	TRANSISTOR							
Q431			2SC3356-A	TRANSISTOR							
Q451		*	2SC5551AF	TRANSISTOR							
Q453-456			RT1N436U-T111	TRANSISTOR							
Q471-474			RT1N436U-T111	TRANSISTOR							
Q475-477			2SC5383-T111	TRANSISTOR							
Q521,522		*	2SC5551AF	TRANSISTOR							
Q541			2SC3356-A	TRANSISTOR							
Q551			2SC3356-A	TRANSISTOR							
Q571			2SC5383-T111	TRANSISTOR							
Q591			RT1N141U-T111	TRANSISTOR							
Q631			RT1N436U-T111	TRANSISTOR							
Q641			2SC3356-A	TRANSISTOR							
Q651-653			2SC3356-A	TRANSISTOR							
Q654			2SC5383-T111	TRANSISTOR							
Q660,661		*	2SC3134	TRANSISTOR							
Q662			2SA1037AK	TRANSISTOR							
Q663,664			2SC3356-A	TRANSISTOR							
Q665,666			2SC5383-T111	TRANSISTOR							
Q667			2SK1824-A	FET							
Q668-670			2SC5383-T111	TRANSISTOR							
Q671			RT1P141U-T111	TRANSISTOR							
Q702			2SC5383-T111	TRANSISTOR							
Q721			3SK293-F	FET							
Q741			2SK1830F	FET							
Q742			2SC3356-A	TRANSISTOR							
Q781,782		*	INK0010AU1-T1	FET							
Q783			NESG260234	TRANSISTOR							
Q784		*	RT5P431C-T112	TRANSISTOR							
Q801,802			RT1N436U-T111	TRANSISTOR							
Q803,804			2SC5383-T111	TRANSISTOR							
Q805			2SC4617(R)	TRANSISTOR							
Q806			2SK208-F(Y)	FET							
Q807			2SC5383-T111	TRANSISTOR							
Q841			RN47A5-F	TRANSISTOR							
Q842			2SC5383-T111	TRANSISTOR							
Q861,862			RT1N436U-T111	TRANSISTOR							
Q903			RT1N436U-T111	TRANSISTOR							
Q904			2SB1188(O,R)	TRANSISTOR							
Q905			RT1N141U-T111	TRANSISTOR							
Q906		*	INK0010AU1-T1	FET							
Q907			2SB1188(O,R)	TRANSISTOR							
Q908,909		*	RT5P431C-T112	TRANSISTOR							
Q910		*	INK0010AU1-T1	FET							
Q911			RT1N436U-T111	TRANSISTOR							
Q915-917			HN7G01FU-F	TRANSISTOR							
Q918			RT1N436U-T111	TRANSISTOR							
Q920			HN7G01FU-F	TRANSISTOR							

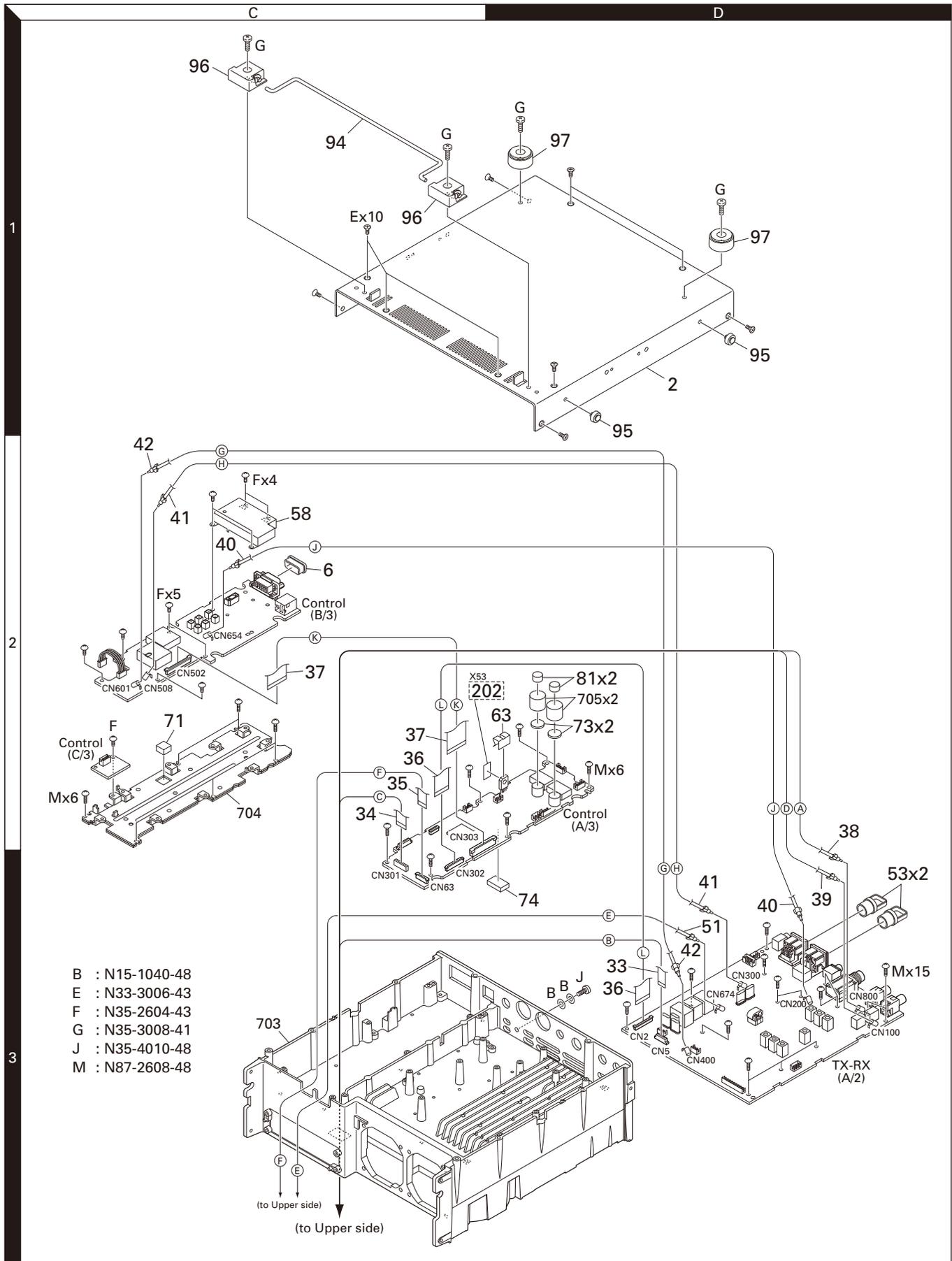
EXPLODED VIEW (MAIN BODY UPPER SIDE)



Parts with the exploded numbers larger than 700 are not supplied.

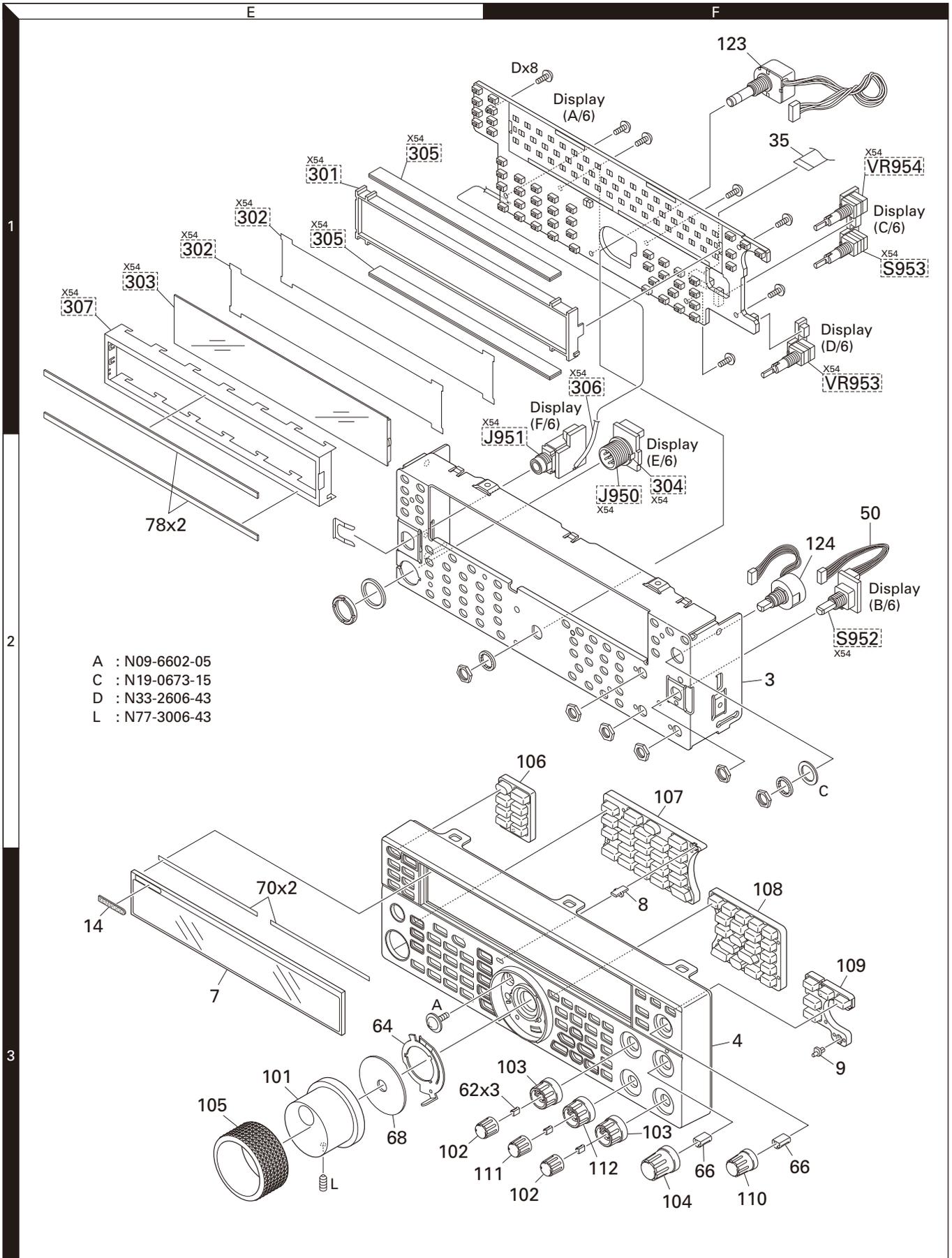
TS-590S

EXPLODED VIEW (MAIN BODY LOWER SIDE)



Parts with the exploded numbers larger than 700 are not supplied.

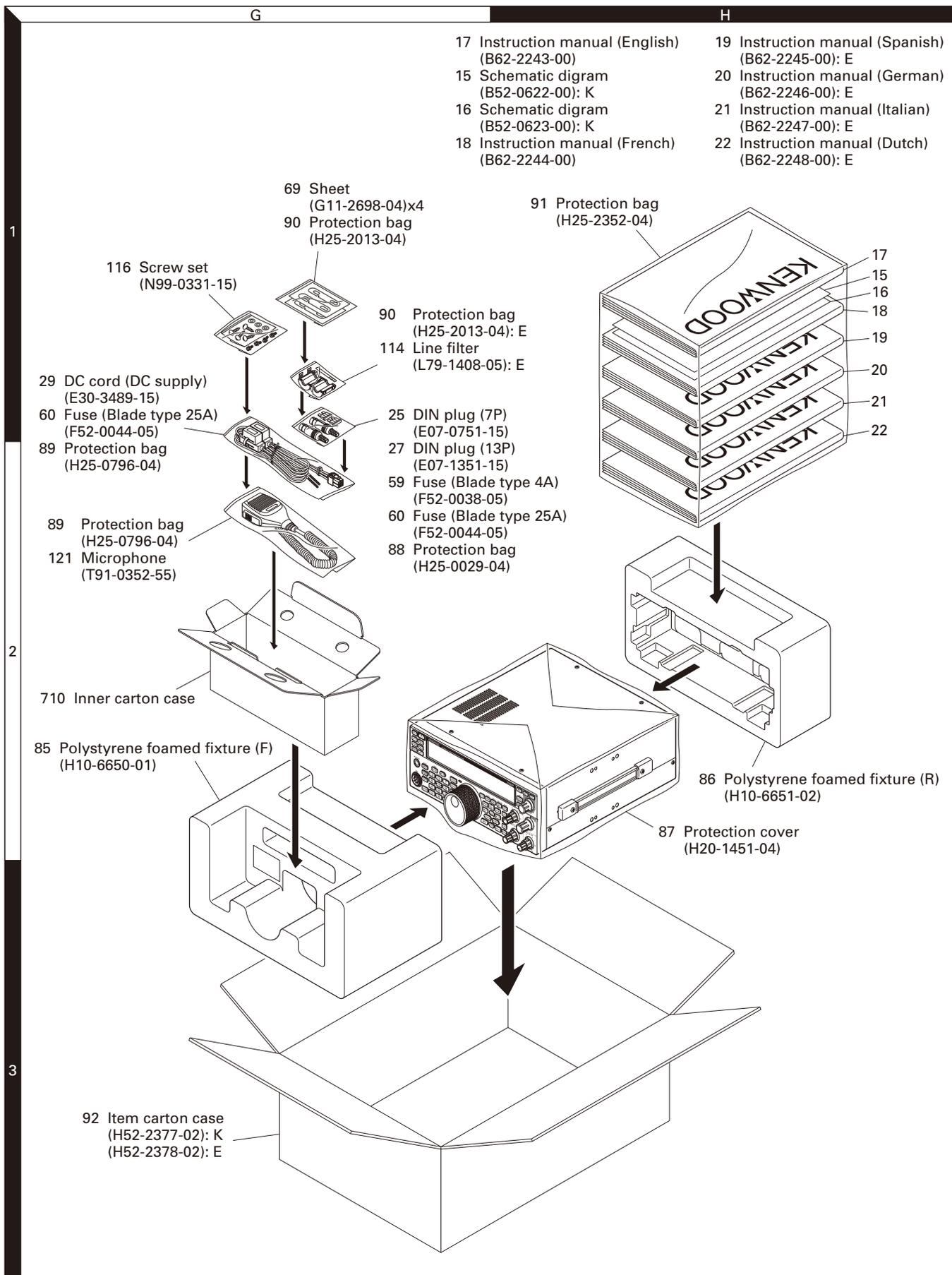
EXPLODED VIEW (PANEL)



- A : N09-6602-05
- C : N19-0673-15
- D : N33-2606-43
- L : N77-3006-43

Parts with the exploded numbers larger than 700 are not supplied.

PACKING



ADJUSTMENT

Updating the Firmware

The firmware of the main MCU and DSP can be updated using the "TS-590 Update" update software. Update the firmware according to the procedure displayed in update software.

Refer to the help file of the update software for a detailed procedure.

Download the latest "TS-590 Update" update software from the following URL:

http://www.kenwood.com/i/products/info/amateur/software_download.html

* The URL may change without notice.

Note: Update the firmware after replacing the main MCU or Flash memory.

Required Test Equipment

1. DC Voltmeter (DC V.M)

- 1) Input resistance: More than 1M Ω
- 2) Voltage range: 1.5 to 1000V AC/DC

Note: A high-precision multimeter may be used. However, accurate readings can not be obtained for high-impedance circuits.

2. DC Ammeter

- 1) Current range: 100mA, 1.5A, 30A, high-precision ammeter may be used.

3. RF VTVM (RF V.M)

- 1) Input impedance: 1M Ω and less than 3pF, min.
- 2) Voltage range: 10mV to 300V
- 3) Frequency range: 10kHz to 500MHz

4. AF Voltmeter (AF V.M)

- 1) Frequency range: 50Hz to 10kHz
- 2) Input resistance: 1M Ω or greater
- 3) Voltage range: 10mV to 30V

5. AF Generator (AG)

- 1) Frequency range: 200Hz to 5kHz
- 2) Output: 1mV or less to 1V, low distortion

6. AF Dummy Load (DM. SP)

- 1) Impedance: 8 Ω
- 2) Dissipation: 3W or greater

7. Oscilloscope

Requires high sensitivity, and external synchronization capability (150MHz or greater).

8. Standard Signal Generator (SSG)

- 1) Frequency range: 50kHz to 60MHz
- 2) Output: -133dBm/0.1 μ V to 7dBm/1V
- 3) Output impedance: 50 Ω
- 4) AM and FM modulation can be possible

Note: Generator must be frequency stable.

9. Frequency Counter (f. counter)

- 1) Minimum input voltage: 50mV
- 2) Frequency range: 150MHz or greater

10. Noise Generator (Noise G.)

Must generate ignition noise containing harmonics beyond 60MHz.

11. Audio Analyzer

12. RF Dummy Load

- 1) Impedance: 150 Ω and 50 Ω
- 2) Dissipation: 150W or greater

13. Linear Detector

- 1) Frequency range: 60MHz or greater

14. Power Meter

- 1) Impedance: 50 Ω
- 2) Dissipation: 300W continuous or greater
- 3) Frequency limits: 60MHz or greater

15. Spectrum Analyzer

- 1) Frequency range: 100kHz to 140MHz or greater
- 2) Bandwidth: 1kHz to 3MHz

16. Tracking Generator

17. Directional Coupler

18. Monitor Receiver

19. Microphone

MC-43S or MC-60S8

20. Distortion Meter

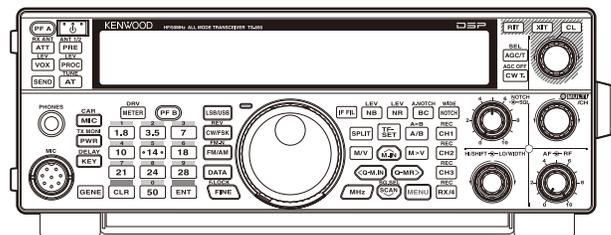
21. Double Signal Pad (50 Ω)

Preparation

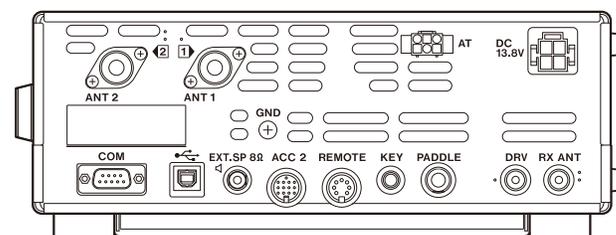
Unless otherwise specified, knobs and switches should be set as follows.

POWER ON
 NOTCH Center
 AF MIN
 RF MAX
 SQL MIN

■ Front panel



■ Rear panel

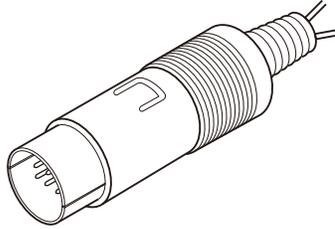


ADJUSTMENT

Service Jig

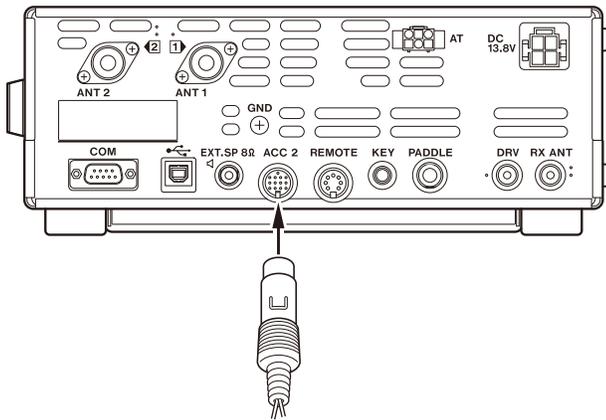
■ ACC 2 connector short plug

Use the same adjustment jig as the TS-570.



■ How to use the ACC 2 connector short plug

Insert the adjustment jig into the ACC 2 connector located on the rear panel of the transceiver.



Adjustment Mode

■ Outline

1. You can adjust the transceiver in service adjustment mode (adjustment using the panel keys) or with manual adjustment (turning a coil and trimmer, etc). The service adjustment mode (hereinafter referred to as "adjustment mode") has 63 items (Menu No. 00 to 62) and all adjustment data is stored in the EEPROM (X53-446 A/3: IC309).
2. You can enter adjustment mode and change each setting data.
3. New data is written to the EEPROM by performing Menu No. 60 writing.

■ Operation procedures in adjustment mode

1. How to start the adjustment mode
 - Insert the adjustment jig into the ACC 2 connector located on the rear panel of the transceiver.
 - Turn the transceiver ON while pressing the [MIC] key and [NR] key, to enter adjustment mode and the Menu No. appears on the Memory channel number display. Remove the adjustment jig from the transceiver when the Menu No. appears.



Menu No.

2. Select the adjustment mode Menu No.
Turn the [MULTI/CH] knob to change the Menu No.
3. Change the adjustment mode setting data
Setting data can be changed using the [MR] or [SCAN] key.
4. Write the adjustment mode data
Press the [MR] or [SCAN] key on the main unit or the [UP] or [DWN] key on the microphone on Menu No. 60.
5. Cancel the adjustment mode
Press the [CLR] key to return to normal VFO mode.

Note: When the power is turned OFF during the adjustment mode, adjustment mode is canceled.

■ Adjustment Mode Menu (Menu No. 00~62)

No.	Adjustment Item	Display	Condition		
			Frequency (MHz)	RX IF (MHz)	Mode
00	CAR Point	10M 2.7k	1.81	73	USB
01		11M 2.7k	1.81	11	USB
02		11M 500H	1.81	11	CW
03	HF 11M IF Gain	HF11 GAIN	14.2	11	USB
04	HF 73M IF Gain	HF73 GAIN	14.2	73	USB
05	11M Mix BAL	HF11 BAL	0.136	11	USB
06	73M Mix BAL	HF73 BAL	0.100	73	USB
07	AGC Reference	AGC REF	14.2	73	USB
08	HF S-Meter	HF.SSB S1	14.2	11	USB
09		HF.SSB S9			
10		HF.SSB SF			
11	HF FM S-Meter	HF.FM. S1	29.2	73	FM
12		HF.FM.SFUL			
13	HF FM Squelch	HF.FM.SQ.TH	29.2	73	FM
14		HF.FM.SQ.TI			
15	50M IF Gain	50. GAIN	50.2	73	USB
16	50M S-Meter	50.SSB S1	50.2	73	USB
17		50.SSB S9			
18		50.SSB SF			
19	50M FM S-Meter	50.FM S1	50.2	73	FM
20		50.FM.SFUL			
21	50M FM Squelch	50.FM.SQ.TH	50.2	73	FM
22		50.FM.SQ.TI			
23	ALC Reference	ALC REF	14.1	73	USB
24	POC/ Power Meter	POC 100W	14.1	73	CW
25		P.MTR 100W	14.1		
26		50M 100W	50.1		

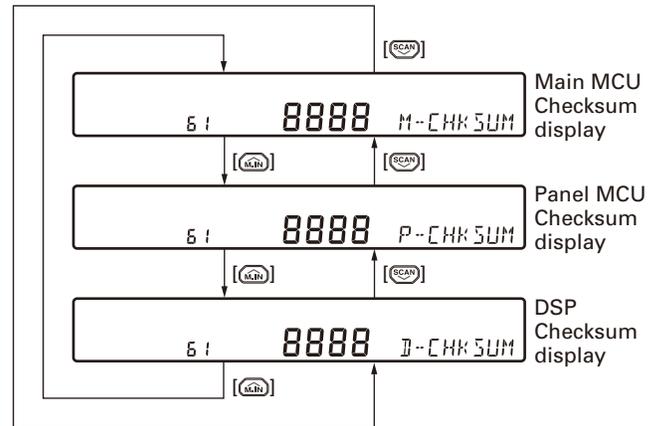
ADJUSTMENT

No.	Adjustment Item	Display	Condition		
			Frequency (MHz)	RX IF (MHz)	Mode
27	POC/ Power Meter	50P.M100W	50.1	73	CW
28		POC 50W	14.1		
29		P.MTR 50W			
30		POC 25W			
31		P.MTR 25W			
32		POC 10W			
33		P.MTR 10W			
34		POC 5W			
35		P.MTR 5W			
36	TX Gain	TGC 14M	14.1	73	CW
37	ALC Meter	ALC.START	14.1	73	CW
38		ALC.MAX			
39	TGC	TGC LW	0.136	11	CW
40		TGC 1.8M	1.83		
41		TGC 3.5M	3.51		
42		TGC 5M	5.30		
43		TGC 7M	7.01		
44		TGC 10M	10.1		
45		TGC 18M	18.1		
46		TGC 21M	21.1		
47		TGC 24M	24.9		
48		TGC 28M	29.1		
49	TGC 50M	50.1	73		
50	PGC	PGC 50W	14.1	73	CW
51		PGC 25W			
52		PGC 10W			
53		PGC 5W			
54	FM Deviation	DEV.WIDE	29.1	11	FM
55		DEV.NAROW		73	
56	Current	CURRENT	28.0	73	USB
57	PRO	SWR PRO	14.1	73	USB
58	SWR	HF SWR	14.1		USB
59		50M SWR	50.1		USB
60	WRITE	WRITE ROM	-	-	-
61	CHECKSUM	M-CHKSUM	-	-	-
62	Display check	-	-	-	-

• MENU No.61 is a checksum confirmation mode

The checksum of the main MCU, the panel MCU, and the DSP can be confirmed using the [MCU] key or [SCAN] key.

- The checksum value of the main MCU appears on the 7 segment display while [M-CHKSUM] appears on the 13 segment display.
- The checksum value of the panel MCU appears on the 7 segment display while [P-CHKSUM] appears on the 13 segment display.
- The checksum value of the DSP appears on the 7 segment display while [D-CHKSUM] appears on the 13 segment display.



ADJUSTMENT

Display Check

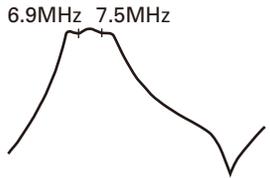
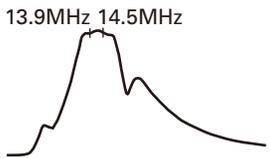
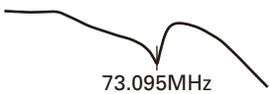
Item	Condition	Measurement			Adjustment			Specifications / Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Setting and full reset	1) Connect the DC cord to the DC power supply. DC IN: DC 13.8V							
	2) Full reset (1) Turn the transceiver ON by pressing the power switch while the [A/B] key is pressed, and the reset confirmation message appears. (2) Turn the [MULTI/CH] control and select "FULL RESET". (3) Press [A/B] to perform the Full reset.				Front panel	LCD	After displaying "HELLO", the display is reset as follows; DISP f.: 14.000.00 Mode: USB Meter: ALC ANT: 1 AGC PRE	Display should be normal. Should be at the reset frequency.
2. LCD all segments light	1) Menu No.: 62						Check	LCD all segments light.

PLL Section

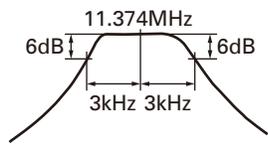
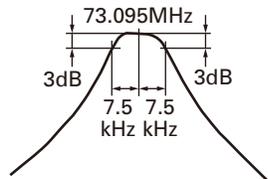
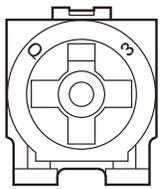
Item	Condition	Measurement			Adjustment			Specifications / Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. LO2 level	1) Display f.: 14.100MHz Mode: FM Disconnect the cable from CN508 and insert a cable from the spectrum analyzer. After the adjustment, connect the cable to CN508.	Spectrum analyzer	Control (B/3)	CN508 (LO2)	Control (B/3)	L505	Level max.	-15dBm or more
2. LO2 (62.4MHz) frequency	1) Display f.: 14.100MHz Mode: FM Disconnect the cable from CN508 and insert a cable from the frequency counter. After the adjustment, connect the cable to CN508.	f. counter				TC501	62.4MHz	±40Hz Note: If the SO-3 is installed in the transceiver, do not make the LO2 (62.4MHz) frequency adjustment.
3. LO1 level	1) Display f.: 1.900MHz Mode: USB Disconnect the cable from CN654 and insert a cable from the spectrum analyzer. After the adjustment, connect the cable to CN654.	Spectrum analyzer		CN654 (LO1)		L668 L673 L677	Level max.	-7dBm or more
	2) Display f.: 7.1500MHz Mode: USB Disconnect the cable from CN654 and insert a cable from the spectrum analyzer. After the adjustment, connect the cable to CN654.					L671 L676 L681	Level max.	-3dBm or more
4. Lock voltage	1) Display f.: 14.100MHz Mode: FM	DC V.M		CV		TC801	2.5V	±0.1V

ADJUSTMENT

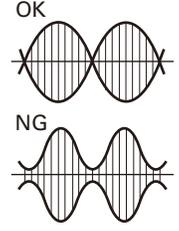
Receiver Section

Item	Condition	Measurement			Adjustment			Specifications / Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
<ul style="list-style-type: none"> Perform the following in the adjustment mode. Item 4 and 8~22. To terminate the adjustment menu in the middle, save your settings with Menu No. 60. 								
1. Trap frequency (E type only)	1) Display f.: 15.501MHz Mode: USB PRE-AMP: ON	Tracking generator Spectrum analyzer	Rear panel TX-RX (A/2)	ANT 1 CN201	TX-RX (A/2)	TC102	Adjust TC102 to get a null point at 15.501MHz as shown.	
	• 15.5MHz							
• 11.7MHz	2) Display f.: 11.700MHz Mode: USB PRE-AMP: ON					TC101	Adjust TC101 to get a null point at 11.7MHz as shown. Repeat the trap frequency adjustment 2 to 3 times, alternating between 15.5MHz and 11.7MHz.	
2. HF BPF	1) Display f.: 7.200MHz Mode: USB PRE-AMP: ON					L133 L150 L167	Adjust the coils to obtain the frequency response as shown.	
	2) Display f.: 14.200MHz Mode: USB PRE-AMP: ON					L134 L153 L168		K type  E type 
3. IF Trap (73.095MHz)	1) Display f.: 50MHz Mode: USB PRE-AMP: ON					L135	Adjust L135 at 73.095MHz to minimum level.	

ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications / Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
4. MCF (11.374MHz)	1) Menu No.: 54 Mode: USB Spectrum analyzer setting Center f.: 11.374MHz Frequency span: 20kHz XdB/DIV: 10dB TG level: 0dBm RBW: 300Hz VBW: 1kHz Connect the tracking generator output to CN301. Connect the spectrum analyzer input to CN302.	Tracking generator Spectrum analyzer	TX-RX (A/2)	CN301	TX-RX (A/2)	L301 L302	Adjust the coils to obtain the frequency response as shown.	
				CN302				
5. MCF (73.095MHz)	1) Display f.: 29.200MHz Mode: FM Spectrum analyzer setting Center f.: 73.095MHz Frequency span: 100kHz XdB/DIV: 10dB TG level: 0dBm RBW: 3kHz VBW: 10kHz Connect the tracking generator output to CN303. Connect the spectrum analyzer input to CN304.			CN303 CN304		L326 L374 L375 L376		
6. RX Trap • 11.3745MHz • 44.150MHz	1) Display f.: 21.4MHz Mode :USB PRE-AMP: ON SSG f.: 11.3745MHz SSG output: -30dBm (7.07mV)	SSG AF V.M	Rear panel	ANT 1 EXT. SP		L253 L255	Check S-meter is not appear. AF output min. Repeat adjust for 2 to 3 times.	If S-meter is appear, turn SSG level settings down until S-meter is not appear.
	2) Display f.: 21.4MHz Mode: USB PRE-AMP: ON SSG f.: 44.150MHz SSG output: -30dBm (7.07mV)					TC105		
7. FM discriminator	1) Display f.: 29.200MHz Mode: FM PRE-AMP: ON AF output: 0.63V/8Ω SSG f.: 29.200MHz SSG output: -53dBm (0.501mV) MOD: 1kHz DEV: 3kHz	SSG Oscilloscope AF V.M Distortion meter DM.SP Audio analyzer				L595	Adjust the L595 to AF maximum output of 0.63V/ 8 ohms. Check the distortion and the waveform is a good sine wave.	AF max. 2.3% or less
8. 1st mixer balance	1) Adjustment of VR261					VR261	Adjust the volume position of VR261 as shown.	
	2) Menu No.: 06 (100kHz, USB) PRE-AMP: OFF SSG: OFF	SSG AF V.M	Rear panel	ANT 1 EXT. SP		VR321	Noise min.	

ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications / Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
9. Carrier point (XF473 10.695M /2.7k)	1) Menu No.: 00 (1.81MHz, USB) AGC: OFF SSG1 f.: 1.81010MHz SSG2 f.: 1.81290MHz SSG output: -33dBm (5.01mV)	SSG1 SSG2 2 signal pad Oscilloscope	Rear panel TX-RX (A/2)	ANT 1 TP2 (CAR)	Front panel	[] or []	Change the adjustment values to get the waveform as shown.	
10. Carrier point (XF474 11.374M /2.7k)	1) Menu No.: 01 (1.81MHz, USB) AGC: OFF SSG1 f.: 1.81010MHz SSG2 f.: 1.81290MHz SSG output: -33dBm (5.01mV)							
11. Carrier point (XF475 11.374M /500)	1) Menu No.: 02 (1.81MHz, CW) AGC: OFF SSG1 f.: 1.80970MHz SSG2 f.: 1.81030MHz SSG output: -33dBm (5.01mV)							
12. AGC start level (11M)	1) Menu No.: 03 (14.2MHz, USB) SSG f.: 14.201MHz SSG output: -110dBm (0.707μV)	SSG Oscilloscope	Rear panel	ANT 1 EXT.SP			Adjust data until the display shown "1 to 2".	
13. AGC start level (73M) • 14M	1) Menu No.: 04 (14.2MHz, USB) SSG f.: 14.201MHz SSG output: -110dBm (0.707μV)	AF V.M DM.SP						
14. HF SSB S-meter • S1 • S9	1) Menu No.: 08 (14.2MHz, USB) SSG f.: 14.201MHz SSG output: -107dBm (1μV)						Set the SSG, then press the [] or [] key.	S-meter lights up to S1 position.
• Full scale (Lights up all)	2) Menu No.: 09 (14.2MHz, USB) SSG output: -81dBm (19.9μV)							S-meter lights up to S9 position.
	3) Menu No.: 10 (14.2MHz, USB) SSG output: -21dBm (19.9mV)							S-meter lights up all.
15. HF FM S-meter • S1 • Full scale (Lights up all)	1) Menu No.: 11 (29.2MHz, FM) SSG f.: 29.200MHz SSG output: -117dBm (0.316μV) MOD: 1kHz DEV: 3kHz							S-meter lights up to 1dot position.
	2) Menu No.: 12 (29.2MHz, FM) SSG output: -95dBm (3.98μV)							S-meter lights up all.
16. HF FM SQL thresh-old	1) Menu No.: 13 (29.2MHz, FM) SSG output: OFF MOD: 1kHz DEV: 3kHz							
17. HF FM SQL tight	1) Menu No.: 14 (29.2MHz, FM) SSG f.: 29.200MHz SSG output: -113dBm (0.501μV) MOD: 1kHz DEV: 3kHz							
18. AGC start level (73M) • 50M	1) Menu No.: 15 (50.2MHz, USB) SSG f.: 50.201MHz SSG output: -114dBm (0.4μV)						Adjust data until the display shown "1 to 2".	

ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications / Remarks																																																																																											
		Test-equipment	Unit	Terminal	Unit	Parts	Method																																																																																												
19. 50M SSB S-meter • S1 • S9 • Full scale (Lights up all)	1) Menu No.: 16 (50.2MHz, USB) SSG f.: 50.201MHz SSG output: -111dBm (0.63μV)	SSG Oscilloscope AF V.M DM.SP	Rear panel	ANT 1	Front panel	[GND] or [ESP]	Set the SSG, then press the [GND] or [ESP] key.	S-meter lights up to S1 position.																																																																																											
	2) Menu No.: 17 (50.2MHz, USB) SSG output: -85dBm (12.6μV)			EXT.SP				S-meter lights up to S9 position.																																																																																											
	3) Menu No.: 18 (50.2MHz, USB) SSG output: -25dBm (12.6mV)							S-meter lights up all.																																																																																											
20. 50M FM S-meter • S1 • Full scale (Lights up all)	1) Menu No.: 19 (50.2MHz, FM) SSG f.: 50.2MHz SSG output: -117dBm (0.316μV) MOD: 1kHz DEV: 3kHz							S-meter lights up to 1dot position.																																																																																											
	2) Menu No.: 20 (50.2MHz, FM) SSG output: -95dBm (3.98μV)							S-meter lights up all.																																																																																											
21. 50M FM SQL threshold	1) Menu No.: 21 (50.2MHz, FM) SSG output: OFF MOD: 1kHz DEV: 3kHz																																																																																																		
22. 50M FM SQL tight	1) Menu No.: 22 (50.2MHz, FM) SSG f.: 50.200MHz SSG output: -113dBm (0.501μV) MOD: 1kHz DEV: 3kHz																																																																																																		
<ul style="list-style-type: none"> Writing data: After items 4 and 8~22 have been adjusted; <ol style="list-style-type: none"> Menu No. : 60 [GND] or [ESP] key: Push once time. Display "rEAdy" → "good" (If "nG" is displayed, enter data again.) [CLR] key: Push once time. 																																																																																																			
23. S/N Check (Reference)	1) Display f.: Refer to Table 1. AF output: 0.63V/8Ω AGC: FAST SSG f.: Refer to Table 1. However, USB : +1kHz LSB: -1kHz PRE-AMP: ON ATT: OFF	SSG Oscilloscope AF V.M DM.SP	Rear panel	ANT 1																																																																																															
				EXT.SP																																																																																															
				<table border="1"> <thead> <tr> <th>Frequency</th> <th>Mode</th> <th>SSG RF level (dBm)</th> <th>SSG MOD</th> <th>DEV</th> <th>Measurement</th> <th>Spec.</th> </tr> </thead> <tbody> <tr> <td>550kHz</td> <td>AM</td> <td>-85</td> <td>1kHz</td> <td>60%→OFF</td> <td>S/N</td> <td>>10dB</td> </tr> <tr> <td>1.8MHz</td> <td>LSB</td> <td>-119</td> <td>OFF</td> <td>OFF</td> <td>S/N</td> <td>>10dB</td> </tr> <tr> <td>3.7MHz</td> <td>CW</td> <td>-123</td> <td>OFF</td> <td>OFF</td> <td>S/N</td> <td>>10dB</td> </tr> <tr> <td>5.3MHz</td> <td>LSB</td> <td>-119</td> <td>OFF</td> <td>OFF</td> <td>S/N</td> <td>>10dB</td> </tr> <tr> <td>7.2MHz</td> <td>LSB</td> <td>-119</td> <td>OFF</td> <td>OFF</td> <td>S/N</td> <td>>10dB</td> </tr> <tr> <td>14.2MHz</td> <td>USB</td> <td>-119.5</td> <td>OFF</td> <td>OFF</td> <td>S/N</td> <td>>10dB</td> </tr> <tr> <td>18.2MHz</td> <td>USB</td> <td>-119.5</td> <td>OFF</td> <td>OFF</td> <td>S/N</td> <td>>10dB</td> </tr> <tr> <td>21.2MHz</td> <td>FSK</td> <td>-119.5</td> <td>OFF</td> <td>OFF</td> <td>S/N</td> <td>>10dB</td> </tr> <tr> <td>24.8MHz</td> <td>USB</td> <td>-123</td> <td>OFF</td> <td>OFF</td> <td>S/N</td> <td>>10dB</td> </tr> <tr> <td>29.6MHz</td> <td>FM</td> <td>-119</td> <td>1kHz</td> <td>3kHz</td> <td>SINAD</td> <td>>12dB</td> </tr> <tr> <td>50.2MHz</td> <td>USB</td> <td>-123</td> <td>OFF</td> <td>OFF</td> <td>S/N</td> <td>>10dB</td> </tr> </tbody> </table>								Frequency	Mode	SSG RF level (dBm)	SSG MOD	DEV	Measurement	Spec.	550kHz	AM	-85	1kHz	60%→OFF	S/N	>10dB	1.8MHz	LSB	-119	OFF	OFF	S/N	>10dB	3.7MHz	CW	-123	OFF	OFF	S/N	>10dB	5.3MHz	LSB	-119	OFF	OFF	S/N	>10dB	7.2MHz	LSB	-119	OFF	OFF	S/N	>10dB	14.2MHz	USB	-119.5	OFF	OFF	S/N	>10dB	18.2MHz	USB	-119.5	OFF	OFF	S/N	>10dB	21.2MHz	FSK	-119.5	OFF	OFF	S/N	>10dB	24.8MHz	USB	-123	OFF	OFF	S/N	>10dB	29.6MHz	FM	-119	1kHz	3kHz	SINAD	>12dB	50.2MHz	USB	-123	OFF	OFF	S/N	>10dB				
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ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications / Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
24. PRE-AMP gain	1) Display f.: 14.200MHz Mode: USB PRE-AMP: ON AGC: FAST AF output: 0.63V/8Ω SSG f.: 14.201MHz SSG output: -119dBm (0.25μV)	S S G Oscilloscope AF V.M DM.SP	Rear panel	ANT 1 EXT.SP			Set the AF level at 0dB.	
	2) PRE-AMP: OFF					Check the AF level.	-(5~15)dB	
25. RF ATT	1) Display f.: 14.200MHz Mode: USB ATT: ON AGC: FAST AF output: 0.63V/8Ω SSG f.: 14.201MHz SSG output: -107dBm (1μV)						Set the AF level at 0dB.	
	2) PRE-AMP: OFF					Check the AF level.	-(10~14)dB	
26. NB gain	1) Display f.: 14.200MHz Mode: USB PRE-AMP: ON AGC: FAST NB1: ON SSG f.: 14.201MHz SSG output: -103dBm (1.58μV)	DC V.M S S G Oscilloscope AF V.M DM.SP Noise G.	TX-RX (B/2) Rear panel	TP601 (NB) ANT1 EXT.SP	TX-RX (B/2)	L653 L664 L665	Voltage min.	4V or less
	2) NB1: OFF → ON					Adjust output of noise generator to S5, and check.	Noise should disappear when NB1 is ON.	
27. VGS-1 (Option)	1) Disconnect the antenna cable from the transceiver. Connect the VGS-1 to CN901 on the Control unit (A/3). Display f.: 14.100MHz Mode: USB AF knob: MIN				Front panel	[PF A]	1 push	The display frequency can be heard vocally.
	2) Connect a microphone to the MIC jack.					[CH1]	Hold down [CH1] key, and talk into the microphone for approximately 10 seconds.	
							Press the [CH1] key again.	The recorded voice message is played back.

ADJUSTMENT

Transmitter Section

Item	Condition	Measurement			Adjustment			Specifications / Remarks	
		Test-equipment	Unit	Terminal	Unit	Parts	Method		
<ul style="list-style-type: none"> Perform the following in the adjustment mode. Item 2~24. To terminate the adjustment menu in the middle, save your settings with Menu No. 60. 									
1. Final idling current	1) Display f.: 14.100MHz Mode : USB Final unit (A/2) VR1, 2, 3, 4: MIN Transmit	Ammeter	Final (A/2)	DC IN	Final (A/2)		Check the default current (I ₂) of DC IN.		
						VR1	$I_2 + 500\text{mA} = I_A$	±50mA	
						VR2	$I_A + 1000\text{mA} = I_B$	±100mA	
						VR3	$I_B + 700\text{mA} = I_C$	±50mA	
						VR4	$I_C + 700\text{mA} = I_D$	±50mA	
2. ALC reference voltage	1) Menu No.: 23 (14.1MHz, USB) Transmit	DC V.M	TX-RX (A/2)	TP1 (ALC)	Front panel	[] or []	Set the adjustment value within the limit of the specified voltage.	2.7V±0.1V	
3. HF Max power (100W)	1) Menu No.: 24 (14.1MHz, CW) Transmit	Power meter 150W ATT	Rear panel	ANT 1			Set the adjustment value within the limit of the specified power.	100W±3.0W	
4. 14.1MHz Null	1) Menu No.: 24 (14.1MHz, CW) Transmit	Power meter 150W ATT	Rear panel	ANT 1	Final (A/2)	TC1	VSR voltage min.	0.3V or less	
		DC V.M	Final (A/2)	TP2 (VSR)					
5. Power meter 100W	1) Menu No.: 25 (14.1MHz, CW) Transmit	Power meter 150W ATT	Rear panel	ANT 1	Front panel	[]	1 push	Power meter lights up to 100W position.	
6. 50M Max power (100W)	1) Menu No.: 26 (50.1MHz, CW) Transmit						[] or []	Set the adjustment value within the limit of the specified power.	100W±3.0W
7. 50M Power meter 100W	1) Menu No.: 27 (50.1MHz, CW) Transmit						[]	1 push	Power meter lights up to 100W position.
8. POC 50W	1) Menu No.: 28 (14.1MHz, CW) Transmit						[] or []	Set the adjustment value within the limit of the specified power.	50W±2.0W
9. Power meter 50W	1) Menu No.: 29 (14.1MHz, CW) Transmit						[]	1 push	Power meter lights up to 50W position.
10. POC 25W	1) Menu No.: 30 (14.1MHz, CW) Transmit						[] or []	Set the adjustment value within the limit of the specified power.	25W±1.0W
11. Power meter 25W	1) Menu No.: 31 (14.1MHz, CW) Transmit						[]	1 push	Power meter lights up to 25W position.

ADJUSTMENT

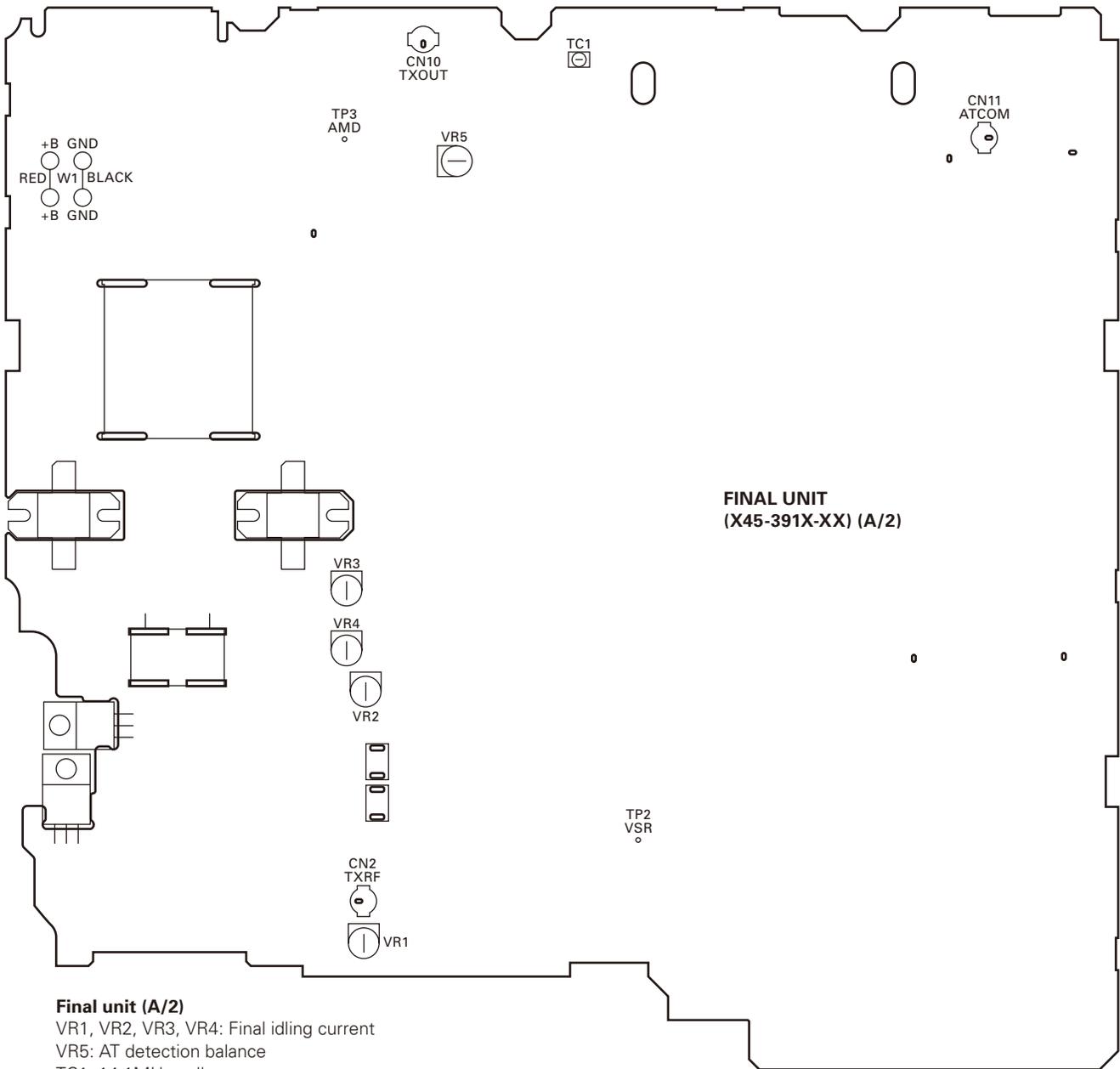
Item	Condition	Measurement			Adjustment			Specifications / Remarks	
		Test-equipment	Unit	Terminal	Unit	Parts	Method		
12. POC 10W	1) Menu No.: 32 (14.1MHz, CW) Transmit	Power meter 150W ATT	Rear panel	ANT 1	Front panel	[] or []	Set the adjustment value within the limit of the specified power.	10W±0.5W	
13. Power meter 10W	1) Menu No.: 33 (14.1MHz, CW) Transmit					[]	1 push	Power meter lights up to 10W position.	
14. POC 5W	1) Menu No.: 34 (14.1MHz, CW) Transmit					[] or []	Set the adjustment value within the limit of the specified power.	5.0W±0.3W	
15. Power meter 5W	1) Menu No.: 35 (14.1MHz, CW) Transmit					[]	1 push	Power meter lights up to 5W position.	
16. TGC GAIN	1) Menu No.: 36 (14.1MHz, CW) Transmit					[] or []	Set the adjustment value within the limit of the specified power.	100W±3.0W	
17. ALC meter • Start point	1) Menu No.: 37 (14.1MHz, CW) Transmit					[]	1 push	ALC meter lights up to 1.	
	• Zone max. (15 dots) point								2) Menu No.: 38 (14.1MHz, CW) Transmit
18. Band TGC (HF) • 1.8M • 3.5M • 5.0M • 7.0M • 10M • 18M • 21M • 24.9M • 28M	1) Menu No.: 40 (1.83MHz, USB) Transmit					[] or []	Set the adjustment value to become the specified ALC meter.	ALC meter 15 dots	
	• 3.5M								2) Menu No.: 41 (3.51MHz, USB) Transmit
	• 5.0M								3) Menu No.: 42 (5.3MHz, USB) Transmit
	• 7.0M								4) Menu No.: 43 (7.01MHz, USB) Transmit
	• 10M								5) Menu No.: 44 (10.1MHz, USB) Transmit
	• 18M								6) Menu No.: 45 (18.1MHz, USB) Transmit
	• 21M								7) Menu No.: 46 (21.1MHz, USB) Transmit
	• 24.9M								8) Menu No.: 47 (24.9MHz, USB) Transmit
	• 28M								9) Menu No.: 48 (28.1MHz, USB) Transmit
	19. Band TGC • 50M								1) Menu No.: 49 (50.1MHz, USB) Transmit

ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications / Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
20. Power PGC • 50W • 25W • 10W • 5W	1) Menu No.: 50 (14.1MHz, CW) Transmit	Power meter 150W ATT	Rear panel	ANT 1	Front panel	[] or []	Set the adjustment value to become the specified ALC meter.	ALC meter 15 dots
	2) Menu No.: 51 (14.1MHz, CW) Transmit							
	3) Menu No.: 52 (14.1MHz, CW) Transmit							
	4) Menu No.: 53 (14.1MHz, CW) Transmit							
21. FM deviation • Wide • Narrow	1) Menu No.: 54 (29.1MHz, FM) Transmit	Power meter Linear detector 150W ATT					4.1kHz According to the larger +, -.	±0.1kHz
	2) Menu No.: 55 (29.1MHz, FM) Transmit						2.1kHz According to the larger +, -.	±0.1kHz
22. Current protection	1) Menu No.: 56 (24.9MHz, USB) Transmit DC power supply DC IN: DC 15.9V	Ammeter					Set the adjustment value within the limit of the specified current.	21.0A±0.1A
23. SWR protection	1) Menu No.: 57 (14.1MHz, CW) Transmit DC power supply DC IN: DC 13.8V 150Ω dummy connection : Use a cable that is 1m long	150Ω dummy load Through type power meter					Set the adjustment value within the limit of the specified power.	40W±1W
24. SWR meter • 14M (SWR: 3) • 50M (SWR: 3)	1) Menu No.: 58 (14.1MHz, CW) Transmit DC power supply DC IN: DC 13.8V 150Ω dummy connection : Use a cable that is 1m long					[]	1 push	SWR meter lights up to 3 position.
	2) Menu No.: 59 (51.9MHz, FM) Transmit DC power supply DC IN: DC 13.8V 150Ω dummy connection : Use a cable that is approx. 18cm long							
<ul style="list-style-type: none"> • Writing data : After items 2~24 have been adjusted; <ol style="list-style-type: none"> 1) Menu No.: 60 2) [] or [] key: Push once time. Display "rEAdy" → "good" (If "nG" is displayed, enter data again.) 3) [CLR] key: Push once time. 								
25. AT detection balance	1) Display f.: 51.9MHz Mode: FM Power: 10W Transmit	Oscilloscope Power meter 150W ATT	Final (A/2)	TP3 (AMP)	Final (A/2)	VR5	Turn the VR5 to the point where the waveform on the oscilloscope changes from high to low. (Threshold point)	

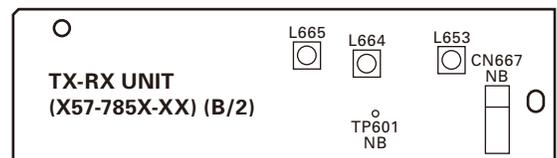
ADJUSTMENT

Adjustment Points (Upper Side)



Final unit (A/2)

VR1, VR2, VR3, VR4: Final idling current
 VR5: AT detection balance
 TC1: 14.1MHz null



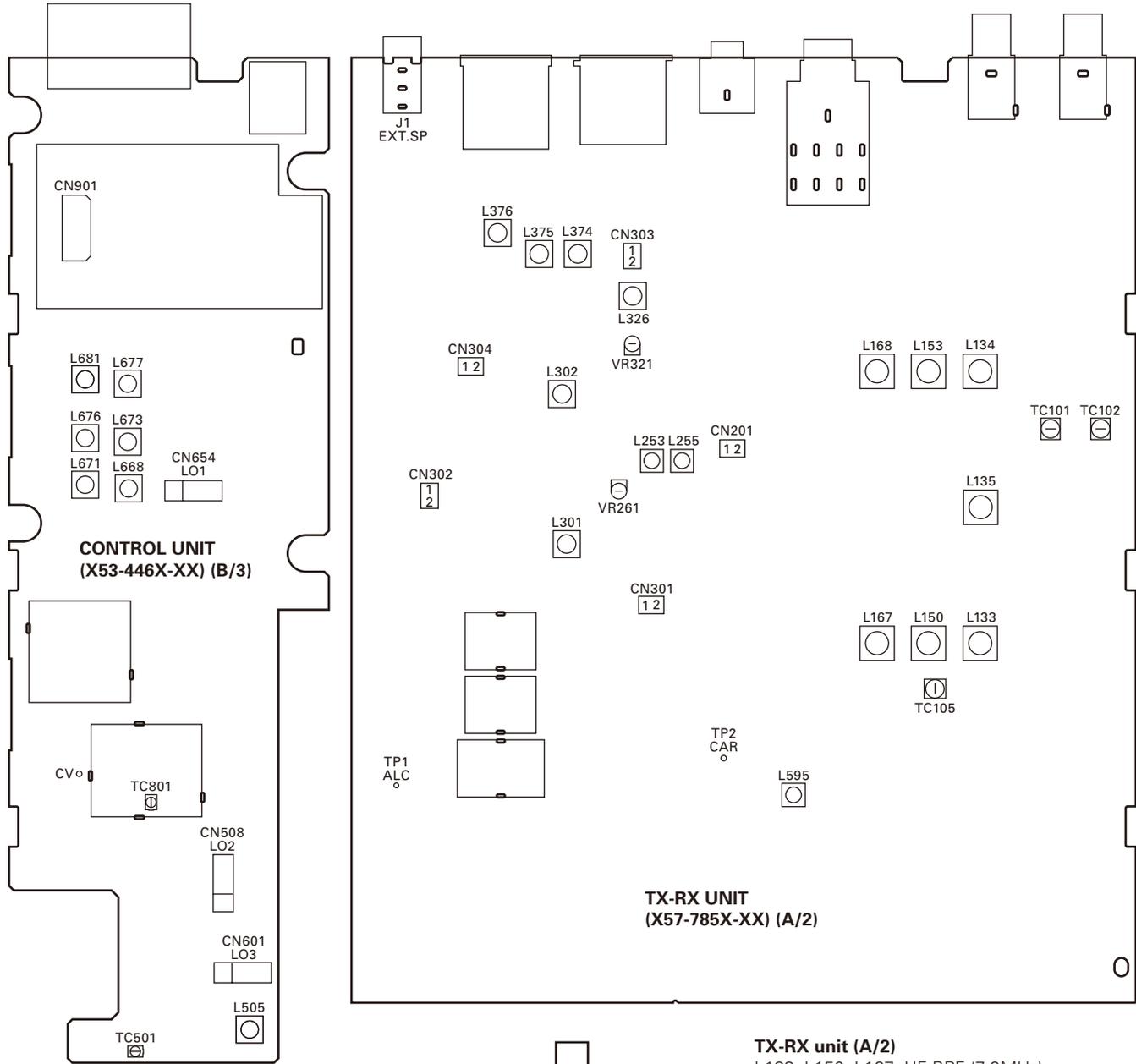
TX-RX unit (B/2)

L653, L664, L665: NB gain



ADJUSTMENT

Adjustment Points (Lower Side)



Control unit (B/3)

- L505: LO2 level
- L671, L676, L681: LO1 level (7.15MHz)
- L668, L673, L677: LO1 level (1.9MHz)
- TC501: LO2 (62.4MHz) frequency
- TC801: Lock voltage



TX-RX unit (A/2)

- L133, L150, L167: HF BPF (7.2MHz)
- L134, L153, L168: HF BPF (14.2MHz)
- L135: IF trap (73.095MHz)
- L253, L255: RX trap (11.3745MHz)
- L301, L302: MCF (11.374MHz)
- L326, L374, L375, L376: MCF (73.095MHz)
- L595: FM discriminator
- TC101: Trap frequency (11.7MHz) E type only
- TC102: Trap frequency (15.5MHz) E type only
- TC105: RX trap (44.150MHz)
- VR261, VR321: 1st mixer balance

TERMINAL FUNCTION

FINAL UNIT (X45-391X-XX A/2)

Pin No.	Name	I/O	Function
CN2 (to TX-RX unit A/2 CN800)			
1	TXRF	I	TX RF input (Coaxial)
CN3 (to EXT. AT)			
1	14S	O	Switched 14V (for external antenna tuner)
2	GND	-	GND
3	TT	I/O	External antenna tuner (AT-300) IN/ THROUGH control
4	TS	I/O	External antenna tuner (AT-300) tuning start control
5	GND	-	GND
CN4 (to Control unit A/3 CN1)			
1	14S	I	Switched 14V
2	GND	-	GND
3	14V	I	Non switched 14V
CN5 (to Control unit A/3 CN301)			
1	DATA	I	Serial data
2	CLK2	I	Serial clock
3	BOVR	O	Over voltage detection Over 19V becomes "H"
4	GND	-	GND
5	PSC	I	Power supply switch control signal "H" when power is ON
6	GND	-	GND
7	TH1	O	Thermistor detection voltage
8	AMD	O	Output voltage of amplitude detector
9	TS	I/O	External antenna tuner (AT-300) tuning start control
10	PHD	O	Output voltage of phase detector
11	TT	I/O	External antenna tuner (AT-300) IN/ THROUGH control
12	ATPWS	I	AT relay operating stop signal
13	FEN1	I	IC1, IC7, IC9 enable
14	FEN2	I	IC8, IC10 enable
CN6 (to FAN2)			
1	FAN2+	O	Supply FAN2 voltage
2	GND	-	GND
CN7 (to FAN1)			
1	FAN1+	O	Supply FAN1 voltage
2	GND	-	GND
CN8 (to INT. SPEAKER)			
1	SP	O	Speaker output
2	SPG	-	Speaker GND
CN9 (to TX-RX unit A/2 CN5)			
1	TXB	I	TX 8V
2	ID	O	Power current signal
3	33C	I	3.3V (DC/DC)

Pin No.	Name	I/O	Function
4	VSR	O	Reflected wave power detection voltage
5	SP	I	Speaker input
6	VSF	O	Forward wave power detection voltage
7	SPG	-	Speaker GND
8	GND	-	GND
9	NC	-	No connection
10	5A	I	Non switched 5V
CN10 (to Final (Relay) unit B/2 W3)			
1	TXOUT	O	TX RF output (Coaxial)
CN11 (to Final (Relay) unit B/2 W2)			
1	ATCOM	I	TX/RX relay common terminal (Coaxial)
W1 (to DC 13.8V)			
1	+B	I	Power supply voltage 13.8V
2	+B	I	Power supply voltage 13.8V
3	GND	-	GND
4	GND	-	GND
W6 (to Final (Relay) unit B/2 CN52)			
1	TXRL	O	TX relay control signal
2	GND	-	GND

FINAL (RELAY) UNIT (X45-391X-XX B/2)

Pin No.	Name	I/O	Function
CN51 (to TX-RX unit A/2 CN100)			
1	RAT	O	RAT output (Coaxial)
CN52 (to Final unit A/2 W6)			
1	TXRL	I	TX relay control signal
2	GND	-	GND
W2 (to Final unit A/2 CN11)			
1	ATCOM	I/O	TX/RX relay common (Coaxial)
W3 (to Final unit A/2 CN10)			
1	TXOUT	I	TX RF input (Coaxial)

CONTROL UNIT (X53-446X-XX A/3)

Pin No.	Name	I/O	Function
CN1 (to Final unit A/2 CN4)			
1	14S	I	Switched 14V
2	GND	-	GND
3	14V	I	Non switched 14V
CN2 (to TX-RX unit A/2 CN1)			
1	14S	O	Switched 14V
2	GND	-	GND
3	8A	O	8V (DC/DC)
CN61 (to TX-RX unit A/2 CN600)			
1	RIF	I	RX IF input
2	GND	-	GND

TERMINAL FUNCTION

Pin No.	Name	I/O	Function
CN62 (to TX-RX unit A/2 CN700)			
1	TIF	O	TX IF output
2	GND	-	GND
CN63 (to Display unit A/6 CN107)			
1	5C	O	5V
2	NC	-	No connection
3	GND	-	GND
4	MU	O	MIC up control
5	MD	O	MIC down control
6	PCTS	I	RTS signal input from Panel MCU
7	PRXD	I	Serial data input from Panel MCU
8	PRTS	O	RTS signal output to Panel MCU
9	PTXD	O	Serial data output to Panel MCU
10	BKC	O	Reduced voltage detection interrupt
11	PRST	O	Reset signal for Panel MCU
12	GND	-	GND
13	NC	-	No connection
14	33C	O	3.3V (DC/DC)
15	PWS	I	Power switch input signal
16	GND	-	GND
17	GND	-	GND
18	NC	-	No connection
19	8A	O	8V
20	8A	O	8V
CN64 (to Display (MIC) unit E/6 CN951)			
1	MIC	I	MIC signal input
2	MSG	-	MIC GND
3	MCG	-	GND
4	MU	I	MIC UP control
5	MD	I	MIC Down control
6	SS	I	MIC standby (PTT) control
7	8A	O	8V
CN65 (to TX-RX unit A/2 CN3)			
1	AF	O	Audio signal output
2	AFG	-	Audio GND
CN301 (to Final unit A/2 CN5)			
1	DATA	O	Serial data
2	CLK2	O	Serial clock
3	BOVR	I	Over voltage detection Over 19V becomes "H"
4	GND	-	GND
5	PSC	O	Power supply switch control signal "H" when power is ON
6	GND	-	GND
7	TH1	I	Thermistor detection voltage
8	AMD	I	Input voltage of amplitude detector

Pin No.	Name	I/O	Function
9	TS	I/O	External antenna tuner (AT-300) tuning start control
10	PHD	I	Input voltage of phase detector
11	TT	I/O	External antenna tuner (AT-300) IN/ THROUGH control
12	ATPWS	O	AT relay operating stop signal
13	FEN1	O	IC1, IC7, IC9 enable
14	FEN2	O	IC8, IC10 enable
CN302 (to TX-RX unit A/2 CN2)			
1	5A	O	Non switched 5V
2	NC	-	No connection
3	GND	-	GND
4	DGND	-	Digital GND
5	NC	-	No connection
6	33C	O	3.3V (DC/DC)
7	IDT	I	Power current voltage
8	IBK	O	IF blanking H: Mute
9	TXC	O	TX ON/OFF H: TXB ON
10	VSFM	I	VSF meter voltage
11	VSRM	I	VSR meter voltage
12	TCS	O	VSF/VSR detector time constant control
13	ALM	I	ALC meter voltage
14	CKY	O	CKY mute signal H: Mute
15	IEN3	O	IC 13 enable
16	IEN2	O	IC11, IC12 enable
17	IEN1	O	IC14, IC15 enable
18	DATA	O	Serial data
19	CLK1	O	Serial clock
20	AD1	I	No connection
21	PHDET	I	Phone jack detection signal L: No phone jack
22	FSQL	I	FM squelch voltage
23	FSM	I	FM S-meter voltage
24	AGCV	O	AGC control voltage
25	KYS	I	KEY jack judgement signal H: Plugged
26	DASH	I	Electronic keyer dash signal L: KEY dash
27	DOT	I	Electronic keyer dot signal L: KEY dot
28	KEY	I	KEY down signal L: KEY down
29	SS	I	Standby switch L: TX
30	RTK	I	RTTY key signal
31	SQC	O	SQL control voltage H: SQ open
32	PKP	O	Inverting PKS control H: PTT ON
33	PKSR	I	PTT input for data communication L: PTT ON
34	GND	-	Analog GND
35	ANO	O	Packet data output
36	ANI	I	Packet data input

TERMINAL FUNCTION

Pin No.	Name	I/O	Function
CN303 (to Control (LO) unit B/3 CN502)			
1	GND	-	GND
2	FMOD	O	FM modulation audio
3	GND	-	GND
4	DRES	O	IC803 reset
5	DEN1	O	IC601 enable
6	SEN	O	IC651 enable
7	DEN2	O	IC803 enable
8	LEN	O	IC801 enable
9	LCLK	O	Serial clock for PLL, DDS
10	LDAT	O	Serial data for PLL, DDS
11	UL	I	Unlock detection L: PLL unlock
12	GND	-	GND
13	NC	-	No connection
14	8A	O	8V
15	8A	O	8V
16	NC	-	No connection
17	33M	O	3.3V for USB (DC/DC)
18	33D	O	3.3V for RS-232C
19	NC	-	No connection
20	5C	O	5V
21	NC	-	No connection
22	UAO	I	USB audio input
23	UAI	O	USB audio output
24	DGND	-	Digital GND
25	URTS	O	USB request to send
26	UCTS	I	USB clear to send
27	UTXD	O	USB transmitted data
28	URXD	I	USB received data
29	USDA	I/O	USB serial data
30	USCL	O	USB serial clock
31	URST	O	USB reset
32	VBINT	I	USB connection interrupt input
33	TYPY	I	50W switch H: 50W
34	STPC	I	Interrupt for returning from sleep mode (PC control)
35	STS	O	RS-232C receiver bias control
36	CCTS	I	RS-232C clear to send
37	CRTS	O	RS-232C request to send
38	CTXD	O	RS-232C transmitted data
39	CRXD	I	RS-232C received data
40	TYPX	-	Type detection
41	VDGND	-	VGS-1 digital GND
42	VBSY	I	VGS-1 busy signal
43	VPLY	I	VGS-1 playback signal
44	CLK	O	VGS-1 serial clock

Pin No.	Name	I/O	Function
45	DATA	O	VGS-1 serial data
46	VEN	O	VGS-1 enable
47	VRST	O	VGS-1 reset
48	VAGND	-	VGS-1 analog GND
49	VAI	O	VGS-1 audio output
50	VAO	I	VGS-1 audio input

CONTROL (LO) UNIT (X53-446X-XX B/3)

Pin No.	Name	I/O	Function
CN502 (to Control unit A/3 CN303)			
1	VAO	O	VGS-1 audio output
2	VAI	I	VGS-1 audio input
3	VAGND	-	VGS-1 analog GND
4	VRST	I	VGS-1 reset
5	VEN	I	VGS-1 enable
6	DATA	I	VGS-1 serial data
7	CLK	I	VGS-1 serial clock
8	VPLY	O	VGS-1 playback signal
9	VBSY	O	VGS-1 busy signal
10	VDGND	-	VGS-1 digital GND
11	TYPX	-	Type detection
12	CRXD	O	RS-232C received data
13	CTXD	I	RS-232C transmitted data
14	CRTS	I	RS-232C request to send
15	CCTS	O	RS-232C clear to send
16	STS	I	RS-232C receiver bias control
17	STPC	O	Interrupt for returning from sleep mode (PC control)
18	TYPY	O	50W switch H: 50W
19	VBINT	O	USB connection interrupt input
20	URST	I	USB reset
21	USCL	I	USB serial clock
22	USDA	I/O	USB serial data
23	URXD	O	USB received data
24	UTXD	I	USB transmitted data
25	UCTS	O	USB clear to send
26	URTS	I	USB request to send
27	DGND	-	Digital GND
28	UAI	I	USB Audio In
29	UAO	O	USB Audio Out
30	NC	-	No connection
31	5C	I	5V
32	NC	-	No connection
33	33D	I	3.3V for RS-232C
34	33M	I	3.3V for USB (DC/DC)
35	NC	-	No connection

TERMINAL FUNCTION

Pin No.	Name	I/O	Function
36	8A	I	8V
37	8A	I	8V
38	NC	-	No connection
39	GND	-	GND
40	UL	O	Unlock detection L: PLL unlock
41	LDAT	I	Serial data for PLL, DDS
42	LCLK	I	Serial clock for PLL, DDS
43	LEN	I	IC801 enable
44	DEN2	I	IC803 enable
45	SEN	I	IC651 enable
46	DEN1	I	IC601 enable
47	DRES	I	IC803 reset
48	GND	-	GND
49	FMOD	I	FM modulation audio
50	GND	-	GND
CN508 (to TX-RX unit A/2 CN300)			
1	LO2	I	2nd local signal (Coaxial)
CN601 (to TX-RX unit A/2 CN400)			
1	LO3	I	3rd local signal (Coaxial)
CN654 (to TX-RX unit A/2 CN200)			
1	LO1	I	1st local signal (Coaxial)
CN901 (to Option VGS-1)			
1	VBSY	I	VGS-1 Busy Signal
2	VPLY	I	VGS-1 Playback Signal
3	NC	-	No connection
4	DATA	O	VGS-1 serial data
5	CLK	O	VGS-1 serial clock
6	VEN	O	VGS-1 enable
7	NC	-	No connection
8	VRST	O	VGS-1 reset
9	VDGND	-	VGS-1 digital GND
10	VAGND	-	VGS-1 analog GND
11	VAO	I	VGS-1 voice output
12	VAI	O	VGS-1 voice input
13	VAGND	-	VGS-1 analog GND
14	5C	O	5V
15	NC	-	No connection
16	NC	-	No connection
17	NC	-	No connection
18	NC	-	No connection
19	NC	-	No connection
20	NC	-	No connection
21	NC	-	No connection
22	NC	-	No connection
23	NC	-	No connection

Pin No.	Name	I/O	Function
24	NC	-	No connection
25	NC	-	No connection
26	NC	-	No connection
W504 (to Control (SO-3) unit C/3 CN503)			
1	REF	I	15.6MHz Option SO-3
2	GND	-	GND
3	GND	-	GND
4	5C	O	5V
J901 (COM)			
1	NC	-	No connection
2	RXD	O	Received Data
3	TXD	I	Transmitted Data
4	NC	-	No connection
5	GND	-	GND
6	NC	-	No connection
7	RTS	I	Request to send
8	CTS	O	Clear to send
9	NC	-	No connection
J902 (USB)			
1	VBUS	I	Power supply from PC (5V)
2	D-	I/O	Universal serial data
3	D+	I/O	Universal serial data
4	GND	-	GND

CONTROL (SO-3) UNIT (X53-446X-XX C/3)

Pin No.	Name	I/O	Function
CN503 (to Control (LO) unit B/3 W504)			
1	REF	O	15.6MHz Option SO-3
2	GND	-	GND
3	GND	-	GND
4	5C	I	5V

DISPLAY UNIT (X54-3700-00 A/6)

Pin No.	Name	I/O	Function
CN102 (to Main Encoder)			
1	5C	O	5V
2	MENB	I	Main encoder pulse B
3	MENA	I	Main encoder pulse A
4	GND	-	GND
CN103 (to RIT/XIT)			
1	5C	O	5V
2	RITA	I	RIT encoder pulse A
3	RITB	I	RIT encoder pulse B
4	GND	-	GND

TERMINAL FUNCTION

Pin No.	Name	I/O	Function
CN104 (to Display (MULTI/CH) unit B/6 CN965)			
1	MLED	O	Multi encoder LED (D961)
2	33C	O	3.3V (DC/DC)
3	MULB	I	Multi encoder pulse B
4	MULC	-	GND
5	MULA	I	Multi encoder pulse A
CN105 (to Display (VR) unit C/6 CN953)			
1	LB	I	Low cut encoder pulse B
2	GND	-	GND
3	LA	I	Low cut encoder pulse A
4	HB	I	Hi cut encoder pulse B
5	HA	I	Hi cut encoder pulse A
6	33C	O	3.3V (DC/DC)
7	NVOL	I	Notch volume voltage
8	SVOL	I	Squelch volume voltage
CN106 (to Display (AF/RF) unit D/6 CN966)			
1	33C	O	3.3V (DC/DC)
2	AFVOL	I	AF volume voltage
3	RFVOL	I	RF volume voltage
4	NC	-	No connection
5	GND	-	GND
CN107 (to Control unit A/3 CN63)			
1	8A	I	8V
2	8A	I	8V
3	NC	-	No connection
4	GND	-	GND
5	GND	-	GND
6	PWS	O	Power switch output signal
7	33C	I	3.3V (DC/DC)
8	NC	-	No connection
9	GND	-	GND
10	PRST	I	Reset signal for Panel MCU
11	BKC	I	Reduced voltage detection interrupt
12	PTXD	I	Serial data input from Main MCU
13	PRTS	I	RTS signal input from Main MCU
14	PRXD	O	Serial data output to Main MCU
15	PCTS	O	RTS signal output to Main MCU
16	MD	I	MIC Down control
17	MU	I	MIC UP control
18	GND	-	GND
19	NC	-	No connection
20	5C	I	5V

DISPLAY (MULTI/CH) UNIT (X54-3700-00 B/6)

Pin No.	Name	I/O	Function
CN965 (to Display unit A/6 CN104)			
1	MLED	I	Multi encoder LED (D961)
2	33C	I	3.3V (DC/DC)
3	MULB	O	Multi encoder pulse B
4	MULC	-	GND
5	MULA	O	Multi encoder pulse A

DISPLAY (VR) UNIT (X54-3700-00 C/6)

Pin No.	Name	I/O	Function
CN953 (to Display unit A/6 CN105)			
1	LB	O	Low cut encoder pulse B
2	GND	-	GND
3	LA	O	Low cut encoder pulse A
4	HB	O	Hi cut encoder pulse B
5	HA	O	Hi cut encoder pulse A
6	33C	I	3.3V (DC/DC)
7	NVOL	O	Notch volume voltage
8	SVOL	O	SQL volume voltage

DISPLAY (AF/RF) UNIT (X54-3700-00 D/6)

Pin No.	Name	I/O	Function
CN966 (to Display unit A/6 CN106)			
1	33C	I	3.3V (DC/DC)
2	AFVOL	O	AF volume voltage
3	RFVOL	O	RF volume voltage
4	NC	-	No connection
5	GND	-	GND

DISPLAY (MIC) UNIT (X54-3700-00 E/6)

Pin No.	Name	I/O	Function
CN951 (to Control unit A/3 CN64)			
1	MIC	O	MIC signal
2	MSG	-	MIC GND
3	MCG	-	GND
4	MU	O	MIC UP control
5	MD	O	MIC Down control
6	SS	O	MIC standby (PTT) control
7	8A	I	8V
J950 (MIC)			
1	MIC	I	MIC signal input
2	SS	I	MIC standby (PTT) control
3	MD	I	MIC Down control
4	MU	I	MIC UP control
5	8A	O	8V

TERMINAL FUNCTION

Pin No.	Name	I/O	Function
6	NC	-	No connection
7	MSG	-	MIC GND
8	MCG	-	GND

DISPLAY (PHONE) UNIT (X54-3700-00 F/6)

Pin No.	Name	I/O	Function
CN964 (to TX-RX unit A/2 CN4)			
1	PH1	I	AF input from phone jack
2	PHG	-	GND for phone jack
3	PH2	O	AF output to phone jack
4	PHDET	O	Phone jack detection signal
J951 (PHONES)			
1	PHG	-	GND for phone jack
2	PH1_R	O	AF output to phone jack
3	PH1_R	O	AF output to phone jack
4	PH1	O	AF output to external speaker
5	PH2	I	AF input to external speaker
6	NC	-	No connection
7	NC	-	No connection
8	PHG	-	GND for phone jack
9	PHDET	I	Phone jack detection signal

TX-RX UNIT (X57-785X-XX A/2)

Pin No.	Name	I/O	Function
CN1 (to Control unit A/3 CN2)			
1	14S	I	Switched 14V
2	GND	-	GND
3	8A	I	8V (DC/DC)
CN2 (to Control unit A/3 CN302)			
1	ANI	O	Packet data output
2	ANO	I	Packet data input
3	GND	-	Analog GND
4	PKSR	O	PTT output for data communication L: PTT ON
5	PKP	I	Invert PKS control H: PTT ON
6	SQC	I	SQL control voltage input H: SQL open
7	RTK	O	RTTY key signal
8	SS	O	Standby switch L: TX
9	KEY	O	KEY down signal L: KEY down
10	DOT	O	Electronic keyer dot signal L: KEY dot
11	DASH	O	Electronic keyer dash signal L: KEY dash
12	KYS	O	KEY jack judgement signal H: Plugged
13	AGCV	I	AGC control voltage
14	FSM	O	FM S-meter voltage
15	FSQL	O	FM squelch voltage

Pin No.	Name	I/O	Function
16	PHDET	O	Phone jack detection signal H: No phone jack
17	AD1	O	No connection (Reserved)
18	CLK1	I	Serial clock
19	DATA	I	Serial data
20	IEN1	I	IC14, IC15 enable
21	IEN2	I	IC11, IC12 enable
22	IEN3	I	IC 13 enable
23	CKY	I	CKY mute signal H: Mute
24	ALM	O	ALC meter voltage
25	TCS	I	VSF/VSR detector time constant control
26	VSRM	O	VSR meter voltage
27	VSFM	O	VSF meter voltage
28	TXC	I	TX ON/OFF H: TXB ON
29	IBK	I	IF blanking H: Mute
30	IDT	O	Power current voltage
31	33C	I	3.3V (DC/DC)
32	NC	-	No connection
33	DGND	-	Digital GND
34	GND	-	GND
35	NC	-	No connection
36	5A	I	Non switched 5V
CN3 (to Control unit A/3 CN65)			
1	AF	I	Audio signal input
2	AFG	-	Audio GND
CN4 (to Display (PHONE) unit F/6 CN964)			
1	PH1	O	AF output for phone jack
2	PHG	-	GND for phone jack
3	PH2	I	AF input for phone jack
4	PHDET	I	Phone jack detector signal H: No phone jack
CN5 (to Final unit A/2 CN9)			
1	5A	O	Non switched 5V
2	NC	-	No connection
3	GND	-	GND
4	SPG	-	Speaker GND
5	VSF	I	Forward wave power detection voltage
6	SP	O	Speaker output
7	VSR	I	Reflected wave power detection voltage
8	33C	O	3.3V (DC/DC)
9	ID	I	Power current signal
10	TXB	O	TX 8V
CN100 (to Final (Relay) unit B/2 CN51)			
1	RAT	I	RAT input (Coaxial)
CN200 (to Control (LO) unit B/3 CN654)			
1	LO1	I	1st local signal (Coaxial)

TERMINAL FUNCTION

Pin No.	Name	I/O	Function
CN300 (to Control (LO) unit B/3 CN508)			
1	LO2	I	2nd local signal (Coaxial)
CN400 (to Control (LO) unit B/3 CN601)			
1	LO3	I	3rd local signal (Coaxial)
CN600 (to Control unit A/3 CN61)			
1	RIF	O	RX IF output
2	GND	-	GND
CN650 (to TX-RX (NB) unit B/2 CN663)			
1	14S	O	Switched 14V
2	NC	-	No connection
3	-6V	I	-6V (DC/DC)
4	DCGND	-	DC/DC GND
5	GND	-	GND
6	IBK	O	IF blanking H: Mute
7	1STIF	O	1st IF switch signal H: 73.095MHz
8	NBL	O	Noise Blanker level
9	8A	O	8V (DC/DC)
10	BLNK	I	IF mute signal H: Mute
CN674 (to Final unit A/2 CN667)			
1	NBIF	O	NB IF output (Coaxial)
CN700 (to Control unit A/3 CN62)			
1	TIF	I	TX IF input
2	GND	-	GND
CN800 (to Final unit A/2 CN2)			
1	TXRF	I	TX RF output (Coaxial)
J1 (EXT.SP)			
4	GND	-	GND
5	PH2	O	AF output for external speaker
6	SP	I	Internal speaker AF signal
J2 (ACC2)			
1	NC	-	No connection
2	RTTY	I	RTTY key input
3	ANO	O	Packet RX signal output
4	GND	-	GND
5	PSQ	O	Squelch control signal SQL tight: Hi-Z
6	NC	-	No connection
7	NC	-	No connection
8	GND	-	GND
9	PKS	I	PTT line control for data communication H: PTT ON
10	NC	-	No connection
11	ANI	I	Packet data input
12	GND	-	GND
13	SS	I	Standby switch L: TX
J3 (REMOTE)			
1	SPO	O	Speaker output

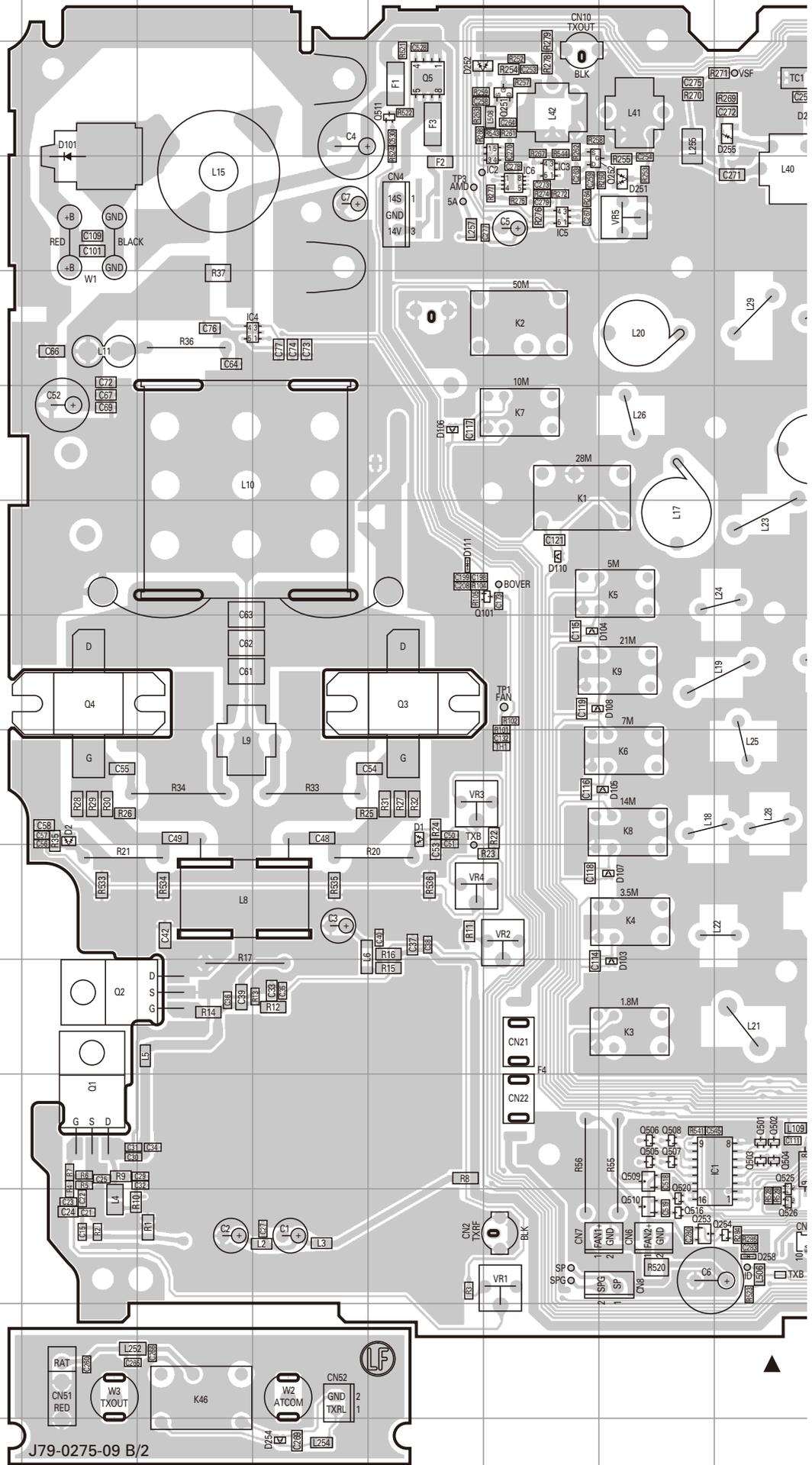
Pin No.	Name	I/O	Function
2	COM	-	Common terminal (relay)
3	SS	I	Standby switch L: TX
4	MKE	-	Make terminal (relay)
5	BRK	-	Break terminal (relay)
6	ALC	I	ALC voltage
7	TX14V	O	TX 14V
J4 (KEY)			
1	GND	-	GND
2	KEY	I	KEY down signal input
3	GND	-	GND
10	NC	-	No connection
11	KYS	I	KEY jack judgement signal
J5 (PADDLE)			
1	GND	-	GND
2	DOT	I	Dot signal input
3	DASH	I	Dash signal input
4	KYS	I	KEY jack judgement signal
5	KYS	I	KEY jack judgement signal
6	NC	-	No connection
7	NC	-	No connection
8	NC	-	No connection
9	NC	-	No connection
J100 (RX ANT)			
1	RXANT	I	RX antenna input (Coaxial)
J800 (DRV)			
1	DRV	O	Drive output (Coaxial)

TX-RX (NB) UNIT (X57-785X-XX B/2)

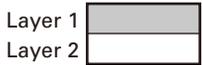
Pin No.	Name	I/O	Function
CN663 (to TX-RX unit A/2 CN650)			
1	14S	I	Switched 14V
2	NC	-	No connection
3	-6V	O	-6V (DC/DC)
4	DCGND	-	DC/DC GND
5	GND	-	GND
6	IBK	I	IF blanking H: Mute
7	1STIF	I	1st IF switch signal H: 73.095MHz
8	NBL	I	Noise blanker level
9	8A	I	8V (DC/DC)
10	BLNK	O	IF mute signal H: Mute
CN667 (to TX-RX unit A/2 CN674)			
1	NBIF	I	NB IF input (Coaxial)

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FINAL UNIT
(X45-391X-XX)
0-11: K 2-71: E
Component side view
(J79-0275-09)



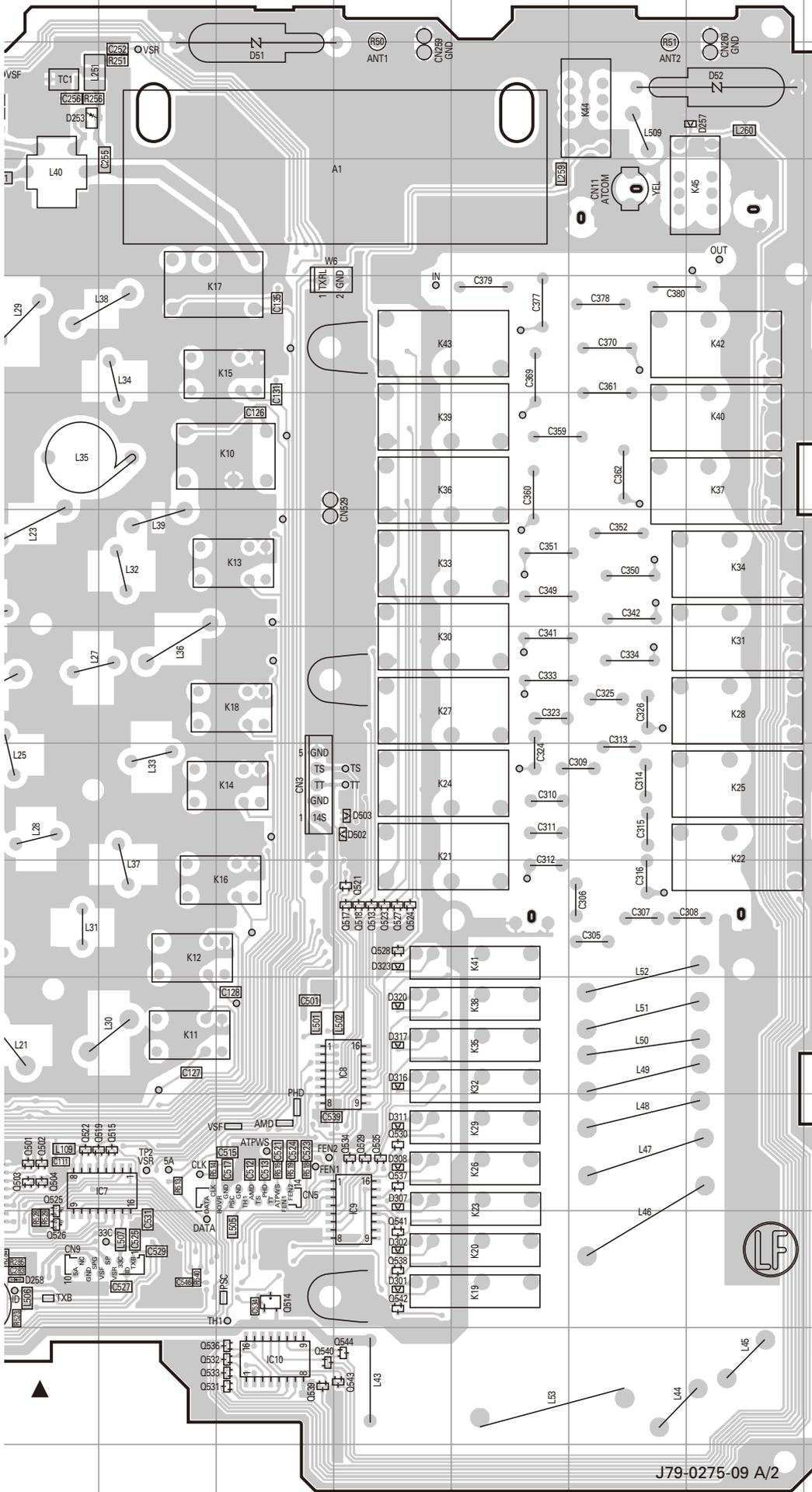
Component side



Foil side

PC BOARD TS-590S

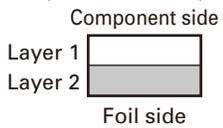
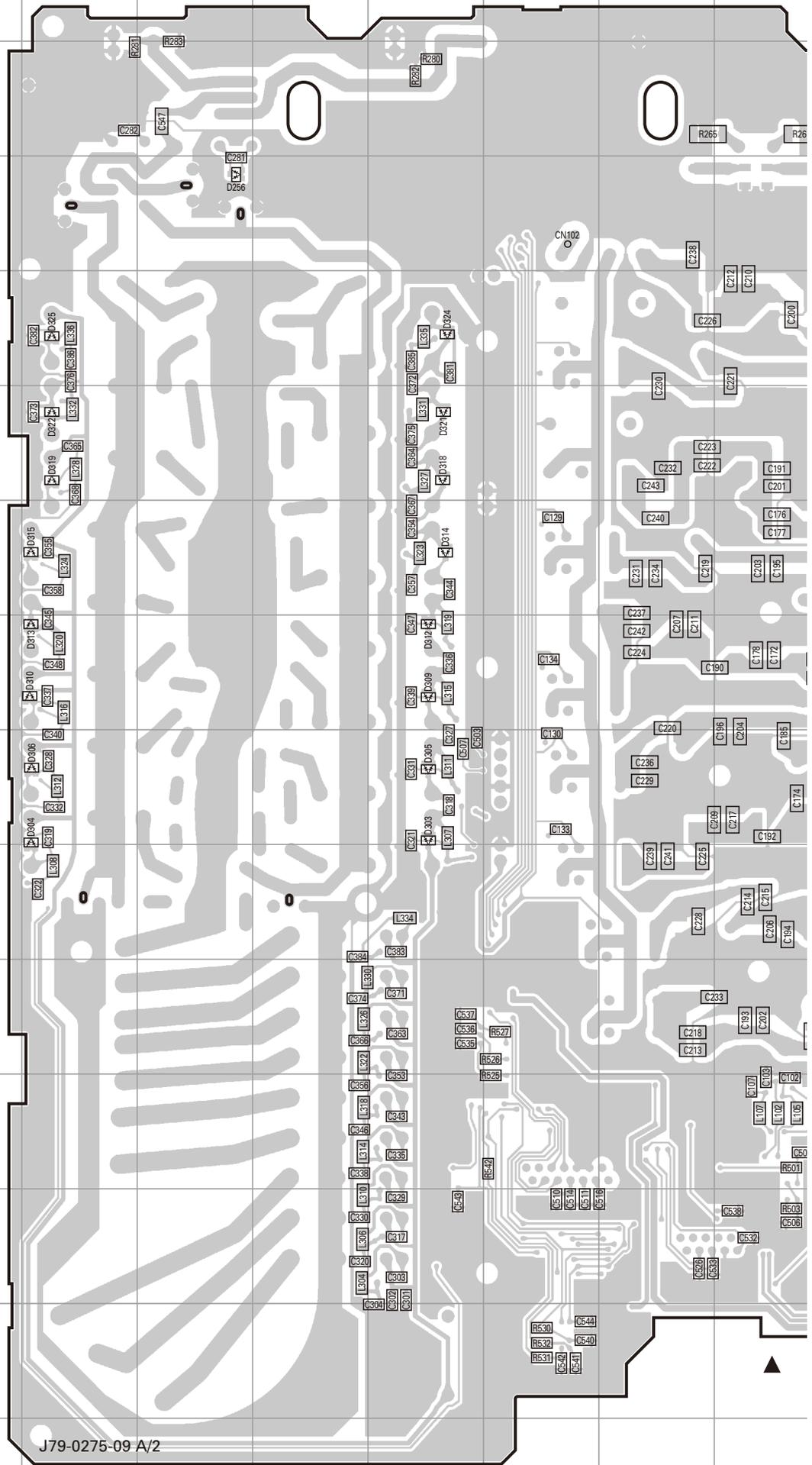
FINAL UNIT
(X45-391X-XX)
0-11: K 2-71: E
Component side view
(J79-0275-09)



Ref. No.	Address	Ref. No.	Address
IC1	11J	Q529	11M
IC2	2H	Q530	11M
IC3	3H	Q531	13L
IC4	4E	Q532	13L
IC5	3H	Q533	13L
IC6	3H	Q534	11M
IC7	11K	Q535	11M
IC8	10M	Q536	13L
IC9	11M	Q537	11M
IC10	13L	Q538	12M
Q1	11D	Q539	13L
Q2	10D	Q540	13L
Q3	7G	Q541	12M
Q4	7D	Q542	12M
Q5	2G	Q543	13M
Q101	6H	Q544	13M
Q251	2H	D1	8G
Q252	3H	D2	8D
Q253	12I	D51	2L
Q254	12J	D52	2P
Q501	11J	D101	2D
Q502	11J	D103	10I
Q503	11J	D104	7H
Q504	11J	D105	8I
Q505	11I	D106	5G
Q506	11I	D107	9I
Q507	11I	D108	7H
Q508	11I	D110	6H
Q509	11I	D111	6G
Q510	12I	D251	3I
Q511	2G	D252	2G
Q513	9M	D253	2J
Q514	12L	D254	14F
Q515	11K	D255	2J
Q516	12I	D257	2P
Q517	9M	D258	12J
Q518	9M	D301	12M
Q519	11K	D302	12M
Q520	12I	D307	11M
Q521	9M	D308	11M
Q522	11J	D311	11M
Q523	9M	D316	10M
Q524	9M	D317	10M
Q525	12J	D320	10M
Q526	12J	D323	9M
Q527	9M	D502	8M
Q528	9M	D503	8M

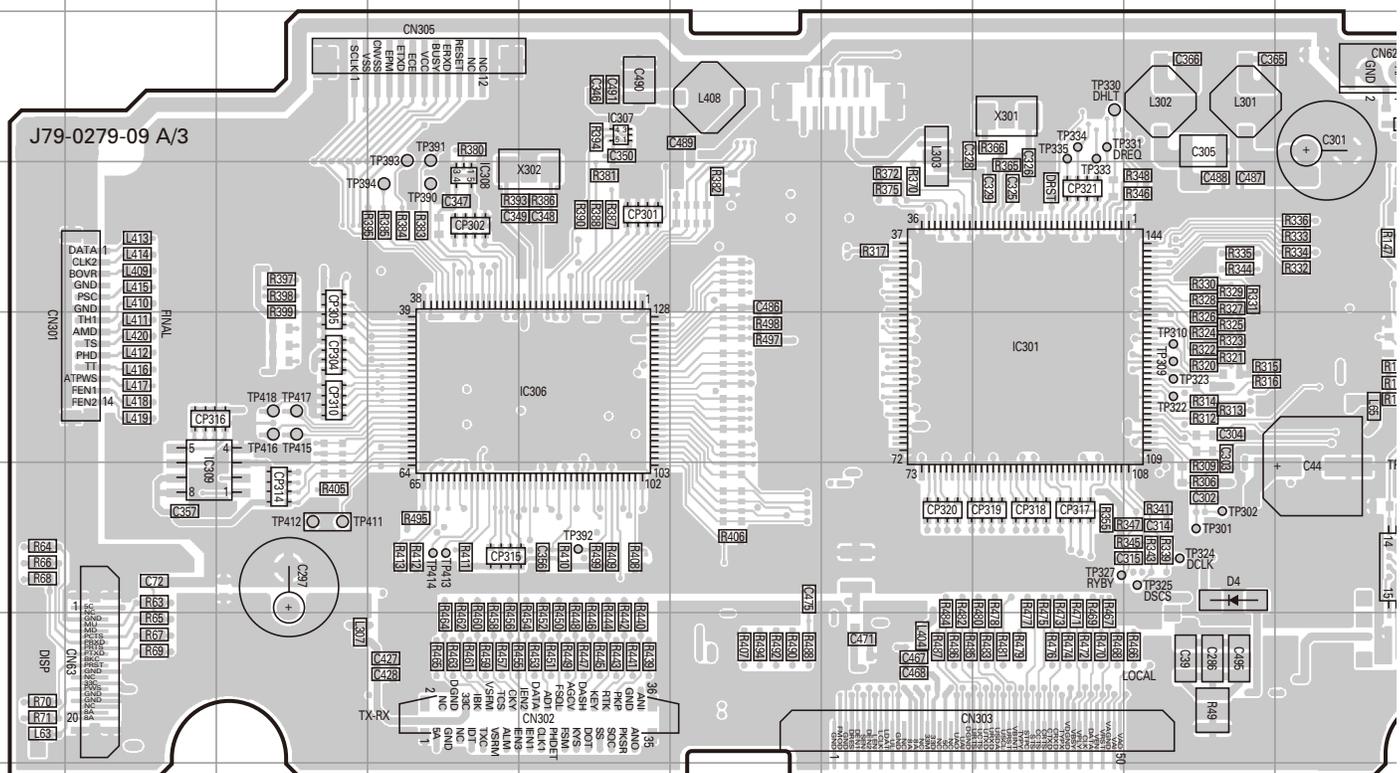
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FINAL UNIT
(X45-391X-XX)
0-11: K 2-71: E
Foil side view
(J79-0275-09)



TS-590S PC BOARD

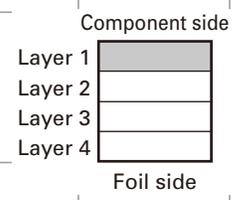
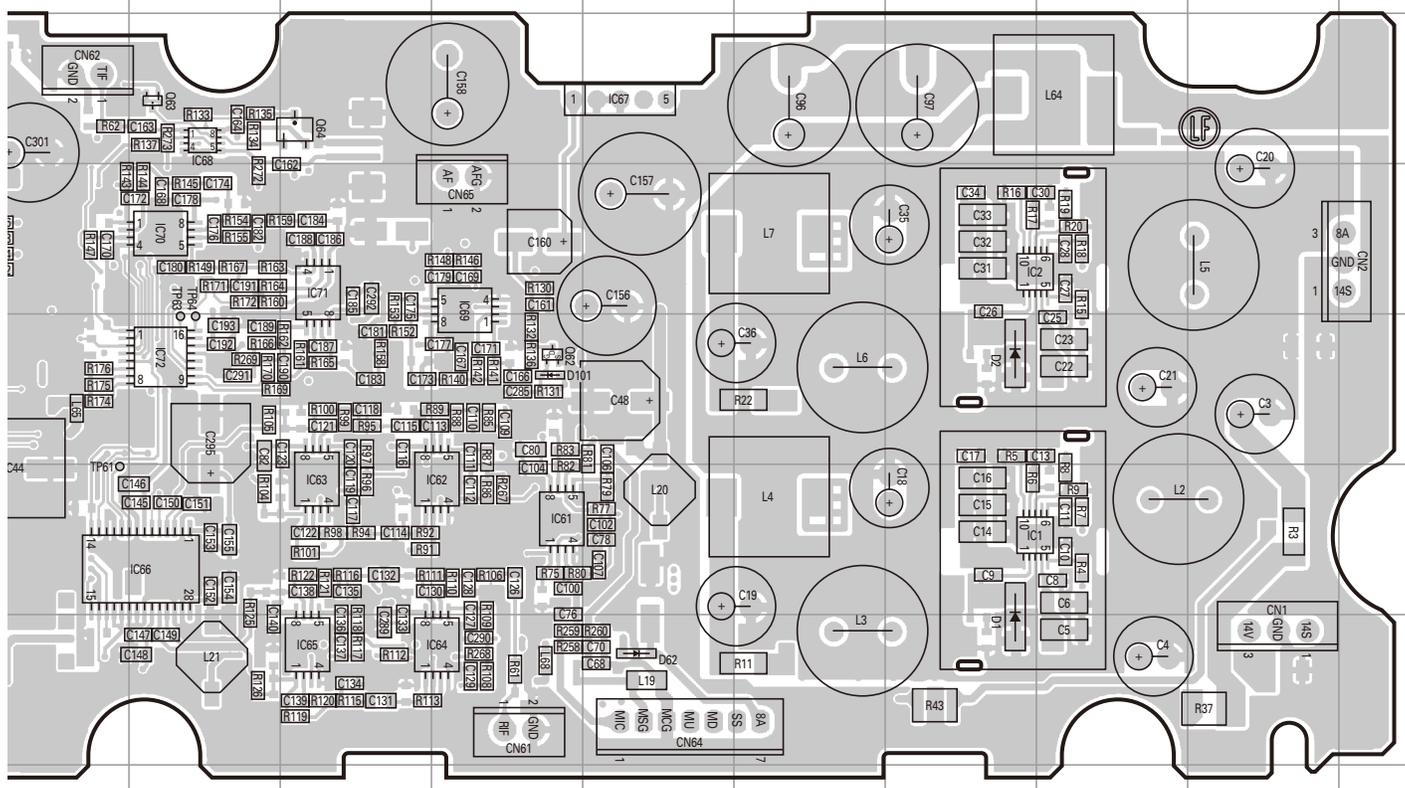
CONTROL UNIT (X53-446X-XX) (A/3) 0-11: K 2-71: E
Component side view (J79-0279-09 A/3)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC1	6P	IC69	4M	Q63	3K
IC2	4P	IC70	4K	Q64	3L
IC61	6M	IC71	4L	D1	7P
IC62	6M	IC72	5K	D2	5P
IC63	6L	IC301	5H	D4	6I
IC64	7M	IC306	5E	D62	7N
IC65	7L	IC307	3E	D101	5M
IC66	6K	IC308	4D		
IC67	3N	IC309	6B		
IC68	3K	Q62	5M		

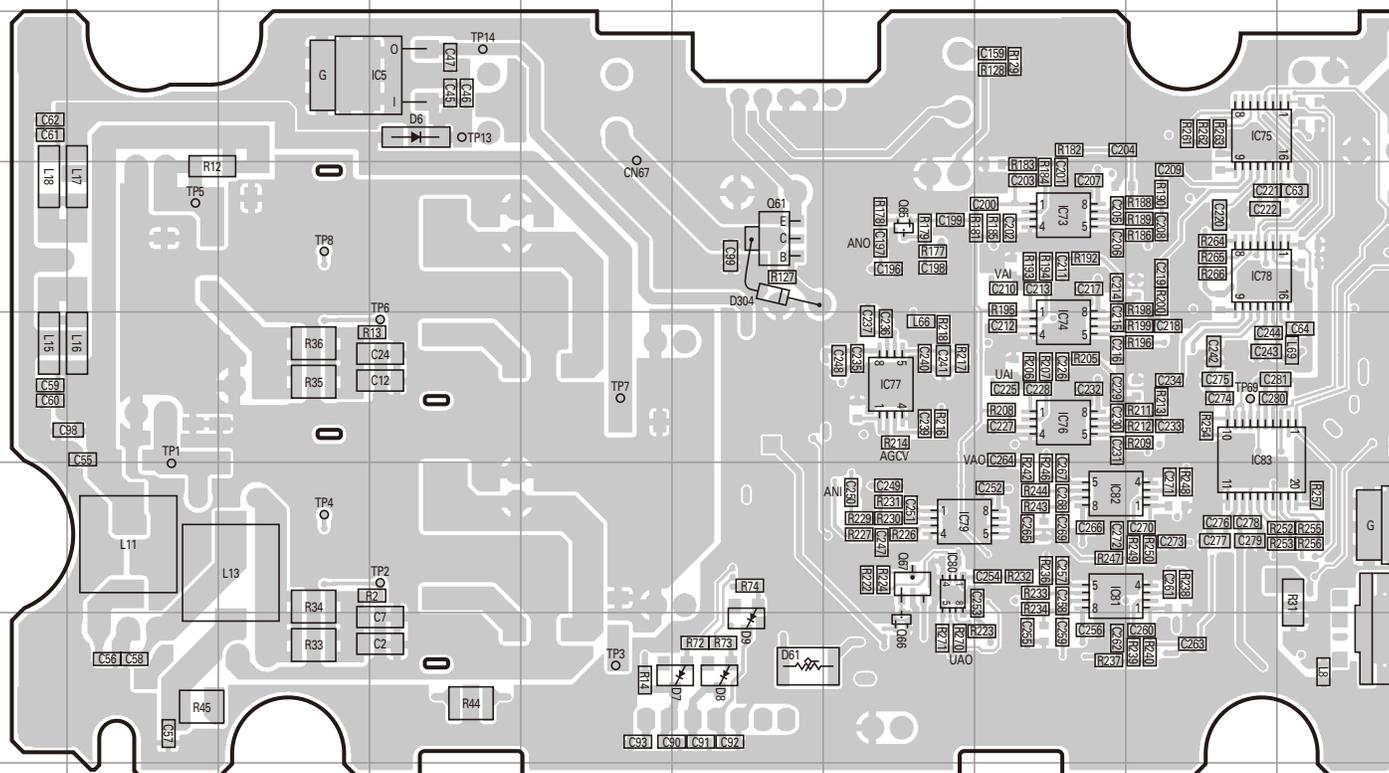
PC BOARD TS-590S

CONTROL UNIT (X53-446X-XX) (A/3) 0-11: K 2-71: E
Component side view (J79-0279-09 A/3)



TS-590S PC BOARD

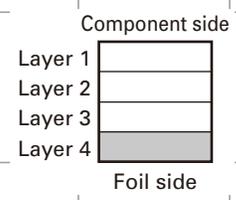
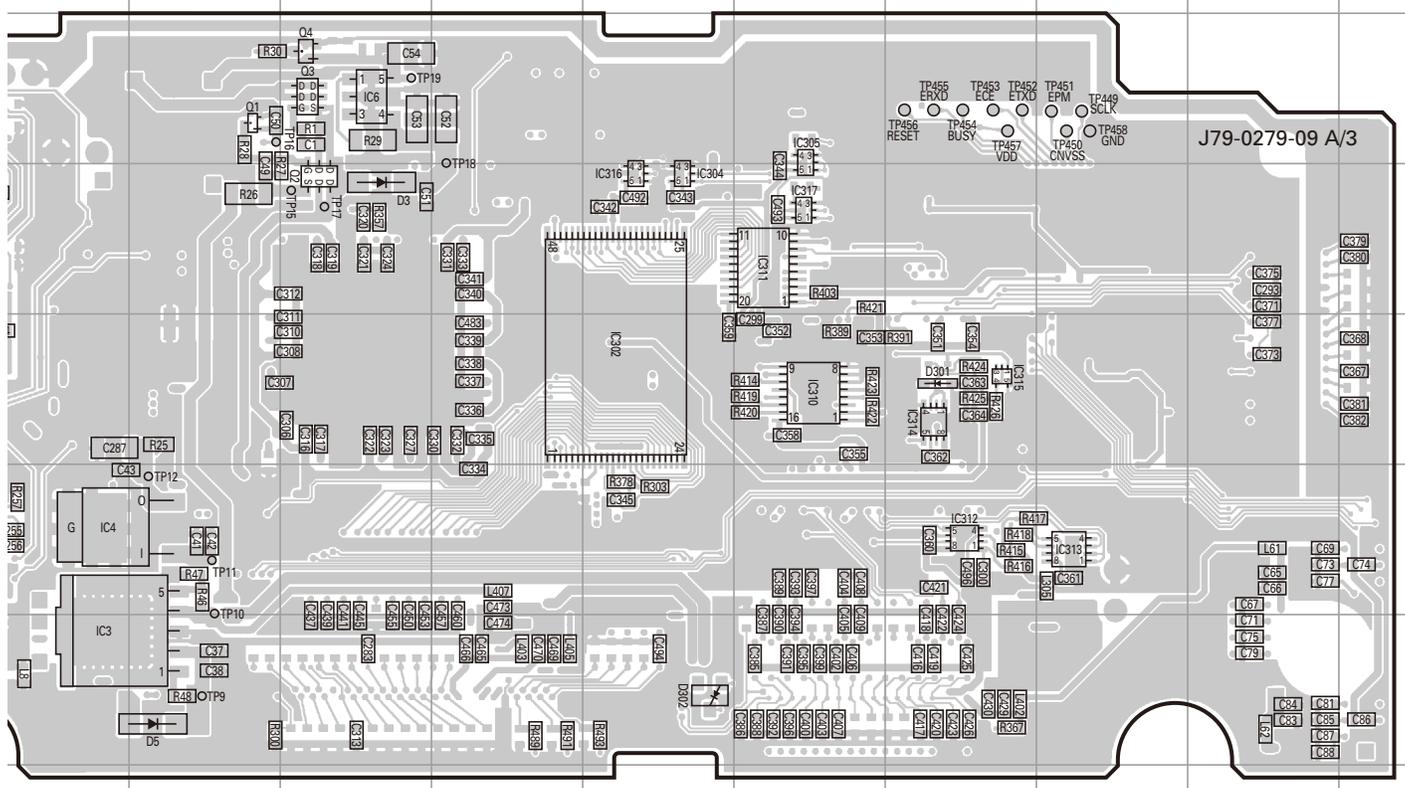
CONTROL UNIT (X53-446X-XX) (A/3) 0-11: K 2-71: E
Foil side view (J79-0279-09 A/3)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC3	7J	IC80	6G	IC314	5P	Q67	6G
IC4	6J	IC81	6H	IC315	5P	D3	4L
IC5	3D	IC82	6H	IC316	4N	D5	7K
IC6	3L	IC83	5I	IC317	4O	D6	3D
IC73	4H	IC302	5N	Q1	3K	D7	7F
IC74	5H	IC304	4N	Q2	4L	D8	7F
IC75	3I	IC305	3O	Q3	3L	D9	7F
IC76	5H	IC310	5O	Q4	3L	D61	7F
IC77	5G	IC311	4O	Q61	4F	D301	5P
IC78	4I	IC312	6P	Q65	4G	D302	7N
IC79	6G	IC313	6Q	Q66	7G	D304	4F

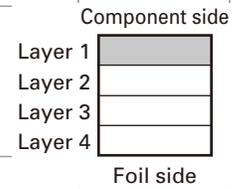
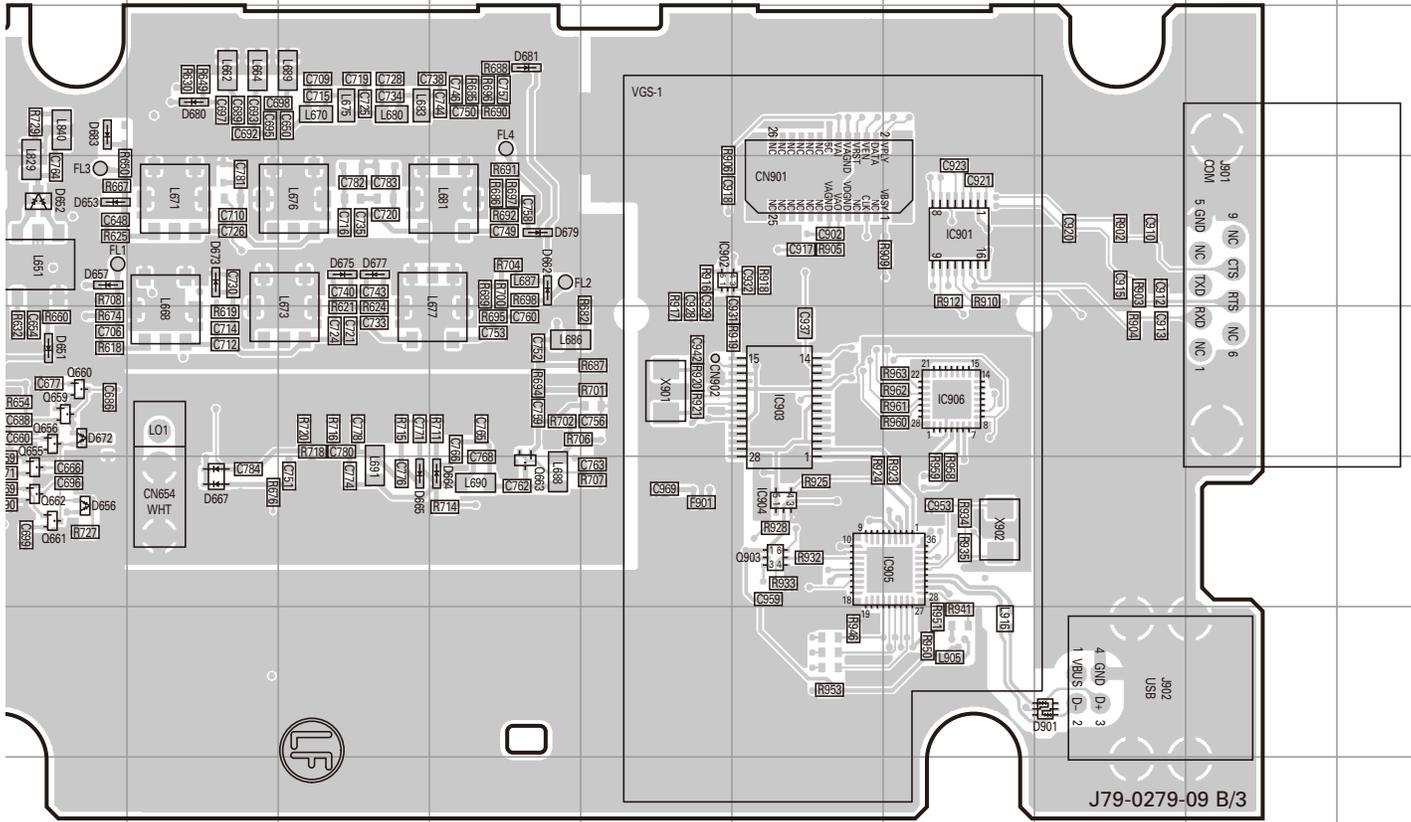
PC BOARD TS-590S

CONTROL UNIT (X53-446X-XX) (A/3) 0-11: K 2-71: E
Foil side view (J79-0279-09 A/3)



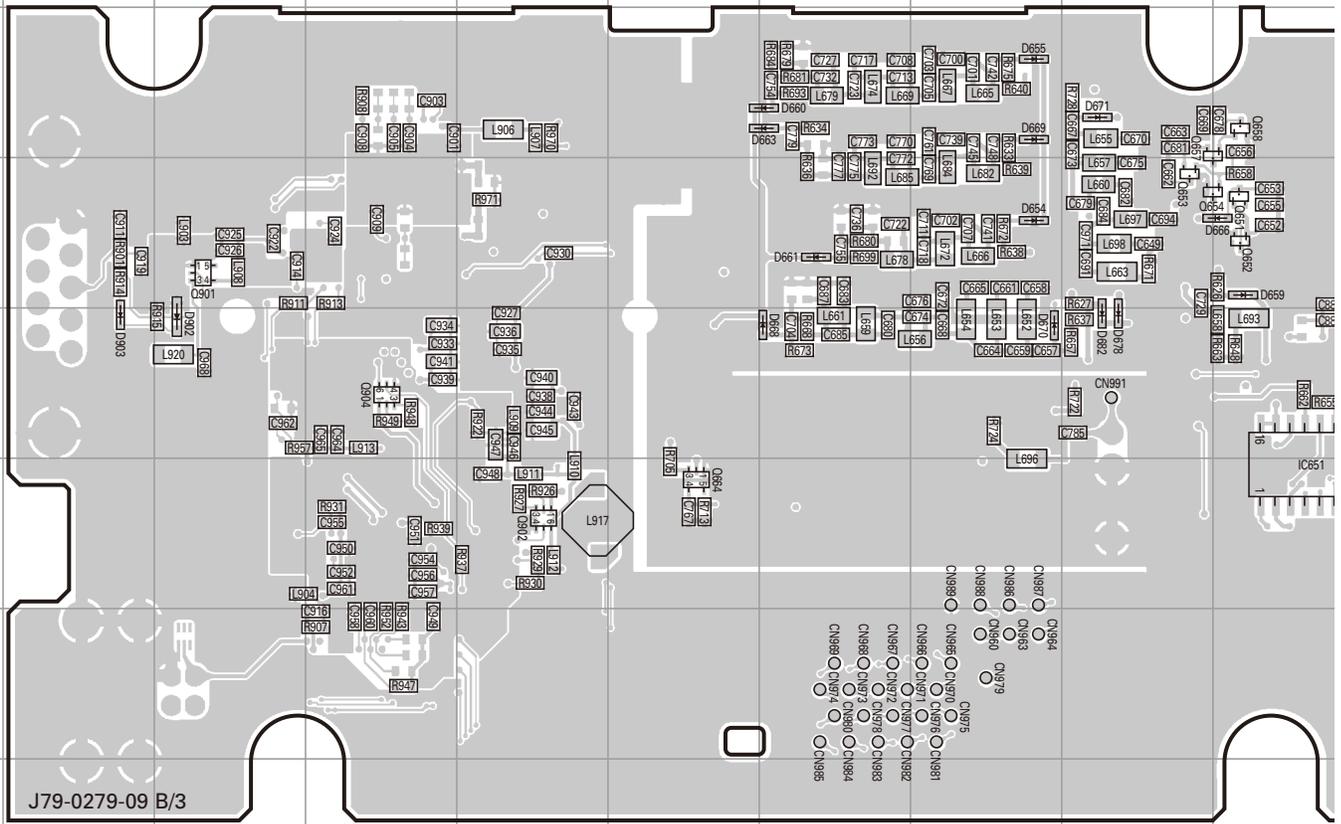
PC BOARD TS-590S

CONTROL UNIT (X53-446X-XX) (B,C/3) 0-11: K 2-71: E Component side view (J79-0279-09 B,C/3)



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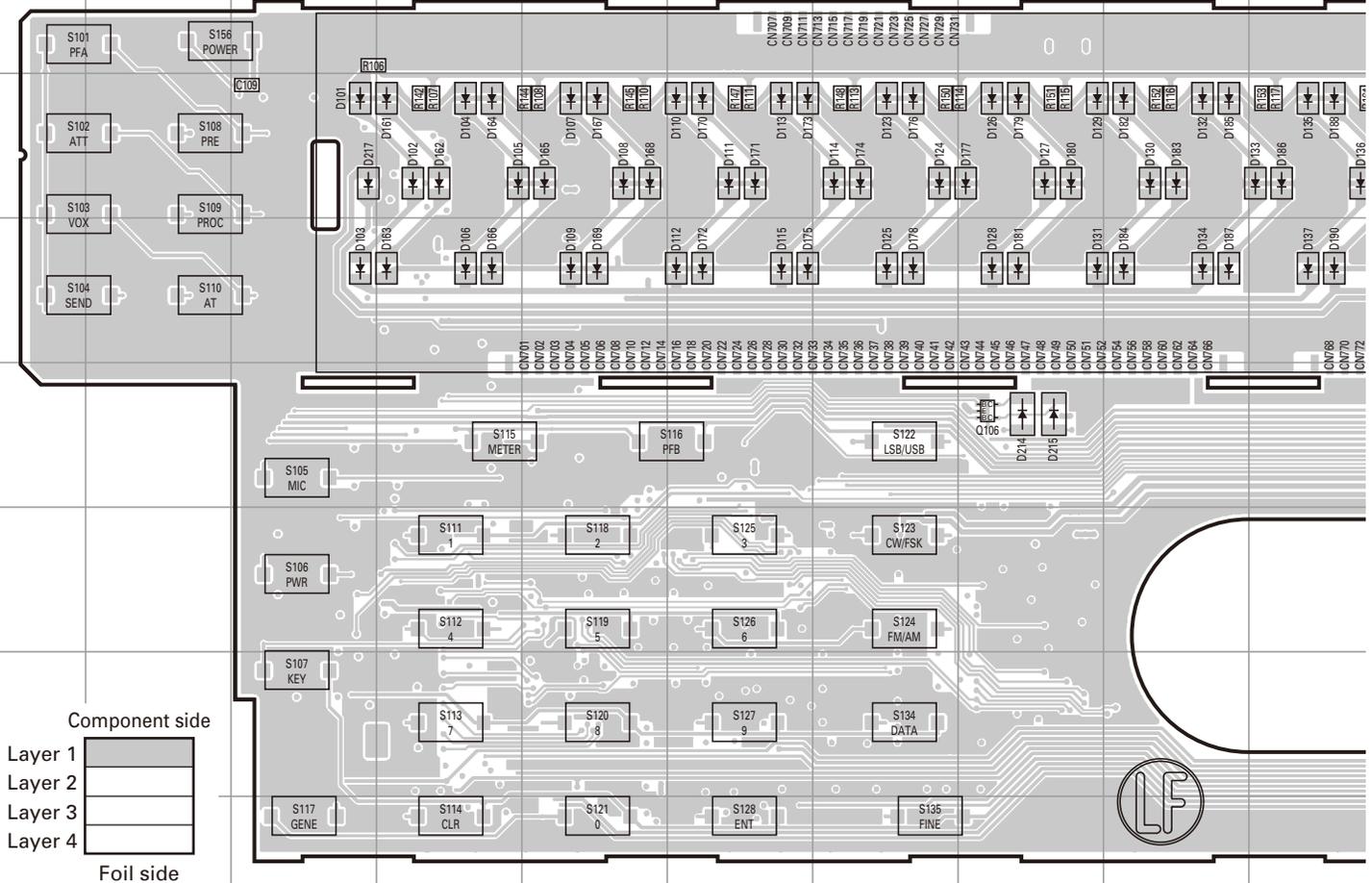
CONTROL UNIT (X53-446X-XX) (B,C/3) 0-11: K 2-71: E
Foil side view (J79-0279-09 B,C/3)



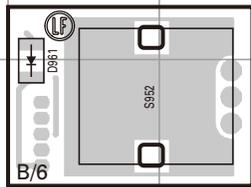
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IC601	5Q	Q664	6F	D661	4G
IC651	6J	Q803	3M	D663	3G
IC802	5K	Q804	3N	D666	4J
Q601	6Q	Q805	6M	D668	5G
Q602	6P	Q901	4C	D669	3H
Q651	4J	Q902	6E	D670	5H
Q652	4J	Q904	5D	D671	3I
Q653	4I	D654	4H	D678	5I
Q654	4I	D655	3H	D682	5I
Q657	3I	D659	4J	D902	5C
Q658	3J	D660	3G	D903	5B

TS-590S PC BOARD

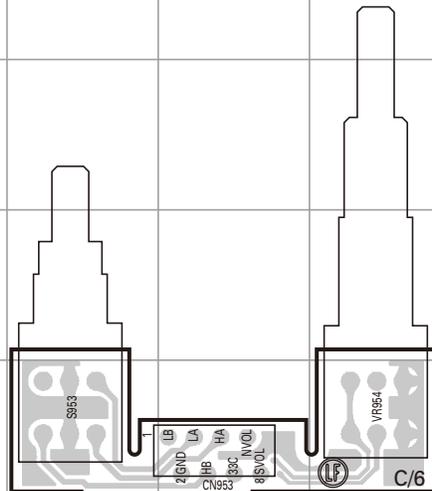
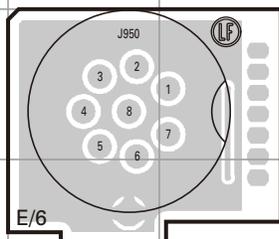
DISPLAY UNIT (X54-3700-00) (A/6): DISPLAY Component side view (J79-0280-09 A/6)



DISPLAY UNIT (X54-3700-00) (B/6): MULCH/CH



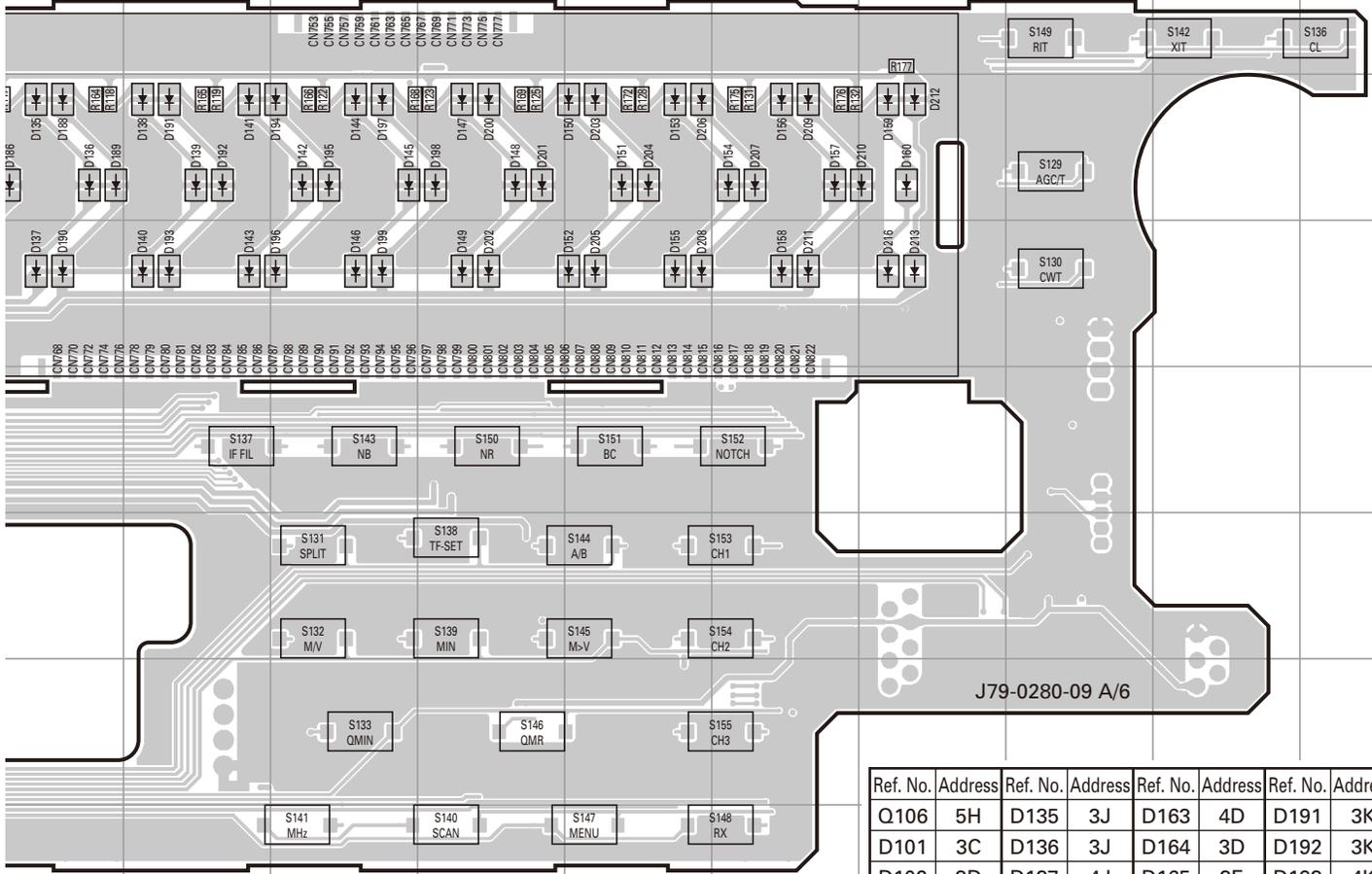
DISPLAY UNIT (X54-3700-00) (E/6): MIC



DISPLAY UNIT (X54-3700-00) (C/6) : HI/LO (SHIFT/WIDTH), NOTCH/SQL

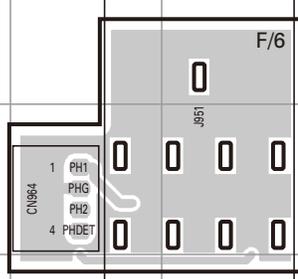
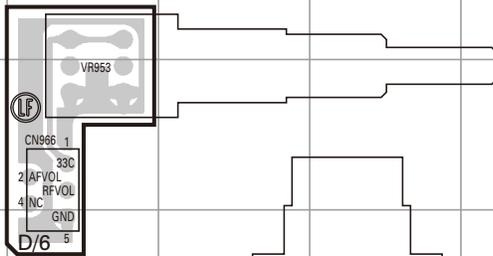
PC BOARD TS-590S

DISPLAY UNIT (X54-3700-00) (A/6): DISPLAY Component side view (J79-0280-09 A/6)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
Q106	5H	D135	3J	D163	4D	D191	3K
D101	3C	D136	3J	D164	3D	D192	3K
D102	3D	D137	4J	D165	3E	D193	4K
D103	4C	D138	3K	D166	4D	D194	3L
D104	3D	D139	3K	D167	3E	D195	3L
D105	3D	D140	4K	D168	3E	D196	4L
D106	4D	D141	3K	D169	4E	D197	3L
D107	3E	D142	3L	D170	3F	D198	3M
D108	3E	D143	4K	D171	3F	D199	4L
D109	4E	D144	3L	D172	4F	D200	3M
D110	3F	D145	3L	D173	3F	D201	3M
D111	3F	D146	4L	D174	3G	D202	4M
D112	4F	D147	3M	D175	4F	D203	3N
D113	3F	D148	3M	D176	3G	D204	3N
D114	3G	D149	4M	D177	3H	D205	4N
D115	4F	D150	3N	D178	4G	D206	3N
D123	3G	D151	3N	D179	3H	D207	3O
D124	3G	D152	4N	D180	3H	D208	4N
D125	4G	D153	3N	D181	4H	D209	3O
D126	3H	D154	3O	D182	3I	D210	3P
D127	3H	D155	4N	D183	3I	D211	4O
D128	4H	D156	3O	D184	4I	D212	3P
D129	3H	D157	3O	D185	3I	D213	4P
D130	3I	D158	4O	D186	3J	D214	5H
D131	4H	D159	3P	D187	4I	D215	5H
D132	3I	D160	3P	D188	3J	D216	4P
D133	3J	D161	3D	D189	3J	D217	3C
D134	4I	D162	3D	D190	4J	D961	10B

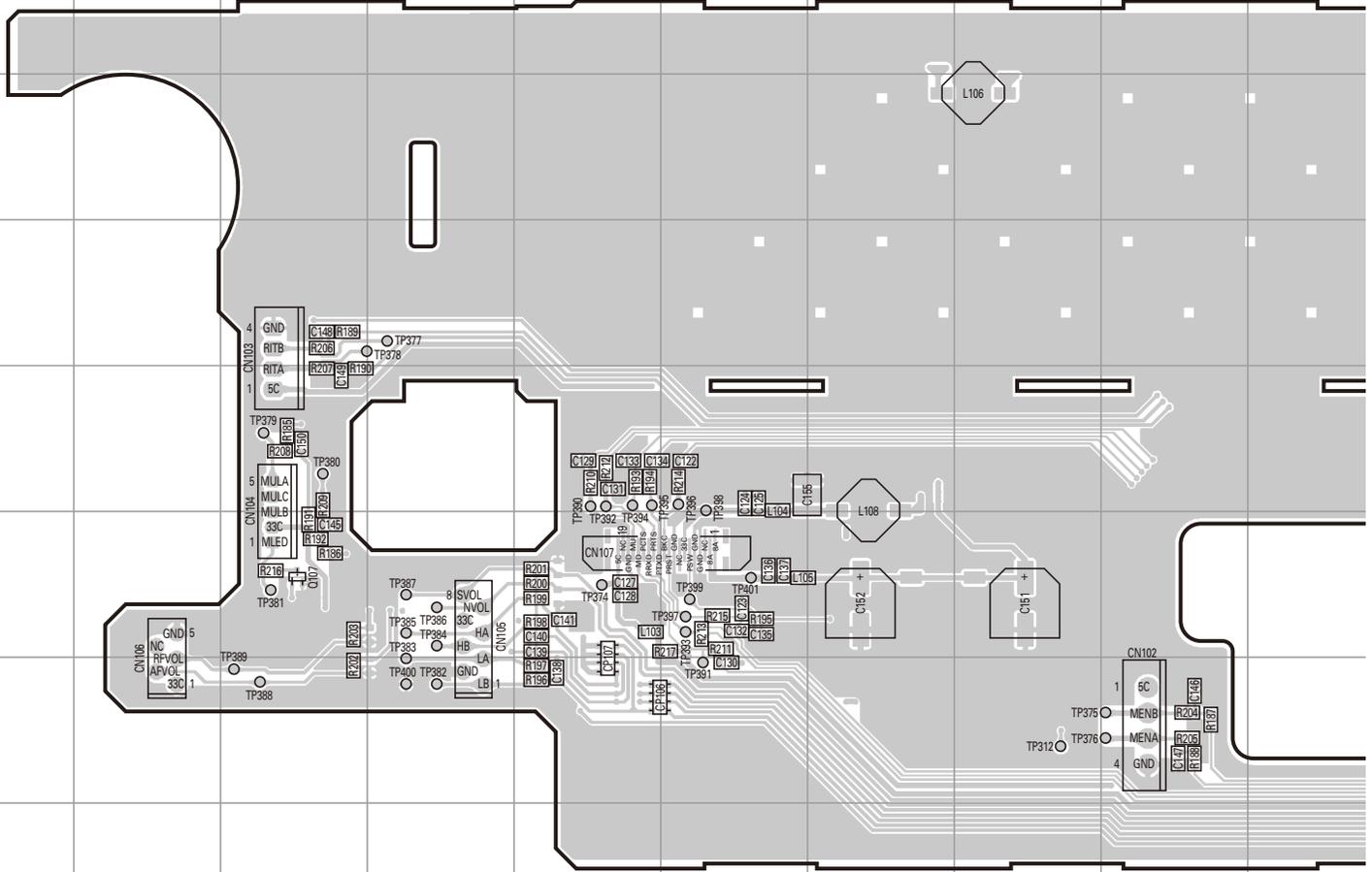
DISPLAY UNIT (X54-3700-00) (D/6): AF/RF



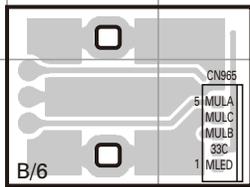
DISPLAY UNIT (X54-3700-00) (F/6): PHONE

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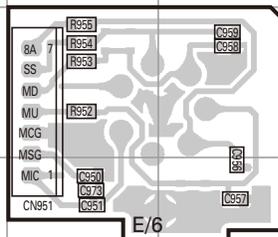
DISPLAY UNIT (X54-3700-00) (A/6): DISPLAY
Foil side view (J79-0280-09 A/6)



DISPLAY UNIT (X54-3700-00) (B/6): MULCH/CH

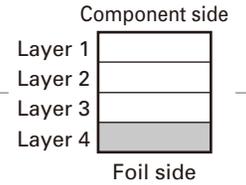
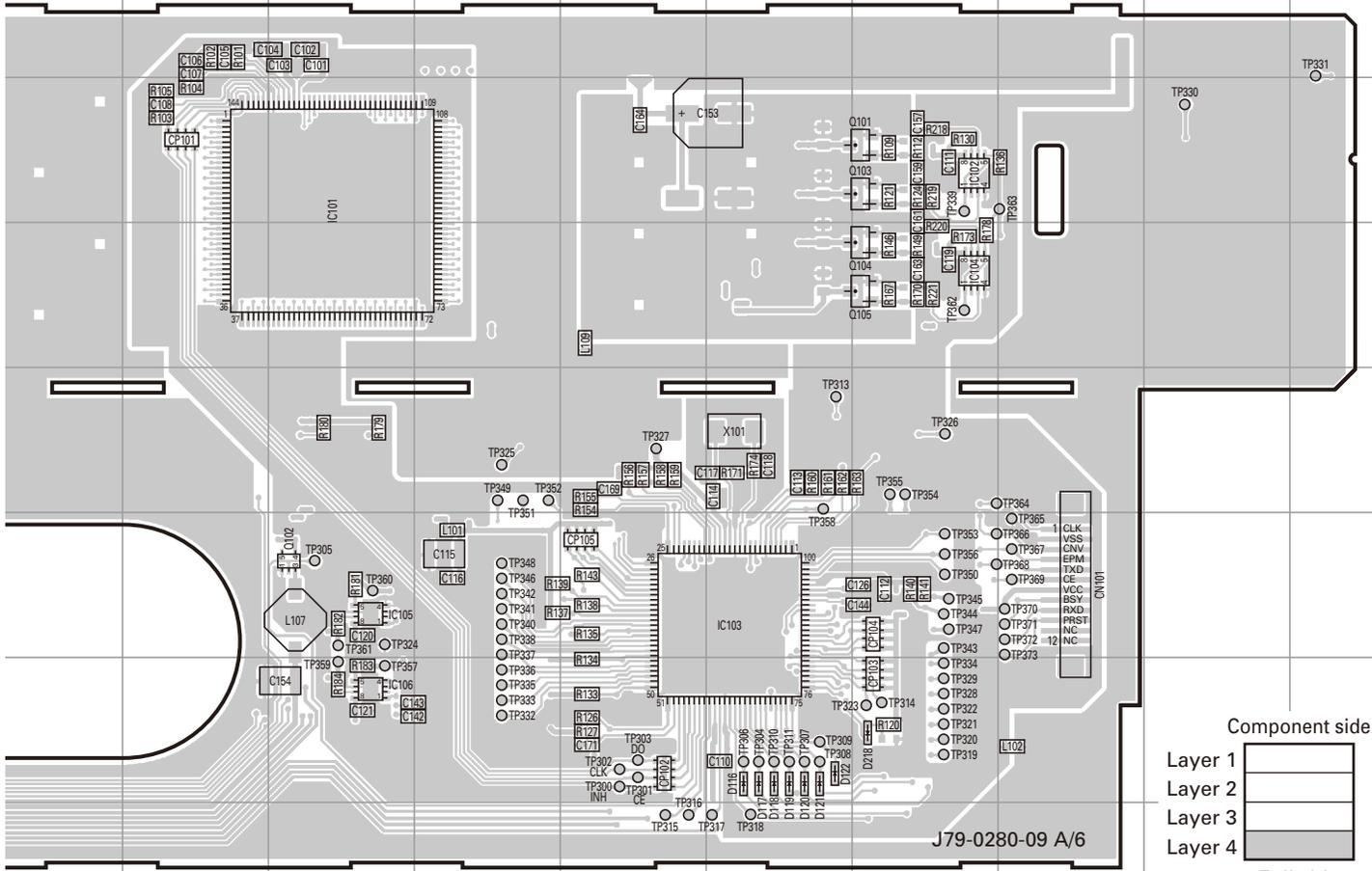


DISPLAY UNIT (X54-3700-00) (E/6): MIC

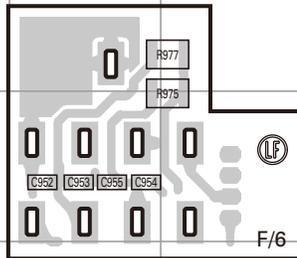
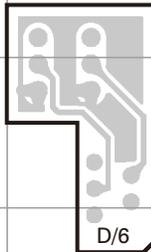


PC BOARD TS-590S

DISPLAY UNIT (X54-3700-00) (A/6): DISPLAY Foil side view (J79-0280-09 A/6)



DISPLAY UNIT (X54-3700-00) (D/6): AF/RF



DISPLAY UNIT (X54-3700-00) (F/6): PHONE

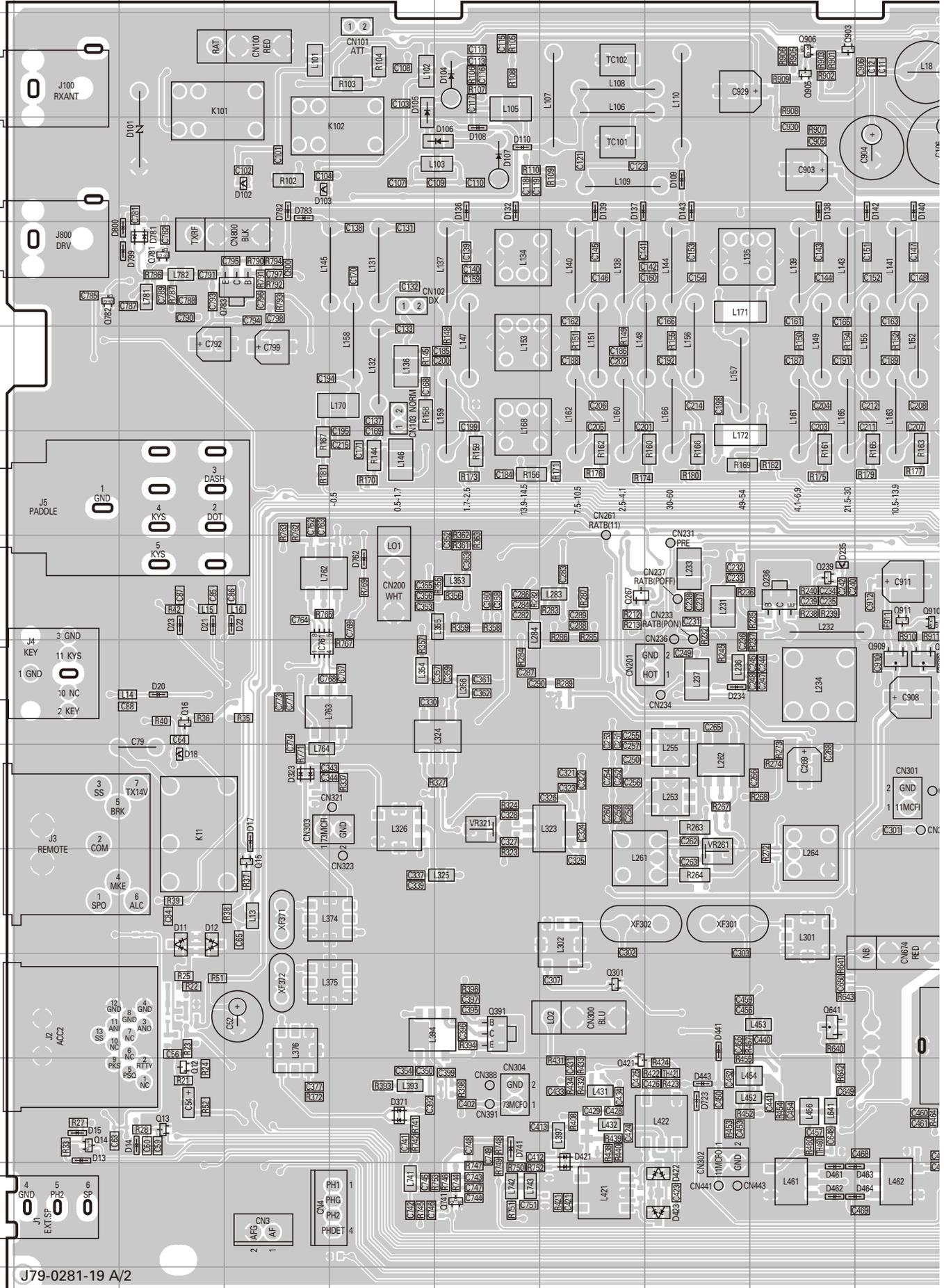
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IC101	3L	Q105	4P
IC102	3P	Q107	6C
IC103	6O	D116	7O
IC104	4P	D117	7O
IC105	6L	D118	7O
IC106	7L	D119	7O
Q101	3P	D120	7O
Q102	6L	D121	7O
Q103	3P	D122	7O
Q104	4P	D218	7P

TS-590S PC BOARD

TX-RX UNIT (X57-785X-XX)

0-11: K 2-71: E

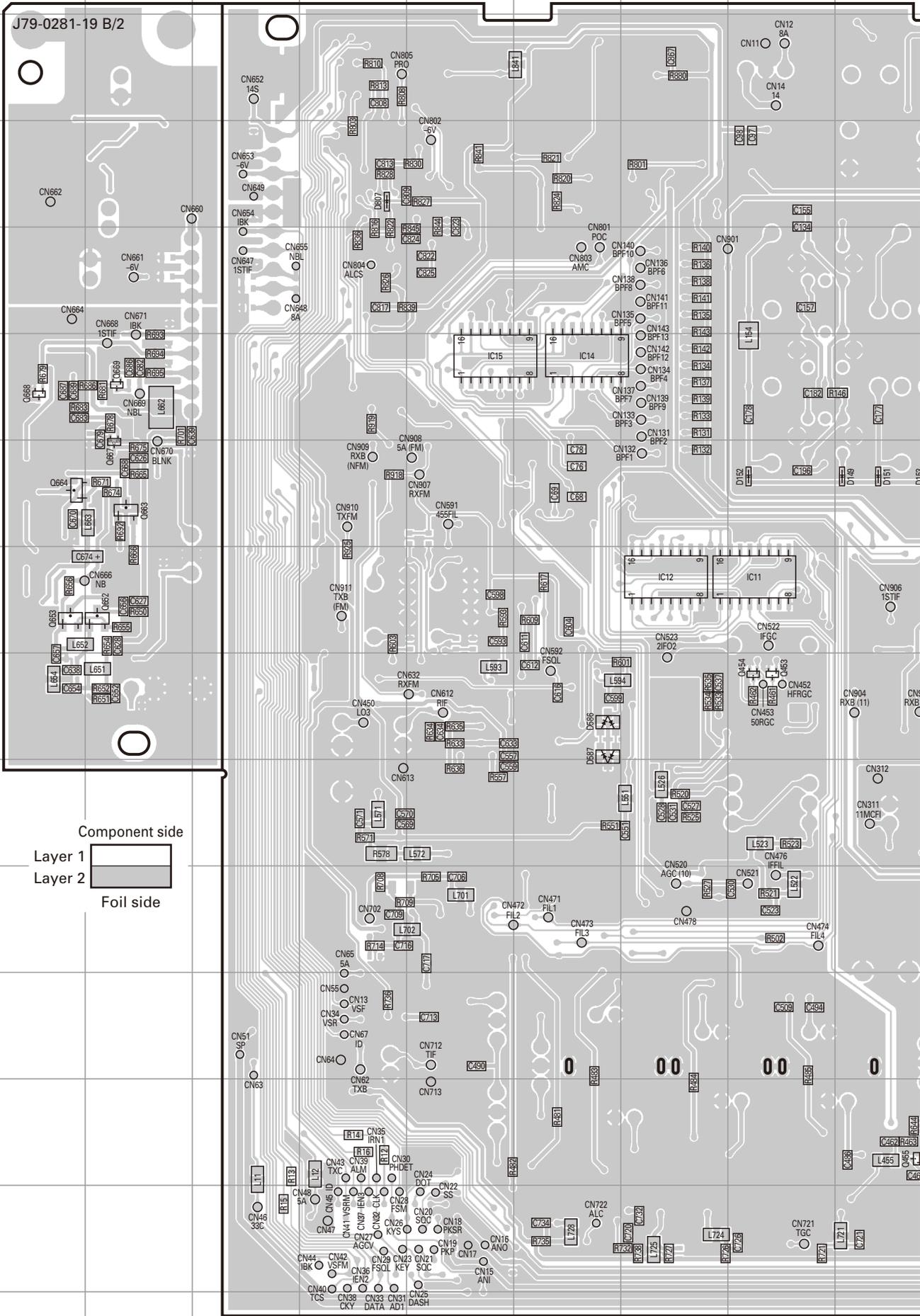
Component side view (J79-0281-19)



TS-590S PC BOARD

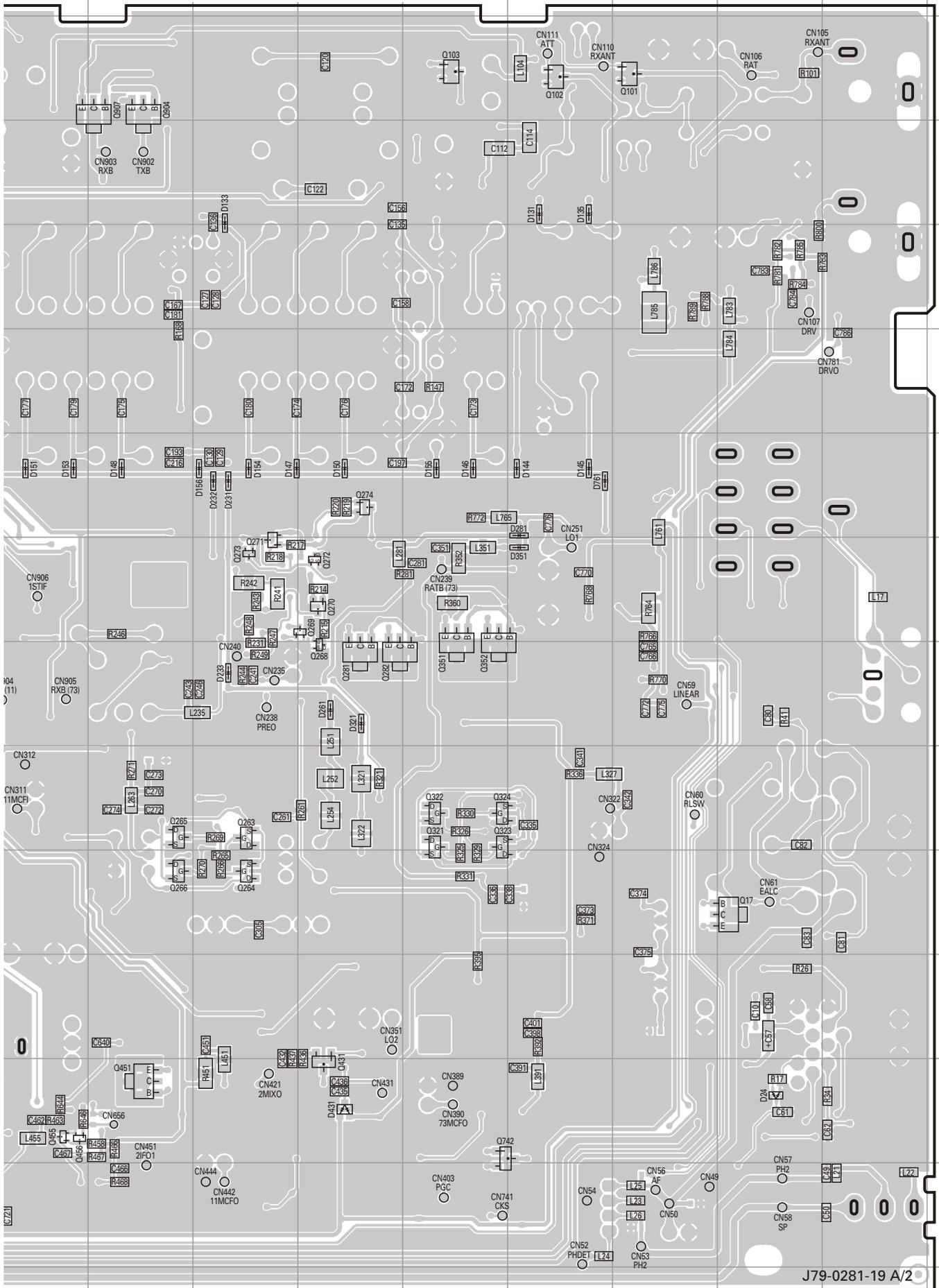
TX-RX UNIT (X57-785X-XX)
0-11: K 2-71: E
Foil side view (J79-0281-19)

Ref. No.	Address
IC11	7I
IC12	7H
IC14	5G
IC15	5F
Q17	10Q
Q101	2P
Q102	2O
Q103	2N
Q263	9L
Q264	10L
Q265	9K
Q266	10K
Q268	8M
Q269	7M
Q270	7M
Q271	7L
Q272	7M
Q273	7L
Q274	6M
Q281	8M
Q282	8M
Q321	9N
Q322	9N
Q323	9N
Q324	9N
Q351	8N
Q352	8N
Q431	12M
Q451	12K
Q453	8I
Q454	8I
Q455	12J
Q456	12J
Q652	7C
Q653	7B
Q663	6C
Q664	6B
Q667	6C
Q668	5B
Q669	5C
Q742	12N
Q904	2K
Q907	2K
D24	12Q
D131	3O
D133	3L
D135	3O
D144	6O
D145	6O
D146	6N
D147	6L
D148	6K
D149	6J
D150	6M
D151	6J
D152	6I
D153	6J
D154	6L
D155	6N
D156	6L
D231	6L
D232	6L
D233	8L
D261	8M
D281	6O
D321	8M
D351	7O
D431	12M
D586	8G
D587	8G
D761	6O
D807	3E



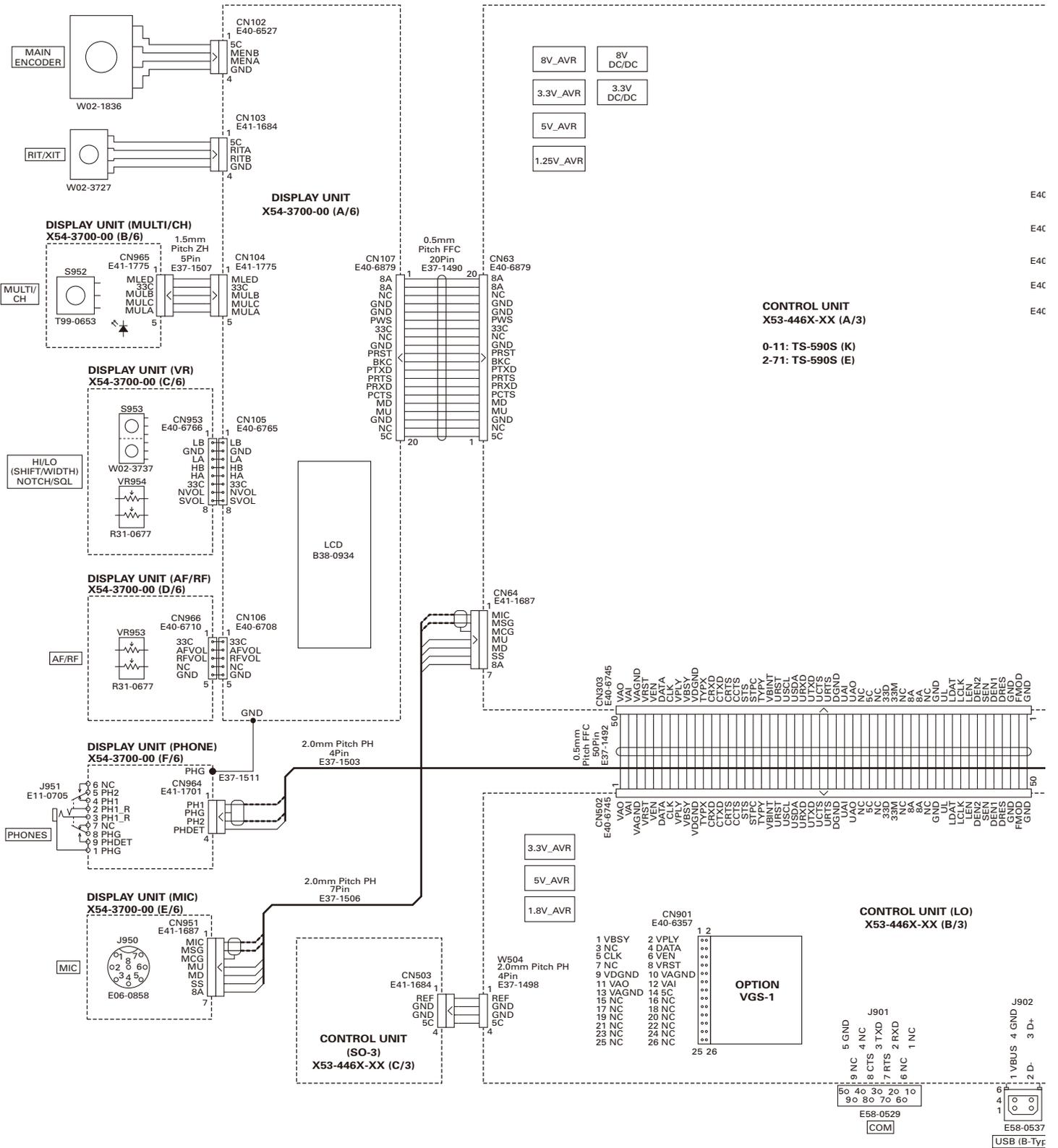
TX-RX UNIT (X57-785X-XX)
0-11: K 2-71: E
Foil side view (J79-0281-19)

PC BOARD TS-590S

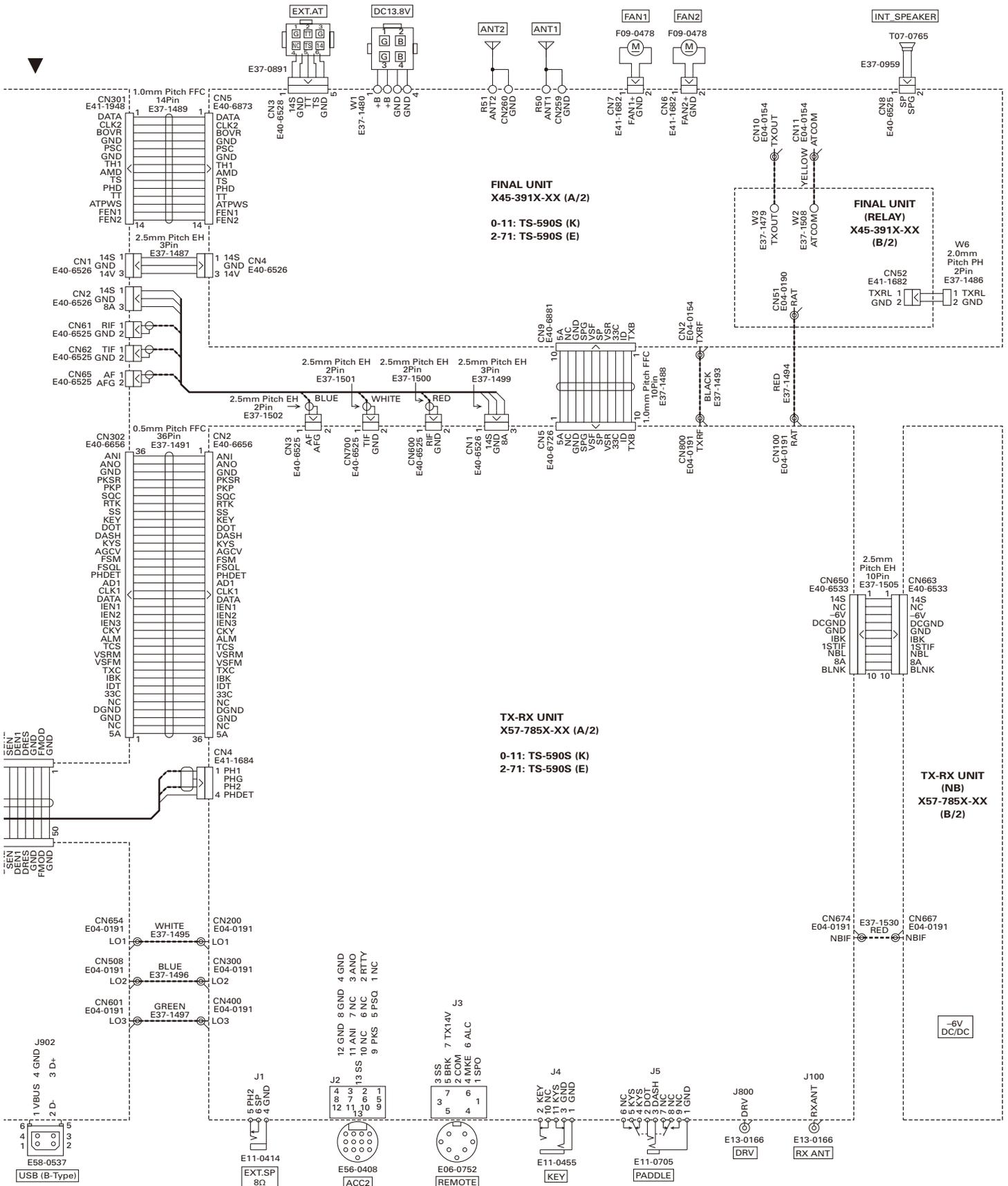


TS-590S

INTERCONNECTION DIAGRAM

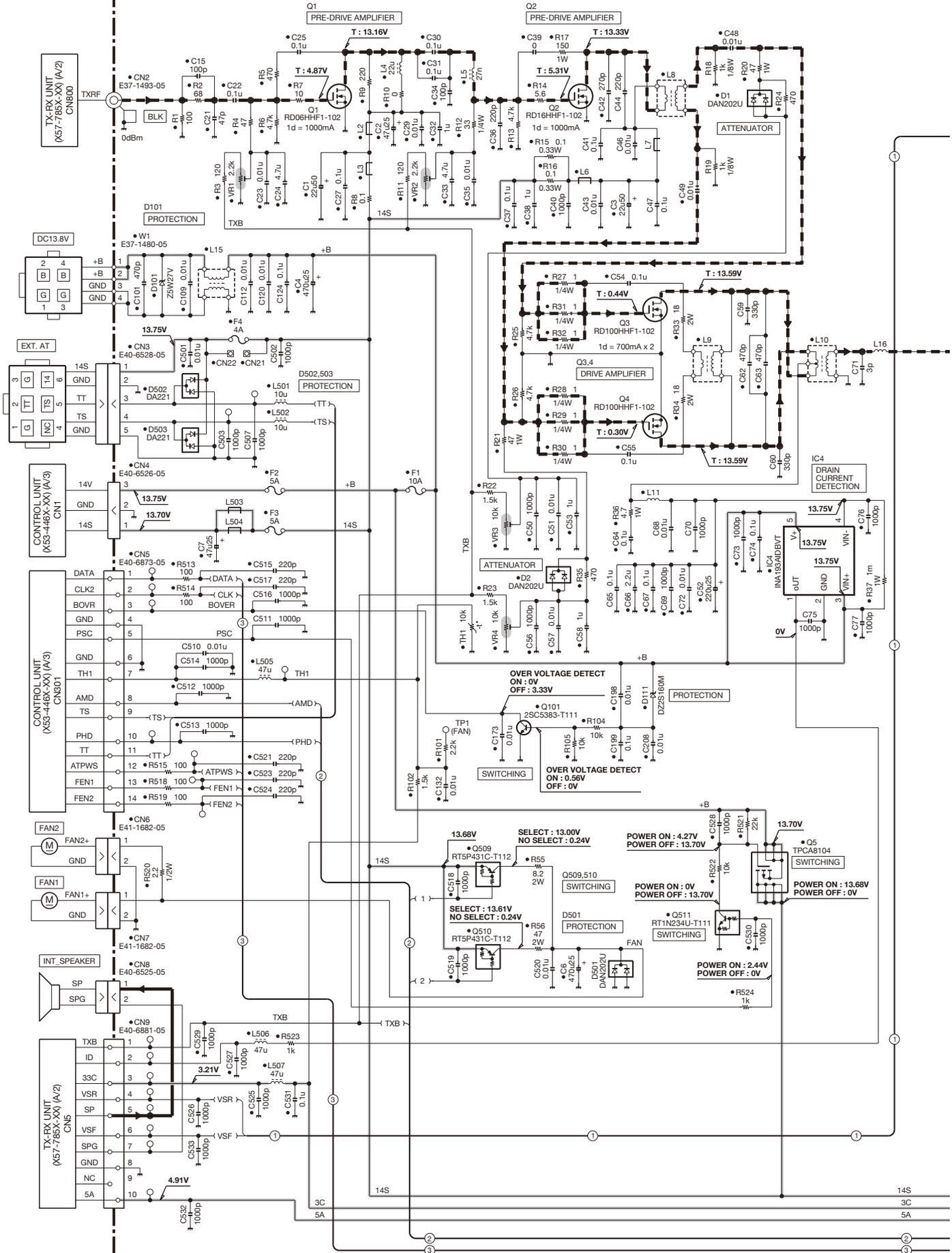


INTERCONNECTION DIAGRAM



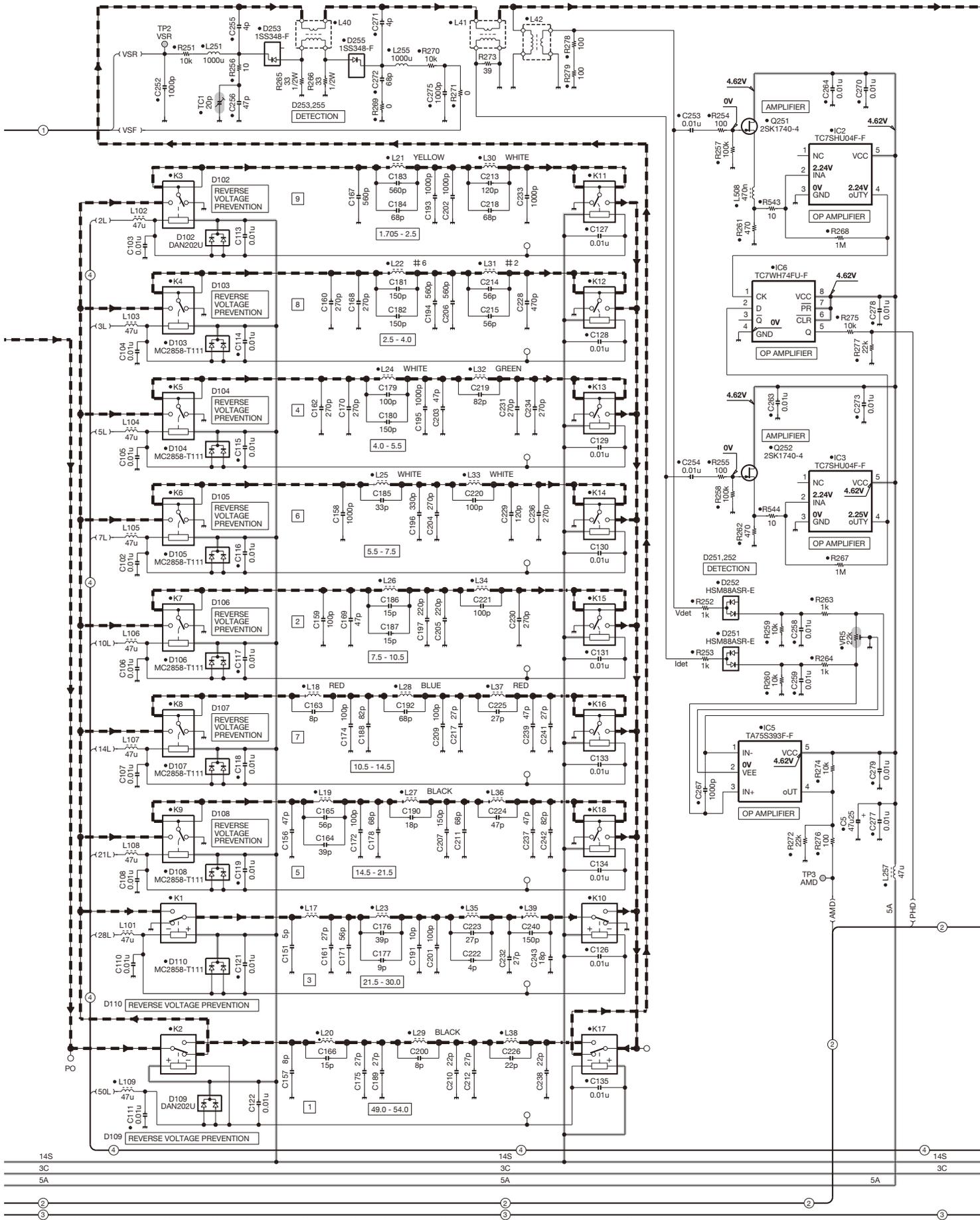
TS-590S SCHEMATIC DIAGRAM

FINAL UNIT (X45-391X-XX) (A/2)



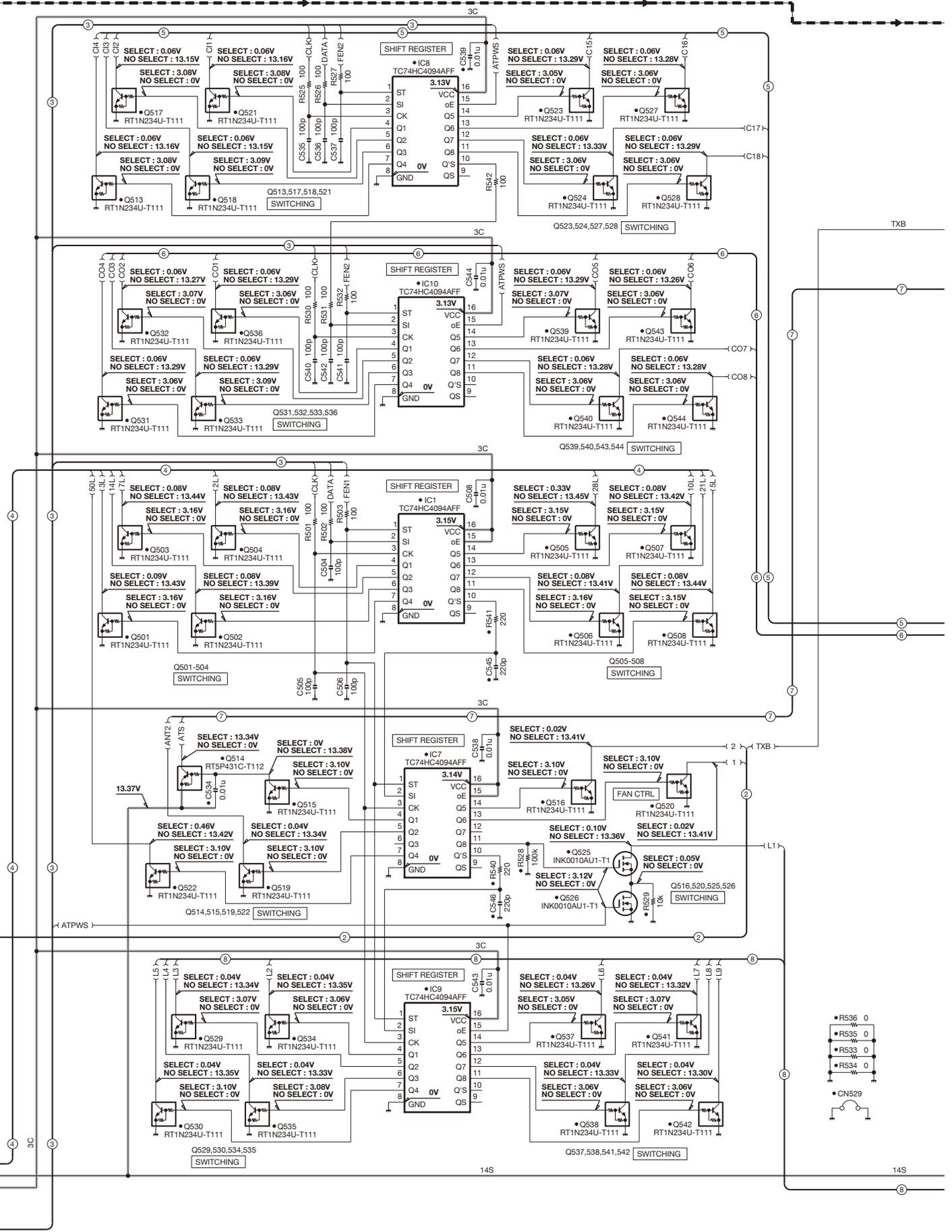
SCHEMATIC DIAGRAM TS-590S

FINAL UNIT (X45-391X-XX) (A/2)



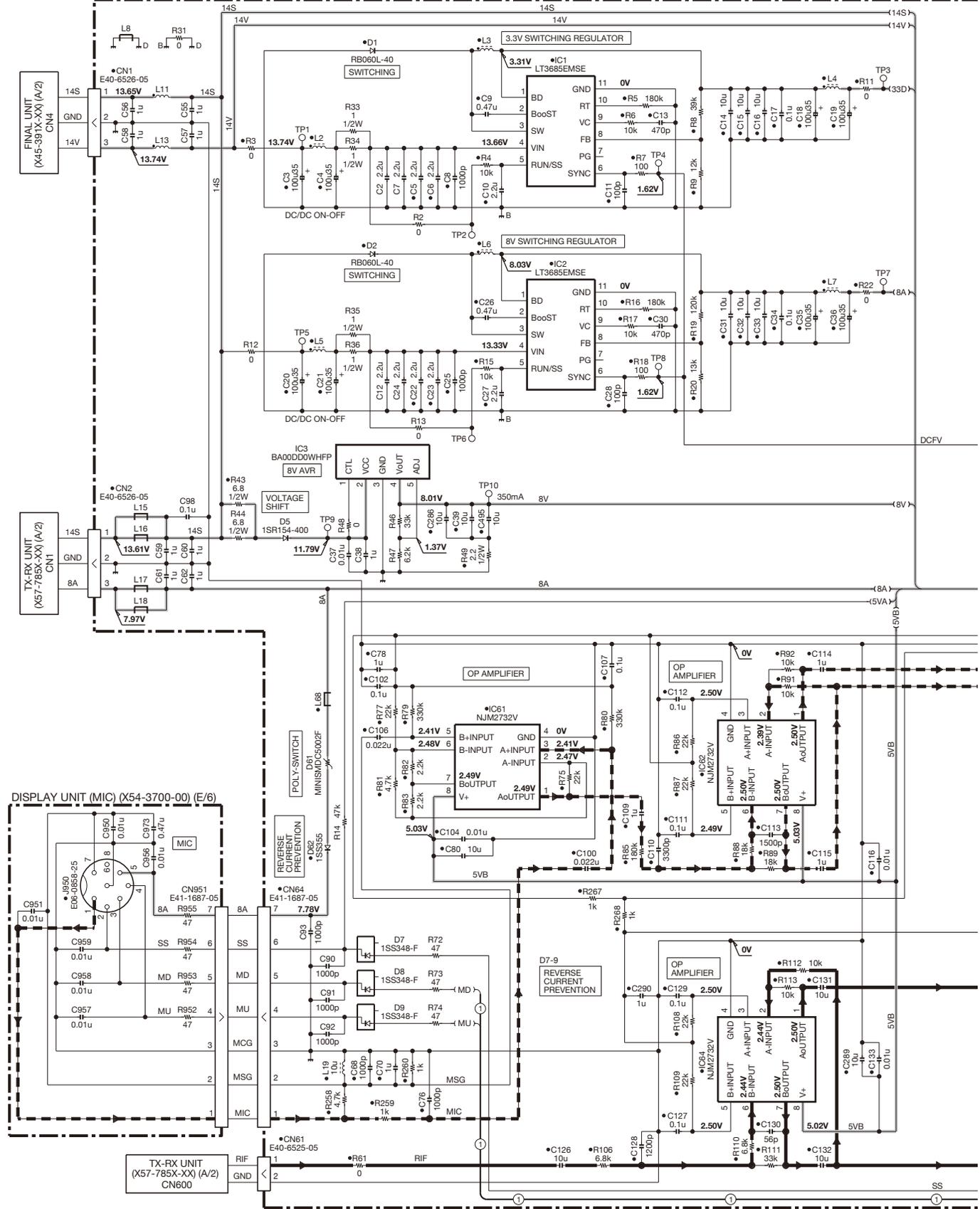
TS-590S SCHEMATIC DIAGRAM

FINAL UNIT (X45-391X-XX) (A/2)



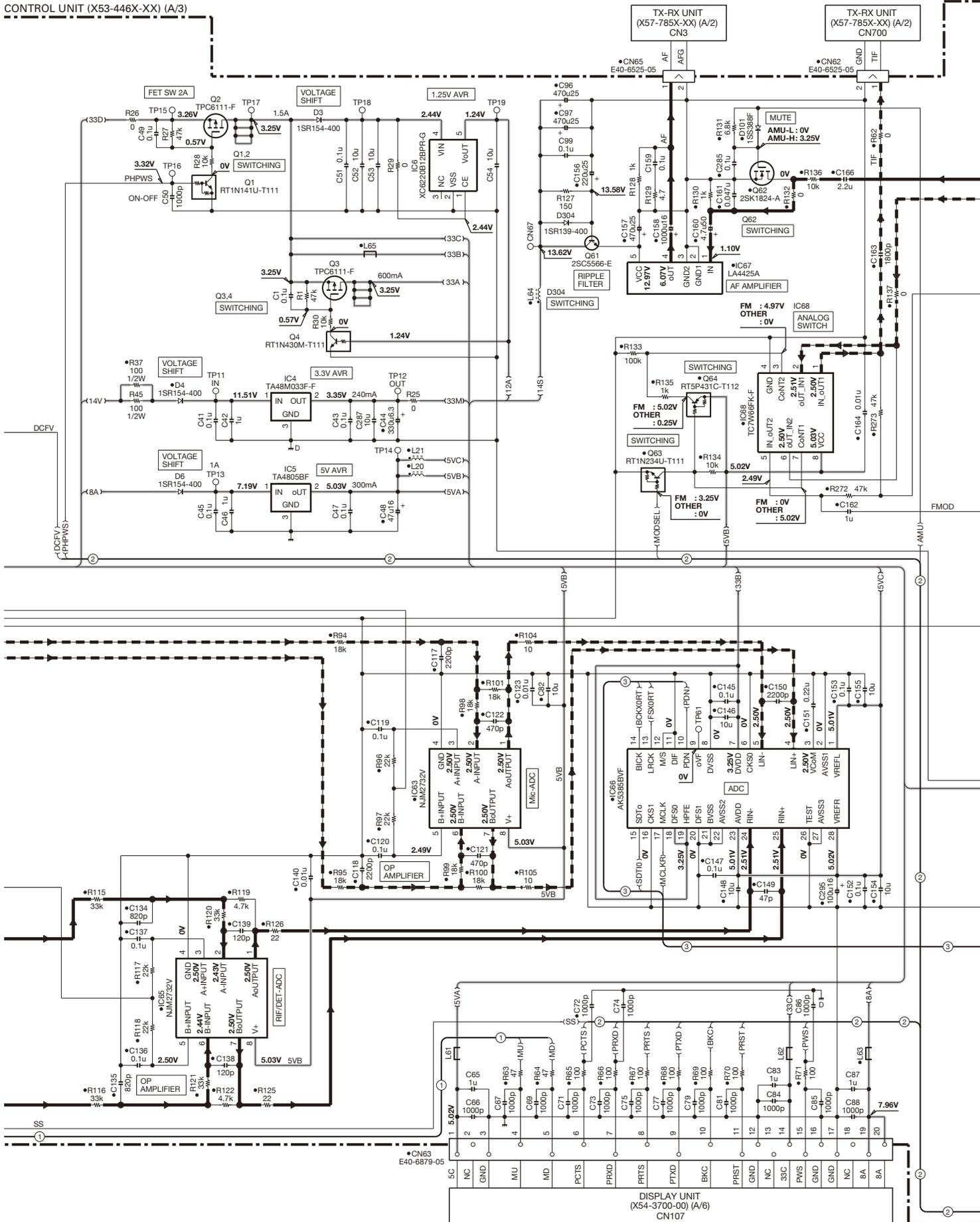
TS-590S SCHEMATIC DIAGRAM

CONTROL UNIT (X53-446X-XX) (A/3)



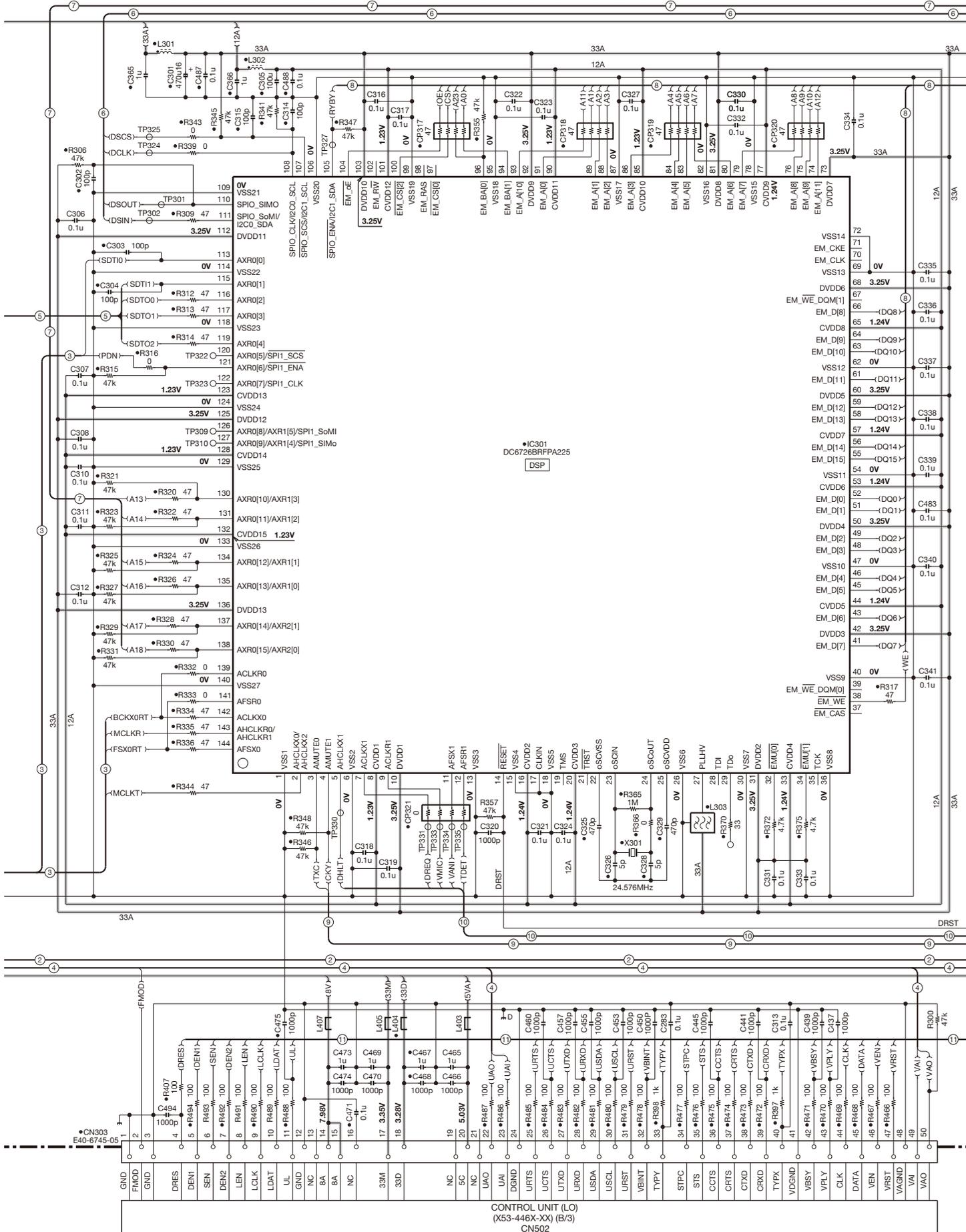
SCHEMATIC DIAGRAM TS-590S

CONTROL UNIT (X53-446X-XX) (A/3)



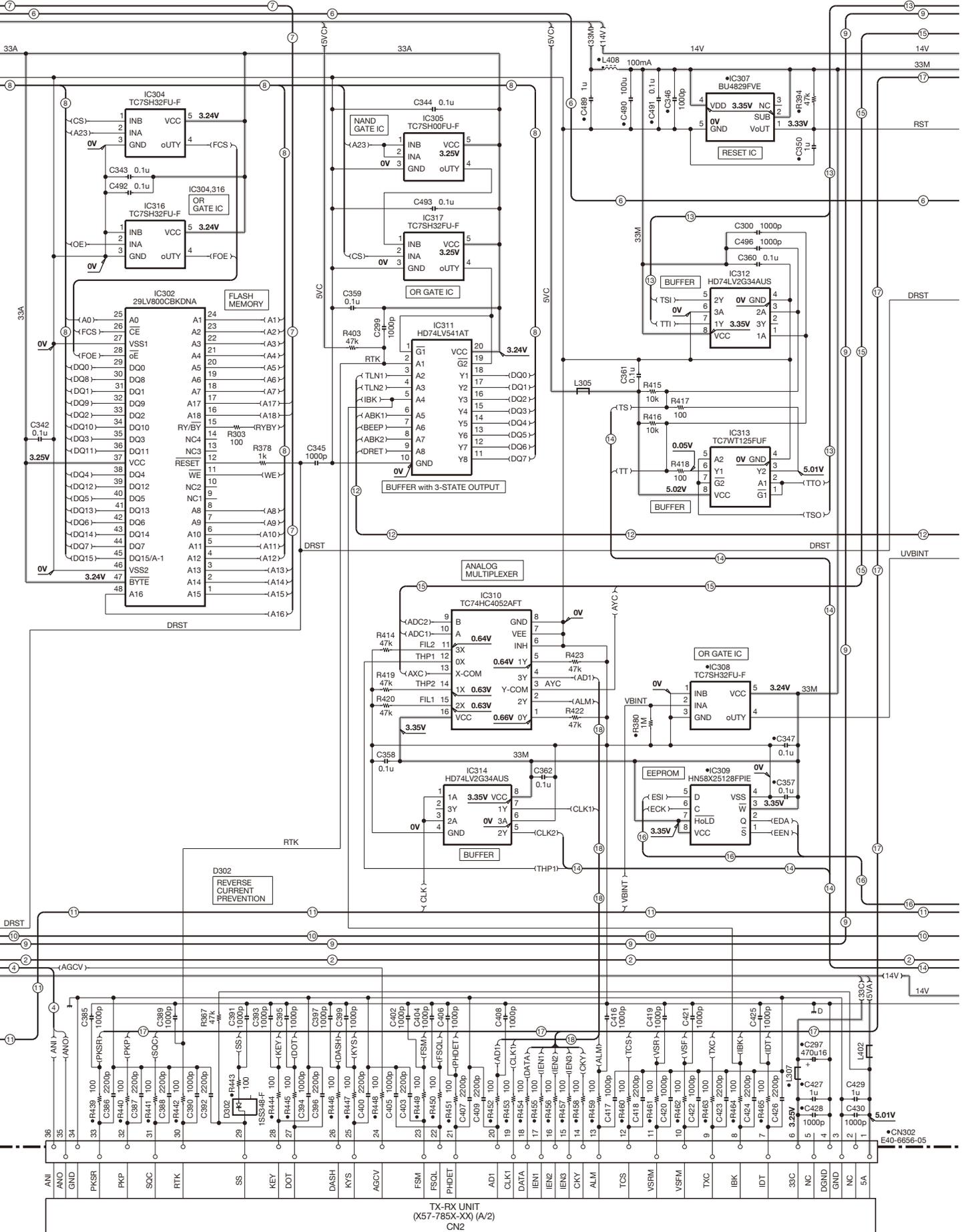
SCHEMATIC DIAGRAM TS-590S

CONTROL UNIT (X53-446X-XX) (A/3)

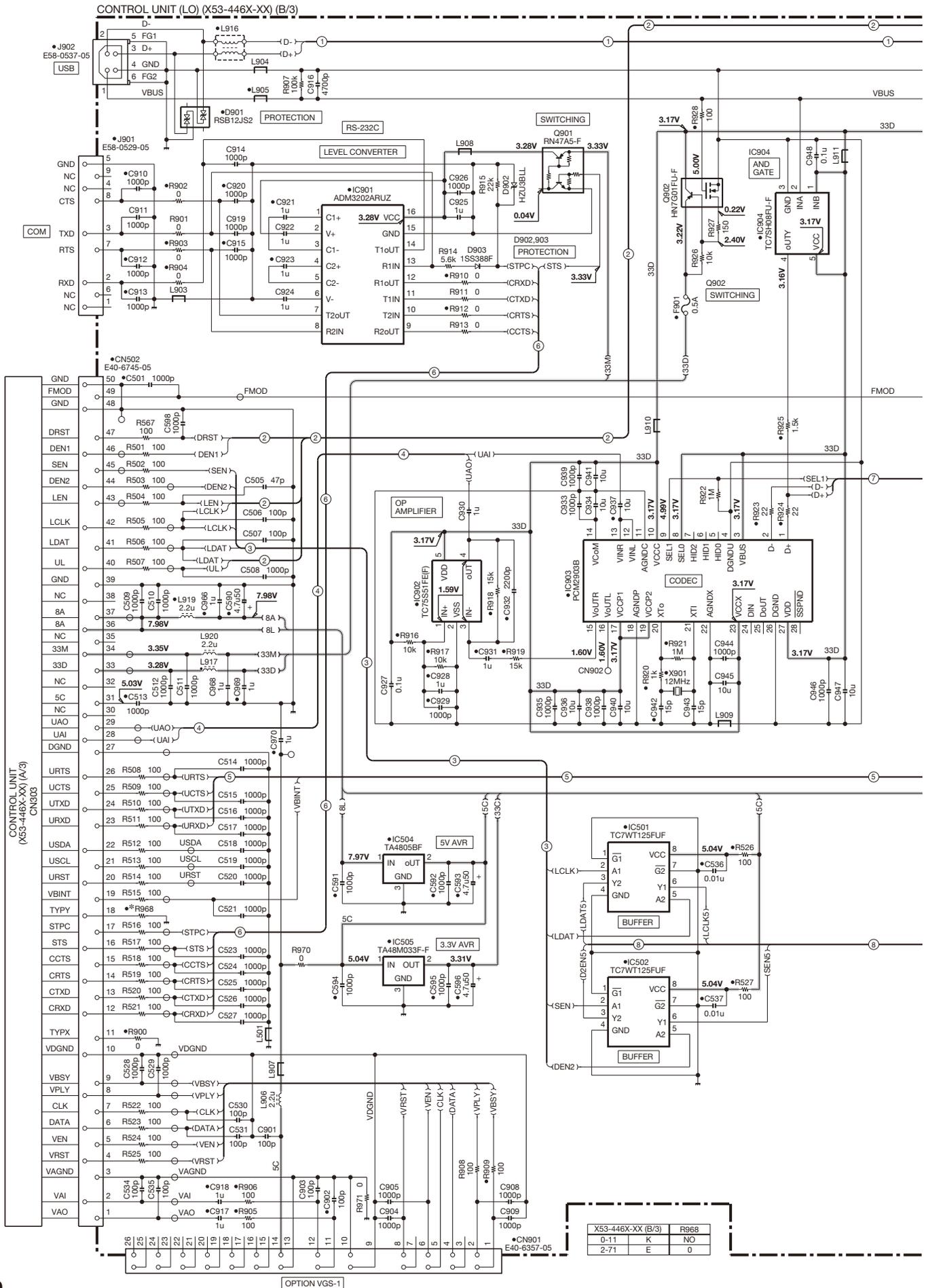


TS-590S SCHEMATIC DIAGRAM

CONTROL UNIT (X53-446X-XX) (A/3)

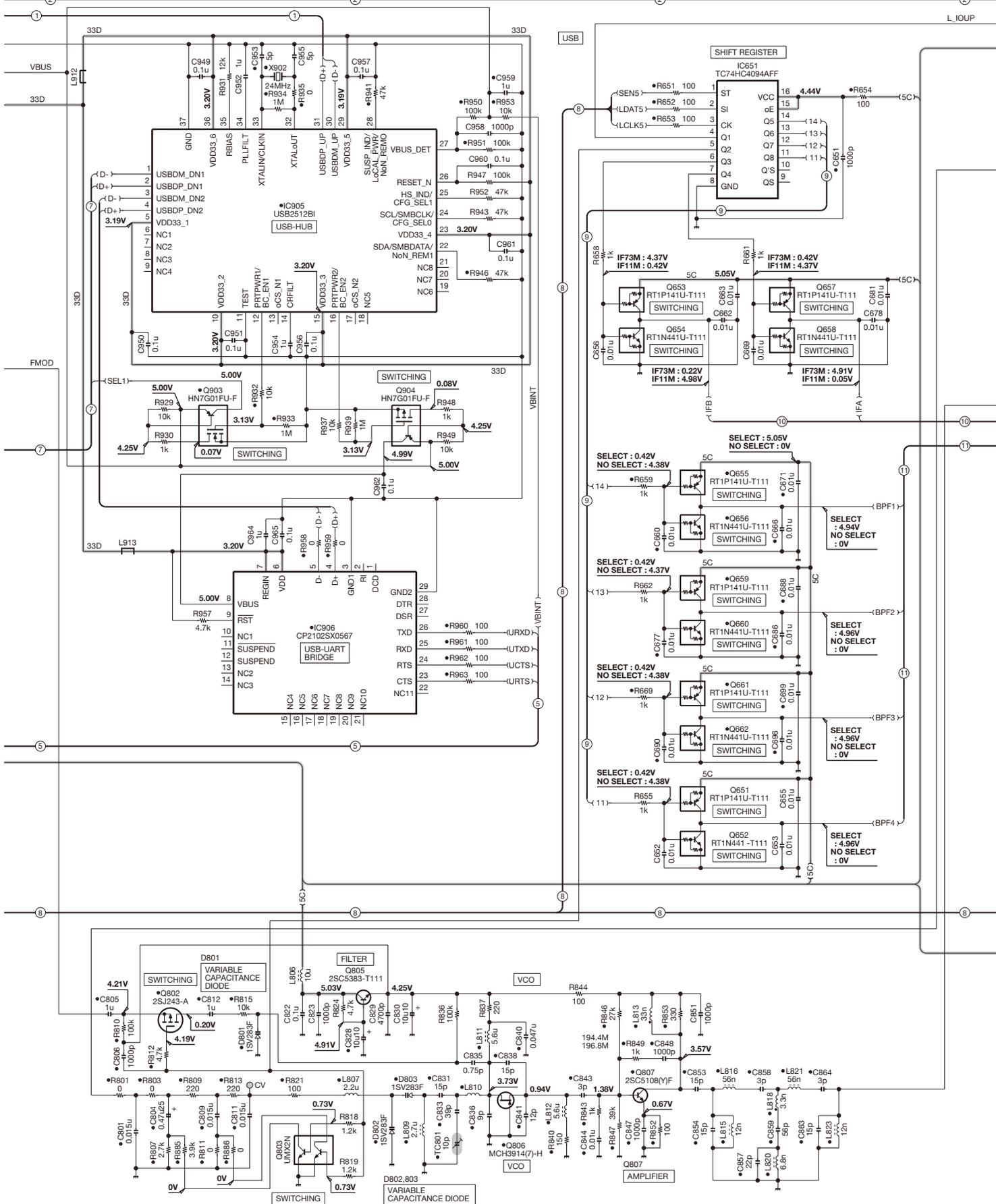


TS-590S SCHEMATIC DIAGRAM



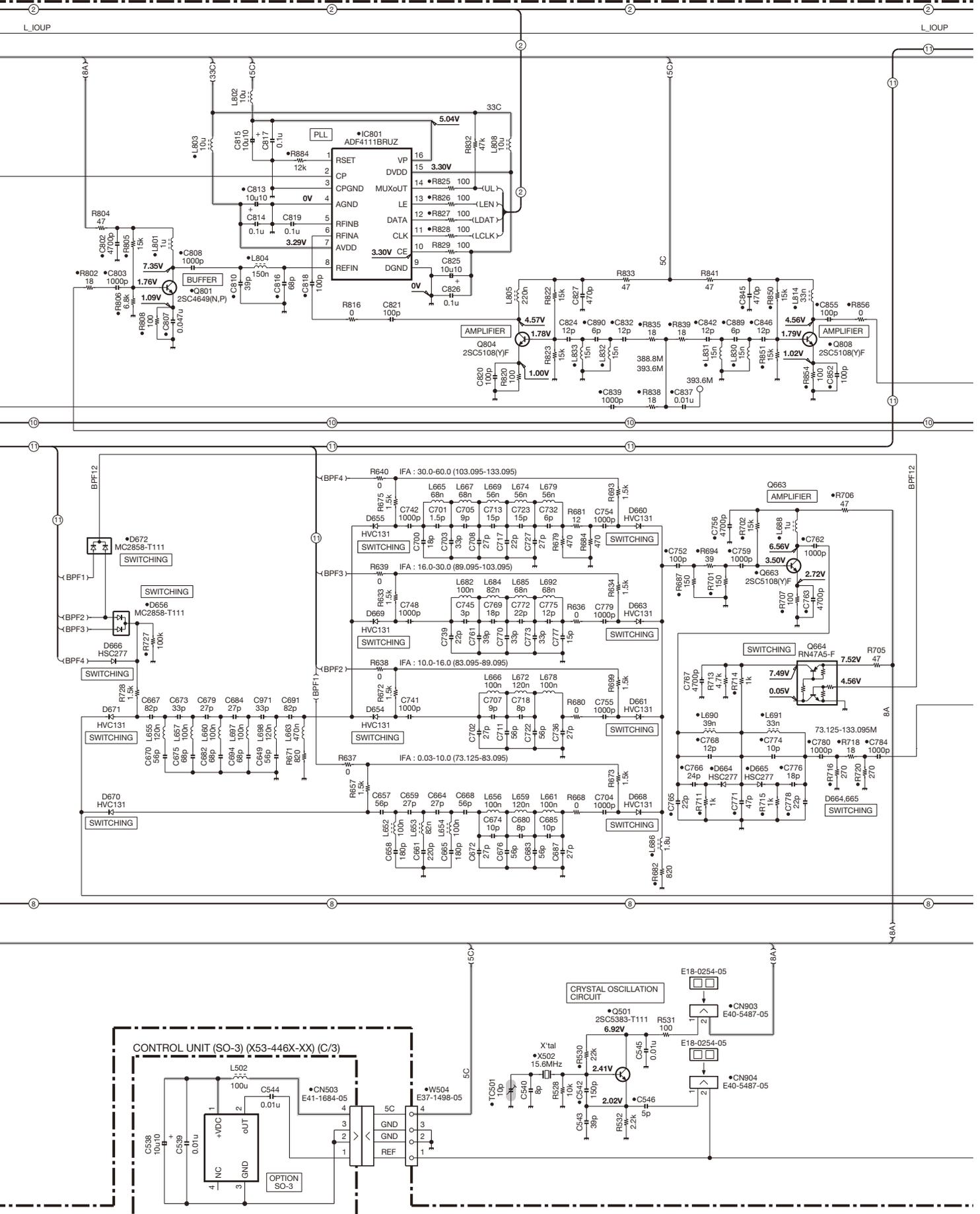
SCHEMATIC DIAGRAM TS-590S

CONTROL UNIT (LO) (X53-446X-XX) (B/3)



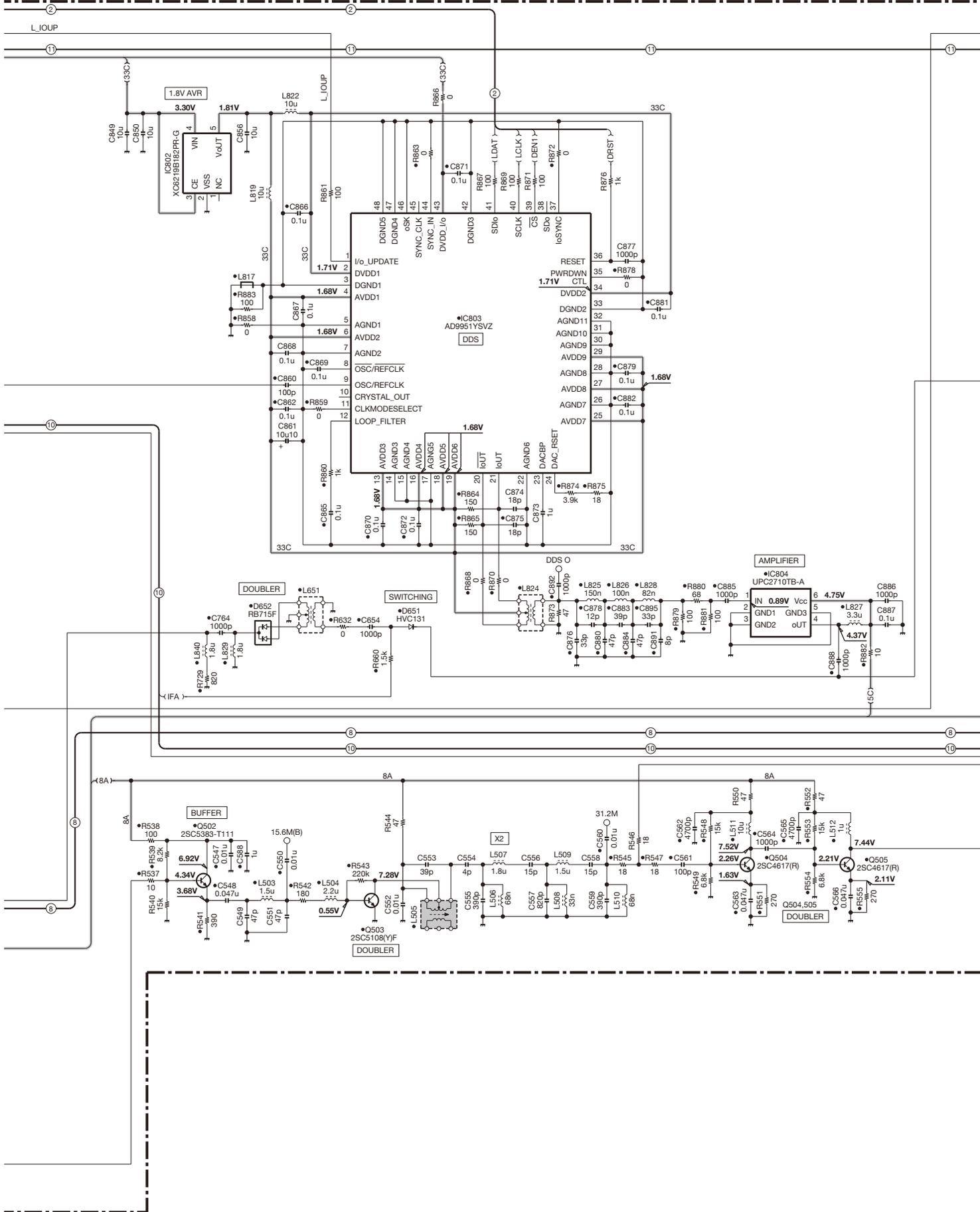
TS-590S SCHEMATIC DIAGRAM

CONTROL UNIT (LO) (X53-446X-XX) (B/3)



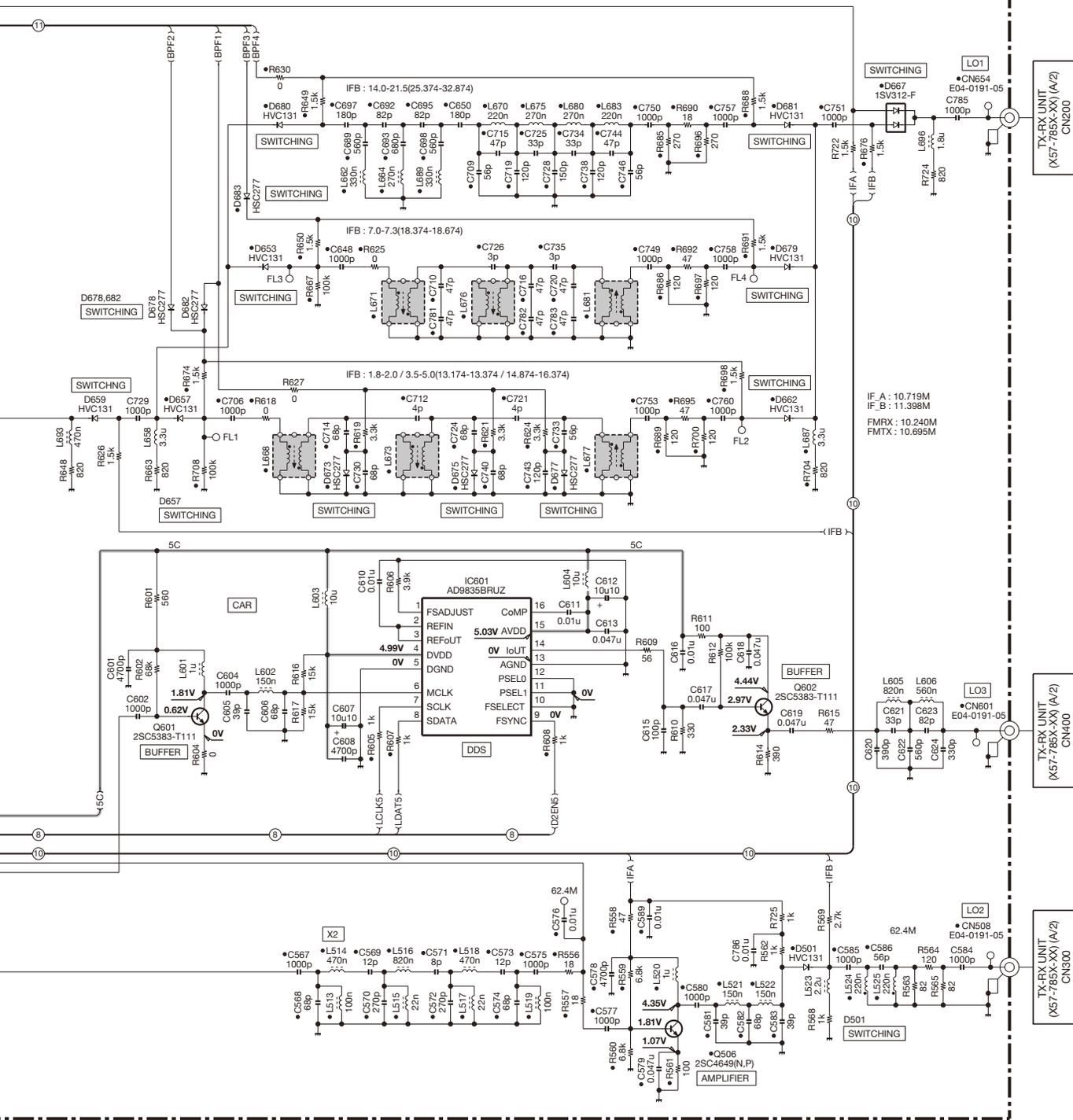
SCHEMATIC DIAGRAM TS-590S

CONTROL UNIT (LO) (X53-446X-XX) (B/3)



TS-590S SCHEMATIC DIAGRAM

CONTROL UNIT (LO) (X53-446X-XX) (B/3)

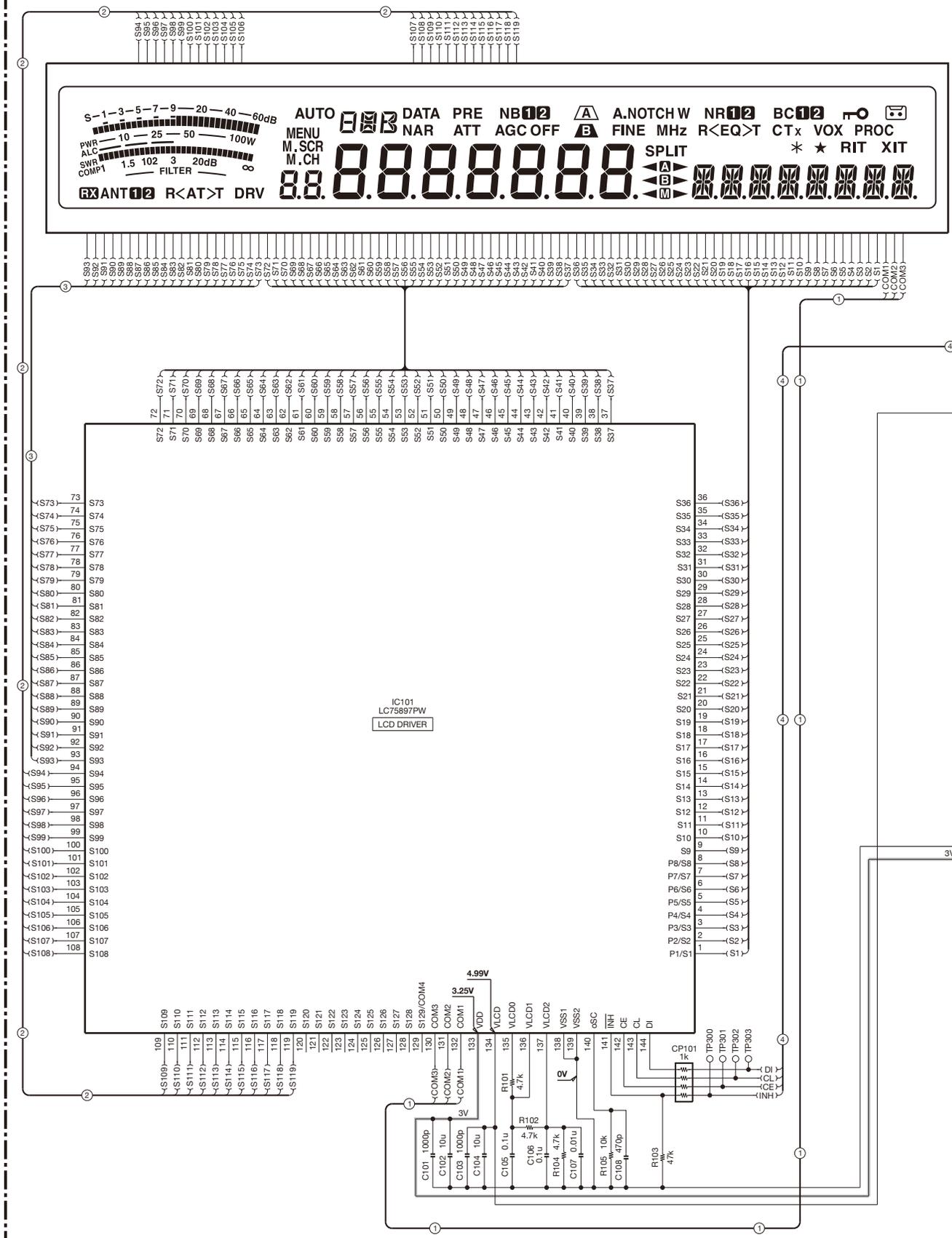


1
2
3
4
5
6
7

Note : The components marked with a dot (•) are parts of layer 1.

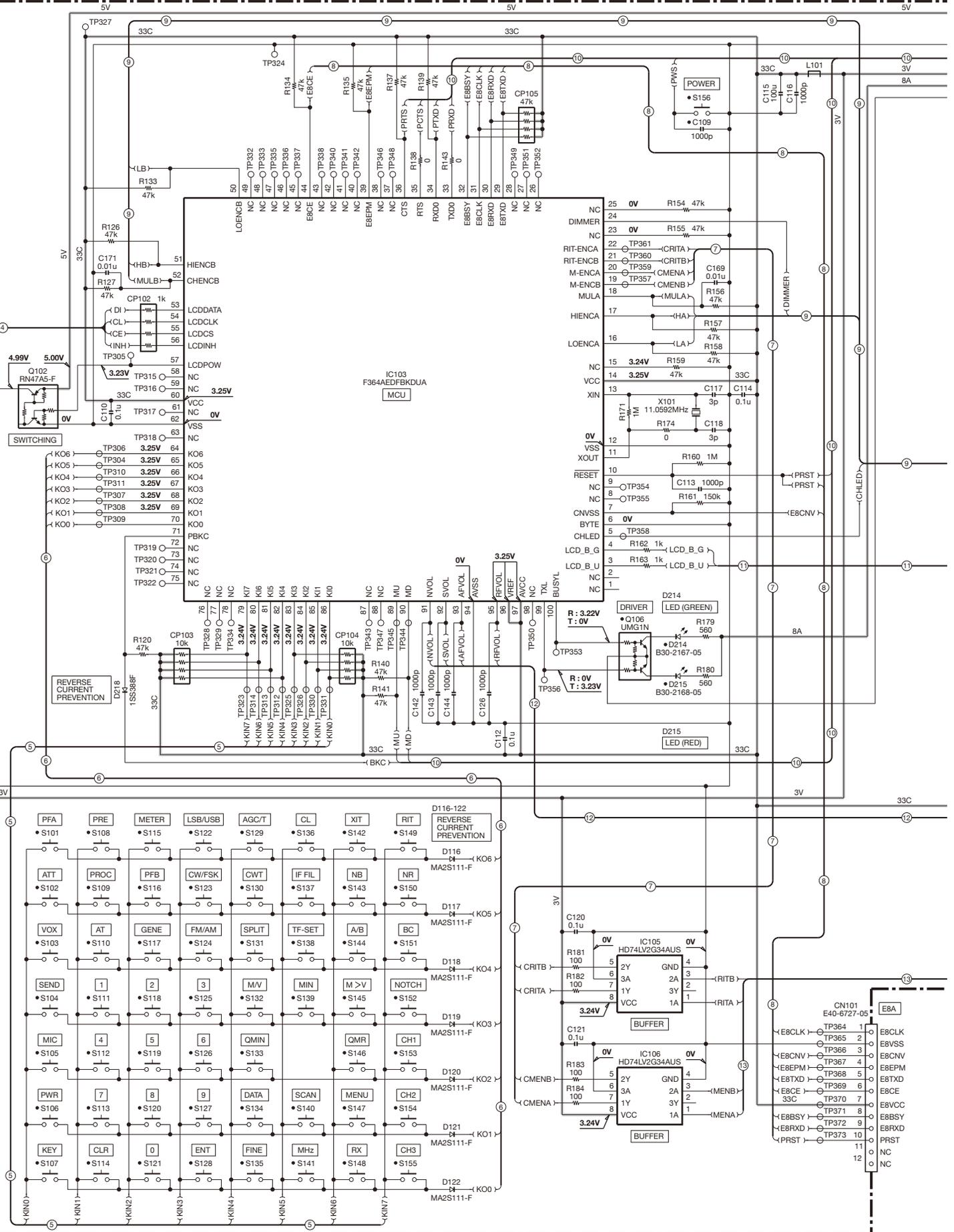
SCHEMATIC DIAGRAM TS-590S

DISPLAY UNIT (X54-3700-00) (A/6)



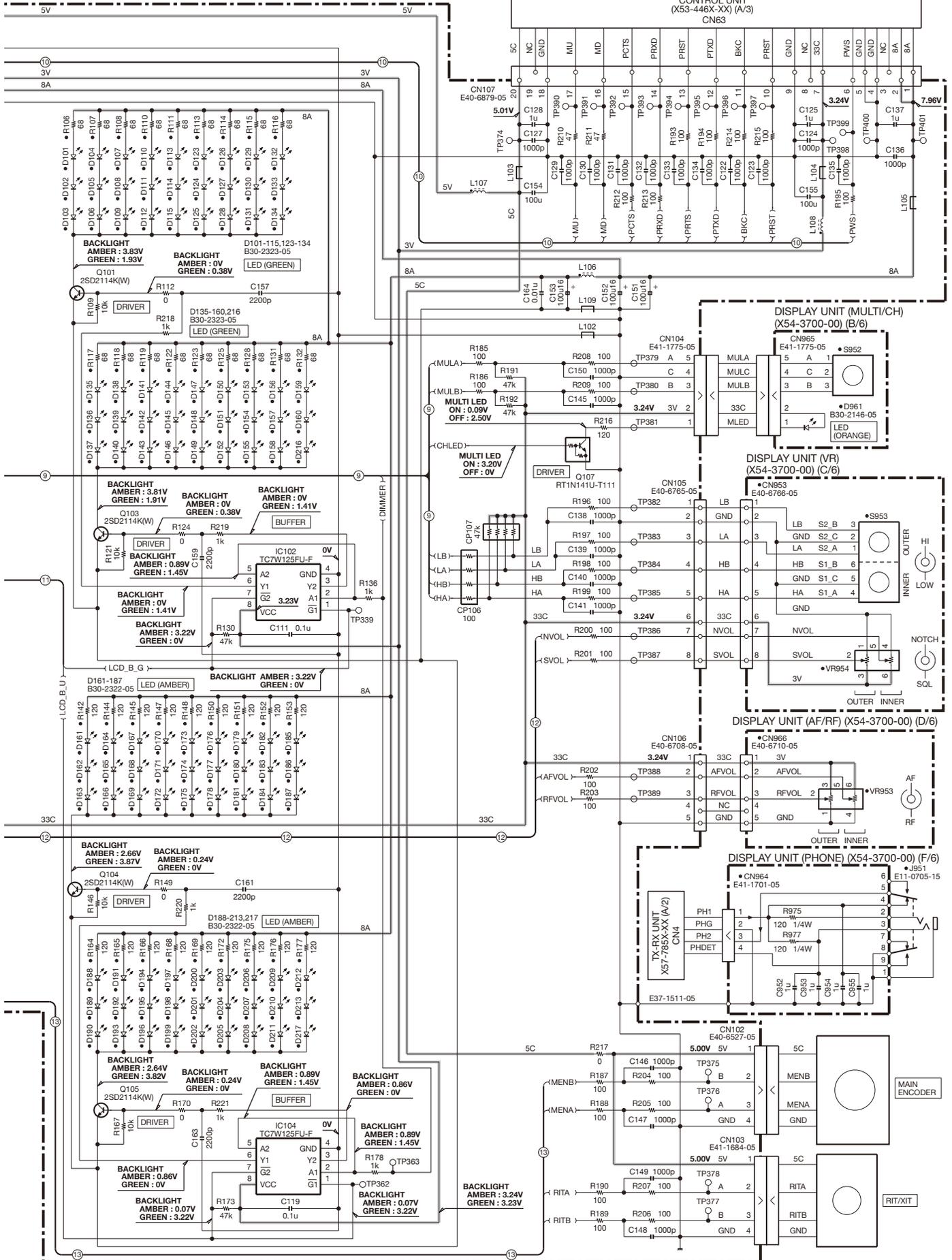
TS-590S SCHEMATIC DIAGRAM

DISPLAY UNIT (X54-3700-00) (A/6)



SCHEMATIC DIAGRAM TS-590S

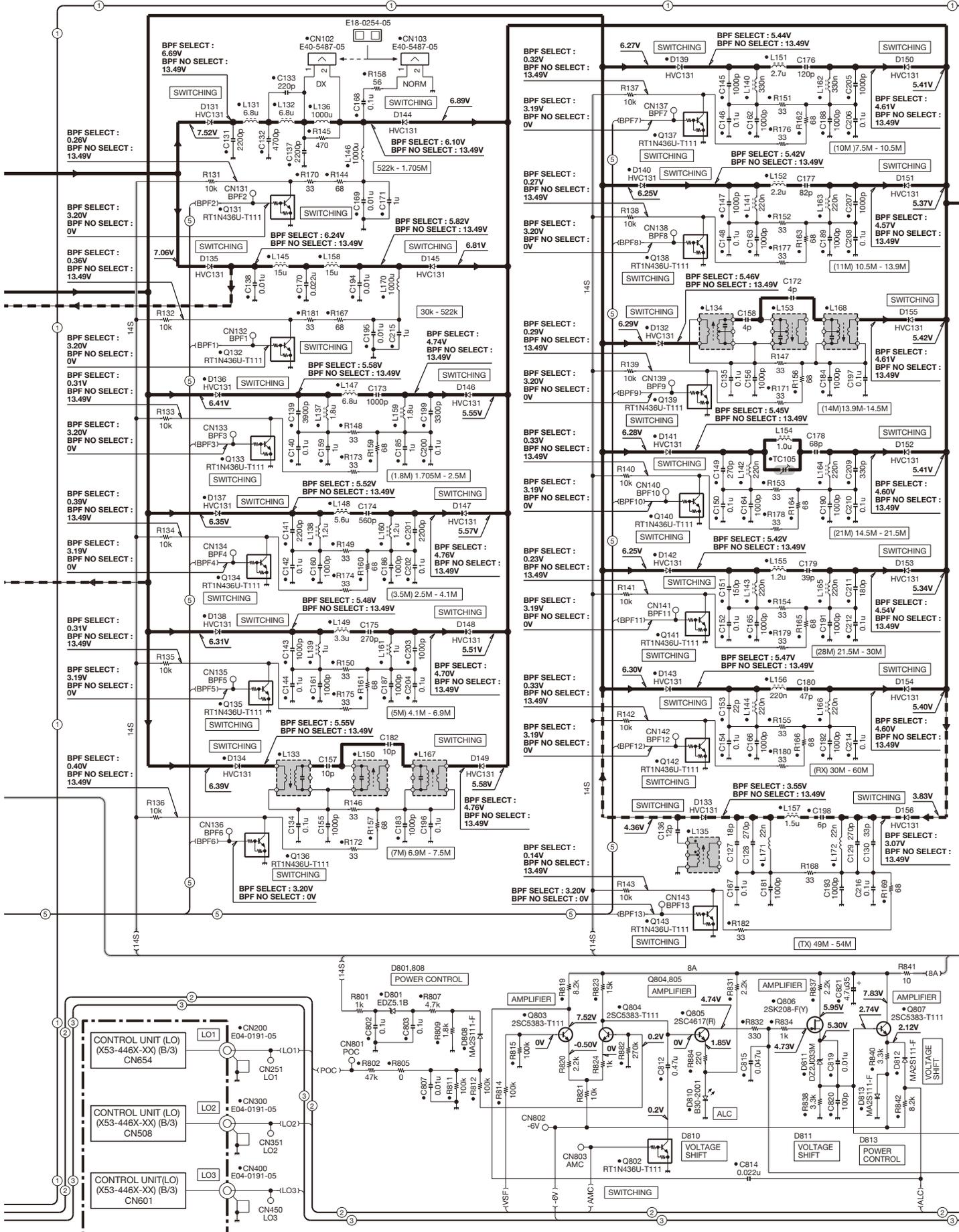
DISPLAY UNIT (X54-3700-00) (A/6)



Note : The components marked with a dot (•) are parts of layer 1.

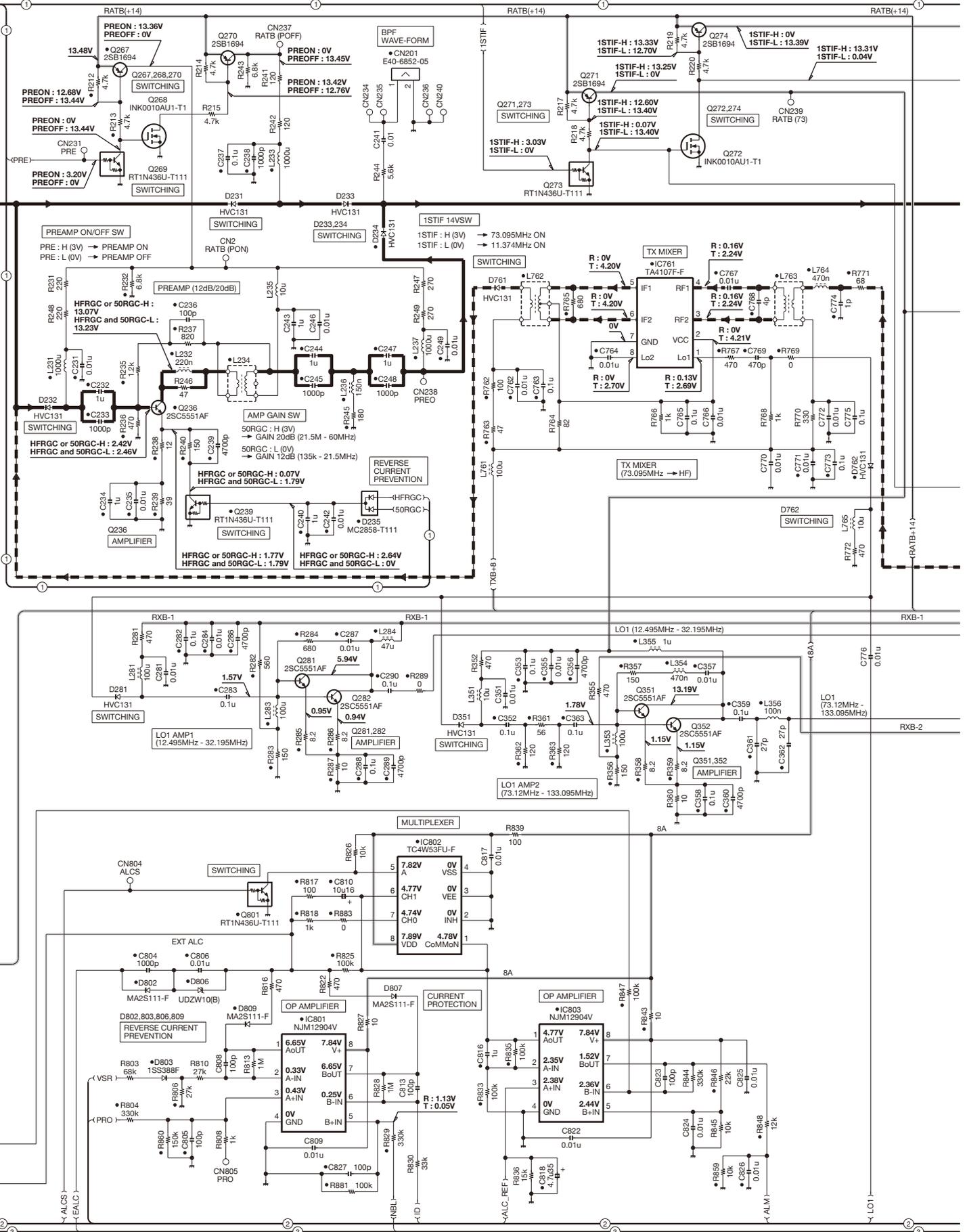
SCHEMATIC DIAGRAM TS-590S

TX-RX UNIT (X57-785X-XX) (A/2)



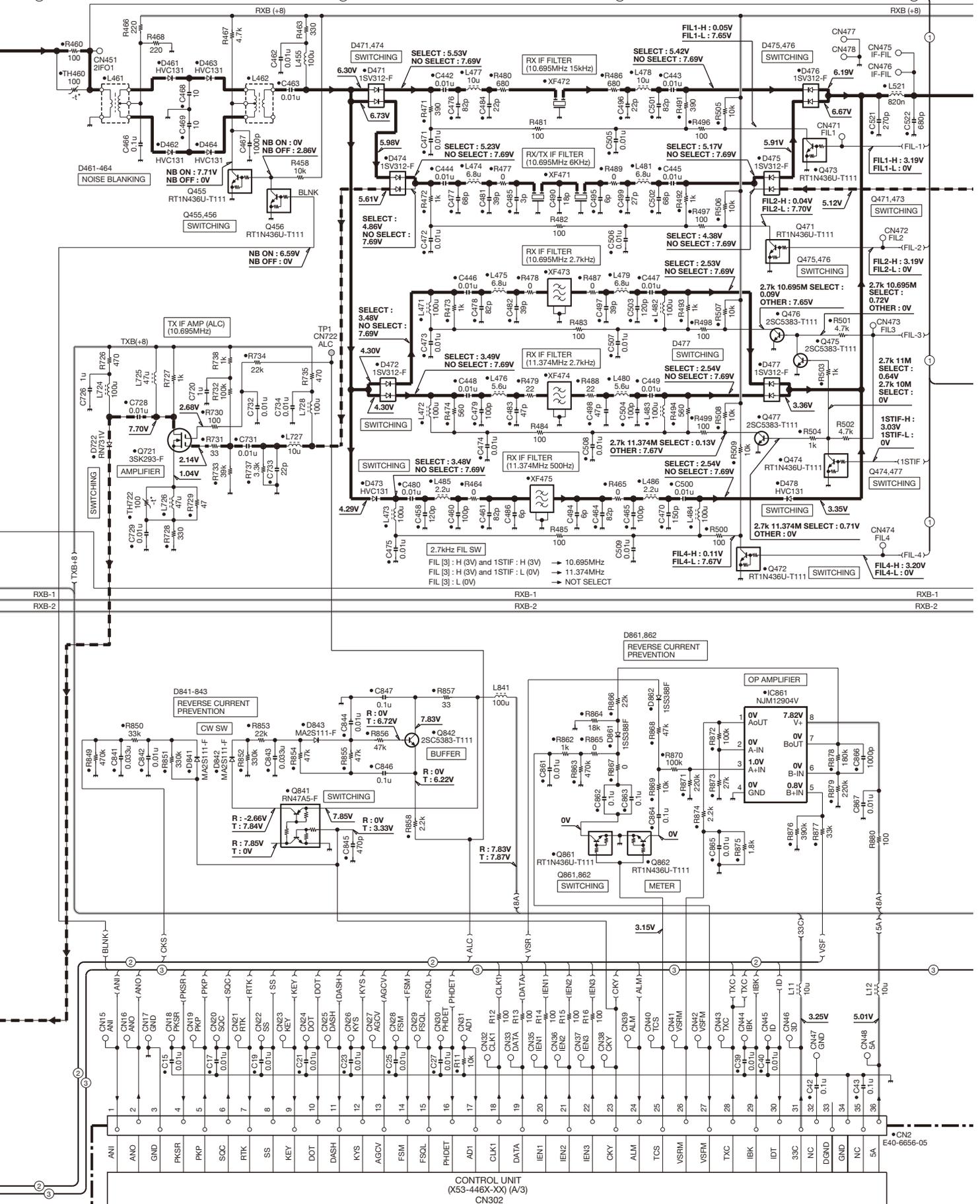
TS-590S SCHEMATIC DIAGRAM

TX-RX UNIT (X57-785-XX) (A/2)



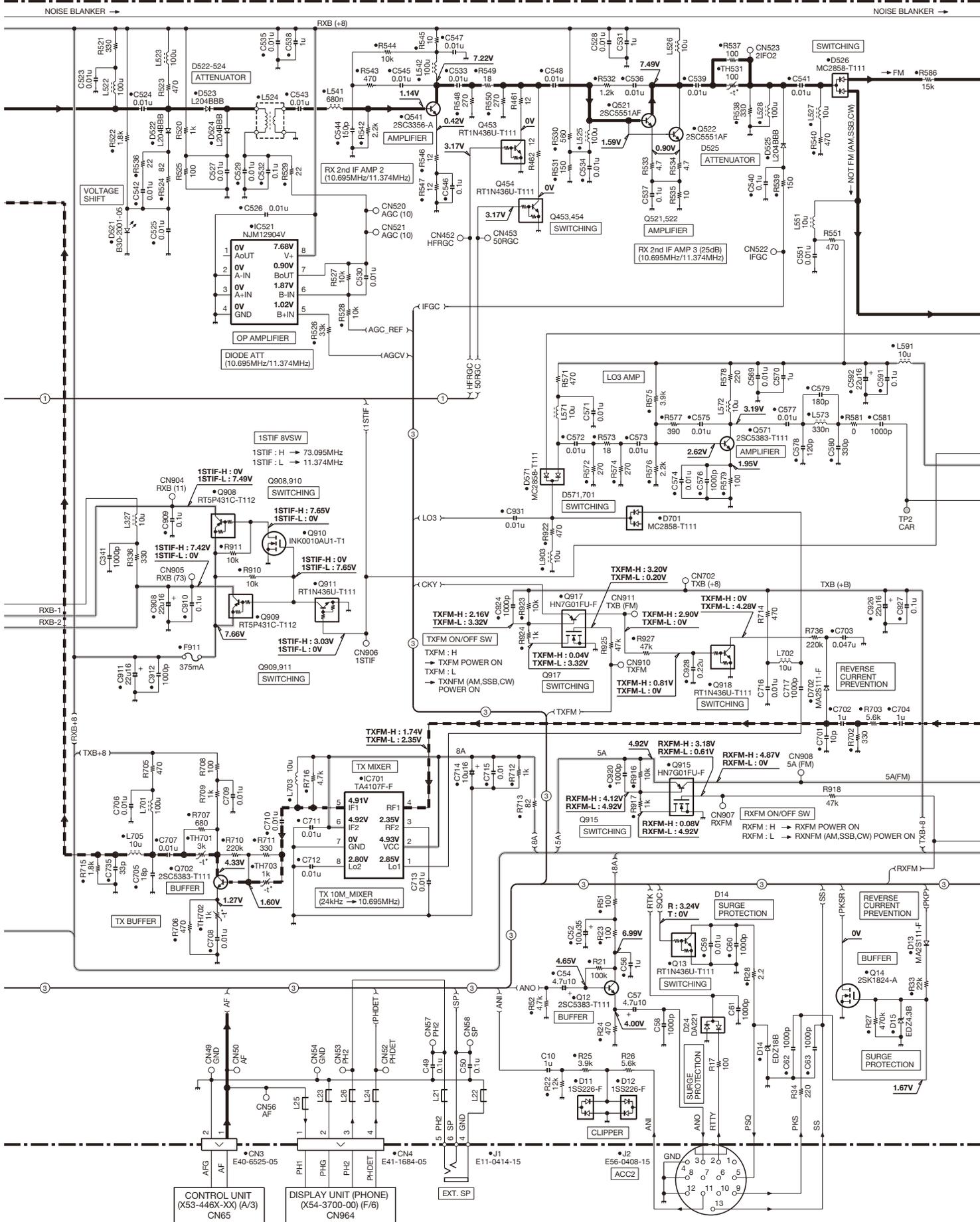
TS-590S SCHEMATIC DIAGRAM

TX-RX UNIT (X57-785X-XX) (A/2)



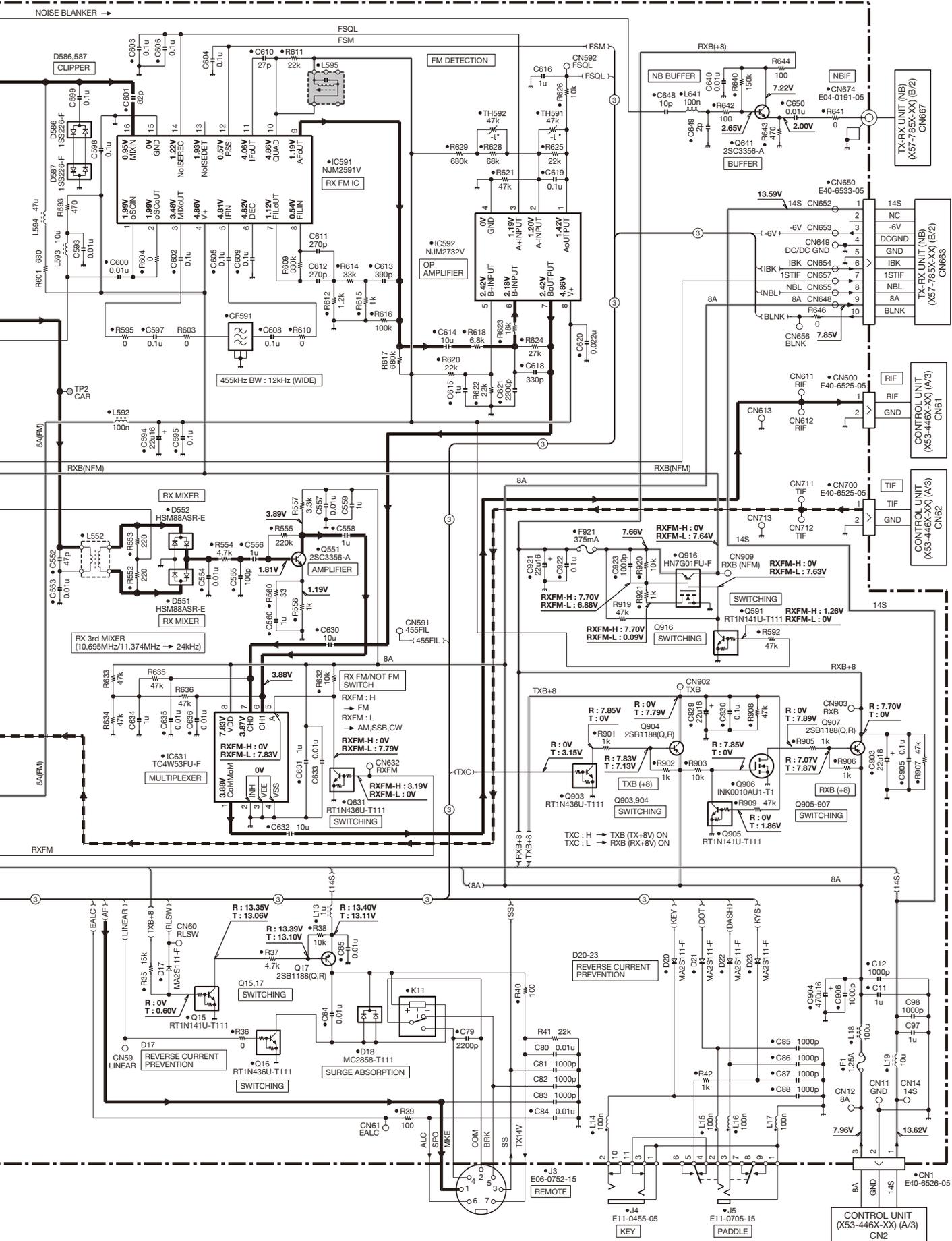
SCHEMATIC DIAGRAM TS-590S

TX-RX UNIT (X57-785X-XX) (A/2)



TS-590S SCHEMATIC DIAGRAM

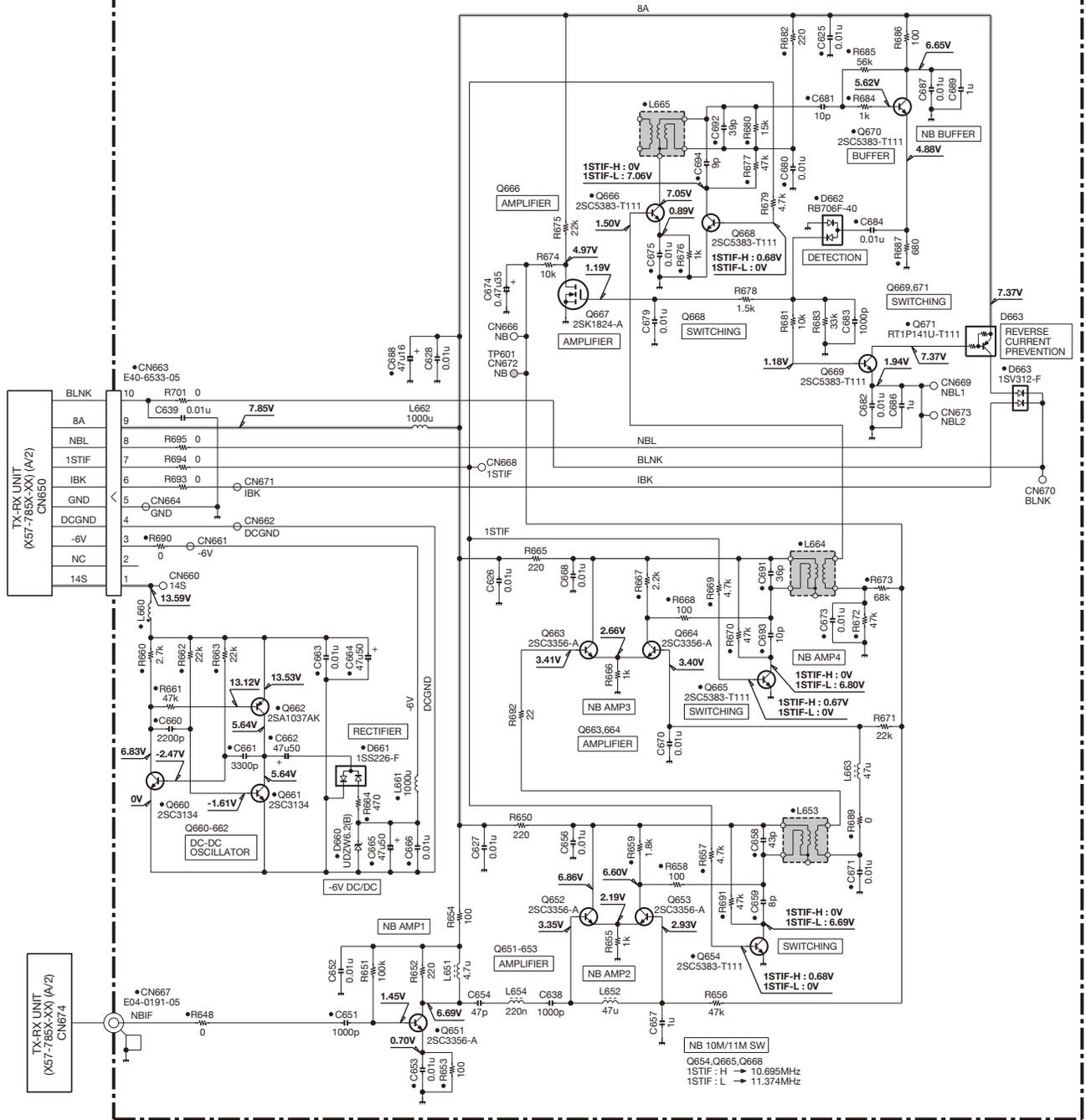
TX-RX UNIT (X57-785X-XX) (A/2)



Note : The components marked with a dot (•) are parts of layer 1.

SCHEMATIC DIAGRAM TS-590S

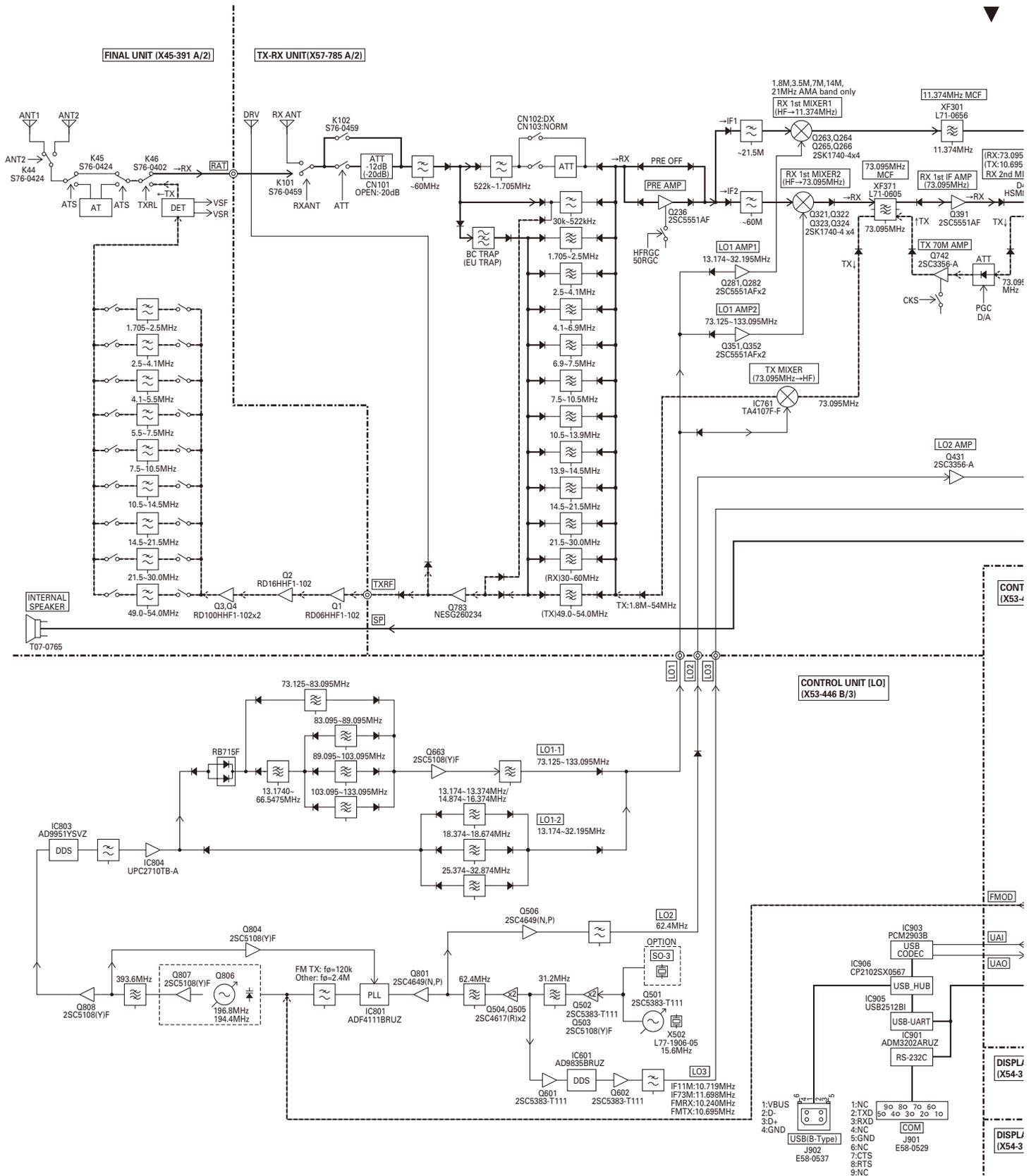
TX-RX UNIT (NB) (X57-785X-XX) (B/2)



Note : The components marked with a dot (•) are parts of layer 1.

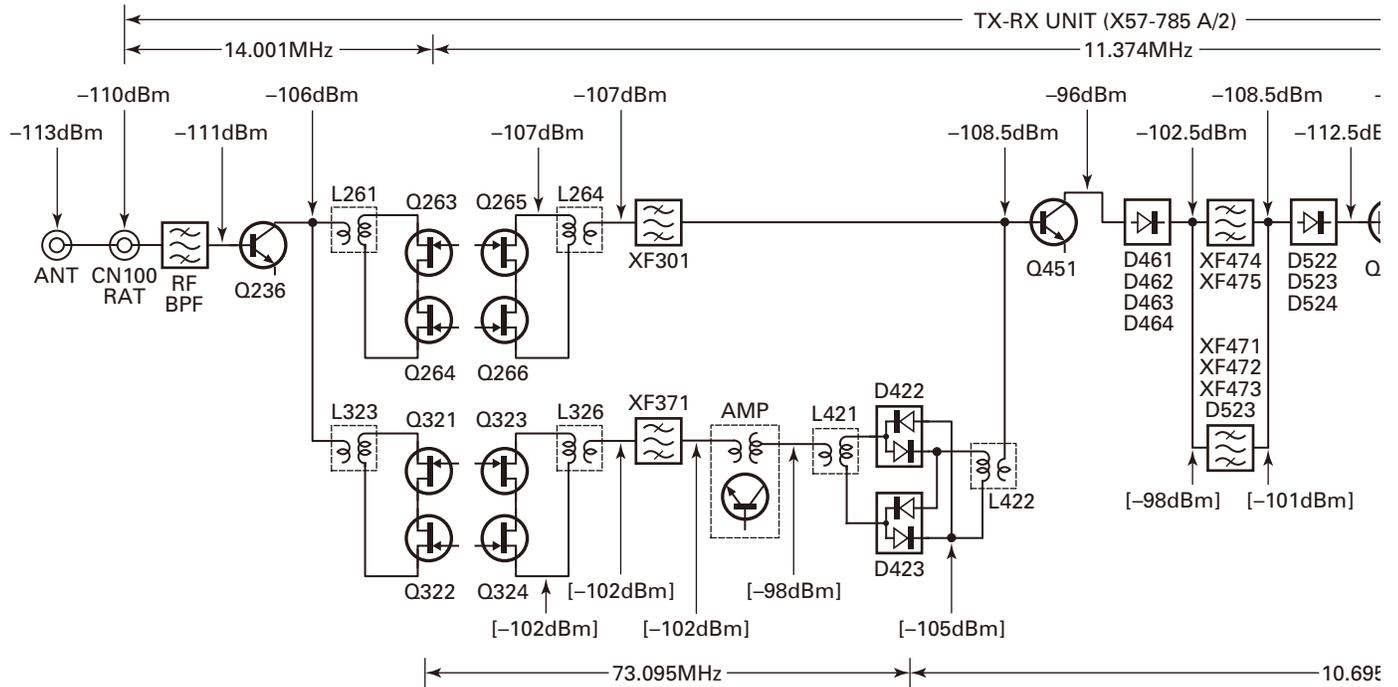
TS-590S

BLOCK DIAGRAM



LEVEL DIAGRAM

Receiver Section

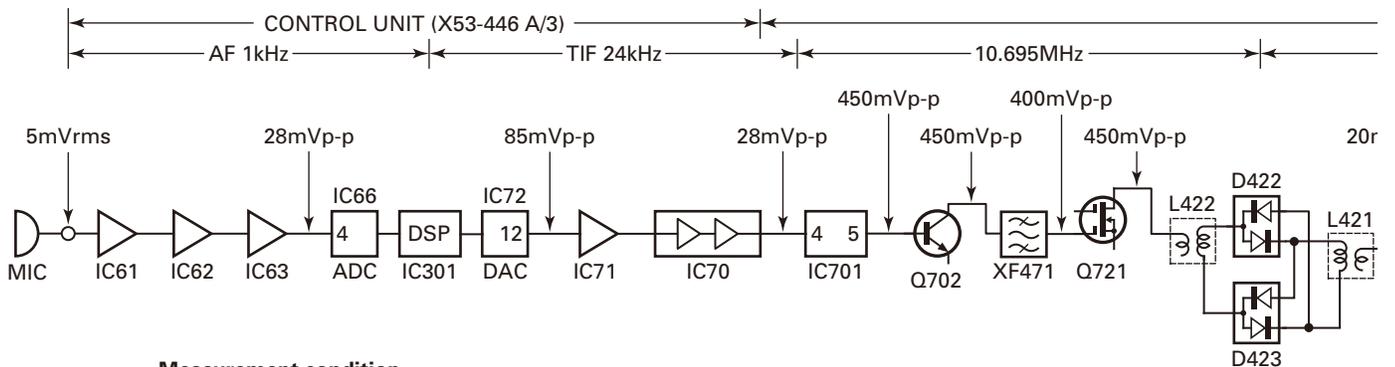


Measurement condition

Frequency: 14.0MHz
 PRE AMP: ON
 ANT input: -113dBm/0.501μV
 AF output: 0.63V/8Ω, 1kHz
 Mode: USB
 The values in parentheses () are those in FM mode
 The values in parentheses [] are those in RX2 (IF1: 73.095MHz)

Input -113dBm from the antenna, set AF VOLUME so that AF output is 0.63Vrms, and measure the signal level at each part
 The AF section is measured with an oscilloscope and the other parts are measured with an RF voltmeter.

Transmitter Section

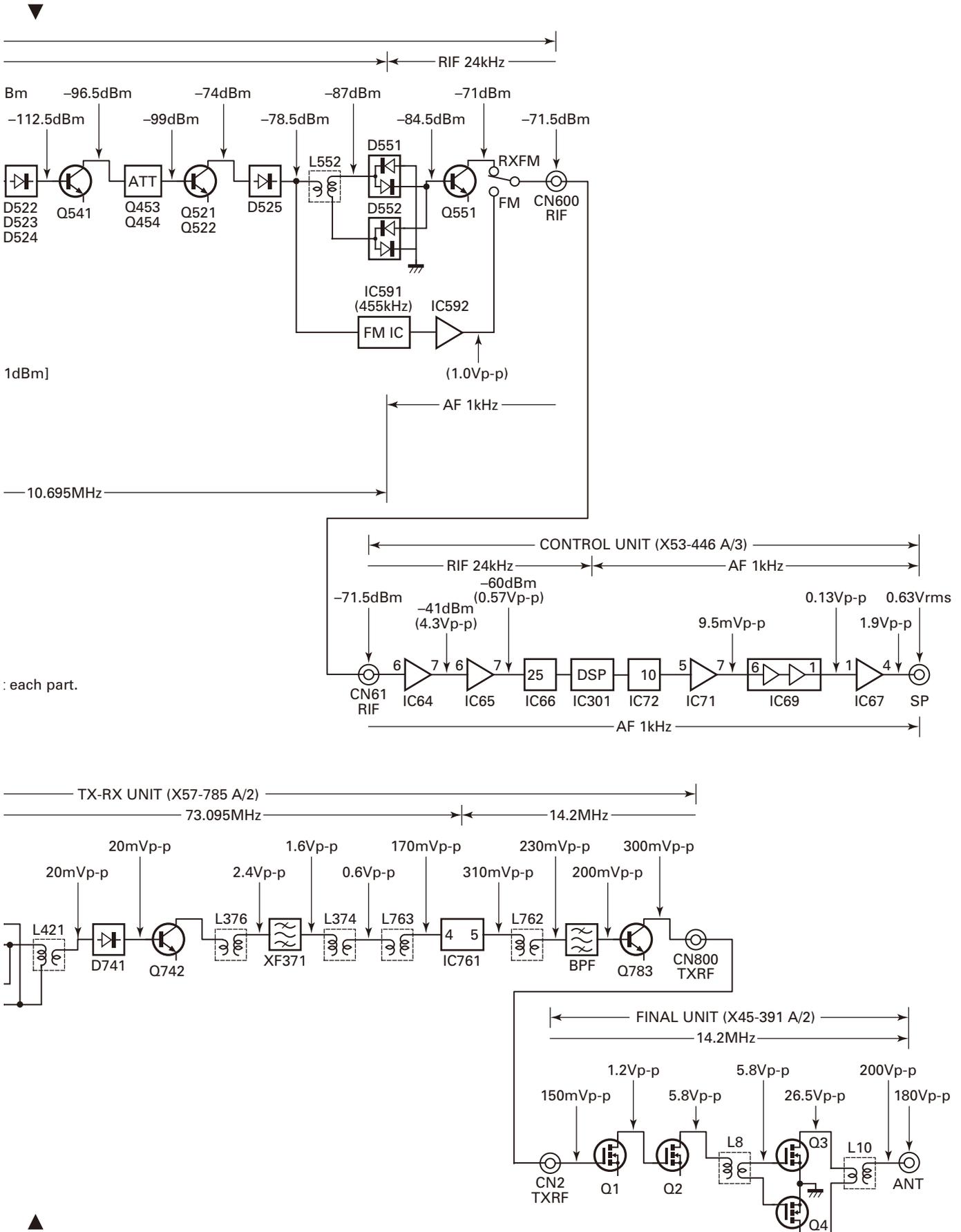


Measurement condition

Frequency: 14.2MHz
 Mode: USB
 MIC input: 1kHz/5mV
 Output power: 100W
 MIC level: ALC zone maximum

Audio frequency section is measured by the AF voltmeter or oscilloscope.
 Radio frequency section is measured by high impedance RF voltmeter.

LEVEL DIAGRAM



OPTIONAL ACCESSORIES

PS-60 (DC Power Supply)

■ External View



ARCP-590 (Radio Control Program)

ARHP-590 (Radio Host Program)

ARUA-10 (USB Audio Controller)

Available free for downloading from the KENWOOD website:

http://www.kenwood.com/i/products/info/amateur/software_download.html

SPECIFICATIONS

General

Mode	J3E (SSB)/ A1A (CW)/ A3E (AM)/ F3E (FM)/ F1B (FSK)	
Number of memory channels	110 + 10 (Quick memory channels)	
Antenna impedance	160 m ~ 6 m band	50 Ω (with built-in antenna tuner 16.7 ~ 150 Ω)
Supply Voltage	DC 13.8 V \pm 15%	
Grounding method	Negative ground	
Current	Transmit (max.)	Less than 20.5 A
	Receive (no signal)	Less than 1.5 A
Usable temperature range	-10°C ~ +50°C (+14°F ~ +122°F)	
Frequency stability without SO-3	-10°C ~ 50°C	Within \pm 5 ppm
Frequency stability with SO-3	-10°C ~ 50°C	Within \pm 0.5 ppm
Dimensions (W x H x D Projections not included)	270 x 96 x 291 mm/ 10.63 x 3.78 x 11.46 inches	
Weight	Approx. 7.4 kg/ 16.3 lbs	

Transmitter

Frequency range	160 m band	1.8 ~ 2.0 MHz (K type)/ 1.81 ~ 2.0 MHz (E type)	
	80 m band	3.5 ~ 4.0 MHz (K type)/ 3.5 ~ 3.8 MHz (E type)	
	60 m band	5.1675 MHz, 5.25 ~ 5.45 MHz (K type)	
	40 m band	7.0 ~ 7.3 MHz (K type)/ 7.0 ~ 7.2 MHz (E type)	
	30 m band	10.1 ~ 10.15 MHz	
	20 m band	14.0 ~ 14.35 MHz	
	17 m band	18.068 ~ 18.168 MHz	
	15 m band	21.0 ~ 21.45 MHz	
	12 m band	24.89 ~ 24.99 MHz	
	10 m band	28.0 ~ 29.7 MHz	
Output power	SSB/ CW/ FSK/ FM	Max.	100 W
		Min.	5 W
	AM	Max.	25 W
		Min.	5 W
Maximum frequency deviation (FM)	Wide	Less than \pm 5 kHz	
	Narrow	Less than \pm 2.5 kHz	
Modulation	SSB	Balanced	
	AM	Low power	
	FM	Reactance	
Spurious emissions	160 m ~ 10 m band	Less than -50 dB	
	6 m band	Less than -60 dB	
Carrier suppression (SSB)	More than 50 dB		
Unwanted sideband suppression (modulation frequency 1.0 kHz)	More than 50 dB		
Transmit frequency response	-6 dB: 400 ~ 2600 Hz		
XIT shift frequency range	\pm 9.999 kHz		
Microphone impedance	600 Ω		

SPECIFICATIONS

Receiver

Circuit type		RX1 (1.8/ 3.5/ 7/ 14/ 21 MHz band/ IF band width of 2.7 kHz or less (SSB/CW/FSK))	RX2 (Other)
		Double conversion superheterodyne	Triple conversion superheterodyne
Frequency range		0.13 (VFO 30 kHz) ~ 60 MHz	
Intermediate frequency	1st IF	11.374 MHz	73.095 MHz
	2nd IF	24 kHz	10.695 MHz
	3rd IF	–	24 kHz (except FM)/ 455 kHz (FM)
Sensitivity	SSB/ CW/ FSK (S/N 10 dB)	0.13 ~ 0.522 MHz: Less than 0.5 μ V 0.522 ~ 1.705 MHz: Less than 4 μ V 1.705 ~ 24.5 MHz: Less than 0.2 μ V 24.5 ~ 30.0 MHz: Less than 0.13 μ V 50.0 ~ 54.0 MHz: Less than 0.13 μ V	
	AM (S/N 10 dB)	0.13 ~ 0.522 MHz: Less than 6.3 μ V 0.522 ~ 1.705 MHz: Less than 31.6 μ V 1.705 ~ 24.5 MHz: Less than 2 μ V 24.5 ~ 30.0 MHz: Less than 1.3 μ V 50.0 ~ 54.0 MHz: Less than 1.3 μ V	
	FM (12 dB SINAD)	28.0 ~ 30.0 MHz: Less than 0.22 μ V 50.0 ~ 54.0 MHz: Less than 0.22 μ V	
Squelch sensitivity	SSB/ CW/ FSK/ AM	0.13 ~ 0.522 MHz: Less than 5.6 μ V 0.522 ~ 1.705 MHz: Less than 18.0 μ V 1.705 ~ 30.0 MHz: Less than 1.8 μ V 50.0 ~ 54.0 MHz: Less than 1.1 μ V	
	FM	28.0 ~ 30.0 MHz: Less than 0.2 μ V 50.0 ~ 54.0 MHz: Less than 0.2 μ V	
Selectivity	SSB	More than 2.2 kHz (–6 dB), Less than 4.4 kHz (–60 dB)	
	CW/ FSK	More than 500 Hz (–6 dB), Less than 1.2 kHz (–60 dB)	
	AM	More than 6.0 kHz (–6 dB), Less than 12.0 kHz (–50 dB)	
	FM	More than 12.0 kHz (–6 dB), Less than 25.0 kHz (–50 dB)	
Spurious response	Image Ratio	More than 70 dB	
	IF Rejection	More than 70 dB	
Notch filter attenuation	Auto	More than 60 dB	
	Manual	More than 70 dB	
Beat cancel attenuation (at 1 kHz)		More than 40 dB	
Audio output (8 Ω , 10% distortion)		More than 1.5 W	
Audio output impedance (EXT.SP)		8 Ω	
RIT shift frequency range		\pm 9.999 kHz	

Specifications are subject to change without notice due to advancements in technology.

MEMO

TS-590S

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6070 Kestrel Road, Mississauga, Ontario, Canada L5T 1S8

Kenwood Electronics Deutschland GmbH

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Kenwood Electronics Belgium N.V.

Leuvensesteenweg 248 J, 1800 Vilvoorde, Belgium

Kenwood Electronics France S.A.

L'Etoile Paris Nord 2, 50 Allée des Impressionnistes,
Bp 58416 Villepinte, 95944 Roissy Ch De Gaulle Cedex

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KENWOOD House, Dwight Road, Watford, Herts.,
WD18 9EB United Kingdom

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Amsterdamseweg 37, 1422 AC Uithoorn, The Netherlands

Kenwood Electronics Italia S.p.A.

Via G. Sirtori, 7/9 20129 Milano, Italy

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Bolivia, 239-08020 Barcelona, Spain

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Talavera Business Park Building A, 4 Talavera Road,
North Ryde NSW 2113 Australia

Kenwood Electronics (Hong Kong) Ltd.

Suite 2504, 25/F, Tower 2, Nina Tower, No. 8 Yeung Uk Road,
Tsuen Wan, New Territories, Hong Kong

Kenwood Electronics Singapore Pte Ltd

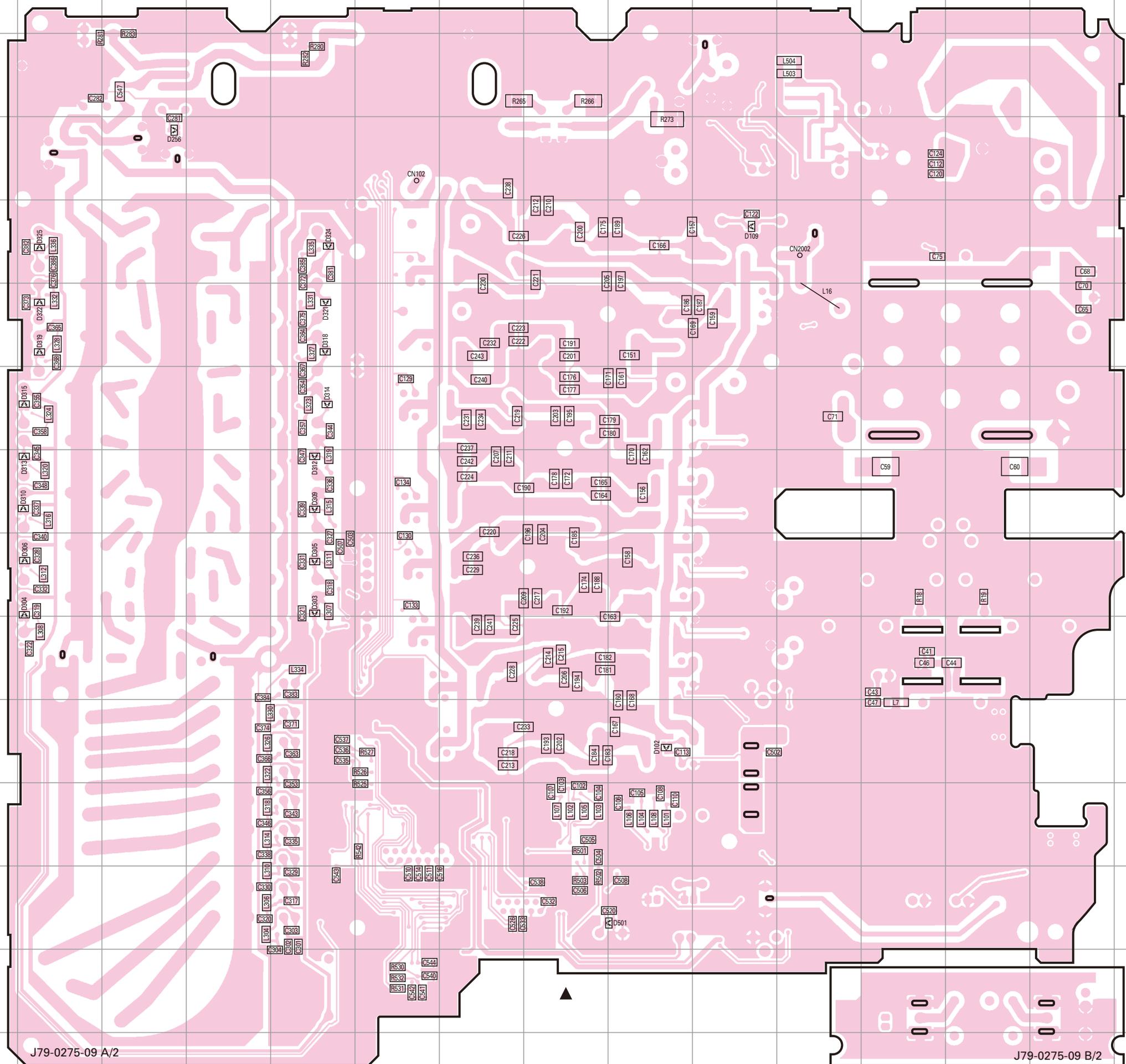
1 Ang Mo Kio Street 63, Singapore 569110

TS-590S PC BOARD

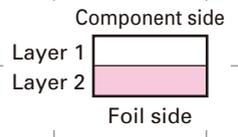
FINAL UNIT
 (X45-391X-XX)
 0-11: K 2-71: E
Foil side view
 (J79-0275-09)

PC BOARD TS-590S

FINAL UNIT
 (X45-391X-XX)
 0-11: K 2-71: E
Foil side view
 (J79-0275-09)



Ref. No.	Address
D102	10K
D109	4L
D256	3E
D303	8G
D304	8D
D305	8G
D306	8D
D309	7G
D310	7D
D312	7G
D313	7D
D314	6G
D315	6D
D318	5G
D319	5D
D321	5G
D322	5D
D324	4G
D325	4D
D501	12K



J79-0275-09 A/2

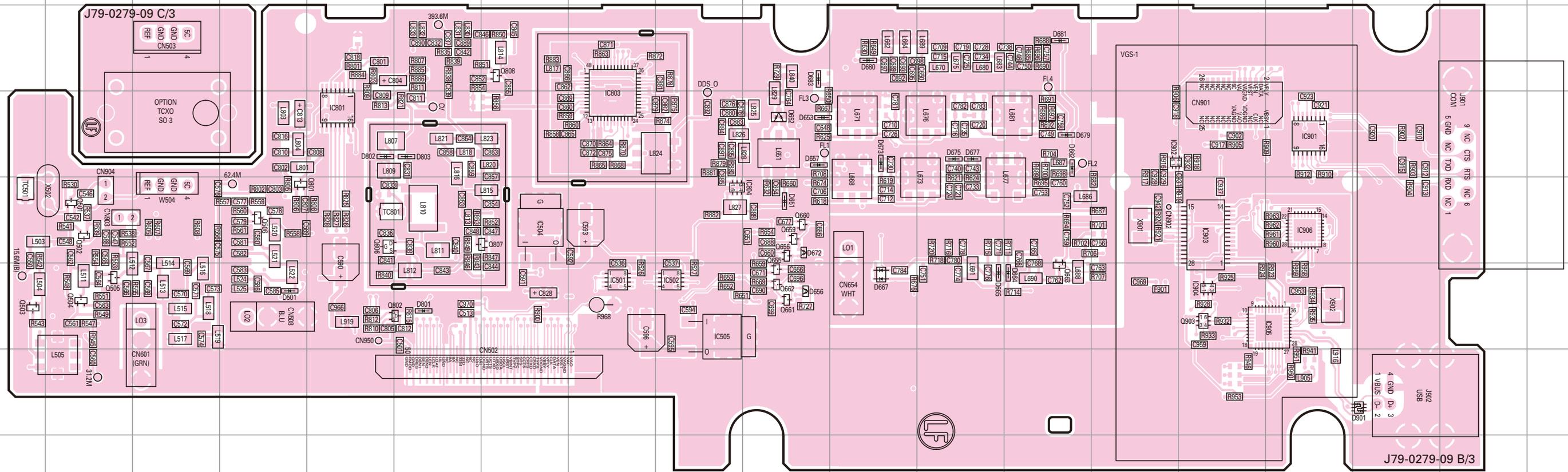
J79-0275-09 B/2

TS-590S PC BOARD

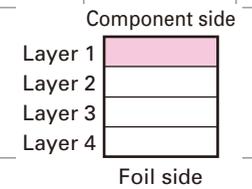
PC BOARD TS-590S

CONTROL UNIT (X53-446X-XX) (B,C/3) 0-11: K 2-71: E
Component side view (J79-0279-09 B,C/3)

CONTROL UNIT (X53-446X-XX) (B,C/3) 0-11: K 2-71: E
Component side view (J79-0279-09 B,C/3)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC501	6H	IC905	6P	Q660	5J	D652	4J	D677	4L
IC502	6I	IC906	5P	Q661	6J	D653	4J	D679	4M
IC504	5G	Q501	5B	Q662	6J	D656	5J	D680	3K
IC505	6I	Q502	5B	Q663	6M	D657	4J	D681	3M
IC801	4E	Q503	6A	Q801	5D	D662	4M	D683	3J
IC803	4H	Q504	6B	Q802	6F	D664	6M	D801	6F
IC804	5I	Q505	6B	Q806	5E	D665	6L	D802	4E
IC901	4P	Q506	5D	Q807	5G	D667	6K	D803	4F
IC902	4N	Q655	6J	Q808	3G	D672	5J	D901	7Q
IC903	5O	Q656	5J	D501	6D	D673	4K		
IC904	6O	Q659	5J	D651	5J	D675	4L		

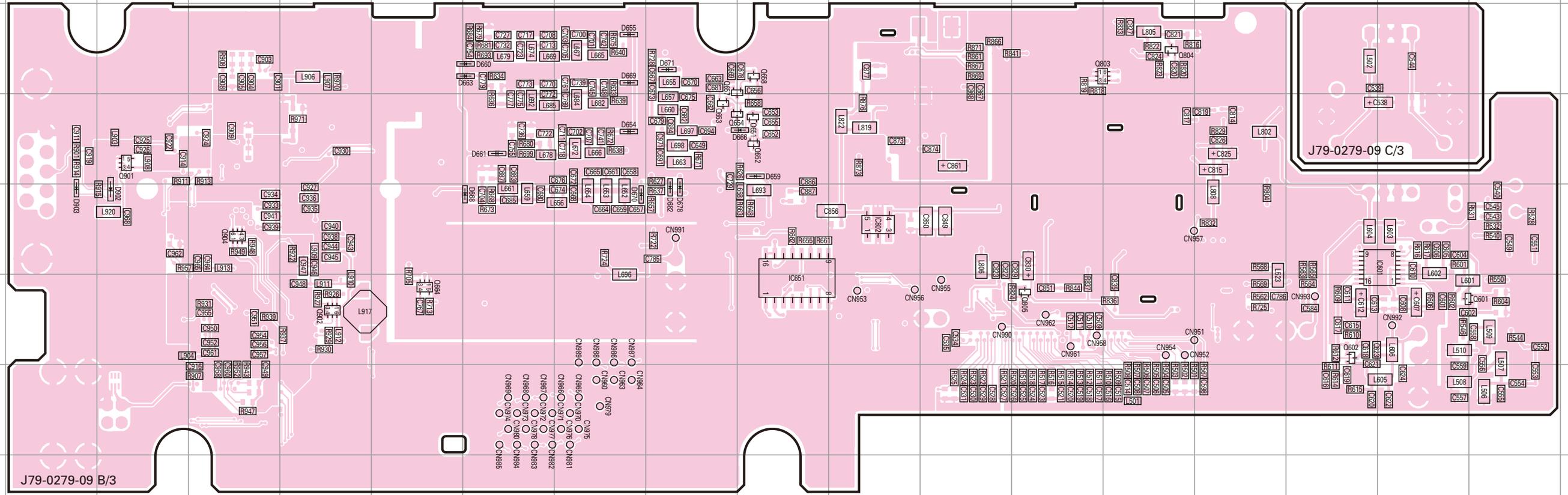


TS-590S PC BOARD

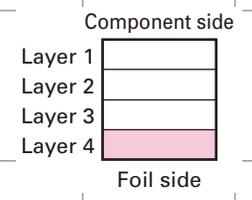
PC BOARD TS-590S

CONTROL UNIT (X53-446X-XX) (B,C/3) 0-11: K 2-71: E
Foil side view (J79-0279-09 B,C/3)

CONTROL UNIT (X53-446X-XX) (B,C/3) 0-11: K 2-71: E
Foil side view (J79-0279-09 B,C/3)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC601	5Q	Q664	6F	D661	4G
IC651	6J	Q803	3M	D663	3G
IC802	5K	Q804	3N	D666	4J
Q601	6Q	Q805	6M	D668	5G
Q602	6P	Q901	4C	D669	3H
Q651	4J	Q902	6E	D670	5H
Q652	4J	Q904	5D	D671	3I
Q653	4I	D654	4H	D678	5I
Q654	4I	D655	3H	D682	5I
Q657	3I	D659	4J	D902	5C
Q658	3J	D660	3G	D903	5B

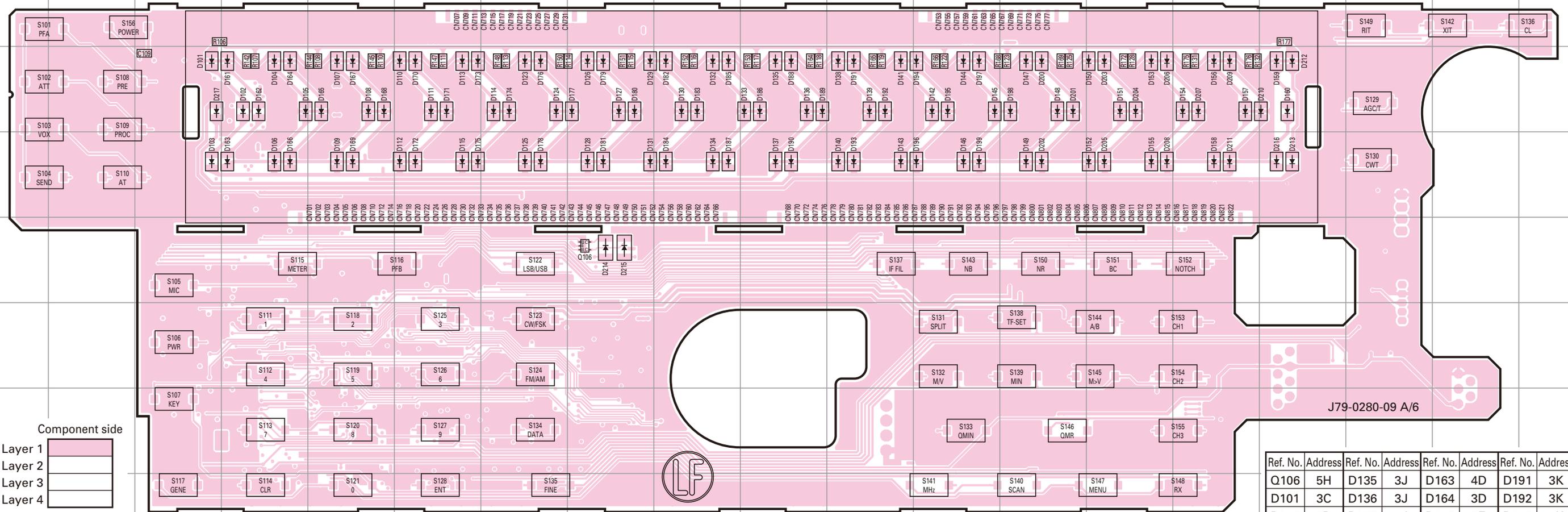


TS-590S PC BOARD

PC BOARD TS-590S

DISPLAY UNIT (X54-3700-00) (A/6): DISPLAY
Component side view (J79-0280-09 A/6)

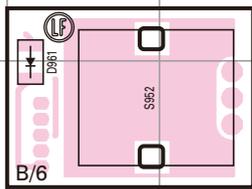
DISPLAY UNIT (X54-3700-00) (A/6): DISPLAY
Component side view (J79-0280-09 A/6)



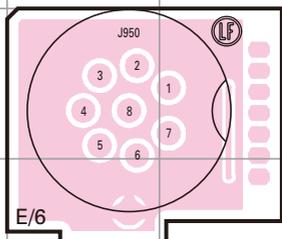
J79-0280-09 A/6



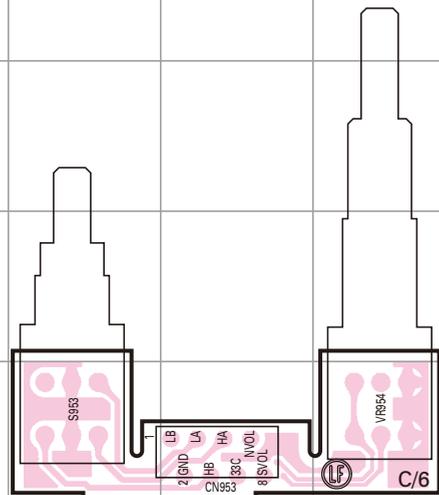
DISPLAY UNIT (X54-3700-00) (B/6): MULCH/CH



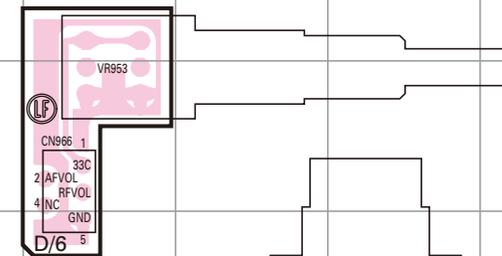
DISPLAY UNIT (X54-3700-00) (E/6): MIC



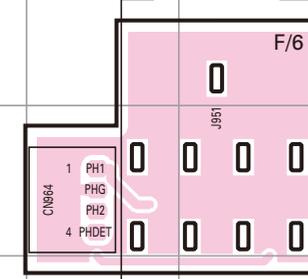
DISPLAY UNIT (X54-3700-00) (C/6)
: HI/LO (SHIFT/WIDTH), NOTCH/SQL



DISPLAY UNIT (X54-3700-00) (D/6): AF/RF



DISPLAY UNIT (X54-3700-00) (F/6): PHONE



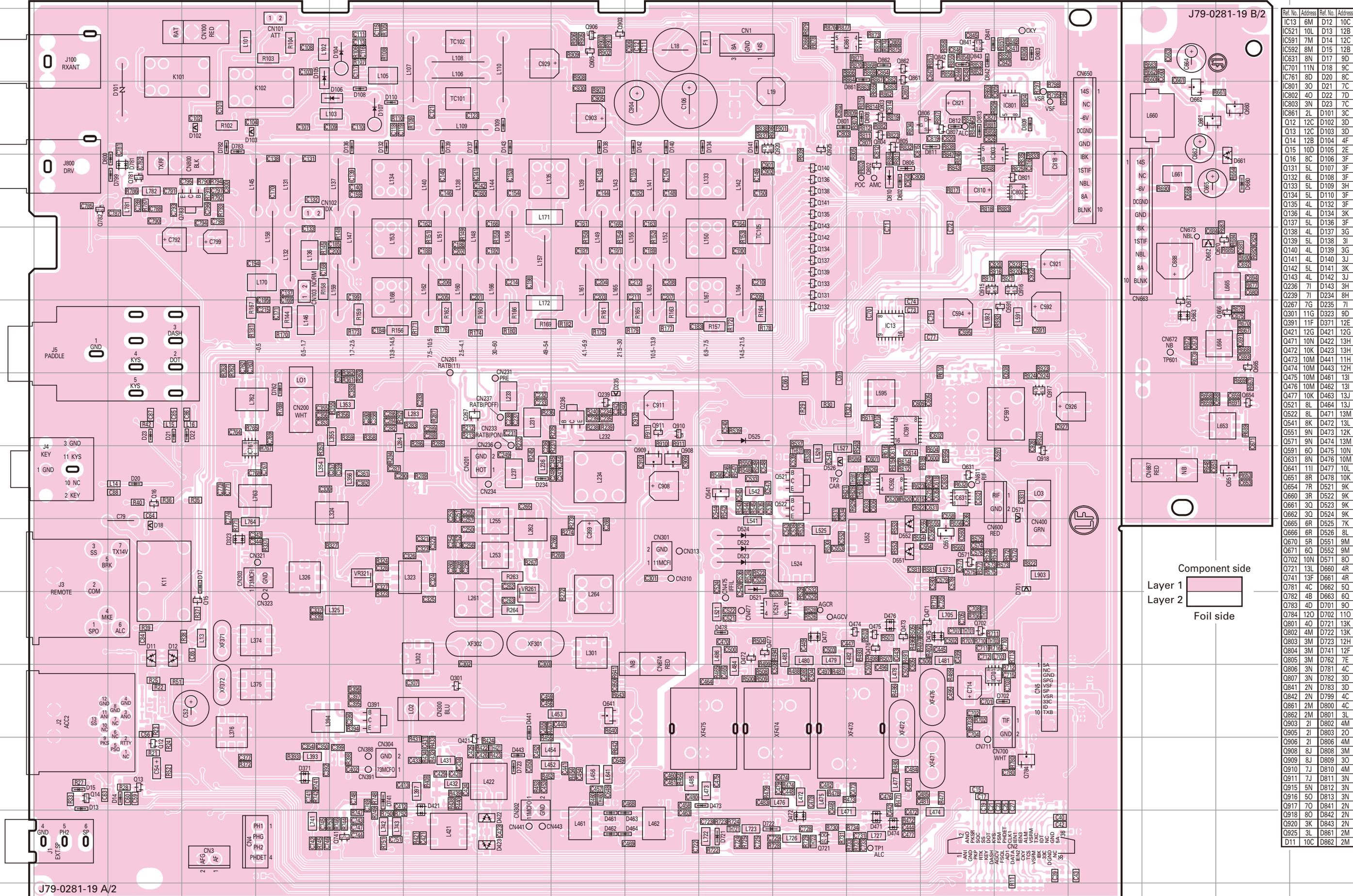
Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
Q106	5H	D135	3J	D163	4D	D191	3K
D101	3C	D136	3J	D164	3D	D192	3K
D102	3D	D137	4J	D165	3E	D193	4K
D103	4C	D138	3K	D166	4D	D194	3L
D104	3D	D139	3K	D167	3E	D195	3L
D105	3D	D140	4K	D168	3E	D196	4L
D106	4D	D141	3K	D169	4E	D197	3L
D107	3E	D142	3L	D170	3F	D198	3M
D108	3E	D143	4K	D171	3F	D199	4L
D109	4E	D144	3L	D172	4F	D200	3M
D110	3F	D145	3L	D173	3F	D201	3M
D111	3F	D146	4L	D174	3G	D202	4M
D112	4F	D147	3M	D175	4F	D203	3N
D113	3F	D148	3M	D176	3G	D204	3N
D114	3G	D149	4M	D177	3H	D205	4N
D115	4F	D150	3N	D178	4G	D206	3N
D123	3G	D151	3N	D179	3H	D207	3O
D124	3G	D152	4N	D180	3H	D208	4N
D125	4G	D153	3N	D181	4H	D209	3O
D126	3H	D154	3O	D182	3I	D210	3P
D127	3H	D155	4N	D183	3I	D211	4O
D128	4H	D156	3O	D184	4I	D212	3P
D129	3H	D157	3O	D185	3I	D213	4P
D130	3I	D158	4O	D186	3J	D214	5H
D131	4H	D159	3P	D187	4I	D215	5H
D132	3I	D160	3P	D188	3J	D216	4P
D133	3J	D161	3D	D189	3J	D217	3C
D134	4I	D162	3D	D190	4J	D961	10B

TS-590S PC BOARD

TX-RX UNIT (X57-785X-XX)
 0-11: K 2-71: E
 Component side view (J79-0281-19)

TX-RX UNIT (X57-785X-XX)
 0-11: K 2-71: E
 Component side view (J79-0281-19)

PC BOARD TS-590S



Component side
 Layer 1
 Layer 2
 Foil side

Ref. No.	Address	Ref. No.	Address
IC13	6M	D12	10C
IC521	10L	D13	12B
IC591	7M	D14	12C
IC592	8M	D15	12B
IC631	8N	D17	9D
IC701	11N	D18	9C
IC801	3O	D21	7C
IC802	4O	D22	7D
IC803	3N	D23	7C
IC861	2L	D101	3C
Q12	12C	D102	3D
Q13	12C	D103	3D
Q14	12B	D104	4F
Q15	10D	D105	2E
Q16	8C	D106	3F
Q131	5L	D107	3F
Q132	6L	D108	3F
Q133	5L	D109	3H
Q134	5L	D110	3F
Q135	4L	D132	3F
Q136	4L	D134	3K
Q137	5L	D136	3F
Q138	4L	D137	3G
Q139	5L	D138	3I
Q140	4L	D139	3G
Q141	4L	D140	3J
Q142	5L	D141	3K
Q143	4L	D142	3J
Q236	7I	D143	3H
Q239	7I	D234	8H
Q267	7G	D235	7I
Q301	11G	D323	9D
Q391	11F	D371	12E
Q421	12G	D421	12G
Q471	10N	D422	13H
Q472	10K	D423	13H
Q473	10M	D441	11H
Q474	10M	D443	12H
Q475	10M	D461	13I
Q476	10M	D462	13I
Q477	10K	D463	13J
Q521	8L	D464	13J
Q522	8L	D471	13M
Q541	8K	D472	13L
Q551	9N	D473	12K
Q571	9N	D474	13M
Q591	6O	D475	10N
Q631	8N	D476	10M
Q641	11I	D477	10L
Q651	8R	D478	10K
Q654	7R	D521	9K
Q660	3R	D522	9K
Q661	3O	D523	9K
Q662	3O	D524	9K
Q665	6R	D525	7K
Q666	6R	D526	8L
Q670	5R	D551	9M
Q671	6O	D552	9M
Q702	10N	D571	8O
Q721	13L	D660	4R
Q741	13F	D661	4R
Q781	4C	D662	5Q
Q782	4B	D663	6Q
Q783	4D	D701	9O
Q784	12O	D702	11O
Q801	4O	D721	13K
Q802	4M	D722	13K
Q803	3M	D723	12H
Q804	3M	D741	12F
Q805	3M	D762	7E
Q806	3N	D781	4C
Q807	3N	D782	3D
Q841	2N	D783	3D
Q842	2N	D799	4C
Q861	2M	D800	4C
Q862	2M	D801	3L
Q903	2I	D802	4M
Q905	2I	D803	2O
Q906	2I	D806	4M
Q908	8J	D808	3M
Q909	8J	D809	3O
Q910	7J	D810	4M
Q911	7J	D811	3N
Q915	5N	D812	3N
Q916	5O	D813	3N
Q917	7O	D841	2N
Q918	8O	D842	2N
Q920	3K	D843	2N
Q925	3L	D861	2M
D11	10C	D862	2M

J79-0281-19 A/2

J79-0281-19 B/2

TS-590S PC BOARD

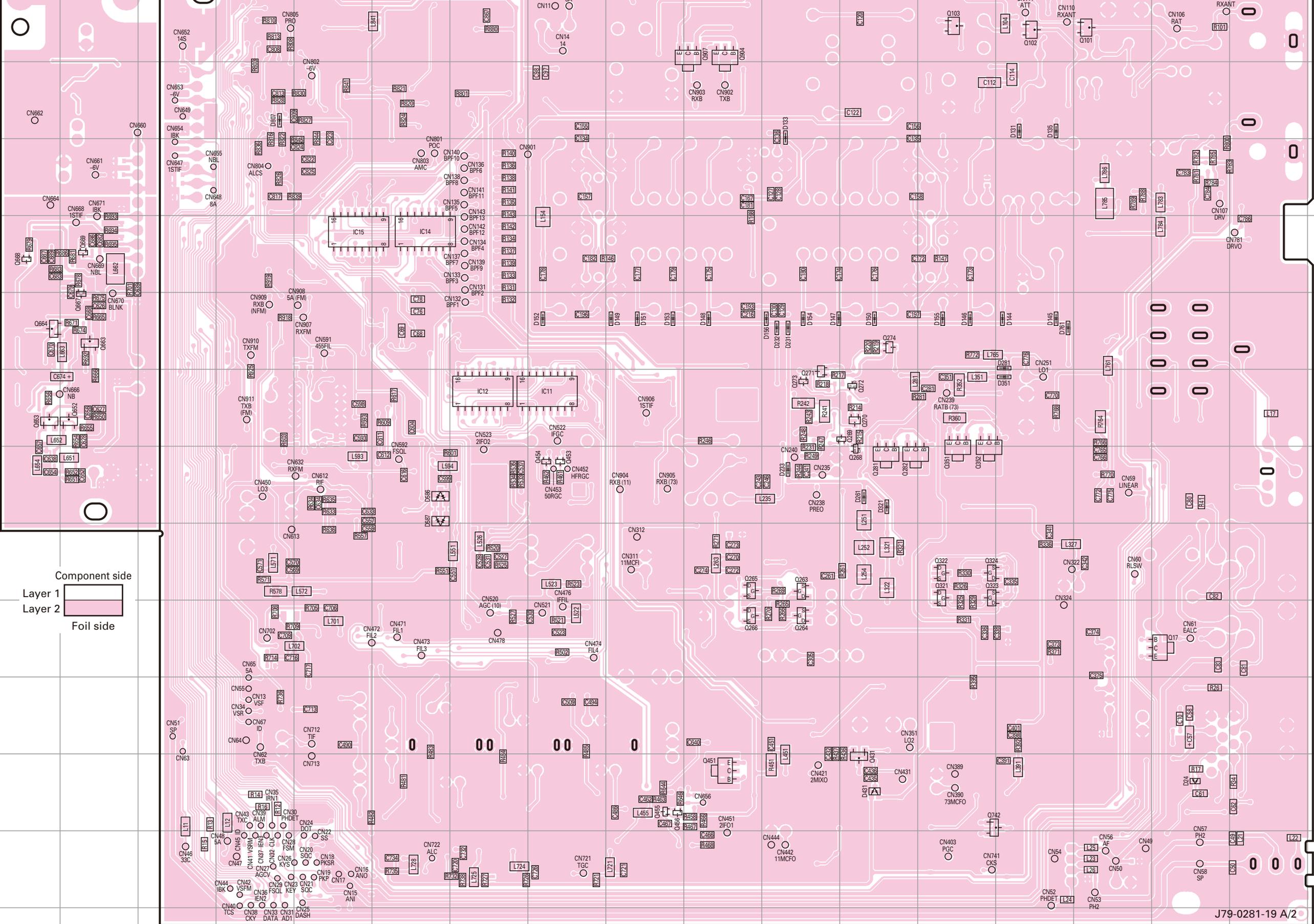
TX-RX UNIT (X57-785X-XX)
 0-11: K 2-71: E
 Foil side view (J79-0281-19)

TX-RX UNIT (X57-785X-XX)
 0-11: K 2-71: E
 Foil side view (J79-0281-19)

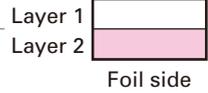
PC BOARD TS-590S

Ref. No.	Address
IC11	7I
IC12	7H
IC14	5G
IC15	5F
Q17	10Q
Q101	2P
Q102	2O
Q103	2N
Q263	9L
Q264	10L
Q265	9K
Q266	10K
Q268	8M
Q269	7M
Q270	7M
Q271	7L
Q272	7M
Q273	7L
Q274	6M
Q281	8M
Q282	8M
Q321	9N
Q322	9N
Q323	9N
Q324	9N
Q351	8N
Q352	8N
Q431	12M
Q451	12K
Q453	8I
Q454	8I
Q455	12J
Q456	12J
Q652	7C
Q653	7B
Q663	6C
Q664	6B
Q667	6C
Q668	5B
Q669	5C
Q742	12N
Q904	2K
Q907	2K
D24	12Q
D131	3O
D133	3L
D135	3O
D144	6O
D145	6O
D146	6N
D147	6L
D148	6K
D149	6J
D150	6M
D151	6J
D152	6I
D153	6J
D154	6L
D155	6N
D156	6L
D231	6L
D232	6L
D233	8L
D261	8M
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D321	8M
D351	7O
D431	12M
D586	8G
D587	8G
D761	6O
D807	3E

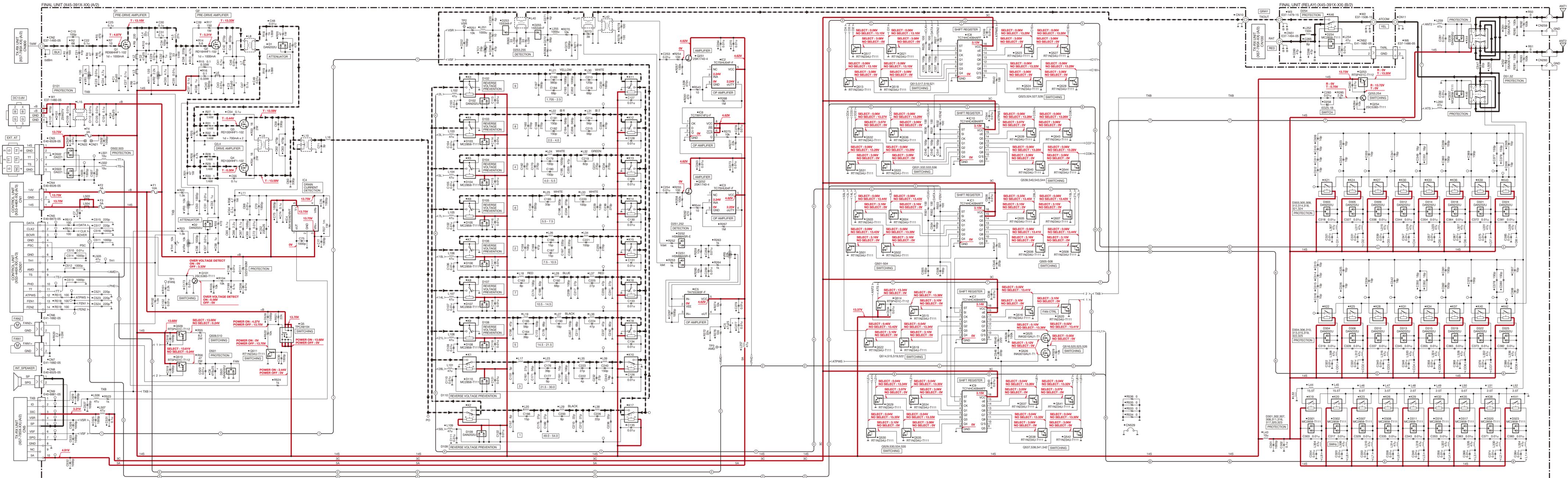
J79-0281-19 B/2



Component side



J79-0281-19 A/2



FINAL UNIT (X45-391X-XX) (A/2)

FINAL UNIT (RELAY) (X45-391X-XX) (B/2)

TX-RX UNIT (X57-785X-XX) (A/2)

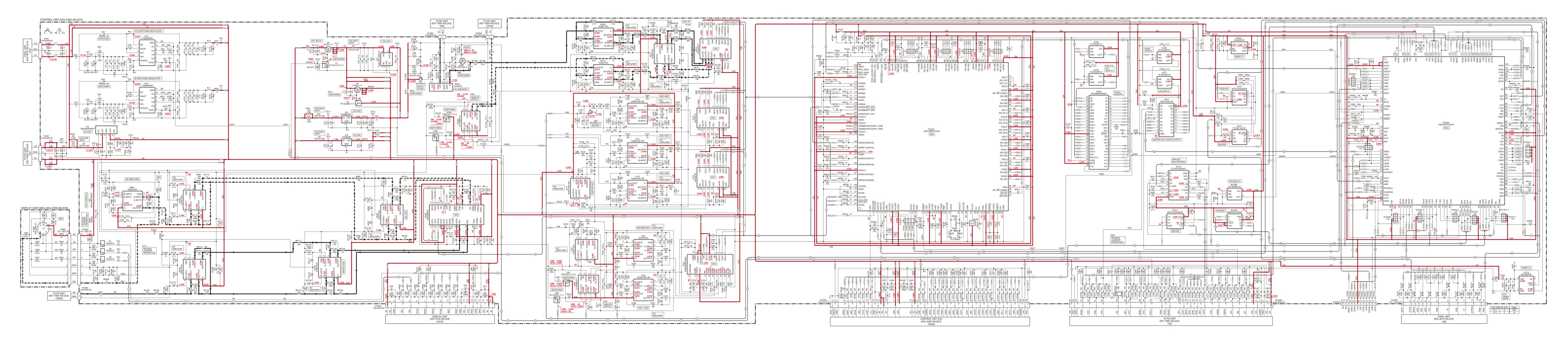
TX-RX UNIT (X57-785X-XX) (A/2)

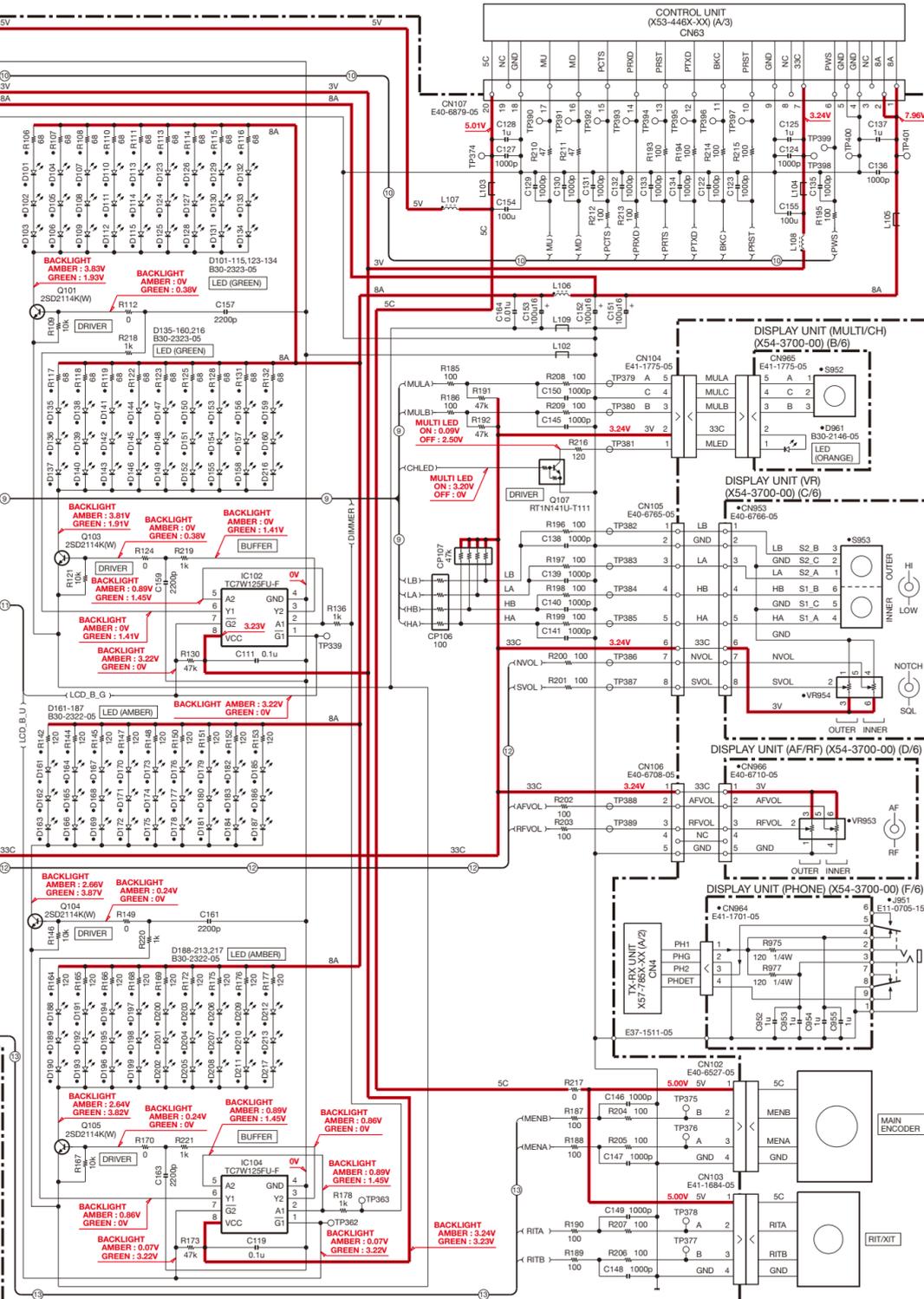
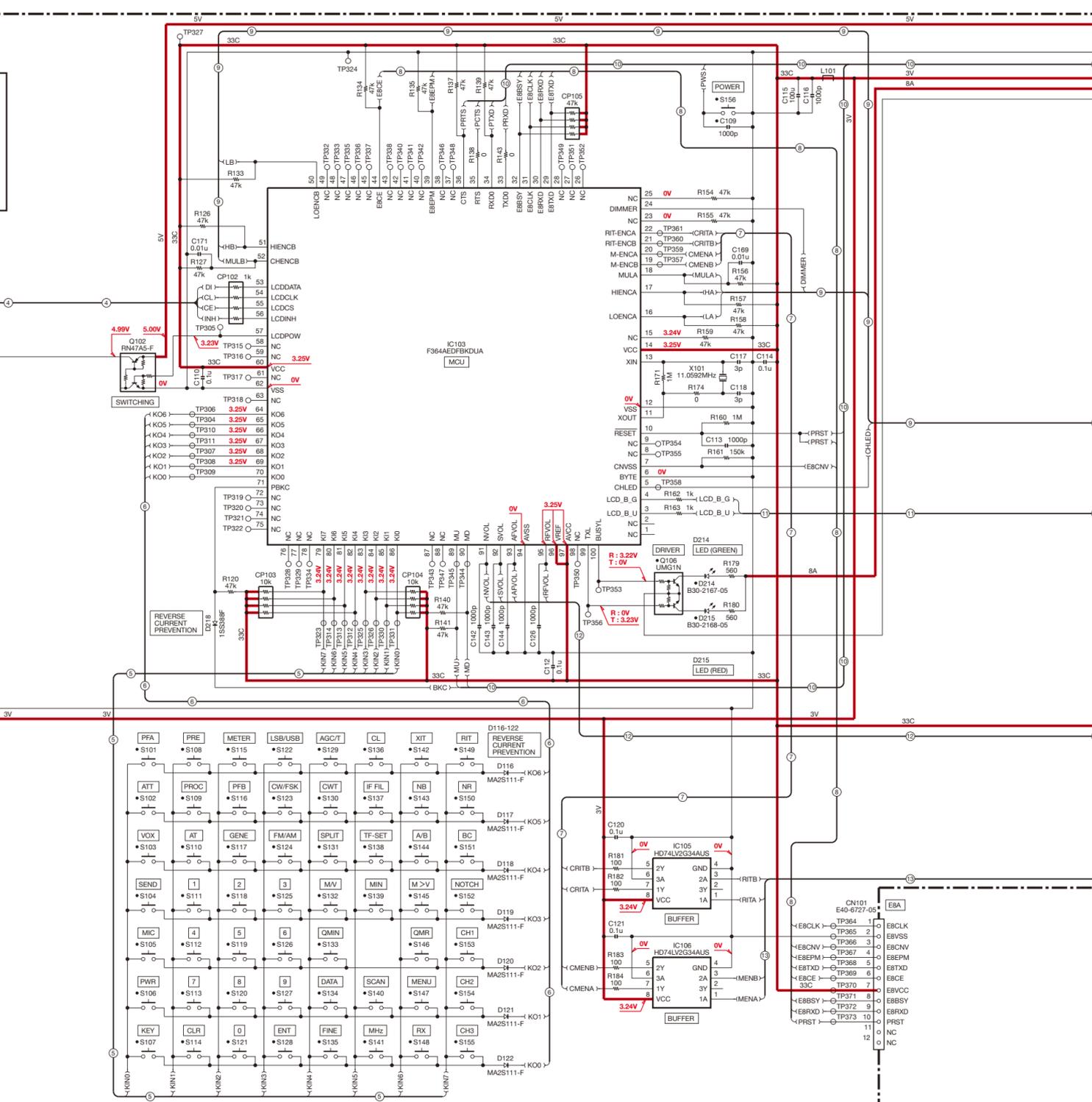
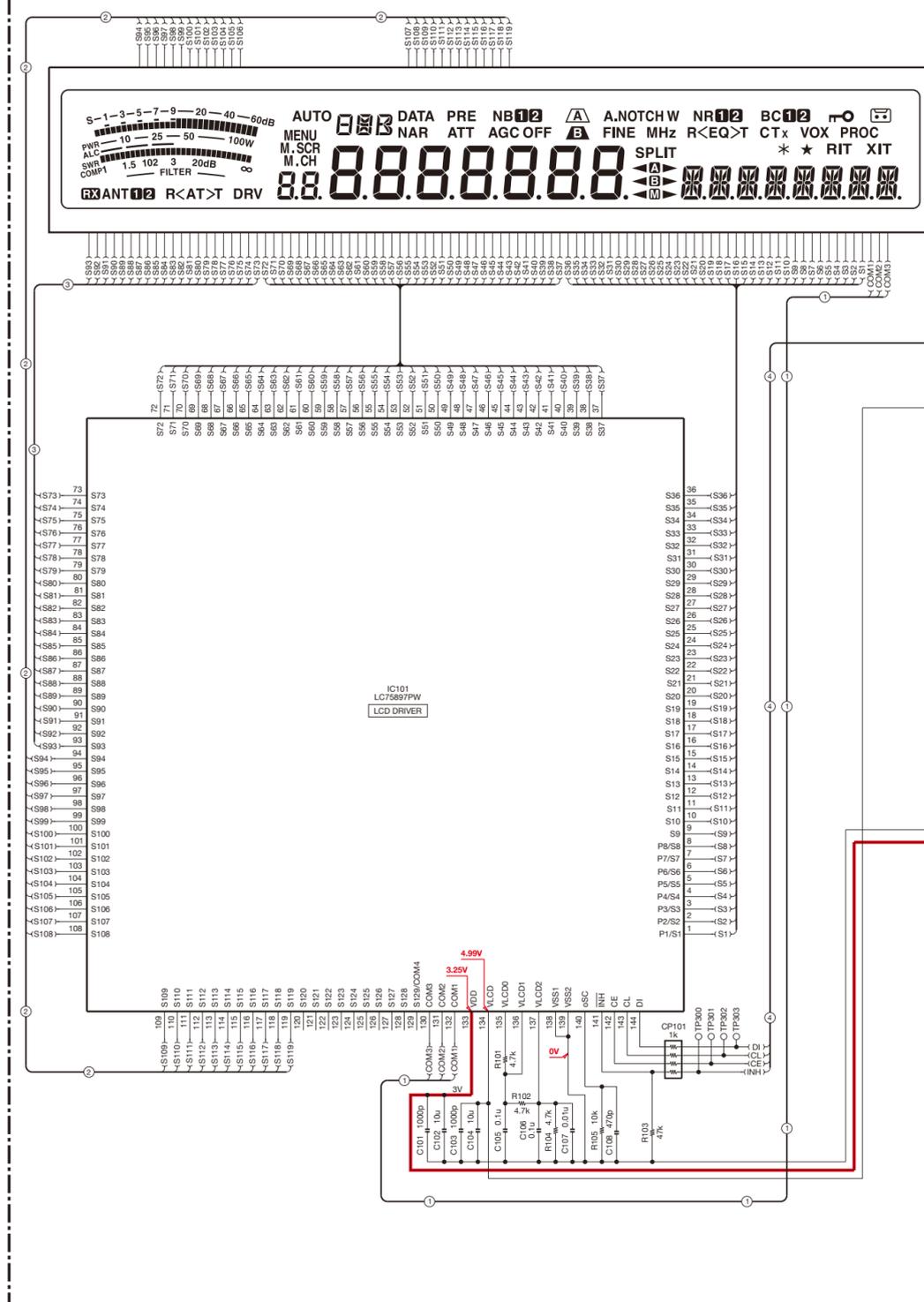
TX-RX UNIT (X57-785X-XX) (A/2)

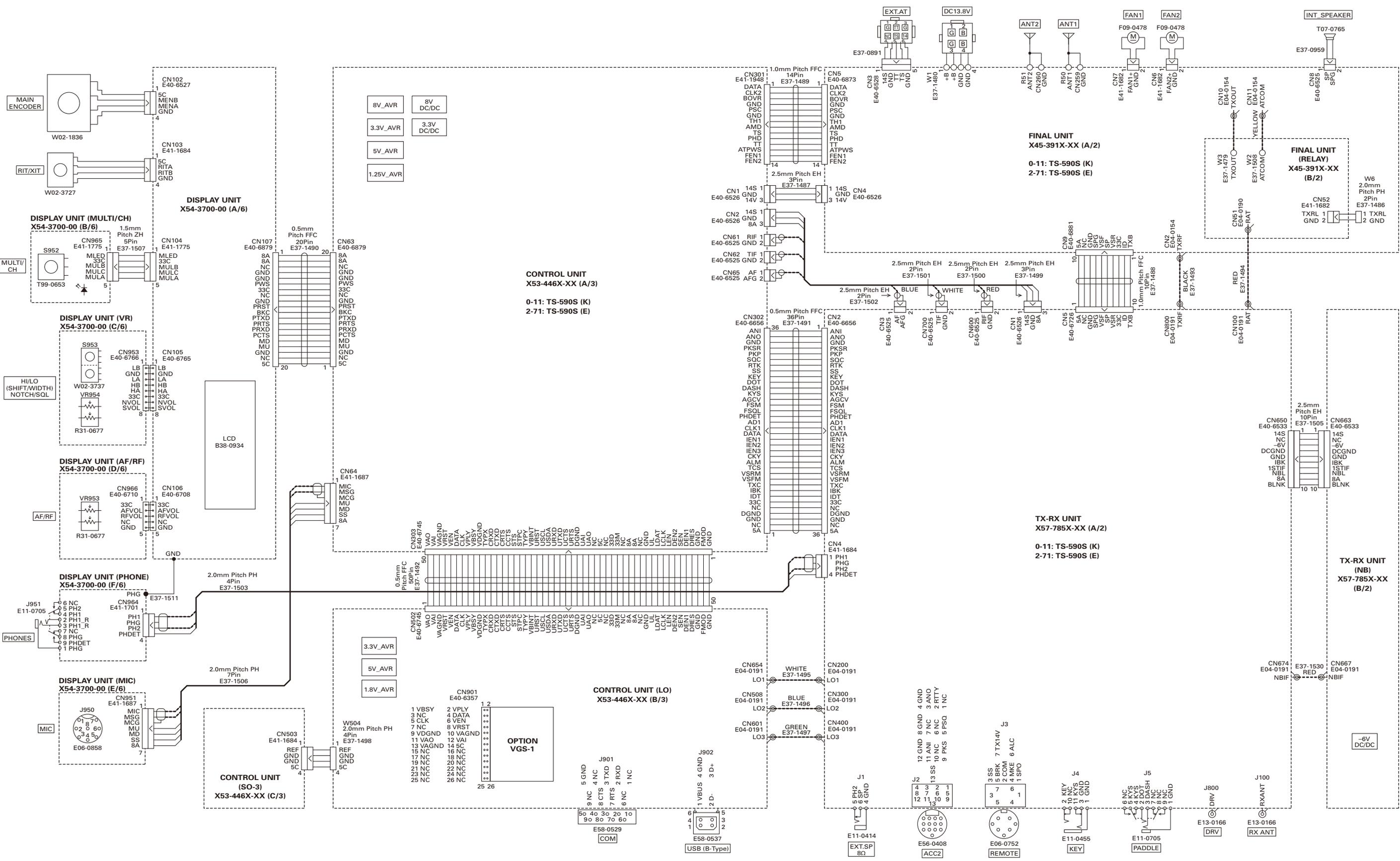
TX-RX UNIT (X57-785X-XX) (A/2)

TX-RX UNIT (X57-785X-XX) (A/2)

TX-RX UNIT (X57-785X-XX) (A/2)







8V_AVR DC/DC
 3.3V_AVR 3.3V DC/DC
 5V_AVR
 1.25V_AVR

CONTROL UNIT
 X53-446X-XX (A/3)
 0-11: TS-590S (K)
 2-71: TS-590S (E)

FINAL UNIT
 X45-391X-XX (A/2)
 0-11: TS-590S (K)
 2-71: TS-590S (E)

TX-RX UNIT
 X57-785X-XX (A/2)
 0-11: TS-590S (K)
 2-71: TS-590S (E)

TX-RX UNIT
 (NB)
 X57-785X-XX (B/2)

DISPLAY UNIT
 X54-3700-00 (A/6)

DISPLAY UNIT (MULTI/CH)
 X54-3700-00 (B/6)

DISPLAY UNIT (VR)
 X54-3700-00 (C/6)

DISPLAY UNIT (AF/RF)
 X54-3700-00 (D/6)

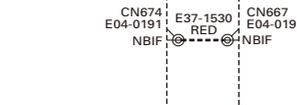
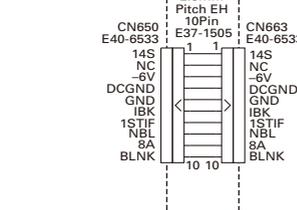
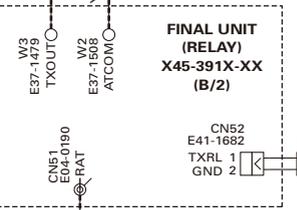
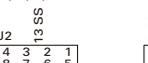
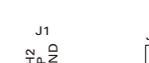
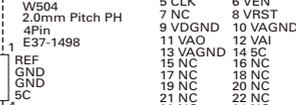
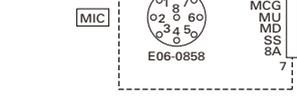
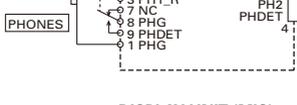
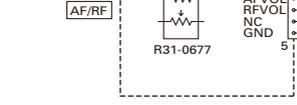
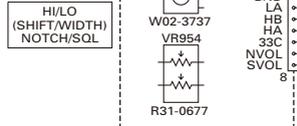
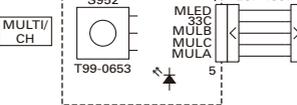
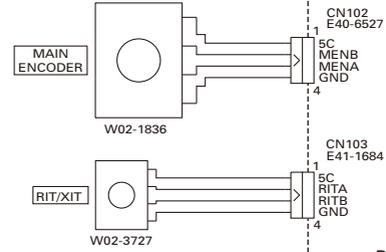
DISPLAY UNIT (PHONE)
 X54-3700-00 (F/6)

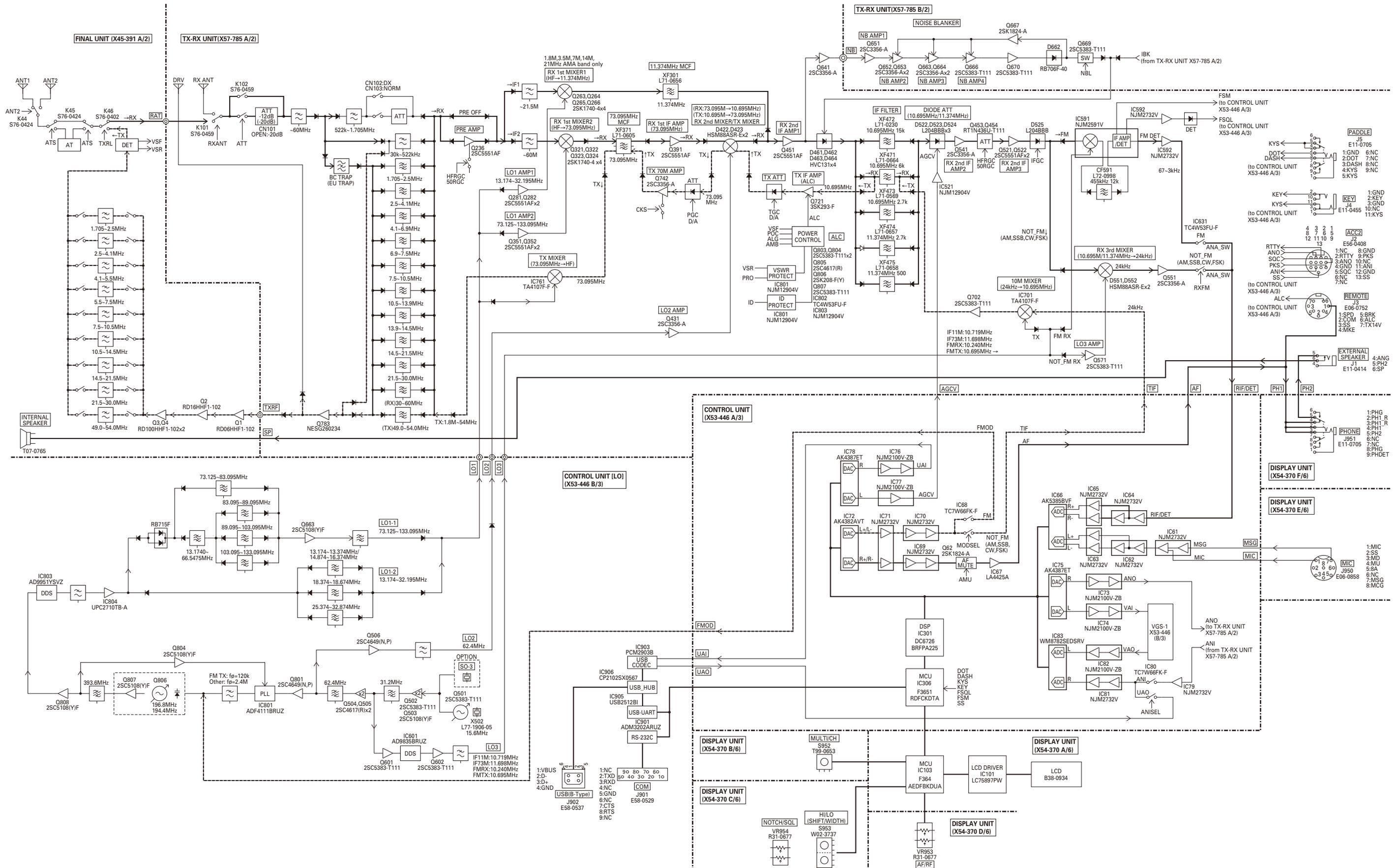
DISPLAY UNIT (MIC)
 X54-3700-00 (E/6)

CONTROL UNIT
 (SO-3)
 X53-446X-XX (C/3)

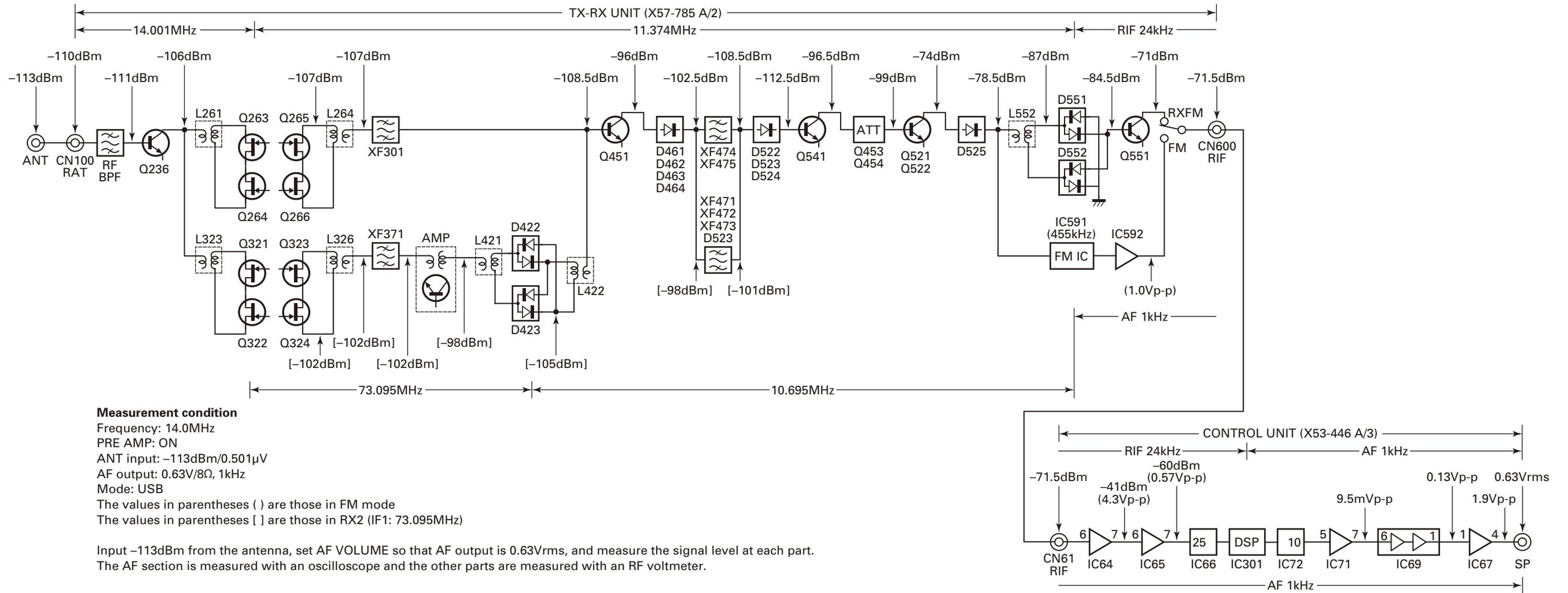
CONTROL UNIT (LO)
 X53-446X-XX (B/3)

OPTION
 VGS-1





Receiver Section



Transmitter Section

