

# NXR-901

OCXO UNIT

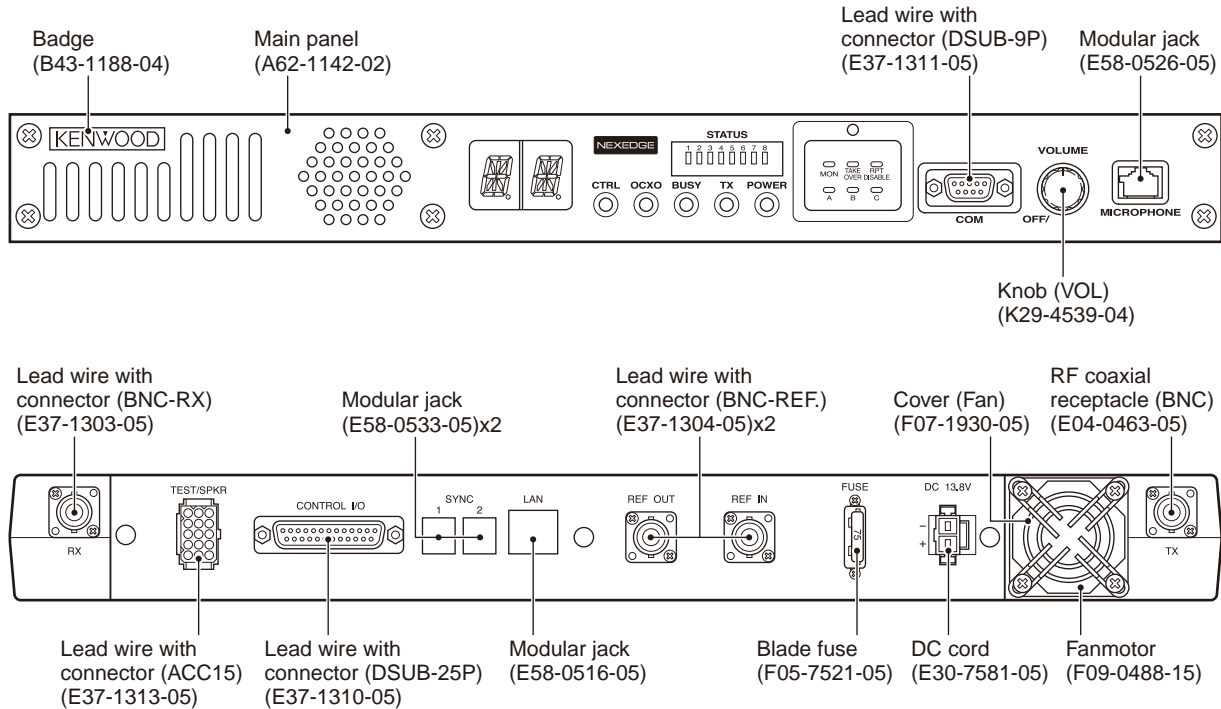
KXK-3 M3 version

## SERVICE MANUAL

# KENWOOD

JVC KENWOOD Corporation

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B53-7004-00 (Y) 330



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# NXR-901

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Transceivers containing AMBE+2™ Vocoder:

The AMBE+2™ voice coding technology is embedded in the firmware under the license of Digital Voice Systems, Inc.

# GENERAL

## INTRODUCTION

### SCOPE OF THIS MANUAL

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

### ORDERING REPLACEMENT PARTS

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

## PERSONAL SAFETY

The following precautions are recommended for personal safety:

- DO NOT transmit if someone is within two feet (0.6 meter) of the antenna.
- DO NOT transmit until all RF connectors are secure and any open connectors are properly terminated.
- SHUT OFF this equipment when near electrical blasting caps or while in an explosive atmosphere.
- All equipment should be properly grounded before powerup for safe operation.
- This equipment should be serviced by only qualified technicians.

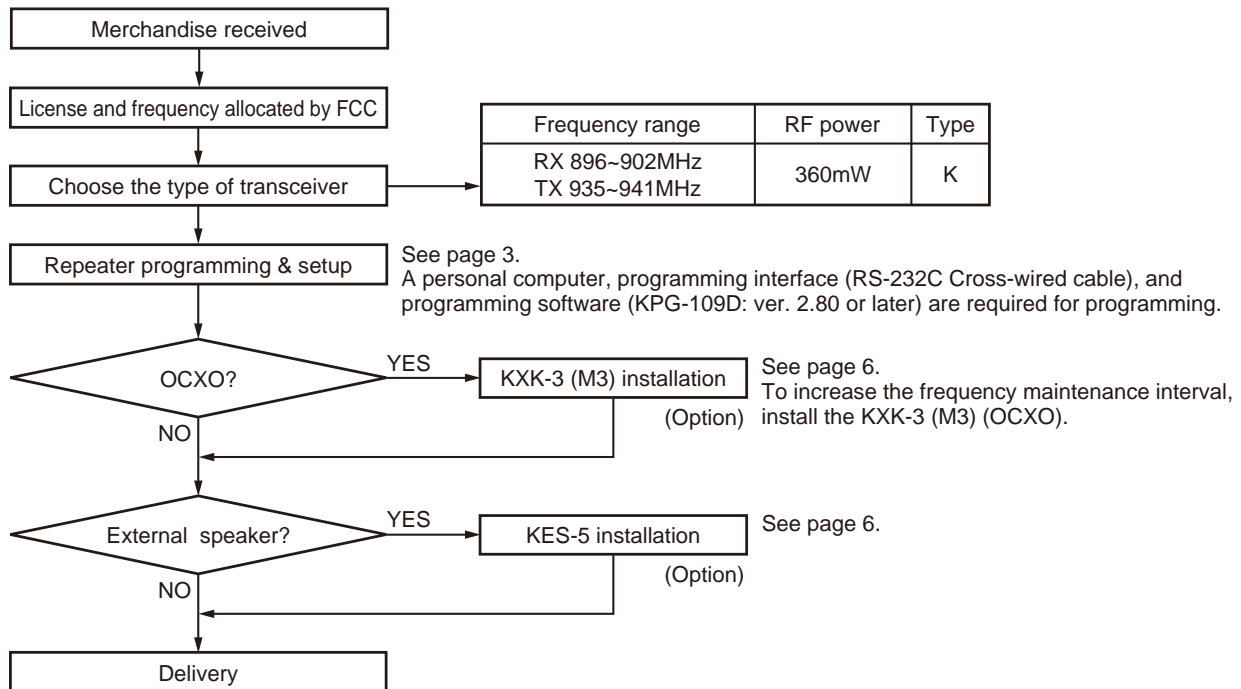
## SERVICE

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

## NOTE

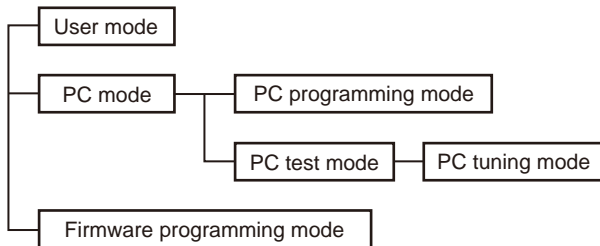
You must use KPG-109D version 2.80 or later for this transceiver. KPG-109D version earlier than version 2.80 will not work properly.

## SYSTEM SET-UP



## REALIGNMENT

### 1. Modes



Mode	Function
User mode	Use this mode for normal operation.
PC mode	Use this mode to make various settings by means of the FPU through the RS-232C port.
PC programming mode	Use to read and write frequency data and other features to and from the repeater.
PC test mode	Use to check the repeater using the PC. This feature is included in the FPU.
Firmware programming mode	Use when changing the firmware program of the flash memory.

### 2. How to Enter Each Mode

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

### 3. PC Mode

#### 3-1. Preface

The NXR-901 repeater is programmed by using a personal computer, programming interface and programming software (KPG-109D: ver. 2.80 or later).

#### 3-2. Connection Procedure

1. Connect the NXR-901 to the personal computer with the interface cable.
2. When power is applied, the user mode is entered immediately. When the PC sends a command, the repeater enters the PC mode and displays "PC" on the 17-segment LED. When data is being transmitted to the PC from the repeater, the TX LED flashes. The BUSY LED flashes when data from the PC is being received by the repeater.

#### Note:

- The data stored in the personal computer must match the model type, when it is written into the flash memory.
- Change the NXR-901 to PC mode, then attach the RS-232C Cross-wired cable.

# NXR-901

## REALIGNMENT

### 3-3. KCT-53U Description (USB adapter: Option)

The KCT-53U is cable which connects the RS-232C Cross-wired cable to a USB port on a computer.

When using the KCT-53U, install the supplied CD-ROM (with driver software) in the computer. The KCT-53U driver runs under Windows 2000, XP or Vista (32-bit).

### 3-4. Programming Software Description

The KPG-109D is the programming software for NXR-901 supplied on a CD-ROM. This software runs under Windows XP, Vista or 7 on a PC.

The data can be input to or read from NXR-901 and edited on the screen. The programmed or edited data can be printed out. It is also possible to tune the transceiver.

### 3-5. Programming With PC

Data can be programmed into the flash memory in RS-232C format via the COM connector.

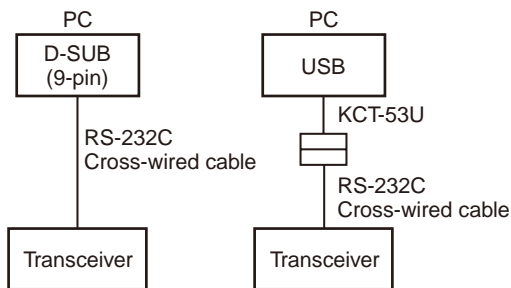
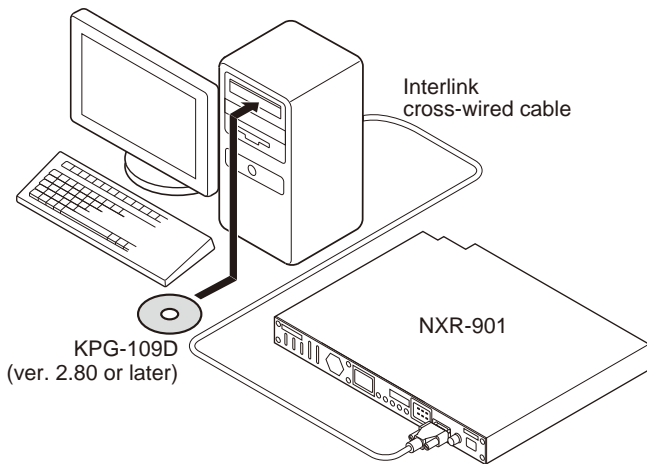


Fig. 1

## 4. Firmware Programming Mode

### 4-1. Preface

The NXR-901 uses flash memory to allow it to be easily upgraded when new features are released in the future.

### 4-2. Connection Procedure

Connect the NXR-901 to the personal computer with the RS-232C Cross-wired cable. (Connection is the same as in the PC mode.)

### Note:

You can only program firmware from the DB-9 COM connector on the front panel. Using the 25-pin logic interface on the rear panel will not work.

### 4-3. Programming

1. Start up the programming software (Fpro. exe).  
The Fpro. exe exists in the KPG-109D installed folder.
2. Set the communications speed (normally, 115200 bps) and communications port in the configuration item.
3. Set the firmware to be updated by file name item.
4. Turn the NXR-901 power on.
5. Check the connection between the NXR-901 and the personal computer, and make sure that the NXR-901 is in the program mode.
6. Press write button in the window. A window opens on the display to indicate progress of writing.
7. If writing ends successfully, the NXR-901 restarts.
8. If you want to continue programming other NXR-901s, repeat steps 3 to 6.

### Note:

It automatically enters the firmware program mode by the writing request from the programming software (KPG-109D).

### 4-4. Function

Baud rate is decided automatically with setting of programming software.

### Note:

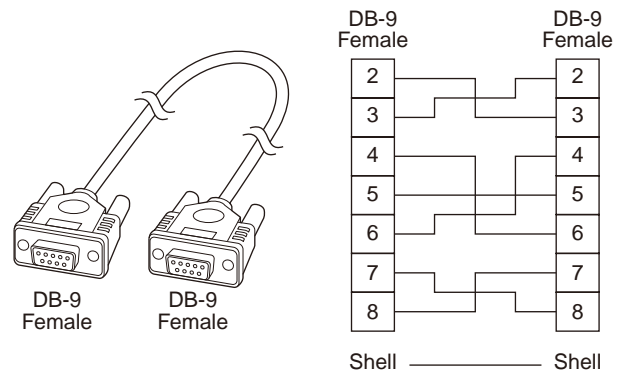
Normally, write in the high-speed mode (115200 bps).

### ■ Cross-wired cable

There are a few types of null modem cable available in the market. Make sure to use one of the following null modem cables that meets the following specifications.

Cable Specification: Null modem cable with full handshaking (cross-wired) or InterLink cable that is usually used to transfer files between PCs.

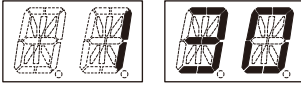
Connector Specification (both cable ends): DB-9 female



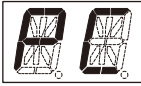
## OPERATING FEATURES

### 1. Two 17-segment LED Displays

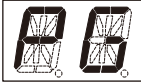
- Channel display (1~30): While operating normally in user mode.



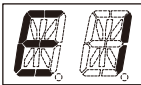
- “PC” is displayed while in PC mode.



- “PG” is displayed while in firmware programming mode.



- “E1” is displayed when FPU data is not written.



- “E2” is displayed when the channel data is not written.



- “E3” is displayed when PLL is unlocked.  
Receiver PLL unlocked = BUSY LED blinks.  
Transmitter PLL unlocked = TX LED blinks.



- “E4” is displayed when PTT is attempted on a channel number that has no frequency data programmed.



- “E5” is displayed when IP address configuration is error.



- “E6” is displayed when no frame clock is entered.



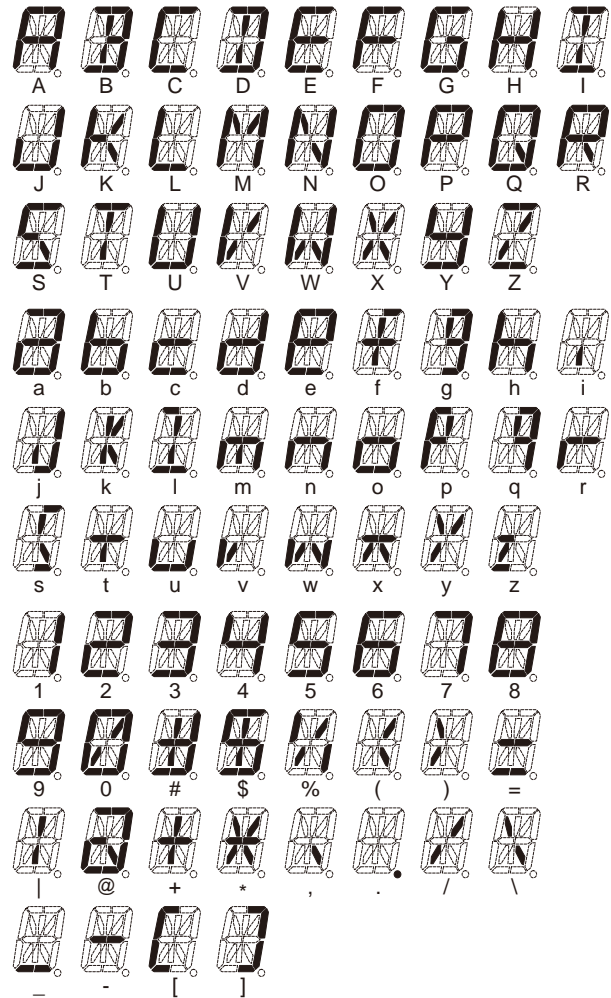
- “E7” is displayed when the thermal protection occurs.



- “E8” is displayed when Failure Input port becomes active.



All segments ON



## INSTALLATION

### 1. OCXO (KXK-3 (M3))

1. Before installing the KXK-3 (M3), be sure to turn the power off.
2. Remove the top cover of the TX unit.
3. Mount the KXK-3 (M3) using the 5 screws.
4. Carefully connect and lock the flat cable to CN1 and CN803, with the conductor side facing in.
5. Connect the coaxial cable to CN2 and CN407.
6. Connect the 2-pin cable to CN3 and CN807.

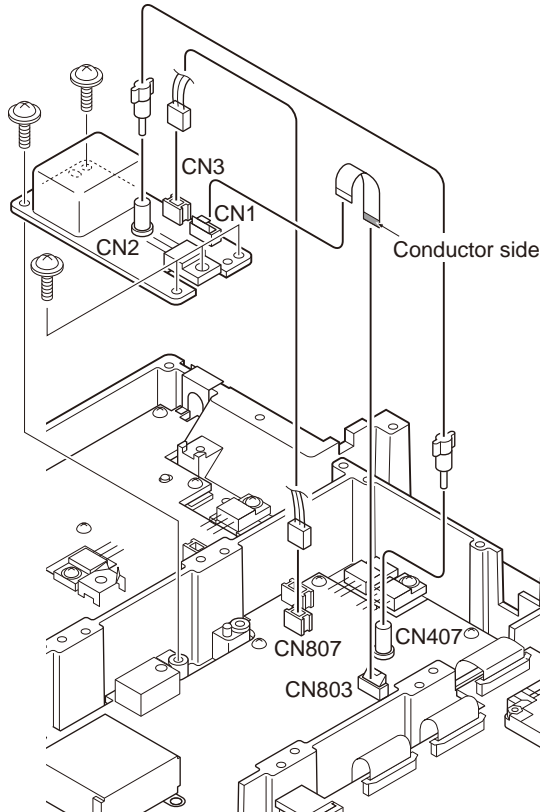


Fig. 1

### 2. External Speaker (KES-5)

The NXR-901 has a internal built-in speaker, and the external speaker output from the TEST/SPKR connector (15-pin) on the rear of the radio is 3W/4Ω. Use external speaker KES-5.

#### 2-1. Connection for the KES-5 With the NXR-901

##### ■ When taking the AF output from the TEST/SPKR connector (15-pin) on the rear of the radio

The following tools are required for changing the connector.

##### • Extracting tool

The following extracting tool is recommended:  
Molex Inc. Order No.: 11-03-0002 (W05-0878-00)

1. Remove the connector with jumper from the external speaker connector on the rear panel of the radio. (Fig. 2-1)

**Note:** Save the jumper, which is required when the radio is used without the external speaker.

2. Remove the terminals with the jumper from the connector housing holes number 9 and 12 using the extracting tool.

##### Removing the jumper lead (Fig. 2-2)

- 1) Insert the extracting tool (11-03-0002) into the connector while pushing the jumper lead in the direction of (a).
  - 2) Push the extracting tool into collapse the barbs of the crimp terminal.
  - 3) Pull out the lead while continuing to push the extracting tool in the direction (b).
3. Reinsert the terminal with the black and white stripe lead into hole number 12, and the terminal with the black lead into hole number 6. (Fig. 2-3)
  4. Attach the connector to the external speaker connector on the radio.

##### Note:

- Relationship between TEST/SPKR connector (15-pin) connection and speaker output.
- When pins 9 and 12 are shorted: Built-in internal speaker is used.
- When pins 9 and 12 are open and output is from pins 6 and 12: KES-5 is used.

Square-type plug  
(E31-3228-05)  
Accessory

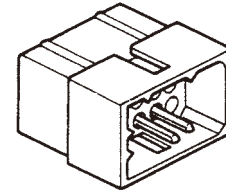


Fig. 2-1

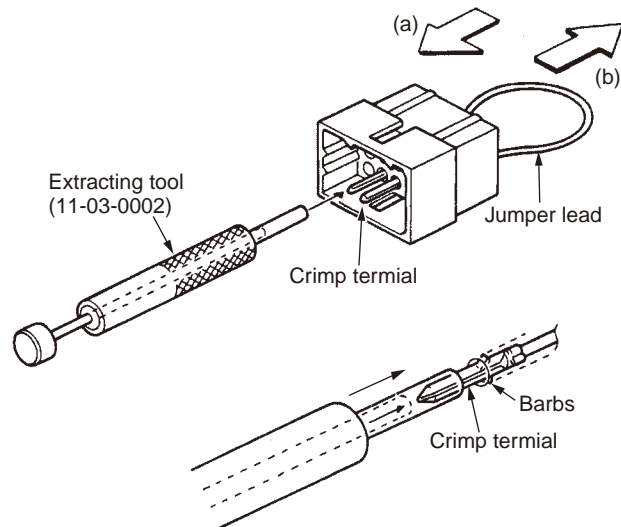
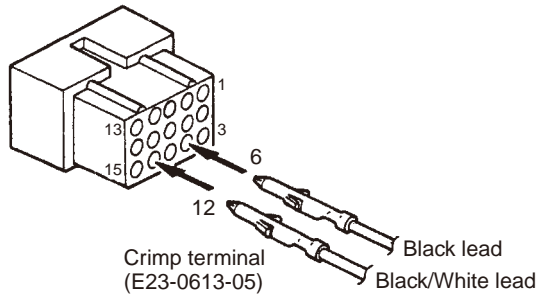


Fig. 2-2

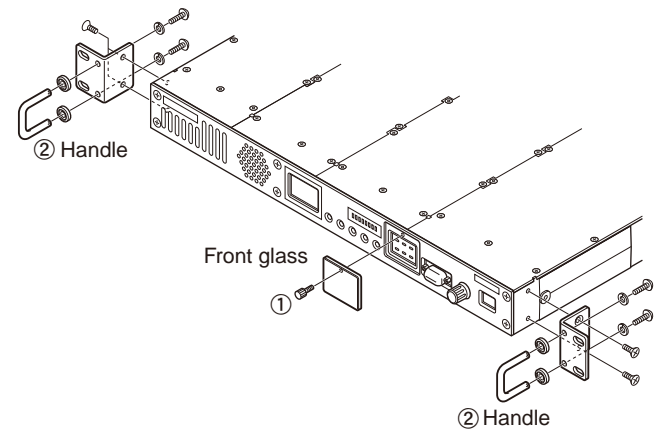
## INSTALLATION



**Fig. 2-3**

### 3. How to Attach the Supplied Accessories

1. Attach the front glass to the front panel with the supplied screw. (①)
2. To attach the handles on the both sides of the chassis, refer to illustration. (②)



**Fig. 3**

## CIRCUIT DESCRIPTION

### 1. Outline

The NXR-901 is a UHF repeater operating at 896 to 902MHz for receiving and 935 to 941MHz for transmitting.

The 896 to 901MHz/935 to 940MHz band is defined by 47CFR Part 90. In this band, transmit frequency accuracy is required to be +/-0.1ppm. The 901 to 902MHz/940 to 941MHz band is defined by 47CFR Part 24. In this band, transmit frequency accuracy is required to be +/-1.0ppm. For good communication quality in the NXDN system, it is recommended that frequency accuracy is smaller than or equal to +/-0.5ppm.

The receiver part of the NXR-901 is configured as double-conversion super heterodyne. The 1st IF is 73.05MHz and the 2nd IF is 450kHz.

The IF system IC for Analog mode demodulates the FM IF signal into an audio signal. The audio signal is fed to the DSP to process filtering.

The IF system IC for Digital mode converts the 1st IF signal to the 2nd IF and the signal level is controlled by the AGC function. The levelled 2nd IF signal is fed to the DSP to process additional filtering and demodulation.

The transmitter part of the NXR-901 is configured to direct VCO modulation. To have a wide range modulation frequency band, 19.2MHz modulator PLL can be modulated by near DC to 100~200Hz signal.

The NXR-901 has a 10.0MHz reference signal distribution circuit. The internal 20.0MHz PLL is phase locked with the "REF IN" external 10.0MHz reference signal, the internal 19.2MHz TCXO signal (is converted to 5.99MHz) or the optional OCXO's 10.0MHz signal. The locked 20.0MHz signal is divided by 2, then the 10.0MHz signal is fed to the "REF OUT" terminal to synchronize the other repeaters.

### 2. Transmitter Unit

The Transmitter unit (X56-315 A/3) consists of the following circuit.

- (1) Internal/external reference circuit
- (2) Internal frequency reference 20.0MHz PLL circuit and 1/2 divider
- (3) Transmitter Modulation 19.2MHz PLL circuit
- (4) Transmitter main PLL circuit
- (5) Driver circuit
- (6) Modulation level adjustment circuit
- (7) AVR circuits
- (8) Other circuits

#### 2-1. Internal/external reference circuit

The internal TCXO X401 (19.2MHz) is the frequency reference for the TX, RX and Control units. The internal 20.0MHz PLL circuit (X301 and IC303) is locked from this signal (frequency is converted from 19.2MHz to 5.99MHz by the DDS IC, IC401). The 20.0MHz signal is distributed to the TX, RX and Control units. In addition, the 20.0MHz signal is divided by 2 to generate 10.0MHz. This 10.0MHz signal is distributed by the "REF OUT" terminal to the other NXR-901s to synchronize the RX/TX frequency.

The NXR-901 can operate with one of the following frequency reference signals, the internal TCXO X401 (19.2MHz), external reference signal (10.0MHz) from "REF IN", and optional OCXO unit KXK-3 (M3) (10.0MHz).

The internal/external reference circuit automatically switches signals used as reference signals among the 5.99MHz internal DDS (generated by 19.2MHz, X401), the 10MHz external reference signal and the 10MHz OCXO unit.

If no OCXO unit is installed, and there is no external

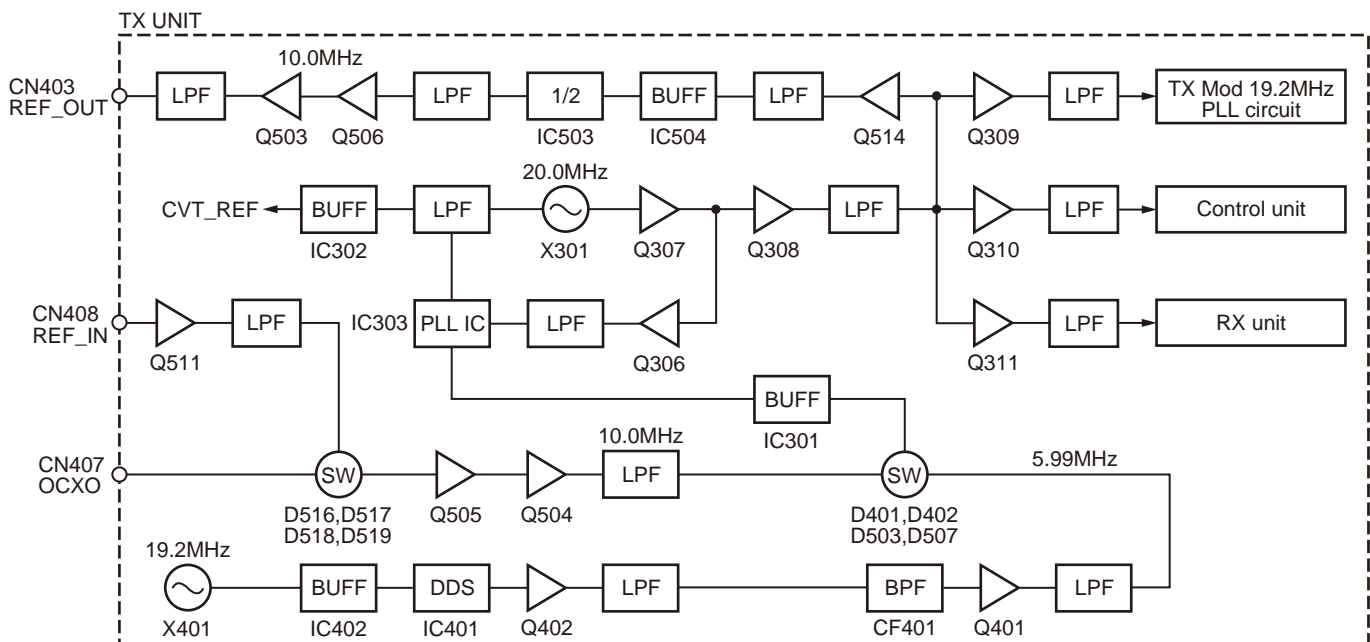


Fig. 1 Internal/external reference circuit and 20.0MHz PLL circuit



## CIRCUIT DESCRIPTION

reference signal, the 5.99MHz internal DDS (IC401) is selected as the reference signal.

If the OCXO unit is installed and there is no external reference signal, the 10MHz OCXO unit is selected as the reference signal.

If an external reference signal (CN408/ 10MHz/ 0dBm or higher/  $Z_{in}=50\Omega$ ) is applied, the external reference signal is selected as the reference signal irrespective of an existing OCXO unit.

The internal/external reference circuit consists of D401, D402, D503, D507, D509, D510, D516, D517, D518, D519, Q403, Q404, Q501, Q502, Q507, Q508, Q509 and Q510.

The DDS circuit consists of X401, IC401, IC402, IC403, CF401, Q401 and Q402.

In any conditions, the "REF OUT" terminal provides a 10.0MHz reference signal (CN403/ 10.0MHz/ more than +5dBm/  $Z_{load}=50\Omega$ ). The "REF OUT" frequency accuracy is dependant on the internal reference TCXO X401, optional internal OCXO unit, KXK-3 (M3) or "REF IN" signal.

### 2-2. Internal frequency reference 20.0MHz PLL circuit and 1/2 divider

The internal reference 20.0MHz PLL circuit produces a reference frequency signal for the transmitter modulation 19.2MHz PLL circuit, the Receiver unit (X55-312) 1st/2nd PLL IC and the Control unit (X53-414) DSP's clock PLL IC.

This circuit consists of Q307, Q306, Q308, Q309, X301, IC302 and IC303.

The 5.99MHz or 10MHz signal produced by the internal/external reference circuit is amplified by IC301 and supplied to the PLL IC (IC303) reference signal pin.

The VCXO (X301) signal enters buffer amplifier Q307 and is amplified by Q306. The higher harmonic wave is attenuated by LPF and returns to IC303. Its phase is compared with that of the reference frequency 10kHz.

The phase difference signal produced by the comparing phase is converted to a DC voltage by a lag-lead type loop filter.

This DC voltage is input to the X301 control voltage terminal for controlling the VCXO oscillating frequency.

The DC voltage passes through the IC302 operational amplifier, and is output as a voltage signal (CVT-REF) for monitoring the reference 20.0MHz PLL circuit lock voltage.

The stabilized 20.0MHz reference oscillating signal enters the Q308 and Q309 buffer amplifiers and is amplified by Q310 and Q311.

The higher harmonic wave is attenuated by the LPF, fed to IC205 and used as the reference frequency signal for the transmitter modulation 19.2MHz PLL circuit.

The phase locked 20.0MHz signal is also used as the reference signal for the Receiver unit (X55-312) and Control unit (X53-414). Q310 is the buffer amplifier to Control unit, and it is connected to CN405. Q311 is the buffer amplifier for the Receiver unit, and is connected to CN406.

There is a 1/2 divider circuit consisting of Q503, Q506, Q514, IC503, IC504, IC501. The 20.0MHz signal from Q308 is fed to Q514 and IC504 buffer amplifiers to amplify the necessary level. IC503 divides the input signal to be half the frequency. The 10.0MHz signal is levelled by the AGC circuit of Q503 and Q506 to meet a wide range of load impedance.

### 2-3. Transmitter modulation 19.2MHz PLL circuit

The transmitter modulation 19.2MHz PLL circuit produces the reference frequency signal for the main PLL and modulates the low-frequency components.

The circuit consists of X201, IC204, IC205, IC206, IC208, Q3, Q205 and Q206. The signal generated by the VCXO (X201) is fed to the buffer amplifier Q206 and is amplified by Q205 to feed the PLL IC (IC204).

The 20.0MHz reference signal is fed by IC205. Its phase is compared with that of the 5kHz reference frequency.

The phase difference signal produced by the comparing phase is converted to a DC voltage by a lag-lead type loop filter.

This DC voltage is input to the IC206 invert amplifier (B/2) and is synthesized with the modulating signal.

This DC voltage is input to the X201 control voltage terminal for controlling the 19.2 MHz VCXO oscillating frequency.

The DC voltage passes through the IC208 operational amplifier, and is output as a voltage signal (CVT\_MOD) for monitoring the modulating 19.2MHz PLL circuit lock voltage.

The 19.2MHz signal is buffered by Q3. The higher harmonic wave is attenuated by the LPF, fed to IC5, and is used as the reference frequency signal of the transmitter main PLL circuit.

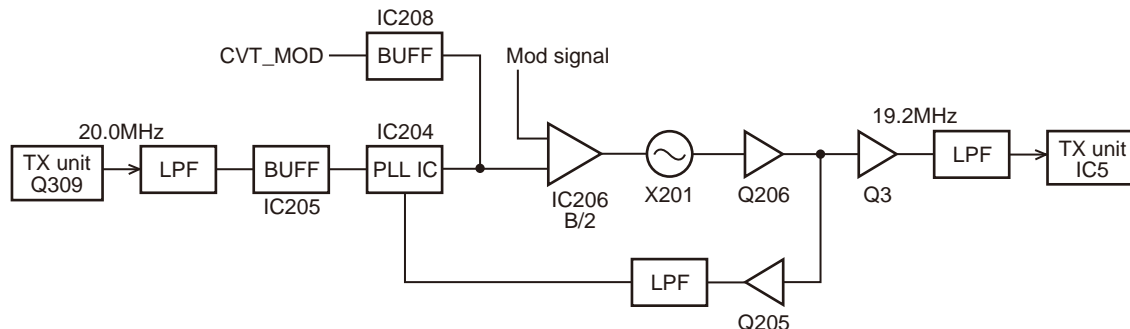


Fig. 2 Transmitter modulation 19.2MHz PLL circuit

## CIRCUIT DESCRIPTION

### 2-4. Transmitter main PLL circuit

The transmitter main PLL circuit consists of the VCO (Q4) and PLL IC (IC5). They produce the transmitter frequency signal.

The VCO Q4 produces transmitter frequencies from 467.5~470.5MHz. The VCO's tuning voltage is adjusted by buffer amplifier IC6 and DAC IC201 pin 1.

The VCO frequency tuning voltage is adjusted by the IC201 pin 1 DAC signal, the IC6 DC amplifier and the low pass filter. The LPF is configured with R28, C39 and D1. The VCO frequency tuning voltage is monitored by the IC3 DC buffer and the IC703 pin 16 ADC.

The signal produced by the VCO (Q4) is fed to the buffer amplifier and is amplified by Q6.

The VCO signal is doubled by Q5 to 935~941MHz. This signal is fed to the BPF to attenuate spurious signals, and is then fed to PLL IC (C5).

The phase difference signal produced by the comparing phase is converted to a DC voltage by a lag-lead type loop filter.

The DC signal is applied to varicaps D2 and D3 to lock the VCO oscillator with the desired oscillator frequency.

At the same time, the DC signal passes through the IC3 operational amplifier for monitoring the transmitter main PLL lock voltage.

The output from the VCO passes through frequency doubler Q8 and Q9. The produced 900MHz band signal is filtered by the BPF to attenuate spurious signals.

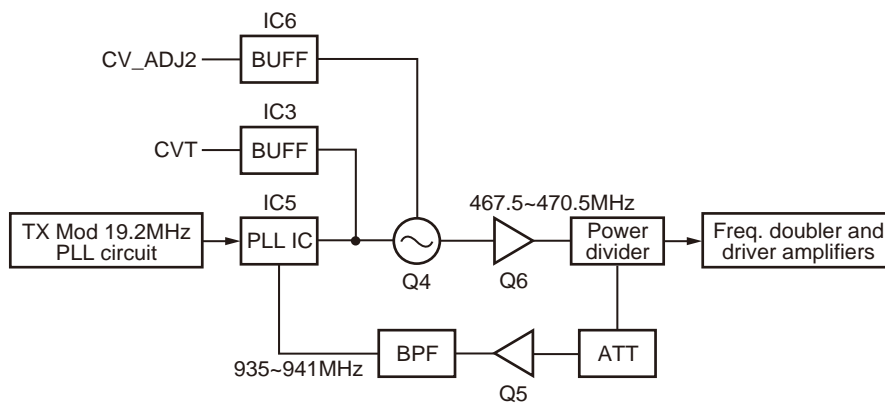


Fig. 3 Transmitter main PLL circuit

### 2-5. Driver circuit

The driver circuits consist of a frequency doubler circuit (VCO's 467.5~470.5MHz signal is doubled to 935~941MHz) and a transmitter driver amplifier.

The frequency doubler consists of Q8 and Q9. Spurious signals are filtered by the BPF.

The driver amplifiers consist of Q10, Q11 and SAW band-pass filter L34. The Driver output power is levelled by D7

and IC8 to adjust Q11's Vg voltage (to control Vg, Id will be changed; to change Id, gm will be changed; then, the gain of Q11 is changed). The output power of CN802 is 16dBm and is to be adjusted with a 50Ω termination. L34 is an additional SAW band-pass filter. The SAW filter reduces the frequency doubler's spurious signals. In addition, the SAW filter attenuates broadband noise from the VCO, doubler and buffer amplifiers on the GPS downlink band.

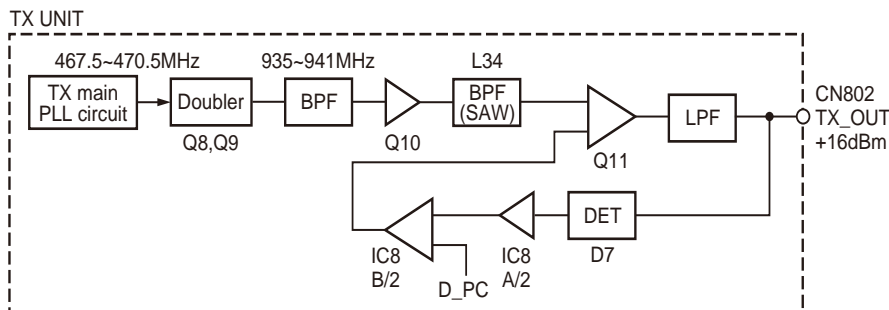


Fig. 4 Frequency doubler and driver circuit

## CIRCUIT DESCRIPTION

### 2-6. Modulation level adjustment circuit

The level adjustment circuit adjusts the modulation signal level to provide the required level of modulation. This circuit consists of IC203, IC206 and IC207.

The audio signal comes from the Control unit (X53-413) through CN804 pin 4. The modulating signal is fed to IC207 from this pin. IC207 is an electronic volume control IC.

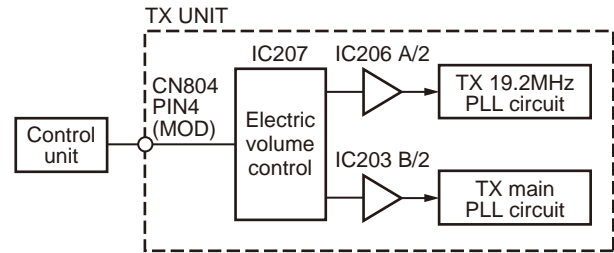
The modulation waveform balance adjustment and maximum deviation adjustment are performed according to data from the MPU to IC207 using the FPU.

The modulation signal is produced by the modulating low-pitched tone to the transmitter modulation 19.2MHz PLL circuit and adds the high-pitched modulation to the transmitter main PLL.

IC206 is an inverting amplifier (B/2) for inverting the amplification (A/2) of the modulating signal and synthesizing the VCXO (X201) control voltage and modulating signal.

IC203 is a reference voltage generator (A/2) in the modulating level adjusting circuit and non-inverting amplification

(B/2) of the modulating signal with a cut off signal of approximately 9kHz.

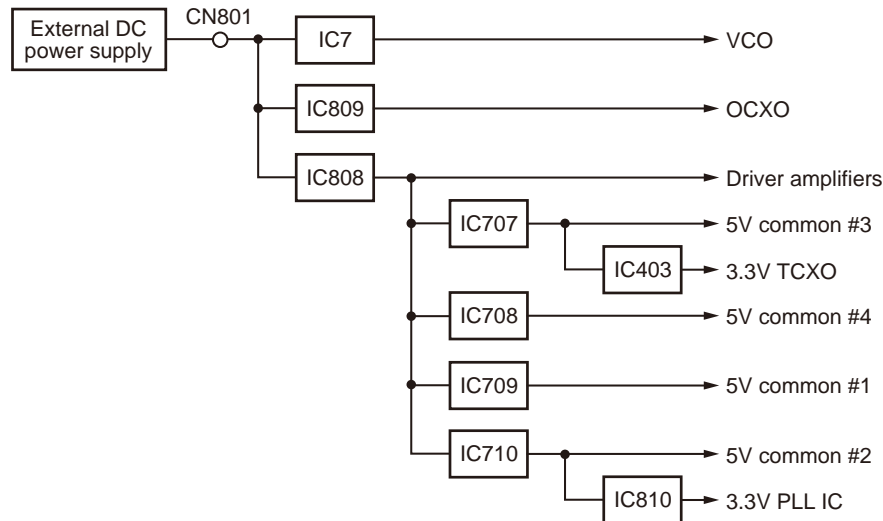


**Fig. 5 Modulation level adjustment circuit**

### 2-7. AVR circuit

IC7, IC707, IC708, IC709, IC710, IC808, IC810, IC403 and IC809 are AVR ICs.

Each circuit contains its own power regulator IC to maintain isolation between circuits.



**Fig. 6 AVR circuit**

### 2-8. Other circuits

In addition, IC202 is an EEPROM. The transmitter adjustment data adjusted for each unit is written into the EEPROM. If the unit is installed in another set, it is not necessary to adjust it again from the beginning; only fine-tuning is necessary for each unit.

The temperature sensor (IC704) monitors the temperature of the Transmitter unit (X56-315 A/3).

The D/A converters (IC201 and IC705) convert the AGC setting (D\_PC) of the driver circuit, VCO tuning voltage setting (CV\_ADJ2) of transmitter main PLL circuit and control voltage value (PWR\_CONT, PA\_BIAS) of the Final unit (X45-387 A/4).

The A/D converter (IC703) converts the Transmitter unit (X56-315 A/3) temperature, VCO and VCXO control voltage (CVT, CVT-REF and CVT-MOD), Final unit (X45-387 A/4) PA current (PA\_CURR), fan current (FAN\_CURR), output power detection voltage (FWD\_PWR, RFL\_PWR), etc.

The shift register (IC701) controls each part of the Transmitter unit (X56-315 A/3) based on serial data of the Control unit (X53-413).

## 3. Final Unit

The RF final amplifier unit (X45-387 A/4) amplifies the transmitter power to specified levels.

This unit consists of the following circuits:

- (1) Transmitter power amplifier IC
- (2) Forward power detector and isolator circuit
- (3) Reflected power detector circuit
- (4) High pass filter and Harmonic filter circuit
- (5) APC circuit
- (6) High temperature detector circuit
- (7) FAN action control circuit
- (8) Current detector circuit
- (9) AVR Circuit
- (10) Other Circuits

## CIRCUIT DESCRIPTION

### 3-1. Transmitter power amplifier IC

The power amplifier MMIC is IC21. This device works with linear operation mode and can operate from 700MHz to 2700MHz. The input and output matching circuit is adjusted to the 935 to 941MHz band for the NXR-901. This device does not have a gain control function, therefore the output power is controlled by the drive power level.

The P1dB output power of the device is typically 28dBm and its linear gain is typically 20dB.

The drive power from the TX unit is level controlled by IC20, variable attenuator IC, to be fed into pin 1 and pin 2 of IC21 with matching circuit C302, C303 and the transmission line. The output terminals, pin 9 to 12 are matched to 50ohms with L30, C307, C310 and the transmission line.

To control the ramp-up and ramp-down waveform, the PA VBIAS terminal voltage timing is managed by the PA\_BIAS signal and time constant circuit. IC6 (A/2) is the time constant circuit.

### 3-2. Forward power detector and isolator circuit

To stabilize the load impedance of IC21, an isolator device (L31) is used. Because there is very small reflection power at the isolator input port, forward power coupling circuit is simplified with C193 and R34, R38 and R42. Detected DC voltage is amplified by differential amplifier IC4 (A/2).

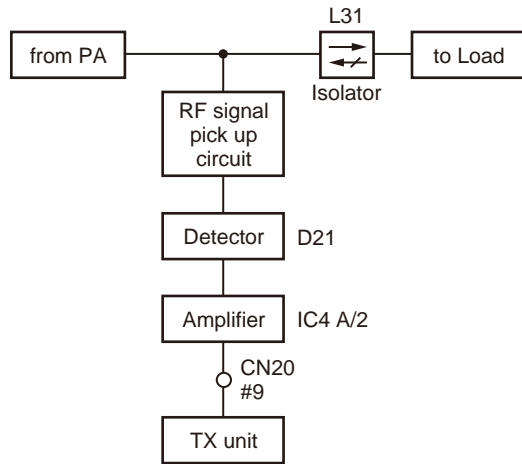


Fig. 7 Forward power detection circuit

### 3-3. Reflected power detector circuit

The reflected power detector circuit consists of a CM coupling type detection circuit formed by a strip line and the differential amplifier IC4 (B/2).

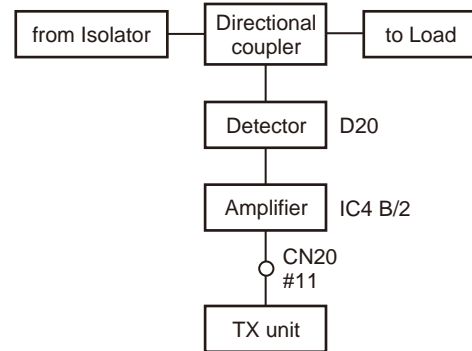


Fig. 8 Reverse power detection circuit

### 3-4. High pass filter and harmonic filter circuit

The T type single stage high pass filter prevents the PA MMIC from being broken by static electricity. The harmonic filter circuit uses a three-stage "pi" type Chebyshev LPF.

This circuit removes harmonics from the transmitter output and sends the filtered signal to the antenna connector (CN22).

### 3-5. APC circuit

The APC circuit stabilizes the transmitter power so that the output power specified by the Control Voltage from the MPU is obtained.

It consists of a Forward power detector circuit, Differential amplifiers (IC2) and a variable attenuator (IC20).

It compares the voltage detected by the Forward power detector circuit (voltage detected by the Forward Power) and the Control Voltage (PWR\_CONT) from the MPU (IC802: X56-315 A/3).

It stabilizes the output power by changing the drive power of the PA MMIC (IC21). The attenuation value of IC20 is controlled by the current value of pin 1 and pin 8.

The isolator consumes the reflection power and the APC controls the constant forward power under any TX antenna terminal conditions. The antenna terminal load condition is known by the reflection detection circuit. Its detected voltage relatively relates to the load VSWR value.

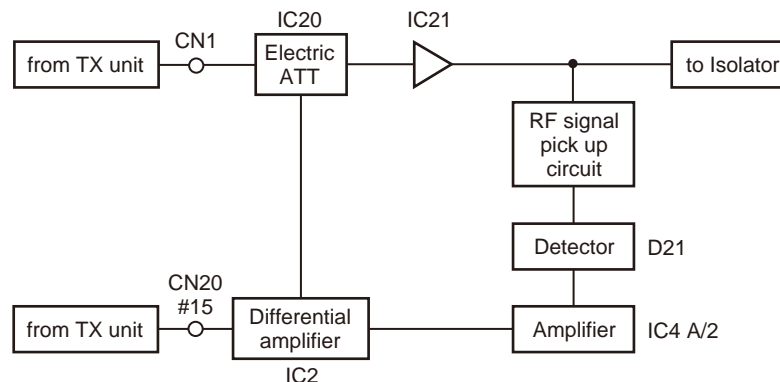


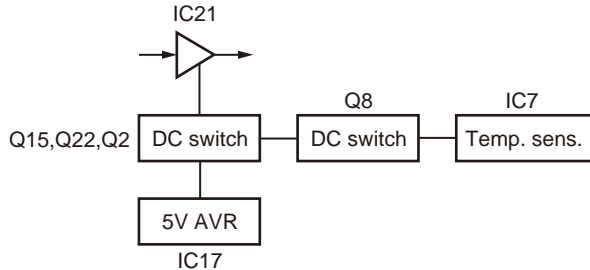
Fig. 9 APC circuit

## CIRCUIT DESCRIPTION

### 3-6. High temperature detector circuit

The high temperature detector circuit consists of a thermal switch IC (IC7) and a switching FET (Q8).

This circuit stops the transmission when the Final unit temperature is too high (83°C or higher).

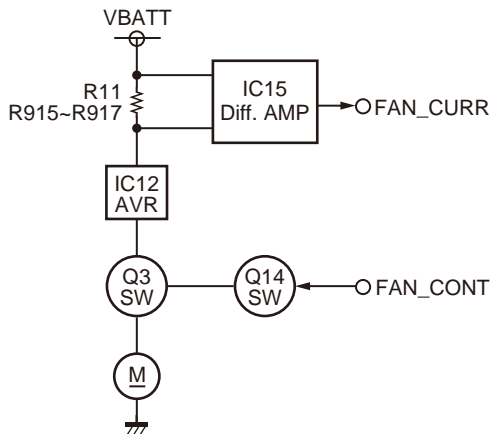


**Fig. 10 High temperature detector circuit**

### 3-7. FAN action control circuit

The FAN action control circuit consists of a FAN, current detection resistors (R11, R915 to R917), a Differential amplifier (IC15), a Switching transistor (Q3), and a Switching FET (Q14).

It detects the normal and abnormal state by monitoring the current flowing FAN motor, and stops operation when failure occurs.

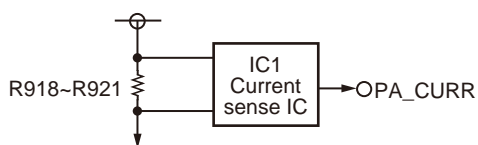


**Fig. 11 FAN action control circuit**

### 3-8. Current detector circuit

The current detector circuit monitors the current of the PA MMIC. It consists of current detection resistors (R918 to R921) and a current detection IC (IC1).

It detects the normal and abnormal state of the PA MMIC by monitoring the current of the MMIC. If a failure occurs, it stops operation.

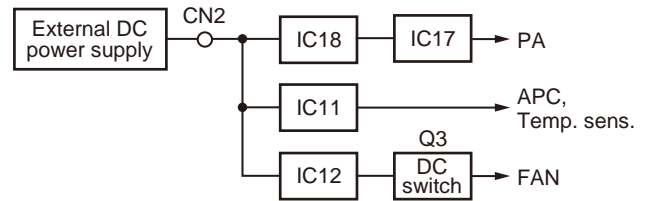


**Fig. 12 Current detector circuit**

### 3-9. AVR circuit

IC17 and IC18 are AVR ICs for PA MMIC. IC11 supplies 5V to the OP amp ICs. IC12 supplies 5V to the FAN.

They maintain isolation of each power supply.



**Fig. 13 AVR circuit**

### 3-10. Other circuits

IC9 is an EEPROM that saves various adjustment data of the Final unit.

## 4. Receiver Unit

The Receiver unit (X55-312) consists of the following circuits:

- (1) Front-end circuit
- (2) 1st-Mixer circuit
- (3) 1st-IF circuits
- (4) Demodulator circuits
- (5) Squelch circuit
- (6) Receiver PLL circuits
- (7) AVR circuit
- (8) Other circuits

There are three demodulating modes that can receive Analog\_Narrow, Digital\_Narrow, and Digital\_Very-Narrow. In addition, there are 2 mixed modes.

### 4-1. Front-end circuit

The front-end circuit consists of L203 dielectric BPF, Q201 Low Noise Amplifier (LNA), L210 dielectric BPF and IC202 variable attenuator. The dielectric BPFs cover from 896 to 902MHz.

The collector current of Q201 is monitored by the IC201 current detection circuit. The detected DC voltage is input to pin 15 of IC811 (ADC).

The IC202 variable attenuator is used for the RF AGC. The controlled attenuation value of IC202 is at its minimum when the input level is lower than -20dBm.

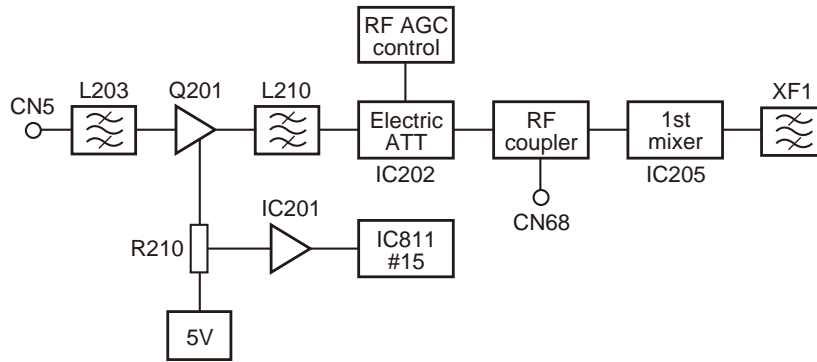
### 4-2. 1st-Mixer circuit

The 1st mixer consists of IC205, L215, L218 and L221. The mixer device is doubly balanced and it has local oscillator amplifier and IF amplifier.

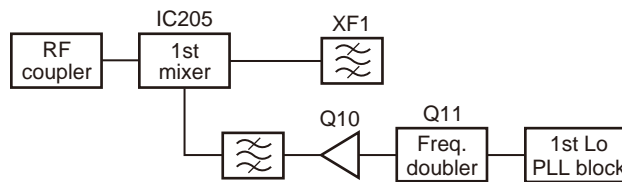
The 1st local buffer stage consists of a BPF, amplifier Q10 and frequency doubler Q11. The frequency doubler produces a 823 to 829MHz local oscillator signal from the VCO. The BPF attenuates the 411.5 to 414.5MHz signal and 1234 to 1244MHz signal.

73.05MHz is produced as the 1st Intermediate Frequency (IF1).

## CIRCUIT DESCRIPTION



**Fig. 14 Front-end circuit**



**Fig. 15 1st-Mixer circuit**

### 4-3. 1st-IF circuit

The IF1 signal produced by the 1st-Mixer circuit is passed to 1st IF circuit.

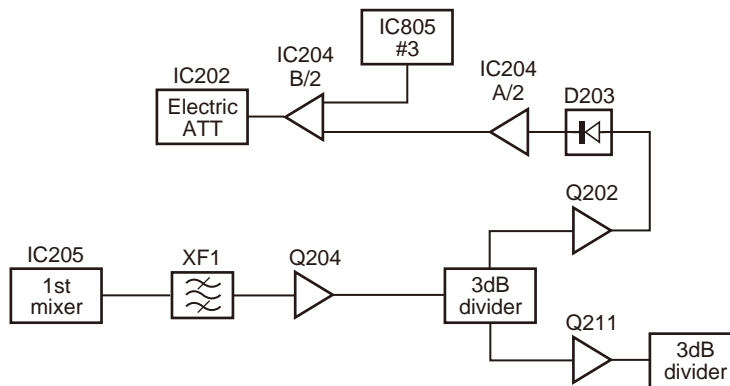
The 1st IF circuit consists of XF1, Q204.

This signal path is used for analog narrow FM, narrow digital, very narrow digital and mixed operation mode.

XF1 is 4-pole Monolithic Crystal Filters (MCF). This is a BPF for removing spurious noise occurring close to the desired signal.

The final 1st IF amplifier is Q211 to have enough total gain from the RX antenna to the IF system IC.

The filtered 1st IF signal is coupled to the Q202 IF amplifier to construct the RF AGC loop. The loop works to protect the MCF from a very large antenna input signal (i.e. -10 to 10dBm).



**Fig. 16 1st-IF circuit**

## CIRCUIT DESCRIPTION

### 4-4. Demodulator circuits

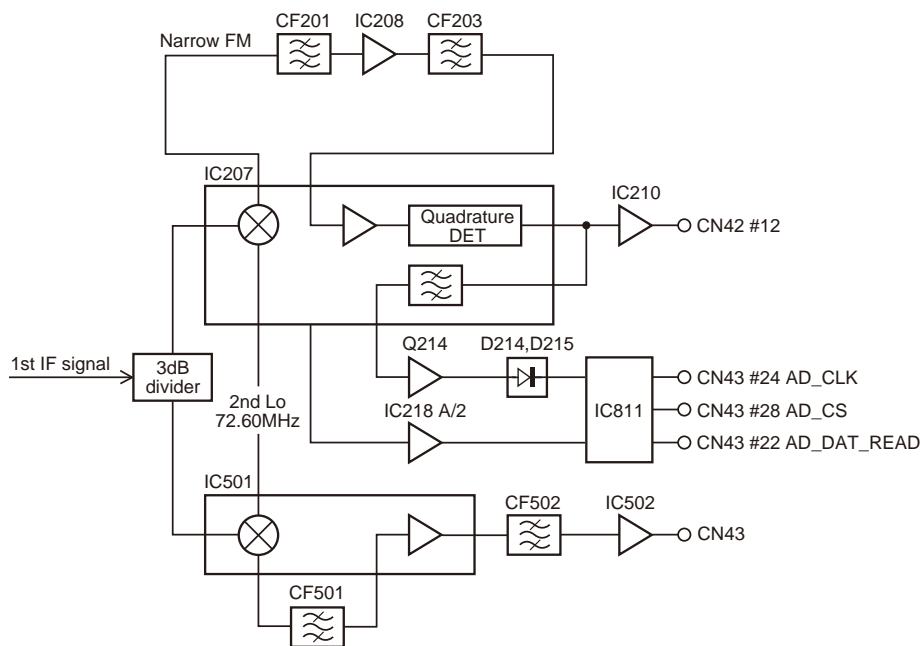
The desired signal that passed through the 1st IF circuit passes through a 3dB divider consisting of LC parts and is fed to the IF system IC, IC207, and IC501.

Analog\_Narrow FM signal is mixed with the second local oscillator signal by the mixer in IC207. The 450kHz signal is produced as the 2nd Intermediate Frequency (IF2).

The analog narrow FM signal is filtered by the ceramic filters of CF201 and CF203. The baseband signal is FM-detected by the quadrature detection circuit consisting of L286, and is an amplified Narrow FM signal to be filtered by ceramic filters CF201 and CF203 for narrow FM.

Narrow FM signal to be filtered by ceramic filters CF201, CF203 for narrow FM. The baseband signal FM-detected by the quadrature detection circuit is amplified to a signal level of approximately 100mVrms by IC210 and is then transmitted to the Control unit (X53-413) from CN42 (pin 12).

Digital\_Narrow or Digital\_Very-Narrow signal is mixed with the second local oscillator signal by the mixer in IC501. 450kHz signal is produced as the 2nd Intermediate Frequency (IF2). Here, irrespective of modulation modes, it passes through the CF501 and CF502 path. It is transmitted as the baseband signal via IC502 to the CN43 Control unit, X53-414.



**Fig. 17 Demodulator circuits**

### 4-5. Squelch circuit

The desired noise of the noise component output from the IF system IC\_IC207 (pin 9) is extracted by the BPF IC207 (pin 7, 8).

After passing through Q214, it is DC-detected as the squelch voltage by D214, D215 and input to ADC\_IC811 (pin 11).

The MPU mounted in the Control unit (X53-413) compares it with a predetermined reference voltage and turns the Audio signal on and off. The strength of the receiver signal input from CN5 is output as the RSSI voltage from the IF system IC\_IC207 (pin 12), and is input to IC811 (ADC) pin 12 via IC812 A/2.

### 4-6. Receiver PLL circuits

The Receiver unit (X55-312) has the 1st-PLL circuit for controlling the VCO that generates the signal to the first local oscillator, and the 2nd-PLL circuit for controlling the VCO that generates the signal to the second local oscillator.

The 1st-PLL circuit consists of the VCO (Q5), the Buffer amplifier (Q9), the RF amplifiers (Q8), the PLL-IC (IC2), the Active loop filters (Q2 and Q3) and the CV adjustment buffer/LPF (IC3 and D5).

The receiver's 1st mixer requires a 823~829MHz local oscillator signal. The 1st-PLL's VCO oscillates at half of it, 411.5~414.5MHz. Frequency doubler Q8 doubles to a 823~829MHz signal and passes it to IC2 pin 2 through the band-pass filter to attenuate the spurious signals. The PLL is locked to the 823~829MHz frequency range. As described in section 4.2, the VCO signal is doubled for the 1st mixer.

## CIRCUIT DESCRIPTION

IC2 (PLL IC) compares the phase difference of the VCO signal and the 20.0MHz reference signal from the TX unit. The phase error signal from IC2 is filtered by the Q2 and Q3 active low pass filter.

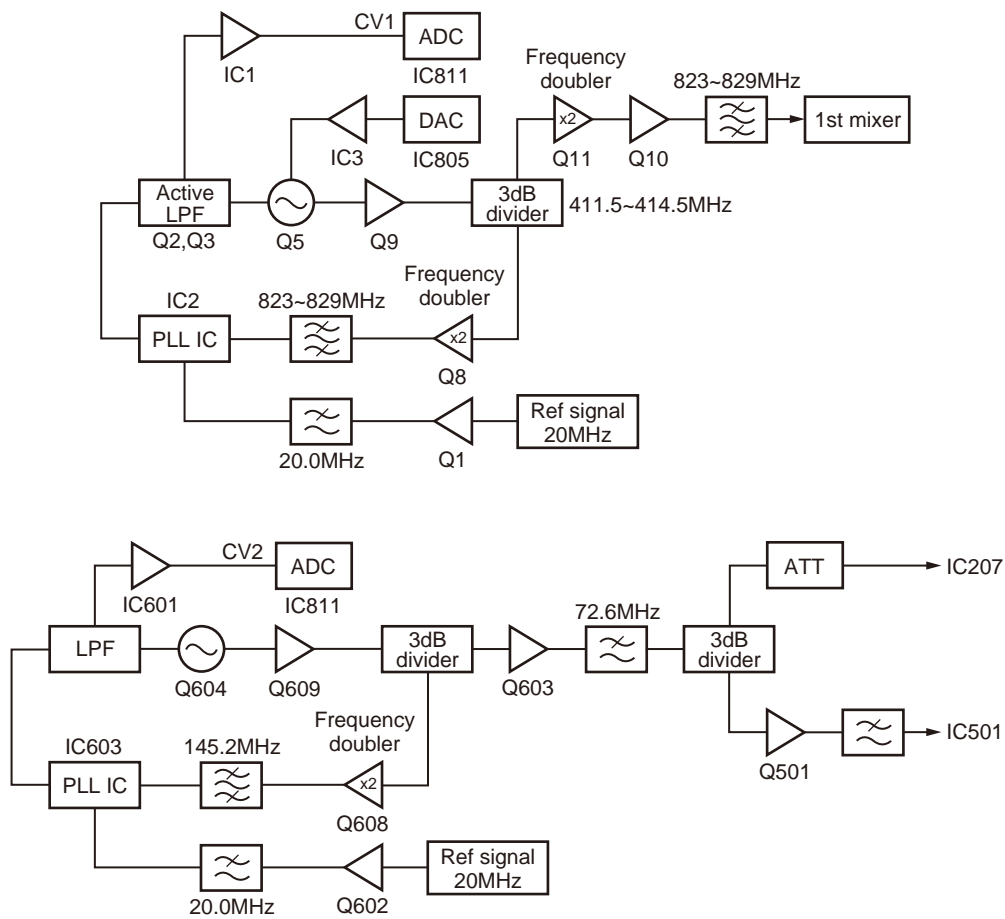
The VCO frequency tuning voltage is adjusted by the IC805 pin 3 DAC signal, the IC3 DC amplifier and the low pass filter. The LPF is configured with R32, C46 and D5. The VCO frequency tuning voltage is monitored by the IC1 DC buffer and IC811 pin 16 ADC.

The 2nd-PLL circuit consists of the VCO (Q604), the Buffer amplifier (Q609), the RF amplifier (Q602), the RF doubler (Q608) and the PLL-IC (IC603).

The 72.6MHz 2nd local oscillator signal generated by Q604 is doubled to 145.20MHz by Q608 and is passed to the LC band-pass filter to attenuate the spurious signals. The 145.2MHz signal is fed to IC603 (pin 5) as the Fin signal. The 20.0MHz reference clock distributed by the Transmitter unit (X56-315) is input as the REFin signal to IC603 (pin 8) via Q602.

Two signals, Fin and REFin, are phase-compared by each frequency divider as the comparison frequency of 200kHz. Therefore the VCO output frequency is half of the PLL's Fin frequency.

The 2nd VCO control voltage (CV2) is input to IC811 (ADC) pin 10 via IC601.



**Fig. 18 Receiver PLL circuits**



## CIRCUIT DESCRIPTION

### 4-7. AVR circuit

The power supply voltage supplied from the Power unit (X45-387 C/4) is distributed from the Receiver unit (X55-312) CN44 to IC807 (9V), IC808 (5V), IC809 (8V).

The output of IC807 is supplied to the 1st and 2nd VCO circuits.

The output of IC808 is supplied to the LNA, down converter, and the 1st local amplifiers.

The output of IC809 is distributed to IC801 (5V), IC802 (5V), IC803 (5V) and IC804 (5V).

The output of IC801 is supplied to the PLL IC's charge-pump, buffer amplifiers, IC4 (3.3V), IC605 (3.3V) and IC606 (3.3V). The output of IC606 is supplied to PLL serial data driver IC602 and IC604. The output of IC4 and IC605 are supplied to the PLL ICs logic part.

The output of IC802 is supplied to the DAC, ADC and RSSI buffer OP amp ICs.

The output of IC803 is supplied to 1st IF amplifiers and analog FM system IC.

The output of IC804 is supplied to the digital mode IF system IC.

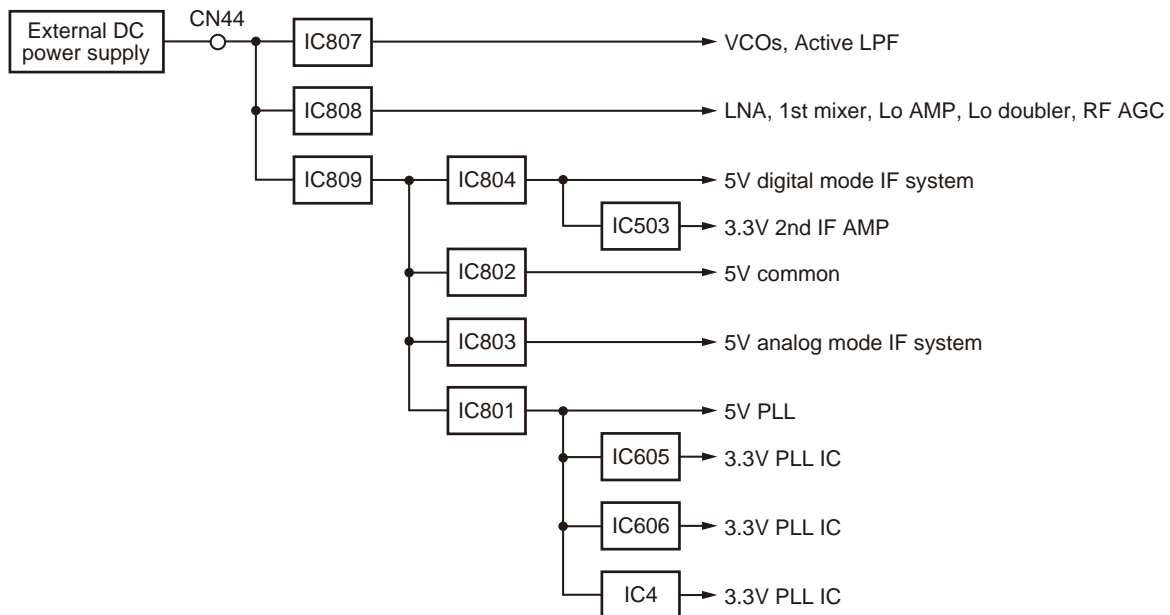


Fig. 19 AVR circuit

### 4-8. Other circuits

Other circuits include the EEPROM (IC813), the temperature sensor IC (IC806), the DAC (IC805) and the ADC (IC811).

IC813 saves various adjustment values of the Receiver unit.

IC806 is built-in for detecting changes in temperature.

The IC805 pin 1 voltage adjusts the RSSI voltage from the analog FM system IC, IC207 pin 12. The IC805 pin 2 voltage adjusts the 1st VCO's control voltage. The IC805 pin 3 voltage adjusts the RF AGC operation point.

IC811 monitors the 1st-VCO control voltage (pin 16), the LNA current detection value (pin 15), the temperature detected by the temperature sensor IC (IC806 pin 14), the RSSI voltage detected by the analog IF system IC (IC207 pin 12), the squelch voltage detected by the IF system IC (IC207 pin 9) and the control voltage of the 2nd-VCO (pin 10). IC811 sends each input port state(s) in serial data ports pin 1, 2, 3 and 18 from CN42 to the Control unit (X53-413). The signal is processed by the MPU.

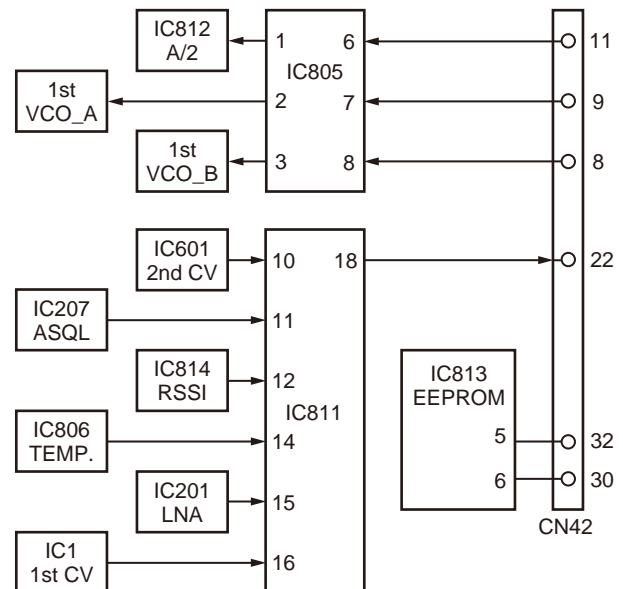


Fig. 20 Other circuits

## CIRCUIT DESCRIPTION

### 5. Baseband Signal Processing Part

The baseband circuit is located on the Control unit (X53-413).

This circuit enables the selection of the Analog Signal Processing mode and the Digital Signal Processing mode, and adjusts the level of the baseband signals in each mode.

This circuit consists of IC2, IC3, IC5, IC8, IC9, IC12, IC14, IC19, IC20 and IC21.

The type of input modulation signals are local microphone terminal, low-speed data (LSD), high-speed data (HSD), external audio input (TA), and external data input (TD), and also the type of output demodulation signals are receiving audio output (RA), and receiving data output (RD).

The multiplexer (IC2, IC3, IC14) selects the signal path, the electronic volume (IC8) adjusts the signal level, and the operational amplifiers (IC5, IC9, IC12, IC19, IC20, and IC21) amplify and sum various signals.

#### 5-1. Demodulation circuit

##### (Analog/Digital signal processing)

In case of the Analog Signal Processing mode, the detected audio signal obtained from the IF SYSTEM IC (X53-312 IC207) is amplified by IC5 (A/2), input into the AINR terminal of CODEC IC (IC4), and then processed as an audio signal by the DSP (IC37).

The processed audio signal from the AOUTR terminal of IC4 is amplified to a sufficient level by IC12 (A/2), and is then passed through the anti-aliasing filter at IC12 (B/2).

In case of the Digital Signal Processing mode, the detected audio/data signal obtained from the IF SYSTEM IC (X53-312 IC501) is input into the ADC (X53-414 IC312).

Receiving signal processing is performed by RX\_DSP (X53-414 IC323), and voice decode processing is performed by TX\_VOCODER DSP (X53-414 IC324).

The processed audio signal from the AOUTL terminal of the CODEC IC (X53-414 IC309) is amplified to a sufficient level by IC20 (D/4), and is then passed through the anti-aliasing filter at IC20 (C/4).

The audio signal path is selected by the multiplexer (IC14) depending on the Analog mode (IC14 is setting Y=Y0) or the Digital mode (IC14 is setting Y=Y1).

The audio signal is then routed through an electronic volume (IC8) V3/V4 to the multiplexer IC (IC25), and is amplified to a sufficient level to drive the loudspeaker using an audio power amplifier (IC29).

#### 5-2. Audio amplifier circuit

The audio amplifier circuit is located in the control section of the Control unit (X53-413).

The 3W output audio power is available from the pin 15 test connector "SPO, SPG" on the rear panel to the external speaker, in the case of a 13.8V power supply voltage and 4 ohm load.

#### 5-3. Microphone circuit

The signal from the microphone is passed through the AGC circuit located in the DISPLAY circuit (X56-315 B/3) so that it may not saturate.

This circuit consists of IC926, D933, D934 Q931, and Q932.

The AGC controls the amplifier gains using the detected audio signal depending on the positive and negative peaks of the signal amplitude.

The audio signal goes to the control section of the Control unit (X53-413) from the DISPLAY circuit (X56-315 B/3).

#### 5-4. Modulation circuit

##### (Analog/Digital signal processing)

The transmitting audio signal goes to the input terminal of the multiplexer IC (IC3) for microphone muting.

In case of the Analog Signal Processing mode (multiplexer IC3 is setting X=X0), the audio signal is amplified by IC9 (A/4), input to the AINL terminal of the CODEC IC (IC4), and audio processed by the DSP (IC37).

The processed audio signal from the AOUTL terminal of IC4 is amplified to a sufficient level by IC9 (B/4), and is then passed through an anti-aliasing filter at IC9 (C/4), and amplified by the summing (TD) amplifier IC9 (D/4).

On the other hand, in the case of the Digital Signal Processing mode (multiplexer IC3 is setting X=X1), the audio signal is amplified by IC20 (A/4), input to the AINL terminal of the CODEC IC (X53-414 IC309), and processed by the TX\_VOCODER DSP (X53-414 IC324).

The processed audio signal from the AOUTR terminal of IC309 passes through the anti-aliasing filter at IC19 (B/2).

### 6. Control Circuit

The control circuit consists of two units, X53-413 and X53-414.

Unit X53-413 mainly has the power supply circuit, baseband signal path selection circuit (level adjustment is included), analog mode voice codec circuit, and RF controller circuit.

Unit X53-414 has the mode selection (analog or digital) circuit, digital mode communication processing circuit, LAN interface circuit, and Compact Flash interface circuit.

#### 6-1. X53-413

##### ■ RF control MPU

The IC34 RF control MPU is a 16-bit single chip micro-processor incorporating 256K bytes of ROM and 20K bytes of RAM.

This MPU controls the Flash memory, DSP, Receiver unit, Transmitter unit, the EEPROM of each unit, and the display circuit, and has communication I/F with external devices.

##### ■ DSP

The DSP circuit is in charge of the filtering of transmitting and receiving signals, and the encoding and decoding of sub-audible signals (encode: QT, DQT, DTMF, decode: QT, DQT, DTMF).

This circuit consists of IC37, IC30, IC31, IC4, IC5, IC9, and IC12.

The receiving signal, DET is converted from analog to digital by IC4 with a sampling frequency of 16.128kHz.

The digitized audio signal is sent to the DSP (IC37) to process the sub-audible signal and audio signal. The processed digital audio signal is applied to CODEC IC4, and is converted from digital to analog.

## CIRCUIT DESCRIPTION

The analog signal is output from pin 16 (AOUTR) of IC4.

The audio signal is then amplified by IC12 (A/2), passed through the low-pass filter at IC12 (B/2), selected by the multiplexer IC14 (Y0=Y) and is then input into an electronic volume IC8.

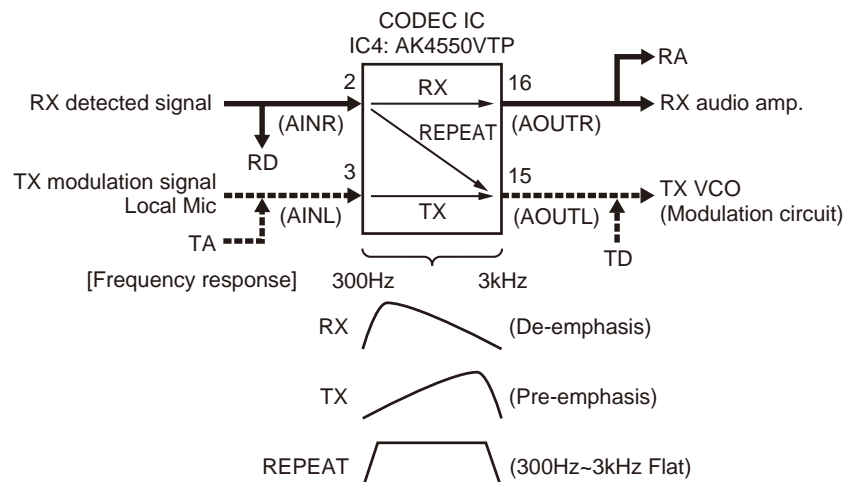
On the other hand, the transmitting audio signal output from IC3 is amplified by IC9 (A/4), applied to pin 3 (AINL) of CODEC IC4, and is then converted from analog to digital at a sampling frequency of 16.128kHz.

The digitized transmitting audio signal is AGC-processed, pre-emphasized and filtered by DSP IC37, except for the

300Hz to 3kHz range, and is then fed back to CODEC IC4, converted from digital to analog, and is then output from pin 15 (AOUTL).

The transmitting signal from the AOUTL is amplified by IC9 (B/4), passed through the IC9 (C/4) low-pass filter, and is sent to the IC9 (D/4) summing amplifier.

IC31 is a counter IC. The clock required for the CODEC and DSP is generated by dividing the 16.515072MHz clock signal supplied by the DSP IC37.



**Fig. 21 An audio signal course and the frequency characteristic**

### ■ Shift register circuit

The MPU (IC34) transmits serial data to shift registers IC923 from IC923 to IC960 and from IC960 to IC963 in the display circuit (X56-315 B/3, C/3).

Additionally, it transmits serial data to the Control unit (X53-413) IC1 and IC22 and the Transmitter unit (X56-315) IC703.

This serial data can control various functions of each unit.

### ■ Power supply circuit

This circuit consists of X53-413 IC6, IC10, IC11, IC15, IC16 and IC18, and X53-414 IC305, IC306, IC307 and IC329.

IC10 is a DC/DC converter that converts 13.8V to 5.0V.

IC11 is a DC/DC converter that converts 13.8V to 8.0V.

IC16 is connected to IC10 via the 5.0V AVR. IC6, IC15, IC305 and IC329 are connected to IC329 via the 3.3V AVR. IC18 is connected to IC329 via the 1.8V AVR. IC306 is connected to IC329 via the 1.5V AVR. IC307 is connected to IC15 via the 1.5V AVR.

### ■ Flash memory (RF control MPU)

IC17 is an 8M-bit Flash memory and contains MPU firmware for controlling the RF.

### ■ EEPROMs circuit

The EEPROM is a built in Receiver unit (X55-312), Transmitter unit (X56-315) and Final unit (X45-387).

The RF control MPU controls these EEPROMs via the IIC bus.

### 6-2. X53-414

#### ■ Main MPU

The Main MPU (IC703) is a 32-bit RISC microprocessor incorporating a 16K bytes cache memory.

The main MPU controls the Flash memory, SDRAM, SRAM, LAN IC, RS-232C driver, receiver and real-time clock (RTC).

#### ■ LAN interface

The NXR-901 is equipped with a 100Base-TX or 10Base-T LAN interface. This circuit consists of IC719, IC720 and J700. IC719 is a control IC. IC720 saves the MAC address in the EEPROM. J700 is connected to the LAN cable.

#### ■ Real time clock (RTC) circuit

This circuit consists of IC710 and X701. IC710 is a Real Time Clock. X701 is a crystal oscillator.

IC710 is connected to IC703 (Main\_MPU) via the IIC bus.

The oscillating frequency of X701 is 32.768kHz.

It is backed up by a secondary lithium battery (BA300). The IC710 clock data is used after resetting the backup.

#### ■ RS-232C circuit

The NXR-901 is equipped with a RS-232C interface.

It connects to a PC with a 9-pin female RS-232C cross cable.

It uses the FPU and writes the firmware.

IC705 is a RS-232C driver receiver IC, and interfaces at the RS-232C level.

## CIRCUIT DESCRIPTION

### Modem control MPU

The modem control MPU (IC325) is 16-bit single chip microprocessor incorporating 256K bytes of ROM and 20K bytes of RAM.

This MPU controls the Flash memory, two DSPs, the OCXO unit in the Transmitter unit (X42-328) and the PLL circuit.

It also monitors the external power supply voltage. If the voltage is abnormal, it stops the system.

### RX DSP (IC323)

In digital mode, the IF signal input from the ADC (IC312) to the RX DSP is limited to a very narrow band. So, it passes through the IF band limitation band.

This signal is demodulated by the wave detection processing part. The demodulated wave is made to pass through the baseband limitation filter (root nyquist cosine filter and 1/sinc filter).

This signal is symbol-detected and bit-judged, and is then converted to digital data. Its frame timing is detected and decoded for CAI data error correction.

Sound data is vocoder decode processed by the IC324 TX\_Vocoder\_DSP. It is then converted into the PCM signal.

It is analog-output as an audio signal by the DAC part of the Audio codec IC (IC309 AOUTL terminal).

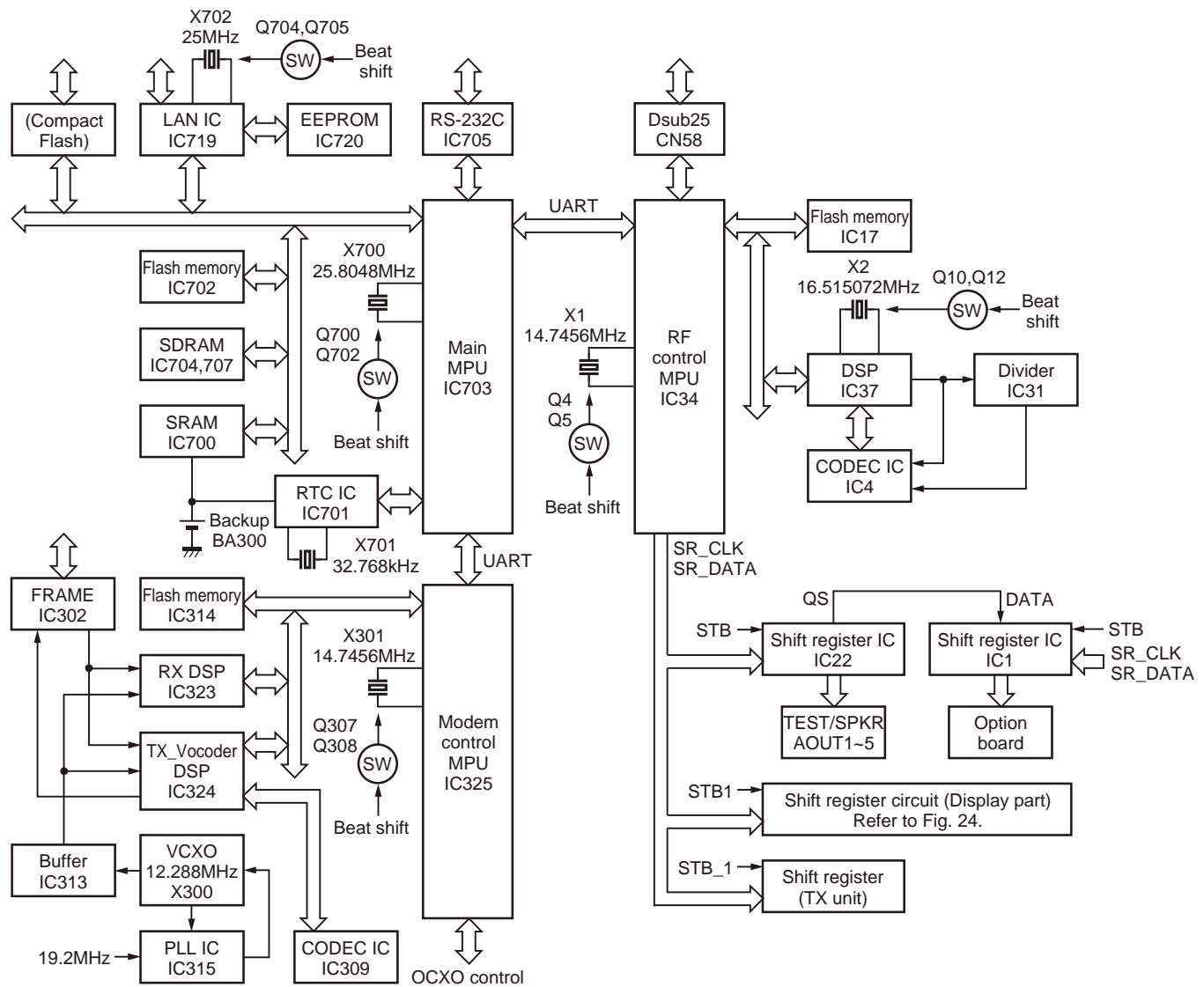


Fig. 22 Control circuit

## CIRCUIT DESCRIPTION

### ■ TX\_Vocoder DSP

In digital mode, vocoder processing is performed by the IC324 TX\_Vocoder\_DSP.

The audio signal input from the Audio codec IC ADC part (IC309 AINL) terminal is vocoder encode processed and converted to audio data.

CAI data is encoded for correcting errors and converted to transmitter data.

This data is framed, converted to symbol values and made to pass the baseband limit filter (root nyquist cosine filter and sinc filter).

The passed signal turns into a MOD signal. It is output as an analog signal by the Audio codec IC DAC part (IC309 AOUTR terminal).

### ■ Power supply voltage monitoring circuit

This circuit always monitors the external power supply voltage assuming that the abnormal power supply voltage is applied.

This circuit consists of X53-413 R67, R68, R71, and R79 and IC7, and X53-414 IC308. If the voltage is reduced, these circuits interrupt the Modem control MPU (IC325) and the NXR-901 rapidly shifts to the power down state.

The IC325 A/D converter (pin 124) monitors the voltage. It detects voltage rises and returns it to the normal voltage range.

### ■ Reset circuit

Reset system diagrams of each device of the NXR-901 are attached. With regards to the priority of the reset signal of each device, IC303 that prepares the reset signal of IC325 has the highest priority.

The IC325 software can activate devices including IC323, IC324, IC703, IC700, IC702, IC719, IC34, and IC17. The IC703 software can activate the reset of IC325.

### ■ Clock shift circuit

The NXR-901 Control unit has a crystal oscillation circuit as shown below.

X53-4132-71:

14.7456MHz (IC34 and X1)

16.515072MHz (IC37 and X2)

X53-4140-10:

14.7456MHz (IC325 and X301)

25.8048MHz (IC37 and X2)

25MHz (IC719 and X702)

Each oscillation circuit turns on the NPN transistor "2SC4738 F" and staggers the oscillating frequency by approximately -70ppm.

This may prevent interference against transmitter and receiver frequencies.

Each transistor is turned on and off by the FPU.

### ■ Flash memory (for Main MPU)

IC702 is a 128M-bit Flash memory and contains the firmware of the Main MPU.

### ■ Flash memory (Modem control MPU)

IC314 is an 8M-bit Flash memory and contains the firmware of the Modem control MPU, RX DSP, and TX\_Vocoder\_DSP.

### ■ SDRAM

IC704 and IC707 are program execution memory used by the Main MPU, and use two 128M-bit.

### ■ SRAM

IC700 is a memory backed up by a lithium battery (BA300).

The capacity is 16M-bit. It contains data required for the system backup.

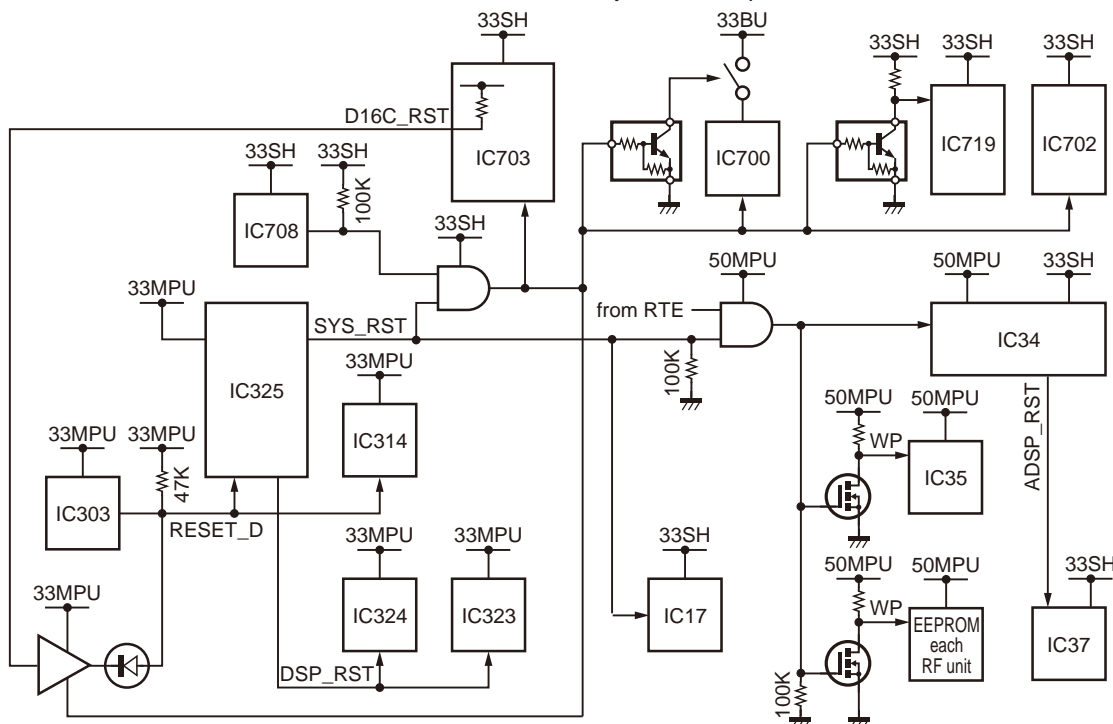


Fig. 23 Reset circuit

## CIRCUIT DESCRIPTION

### ■ Frame transmitter and receiver circuit

J702 and J703 are connectors for synchronizing with other repeaters. The differential rectangular wave 12.5Hz or 25Hz is input to and output from this connector for synchronizing multiple repeaters.

In the repeater system, any given repeater outputs a synchronizing signal and that synchronous signal is input to the other remaining repeaters.

With regards to the output of the synchronous signal, the frame signal generated by TX\_Vocoder\_DSP (IC324) is differentially output by IC302.

With regards to the input of the synchronous signal, IC302 receives a differential signal, and is input to the interruption of the RX DSP (IC323) and TX\_Vocoder\_DSP (IC324).

### ■ 12.288MHz clock PLL circuit

The PLL circuit is installed in the Control unit (X53-414) for operating the RX DSP and TX\_Vocoder DSP.

The PLL circuit consists of X300 (12.288MHz VCXO), IC315 (PLL IC), Q300, Q304, Q305, and IC313.

The purpose of this PLL circuit is to synchronize with the 19.2MHz reference signal controlled by the 10MHz OCXO (deviation  $\pm 0.4\text{ppm}$ ) in the Transmitter unit (X56-315).

So, two DSPs can be executed by a  $\pm 0.4\text{ppm}$  clock deviation.

Q300 is a 19.2MHz buffer amp signal input from the Transmitter unit (X56-315).

The signal from the Transmitter unit is supplied to IC315 pin 8 (reference signal input).

12.288MHz from X300 is amplified by Q304 and distrib-

uted to two routes.

One is amplified by Q305 and input to IC315 pin 6 (RF signal input). The other is amplified by IC313 and becomes a clock for the RX DSP and TX\_Vocoder DSP.

IC315 compares the reference signal and RF signal and detects their phase errors.

This phase error signal is output from the pin 2 charge pump (CP), passed through the LPF and is supplied to X300 voltage control pin 1.

## 7. Display Circuit

### 7-1. Display circuit

The display circuit (X56-315 B/3,C/3) consists of various types of LEDs, 17-segment type D960, D961 (red), D921 (red: transmission), two-color type D920 (green: busy), D922 (green: power on, red blinking: abnormal voltage), D923 (red: CCH), two-color type D924 (red: OXCO error, green: OXCO normality, orange: external reference signal), 8-bit status LEDs D925 to D932, and LEDs with built in switches S920 to S925.

IC920 to IC925 and IC960 to IC963 are in charge of displaying present channels and states on the front panel.

IC923 to IC925 and IC960 to IC963 are shift registers that convert the MPU serial data to parallel data and turn on LEDs.

### 7-2. Key switches circuit

The logic signals from the front panel key and channel switches (channel selector) are entered directly into the RF MPU (IC34).

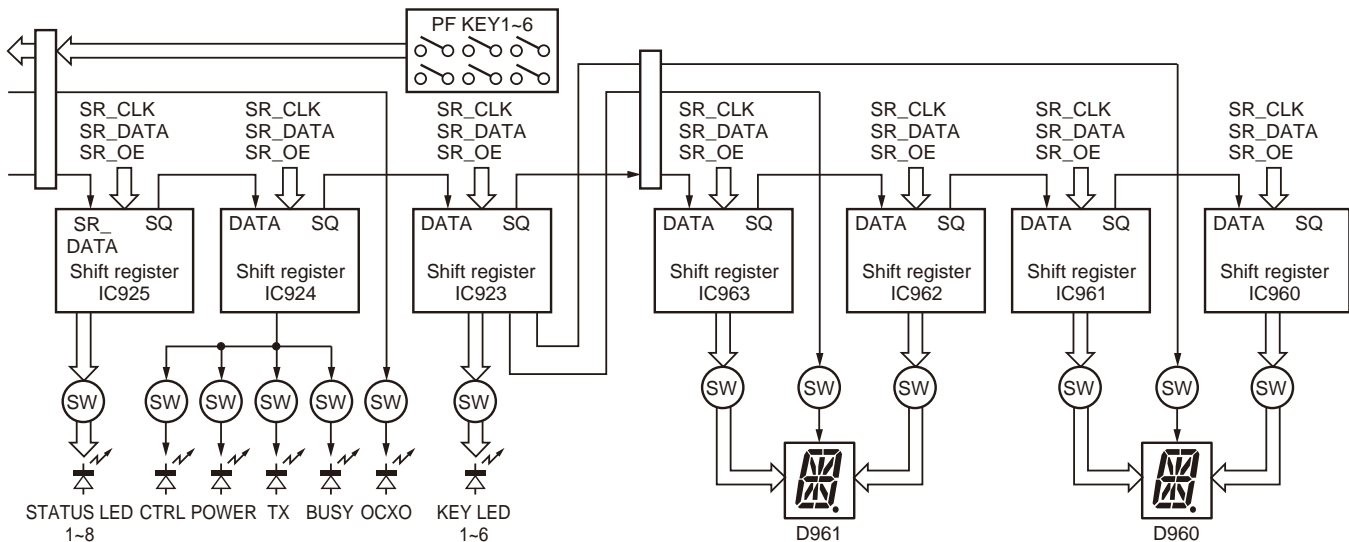


Fig. 24 Shift register circuit (Display part)

## COMPONENTS DESCRIPTION

### Final unit (X45-3870-11)

Ref. No.	Part Name	Description
IC1	IC	Current monitor
IC2	IC	OP AMP
IC4	IC	OP AMP
IC6	IC	OP AMP
IC7	IC	Temperature sensor
IC9	IC	EEPROM
IC11,12	IC	Voltage regulator
IC15	IC	OP AMP
IC17,18	IC	Voltage regulator
IC20	IC	Variable attenuator
IC21	IC	RF power AMP
Q2,3	FET	DC switch
Q6	FET	DC switch
Q8	FET	DC switch
Q14,15	FET	DC switch
Q22	FET	DC switch
Q501	Transistor	Current drive
D4	Surge absorber	Surge protection
D5,6	Diode	Surge protection
D20~22	Diode	RF detection
D23	Zener diode	Overvoltage protection
D902	Varistor	Surge protection

### Control unit (X53-4132-71)

Ref. No.	Part Name	Description
IC1	IC	Shift register
IC2,3	IC	Multiplexer
IC4	IC	CODEC
IC5	IC	OP AMP
IC6	IC	Voltage regulator
IC7	IC	OP AMP
IC8	IC	D/A converter
IC9	IC	OP AMP
IC10,11	IC	DC/DC converter control
IC12	IC	OP AMP
IC14	IC	Multiplexer
IC15,16	IC	Voltage regulator
IC17	IC	Flash memory
IC18	IC	Voltage regulator
IC19~21	IC	OP AMP
IC22	IC	Shift register
IC23	IC	NAND gate
IC25	IC	Analog switch
IC26	IC	OP AMP

Ref. No.	Part Name	Description
IC27,28	IC	Buffer
IC29	IC	AF PA
IC30	IC	NAND gate
IC31	IC	Divider
IC32,33	IC	Buffer
IC34	IC	MPU
IC35	IC	EEPROM
IC36	IC	Buffer
IC37	IC	DSP
IC38	IC	AND gate
IC39,40	IC	Buffer
IC41,50	IC	AND gate
Q1	Transistor	Inverter
Q2,3	FET	DC/DC converter
Q4,5	Transistor	Clock shift switch
Q6,7	Transistor	AF mute switch
Q8	Transistor	Power switch
Q9	FET	Power switch
Q10	Transistor	Clock shift switch
Q11	Transistor	Buffer AMP
Q12	Transistor	Clock shift switch
Q13	Transistor	Buffer AMP
Q14~17	Transistor	DC/DC converter
Q18	FET	Inverter
Q19	FET	Pull up switch
Q20~23	Transistor	Power switch
Q25	Transistor	OP CONT switch
Q26	Transistor	AF mute switch
Q27~29	Transistor	Buffer AMP
D1,2	Diode	DC/DC converter
D3~5	Diode	Surge protector
D6	Zener diode	Surge protector
D7~12	Diode	Surge protector
D13	Zener diode	Surge protector
D14~18,20,23	Diode	Surge protector
D24,25	Varistor	Current protector
D26	Diode	Diode switch
D28	Diode	Surge protector
D29	Zener diode	Surge protector
D30	Diode	Surge protector
D31	Zener diode	Surge protector
D32	Diode	Surge protector
D33	Zener diode	Surge protector
D36,37	Diode	Surge protector
D38,39	Diode	Diode switch

## COMPONENTS DESCRIPTION

### Control unit (X53-4140-10)

Ref. No.	Part Name	Description
IC300,301	IC	Buffer
IC302	IC	RS-485 driver/receiver
IC303	IC	Voltage detector
IC304	IC	Buffer
IC305~307	IC	Voltage regulator
IC308	IC	Voltage detector
IC309	IC	CODEC
IC312	IC	A/D converter
IC313	IC	Inverter
IC314	IC	Flash memory
IC315	IC	12.288MHz PLL
IC318~321	IC	Buffer
IC323,324	IC	DSP
IC325	IC	MPU
IC327	IC	AND gate
IC329	IC	Voltage regulator
IC330	IC	Buffer
IC700	IC	SRAM
IC701	IC	RTC IC
IC702	IC	Flash memory
IC703	IC	MPU
IC704	IC	SDRAM
IC705	IC	RS-232C driver/receiver
IC707	IC	SDRAM
IC708	IC	Voltage detector
IC709	IC	Buffer
IC710,711	IC	NAND gate
IC712,713	IC	OR gate
IC714~718	IC	Octal buffer
IC719	IC	LAN IC
IC720	IC	EEPROM
IC721	IC	AND gate
IC722	IC	OR gate
IC723	IC	NAND gate
IC724,725	IC	Buffer
IC726	IC	AND gate
IC727,728	IC	Buffer
Q300	Transistor	Reference AMP
Q301	Transistor	DC switch
Q302	Transistor	Power switch
Q303	Transistor	Control switch
Q304,305	Transistor	Reference AMP
Q307,308	Transistor	Clock shift switch
Q309	FET	Switch

Ref. No.	Part Name	Description
Q700,702 Q704,705	Transistor	Clock shift switch
Q706	Transistor	Control switch
Q707	Transistor	MIC switch
D300	Diode	DC Switch
D701	Diode	Switch
D702	Diode	Voltage protector

### RX unit (X55-3120-11)

Ref. No.	Part Name	Description
IC1	IC	OP AMP
IC2	IC	Fractional-N PLL IC
IC3	IC	OP AMP
IC4	IC	Voltage regulator
IC201	IC	OP AMP
IC202	IC	Variable attenuator
IC204	IC	OP AMP
IC205	IC	Down converter
IC207	IC	FM IF system IC
IC208	IC	OP AMP (IF AMP)
IC210	IC	OP AMP
IC501	IC	IF system IC
IC502	IC	OP AMP (IF AMP)
IC503	IC	Voltage regulator
IC601	IC	OP AMP
IC602	IC	3-state buffer
IC603	IC	Integer-N PLL IC
IC604	IC	3-state buffer
IC605,606	IC	Voltage regulator
IC801~804	IC	Voltage regulator
IC805	IC	DAC
IC806	IC	Temperature sensor
IC807~809	IC	Voltage regulator
IC810	IC	Voltage reference
IC811	IC	ADC
IC812	IC	OP AMP
IC813	IC	EEPROM
IC814	IC	OP AMP
Q1	Transistor	Reference signal AMP
Q2,3	Transistor	PLL active filter AMP
Q4	Transistor	Ripple filter AMP
Q5	FET	Oscillator
Q6	Transistor	Ripple filter AMP
Q7	FET	DC switch
Q8~11	Transistor	1st Local AMP



## COMPONENTS DESCRIPTION

Ref. No.	Part Name	Description
Q201	Transistor	LNA
Q202,204	Transistor	IF AMP
Q211	Transistor	IF AMP
Q214	Transistor	Noise AMP
Q216	FET	DC switch
Q501	Transistor	2nd Local AMP
Q601,602	Transistor	Reference signal AMP
Q603	Transistor	2nd Local AMP
Q604	FET	Oscillator
Q605	Transistor	Ripple filter AMP
Q606	Transistor	DC switch
Q607	FET	DC switch
Q608,609	Transistor	2nd Local AMP
Q610,611	FET	DC switch
Q801	FET	DC switch
D1~3	Variable capacitance diode	Frequency control
D5	DIODE	Speed-up diode
D6	LED	PLL indicator
D203	Diode	Detector
D214,215	Diode	Detector
D601	Variable capacitance diode	Frequency control

### TX unit (X56-3150-11)

Ref. No.	Part Name	Description
IC1,2	IC	3-state buffer
IC3	IC	OP AMP
IC5	IC	Fractional-N PLL IC
IC6	IC	OP AMP
IC7	IC	Voltage regulator
IC8	IC	OP AMP
IC201	IC	DAC
IC202	IC	EEPROM
IC203	IC	OP AMP
IC204	IC	Integer-N PLL IC
IC205	IC	Buffer AMP
IC206	IC	OP AMP
IC207	IC	Digital potentiometer
IC208	IC	OP AMP
IC301	IC	Buffer AMP
IC302	IC	OP AMP
IC303	IC	Integer-N PLL IC
IC401	IC	5.99MHz DDS IC
IC402	IC	Buffer AMP
IC403	IC	Voltage regulator

Ref. No.	Part Name	Description
IC501,502	IC	OP AMP
IC503	IC	Frequency divider
IC504	IC	Buffer AMP
IC505,506	IC	Comparator
IC701	IC	Shift register
IC702	IC	Voltage reference
IC703	IC	ADC
IC704	IC	Temperature sensor
IC705	IC	DAC
IC707~710	IC	Voltage regulator
IC711	IC	3-state buffer
IC810	IC	Voltage regulator
IC920~922	IC	3-state buffer
IC923~925	IC	Shift register
IC926	IC	OP AMP
IC960~963	IC	Shift register
Q1,2	FET	DC switch
Q3	Transistor	Reference signal AMP
Q4	FET	Oscillator
Q5,6	Transistor	RF AMP
Q7	Transistor	Ripple filter AMP
Q8~10	Transistor	RF AMP
Q11	FET	RF AMP
Q13	FET	DC switch
Q14~16	FET	DC switch
Q201	FET	DC switch
Q202	Transistor	DC switch
Q203,204	FET	DC switch
Q205,206	Transistor	Reference signal AMP
Q301~304	FET	DC switch
Q305	Transistor	DC switch
Q306~311	Transistor	Reference signal AMP
Q401,402	Transistor	Reference signal AMP
Q403	FET	DC switch
Q404	FET	DC switch
Q405~407	FET	DC switch
Q501	FET	DC switch
Q502	FET	DC switch
Q503,504	FET	Reference signal AMP
Q505,506	FET	Reference signal AMP
Q507	FET	DC switch
Q508	FET	DC switch
Q509,510	FET	DC switch
Q511	Transistor	Reference signal AMP
Q512	FET	DC switch

# NXR-901

## COMPONENTS DESCRIPTION

Ref. No.	Part Name	Description
Q513,514	Transistor	Reference signal AMP
Q515-518	FET	DC switch
Q920-930	Transistor	DC switch
Q931	Transistor	Audio level limiter
Q932	Transistor	Audio level limiter
Q960-976	Transistor	DC switch
D1	Diode	Speed-up diode
D2-5	Variable capacitance diode	Frequency control
D6	Variable capacitance diode	Modulation control
D7	Diode	Detector
D8	LED	Output indicator
D201	LED	PLL indicator
D401,402	Diode	Reference signal switch
D501,502	Zener diode	Surge protection
D503	Diode	Reference signal switch

Ref. No.	Part Name	Description
D504-506	Diode	Detector
D507	Diode	Reference signal switch
D509,510	Diode	DC switch
D511,512	Zener diode	Surge protection
D515	Diode	Detector
D516-519	Diode	Reference signal switch
D801	Surge absorber	Surge protection
D920	LED	BUSY
D921	LED	TX
D922	LED	POWER
D923	LED	CTRL
D924	LED	OCXO
D925-932	LED	Status 8~Status 1
D933,934	Diode	Audio level limiter
D935,936	Diode	Surge protection
D960,961	LED	17-segment LED

## TERMINAL FUNCTION

### Final unit (X45-3870-11) (A/4)

Pin No.	Name	I/O	Function
<b>CN1 (To X56-315 A/3 CN802)</b>			
1	TX SIGNAL	I	TX driver input signal (Coaxial)
<b>CN2 (To X45-387 C/4 CN29)</b>			
1	SB	I	Power supply input
<b>CN8</b>			
1	-	O	5V supply output for FAN
2	-	-	Ground
<b>CN20 (To X56-315 A/3 CN806)</b>			
1	GND	-	Ground
2	GND	-	Ground
3	NC	-	No connection
4	GND	-	Ground
5	PA_CURR	O	PA device current monitor
6	GND	-	Ground
7	FAN_CURR	O	FAN current monitor
8	GND	-	Ground
9	FWD_PWR	O	TX forward power detection
10	GND	-	Ground
11	RFL_PWR	O	TX reflect power detection
12	GND	-	Ground
13	PA_BIAS	I	PA Vbias terminal control
14	GND	-	Ground
15	PWR_CONT	I	TX power control
16	GND	-	Ground
17	FAN_CONT	I	FAN1 control
18	GND	-	Ground
19	FAN_CONT2	I	FAN2 control
20	GND	-	Ground
21	TEMP_RST	-	No connection
22	GND	-	Ground
23	ANT_SW	I	PA device's DC switch control
24	GND	-	Ground
25	TEMP_PRT	O	High temperature detect
26	D_GND	-	Digital ground
27	CONT_5.0V	I	Switched 5V supply
28	D_GND	-	Digital ground
29	SCK	I	Clock input for EEPROM
30	D_GND	-	Digital ground
31	SDA	I/O	Data input/output for EEPROM
32	D_GND	-	Digital ground
33	GND	-	Ground
34	WP	I	Write protection input for EEPROM
35	GND	-	Ground

Pin No.	Name	I/O	Function
36	GND	-	Ground
<b>CN21 (To X45-387 C/4 CN30)</b>			
1	E	-	Ground

### Final unit (X45-3870-11) (C/4)

Pin No.	Name	I/O	Function
<b>CN11 (To X53-413 CN4)</b>			
1	E	-	Ground
2	-	-	No connect
3	SB	O	Power supply output
4	SB	O	Power supply output
<b>CN12 (To X56-315 A/3 CN801)</b>			
1	E	-	Ground
2	SB	O	Power supply output
3	SB	O	Power supply output
<b>CN15 (To X55-312 CN44)</b>			
1	E	-	Ground
2	SB	O	Power supply output
3	SB	O	Power supply output

### Final unit (X45-3870-11) (D/4)

Pin No.	Name	I/O	Function
<b>CN905 (To X56-315 B/3 CN923)</b>			
1	VOLUME_IN	O	Volume control output for AF signal
2	33MPU	I	3.3V constant voltage
3	GND	-	Ground
4	33AUD	I	3.3V constant voltage
5	SB	I	Power supply input
6	SCM_EN	-	No connection
7	GND	-	Ground
8	PTT_TXD_SCM	O	PTT output
9	HOOK_RXD_SCM	O	Hook detection output
10	MIG	-	MIC ground
11	MIC	O	MIC signal output

### Control unit (X53-4132-71)

Pin No.	Name	I/O	Function
<b>CN1 (To X53-414 CN401)</b>			
1	PTT_TXD_SCM	-	No connection
2	GND	-	Ground
3	LO_VOL_DET	O	Low voltage detection signal
4	NC	-	No connection
5	TD_SW	I	TD terminal input signal mute switch

## TERMINAL FUNCTION

Pin No.	Name	I/O	Function
6	MICAD_SW	I	Microphone input signal switch, changed to analog modulation or NXDN modulation
7	MIC_SW	I	Microphone mute switch
8	RXAD_SW	I	Speaker signal switch, changed to analog reception signal or NXDN reception signal
9	PATH_SW	I	Analog or NXDN modulation route selector switch
10	BEEP_SW	I	Beep sound mute switch
11	TA_SW	I	TA input mute switch
12	TAAD_SW	I	TA input signal, changed to analog modulation or NXDN modulation
13	EVOL_LD	I	Load for electronic volume
14	GND	-	Ground
15	EVOL_CLK	I	Clock for electronic volume
16	PTT_AM16C	O	PTT signal
17	EVOL_DATA	I	Data for electronic volume
18	INSP_SW	-	No connection
19	AF_MUTE	I	Speaker output mute switch
20	SCM_EN	-	No connection
21	AMP_SW	I	Speaker amplifier power ON/OFF switch
22	HOOK_RXD_SCM	-	No connection
23	NC	-	No connection
24	INRA_SW	-	No connection
25	MIC_D_IN	O	NXDN transmission signal output
26	BEEP	I	Beep sound signal input
27	RX_AUDIO_D	I	NXDN reception signal input
28	GND	-	Ground
29	MOD_D_OUT	I	NXDN modulation signal input
30	PWR_ST_R	I	Switch for red LED (Power source)
31	VOLUME_IN	O	Volume control input for AF signal
32	OCXO_ST_G	I	Switch for green LED (OCXO)
33	OCXO_ST_R	I	Switch for red LED (OCXO)
34	RX_POWER_SAVE	I	RX unit power saving signal
35	GND	-	Ground
36	GND	-	Ground
<b>CN2 (To X53-414 CN402)</b>			
1	SYS_RST	I	System reset signal from modem control MPU
2	GND	-	Ground
3	BER_CLK	I	Serial clock for measurement bit error rate
4	BER_DAT	I	Serial data for measurement bit error rate
5	A16C_CK_SFT	I	"Frequency shift" signal to RF control MPU
6	TRUNKING	O	"Trunking mode" signal to Main MPU
7	ADSP_CK_SFT	I	"Frequency shift" signal to Analog mode DSP

Pin No.	Name	I/O	Function
8	GND	-	Ground
9	RADIO_ERR	O	"Detect accident of RF block" signal to Main MPU
10	QT_DQT	O	"Detect QT or DQT" signal to Main MPU
11	TX_STATE	O	"During the transmission" signal to Main MPU
12	RF_PTT	O	"Press-to-talk-switch" signal to Main MPU
13	GND	-	Ground
14	STX0_ARX0	I	UART signal from Main CPU to RF control MPU
15	SRX0_ATX0	O	UART signal from RF control MPU to Main MPU
16	GND	-	Ground
17	SC_SH	O	"Squelch control" signal to Main MPU
18	E_PTT_SH	O	"External press-to-talk-switch" signal to Main MPU
19	NC	-	No connection
20	50MPU_CONT	I	5V regulator control
21	33SH	I	3.3V constant voltage
22	33MPU_A	O	3.3V constant voltage
23	50MPU_A	O	5V constant voltage
24	33MPU_A_GND	-	Ground
25	33MPU	O	3.3V constant voltage
26	33MPU	O	3.3V constant voltage
27	33MPU_A_GND	-	Ground
28	DC50	O	5V constant voltage
29	DC50	O	5V constant voltage
30	DC50	O	5V constant voltage
31	DC50	O	5V constant voltage
32	50MPU_A_GND	-	Ground
33	50MPU	O	5V constant voltage
34	50MPU_A_GND	-	Ground
35	GND	-	Ground
36	HI_VOL_DET	O	Voltage monitor
<b>CN3 (To X56-315 B/3 CN921)</b>			
1	DC8	O	8V constant voltage
2	GND	-	Ground
3	DC8	O	8V constant voltage
4	DC8	O	8V constant voltage
5	50MPU	O	5V constant voltage
6	50MPU	O	5V constant voltage
7	GND	-	Ground
8	DC8	O	8V constant voltage
9	K5	O	Key Scan
10	K4	O	Key Scan
11	K3	I	Key Scan

## TERMINAL FUNCTION

Pin No.	Name	I/O	Function
12	K2	I	Key Scan
13	K1	I	Key Scan
14	GND	-	Ground
15	STB1	O	Shift register strobe
16	GND	-	Ground
17	SR_DATA	O	Shift register data
18	GND	-	Ground
19	SR_CLK	O	Shift register clock
20	GND	-	Ground
21	SR_OE	O	Shift register output enable
22	GND	-	Ground
23	PTT_TXD_SCM	I	MIC PTT
24	SCM_EN	-	No connection
25	HOOK_RXD_SCM	I	HOOK detect input
26	GND	-	Ground
27	OCXO_ST_G	O	OCXO Green LED switch
28	PWR_ST_R	O	POWER Red LED switch
29	OCXO_ST_R	O	OCXO Red LED switch
30	SB	O	Power supply output
31	VOLUME_IN	I	Volume control input for AF signal
32	33AUD	O	3.3V constant voltage
33	33MPU	O	3.3V constant voltage
34	MIC	I	MIC signal Input
35	GND	-	Ground
36	MIG	-	MIC ground
<b>CN4 (To X45-387 C/4 CN11)</b>			
1	E	-	Earth
2	NC	-	No connection
3	SB	I	Power supply input
4	SB	I	Power supply input
<b>CN56 (To X56-315 A/3 CN804)</b>			
1	GND	-	Ground
2	GND	-	Ground
3	PAG	O	Not used
4	GND	-	Ground
5	CONT_5.0V	O	5V constant voltage
6	D_GND	-	Digital ground
7	CONT_5.0V	O	5V constant voltage
8	D_GND	-	Ground
9	SDA	I/O	EEPROM data
10	D_GND	-	Ground
11	SCK	O	EEPROM clock
12	TEMP_PRT	I	Not used
13	ANT_SW	O	PA device's DC switch control

Pin No.	Name	I/O	Function
14	VER	I	Hardware version DC signal
15	VR_EN	O	Enable for electronic volume
16	440_EN	O	Enable for PLL
17	132_EN	O	Enable for PLL
18	440_CE	O	PLL chip select
19	132_CE	O	PLL chip select
20	LDT	I	PLL lock detection
21	2DA_EN	O	Enable for 2ch DAC
22	3DA_EN	O	Enable for 3ch DAC
23	2DA_CE	O	Chip select for 2ch DAC
24	SR_OE	O	Shift register output enable
25	8AD_EN	O	Enable for 8ch DAC
26	SR_EN	O	Shift register strobe
27	SDI1	I	Analog data of 8ch ADC
28	SDO0	O	Data for 3 line serial
29	SCLK1	O	Clock 1 for 3 line serial
30	SCLK0	O	Clock for 3 line serial
31	SDO1	O	Data 1 for 3 line serial
32	GND	-	Ground
33	MOD	O	Modulating signal
34	WP	O	Write protection of EEPROM
35	GND	-	Ground
36	GND	-	Ground
<b>CN57 (To X55-312 CN42)</b>			
1	GND	-	Ground
2	GND	-	Ground
3	WP	O	Write protection of EEPROM
4	D_GND	-	Digital ground
5	E2PROM_SDA	I/O	Data of EEPROM
6	CONT_5.0V	-	5V constant voltage
7	E2PROM_SCL	O	Clock of EEPROM
8	D_GND	-	Digital ground
9	AD_CS	O	Enable for 8ch DAC
10	IF_BW_SW	O	IF filter bandwidth switch
11	AD_DAT_WRITE	O	Data 0 for 3 line serial I/F
12	NC (IF_NW_SW)	-	No connection
13	AD_CLK	O	Clock 0 for 3 line serial I/F
14	GND	-	Ground
15	AD_DAT_READ	I	Analog data of 8ch ADC
16	NC	-	No connection
17	CONT_5.0V	-	5V constant voltage
18	PLL_LOCK_DET	I	PLL 1,2 lock detection
19	NC (AGC_RSSI)	-	No connection
20	PLL2_EN	O	PLL 2 enabling signal

## TERMINAL FUNCTION

Pin No.	Name	I/O	Function
21	FM_RSSI	I	RSSI signal input
22	NC	-	No connection
23	GND	-	Ground
24	PLL_PWR_SAVE	O	Not used
25	RX_AUDIO	I	Reception audio signal
26	SIF_DAT	O	Data 0 for 3 line serial I/F
27	GND	-	Ground
28	SIF_CLK	O	Clock 0 for 3 line serial I/F
29	DA_EN	O	Enable for 3ch DAC
30	PLL1_EN	O	PLL 1 enabling signal
31	VCO_BAND_SW	O	Not used
32	DDS_EN	O	Not used
33	RX_POWER_SAVE	O	Not used
34	NC	-	No connection
35	GND	-	Ground
36	GND	-	Ground
<b>CN58 (To CONTROL I/O D-sub 25-pin Connector)</b>			
1	NC	-	No connection
2	NC	-	No connection
3	NC	-	No connection
4	NC (RSSI)	-	No connection (RSSI)
5	BER_CLK	O	for Bit Error Rate Clock
6	NC	-	No connection
7	EMON	I	External monitor switch input "L"=Monitor on, "H"=Monitor off
8	NC	-	No connection
9	EPTT	I	External press-to-talk switch input "L"=PTT on, "H"=PTT off
10	AI1	I	Programmable function input 1
11	SC	O	Squelch control output "L"=Busy, "H"=Not busy
12	AI2	I	Programmable function input 2
13	BER_DAT	O	for Bit Error Rate Data
14	AI3	I	Programmable function input 3
15	TXG	-	TX signal ground for TA,TD
16	DG	-	Control line ground
17	IO1	I/O	Programmable function input/output 1
18	TD	I	TX-DATA input (data or Signaling) Input impedance=600Ω Coupling=AC coupling Deviation=0.75kHz (Narrow) at 100Hz 0.5Vpp input
19	IO2		Programmable function input/output 2
20	TA	I	TX audio input (voice) Input impedance=600Ω Coupling=AC coupling Frequency response=Pre-emphasis curve Deviation=60% deviation at 1kHz 280mVrms±25mV input

Pin No.	Name	I/O	Function
21	IO3	I/O	Programmable function input/output 3
22	RD	O	RX-DATA output (data or Signaling) output impedance=1kΩ or less Coupling=AC coupling Non-squelched Frequency response=±2.5dB at 10~3000Hz Output level=70~90mVrms (standard modulation)
23	IO4		Programmable function input/output 4
24	RA	O	RX-Audio output (voice) output impedance=1kΩ or less Coupling=AC coupling Squelched Frequency response=De-emphasis curve Output level=360~440mVrms (standard modulation)
25	IO5	I/O	Programmable function input/output 5
26	RXG	-	RX signal ground for RA, RD
27	IO6	I/O	Programmable function input/output 6
28	SPM	I	Speaker mute signal input. "L"=Mute on
29	NC	-	No connection
30	NC	-	No connection
<b>CN59 (To TEST/SPKR 15-pin Connector)</b>			
1	AO5	O	Auxiliary output 5
2	AO4	O	Auxiliary output 4
3	AO3	O	Auxiliary output 3
4	SPO	O	Speaker AF output
5	AO2	O	Auxiliary output 2
6	SPO	O	Speaker AF output
7	AO1	O	Auxiliary output 1
8	SPI	I	Internal speaker AF input
9	RSSI	O	RSSI output (Analog signal output)
10	RD	O	RX-DATA output (Equal to D-sub connector terminal No22)
11	GND	-	Ground
12	SPG	-	Speaker ground
13	GND	-	Ground
14	SPG	-	Speaker ground
15	NC	-	No connection
16	NC	-	No connection
17	SB	O	Power supply output
18	NC	-	No connection
19	SB	O	Power supply output
20	NC	-	No connection
<b>CN60 (To Internal Speaker)</b>			
1	SPO	O	Internal speaker AF output
2	SPG	-	Internal speaker ground

## TERMINAL FUNCTION

### Control unit (X53-4140-10)

Serial data enable signal to potentiometer of OCXO unit

Pin No.	Name	I/O	Function
<b>CN300 (To X55-312 CN43)</b>			
	RX_IF_VN	I	2nd IF signal (450 kHz) of NXDN mode
<b>CN302 (To X56-315 A/3 CN405)</b>			
	REF2 (20.0MHz)	I	20.0MHz reference clock input from TX unit
<b>CN400 (To X56-315 A/3 CN805)</b>			
1	GND	-	Ground
2	GND	-	Ground
3	REF_SW2	O	Control signal for reference clock change circuit
4	WP	O	Write protection signal to EEPROM
5	REF_SW	O	Control signal for reference clock change circuit
6	OX_SCL	O	ADC of OCXO unit (for electric current detection) to serial clock
7	EXT_EXIST	I	External reference clock detection signal
8	OX_SDA	I/O	ADC of OCXO unit (for electric current detection) to serial data input/output
9	REF_EXIST	I	Reference clock detection signal
10	IMP_H_L	-	No connection
11	REF_IN_OUT	O	Control signal for reference clock change circuit
12	GND	-	Ground
13	OX_SDI2	I	Serial data input from potentiometer of OCXO unit
14	GND	-	Ground
15	OCXO_VR_EN	O	Serial data enable signal to potentiometer of OCXO unit
16	GND	-	Ground
17	OCXO_ON	O	Power source control of OCXO unit
18	GND	-	Ground
19	OCXO_CURR	I	Monitor of the voltage which detects current of OCXO unit
20	GND	-	Ground
21	OCXO_EXIST	I	Detection signal of OCXO unit presence
22	GND	-	Ground
23	VCXO_DA_EN	O	DDS (5.99MHz) to serial data enabling signal
24	GND	-	Ground
25	REF_LDT	I	Lock detection signal from PLL (20.0MHz)
26	GND	-	Ground
27	PLL_19_EN	O	Serial data enabling signal to PLL (20.0MHz)
28	GND	-	Ground
29	PLL_19_CE	-	No connection
30	GND	-	Ground
31	OX_SDO2	O	DAC of OCXO unit to serial data output

Pin No.	Name	I/O	Function
32	GND	-	Ground
33	OX_SCLK2	O	DAC of OCXO unit to serial clock output
34	33MPU	O	3.3V constant voltage
35	GND	-	Ground
36	GND	-	Ground
<b>CN401 (To X53-413 CN1)</b>			
1	GND	-	Ground
2	GND	-	Ground
3	RX_POWER_SAVE	O	Power saving signal of RX unit
4	OCXO_ST_R	O	OCXO LED red control
5	OCXO_ST_G	O	OCXO LED green control
6	VOLUME_IN	I	Voltage monitor for audio level control
7	PWR_ST_R	O	POWER LED red control
8	MOD_D_OUT	O	Transmission modulating signal of NXDN mode
9	GND	-	Ground
10	RX_AUDIO_D	O	Reception demodulating signal of NXDN mode
11	BEEP	O	Beep sound signal output
12	MIC_D_IN	I	Audio signal before the transmission compressing of the NXDN mode
13	INRA_SW	-	No connection
14	NC	-	No connection
15	HOOK_RXD_SCM	I	Hook detection input
16	AMP_SW	O	Power source control of audio power amplifier
17	SCM_EN	-	No connection
18	AF_MUTE	O	Audio mute control
19	INSP_SW	-	No connection
20	EVOL_DATA	O	Serial data to DAC (for audio level adjustment)
21	PTT_AM16C	I	"Press-to-talk-switch" signal to Main MPU
22	EVOL_CLK	O	Serial clock to DAC (for audio level adjustment)
23	GND	-	Ground
24	EVOL_LD	O	Serial load to DAC (for audio level adjustment)
25	TAAD_SW	O	Route formation signal of audio circuit
26	TA_SW	O	Route formation signal of audio circuit
27	BEEP_SW	O	Route formation signal of audio circuit
28	PATH_SW	O	Route formation signal of audio circuit
29	RXAD_SW	O	Route formation signal of audio circuit
30	MIC_SW	O	Route formation signal of audio circuit
31	MICAD_SW	O	Route formation signal of audio circuit
32	TD_SW	O	Route formation signal of audio circuit
33	NC	-	No connection
34	LO_VOL_DET	I	Detection of voltage for low voltage state

## TERMINAL FUNCTION

Pin No.	Name	I/O	Function
35	GND	-	Ground
36	PTT_TXD_SCM	-	No connection
<b>CN402 (To X53-413 CN2)</b>			
1	HI_VOL_DET	I	Voltage monitor
2	GND	-	Ground
3	50MPU_A_GND	-	Ground
4	50MPU	I	5V constant voltage
5	50MPU_A_GND	-	Ground
6	DC50	I	5V constant voltage
7	DC50	I	5V constant voltage
8	DC50	I	5V constant voltage
9	DC50	I	5V constant voltage
10	33MPU_A_GND	-	Ground
11	33MPU	I	3.3V constant voltage
12	33MPU	I	3.3V constant voltage
13	33MPU_A_GND	-	Ground
14	50MPU_A	I	5V constant voltage
15	33MPU_A	I	3.3V constant voltage
16	33SH	O	3.3V constant voltage
17	50MPU_CONT	O	5V regulator control
18	NC	-	No connection
19	E_PTT_SH	I	"External press-to-talk-switch" signal to Main MPU
20	SC_SH	I	"Squelch control" signal to Main MPU
21	GND	-	Ground
22	SRX0_ATX0	O	UART signal from RF control MPU to Main MPU
23	STX0_ARX0	I	UART signal from Main MPU to RF control MPU
24	GND	-	Ground
25	RF_PTT	I	"Press-to-talk-switch" signal to Main MPU
26	TX_STATE	I	"During the transmission" signal to Main MPU
27	QT_DQT	I	"Detect QT or DQT" signal to Main MPU
28	RADIO_EER	I	"Detect accident of RF block" signal to Main MPU
29	GND	-	Ground
30	ADSP_CK_SFT	O	"Frequency shift" signal to Analog mode DSP
31	TRUKING	I	"Trunking mode" signal to Main MPU
32	A16C_CK_SFT	O	"Frequency shift" signal to RF control MPU
33	BER_DAT	O	Serial data for measurement bit error rate
34	BER_CLK	O	Serial clock for measurement bit error rate
35	GND	-	Ground
36	SYS_RST	O	System reset signal from modem control MPU

Pin No.	Name	I/O	Function
<b>CN713 (To COM D-sub 9-pin connector)</b>			
1	CD	-	No connection
2	DSR	I	Data Set Ready
3	RD	I	Receive Data
4	RTS	O	Request to Send
5	SD	O	Send Data
6	CTS	I	Clear to Send
7	DTR	O	Data Terminal Ready
8	RI	-	No connection
9	GND	-	Ground
<b>J701 (To CF card)</b>			
1	GND	-	GND
2	D03 CF	I/O	Data
3	D04 CF	I/O	Data
4	D05 CF	I/O	Data
5	D06 CF	I/O	Data
6	D07 CF	I/O	Data
7	CE1A CF	O	Card enable 1
8	A10 CF	O	Address
9	RD CF	O	Read enable
10	A09 CF	O	Address
11	A08 CF	O	Address
12	A07 CF	O	Address
13	33CF	-	3.3V
14	A06 CF	O	Address
15	A05 CF	O	Address
16	A04 CF	O	Address
17	A03 CF	O	Address
18	A02 CF	O	Address
19	A01 CF	O	Address
20	A00 CF	O	Address
21	D00 CF	I/O	Data
22	D01 CF	I/O	Data
23	D02 CF	I/O	Data
24	NC	-	No connection
25	CD2	I	Card detection 2
26	CD1	I	Card detection 1
27	D11 CF	I/O	Data
28	D12 CF	I/O	Data
29	D13 CF	I/O	Data
30	D14 CF	I/O	Data
31	D15 CF	I/O	Data
32	CE2A CF	O	Card enable 2
33	NC	-	No connection



## TERMINAL FUNCTION

Pin No.	Name	I/O	Function
34	IO RD	O	I/O area read enable
35	IO WR	O	I/O area read enable
36	WE CF	O	Write enable
37	R/B/IREQ CF	I	Ready busy/Interruption demand
38	33CF	-	3.3V
39	NC	-	No connection
40	NC	-	No connection
41	RESET CF	O	Reset
42	WAIT CF	I	Wait
43	NC	I	No connection
44	REG	O	Attribute area selection
45	NC	-	No connection
46	NC	-	No connection
47	D08 CF	I/O	Data
48	D09 CF	I/O	Data
49	D10 CF	I/O	Data
50	GND	-	GND

### RX unit (X55-3120-11)

Pin No.	Name	I/O	Function
<b>CN5 (To RX ANT)</b>			
1	RX_SIGNAL	I	Receive signal input (Coaxial)
<b>CN42 (To X53-413 CN57)</b>			
1	GND	-	Ground
2	GND	-	Ground
3	NC	-	No connection
4	RX_POWER_SAVE	I	No connection
5	DDS_EN	I	No connection
6	VCO_BAND_SW	I	No connection
7	PLL1_EN	I	Enable input for 1st Lo PLL (PLL1)
8	DA_EN	I	Enable input for DA
9	SIF_CLK	I	Clock input for PLL1/PLL2/DA
10	GND	-	Ground
11	SIF_DAT	I	Data input for PLL1/PLL2/DA
12	RX_AUDIO	O	RX audio output
13	PLL_PWR_SAVE	I	No connection
14	GND	-	Ground
15	NC	-	No connection
16	FM_RSSI	O	FM RSSI output
17	PLL2_EN	I	Enable input for 2nd Lo PLL (PLL2)
18	NC (AGC_RSSI)	-	No connection
19	PLL_LOCK_DET	O	PLL1/PLL2 lock detect output
20	CONT_5.0V	I	Switched 5V supply
21	NC	-	No connection

Pin No.	Name	I/O	Function
22	AD_DAT_READ	O	AD logic data output
23	GND	-	Ground
24	AD_CLK	I	Clock input for AD
25	NC (IF_NW_SW)	-	No connection
26	AD_DAT_WRITE	I	Serial data input for AD
27	IF_BW_SW	I	IF bandwidth switch input
28	AD_CS	I	Enable input for AD
29	D_GND	-	Digital ground
30	E2PROM_SCL	I	Clock input for EEPROM
31	CONT_5.0V	I	Switched 5V supply
32	E2PROM_SDA	I/O	Data input for EEPROM
33	D_GND	-	Digital ground
34	WP	I	Write protection input for E2PROM
35	GND	-	Ground
36	GND	-	Ground
<b>CN43 (To X53-414 CN300)</b>			
1	RX_IF_VN	O	RX NXDN detection output
<b>CN44 (To X45-387 C/4 CN15)</b>			
1	E	-	Ground
2	B	I	Power supply input
3	B	I	Power supply input
<b>CN45 (To X56-315 A/3 CN406)</b>			
1	REF1	I	Reference signal input
<b>CN46</b>			
1	-	I	Use for RX MCF tuning
2	GND	-	Ground
<b>CN47</b>			
1	-	O	Use for RX MCF tuning
2	-	-	Ground
<b>CN68</b>			
1	LEVEL MONITOR	O	Use for RX AGC level monitor (Coaxial)

### TX unit (X56-3150-11) (A/3)

Pin No.	Name	I/O	Function
<b>CN403</b>			
1	REF_OUT (10MHz)	O	Reference signal distribution (coaxial)
<b>CN405 (To X53-414 CN302)</b>			
1	REF2 (20.0MHz)	O	DSP reference signal output (coaxial)
<b>CN406 (To X55-312 CN45)</b>			
1	REF1 (20.0MHz)	O	Rx reference signal output (coaxial)

## TERMINAL FUNCTION

Pin No.	Name	I/O	Function
<b>CN407 (To X42-328 CN2: OCXO Optional unit)</b>			
1	OCXO	I	OCXO (Optional unit) reference signal input (coaxial)
<b>CN408</b>			
1	REF_IN (10MHz)	I	External reference signal input (coaxial)
<b>CN801 (To X45-387 C/4 CN12)</b>			
1	E	-	Ground
2	B	I	Power supply (Vcc)
3	B	I	Power supply (Vcc)
<b>CN802 (To X45-387 A/4 CN1)</b>			
1	TX OUT	O	TX driver output signal (coaxial)
<b>CN803 (To X42-328 CN1: OCXO Optional unit)</b>			
1	33MPU	O	Switched 3.3V power supply
2	GND	-	Ground
3	OX_SDA	I/O	OCXO EEPROM serial data
4	OX_SCL	O	OCXO EEPROM serial clock
5	OCXO_VR_EN	O	Enable output for OCXO IC3 (potentiometer)
6	OCXO_ON	O	OCXO power on signal
7	OX_SCLK2	O	Serial clock output for OCXO IC3 (potentiometer)
8	OCXO_CURR	I	OCXO current detection signal
9	OX_SDI2	I	Serial data input for OCXO IC3 (potentiometer)
10	OCXO_EXIST	I	OCXO detection signal
11	OX_SDO2	O	Serial data output for OCXO IC3 (potentiometer)
12	GND	-	Ground
13	REF_SW2	O	OCXO reference signal output switch
<b>CN804 (To X53-413 CN56)</b>			
1	GND	-	Ground
2	GND	-	Ground
3	WP	I	EEPROM write protect signal input
4	MOD	I	Modulation signal input
5	GND	-	Ground
6	SDO1	I	Serial data input for IC114(IC5), IC204, IC703, IC705
7	SCLK0	I	Serial clock input for IC711(IC201, IC207, IC701)
8	SCLK1	I	Serial clock input for IC2(IC5), IC204, IC703, IC705
9	SDO0	I	Serial data input for IC711(IC201, IC207, IC701)
10	SDI1	O	Serial data output for IC703
11	SR_EN	I	Enable input for IC701
12	8AD_EN	I	Enable input for IC703
13	SR_OE	I	Enable input for IC701
14	2DA_CE	I	Chip enable input for IC705

Pin No.	Name	I/O	Function
15	3DA_EN	I	Enable input for IC201
16	2DA_EN	I	Enable input for IC705
17	LDT	O	RF PLL lock detect output
18	132_CE	I	Chip enable input for IC204
19	440_CE	I	No connection
20	132_EN	I	Load enable input for IC204
21	440_EN	I	Load enable input for IC1(IC5)
22	VR_EN	I	Load enable input for IC207
23	VER	O	Hardware version control signal output
24	ANT_SW	I	TX antenna switch input
25	TEMP_PRT	O	Temperature protection signal output
26	SCK	I	EEPROM clock
27	D_GND	-	Ground
28	SDA	I/O	EEPROM data
29	D_GND	-	Ground
30	CONT_5.0V	I	Switched 5V power supply
31	D_GND	-	Ground
32	CONT_5.0V	I	Switched 5V power supply
33	GND	-	Ground
34	PAG	I	POCSAG
35	GND	-	Ground
36	GND	-	Ground
<b>CN805 (To X53-414 CN400)</b>			
1	GND	-	Ground
2	GND	-	Ground
3	33MPU	I	Switched 3.3V power supply
4	OX_SCLK2	I	Serial clock input for IC601, IC404
5	GND	-	Ground
6	OX_SDO2	I	Serial data input for IC601, IC404
7	GND	-	Ground
8	PLL_19_CE	I	100kohm load
9	GND	-	Ground
10	PLL_19_EN	I	Enable input for IC404
11	GND	-	Ground
12	REF_LDT	O	19.2MHz PLL lock detect output
13	GND	-	Ground
14	VCXO_DA_EN	I	Enable input for IC601
15	GND	-	Ground
16	OCXO_EXIST	O	OCXO detection signal
17	GND	-	Ground
18	OCXO_CURR	O	OCXO current detection signal
19	GND	-	Ground
20	OCXO_ON	I	OCXO power on signal
21	GND	-	Ground

## TERMINAL FUNCTION

Pin No.	Name	I/O	Function
22	OCXO_VR_EN	I	Enable input for OCXO IC3 (potentiometer)
23	GND	-	Ground
24	OX_SDI2	O	Serial data output for OCXO IC3 (potentiometer)
25	GND	-	Ground
26	REF_IN_OUT	I	Reference clock switched signal input
27	IMP_H_L	I	100kohm load
28	REF_EXIST	O	Reference detector signal output
29	OX_SDA	I/O	OCXO EEPROM serial data
30	EXT_EXIST	O	External reference detector signal output
31	OX_SCL	I	OCXO EEPROM serial clock
32	REF_SW	I	Reference signal output switch
33	WP	I	EEPROM write protect signal input
34	REF_SW2	I	OCXO reference signal output switch
35	GND	-	Ground
36	GND	-	Ground
<b>CN806 (To X45-387 A/4 CN20)</b>			
1	GND	-	Ground
2	GND	-	Ground
3	WP	O	EEPROM write protect signal output
4	GND	-	Ground
5	D_GND	-	Digital ground
6	SDA	I/O	EEPROM data
7	D_GND	-	Digital ground
8	SCK	O	EEPROM clock
9	D_GND	-	Digital ground
10	CONT_5.0V	O	Switched 5V power supply
11	D_GND	-	Digital ground
12	TEMP_PRT	I	Temperature protection signal input
13	GND	-	Ground
14	ANT_SW	O	TX antenna switch output
15	GND	-	Ground
16	TEMP_RST	O	Temperature sensor reset signal output
17	GND	-	Ground
18	FAN_CONT2	O	FAN2 control signal output
19	GND	-	Ground
20	FAN_CONT	O	FAN1 control signal output
21	GND	-	Ground
22	PWR_CONT	O	Power control signal output
23	GND	-	Ground
24	PA_BIAS	O	PA Vbias terminal control
25	GND	-	Ground
26	RFL_PWR	I	Reflect power signal input
27	GND	-	Ground

Pin No.	Name	I/O	Function
28	FWD_PWR	I	Forward power signal input
29	GND	-	Ground
30	FAN_CURR	I	FAN current monitor signal input
31	GND	-	Ground
32	PA_CURR	I	PA current monitor signal input
33	GND	-	Ground
34	NC	-	No connection
35	GND	-	Ground
36	GND	-	Ground
<b>CN807 (To X42-328 CN3: OCXO Optional unit)</b>			
1	8OCXO	O	OCXO power supply 8V
2	GND	-	Ground

### TX unit (X56-3150-11) (B/3)

Pin No.	Name	I/O	Function
<b>CN920 (To X56-315 C/3 CN960)</b>			
1	DC8	O	8V Power supply
2	GND	-	Ground
3	50MPU	O	Switched 5V power supply
4	STB	O	Shift Register Strobe
5	SR_OE	O	Shift Register Output Enable
6	SR_CLK	O	Shift Register Clock
7	SR_DATA	O	Shift Register Data
8	LED1	O	D960 segment "F" control
9	GND	-	Ground
10	LED10	O	D961 segment "F" control
<b>CN921 (To X53-413 CN3)</b>			
1	MIG	-	MIC Ground
2	GND	-	Ground
3	MIC	O	MIC Signal Input
4	33MPU	I	Switched 3.3V power supply
5	33AUD	I	Switched 3.3V power supply
6	VOLUME_IN	O	Volume control output for AF signal
7	SB	I	Power supply output
8	OCXO_ST_R	I	OCXO Red LED Switch
9	PWR_ST_R	I	POWER Red LED Switch
10	OCXO_ST_G	I	OCXO Green LED Switch
11	GND	-	Ground
12	HOOK_RXD_SCM	O	HOOK detect signal
13	SCM_EN	-	No connection
14	PTT_TXD_SCM	O	MIC PTT
15	GND	-	Ground
16	SR_OE	I	Shift Register Output Enable
17	GND	-	Ground

## TERMINAL FUNCTION

Pin No.	Name	I/O	Function
18	SR_CLK	I	Shift Register Clock
19	GND	-	Ground
20	SR_DATA	I	Shift Register Data
21	GND	-	Ground
22	STB1	I	Shift Register Strobe
23	GND	-	Ground
24	K1	O	Key Scan
25	K2	O	Key Scan
26	K3	O	Key Scan
27	K4	I	Key Scan
28	K5	I	Key Scan
29	DC8	I	8V Power supply
30	GND	-	Ground
31	50MPU	I	Switched 5V power supply
32	50MPU	I	Switched 5V power supply
33	DC8	I	8V Power supply
34	DC8	I	8V Power supply
35	GND	-	Ground
36	DC8	I	8V Power supply
<b>CN923 (To X45-387 D/4 CN905)</b>			
1	VOLUME_IN	I	Volume control input for AF signal
2	33MPU	O	Switched 3.3V power supply
3	GND	-	Ground

Pin No.	Name	I/O	Function
4	33AUD	O	Switched 3.3V power supply
5	SB	O	Power supply output
6	SCM_EN	-	No connection
7	GND	-	Ground
8	PTT_TXD_SCM	I	MIC PTT
9	HOOK_RXD_SCM	I	HOOK detect signal
10	MIG	-	MIC ground
11	MIC	I	MIC signal input

### TX unit (X56-3150-11) (C/3)

Pin No.	Name	I/O	Function
<b>CN960 (To X56-315 B/3 CN920)</b>			
1	DC8	I	8V Power supply
2	GND	-	Ground
3	50MPU	I	Switched 5V power supply
4	STB	I	Shift Register Strobe
5	SR_OE	I	Shift Register Output Enable
6	SR_CLK	I	Shift Register Clock
7	SR_DATA	I	Shift Register Data
8	LED1	I	D960 segment "F" control
9	GND	-	Ground
10	LED10	I	D961 segment "F" control

### COM D-Sub 9-pin Connector

Pin No.	Pin Name	I/O	Signal Type	Description / port Type	Specification	Min	Typ	Max	Unit	Remarks
1	CD	I	Digital	Carrier Detect	Input voltage range	-30	-	30	V	Conform to RS-232C
2	RD	I	Digital	Receive Data	Input voltage range	-30	-	30	V	
3	SD	O	Digital	Send Data	Voltage swing	±5	±5.2	-	V	
4	DTR	O	Digital	Data Terminal Ready	Voltage swing	±5	±5.2	-	V	
5	SG	-	GND	Signal GND	-	-	-	-	-	
6	DSR	I	Digital	Data Set Ready	Input voltage range	-30	-	30	V	
7	RTS	O	Digital	Request to Send	Voltage swing	±5	±5.2	-	V	
8	CTS	I	Digital	Clear to Send	Input voltage range	-30	-	30	V	
9	CI	I	Digital	Ringer DET	Input voltage range	-30	-	30	V	

## TERMINAL FUNCTION

### Microphone Connector

Pin No.	Pin Name	I/O	Signal Type	Description /port Type	Specification	Min	Typ	Max	Unit	Remarks
1	NC	-	-	-	-	-	-	-	-	-
2	SB	-	Power	Power	Voltage value	10.8	13.8	15.9	V	Related to DC power supply terminal input voltage.
					Allowable current value	-	-	0.2	A	
3	GND	-	GND	Digital GND	Allowable current value	-	-	0.2	A	-
4	PTT	I	Digital	PTT Signal CMOS Active Low	VIH	0.8Vcc	-	Vcc	V	Vcc=5V±2%
					VIL	0	-	0.2Vcc	V	
					Input impedance	-	47k	-	Ω	47kΩ PU
5	MIG	-	-	MIC GND	-	-	-	-	-	-
6	MIC	I	Analog	MIC Input	Input amplitude value (60%Dev@1kHz)	4	5.5	7	mVrms	-
					Input impedance (DC to 10kHz)	-	600	-	Ω	-
					Allowable frequency	0.3	-	3	kHz	-
7	HOOK	I	Digital	HOOK Detect Signal CMOS Active Low	VIH	0.8Vcc	-	Vcc	V	Vcc=5V±2%
					VIL	0	-	0.2Vcc	V	
					Input impedance	-	47k	-	Ω	47kΩ PU
8	NC	-	-	-	-	-	-	-	-	-

### LAN Connector (RJ-45)

Pin No.	Pin Name	I/O	Signal Type	Description /port Type	Specification	Min	Typ	Max	Unit	Remarks
1	TD+	O	Analog	TX Signal +	-	0.95	-	1.05	V	Conform to IEEE802.3
2	TD-	O	Analog	TX Signal -	-	0.95	-	1.05	V	Conform to IEEE802.3
3	RD+	I	Analog	RX Signal +	-	-	-	-	-	Use Designated Transformer
4	NC	-	-	-	-	-	-	-	-	-
5	NC	-	-	-	-	-	-	-	-	-
6	RD-	I	Analog	RX Signal -	-	-	-	-	-	Use Designated Transformer
7	NC	-	-	-	-	-	-	-	-	-
8	NC	-	-	-	-	-	-	-	-	-

### SYNC Connector

Pin No.	Pin Name	I/O	Signal Type	Description /port Type	Specification	Min	Typ	Max	Unit	Remarks
1	FRMA	I/O	-	RS-485 Differential Signal A	[Input] VID=VA-VB	-12	-	12	V	Conform to RS-485
					[Output] (No load) VOD= VA-VB	3	4.3	-	V	
2	NC	-	-	-	-	-	-	-	-	-
3	NC	-	-	-	-	-	-	-	-	-
4	FRMB	I/O	-	RS-485 Differential Signal B	[Input] VID=VA-VB	-12	-	12	V	Conform to RS-485
					[Output] (No load) VOD= VA-VB	3	4.3	-	V	

## TERMINAL FUNCTION

### CONTROL I/O D-sub 25-pin Connector

Pin No	Pin Name	I/O	Signal Type	Signal Summary	Specification	Min	Typ	Max	Unit	Remarks
1	NC (RSSI)	-	-	-	-	-	-	-	-	-
2	NC	-	-	-	-	-	-	-	-	-
3	NC	-	-	-	-	-	-	-	-	-
4	AI1	I	Digital	Programmable Function Input 1 /CMOS	VIH	0.8Vcc	-	Vcc	V	Vcc=5V±2%
					VIL	0	-	0.2Vcc	V	
					Input impedance	-	47k	-	Ω	
5	AI2	I	Digital	Programmable Function Input 2 /CMOS	VIH	0.8Vcc	-	Vcc	V	Vcc=5V±2%
					VIL	0	-	0.2Vcc	V	
					Input impedance	-	47k	-	Ω	
6	AI3	I	Digital	Programmable Function Input 3 /CMOS	VIH	0.8Vcc	-	Vcc	V	Vcc=5V±2%
					VIL	0	-	0.2Vcc	V	
					Input impedance	-	47k	-	Ω	
7	DG	-	GND	Digital GND	-	-	-	-	-	-
8	TD	I	Analog	TX Data Input (signaling)	INPUT: 0.1kHz/0.5Vp-p	0.7	0.75	0.8	kHzDEV	NFM
					Input impedance	-	600	-	Ω	600Ω PD is applied to GND.
9	TA	I	Analog	TX Audio Input (voice)	1kHz/60% Dev	270	280	290	mV	NFM
					Input impedance	-	600	-	Ω	600Ω PD is applied to GND.
10	RD	O	Analog	RX Data Output (signaling) Not squelched	INPUT: 60% Dev.	75	80	85	mV	-
11	RA	O	Analog	RX Audio Output (voice) Squelched	INPUT: 60% Dev.	380	400	420	mV	-
12	RXG	-	GND	RX Signal GND	-	-	-	-	-	-
13	SPM	I	Digital	Speaker Mute /CMOS	VIH	0.7Vcc	-	5.5	V	Vcc=3.3V±2%
					VIL	-	-	0.3Vcc	V	
					Input impedance	-	47k	-	Ω	
14	BER_CLK	O	Digital	for Bit Error Rate Clock	VOH (IO=-50μA)	Vcc-0.1	Vcc	-	V	47kΩ PU to Vcc
					VOL (IO=50μA)	-	0	0.1	V	
15	EMON	I	Digital	External Monitor Switch	VIH	0.8Vcc	-	Vcc	V	Vcc=5V±2%
					VIL	0	-	0.2Vcc	V	
					Input impedance	-	47k	-	Ω	
16	EPTT	I	Digital	External PTT Switch	VIH	0.8Vcc	-	Vcc	V	Vcc=5V ±2%
					VIL	0	-	0.2Vcc	V	
					Input impedance	-	47k	-	Ω	
17	SC	O	Digital	Squelch Control	VOH (IO=-200μA)	Vcc-2.0	-	Vcc	V	47kΩ PU to Vcc
					VOL (IO=200μA)	-	-	0.45	V	
18	BER_DAT	O	Digital	for Bit Error Rate Data	VOH (IO=-50μA)	Vcc-0.1	Vcc	-	V	47kΩ PU to Vcc
					VOL (IO=50μA)	-	0	0.1	V	

## TERMINAL FUNCTION

Pin No	Pin Name	I/O	Signal Type	Signal Summary	Specification	Min	Typ	Max	Unit	Remarks
19	TXG	-	GND	TX Signal GND	-	-	-	-	-	-
20	IO1	I	Digital	Programmable Function I/O 1	VIH	0.8Vcc	-	Vcc	V	Vcc=5V±2%
					VIL	0	-	0.2Vcc	V	
		O			Input impedance	-	47k	-	Ω	47kΩ PU to Vcc
					VOH (IO=-200μA)	Vcc-2.0	-	Vcc	V	
					VOL (IO=200μA)	-	-	0.45	V	
21	IO2	I	Digital	Programmable Function I/O 2	VIH	0.8Vcc	-	Vcc	V	Vcc=5V±2%
					VIL	0	-	0.2Vcc	V	
		O			Input impedance	-	47k	-	Ω	47kΩ PU to Vcc
					VOH (IO=-200μA)	Vcc-2.0	-	Vcc	V	
					VOL (IO=200μA)	-	-	0.45	V	
22	IO3	I	Digital	Programmable Function I/O 3	VIH	0.8Vcc	-	Vcc	V	Vcc=5V±2%
					VIL	0	-	0.2Vcc	V	
		O			Input impedance	-	47k	-	Ω	47kΩ PU to Vcc
					VOH (IO=-200μA)	Vcc-2.0	-	Vcc	V	
					VOL (IO=200μA)	-	-	0.45	V	
23	IO4	I	Digital	Programmable Function I/O 4	VIH	0.8Vcc	-	Vcc	V	Vcc=5V±2%
					VIL	0	-	0.2Vcc	V	
		O			Input impedance	-	47k	-	Ω	47kΩ PU to Vcc
					VOH (IO=-200μA)	Vcc-2.0	-	Vcc	V	
					VOL (IO=200μA)	-	-	0.45	V	
24	IO5	I	Digital	Programmable Function I/O 5	VIH	0.8Vcc	-	Vcc	V	Vcc=5V±2%
					VIL	0	-	0.2Vcc	V	
		O			Input impedance	-	47k	-	Ω	47kΩ PU to Vcc
					VOH (IO=-200μA)	Vcc-2.0	-	Vcc	V	
					VOL (IO=200μA)	-	-	0.45	V	
25	IO6	I	Digital	Programmable Function I/O 6	VIH	0.8Vcc	-	Vcc	V	Vcc=5V±2%
					VIL	0	-	0.2Vcc	V	
		O			Input impedance	-	47k	-	Ω	47kΩ PU to Vcc
					VOH (IO=-200μA)	Vcc-2.0	-	Vcc	V	
					VOL (IO=200μA)	-	-	0.45	V	

## TERMINAL FUNCTION

### TEST/SPKR 15-pin Connector

Pin No.	Pin Name	I/O	Signal Type	Con-figuration Change	Signal Summary	Specification	Min	Typ	Max	Unit	Remarks
1	SB	-	-	No	Power Supply	Voltage value	10.8	13.8	15.9	V	Related to DC power supply terminal input voltage.
						Supply current	-	-	1	A	
2	SB	-	-	No	Power Supply	Voltage value	10.8	13.8	15.9	V	Related to DC power supply terminal input voltage.
						Supply current	-	-	1	A	
3	NC	-	-	-	-	-	-	-	-	-	-
4	GND	-	GND	No	Digital GND	-	-	-	-	-	-
5	GND	-	GND	No	Digital GND	-	-	-	-	-	-
6	SPG	-	GND	No	Speaker GND	-	-	-	-	-	-
7	RD	O	Analog	No	RX Data Output (signaling) Not squelched	INPUT: 60% Dev.	75	80	85	mV	-
8	RSSI	O	Analog	No	RSSI Output	Amplitude value	0	-	5	V	-
						Allowable Load value	10k	-	-	Ω	-
9	SPI	I	Analog	No	Internal Speaker Input	-	-	-	-	-	-
10	AO1	O	Digital	default	Auxiliary Output 1 Open collector	External voltage value	-	-	16	V	-
						Supply current	-	-	200	mA	-
				\$R520=47k D5=delete	Auxiliary Output 1 Open collector with PU	PU resistor	-	47k	-	Ω	Vcc=5V±2%
						VOL (IO=0mA)	-	-	0.1	V	-
11	AO2	O	Digital	default	Auxiliary Output 2 Open collector	External Voltage value	-	-	16	V	-
						Supply current	-	-	200	mA	-
				\$R519=47k D12=delete	Auxiliary Output 2 Open collector with PU	PU resistor	-	47k	-	Ω	Vcc=5V±2%
						VOL (IO=0mA)	-	-	0.1	V	-
12	SPO	O	Analog	No	External Speaker Output	Output level	-	-	3	W	-
						Output impedance	-	-	4	Ω	-
13	AO3	O	Digital	default	Auxiliary Output 3 Open collector	External voltage value	-	-	16	V	-
						Supply current	-	-	200	mA	-
				\$R518=47k D28=delete	Auxiliary Output 3 Open collector with PU	PU resistor	-	47k	-	Ω	Vcc=5V±2%
						VOL (IO=0mA)	-	-	0.1	V	-
14	AO4	O	Digital	default	Auxiliary Output 4 Open collector	External voltage value	-	-	16	V	-
						Supply current	-	-	200	mA	-
				\$R517=47k D30=delete	Auxiliary Output 4 Open collector with PU	PU resistor	-	47k	-	Ω	Vcc=5V±2%
						VOL (IO=0mA)	-	-	0.1	V	-
15	AO5	O	Digital	default	Auxiliary Output 5 Open collector	External voltage value	-	-	16	V	-
						Supply current	-	-	200	mA	-
				\$R516=47k D32=delete	Auxiliary Output 5 Open collector with PU	PU resistor	-	47k	-	Ω	Vcc=5V±2%
						VOL (IO=0mA)	-	-	0.1	V	-



## PARTS LIST

\* New Parts.  $\Delta$  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

### NXR-901

### FINAL UNIT (X45-3870-11)

Ref. No.	Address	New parts	Parts No.	Description	Destination
<b>NXR-901</b>					
1	3A		A62-1142-02	MAIN PANEL	
2	1E		B10-2781-04	FRONT GLASS ACCESSORY	
3	3A		B11-1841-04	FILTER(PF)	
4	3A		B11-1842-04	FILTER(17SEG)	
5	3A		B11-1843-04	FILTER(LED)	
6	3A		B11-1844-04	FILTER(STATUS)	
7	3A		B42-7296-04	STICKER(NEXEDGE)	
8	3A		B43-1188-04	BADGE	
9	1F	*	B62-2410-00	INSTRUCTION MANUAL	
11	2B		E04-0463-05	RF COAXIAL RECEPTACLE(BNC)	
12	1F		E30-3344-25	DC CORD ACCESSORY	
13	1B		E30-7581-05	DC CORD	
14	2C		E30-7582-05	TRUNK CABLE	
15	1B,1C,2C		E30-7583-05	TRUNK CABLE	
16	1E		E30-7701-15	MODULAR CABLE(SYNC)	
17	1B,1C		E37-1295-05	FLAT CABLE(36P)	
18	1B		E37-1299-05	LEAD WIRE WITH TERMINAL(FUSE-DC+)	
19	1B		E37-1300-05	LEAD WIRE WITH TERMINAL(FUSE-DC-)	
20	1B		E37-1301-05	LEAD WIRE WITH TERMINAL(DC-PA+)	
21	1B		E37-1302-05	LEAD WIRE WITH TERMINAL(DC-PA-)	
22	2C		E37-1303-05	LEAD WIRE WITH CONNECTOR(BNC-RX)	
23	1D		E37-1304-05	LEAD WIRE WITH CONNECTOR(BNC-REF)	
24	1B		E37-1305-05	LEAD WIRE WITH CONNECTOR(DC-TX)	
25	1C		E37-1306-05	LEAD WIRE WITH CONNECTOR(DC-CONT)	
26	2C		E37-1307-05	LEAD WIRE WITH CONNECTOR(DC-RX)	
28	1D		E37-1310-05	LEAD WIRE WITH CONNECTOR(DSUB-25P)	
29	3B		E37-1311-05	LEAD WIRE WITH CONNECTOR(DSUB-9P)	
30	2D		E37-1313-05	LEAD WIRE WITH CONNECTOR(ACC15)	
31	3B		E37-1314-05	LEAD WIRE WITH CONNECTOR(DISP-MIC)	
32	3B		E37-1315-05	LEAD WIRE WITH CONNECTOR(DISP-17SEG)	
33	2B		E37-1316-05	LEAD WIRE WITH CONNECTOR(SP)	
34	1E		E37-1381-05	15P PLUG ACCESSORY	
36	1D,1E		F05-7521-05	BLADE FUSE(7.5A/32V) ACCESSORY	
37	2A		F07-1930-05	COVER(FAN)	
38	1D		F09-0445-05	CAP(25P)	
39	3B		F09-0484-05	CAP(9P)	
40	2A		F09-0488-15	FANMOTOR	
42	3A		G10-1343-04	FIBROUS SHEET(FRONT PANEL)	
44	3C		G10-1396-04	FIBROUS SHEET(SHIELDING COVER)	
45	2B		G11-4408-04	RUBBER SHEET(CONT-TR)	
47	3A		G13-2163-04	CUSHION(PF)	
48	1C	*	G13-2382-04	CONDUCTIVE CUSHION(COMPACT FLASH)	
49	3F	*	H52-2530-02	ITEM CARTON CASE	
52	3B	*	J19-5496-12	HOLDER(DISP)	
53	1C	*	J19-5546-05	HOLDER(COMPACT FLASH)	
54	1E		J29-0725-04	BRACKET(SIDE)	
55	3A		J39-0655-03	SPACER(SP)	
-			J61-0307-05	BAND(DC CORD)	
58	1E		K01-0421-05	HANDLE ACCESSORY	
59	3A		K29-4539-04	KNOB(VOLUME)	
61	1F		L79-1419-05	LINE FILTER(DC)	

Ref. No.	Address	New parts	Parts No.	Description	Destination
A	1E		N08-0563-04	DRESSED SCREW(FRONT GLASS)	
B	3B,1D		N09-2292-05	HEXAGON HEAD SCREW(DSUB)	
D	2C,1D		N30-2606-48	PAN HEAD MACHINE SCREW(BNC)	
E	2A		N30-3016-43	PAN HEAD MACHINE SCREW(FAN)	
F	2D,3D		N32-3006-43	FLAT HEAD MACHINE SCREW(TOP/REAR)	
G	3A,1E		N32-4008-43	FLAT HEAD MACHINE SCREW(PANEL)	
H	1B,1C		N67-3008-48	PAN HEAD SEMS SCREW(AVR)	
J	3B		N80-2006-43	PAN HEAD TAPTITE SCREW(DISP)	
K	1D		N80-2608-43	PAN HEAD TAPTITE SCREW(FUSE)	
L	1B,2C		N87-2608-48	BRAZIER HEAD TAPTITE SCREW(PCB)	
64	3A		T07-0347-15	SPEAKER	
-			X53-4132-72	SERVICE CONTROL UNIT	
-			X53-4140-11	SERVICE CONTROL UNIT	
-			490-0174-05	ADHESIVE TAPE	
<b>FINAL UNIT (X45-3870-11)</b>					
C1 ,2			CD04BQ1H101M	ELECTRO 100UF 50WV	
C7 ,8			CE32BM1V220M	CHIP EL 22UF 35WV	
C10 ,11			CC73GCH1H470J	CHIP C 47PF J	
C15 -17			CK73GB1H103K	CHIP C 0.010UF K	
C21			CC73GCH1H470J	CHIP C 47PF J	
C22			CE32BM1V220M	CHIP EL 22UF 35WV	
C25 -27			CK73GB1H103K	CHIP C 0.010UF K	
C28 -30			CC73GCH1H470J	CHIP C 47PF J	
C32			CE32BM1V220M	CHIP EL 22UF 35WV	
C33			CE32AU1E100M	CHIP EL 10UF 25WV	
C36			CC73GCH1H470J	CHIP C 47PF J	
C37			CK73GB1H103K	CHIP C 0.010UF K	
C38			CE32AU1E100M	CHIP EL 10UF 25WV	
C39			CC73GCH1H470J	CHIP C 47PF J	
C40			CK73GB1H103K	CHIP C 0.010UF K	
C41 ,42			CC73GCH1H470J	CHIP C 47PF J	
C45 ,46			CC73GCH1H470J	CHIP C 47PF J	
C49			CK73GB1H103K	CHIP C 0.010UF K	
C54			CC73GCH1H470J	CHIP C 47PF J	
C58			CC73GCH1H470J	CHIP C 47PF J	
C59			CK73GB1H103K	CHIP C 0.010UF K	
C61			CC73GCH1H470J	CHIP C 47PF J	
C63 ,64			CC73GCH1H470J	CHIP C 47PF J	
C67			CC73GCH1H470J	CHIP C 47PF J	
C70			CK73GB1H103K	CHIP C 0.010UF K	
C71 -75			CC73GCH1H470J	CHIP C 47PF J	
C77 ,78			CC73GCH1H470J	CHIP C 47PF J	
C80			CK73GB1H103K	CHIP C 0.010UF K	
C83			CC73GCH1H470J	CHIP C 47PF J	
C86			CK73GB1H103K	CHIP C 0.010UF K	
C87			CC73GCH1H040B	CHIP C 4.0PF B	
C89 -91			CC73GCH1H470J	CHIP C 47PF J	
C96			CC73GCH1H470J	CHIP C 47PF J	
C102			CC73GCH1H470J	CHIP C 47PF J	
C104,105			CC73GCH1H470J	CHIP C 47PF J	

## PARTS LIST

### FINAL UNIT (X45-3870-11)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C122,123		*	C93-0983-05	CHIP C 6.0PF D		CN905			E41-1483-05	PIN ASSY(11P)	
C130			C93-0980-05	CHIP C 5.0PF B		J901			E58-0526-05	MODULAR JACK(MIC)	
C132			C93-0980-05	CHIP C 5.0PF B		F1			F53-0324-15	FUSE(2.5A)	
C134			CC73GCH1H470J	CHIP C 47PF J		CN4			J13-0071-05	FUSE HOLDER	
C137			C93-0878-05	CHIP C 2.0PF B		L1			L92-0179-05	CHIP FERRITE	
C138			CE32CL1V100M	CHIP EL 10UF 35WV		L3			L79-0558-05	FILTER	
C148			C93-0878-05	CHIP C 2.0PF B		L12			L34-4605-15	AIR-CORE COIL	
C150			CK73GB1H104K	CHIP C 0.10UF K		L17			L34-4521-05	AIR-CORE COIL	
C167			CK73GB1H104K	CHIP C 0.10UF K		L18 -20			L34-4604-15	AIR-CORE COIL	
C169,170			CC73GCH1H470J	CHIP C 47PF J		L21 ,22			L41-1085-14	SMALL FIXED INDUCTOR(100NH)	
C187,188			C92-0905-05	OS-CON 47UF 35WV		L30			L34-4645-15	AIR-CORE COIL	
C191			CC73GCH1H470J	CHIP C 47PF J		L31		*	L39-1593-05	ISOLATOR	
C192			CC73GCH1H120G	CHIP C 12PF G		L900			L92-0447-05	BEADS CORE	
C193			CC73GCH1H0R5B	CHIP C 0.5PF B		R2			RK73GB2A000J	CHIP R 0 J 1/10W	
C194,195			CC73GCH1H470J	CHIP C 47PF J		R9			RK73GB2A101J	CHIP R 100 J 1/10W	
C197			CC73GCH1H221J	CHIP C 220PF J		R11			RK73EB2E4R7J	CHIP R 4.7 J 1/4W	
C198			CK73GB1H103K	CHIP C 0.010UF K		R12			RK73GB2A562J	CHIP R 5.6K J 1/10W	
C199			CC73GCH1H470J	CHIP C 47PF J		R13			RK73GB2A103J	CHIP R 10K J 1/10W	
C200			CK73GB1H103K	CHIP C 0.010UF K		R17			RK73GB2A103J	CHIP R 10K J 1/10W	
C202			CC73GCH1H470J	CHIP C 47PF J		R18			RK73GB2A473J	CHIP R 47K J 1/10W	
C203			CC73GCH1H221J	CHIP C 220PF J		R20			RK73GB2A223J	CHIP R 22K J 1/10W	
C204			CK73GB1H333K	CHIP C 0.033UF K		R21			RK73GB2A103J	CHIP R 10K J 1/10W	
C205-211			CC73GCH1H470J	CHIP C 47PF J		R25			RK73GB2A104J	CHIP R 100K J 1/10W	
C302,303			C93-0871-05	CHIP C 1.0PF B		R27 ,28			RK73GB2A824J	CHIP R 820K J 1/10W	
C304-306			CC73GCH1H470J	CHIP C 47PF J		R29 ,30			RK73GB2A103J	CHIP R 10K J 1/10W	
C307			C93-0980-05	CHIP C 5.0PF B		R31 ,32			RK73GB2A104J	CHIP R 100K J 1/10W	
C308			CK73GB1H102K	CHIP C 1000PF K		R34			RK73GB2A101J	CHIP R 100 J 1/10W	
C309			CK73GB1H103K	CHIP C 0.010UF K		R35 ,36			RK73GB2A224J	CHIP R 220K J 1/10W	
C310-312			CC73GCH1H470J	CHIP C 47PF J		R38			RK73GB2A101J	CHIP R 100 J 1/10W	
C313			CK73GB1H103K	CHIP C 0.010UF K		R42			RK73GB2A680J	CHIP R 68 J 1/10W	
C320			CC73GCH1H470J	CHIP C 47PF J		R44			RK73GB2A271J	CHIP R 270 J 1/10W	
C321			CK73GB1H103K	CHIP C 0.010UF K		R45			RK73GB2A000J	CHIP R 0 J 1/10W	
C325			CC73GCH1H470J	CHIP C 47PF J		R46			RK73GB2A223J	CHIP R 22K J 1/10W	
C326			CK73GB1H103K	CHIP C 0.010UF K		R47			RK73GB2A331J	CHIP R 330 J 1/10W	
C327			CK73GB1H333K	CHIP C 0.033UF K		R52			RK73GB2A330J	CHIP R 33 J 1/10W	
C503			CK73GB1H473K	CHIP C 0.047UF K		R53			RK73GB2A154J	CHIP R 150K J 1/10W	
C504			CC73GCH1H470J	CHIP C 47PF J		R56 ,57			RK73GB2A104J	CHIP R 100K J 1/10W	
C505			CK73GB1H104K	CHIP C 0.10UF K		R61			RK73GB2A220J	CHIP R 22 J 1/10W	
C506			CC73GCH1H470J	CHIP C 47PF J		R62			RK73GH2A223D	CHIP R 22K D 1/10W	
C508			CC73GCH1H470J	CHIP C 47PF J		R63			RK73GH2A563D	CHIP R 56K D 1/10W	
C900			CK73GB1H104K	CHIP C 0.10UF K		R69			RK73GB2A102J	CHIP R 1.0K J 1/10W	
C901			CK73GB1H102K	CHIP C 1000PF K		R70 -72			RK73GB2A000J	CHIP R 0 J 1/10W	
C902			CC73GCH1H101J	CHIP C 100PF J		R75 ,76			RK73GB2A472J	CHIP R 4.7K J 1/10W	
C904			CC73GCH1H101J	CHIP C 100PF J		R78			RK73GB2A104J	CHIP R 100K J 1/10W	
C905			CK73FB0J106K	CHIP C 10UF K		R92			RK73GB2A104J	CHIP R 100K J 1/10W	
C906-908			CK73GB1H102K	CHIP C 1000PF K		R102			RK73GH2A471D	CHIP R 470 D 1/10W	
C909,910			CC73GCH1H101J	CHIP C 100PF J		R105			RK73GB2A000J	CHIP R 0 J 1/10W	
C912,913			CC73GCH1H101J	CHIP C 100PF J		R106			RK73GB2A474J	CHIP R 470K J 1/10W	
C914			CK73GB1H104K	CHIP C 0.10UF K		R107-109			RK73GB2A000J	CHIP R 0 J 1/10W	
C915			CC73GCH1H101J	CHIP C 100PF J		R110			RK73GB2A394J	CHIP R 390K J 1/10W	
C916			CK73GB1H102K	CHIP C 1000PF K		R121			RK73GH2A103D	CHIP R 10K D 1/10W	
C917-919			CE32BM1V220M	CHIP EL 22UF 35WV		R123			RK73GB2A103J	CHIP R 10K J 1/10W	
CN1			E04-0193-05	PIN SOCKET		R125			R92-1061-05	JUMPER REST 0 OHM	
CN2			E23-0902-05	TERMINAL		R133			RK73GB2A103J	CHIP R 10K J 1/10W	
CN8			E41-2671-05	PIN ASSY(2P)		R136			RK73GB2A394J	CHIP R 390K J 1/10W	
CN11			E41-2673-05	PIN ASSY(4P)		R137,138			RK73GB2A104J	CHIP R 100K J 1/10W	
CN12			E41-2672-05	PIN ASSY(3P)		R140			RK73GB2A104J	CHIP R 100K J 1/10W	
CN15			E41-2672-05	PIN ASSY(3P)		R142			RK73GB2A000J	CHIP R 0 J 1/10W	
CN20			E40-6656-05	PIN ASSY(36P)							

## PARTS LIST

FINAL UNIT (X45-3870-11)  
CONTROL UNIT (X53-4132-71)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R145			RK73GB2A000J	CHIP R 0 J 1/10W		Q22			SSM3K15TE(F)	FET	
R151			RK73GB2A000J	CHIP R 0 J 1/10W		Q501			2SA1832F	TRANSISTOR	
R152			RK73GB2A223J	CHIP R 22K J 1/10W		<b>CONTROL UNIT (X53-4132-71)</b>					
R155			RK73GB2A101J	CHIP R 100 J 1/10W		C1 -5			CK73GB1H102K	CHIP C 1000PF	K
R156,157			RK73GB2A000J	CHIP R 0 J 1/10W		C6			CC73GCH1H101J	CHIP C 100PF	J
R163,164			RK73GB2A122J	CHIP R 1.2K J 1/10W		C7			CK73GB1H102K	CHIP C 1000PF	K
R165			RK73GB2A474J	CHIP R 470K J 1/10W		C8			CC73GCH1H101J	CHIP C 100PF	J
R166			RK73GB2A000J	CHIP R 0 J 1/10W		C9			CK73GB1H102K	CHIP C 1000PF	K
R167			RK73GB2A333D	CHIP R 33K D 1/10W		C10			CC73GCH1H101J	CHIP C 100PF	J
R169,170			RK73GB2A103J	CHIP R 10K J 1/10W		C12 -16			CK73GB1H102K	CHIP C 1000PF	K
R203			RK73GB2A000J	CHIP R 0 J 1/10W		C18 -28			CK73GB1H102K	CHIP C 1000PF	K
R204			RK73GB2A104J	CHIP R 100K J 1/10W		C29			CC73GCH1H101J	CHIP C 100PF	J
R206			RK73GB2A104J	CHIP R 100K J 1/10W		C30 -33			CK73GB1H102K	CHIP C 1000PF	K
R207,208			RK73GB2A473J	CHIP R 47K J 1/10W		C34			CC73GCH1H101J	CHIP C 100PF	J
R501			RK73GB2A104J	CHIP R 100K J 1/10W		C35			CK73GB1H102K	CHIP C 1000PF	K
R502			RK73GB2A474J	CHIP R 470K J 1/10W		C36			CC73GCH1H101J	CHIP C 100PF	J
R503,504			RK73GB2A103J	CHIP R 10K J 1/10W		C37			CK73GB1H104K	CHIP C 0.10UF	K
R505			RK73GB2A223J	CHIP R 22K J 1/10W		C39 -47			CK73GB1H102K	CHIP C 1000PF	K
R506			RK73GB2A103J	CHIP R 10K J 1/10W		C49			CC73GCH1H101J	CHIP C 100PF	J
R802			RK73GB2A000J	CHIP R 0 J 1/10W		C50 -53			CK73GB1H102K	CHIP C 1000PF	K
R900			RK73GB2A000J	CHIP R 0 J 1/10W		C54			CC73GCH1H101J	CHIP C 100PF	J
R901			RK73GB2A182J	CHIP R 1.8K J 1/10W		C55			CK73GB1H102K	CHIP C 1000PF	K
R902			RK73GB2A000J	CHIP R 0 J 1/10W		C56			CC73GCH1H101J	CHIP C 100PF	J
R903			RK73GB2A681J	CHIP R 680 J 1/10W		C57			CK73GB1H102K	CHIP C 1000PF	K
R905,906			RK73GB2A000J	CHIP R 0 J 1/10W		C58			CC73GCH1H101J	CHIP C 100PF	J
R907			RK73GH2A153D	CHIP R 15K D 1/10W		C60 -62			CK73GB1H102K	CHIP C 1000PF	K
R909			RK73GB2A000J	CHIP R 0 J 1/10W		C63			CK73GB1H104K	CHIP C 0.10UF	K
R910			RK73GB2A182J	CHIP R 1.8K J 1/10W		C64			CK73GB1H102K	CHIP C 1000PF	K
R911,912			RK73GB2A000J	CHIP R 0 J 1/10W		C65			CK73FB0J106K	CHIP C 10UF	K
R914			RK73GB2A222J	CHIP R 2.2K J 1/10W		C66			CK73GB1H102K	CHIP C 1000PF	K
R915-917			RK73EB2E4R7J	CHIP R 4.7 J 1/4W		C67			CK73FB0J106K	CHIP C 10UF	K
R918-921			RK73EB2ER39K	CHIP R 0.39 K 1/4W		C68			CK73GB1H102K	CHIP C 1000PF	K
R922			RK73GB2A390J	CHIP R 39 J 1/10W		C69			CK73GB1H104K	CHIP C 0.10UF	K
VR902			R31-0668-15	VARIABLE RESISTOR(10K)		C70			CK73GB1H102K	CHIP C 1000PF	K
D4			Z5W27V	SURGE ABSORBER		C71			CK73FB0J106K	CHIP C 10UF	K
D5			DSM3MA1-RPB	DIODE		C72			CK73GB1E105K	CHIP C 1.0UF	K
D6			1SS355	DIODE		C73			CC73GCH1H101J	CHIP C 100PF	J
D20 -22			HSM88AS-E	DIODE		C74			CK73GB1H104K	CHIP C 0.10UF	K
D23			UDZW4.7(B)	ZENER DIODE		C75			CC73GCH1H101J	CHIP C 100PF	J
D902			AVRM16270MABB	VARISTOR		C76			CK73GB1H102K	CHIP C 1000PF	K
IC1			LTC6101BIS5-F	ANALOGUE IC		C77			C93-1824-05	CHIP C 100UF	M
IC2			NJM2904E-ZB	ANALOGUE IC		C78			CK73FB0J106K	CHIP C 10UF	K
IC4			NJM2904E-ZB	ANALOGUE IC		C79 -82			CK73GB1H104K	CHIP C 0.10UF	K
IC6			NJM2904E-ZB	ANALOGUE IC		C83 -86			CK73FB0J106K	CHIP C 10UF	K
IC7			LM56BIMM/NOPB	ANALOGUE IC		C87			C93-1824-05	CHIP C 100UF	M
IC9			S24CS02AFJTBG	ROM IC		C88			CK73GB1H103K	CHIP C 0.010UF	K
IC11			NJM78M05DL1AZB	ANALOGUE IC		C89, 90			CC73GCH1H221J	CHIP C 220PF	J
IC12	1B		KIA7805API	BI-POLAR IC		C92			CC73GCH1H100D	CHIP C 10PF	D
IC15			NJM2904E-ZB	ANALOGUE IC		C95			C93-1824-05	CHIP C 100UF	M
IC17	1B		KIA7805API	BI-POLAR IC		C96			CC73GCH1H101J	CHIP C 100PF	J
IC18	1B		KIA7808API	BI-POLAR IC		C97			CK73GB1H104K	CHIP C 0.10UF	K
IC20			AV111-12LF	ANALOGUE IC		C98			CK73FB0J106K	CHIP C 10UF	K
IC21			ADL5604ACPZ	ANALOGUE IC		C99			CK73GB1H102K	CHIP C 1000PF	K
Q2			SSM3K15TE(F)	FET		C102			CC73GCH1H150J	CHIP C 15PF	J
Q3			SSM3J01F	FET		C103			CC73GCH1H101J	CHIP C 100PF	J
Q6			SSM3K15TE(F)	FET		C104-106			CD04BQ1H221M	ELECTRO 220UF	50WV
Q8			SSM3K15TE(F)	FET		C107			CK73GB1H102K	CHIP C 1000PF	K
Q14			SSM3K15TE(F)	FET		C108			CK73GB1H104K	CHIP C 0.10UF	K
Q15			2SJ506-E(S)	FET							

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

## PARTS LIST

### CONTROL UNIT (X53-4132-71)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C109			CK73GB1H102K	CHIP C 1000PF K		C217			CK73GB1H103K	CHIP C 0.010UF K	
C110			C93-1824-05	CHIP C 100UF M		C218			CC73GCH1H471J	CHIP C 470PF J	
C111			CK73GB1H104K	CHIP C 0.10UF K		C219			CC73GCH1H100D	CHIP C 10PF D	
C119			CC73GCH1H181J	CHIP C 180PF J		C220			CK73GB1H103K	CHIP C 0.010UF K	
C120			CK73GB1H102K	CHIP C 1000PF K		C222			CC73GCH1H150J	CHIP C 15PF J	
C121			CK73FB0J106K	CHIP C 10UF K		C223			CK73GB1H103K	CHIP C 0.010UF K	
C122			CC73GCH1H101J	CHIP C 100PF J		C224			CK73GB1E105K	CHIP C 1.0UF K	
C123			CK73GB1H472K	CHIP C 4700PF K		C225			CK73GB1H104K	CHIP C 0.10UF K	
C125			CK73GB1H472K	CHIP C 4700PF K		C226			CK73FB0J106K	CHIP C 10UF K	
C127			CK73GB1H182K	CHIP C 1800PF K		C227			CK73GB1H102K	CHIP C 1000PF K	
C128			CC73GCH1H101J	CHIP C 100PF J		C228			CK73GB1H104K	CHIP C 0.10UF K	
C130			CD04BQ1H221M	ELECTRO 220UF 50WV		C229			CC73GCH1H101J	CHIP C 100PF J	
C131			CE32AU1C330M	CHIP EL 33UF 16WV		C230			CK73GB1E105K	CHIP C 1.0UF K	
C133			CD04BQ1H221M	ELECTRO 220UF 50WV		C231			CK73GB1H104K	CHIP C 0.10UF K	
C134			CK73GB1H104K	CHIP C 0.10UF K		C233			CK73GB1H103K	CHIP C 0.010UF K	
C137,138			CK73GB1H102K	CHIP C 1000PF K		C234,235			CK73GB1H104K	CHIP C 0.10UF K	
C139,140			CE32AU1C330M	CHIP EL 33UF 16WV		C236			C90-4120-05	ELECTRO 470UF 35WV	
C141			CK73GB1H102K	CHIP C 1000PF K		C237			CK73GB1H104K	CHIP C 0.10UF K	
C144			CE32AU1C330M	CHIP EL 33UF 16WV		C238			CK73GB1H102K	CHIP C 1000PF K	
C145			CK73GB1H182K	CHIP C 1800PF K		C239			C92-0777-05	ELECTRO 1000UF 25WV	
C146			CK73GB1H104K	CHIP C 0.10UF K		C241			CK73GB1H103K	CHIP C 0.010UF K	
C152			CK73GB1H102K	CHIP C 1000PF K		C243			CK73GB1H103K	CHIP C 0.010UF K	
C155			CC73GCH1H181J	CHIP C 180PF J		C244			CK73GB1H104K	CHIP C 0.10UF K	
C157			CE32AU1C330M	CHIP EL 33UF 16WV		C245			CK73FB0J106K	CHIP C 10UF K	
C159			CK73GB1H102K	CHIP C 1000PF K		C246,247			CK73GB1H102K	CHIP C 1000PF K	
C161			CK73GB1H102K	CHIP C 1000PF K		C248,249			CK73GB1H104K	CHIP C 0.10UF K	
C162			CE32AU1C330M	CHIP EL 33UF 16WV		C250			CK73FB0J106K	CHIP C 10UF K	
C165			CK73GB1H102K	CHIP C 1000PF K		C251			CK73GB1H102K	CHIP C 1000PF K	
C166			CE32AU1C330M	CHIP EL 33UF 16WV		C252			CK73FB0J106K	CHIP C 10UF K	
C169			CK73FB0J106K	CHIP C 10UF K		C253-255			CK73GB1H103K	CHIP C 0.010UF K	
C170			CK73GB1H102K	CHIP C 1000PF K		C256			CK73GB1H104K	CHIP C 0.10UF K	
C172			CK73FB0J106K	CHIP C 10UF K		C257			CK73FB0J106K	CHIP C 10UF K	
C173			CC73GCH1H101J	CHIP C 100PF J		C258			CK73GB1H103K	CHIP C 0.010UF K	
C174			CK73GB1H102K	CHIP C 1000PF K		C262			CK73FB0J106K	CHIP C 10UF K	
C175			CC73GCH1H391J	CHIP C 390PF J		C263			CK73GB1H102K	CHIP C 1000PF K	
C177			CC73GCH1H101J	CHIP C 100PF J		C265			CK73GB1H104K	CHIP C 0.10UF K	
C178			CK73FB0J106K	CHIP C 10UF K		C266-270			CK73GB1H103K	CHIP C 0.010UF K	
C188,189			CK73GB1H104K	CHIP C 0.10UF K		C271			CK73FB0J106K	CHIP C 10UF K	
C190			CK73GB1E105K	CHIP C 1.0UF K		C272,273			CK73GB1H103K	CHIP C 0.010UF K	
C192,193			CK73GB1E105K	CHIP C 1.0UF K		C274			CK73GB1H472K	CHIP C 4700PF K	
C194			CC73GCH1H560J	CHIP C 56PF J		C275			CC73GCH1H120J	CHIP C 12PF J	
C195			CC73GCH1H181J	CHIP C 180PF J		C276			CC73GCH1H100D	CHIP C 10PF D	
C196			CC73GCH1H101J	CHIP C 100PF J		C277			CK73GB1H103K	CHIP C 0.010UF K	
C197			CC73GCH1H330J	CHIP C 33PF J		C278			CK73FB0J106K	CHIP C 10UF K	
C199			C93-1824-05	CHIP C 100UF M		C279			CK73GB1H103K	CHIP C 0.010UF K	
C200			CK73FB0J106K	CHIP C 10UF K		C280			CC73GCH1H100D	CHIP C 10PF D	
C202			CK73GB1E105K	CHIP C 1.0UF K		C281			CC73GCH1H150J	CHIP C 15PF J	
C203			CC73GCH1H101J	CHIP C 100PF J		C282			CK73GB1H103K	CHIP C 0.010UF K	
C204			CC73GCH1H121J	CHIP C 120PF J		C283			CK73GB1H104K	CHIP C 0.10UF K	
C205			CK73GB1H182K	CHIP C 1800PF K		C284-288			CK73GB1H103K	CHIP C 0.010UF K	
C206			C93-1824-05	CHIP C 100UF M		C289			CK73GB1H102K	CHIP C 1000PF K	
C207			CK73GB1H102K	CHIP C 1000PF K		C290-297			CK73GB1H103K	CHIP C 0.010UF K	
C208			CK73FB0J106K	CHIP C 10UF K		C299,300			CK73GB1H103K	CHIP C 0.010UF K	
C209			CK73GB1H103K	CHIP C 0.010UF K		C302			CK73GB1H103K	CHIP C 0.010UF K	
C210			CK73GB1E105K	CHIP C 1.0UF K		C304			CC73GCH1H101J	CHIP C 100PF J	
C211			CK73GB1H392K	CHIP C 3900PF K		C305,306			CK73GB1H102K	CHIP C 1000PF K	
C212			CC73GCH1H120J	CHIP C 12PF J		C307-310			CC73GCH1H101J	CHIP C 100PF J	
C213,214			CK73GB1H103K	CHIP C 0.010UF K		C311,312			CK73GB1H102K	CHIP C 1000PF K	
C215			CK73GB1H104K	CHIP C 0.10UF K		C313			CC73GCH1H101J	CHIP C 100PF J	
C216			CC73GCH1H100D	CHIP C 10PF D		C314			CK73GB1H102K	CHIP C 1000PF K	

## PARTS LIST

CONTROL UNIT (X53-4132-71)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C315			CC73GCH1H101J	CHIP C 100PF J		C413			CK73GB1H104K	CHIP C 0.10UF K	
C316			CK73GB1H102K	CHIP C 1000PF K		C414			CK73GB1H103K	CHIP C 0.010UF K	
C317			CK73GB1H103K	CHIP C 0.010UF K		C415			CK73GB1H104K	CHIP C 0.10UF K	
C318			CC73GCH1H101J	CHIP C 100PF J		C416			CK73GB1H103K	CHIP C 0.010UF K	
C319			CK73GB1H102K	CHIP C 1000PF K		C417			CK73GB1E105K	CHIP C 1.0UF K	
C320			CK73GB1H103K	CHIP C 0.010UF K		C418-420			CK73GB1H102K	CHIP C 1000PF K	
C321			CC73GCH1H101J	CHIP C 100PF J		C421			CC73GCH1H101J	CHIP C 100PF J	
C322,323			CK73GB1H102K	CHIP C 1000PF K		C422-424			CK73GB1H102K	CHIP C 1000PF K	
C324			CK73GB1H103K	CHIP C 0.010UF K		C425,426			CC73GCH1H101J	CHIP C 100PF J	
C325			CC73GCH1H101J	CHIP C 100PF J		C427-435			CK73GB1H102K	CHIP C 1000PF K	
C326,327			CK73GB1H102K	CHIP C 1000PF K		C436			CK73GB1E105K	CHIP C 1.0UF K	
C328			CK73GB1H103K	CHIP C 0.010UF K		C437,438			CC73GCH1H101J	CHIP C 100PF J	
C329-331			CK73GB1H102K	CHIP C 1000PF K		C440			CK73GB1H102K	CHIP C 1000PF K	
C332			CK73GB1H103K	CHIP C 0.010UF K		C442			CC73GCH1H101J	CHIP C 100PF J	
C333-339			CK73GB1H102K	CHIP C 1000PF K		C444			CK73GB1H102K	CHIP C 1000PF K	
C340			CK73GB1H103K	CHIP C 0.010UF K		C445			CK73GB1H104K	CHIP C 0.10UF K	
C342,343			CK73GB1H102K	CHIP C 1000PF K		C446			CC73GCH1H391J	CHIP C 390PF J	
C344			CK73GB1H103K	CHIP C 0.010UF K		C447			CC73GCH1H101J	CHIP C 100PF J	
C345			CK73GB1H104K	CHIP C 0.10UF K		C448,449			CK73GB1H102K	CHIP C 1000PF K	
C346,347			CK73GB1H102K	CHIP C 1000PF K		C450			CC73GCH1H101J	CHIP C 100PF J	
C348			CK73GB1H103K	CHIP C 0.010UF K		C452,453			CK73GB1H102K	CHIP C 1000PF K	
C350			CK73GB1H102K	CHIP C 1000PF K		C456,457			CK73GB1H102K	CHIP C 1000PF K	
C351			CK73GB1H103K	CHIP C 0.010UF K		C463			CK73GB1H104K	CHIP C 0.10UF K	
C352,353			CK73GB1H102K	CHIP C 1000PF K		C467,468			CK73GB1H102K	CHIP C 1000PF K	
C354			CK73GB1H103K	CHIP C 0.010UF K		C469,470			CC73GCH1H101J	CHIP C 100PF J	
C355			CC73GCH1H101J	CHIP C 100PF J		C471			CK73GB1H102K	CHIP C 1000PF K	
C356			CK73GB1H102K	CHIP C 1000PF K		C473-475			CK73GB1H102K	CHIP C 1000PF K	
C357			CK73GB1H103K	CHIP C 0.010UF K		C477			CK73GB1E105K	CHIP C 1.0UF K	
C358			CK73GB1H102K	CHIP C 1000PF K		C499			C92-0905-05	OS-CON 47UF 35WV	
C359			CC73GCH1H101J	CHIP C 100PF J		C500			CK73GB1H104K	CHIP C 0.10UF K	
C360			CK73GB1H102K	CHIP C 1000PF K		C510			CK73FB0J106K	CHIP C 10UF K	
C361			CK73GB1H103K	CHIP C 0.010UF K		CN1 -3			E40-6656-05	PIN ASSY(36P)	
C362			CK73GB1H102K	CHIP C 1000PF K		CN4			E41-2673-05	PIN ASSY(4P)	
C363			CC73GCH1H101J	CHIP C 100PF J		CN56,57			E40-6656-05	PIN ASSY(36P)	
C364			CK73GB1H102K	CHIP C 1000PF K		CN58			E40-5960-05	PIN ASSY(30P)	
C365			CK73GB1H103K	CHIP C 0.010UF K		CN59			E40-6102-05	PIN ASSY(20P)	
C366-368			CK73GB1H102K	CHIP C 1000PF K		CN60			E41-2735-05	PIN ASSY(2P)	
C369			CK73GB1H103K	CHIP C 0.010UF K		F1 ,2			F53-0315-15	FUSE(250MA)	
C370-372			CK73GB1H102K	CHIP C 1000PF K		F3			F53-0328-15	FUSE(5A)	
C373			CC73GCH1H101J	CHIP C 100PF J		L3 -14			L92-0447-05	BEADS CORE	
C374			CK73GB1H103K	CHIP C 0.010UF K		L15			L33-1476-05	SMALL FIXED INDUCTOR	
C375,376			CK73GB1H102K	CHIP C 1000PF K		L16			L33-1475-05	SMALL FIXED INDUCTOR	
C377			CC73GCH1H101J	CHIP C 100PF J		L17 ,18			L92-0447-05	BEADS CORE	
C379,380			CK73GB1H102K	CHIP C 1000PF K		L19			L33-1475-05	SMALL FIXED INDUCTOR	
C381			CC73GCH1H101J	CHIP C 100PF J		L20 -22			L92-0447-05	BEADS CORE	
C382			CK73GB1H103K	CHIP C 0.010UF K		L32 -40			L92-0447-05	BEADS CORE	
C383,384			CK73GB1H102K	CHIP C 1000PF K		L43			L92-0447-05	BEADS CORE	
C385			CC73GCH1H101J	CHIP C 100PF J		L44 -49			L92-0467-05	CHIP FERRITE	
C386,387			CK73GB1H102K	CHIP C 1000PF K		X1			L77-1984-05	CRYSTAL RESONATOR(14.7456MHZ)	
C388			CC73GCH1H101J	CHIP C 100PF J		X2			L77-1987-05	CRYSTAL RESONATOR(16.515072MHZ)	
C389,390			CK73GB1H102K	CHIP C 1000PF K		CP8			RK75GB1JR00	CHIP-COM 0 1/16W	
C394			C92-0905-05	OS-CON 47UF 35WV		CP10			RK75GB1JR00	CHIP-COM 0 1/16W	
C395			CK73GB1H103K	CHIP C 0.010UF K		CP13			RK75GB1JR00	CHIP-COM 0 1/16W	
C396-399			CK73GB1H102K	CHIP C 1000PF K		CP19			RK75GB1JR00	CHIP-COM 0 1/16W	
C400,401			CE32AU1C330M	CHIP EL 33UF 16WV		CP25,26			RK75GB1JR00	CHIP-COM 0 1/16W	
C403			CK73GB1E105K	CHIP C 1.0UF K		R1 ,2			RK73GB2A000J	CHIP R 0 J 1/10W	
C404			CK73FB0J106K	CHIP C 10UF K		R6			RK73GB2A101J	CHIP R 100 J 1/10W	
C405,406			CC73GCH1H101J	CHIP C 100PF J							
C407			CK73GB1H102K	CHIP C 1000PF K							
C408-410			CK73GB1E105K	CHIP C 1.0UF K							

## PARTS LIST

### CONTROL UNIT (X53-4132-71)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R7 -17			RK73GB2A000J	CHIP R 0 J 1/10W		R156,157			RK73GH2A104D	CHIP R 100K D 1/10W	
R18 ,19			RK73GB2A101J	CHIP R 100 J 1/10W		R158			RK73GB2A333J	CHIP R 33K J 1/10W	
R21 -45			RK73GB2A000J	CHIP R 0 J 1/10W		R159			RK73GB2A000J	CHIP R 0 J 1/10W	
R47 -49			RK73GB2A000J	CHIP R 0 J 1/10W		R160,161			RK73GB2A563J	CHIP R 56K J 1/10W	
R51 -61			RK73GB2A000J	CHIP R 0 J 1/10W		R162			RK73GB2A224J	CHIP R 220K J 1/10W	
R62			RK73GB2A101J	CHIP R 100 J 1/10W		R163			RK73GB2A000J	CHIP R 0 J 1/10W	
R63 ,64			RK73GB2A332J	CHIP R 3.3K J 1/10W		R165			RK73GB2A104J	CHIP R 100K J 1/10W	
R65			RK73GB2A123J	CHIP R 12K J 1/10W		R166			RK73GB2A333J	CHIP R 33K J 1/10W	
R66			RK73GB2A683J	CHIP R 68K J 1/10W		R167			RK73GB2A473J	CHIP R 47K J 1/10W	
R67			RK73GH2A822D	CHIP R 8.2K D 1/10W		R168			RK73GB2A563J	CHIP R 56K J 1/10W	
R68			RK73GH2A332D	CHIP R 3.3K D 1/10W		R169			RK73GB2A333J	CHIP R 33K J 1/10W	
R69 ,70			RK73GB2A000J	CHIP R 0 J 1/10W		R171			RK73GB2A183J	CHIP R 18K J 1/10W	
R71			RK73GH2A473D	CHIP R 47K D 1/10W		R172,173			RK73GB2A473J	CHIP R 47K J 1/10W	
R72 -76			RK73GB2A000J	CHIP R 0 J 1/10W		R174			RK73GB2A683J	CHIP R 68K J 1/10W	
R77			RK73GH2A104D	CHIP R 100K D 1/10W		R175			RK73GB2A393J	CHIP R 39K J 1/10W	
R78			RK73GB2A104J	CHIP R 100K J 1/10W		R176			RK73GB2A473J	CHIP R 47K J 1/10W	
R79			RK73GH2A332D	CHIP R 3.3K D 1/10W		R177,178			RK73GB2A000J	CHIP R 0 J 1/10W	
R80			RK73GB2A123J	CHIP R 12K J 1/10W		R179			RK73GB2A473J	CHIP R 47K J 1/10W	
R81 ,82			RK73GB2A563J	CHIP R 56K J 1/10W		R180			RK73GB2A223J	CHIP R 22K J 1/10W	
R83			RK73GB2A124J	CHIP R 120K J 1/10W		R181,182			RK73GB2A103J	CHIP R 10K J 1/10W	
R84			RK73GB2A473J	CHIP R 47K J 1/10W		R183			RK73GB2A000J	CHIP R 0 J 1/10W	
R85			RK73GB2A000J	CHIP R 0 J 1/10W		R184			RK73GB2A473J	CHIP R 47K J 1/10W	
R86			RK73GB2A473J	CHIP R 47K J 1/10W		R185			RK73GB2A103J	CHIP R 10K J 1/10W	
R87			RK73GB2A223J	CHIP R 22K J 1/10W		R186			RK73GB2A563J	CHIP R 56K J 1/10W	
R88			RK73GB2A000J	CHIP R 0 J 1/10W		R187			RK73GB2A223J	CHIP R 22K J 1/10W	
R89			RK73GB2A103J	CHIP R 10K J 1/10W		R190			RK73GB2A393J	CHIP R 39K J 1/10W	
R90			RK73GB2A153J	CHIP R 15K J 1/10W		R191			RK73GB2A000J	CHIP R 0 J 1/10W	
R91			RK73GB2A472J	CHIP R 4.7K J 1/10W		R192			RK73GB2A154J	CHIP R 150K J 1/10W	
R92			RK73GB2A562J	CHIP R 5.6K J 1/10W		R193			RK73GB2A103J	CHIP R 10K J 1/10W	
R93 ,94			RK73GB2A000J	CHIP R 0 J 1/10W		R194			RK73GB2A473J	CHIP R 47K J 1/10W	
R95			RK73GB2A470J	CHIP R 47 J 1/10W		R195,196			RK73GB2A000J	CHIP R 0 J 1/10W	
R96			RK73GB2A223J	CHIP R 22K J 1/10W		R197			RK73GB2A103J	CHIP R 10K J 1/10W	
R98			RK73GB2A103J	CHIP R 10K J 1/10W		R198			RK73GB2A473J	CHIP R 47K J 1/10W	
R100			RK73GB2A473J	CHIP R 47K J 1/10W		R199			RK73GB2A103J	CHIP R 10K J 1/10W	
R101			RK73GB2A000J	CHIP R 0 J 1/10W		R200,201			RK73GB2A000J	CHIP R 0 J 1/10W	
R102			RK73GB2A123J	CHIP R 12K J 1/10W		R202			RK73GB2A473J	CHIP R 47K J 1/10W	
R103-105			RK73GB2A473J	CHIP R 47K J 1/10W		R203			RK73GB2A104J	CHIP R 100K J 1/10W	
R106-108			RK73GB2A000J	CHIP R 0 J 1/10W		R204			RK73GB2A473J	CHIP R 47K J 1/10W	
R109			RK73GB2A153J	CHIP R 15K J 1/10W		R205			RK73GB2A104J	CHIP R 100K J 1/10W	
R111			RK73GB2A823J	CHIP R 82K J 1/10W		R206			RK73GB2A122J	CHIP R 1.2K J 1/10W	
R112			RK73GB2A123J	CHIP R 12K J 1/10W		R207,208			RK73GB2A473J	CHIP R 47K J 1/10W	
R113			RK73GB2A823J	CHIP R 82K J 1/10W		R209			RK73GB2A103J	CHIP R 10K J 1/10W	
R114			RK73GB2A223J	CHIP R 22K J 1/10W		R210			RK73GB2A000J	CHIP R 0 J 1/10W	
R115			RK73GB2A154J	CHIP R 150K J 1/10W		R211,212			RK73GB2A473J	CHIP R 47K J 1/10W	
R116			RK73GB2A223J	CHIP R 22K J 1/10W		R213			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R127			RK73GB2A473J	CHIP R 47K J 1/10W		R214			RK73GB2A824J	CHIP R 820K J 1/10W	
R128-130			RK73GB2A000J	CHIP R 0 J 1/10W		R215			RK73GB2A473J	CHIP R 47K J 1/10W	
R131-133			RK73GB2A473J	CHIP R 47K J 1/10W		R216,217			RK73GB2A000J	CHIP R 0 J 1/10W	
R135			RK73GB2A000J	CHIP R 0 J 1/10W		R218,219			RK73GB2A473J	CHIP R 47K J 1/10W	
R137			RK73GB2A102J	CHIP R 1.0K J 1/10W		R220,221			RK73GB2A000J	CHIP R 0 J 1/10W	
R138			RK73GB2A473J	CHIP R 47K J 1/10W		R222			RK73GB2A473J	CHIP R 47K J 1/10W	
R141-144			RK73GB2A000J	CHIP R 0 J 1/10W		R223			RK73GB2A103J	CHIP R 10K J 1/10W	
R145			RK73GB2A104J	CHIP R 100K J 1/10W		R224			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R146-148			RK73GB2A000J	CHIP R 0 J 1/10W		R225			RK73GB2A103J	CHIP R 10K J 1/10W	
R149			RK73GB2A333J	CHIP R 33K J 1/10W		R226			RK73GB2A822J	CHIP R 8.2K J 1/10W	
R150			RK73GB2A563J	CHIP R 56K J 1/10W		R228,229			RK73GB2A824J	CHIP R 820K J 1/10W	
R151			RK73GB2A124J	CHIP R 120K J 1/10W		R230,231			RK73GB2A473J	CHIP R 47K J 1/10W	
R152			RK73GB2A104J	CHIP R 100K J 1/10W		R232			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R153			RK73GB2A000J	CHIP R 0 J 1/10W		R233			RK73GB2A000J	CHIP R 0 J 1/10W	
R154,155			RK73GB2A333J	CHIP R 33K J 1/10W		R234,235			RK73GB2A473J	CHIP R 47K J 1/10W	

## PARTS LIST

CONTROL UNIT (X53-4132-71)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R237			RK73GB2A473J	CHIP R 47K J 1/10W		R471-473			RK73GB2A104J	CHIP R 100K J 1/10W	
R240-243			RK73GB2A473J	CHIP R 47K J 1/10W		R474			RK73GB2A000J	CHIP R 0 J 1/10W	
R245,246			RK73GB2A472J	CHIP R 4.7K J 1/10W		R475			RK73GB2A104J	CHIP R 100K J 1/10W	
R247			RK73GB2A473J	CHIP R 47K J 1/10W		R477			RK73GB2A104J	CHIP R 100K J 1/10W	
R249,250			RK73GB2A000J	CHIP R 0 J 1/10W		R478			RK73GB2A103J	CHIP R 10K J 1/10W	
R251			RK73GB2A473J	CHIP R 47K J 1/10W		R479			RK73GB2A000J	CHIP R 0 J 1/10W	
R254			RK73GB2A473J	CHIP R 47K J 1/10W		R482			RK73GB2A000J	CHIP R 0 J 1/10W	
R261,262			RK73GB2A473J	CHIP R 47K J 1/10W		R484			RK73GB2A000J	CHIP R 0 J 1/10W	
R267-271			RK73GB2A473J	CHIP R 47K J 1/10W		R491-495			RK73GB2A000J	CHIP R 0 J 1/10W	
R273			RK73GB2A473J	CHIP R 47K J 1/10W		R501			RK73GB2A000J	CHIP R 0 J 1/10W	
R275			RK73GB2A473J	CHIP R 47K J 1/10W		R502			RK73GB2A183J	CHIP R 18K J 1/10W	
R277			RK73GB2A473J	CHIP R 47K J 1/10W		R507-510			RK73GB2A183J	CHIP R 18K J 1/10W	
R279			RK73GB2A103J	CHIP R 10K J 1/10W		R511-515			RK73GB2A123J	CHIP R 12K J 1/10W	
R281			RK73GB2A103J	CHIP R 10K J 1/10W		R522,523			RK73GB2A000J	CHIP R 0 J 1/10W	
R283			RK73GB2A000J	CHIP R 0 J 1/10W		R524,525			RK73GB2A473J	CHIP R 47K J 1/10W	
R286-288			RK73GB2A000J	CHIP R 0 J 1/10W		R526,527			RK73GB2A121J	CHIP R 120 J 1/10W	
R289			RK73GB2A473J	CHIP R 47K J 1/10W		R528-535			RK73GB2A000J	CHIP R 0 J 1/10W	
R290			RK73GB2A000J	CHIP R 0 J 1/10W		R536			RK73GB2A104J	CHIP R 100K J 1/10W	
R292-294			RK73GB2A000J	CHIP R 0 J 1/10W		R540			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R296,297			RK73GB2A473J	CHIP R 47K J 1/10W		R541			RK73GB2A123J	CHIP R 12K J 1/10W	
R299,300			RK73GB2A103J	CHIP R 10K J 1/10W		R552			RK73GB2A000J	CHIP R 0 J 1/10W	
R301,302			RK73GB2A104J	CHIP R 100K J 1/10W		D1 ,2			CMS05-Q	DIODE	
R303-315			RK73GB2A473J	CHIP R 47K J 1/10W		D3 ,4			DA204U	DIODE	
R316-338			RK73GB2A000J	CHIP R 0 J 1/10W		D5			1SS355	DIODE	
R340			RK73GB2A102J	CHIP R 1.0K J 1/10W		D6			02DZ18F-X	ZENER DIODE	
R342-351			RK73GB2A102J	CHIP R 1.0K J 1/10W		D7 -11			DA204U	DIODE	
R352			RK73GB2A471J	CHIP R 470 J 1/10W		D12			1SS355	DIODE	
R353-357			RK73GB2A102J	CHIP R 1.0K J 1/10W		D13			02DZ18F-X	ZENER DIODE	
R358			RK73GB2A122J	CHIP R 1.2K J 1/10W		D14 -18			DA204U	DIODE	
R359			RK73GB2A000J	CHIP R 0 J 1/10W		D20			DA204U	DIODE	
R360			RK73GB2A122J	CHIP R 1.2K J 1/10W		D23			DA204U	DIODE	
R361-377			RK73GB2A000J	CHIP R 0 J 1/10W		D24			SMD185F-2	VARIATOR	
R378,379			RK73GB2A122J	CHIP R 1.2K J 1/10W		D25			MINISMD C020F	VARIATOR	
R380			RK73GB2A000J	CHIP R 0 J 1/10W		D26			1SS388F	DIODE	
R389-396			RK73GB2A000J	CHIP R 0 J 1/10W		D28			1SS355	DIODE	
R398-404			RK73GB2A000J	CHIP R 0 J 1/10W		D29			02DZ18F-X	ZENER DIODE	
R406-409			RK73GB2A000J	CHIP R 0 J 1/10W		D30			1SS355	DIODE	
R410			RK73GB2A684J	CHIP R 680K J 1/10W		D31			02DZ18F-X	ZENER DIODE	
R411			RK73GB2A224J	CHIP R 220K J 1/10W		D32			1SS355	DIODE	
R412			RK73GB2A103J	CHIP R 10K J 1/10W		D33			02DZ18F-X	ZENER DIODE	
R413			RK73GB2A104J	CHIP R 100K J 1/10W		D36 ,37			DA204U	DIODE	
R414			RK73GB2A000J	CHIP R 0 J 1/10W		D38 ,39			1SS388F	DIODE	
R415-418			RK73GB2A104J	CHIP R 100K J 1/10W		IC1			BU4094BCFV	MOS-IC	
R419,420			RK73GB2A000J	CHIP R 0 J 1/10W		IC2 ,3			BU4053BCFV	MOS-IC	
R426			RS14KB3D220J	FL-PROOF RS 22 J 2W		IC4			AK4550VTP	MOS-IC	
R427			RK73GB2A223J	CHIP R 22K J 1/10W		IC5			NJM2732V	BI-POLAR IC	
R428-430			RK73GB2A000J	CHIP R 0 J 1/10W		IC6			XC6209B332P-G	MOS-IC	
R432			RK73GB2A470J	CHIP R 47 J 1/10W		IC7			TA75S01F-F	MOS-IC	
R433			RK73GB2A473J	CHIP R 47K J 1/10W		IC8			M62364FP-F	MOS-IC	
R434			RK73GB2A470J	CHIP R 47 J 1/10W		IC9			NJM2734V	BI-POLAR IC	
R435			RK73GB2A473J	CHIP R 47K J 1/10W		IC10,11			NJM2340RB1	MOS-IC	
R436-446			RK73GB2A000J	CHIP R 0 J 1/10W		IC12			NJM2732V	BI-POLAR IC	
R448-454			RK73GB2A000J	CHIP R 0 J 1/10W		IC14			BU4053BCFV	MOS-IC	
R455			RK73GB2A104J	CHIP R 100K J 1/10W		IC15			BA33BC0FP	MOS-IC	
R457			RK73GB2A473J	CHIP R 47K J 1/10W		IC16			XC6209B502P-G	MOS-IC	
R458,459			RK73GB2A104J	CHIP R 100K J 1/10W		IC17			<b>Note 1(BGA)</b>	ROM IC	
R460,461			RK73GB2A103J	CHIP R 10K J 1/10W		IC18			XC6201P182M-G	MOS-IC	
R467,468			RK73GB2A000J	CHIP R 0 J 1/10W		IC19			NJM2732V	BI-POLAR IC	
R469			RK73GB2A103J	CHIP R 10K J 1/10W		IC20,21			NJM2734V	BI-POLAR IC	
R470			RK73GB2A000J	CHIP R 0 J 1/10W							

Note 1 : This part cannot be replaced. Therefore, this part is not supplied as a service part.

## PARTS LIST

CONTROL UNIT (X53-4132-71)

CONTROL UNIT (X53-4140-10)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
IC22			BU4094BCFV	MOS-IC		C341,342			CK73HB1H102K	CHIP C 1000PF K	
IC23			TC7SH00FU-F	MOS-IC		C343			CC73HCH1H101J	CHIP C 100PF J	
IC25			TC7S66FUF	MOS-IC		C344			CK73HB1H102K	CHIP C 1000PF K	
IC26			NJM2734V	BI-POLAR IC		C345			CC73HCH1H101J	CHIP C 100PF J	
IC27			TC7SET126FU-F	MOS-IC		C346-348			CK73HB1H102K	CHIP C 1000PF K	
IC28			TC7SH126FU-F	MOS-IC		C349			CC73HCH1H101J	CHIP C 100PF J	
IC29	2C		LA4425A	MOS-IC		C350			CK73HB1H102K	CHIP C 1000PF K	
IC30			TC7SH00FU-F	MOS-IC		C352			CK73HB1H102K	CHIP C 1000PF K	
IC31		*	TC74VHC4040FK	MOS-IC		C353			CC73HCH1H101J	CHIP C 100PF J	
IC32,33			TC7SH126FU-F	MOS-IC		C354			CK73HB1H102K	CHIP C 1000PF K	
IC34		*	30625MGP490GU	MICROPROCESSOR IC		C355			CK73HB1E103K	CHIP C 0.010UF K	
IC35			S24CS02AFJTBG	ROM IC		C356			CC73HCH1H101J	CHIP C 100PF J	
IC36		*	TC74VHCT541AK	MOS-IC		C357,358			CK73HB1H102K	CHIP C 1000PF K	
IC37			320VC5402PGE	MICROPROCESSOR IC		C359,360			CK73HB1A104K	CHIP C 0.10UF K	
IC38			TC7SET08FU-F	MOS-IC		C361			CK73HB1H102K	CHIP C 1000PF K	
IC39			TC7SH125FU-F	MOS-IC		C362			CK73HB1E103K	CHIP C 0.010UF K	
IC40			TC7SH126FU-F	MOS-IC		C364-366			CK73HB1H102K	CHIP C 1000PF K	
IC41			TC7SH08FU-F	MOS-IC		C369,370			CK73HB1H102K	CHIP C 1000PF K	
IC50			TC7SH08FU-F	MOS-IC		C371			CK73HB1A104K	CHIP C 0.10UF K	
Q1			RT1N141M-T111	TRANSISTOR		C373,374			CK73HB1H102K	CHIP C 1000PF K	
Q2 ,3			2SJ506-E(S)	FET		C376-378			CK73HB1H102K	CHIP C 1000PF K	
Q4 ,5			2SC4738F	TRANSISTOR		C379			CK73HB1A104K	CHIP C 0.10UF K	
Q6			DTC363EU	DIGITAL TRANSISTOR		C380,381			CK73HB1H102K	CHIP C 1000PF K	
Q7 ,8			RT1N141M-T111	TRANSISTOR		C383-386			CK73HB1H102K	CHIP C 1000PF K	
Q9			2SJ506-E(S)	FET		C387			CK73GB1H103K	CHIP C 0.010UF K	
Q10			2SC4738F	TRANSISTOR		C388-390			CK73HB1H102K	CHIP C 1000PF K	
Q11			2SD2114K(W)	TRANSISTOR		C391			CK73GB1E105K	CHIP C 1.0UF K	
Q12			2SC4738F	TRANSISTOR		C393-395			CK73HB1H102K	CHIP C 1000PF K	
Q13			2SD2114K(W)	TRANSISTOR		C396			CK73GB1H103K	CHIP C 0.010UF K	
Q14			2SC4116(Y)F	TRANSISTOR		C397,398			CK73HB1H102K	CHIP C 1000PF K	
Q15			2SA1586(Y)F	TRANSISTOR		C399			CK73GB1H104K	CHIP C 0.10UF K	
Q16			2SC4116(Y)F	TRANSISTOR		C401			CC73HCH1H101J	CHIP C 100PF J	
Q17			2SA1586(Y)F	TRANSISTOR		C402			CK73HB1H102K	CHIP C 1000PF K	
Q18			2SK1830F	FET		C403			CC73HCH1H101J	CHIP C 100PF J	
Q19			HN1L02FU(F)	FET		C405,406			CK73HB1H102K	CHIP C 1000PF K	
Q20			2SA1955A-F	TRANSISTOR		C409			CK73HB1H102K	CHIP C 1000PF K	
Q21			RT1N441M-T111	TRANSISTOR		C410			CC73HCH1H101J	CHIP C 100PF J	
Q22			2SA1955A-F	TRANSISTOR		C412-415			CK73HB1H102K	CHIP C 1000PF K	
Q23			RT1N441M-T111	TRANSISTOR		C416			CC73HCH1H101J	CHIP C 100PF J	
Q25 ,26			RT1N441M-T111	TRANSISTOR		C417,418			CE32AU1C330M	CHIP EL 33UF 16WV	
Q27 -29			2SD2114K(W)	TRANSISTOR		C419			CC73HCH1H101J	CHIP C 100PF J	
						C420			CK73HB1A104K	CHIP C 0.10UF K	
						C421			CK73HB1H102K	CHIP C 1000PF K	
						C422			CE32AU1C330M	CHIP EL 33UF 16WV	
						C423			CC73HCH1H101J	CHIP C 100PF J	
<b>CONTROL UNIT (X53-4140-10)</b>											
C302			CC73HCH1H101J	CHIP C 100PF J		C424			CK73HB1H102K	CHIP C 1000PF K	
C303			CK73HB1H102K	CHIP C 1000PF K		C426-430			CK73HB1H102K	CHIP C 1000PF K	
C305			CK73HB1A104K	CHIP C 0.10UF K		C432			CC73HCH1H101J	CHIP C 100PF J	
C306			CK73HB1H102K	CHIP C 1000PF K		C433			CK73HB1H102K	CHIP C 1000PF K	
C308,309			CK73HB1H102K	CHIP C 1000PF K		C435-437			CK73HB1H102K	CHIP C 1000PF K	
C311			CK73HB1A104K	CHIP C 0.10UF K		C438			CK73GB1H103K	CHIP C 0.010UF K	
C312-317			CK73HB1H102K	CHIP C 1000PF K		C439			CE32AU1C330M	CHIP EL 33UF 16WV	
C320			CC73HCH1H101J	CHIP C 100PF J		C440-442			CK73HB1H102K	CHIP C 1000PF K	
C322,323			CK73HB1H102K	CHIP C 1000PF K		C443,444			CE32AU1C330M	CHIP EL 33UF 16WV	
C324			CC73HCH1H101J	CHIP C 100PF J		C445			CK73HB1A104K	CHIP C 0.10UF K	
C326-329			CK73HB1H102K	CHIP C 1000PF K		C446			CK73FB1H102K	CHIP C 1000PF K	
C331			CK73HB1H102K	CHIP C 1000PF K		C447			CK73HB1A104K	CHIP C 0.10UF K	
C333-335			CK73HB1H102K	CHIP C 1000PF K		C448			CE32AU1C330M	CHIP EL 33UF 16WV	
C337			CK73HB1H102K	CHIP C 1000PF K		C449,450			CK73HB1A104K	CHIP C 0.10UF K	
C339			CC73HCH1H101J	CHIP C 100PF J		C453			CK73GB1H103K	CHIP C 0.010UF K	



## PARTS LIST

CONTROL UNIT (X53-4140-10)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C461			CK73GB1H103K	CHIP C 0.010UF K		C575-588			CK73HB1E103K	CHIP C 0.010UF K	
C462			CK73HB1E103K	CHIP C 0.010UF K		C590-601			CK73HB1E103K	CHIP C 0.010UF K	
C463			CC73HCH1H100D	CHIP C 10PF D		C700			CK73HB1E103K	CHIP C 0.010UF K	
C465			CK73GB1H103K	CHIP C 0.010UF K		C701			CK73HB1A104K	CHIP C 0.10UF K	
C466			CK73GB1H104K	CHIP C 0.10UF K		C702			CK73HB1H102K	CHIP C 1000PF K	
C467			CK73GB1H103K	CHIP C 0.010UF K		C703			CC73HCH1H150J	CHIP C 15PF J	
C468			CK73GB1H104K	CHIP C 0.10UF K		C704,705			CK73FB0J106K	CHIP C 10UF K	
C469			CC73GCH1H121J	CHIP C 120PF J		C706			CK73HB1H102K	CHIP C 1000PF K	
C471			CK73HB1H102K	CHIP C 1000PF K		C707			CC73HCH1H080D	CHIP C 8.0PF D	
C474			CK73HB1H392K	CHIP C 3900PF K		C708			CK73HB1A104K	CHIP C 0.10UF K	
C475			CK73FB0J106K	CHIP C 10UF K		C709			CK73FB0J106K	CHIP C 10UF K	
C476			CK73HB1A104K	CHIP C 0.10UF K		C710			CK73HB1E103K	CHIP C 0.010UF K	
C477			CC73GCH1H121J	CHIP C 120PF J		C711			CK73FB0J106K	CHIP C 10UF K	
C478			CK73HB1H102K	CHIP C 1000PF K		C712			CK73HB1H102K	CHIP C 1000PF K	
C479			CC73GCH1H121J	CHIP C 120PF J		C713			CK73HB1A104K	CHIP C 0.10UF K	
C480			CK73FB0J106K	CHIP C 10UF K		C714			CK73FB0J106K	CHIP C 10UF K	
C482			CK73HB1A104K	CHIP C 0.10UF K		C715			CK73HB1A104K	CHIP C 0.10UF K	
C484			CS77BA1C010M	CHIP TNL 1.0UF 16WV		C716			CK73HB1H102K	CHIP C 1000PF K	
C485			CK73GB1H103K	CHIP C 0.010UF K		C717			CK73HB1A104K	CHIP C 0.10UF K	
C486			CC73GCH1H121J	CHIP C 120PF J		C718			CC73HCH1H080D	CHIP C 8.0PF D	
C487			CK73HB1H102K	CHIP C 1000PF K		C719			CK73FB0J106K	CHIP C 10UF K	
C491			CK73FB0J106K	CHIP C 10UF K		C720			CK73HB1A104K	CHIP C 0.10UF K	
C493,494			CK73HB1A104K	CHIP C 0.10UF K		C721			CC73HCH1H100D	CHIP C 10PF D	
C495			CK73GB1E105K	CHIP C 1.0UF K		C722,723			CK73HB1H102K	CHIP C 1000PF K	
C496			CK73HB1C822K	CHIP C 8200PF K		C724			CK73HB1A104K	CHIP C 0.10UF K	
C501			CK73HB1A104K	CHIP C 0.10UF K		C725			CK73HB1H102K	CHIP C 1000PF K	
C504			CK73HB1A104K	CHIP C 0.10UF K		C726			CK73FB0J106K	CHIP C 10UF K	
C506			CK73HB1H472K	CHIP C 4700PF K		C727			CC73HCH1H020B	CHIP C 2.0PF B	
C507			CK73GB1E103K	CHIP C 0.010UF K		C728			CK73HB1E103K	CHIP C 0.010UF K	
C508			CK73HB1A104K	CHIP C 0.10UF K		C729			CC73HCH1H020B	CHIP C 2.0PF B	
C509			CK73GB1E105K	CHIP C 1.0UF K		C730			CK73HB1A104K	CHIP C 0.10UF K	
C515			CK73GB1E105K	CHIP C 1.0UF K		C732			CK73HB1H102K	CHIP C 1000PF K	
C516			CK73HB1H102K	CHIP C 1000PF K		C733-741			CK73HB1A104K	CHIP C 0.10UF K	
C517			CK73HB1A104K	CHIP C 0.10UF K		C742			CK73FB0J106K	CHIP C 10UF K	
C519			CK73HB1C473K	CHIP C 0.047UF K		C743,744			CK73HB1A104K	CHIP C 0.10UF K	
C520			CK73GB1E105K	CHIP C 1.0UF K		C746-750			CK73GB1E105K	CHIP C 1.0UF K	
C521			CK73HB1E103K	CHIP C 0.010UF K		C751			CK73HB1E103K	CHIP C 0.010UF K	
C522-525			CK73HB1A104K	CHIP C 0.10UF K		C754-758			CK73HB1A104K	CHIP C 0.10UF K	
C526-529			CK73FB0J106K	CHIP C 10UF K		C767,768			CK73HB1H102K	CHIP C 1000PF K	
C531			CK73HB1H102K	CHIP C 1000PF K		C769			CK73FB0J106K	CHIP C 10UF K	
C532			CK73HB1A104K	CHIP C 0.10UF K		C770-773			CK73HB1A104K	CHIP C 0.10UF K	
C533-536			CK73HB1H102K	CHIP C 1000PF K		C775			CK73HB1H102K	CHIP C 1000PF K	
C537			CK73FB0J106K	CHIP C 10UF K		C776-780			CK73HB1E103K	CHIP C 0.010UF K	
C538,539			CK73HB1H102K	CHIP C 1000PF K		C781			CK73HB1A104K	CHIP C 0.10UF K	
C543			CK73FB0J106K	CHIP C 10UF K		C782,783			CC73HCH1H120G	CHIP C 12PF G	
C544-546			CK73HB1H102K	CHIP C 1000PF K		C784,785			CK73HB1A104K	CHIP C 0.10UF K	
C547			CK73FB0J106K	CHIP C 10UF K		C786			CC73HCH1H150J	CHIP C 15PF J	
C548			CK73HB1E103K	CHIP C 0.010UF K		C787			CC73HCH1H100D	CHIP C 10PF D	
C549			CC73HCH1H120G	CHIP C 12PF G		C788			CK73FB0J106K	CHIP C 10UF K	
C550,551			CC73HCH1H100D	CHIP C 10PF D		C789-793			CK73HB1A104K	CHIP C 0.10UF K	
C552			CC73HCH1H150J	CHIP C 15PF J		C794			CK73FB0J106K	CHIP C 10UF K	
C553			CK73HB1E103K	CHIP C 0.010UF K		C795			CK73HB1A104K	CHIP C 0.10UF K	
C557			CK73HB1H102K	CHIP C 1000PF K		C796,797			CK73HB1E103K	CHIP C 0.010UF K	
C565			CK73FB0J106K	CHIP C 10UF K		C798			CK73HB1A104K	CHIP C 0.10UF K	
C566			CK73HB1H102K	CHIP C 1000PF K		C799,800			CK73HB1E103K	CHIP C 0.010UF K	
C567			CK73HB1E103K	CHIP C 0.010UF K		C801			CK73HB1H102K	CHIP C 1000PF K	
C569			CE32AU1C330M	CHIP EL 33UF 16WV		C802,803			CK73HB1A104K	CHIP C 0.10UF K	
C570,571			CK73HB1H102K	CHIP C 1000PF K		C804			CK73FB0J106K	CHIP C 10UF K	
C572			CE32BM1E470M	CHIP EL 47UF 25WV		C805-807			CK73HB1E103K	CHIP C 0.010UF K	
C574			CK73HB1H102K	CHIP C 1000PF K		C808			CK73HB1H102K	CHIP C 1000PF K	

## PARTS LIST

### CONTROL UNIT (X53-4140-10)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C809			CK73HB1A104K	CHIP C 0.10UF K		R309			RK73HB1J000J	CHIP R 0 J 1/16W	
C812			CK73HB1A104K	CHIP C 0.10UF K		R311-317			RK73HB1J000J	CHIP R 0 J 1/16W	
C813-815			CK73HB1H102K	CHIP C 1000PF K		R318,319			RK73HB1J101J	CHIP R 100 J 1/16W	
C816-818			CK73HB1A104K	CHIP C 0.10UF K		R320-337			RK73HB1J000J	CHIP R 0 J 1/16W	
C819			CK73HB1H102K	CHIP C 1000PF K		R339			RK73HB1J473J	CHIP R 47K J 1/16W	
C820,821			CK73HB1A104K	CHIP C 0.10UF K		R340-350			RK73HB1J000J	CHIP R 0 J 1/16W	
C822			CK73HB1H102K	CHIP C 1000PF K		R352-354			RK73HB1J000J	CHIP R 0 J 1/16W	
C825			CK73HB1H102K	CHIP C 1000PF K		R356-360			RK73HB1J000J	CHIP R 0 J 1/16W	
C826,827			CC73HCH1H101J	CHIP C 100PF J		R361			RK73GB2A104J	CHIP R 100K J 1/10W	
C828			CK73HB1H102K	CHIP C 1000PF K		R362			RK73GB2A681J	CHIP R 680 J 1/10W	
C829			CC73HCH1H101J	CHIP C 100PF J		R363-386			RK73HB1J000J	CHIP R 0 J 1/16W	
C830			CK73HB1H102K	CHIP C 1000PF K		R387			RK73HB1J104J	CHIP R 100K J 1/16W	
C831			CC73HCH1H101J	CHIP C 100PF J		R388-390			RK73GB2A000J	CHIP R 0 J 1/10W	
C832			CK73HB1H102K	CHIP C 1000PF K		R391			RK73GB2A100J	CHIP R 10 J 1/10W	
C833,834			CK73HB1A104K	CHIP C 0.10UF K		R392			RK73HB1J103J	CHIP R 10K J 1/16W	
C835-837			CK73HB1H102K	CHIP C 1000PF K		R393-397			RK73HB1J000J	CHIP R 0 J 1/16W	
C838,839			CC73HCH1H101J	CHIP C 100PF J		R398			RK73HB1J104J	CHIP R 100K J 1/16W	
C841-848			CC73GCH1H470J	CHIP C 47PF J		R399			RK73HB1J151J	CHIP R 150 J 1/16W	
C850			CC73GCH1H470J	CHIP C 47PF J		R401			RK73HB1J000J	CHIP R 0 J 1/16W	
C851-869			CC73HCH1H470J	CHIP C 47PF J		R403			RK73GB2A000J	CHIP R 0 J 1/10W	
C870-873			CK73HB1H102K	CHIP C 1000PF K		R404,405			RK73HB1J000J	CHIP R 0 J 1/16W	
CN300			E04-0193-05	PIN SOCKET		R406			RK73GB2A000J	CHIP R 0 J 1/10W	
CN302			E04-0193-05	PIN SOCKET		R408,409			RK73HB1J000J	CHIP R 0 J 1/16W	
CN400-402			E40-6656-05	PIN ASSY(36P)		R410			RK73GB2A103J	CHIP R 10K J 1/10W	
CN713			E41-2263-05	PIN ASSY(9P)		R411			RK73GB2A472J	CHIP R 4.7K J 1/10W	
J700			E58-0516-05	MODULAR JACK(LAN)		R413			RK73GB2A103J	CHIP R 10K J 1/10W	
J701			E58-0543-05	RECTANGULAR RECEPTACLE		R414			RK73HB1J000J	CHIP R 0 J 1/16W	
J702,703			E58-0533-05	MODULAR JACK(SYNC)		R415			RK73HB1J100J	CHIP R 10 J 1/16W	
L300-307			L92-0447-05	BEADS CORE		R416			RK73HB1J104J	CHIP R 100K J 1/16W	
L308,309			L41-8285-33	SMALL FIXED INDUCTOR(0.82UH)		R417			RK73HB1J000J	CHIP R 0 J 1/16W	
L310			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		R418,419			RK73GB2A104J	CHIP R 100K J 1/10W	
L311,312			L41-1595-33	SMALL FIXED INDUCTOR(1.5UH)		R420			RK73HB1J000J	CHIP R 0 J 1/16W	
L313-316			L92-0447-05	BEADS CORE		R421			RK73HB1J100J	CHIP R 10 J 1/16W	
L317,318			L33-1500-05	CHOKO COIL		R422			RK73HB1J000J	CHIP R 0 J 1/16W	
L319-325			L92-0447-05	BEADS CORE		R423			RK73HB1J000J	CHIP R 0 J 1/16W	
L326-331			L92-0467-05	CHIP FERRITE		R424			RK73GB2A681J	CHIP R 680 J 1/10W	
X300			L77-1988-05	VCXO(12.288MHZ)		R425			RK73HB1J000J	CHIP R 0 J 1/16W	
X301			L77-1984-05	CRYSTAL RESONATOR(14.7456MHZ)		R428			RK73GB2A100J	CHIP R 10 J 1/10W	
X700			L77-1985-05	CRYSTAL RESONATOR(25.8048MHZ)		R429			RK73GB2A471J	CHIP R 470 J 1/10W	
X701			L77-1802-05	CRYSTAL RESONATOR(32.768KHZ)		R431			RK73HB1J000J	CHIP R 0 J 1/16W	
X702			L77-1986-05	CRYSTAL RESONATOR(25MHZ)		R432			RK73GB2A220J	CHIP R 22 J 1/10W	
CP7 -11			RK75HA1J104J	CHIP-COM 100K J 1/16W		R433			RK73HB1J105J	CHIP R 1.0M J 1/16W	
CP13			RK75HA1J104J	CHIP-COM 100K J 1/16W		R438			RK73GB2A100J	CHIP R 10 J 1/10W	
CP14-16			RK75HA1JR00J	CHIP-COM 0 J 1/16W		R439,440			RK73GB2A220J	CHIP R 22 J 1/10W	
CP18			RK75HA1JR00J	CHIP-COM 0 J 1/16W		R441			RK73HB1J823J	CHIP R 82K J 1/16W	
CP20			RK75HA1JR00J	CHIP-COM 0 J 1/16W		R442			RK73HB1J683J	CHIP R 68K J 1/16W	
CP37			RK75HA1JR00J	CHIP-COM 0 J 1/16W		R445			RK73HB1J393J	CHIP R 39K J 1/16W	
CP43			RK75HA1JR00J	CHIP-COM 0 J 1/16W		R446,447			RK73HB1J000J	CHIP R 0 J 1/16W	
CP47			RK75HA1JR00J	CHIP-COM 0 J 1/16W		R448			RK73GB2A221J	CHIP R 220 J 1/10W	
CP50			RK75HA1JR00J	CHIP-COM 0 J 1/16W		R449			RK73HB1J683J	CHIP R 68K J 1/16W	
CP60			RK75HA1JR00J	CHIP-COM 0 J 1/16W		R451			RK73HB1J473J	CHIP R 47K J 1/16W	
CP62			RK75HA1JR00J	CHIP-COM 0 J 1/16W		R452-454			RK73HB1J100J	CHIP R 10 J 1/16W	
CP68			RK75HA1JR00J	CHIP-COM 0 J 1/16W		R457-461			RK73HB1J473J	CHIP R 47K J 1/16W	
CP75-78			RK75HA1JR00J	CHIP-COM 0 J 1/16W		R464			RK73HB1J472J	CHIP R 4.7K J 1/16W	
CP83-98			RK75HA1J390J	CHIP-COM 39 J 1/16W		R469			RK73HB1J470J	CHIP R 47 J 1/16W	
R300,301			RK73GB2A000J	CHIP R 0 J 1/10W		R470			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R302			RK73HB1J000J	CHIP R 0 J 1/16W		R474			RK73HB1J100J	CHIP R 10 J 1/16W	
R303			RK73GB2A000J	CHIP R 0 J 1/10W		R478			RK73HB1J100J	CHIP R 10 J 1/16W	
						R479			RK73HB1J102J	CHIP R 1.0K J 1/16W	
						R480			RK73HB1J100J	CHIP R 10 J 1/16W	
						R481			RK73HB1J473J	CHIP R 47K J 1/16W	

## PARTS LIST

CONTROL UNIT (X53-4140-10)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R483			RK73HB1J104J	CHIP R 100K J 1/16W		R641			RK73HB1J000J	CHIP R 0 J 1/16W	
R484			RK73HB1J000J	CHIP R 0 J 1/16W		R642			RK73HB1J101J	CHIP R 100 J 1/16W	
R485			RK73HB1J100J	CHIP R 10 J 1/16W		R643			RK73HB1J473J	CHIP R 47K J 1/16W	
R486-489			RK73HB1J000J	CHIP R 0 J 1/16W		R644			RK73HB1J000J	CHIP R 0 J 1/16W	
R491-505			RK73HB1J000J	CHIP R 0 J 1/16W		R646			RK73HB1J473J	CHIP R 47K J 1/16W	
R516-518			RK73HB1J473J	CHIP R 47K J 1/16W		R648			RK73HB1J000J	CHIP R 0 J 1/16W	
R521			RK73HB1J000J	CHIP R 0 J 1/16W		R649			RK73HB1J101J	CHIP R 100 J 1/16W	
R522			RK73HB1J473J	CHIP R 47K J 1/16W		R650			RK73HB1J473J	CHIP R 47K J 1/16W	
R526			RK73HB1J000J	CHIP R 0 J 1/16W		R651-653			RK73HB1J000J	CHIP R 0 J 1/16W	
R527			RK73HB1J473J	CHIP R 47K J 1/16W		R656,657			RK73HB1J000J	CHIP R 0 J 1/16W	
R528,529			RK73HB1J000J	CHIP R 0 J 1/16W		R660-664			RK73HB1J000J	CHIP R 0 J 1/16W	
R530			RK73HB1J473J	CHIP R 47K J 1/16W		R667,668			RK73HB1J000J	CHIP R 0 J 1/16W	
R531,532			RK73HB1J000J	CHIP R 0 J 1/16W		R672-674			RK73HB1J473J	CHIP R 47K J 1/16W	
R533,534			RK73HB1J473J	CHIP R 47K J 1/16W		R678,679			RK73HB1J000J	CHIP R 0 J 1/16W	
R535-539			RK73HB1J000J	CHIP R 0 J 1/16W		R680			RK73HB1J473J	CHIP R 47K J 1/16W	
R540-542			RK73HB1J473J	CHIP R 47K J 1/16W		R685-687			RK73HB1J000J	CHIP R 0 J 1/16W	
R543			RK73HB1J000J	CHIP R 0 J 1/16W		R690			RK73HB1J000J	CHIP R 0 J 1/16W	
R546			RK73HB1J000J	CHIP R 0 J 1/16W		R700,701			RK73HB1J103J	CHIP R 10K J 1/16W	
R547,548			RK73HB1J473J	CHIP R 47K J 1/16W		R702,703			RK73HB1J473J	CHIP R 47K J 1/16W	
R549			RK73HB1J000J	CHIP R 0 J 1/16W		R709,710			RK73HB1J104J	CHIP R 100K J 1/16W	
R550			RK73HB1J473J	CHIP R 47K J 1/16W		R711			RK73GB2A000J	CHIP R 0 J 1/10W	
R551,552			RK73HB1J000J	CHIP R 0 J 1/16W		R712-714			RK73HB1J100J	CHIP R 10 J 1/16W	
R553-555			RK73HB1J473J	CHIP R 47K J 1/16W		R715			RK73GB2A000J	CHIP R 0 J 1/10W	
R556,557			RK73HB1J000J	CHIP R 0 J 1/16W		R716			RK73HB1J000J	CHIP R 0 J 1/16W	
R559			RK73HB1J102J	CHIP R 1.0K J 1/16W		R718			RK73HB1J104J	CHIP R 100K J 1/16W	
R560			RK73HB1J103J	CHIP R 10K J 1/16W		R719			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R561			RK73HB1J000J	CHIP R 0 J 1/16W		R720			RK73HB1J100J	CHIP R 10 J 1/16W	
R562			RK73HB1J103J	CHIP R 10K J 1/16W		R721			RK73GB2A000J	CHIP R 0 J 1/10W	
R564-566			RK73HB1J000J	CHIP R 0 J 1/16W		R722			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R567			RK73HB1J473J	CHIP R 47K J 1/16W		R725,726			RK73HB1J000J	CHIP R 0 J 1/16W	
R568			RK73HB1J000J	CHIP R 0 J 1/16W		R727			RK73HB1J103J	CHIP R 10K J 1/16W	
R569			RK73HB1J224J	CHIP R 220K J 1/16W		R729,730			RK73HB1J000J	CHIP R 0 J 1/16W	
R570			RK73HB1J000J	CHIP R 0 J 1/16W		R731			RK73HB1J103J	CHIP R 10K J 1/16W	
R573-576			RK73HB1J000J	CHIP R 0 J 1/16W		R732			RK73HB1J390J	CHIP R 39 J 1/16W	
R577,578			RK73HB1J473J	CHIP R 47K J 1/16W		R733			RK73HB1J104J	CHIP R 100K J 1/16W	
R579			RK73HB1J000J	CHIP R 0 J 1/16W		R734			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R581			RK73HB1J000J	CHIP R 0 J 1/16W		R735,736			RK73HB1J000J	CHIP R 0 J 1/16W	
R582			RK73HB1J473J	CHIP R 47K J 1/16W		R738			RK73HB1J104J	CHIP R 100K J 1/16W	
R583			RK73HB1J000J	CHIP R 0 J 1/16W		R742			RK73HB1J104J	CHIP R 100K J 1/16W	
R584			RK73HB1J473J	CHIP R 47K J 1/16W		R743,744			RK73HB1J153J	CHIP R 15K J 1/16W	
R585,586			RK73HB1J000J	CHIP R 0 J 1/16W		R745			RK73HB1J104J	CHIP R 100K J 1/16W	
R587			RK73HB1J473J	CHIP R 47K J 1/16W		R754			RK73HB1J103J	CHIP R 10K J 1/16W	
R588			RK73HB1J000J	CHIP R 0 J 1/16W		R756			RK73HB1J000J	CHIP R 0 J 1/16W	
R589			RK73HB1J473J	CHIP R 47K J 1/16W		R758			RK73HB1J103J	CHIP R 10K J 1/16W	
R590			RK73HB1J000J	CHIP R 0 J 1/16W		R759			RK73HB1J000J	CHIP R 0 J 1/16W	
R591			RK73HB1J223J	CHIP R 22K J 1/16W		R760			RK73HB1J103J	CHIP R 10K J 1/16W	
R592-600			RK73HB1J000J	CHIP R 0 J 1/16W		R761-765			RK73GB2A000J	CHIP R 0 J 1/10W	
R602			RK73HB1J103J	CHIP R 10K J 1/16W		R766			RK73HB1J000J	CHIP R 0 J 1/16W	
R604			RK73HB1J103J	CHIP R 10K J 1/16W		R767			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R605-610			RK73HB1J000J	CHIP R 0 J 1/16W		R768-770			RK73HB1J000J	CHIP R 0 J 1/16W	
R612-616			RK73HB1J000J	CHIP R 0 J 1/16W		R772-777			RK73HB1J104J	CHIP R 100K J 1/16W	
R620-623			RK73HB1J000J	CHIP R 0 J 1/16W		R779			RK73HB1J104J	CHIP R 100K J 1/16W	
R624			RK73HB1J473J	CHIP R 47K J 1/16W		R780			RK73HB1J000J	CHIP R 0 J 1/16W	
R626			RK73HB1J473J	CHIP R 47K J 1/16W		R781-784			RK73HB1J104J	CHIP R 100K J 1/16W	
R627			RK73HB1J000J	CHIP R 0 J 1/16W		R785			RK73HB1J272J	CHIP R 2.7K J 1/16W	
R629-631			RK73HB1J000J	CHIP R 0 J 1/16W		R786-788			RK73HB1J104J	CHIP R 100K J 1/16W	
R632			RK73HB1J101J	CHIP R 100 J 1/16W		R794			RK73HB1J104J	CHIP R 100K J 1/16W	
R634			RK73HB1J473J	CHIP R 47K J 1/16W		R796			RK73HB1J104J	CHIP R 100K J 1/16W	
R635,636			RK73HB1J000J	CHIP R 0 J 1/16W		R799-803			RK73HB1J104J	CHIP R 100K J 1/16W	
R637-640			RK73HB1J473J	CHIP R 47K J 1/16W		R805-808			RK73HB1J103J	CHIP R 10K J 1/16W	

## PARTS LIST

### CONTROL UNIT (X53-4140-10)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R816			RK73HB1J105J	CHIP R 1.0M J 1/16W		R960			RK73GB2A000J	CHIP R 0 J 1/10W	
R817			RK73HB1J821J	CHIP R 820 J 1/16W		R970,971			RK73HB1J000J	CHIP R 0 J 1/16W	
R818			RK73HB1J104J	CHIP R 100K J 1/16W		S700			S79-0473-05	DIP SWITCHES	
R820			RK73HB1J103J	CHIP R 10K J 1/16W		D300			1SS388F	DIODE	
R821			RK73HB1J000J	CHIP R 0 J 1/16W		D701			1SS388F	DIODE	
R822			RK73HB1J103J	CHIP R 10K J 1/16W		D702			1SS355	DIODE	
R824			RK73HB1J103J	CHIP R 10K J 1/16W		IC300,301			TC7SET126FU-F	MOS-IC	
R826			RK73HB1J103J	CHIP R 10K J 1/16W		IC302			ISL8485EIBZ	MOS-IC	
R828			RK73HB1J104J	CHIP R 100K J 1/16W		IC303			BU4829FVE	MOS-IC	
R829			RK73HH1J113D	CHIP R 11K D 1/16W		IC304			TC7SH125FU-F	MOS-IC	
R830			RK73HB1J104J	CHIP R 100K J 1/16W		IC305			XC6209B332P-G	MOS-IC	
R832			RK73HB1J104J	CHIP R 100K J 1/16W		IC306			BA15BC0FP	MOS-IC	
R833			RK73HB1J000J	CHIP R 0 J 1/16W		IC307		*	XC6201P152P-G	MOS-IC	
R834			RK73HB1J104J	CHIP R 100K J 1/16W		IC308		*	XC61CN2702N-G	MOS-IC	
R835			RK73HB1J000J	CHIP R 0 J 1/16W		IC309			AK4550VTP	MOS-IC	
R837			RK73GH2A49R9D	CHIP R 49.9 D 1/10W		IC312			ADC57476AIMF	MOS-IC	
R839			RK73GB2A000J	CHIP R 0 J 1/10W		IC313			TC7WU04FK-F	MOS-IC	
R840			RK73GH2A49R9D	CHIP R 49.9 D 1/10W		IC314			Note 1(BGA)	ROM IC	
R842-845			RK73HB1J104J	CHIP R 100K J 1/16W		IC315			ADF4001BRUZ	MOS-IC	
R867,868			RK73GH2A24R9D	CHIP R 24.9 D 1/10W		IC318			TC7SH126FU-F	MOS-IC	
R869			RK73HB1J331J	CHIP R 330 J 1/16W		IC319-321			TC7SET126FU-F	MOS-IC	
R870			RK73HB1J000J	CHIP R 0 J 1/16W		IC323,324			Note 1(BGA)	MICROPROCESSOR IC	
R871-873			RK73HB1J103J	CHIP R 10K J 1/16W		IC325		*	30625MGP490GU	MICROPROCESSOR IC	
R874			RK73HB1J000J	CHIP R 0 J 1/16W		IC327			TC7SH08FU-F	MOS-IC	
R875,876			RK73GH2A24R9D	CHIP R 24.9 D 1/10W		IC329	1C		BA33DD0WT	MOS-IC	
R877,878			RK73HB1J103J	CHIP R 10K J 1/16W		IC330			TC7SH126FU-F	MOS-IC	
R879			RK73GB2A000J	CHIP R 0 J 1/10W		IC700			L102616LL70LI	SRAM IC	
R880,881			RK73HB1J104J	CHIP R 100K J 1/16W		IC701			RV5C386A	MOS-IC	
R884,885			RK73HB1J000J	CHIP R 0 J 1/16W		IC702			29PL127JKCDC	ROM IC	
R886			RK73HB1J221J	CHIP R 220 J 1/16W		IC703			Note 1(BGA)	MICROPROCESSOR IC	
R887			RK73HB1J000J	CHIP R 0 J 1/16W		IC704		*	EM639165TS6IG	DRAM IC	
R888			RK73HB1J221J	CHIP R 220 J 1/16W		IC705			ADM3202ARUZ	MOS-IC	
R889			RK73HB1J103J	CHIP R 10K J 1/16W		IC707		*	EM639165TS6IG	DRAM IC	
R890			RK73HB1J000J	CHIP R 0 J 1/16W		IC708			BU4829FVE	MOS-IC	
R891			RK73HB1J104J	CHIP R 100K J 1/16W		IC709			TC7SH126FU-F	MOS-IC	
R892,893			RK73HB1J000J	CHIP R 0 J 1/16W		IC710,711			TC7SH00FU-F	MOS-IC	
R894			RK73HB1J103J	CHIP R 10K J 1/16W		IC712,713			TC7SH32FU-F	MOS-IC	
R895			RK73HB1J151J	CHIP R 150 J 1/16W		IC714-716		*	TC74LCX244FK	MOS-IC	
R896			RK73HB1J101J	CHIP R 100 J 1/16W		IC717,718			TC74LCX245FK	MOS-IC	
R897			RK73HB1J104J	CHIP R 100K J 1/16W		IC719			LAN91C111I-NU	MOS-IC	
R902,903			RK73HB1J000J	CHIP R 0 J 1/16W		IC720		*	AT93C46DN-SH	ROM IC	
R907			RK73HB1J000J	CHIP R 0 J 1/16W		IC721			TC7SH08FU-F	MOS-IC	
R909			RK73HB1J000J	CHIP R 0 J 1/16W		IC722			TC7SH32FU-F	MOS-IC	
R910			RK73HB1J473J	CHIP R 47K J 1/16W		IC723			TC7SH00FU-F	MOS-IC	
R911			RK73HB1J000J	CHIP R 0 J 1/16W		IC724			TC7SH125FU-F	MOS-IC	
R912			RK73HB1J473J	CHIP R 47K J 1/16W		IC725			TC7SH126FU-F	MOS-IC	
R913,914			RK73HB1J000J	CHIP R 0 J 1/16W		IC726			TC7SH08FU-F	MOS-IC	
R915			RK73HB1J473J	CHIP R 47K J 1/16W		IC727,728			TC7SH126FU-F	MOS-IC	
R916,917			RK73HB1J000J	CHIP R 0 J 1/16W		Q300			2SC4738F	TRANSISTOR	
R919-923			RK73HB1J000J	CHIP R 0 J 1/16W		Q301		*	LTC014EUBFS8	TRANSISTOR	
R924			RK73HB1J104J	CHIP R 100K J 1/16W		Q302			2SA1955A-F	TRANSISTOR	
R926			RK73HB1J473J	CHIP R 47K J 1/16W		Q303			RT1P441M-T111	TRANSISTOR	
R927-933			RK73HB1J000J	CHIP R 0 J 1/16W		Q304,305			2SC4738F	TRANSISTOR	
R934,935			RK73HB1J474J	CHIP R 470K J 1/16W		Q307,308			2SC4738F	TRANSISTOR	
R936			RK73HB1J104J	CHIP R 100K J 1/16W		Q309			SSM6N16FE-F	FET	
R942			RK73HB1J104J	CHIP R 100K J 1/16W		Q700			2SC4738F	TRANSISTOR	
R943			RK73HB1J000J	CHIP R 0 J 1/16W		Q702			2SC4738F	TRANSISTOR	
R945-950			RK73HB1J000J	CHIP R 0 J 1/16W		Q704,705			2SC4738F	TRANSISTOR	
R951			RK73HB1J104J	CHIP R 100K J 1/16W							
R952,953			RK73HB1J000J	CHIP R 0 J 1/16W							

## PARTS LIST

CONTROL UNIT (X53-4140-10)  
RX UNIT (X55-3120-11)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
Q706		*	LTC014EUBFS8	TRANSISTOR		C68			CC73GCH1H080B	CHIP C 8.0PF B	
Q707		*	LTC044EUBFS8	TRANSISTOR		C70			CC73GCH1H060B	CHIP C 6.0PF B	
BA300			W09-1004-05	LITHIUM CELL		C71 ,72			CC73GCH1H040B	CHIP C 4.0PF B	
<b>RX UNIT (X55-3120-11)</b>						C73			CC73GCH1H0R5C	CHIP C 0.5PF C	
D6			B30-2230-05	LED(YG)		C74			CC73GCH1H050B	CHIP C 5.0PF B	
C1			CC73GCH1H471J	CHIP C 470PF J		C76			CK73GB1H104K	CHIP C 0.10UF K	
C2 ,3			CK73GB1H473K	CHIP C 0.047UF K		C77			CC73GCH1H471J	CHIP C 470PF J	
C4			CC73GCH1H820J	CHIP C 82PF J		C78			CS77CC1C330M	CHIP TNL 33UF 16WV	
C5			CK73GB1H473K	CHIP C 0.047UF K		C79			CC73GCH1H080B	CHIP C 8.0PF B	
C6			CK73GB1H104K	CHIP C 0.10UF K		C81			CC73GCH1H060B	CHIP C 6.0PF B	
C7 ,8			CC73GCH1H471J	CHIP C 470PF J		C83			CC73GCH1H040B	CHIP C 4.0PF B	
C9 ,10			CK73GB1H473K	CHIP C 0.047UF K		C84			CK73GB1E105K	CHIP C 1.0UF K	
C11			CC73GCH1H221J	CHIP C 220PF J		C85			CK73GB1H104K	CHIP C 0.10UF K	
C14			CC73GCH1H331J	CHIP C 330PF J		C86 ,87			CC73GCH1H471J	CHIP C 470PF J	
C18			CC73GCH1H181J	CHIP C 180PF J		C88			CK73GB1H104K	CHIP C 0.10UF K	
C19			CK73GB1H473K	CHIP C 0.047UF K		C89			CC73GCH1H471J	CHIP C 470PF J	
C20			CK73FB1E224K	CHIP C 0.22UF K		C90			CC73GCH1H470J	CHIP C 47PF J	
C21			CS77BA1E010M	CHIP TNL 1.0UF 25WV		C91			CK73GB1H104K	CHIP C 0.10UF K	
C23			CS77CB21C220M	CHIP TNL 22UF 16WV		C92			CC73GCH1H050B	CHIP C 5.0PF B	
C24			CS77CC1C330M	CHIP TNL 33UF 16WV		C93 ,94			CC73GCH1H470J	CHIP C 47PF J	
C25			CC73GCH1H471J	CHIP C 470PF J		C95 ,96			CC73GCH1H471J	CHIP C 470PF J	
C27			CK73GB1H103K	CHIP C 0.010UF K		C97			CC73GCH1H070B	CHIP C 7.0PF B	
C28			CE32BM1E470M	CHIP EL 47UF 25WV		C98			CC73GCH1H080B	CHIP C 8.0PF B	
C29 ,30			CC73GCH1H471J	CHIP C 470PF J		C99			CS77CC1C330M	CHIP TNL 33UF 16WV	
C31			CK73GB1H473K	CHIP C 0.047UF K		C100			CK73GB1H104K	CHIP C 0.10UF K	
C32			CC73GCH1H101J	CHIP C 100PF J		C101			CC73GCH1H471J	CHIP C 470PF J	
C33			CC73GCH1H470J	CHIP C 47PF J		C103			CE32AU1E100M	CHIP EL 10UF 25WV	
C34			CC73GCH1H101J	CHIP C 100PF J		C104 ,105			CK73GB1H104K	CHIP C 0.10UF K	
C35 ,36			CK73GB1H473K	CHIP C 0.047UF K		C106			CC73GCH1H470J	CHIP C 47PF J	
C37			CS77CB21C220M	CHIP TNL 22UF 16WV		C107			CK73GB1H103K	CHIP C 0.010UF K	
C38			CS77CC1C330M	CHIP TNL 33UF 16WV		C108			CC73GCH1H470J	CHIP C 47PF J	
C39			CC73GCH1H060B	CHIP C 6.0PF B		C109			CC73GCH1H040B	CHIP C 4.0PF B	
C40			CS77CA1VR15M	CHIP TNL 0.15UF 35WV		C111			CK73GB1E105K	CHIP C 1.0UF K	
C41			CC73GCH1H010B	CHIP C 1.0PF B		C112			CC73GCH1H471J	CHIP C 470PF J	
C42			CC73GCH1H030B	CHIP C 3.0PF B		C113			CC73GCH1H100C	CHIP C 10PF C	
C43			CC73GCH1H040B	CHIP C 4.0PF B		C114			CC73GCH1H471J	CHIP C 470PF J	
C44			CK73GB1H104K	CHIP C 0.10UF K		C115 ,116			CC73GCH1H040B	CHIP C 4.0PF B	
C45			CC73GCH1H471J	CHIP C 470PF J		C117			CC73GCH1H471J	CHIP C 470PF J	
C46			C93-0787-05	CHIP C 0.1UF J		C119			CC73GCH1H470J	CHIP C 47PF J	
C47			CC73GCH1H471J	CHIP C 470PF J		C124			CC73GCH1H470J	CHIP C 47PF J	
C48			CK73GB1H103K	CHIP C 0.010UF K		C125			CC73GCH1H040B	CHIP C 4.0PF B	
C49			CE32BM1E470M	CHIP EL 47UF 25WV		C126			CK73GB1H104K	CHIP C 0.10UF K	
C50			CC73GCH1H471J	CHIP C 470PF J		C127			CC73GCH1H471J	CHIP C 470PF J	
C52			CK73GB1H103K	CHIP C 0.010UF K		C128			CK73GB1H103K	CHIP C 0.010UF K	
C54			CC73GCH1H101J	CHIP C 100PF J		C129			CC73GCH1H471J	CHIP C 470PF J	
C55			CC73GCH1H040B	CHIP C 4.0PF B		C132			CK73GB1H104K	CHIP C 0.10UF K	
C56			CC73GCH1H060B	CHIP C 6.0PF B		C133 ,134			CC73GCH1H470J	CHIP C 47PF J	
C58			CC73GCH1H101J	CHIP C 100PF J		C135			CC73GCH1H471J	CHIP C 470PF J	
C59			CC73GCH1H470J	CHIP C 47PF J		C137			CC73GCH1H100C	CHIP C 10PF C	
C60			CK73GB1H104K	CHIP C 0.10UF K		C138			CC73GCH1H471J	CHIP C 470PF J	
C61			CC73GCH1H101J	CHIP C 100PF J		C139			CC73GCH1H030B	CHIP C 3.0PF B	
C62 ,63			CC73GCH1H470J	CHIP C 47PF J		C140			CC73GCH1H040B	CHIP C 4.0PF B	
C64			CS77BA1E010M	CHIP TNL 1.0UF 25WV		C141			CC73GCH1H030B	CHIP C 3.0PF B	
C65			CC73GCH1H470J	CHIP C 47PF J		C142 ,143			CC73GCH1H040B	CHIP C 4.0PF B	
C66			CC73GCH1H060B	CHIP C 6.0PF B		C144			CC73GCH1H120J	CHIP C 12PF J	
						C146			CC73GCH1H150J	CHIP C 15PF J	
						C147			CC73GCH1H040B	CHIP C 4.0PF B	
						C201-203			CC73GCH1H470J	CHIP C 47PF J	
						C204			CC73GCH1H030B	CHIP C 3.0PF B	
						C206			CC73GCH1H470J	CHIP C 47PF J	

## PARTS LIST

RX UNIT (X55-3120-11)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C209			CK73GB1H103K	CHIP C 0.010UF K		C375			CK73GB1H103K	CHIP C 0.010UF K	
C211,212			CC73GCH1H470J	CHIP C 47PF J		C378			CK73GB1H103K	CHIP C 0.010UF K	
C213			CK73GB1H104K	CHIP C 0.10UF K		C381			CK73GB1H103K	CHIP C 0.010UF K	
C214			CK73GB1H103K	CHIP C 0.010UF K		C383			CE32AU1C330M	CHIP EL 33UF 16WV	
C215			CC73GCH1H030B	CHIP C 3.0PF B		C386			CK73GB1H103K	CHIP C 0.010UF K	
C216			CC73GCH1H101J	CHIP C 100PF J		C388			CK73GB1H103K	CHIP C 0.010UF K	
C217			CC73GCH1H470J	CHIP C 47PF J		C389			CK73GB1H104K	CHIP C 0.10UF K	
C218			CK73GB1H104K	CHIP C 0.10UF K		C390			CK73GB1H103K	CHIP C 0.010UF K	
C219			CC73GCH1H101J	CHIP C 100PF J		C393			CK73FB1E474K	CHIP C 0.47UF K	
C220,221			CC73GCH1H470J	CHIP C 47PF J		C394			CK73GB1H103K	CHIP C 0.010UF K	
C222			CK73GB1H103K	CHIP C 0.010UF K		C396			CK73GB1H103K	CHIP C 0.010UF K	
C224,225			CC73GCH1H470J	CHIP C 47PF J		C397			CC73GCH1H680G	CHIP C 68PF G	
C226			CK73GB1H103K	CHIP C 0.010UF K		C398-400			CK73GB1H103K	CHIP C 0.010UF K	
C229			CC73GCH1H470J	CHIP C 47PF J		C404			CK73GB1H103K	CHIP C 0.010UF K	
C230,231			CK73GB1H103K	CHIP C 0.010UF K		C405,406			CC73GCH1H330G	CHIP C 33PF G	
C233			CK73GB1H104K	CHIP C 0.10UF K		C407			CK73FB1E474K	CHIP C 0.47UF K	
C234			CK73GB1H103K	CHIP C 0.010UF K		C409,410			CK73FB1E474K	CHIP C 0.47UF K	
C235			CK73GB1H104K	CHIP C 0.10UF K		C411			CC73GCH1H221J	CHIP C 220PF J	
C236-239			CC73GCH1H470J	CHIP C 47PF J		C413			CK73FB1E474K	CHIP C 0.47UF K	
C240			CK73GB1H103K	CHIP C 0.010UF K		C414			CC73GCH1H221J	CHIP C 220PF J	
C242,243			CC73GCH1H470J	CHIP C 47PF J		C415			CK73GB1H102K	CHIP C 1000PF K	
C244			CC73HCH1H100C	CHIP C 10PF C		C416			CC73GCH1H471J	CHIP C 470PF J	
C245			CC73GCH1H101J	CHIP C 100PF J		C417			CK73FB1E474K	CHIP C 0.47UF K	
C246			CC73GCH1H470J	CHIP C 47PF J		C419			CK73FB1E474K	CHIP C 0.47UF K	
C247			CC73HCH1H100C	CHIP C 10PF C		C420			CK73GB1H103K	CHIP C 0.010UF K	
C250			CC73GCH1H101J	CHIP C 100PF J		C421,422			CK73FB1E474K	CHIP C 0.47UF K	
C251			CC73GCH1H470J	CHIP C 47PF J		C424			CK73GB1H104K	CHIP C 0.10UF K	
C252			CK73GB1H103K	CHIP C 0.010UF K		C426			CK73FB1E474K	CHIP C 0.47UF K	
C253,254			CC73GCH1H470J	CHIP C 47PF J		C427			CC73GCH1H100C	CHIP C 10PF C	
C256			CK73GB1E154K	CHIP C 0.15UF K		C428			CK73FB1E474K	CHIP C 0.47UF K	
C257			CK73GB1H103K	CHIP C 0.010UF K		C429			CK73GB1H102K	CHIP C 1000PF K	
C258			CC73GCH1H470J	CHIP C 47PF J		C430			CE32AU1E100M	CHIP EL 10UF 25WV	
C259-262			CK73GB1H103K	CHIP C 0.010UF K		C431			CK73FB1H333K	CHIP C 0.033UF K	
C263			CC73GCH1H120J	CHIP C 12PF J		C432			CK73FB1E474K	CHIP C 0.47UF K	
C264			CK73GB1H103K	CHIP C 0.010UF K		C434			C93-1824-05	CHIP C 100UF M	
C266			CC73GCH1H101J	CHIP C 100PF J		C435			CK73FB1E474K	CHIP C 0.47UF K	
C267			CK73GB1H103K	CHIP C 0.010UF K		C436			CC73GCH1H101J	CHIP C 100PF J	
C269			CK73GB1H103K	CHIP C 0.010UF K		C439			CK73FB1E474K	CHIP C 0.47UF K	
C270			CK73GB1H104K	CHIP C 0.10UF K		C440			CK73FB0J106K	CHIP C 10UF K	
C271-274			CK73GB1H103K	CHIP C 0.010UF K		C441			CK73GB1H102K	CHIP C 1000PF K	
C281,282			CK73GB1H103K	CHIP C 0.010UF K		C442			CK73FB1H333K	CHIP C 0.033UF K	
C284			CC73GCH1H180G	CHIP C 18PF G		C446			CK73GB1H103K	CHIP C 0.010UF K	
C288			CC73GCH1H150J	CHIP C 15PF J		C447,448			CK73GB1H104K	CHIP C 0.10UF K	
C289			CK73GB1H103K	CHIP C 0.010UF K		C449			CK73FB1H333K	CHIP C 0.033UF K	
C296			CC73GCH1H220G	CHIP C 22PF G		C450			CC73GCH1H150J	CHIP C 15PF J	
C298			CC73GCH1H680G	CHIP C 68PF G		C452			CC73GCH1H270G	CHIP C 27PF G	
C299			CK73GB1H103K	CHIP C 0.010UF K		C453			CC73GCH1H100C	CHIP C 10PF C	
C306,307			CC73GCH1H330G	CHIP C 33PF G		C501,502			CK73GB1H103K	CHIP C 0.010UF K	
C313			CK73GB1H103K	CHIP C 0.010UF K		C503			CC73GCH1H270G	CHIP C 27PF G	
C315			CK73GB1H473K	CHIP C 0.047UF K		C504			CK73GB1H103K	CHIP C 0.010UF K	
C318			CK73GB1H104K	CHIP C 0.10UF K		C505			CK73GB1H473K	CHIP C 0.047UF K	
C322			CK73FB1E474K	CHIP C 0.47UF K		C506			CK73GB1H104K	CHIP C 0.10UF K	
C325			CC73GCH1H150J	CHIP C 15PF J		C507			CK73FB1E474K	CHIP C 0.47UF K	
C327			CK73GB1H103K	CHIP C 0.010UF K		C508			CK73GB1H103K	CHIP C 0.010UF K	
C330			CK73GB1H104K	CHIP C 0.10UF K		C509			CK73FB1E474K	CHIP C 0.47UF K	
C333			CK73GB1H104K	CHIP C 0.10UF K		C510			CK73GB1H473K	CHIP C 0.047UF K	
C335			CK73GB1H103K	CHIP C 0.010UF K		C511			CK73FB1E474K	CHIP C 0.47UF K	
C339			CK73GB1H103K	CHIP C 0.010UF K		C512,513			CK73GB1H104K	CHIP C 0.10UF K	
C370			CK73GB1H103K	CHIP C 0.010UF K		C515			CK73GB1H473K	CHIP C 0.047UF K	
C374			CE32AU1C330M	CHIP EL 33UF 16WV		C516,517			CK73FB1E474K	CHIP C 0.47UF K	

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Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C518,519			CK73GB1H473K	CHIP C 0.047UF K		C667			CC73GCH1H060B	CHIP C 6.0PF B	
C520			CK73GB1H104K	CHIP C 0.10UF K		C670			CC73GCH1H680G	CHIP C 68PF G	
C521			CK73FB1E474K	CHIP C 0.47UF K		C671			CK73GB1H473K	CHIP C 0.047UF K	
C522,523			CK73GB1H104K	CHIP C 0.10UF K		C672			CC73GCH1H220G	CHIP C 22PF G	
C524			CC73GCH1H470J	CHIP C 47PF J		C673			CC73GCH1H020B	CHIP C 2.0PF B	
C525			CC73GCH1H471J	CHIP C 470PF J		C674,675			CS77CC1C330M	CHIP TNL 33UF 16WV	
C526			CK73GB1E105K	CHIP C 1.0UF K		C676			CK73GB1H102K	CHIP C 1000PF K	
C527			CK73GB1H104K	CHIP C 0.10UF K		C677			CC73GCH1H330G	CHIP C 33PF G	
C528			CC73GCH1H471J	CHIP C 470PF J		C679			CC73GCH1H330G	CHIP C 33PF G	
C529			CK73GB1E105K	CHIP C 1.0UF K		C680			CK73GB1H103K	CHIP C 0.010UF K	
C530			CC73GCH1H180G	CHIP C 18PF G		C681			CC73GCH1H680G	CHIP C 68PF G	
C531			CC73GCH1H050B	CHIP C 5.0PF B		C683,684			CC73GCH1H330G	CHIP C 33PF G	
C532			CC73GCH1H220G	CHIP C 22PF G		C685			CC73GCH1H471J	CHIP C 470PF J	
C533			CC73GCH1H560J	CHIP C 56PF J		C686			CK73GB1H104K	CHIP C 0.10UF K	
C534			CC73GCH1H270G	CHIP C 27PF G		C687			CK73GB1E105K	CHIP C 1.0UF K	
C601,602			CK73GB1H473K	CHIP C 0.047UF K		C688			CC73GCH1H471J	CHIP C 470PF J	
C603			CC73GCH1H820J	CHIP C 82PF J		C689,690			CK73GB1H104K	CHIP C 0.10UF K	
C604,605			CK73GB1H473K	CHIP C 0.047UF K		C691			CC73GCH1H470J	CHIP C 47PF J	
C606			CK73GB1H102K	CHIP C 1000PF K		C692			CK73GB1H102K	CHIP C 1000PF K	
C607			CC73GCH1H101J	CHIP C 100PF J		C693			CK73GB1H104K	CHIP C 0.10UF K	
C608-611			CK73GB1H473K	CHIP C 0.047UF K		C694-697			CK73GB1H102K	CHIP C 1000PF K	
C612			CC73GCH1H471J	CHIP C 470PF J		C698			CK73GB1H473K	CHIP C 0.047UF K	
C613,614			CK73GB1H473K	CHIP C 0.047UF K		C699,700			CK73GB1H102K	CHIP C 1000PF K	
C615			CC73GCH1H471J	CHIP C 470PF J		C701			CE32BM1E470M	CHIP EL 47UF 25WV	
C616			CC73GCH1H080B	CHIP C 8.0PF B		C702			CC73GCH1H220G	CHIP C 22PF G	
C620			CK73GB1H102K	CHIP C 1000PF K		C703			CK73GB1H102K	CHIP C 1000PF K	
C621			CS77CA1ER47M	CHIP TNL 0.47UF 25WV		C704			CC73GCH1H471J	CHIP C 470PF J	
C623			CK73GB1H473K	CHIP C 0.047UF K		C705			CK73GB1E105K	CHIP C 1.0UF K	
C624			CS77CB21C150M	CHIP TNL 15UF 16WV		C706			CK73GB1H104K	CHIP C 0.10UF K	
C625			CK73GB1H102K	CHIP C 1000PF K		C707			CK73GB1E105K	CHIP C 1.0UF K	
C626			CC73GCH1H050B	CHIP C 5.0PF B		C708,709			CC73GCH1H471J	CHIP C 470PF J	
C627-629			CK73GB1H102K	CHIP C 1000PF K		C710			CK73GB1E105K	CHIP C 1.0UF K	
C630			CC73GCH1H471J	CHIP C 470PF J		C711			CC73GCH1H470J	CHIP C 47PF J	
C631			CC73GCH1H120J	CHIP C 12PF J		C801			CE32CL1V100M	CHIP EL 10UF 35WV	
C634			CC73GCH1H080B	CHIP C 8.0PF B		C802			CC73GCH1H471J	CHIP C 470PF J	
C638			CS77BA1E010M	CHIP TNL 1.0UF 25WV		C803			CE32CL1V100M	CHIP EL 10UF 35WV	
C639			CK73GB1H473K	CHIP C 0.047UF K		C804			CE32AU1C330M	CHIP EL 33UF 16WV	
C640			CK73GB1H102K	CHIP C 1000PF K		C805,806			CC73GCH1H471J	CHIP C 470PF J	
C641			CK73GB1H473K	CHIP C 0.047UF K		C807			CE32CL1V100M	CHIP EL 10UF 35WV	
C642,643			CK73GB1H102K	CHIP C 1000PF K		C808			CC73GCH1H471J	CHIP C 470PF J	
C644			CC73GCH1H270G	CHIP C 27PF G		C809			CK73GB1H103K	CHIP C 0.010UF K	
C645			CC73GCH1H180G	CHIP C 18PF G		C811			CC73GCH1H470J	CHIP C 47PF J	
C646			CK73GB1H102K	CHIP C 1000PF K		C813			CC73GCH1H470J	CHIP C 47PF J	
C647			CK73GB1H473K	CHIP C 0.047UF K		C815			CE32BM1E470M	CHIP EL 47UF 25WV	
C648			CC73GCH1H270G	CHIP C 27PF G		C816			CC73GCH1H470J	CHIP C 47PF J	
C649			CE32BM1E470M	CHIP EL 47UF 25WV		C817			CC73GCH1H471J	CHIP C 470PF J	
C650			CC73GCH1H220G	CHIP C 22PF G		C818			CE32CL1V100M	CHIP EL 10UF 35WV	
C651,652			CK73GB1H102K	CHIP C 1000PF K		C819-821			CC73GCH1H471J	CHIP C 470PF J	
C653			CK73GB1H103K	CHIP C 0.010UF K		C822,823			CE32CL1V100M	CHIP EL 10UF 35WV	
C654			CC73GCH1H220G	CHIP C 22PF G		C824			CC73GCH1H470J	CHIP C 47PF J	
C655			CK73GB1H103K	CHIP C 0.010UF K		C828			CK73GB1H104K	CHIP C 0.10UF K	
C656			CC73GCH1H330G	CHIP C 33PF G		C829			CC73GCH1H471J	CHIP C 470PF J	
C658			CC73GCH1H680G	CHIP C 68PF G		C830			CK73GB1H473K	CHIP C 0.047UF K	
C659			CK73GB1H104K	CHIP C 0.10UF K		C831			CC73GCH1H471J	CHIP C 470PF J	
C660			CC73GCH1H220G	CHIP C 22PF G		C832			CE32BM1V220M	CHIP EL 22UF 35WV	
C661			CK73GB1H102K	CHIP C 1000PF K		C833			CC73GCH1H471J	CHIP C 470PF J	
C662			CK73GB1H473K	CHIP C 0.047UF K		C834			CK73GB1H103K	CHIP C 0.010UF K	
C663			CK73GB1H102K	CHIP C 1000PF K		C835-838			CC73GCH1H471J	CHIP C 470PF J	
C664			CE32BM1E470M	CHIP EL 47UF 25WV		C839,840			CK73GB1H103K	CHIP C 0.010UF K	
C666			CC73GCH1H680G	CHIP C 68PF G		C841-843			CK73GB1H473K	CHIP C 0.047UF K	

## PARTS LIST

### RX UNIT (X55-3120-11)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C844			CC73GCH1H471J	CHIP C 470PF J		L23			L41-1078-55	SMALL FIXED INDUCTOR(10NH)	
C845			CK73GB1H473K	CHIP C 0.047UF K		L24			L92-0140-05	CHIP FERRITE	
C846			CC73GCH1H471J	CHIP C 470PF J		L25 ,26			L41-1078-55	SMALL FIXED INDUCTOR(10NH)	
C847			CK73GB1H103K	CHIP C 0.010UF K		L27			L41-1578-55	SMALL FIXED INDUCTOR(15NH)	
C848			CK73GB1H104K	CHIP C 0.10UF K		L28			L41-1078-55	SMALL FIXED INDUCTOR(10NH)	
C850			CK73GB1H473K	CHIP C 0.047UF K		L29 ,30			L41-2278-55	SMALL FIXED INDUCTOR(22NH)	
C851			CK73GB1H104K	CHIP C 0.10UF K		L34			L41-1078-55	SMALL FIXED INDUCTOR(10NH)	
C853			CK73GB1H104K	CHIP C 0.10UF K		L36			L41-1078-55	SMALL FIXED INDUCTOR(10NH)	
C854,855			CC73GCH1H471J	CHIP C 470PF J		L202			L41-4778-55	SMALL FIXED INDUCTOR(47NH)	
C856			CE32CL1V100M	CHIP EL 10UF 35WV		L203		*	L79-1954-05	DIELECTRIC FILTER	
C857			CK73GB1H104K	CHIP C 0.10UF K		L205			L41-3965-55	SMALL FIXED INDUCTOR(3.9NH)	
C859			CK73GB1H104K	CHIP C 0.10UF K		L208			L41-1078-55	SMALL FIXED INDUCTOR(10NH)	
C860			CK73GB1H473K	CHIP C 0.047UF K		L210		*	L79-1954-05	DIELECTRIC FILTER	
C861			C92-0904-05	OS-CON 22UF 35WV		L211			L41-4778-55	SMALL FIXED INDUCTOR(47NH)	
C862			CC73GCH1H020B	CHIP C 2.0PF B		L212,213			L41-2788-55	SMALL FIXED INDUCTOR(270NH)	
C863			CC73GCH1H120J	CHIP C 12PF J		L214			L41-1278-55	SMALL FIXED INDUCTOR(12NH)	
C864			CC73GCH1H150J	CHIP C 15PF J		L215		*	L39-1804-05	TOROIDAL COIL	
C865			CC73HCH1HR75B	CHIP C 0.75PF B		L218		*	L39-1804-05	TOROIDAL COIL	
CN1 -4			E23-1280-05	TERMINAL		L221			L39-1498-05	TOROIDAL COIL	
CN5			E04-0460-05	RF COAXIAL RECEPTACLE(SMB)		L222			L40-1585-92	SMALL FIXED INDUCTOR(150NH)	
CN6 -14			E23-1280-05	TERMINAL		L223			L40-2785-92	SMALL FIXED INDUCTOR(270NH)	
CN16,17			E23-1280-05	TERMINAL		L227			L41-4775-33	SMALL FIXED INDUCTOR(0.047UH)	
CN19			E23-1280-05	TERMINAL		L232			L34-4749-05	COIL	
CN20-24			E23-1330-05	TERMINAL		L246			L34-4749-05	COIL	
CN25,26			E23-1280-05	TERMINAL		L249			L40-2775-92	SMALL FIXED INDUCTOR(27NH)	
CN28			E23-1280-05	TERMINAL		L251,252			L40-1585-92	SMALL FIXED INDUCTOR(150NH)	
CN30			E23-1280-05	TERMINAL		L254			L40-1575-92	SMALL FIXED INDUCTOR(15NH)	
CN32			E23-1280-05	TERMINAL		L258			L40-2785-92	SMALL FIXED INDUCTOR(270NH)	
CN34-36			E23-1280-05	TERMINAL		L278			L40-2775-92	SMALL FIXED INDUCTOR(27NH)	
CN38,39			E23-1280-05	TERMINAL		L279			L92-0138-05	CHIP FERRITE	
CN42			E40-6656-05	PIN ASSY(36P)		L281			L40-1575-92	SMALL FIXED INDUCTOR(15NH)	
CN43			E04-0193-05	PIN SOCKET		L282			L40-2785-92	SMALL FIXED INDUCTOR(270NH)	
CN44			E41-2672-05	PIN ASSY(3P)		L284,285			L40-1585-92	SMALL FIXED INDUCTOR(150NH)	
CN45			E04-0193-05	PIN SOCKET		L286			L34-4725-05	COIL	
CN46,47			E41-2735-05	PIN ASSY(2P)		L288			L92-0138-05	CHIP FERRITE	
CN61,62			E23-1280-05	TERMINAL		L290			L41-1278-55	SMALL FIXED INDUCTOR(12NH)	
CN68			E04-0193-05	PIN SOCKET		L291,292			L92-0138-05	CHIP FERRITE	
CN87-89			E23-1330-05	TERMINAL		L293			L40-1885-92	SMALL FIXED INDUCTOR(180NH)	
-			F10-3080-04	SHIELDING CASE		L501			L41-1588-55	SMALL FIXED INDUCTOR(150NH)	
CF201			L72-1018-05	CERAMIC FILTER(450KHZ)		L502			L41-1088-55	SMALL FIXED INDUCTOR(100NH)	
CF203			L72-1018-05	CERAMIC FILTER(450KHZ)		L503			L41-8278-55	SMALL FIXED INDUCTOR(82NH)	
CF501			L72-1027-05	CERAMIC FILTER(450KHZ)		L601			L41-8295-33	SMALL FIXED INDUCTOR(8.2UH)	
CF502			L72-1028-05	CERAMIC FILTER(450KHZ)		L602			L41-2288-55	SMALL FIXED INDUCTOR(220NH)	
L1			L41-2288-55	SMALL FIXED INDUCTOR(220NH)		L603,604			L41-6895-33	SMALL FIXED INDUCTOR(6.8UH)	
L2			L41-6895-33	SMALL FIXED INDUCTOR(6.8UH)		L605,606			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
L3 ,4			L41-3985-33	SMALL FIXED INDUCTOR(0.39UH)		L607			L41-6895-33	SMALL FIXED INDUCTOR(6.8UH)	
L5 ,6			L41-1098-40	SMALL FIXED INDUCTOR(1000NH)		L608			L41-1595-33	SMALL FIXED INDUCTOR(1.5UH)	
L7 ,8			L92-0140-05	CHIP FERRITE		L609			L40-2285-92	SMALL FIXED INDUCTOR(220NH)	
L9			L41-1098-40	SMALL FIXED INDUCTOR(1000NH)		L610,611			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
L10			L34-4610-15	AIR-CORE COIL(9T)		L612,613			L41-1588-55	SMALL FIXED INDUCTOR(150NH)	
L11			L92-0140-05	CHIP FERRITE		L614			L41-1595-33	SMALL FIXED INDUCTOR(1.5UH)	
L12			L41-1098-40	SMALL FIXED INDUCTOR(1000NH)		L615			L41-1878-55	SMALL FIXED INDUCTOR(18NH)	
L13		*	L41-8265-55	SMALL FIXED INDUCTOR(8.2NH)		L617			L41-2288-55	SMALL FIXED INDUCTOR(220NH)	
L14			L92-0140-05	CHIP FERRITE		L618			L41-1878-55	SMALL FIXED INDUCTOR(18NH)	
L15 ,16		*	L41-8265-55	SMALL FIXED INDUCTOR(8.2NH)		L619			L41-1595-33	SMALL FIXED INDUCTOR(1.5UH)	
L17			L41-1078-55	SMALL FIXED INDUCTOR(10NH)		L620			L41-8278-55	SMALL FIXED INDUCTOR(82NH)	
L18		*	L41-8265-55	SMALL FIXED INDUCTOR(8.2NH)		L621-623			L41-1588-55	SMALL FIXED INDUCTOR(150NH)	
L19			L41-1098-40	SMALL FIXED INDUCTOR(1000NH)		L624			L41-8278-55	SMALL FIXED INDUCTOR(82NH)	
L21 ,22		*	L41-8265-55	SMALL FIXED INDUCTOR(8.2NH)		L625			L41-1588-55	SMALL FIXED INDUCTOR(150NH)	
						L801,802			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	



## PARTS LIST

RX UNIT (X55-3120-11)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
XF1			L71-0666-05	MCF(73.05MHZ)		R73			RK73GB2A180J	CHIP R 18 J 1/10W	
R2			RK73GB2A332J	CHIP R 3.3K J 1/10W		R74			RK73GB2A101J	CHIP R 100 J 1/10W	
R3			RK73GB2A682J	CHIP R 6.8K J 1/10W		R77			RK73GB2A331J	CHIP R 330 J 1/10W	
R4			RK73GB2A181J	CHIP R 180 J 1/10W		R78			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R5			RK73GB2A100J	CHIP R 10 J 1/10W		R79			RK73GB2A000J	CHIP R 0 J 1/10W	
R6			RK73GB2A561J	CHIP R 560 J 1/10W		R80			RK73GB2A392J	CHIP R 3.9K J 1/10W	
R8			RK73GB2A470J	CHIP R 47 J 1/10W		R81			RK73GB2A271J	CHIP R 270 J 1/10W	
R9			RK73GB2A681J	CHIP R 680 J 1/10W		R84			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R10			RK73GB2A471J	CHIP R 470 J 1/10W		R85			RK73GB2A331J	CHIP R 330 J 1/10W	
R11 ,12			RK73GB2A000J	CHIP R 0 J 1/10W		R86			RK73GB2A392J	CHIP R 3.9K J 1/10W	
R13			RK73GB2A474J	CHIP R 470K J 1/10W		R87			RK73GB2A100J	CHIP R 10 J 1/10W	
R14 -16			RK73GB2A000J	CHIP R 0 J 1/10W		R89			RK73GB2A391J	CHIP R 390 J 1/10W	
R17			RK73GH2A274D	CHIP R 270K D 1/10W		R90			RK73GB2A120J	CHIP R 12 J 1/10W	
R18			RK73GH2A154D	CHIP R 150K D 1/10W		R91			RK73GB2A391J	CHIP R 390 J 1/10W	
R19			RK73GH2A274D	CHIP R 270K D 1/10W		R93			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R20			RK73GH2A154D	CHIP R 150K D 1/10W		R202			RK73GB2A000J	CHIP R 0 J 1/10W	
R21			RK73GB2A000J	CHIP R 0 J 1/10W		R204			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R22 -25			RK73GB2A100J	CHIP R 10 J 1/10W		R205			RK73GB2A681J	CHIP R 680 J 1/10W	
R26			RK73GB2A102J	CHIP R 1.0K J 1/10W		R206			RK73GB2A000J	CHIP R 0 J 1/10W	
R27			RK73GB2A151J	CHIP R 150 J 1/10W		R208			RK73GB2A390J	CHIP R 39 J 1/10W	
R28			RK73GB2A102J	CHIP R 1.0K J 1/10W		R209			RK73GB2A000J	CHIP R 0 J 1/10W	
R29			RK73GB2A220J	CHIP R 22 J 1/10W		R210			RK73GB2A100J	CHIP R 10 J 1/10W	
R30			RK73GB2A000J	CHIP R 0 J 1/10W		R212,213			RK73GB2A104J	CHIP R 100K J 1/10W	
R31			RK73GB2A330J	CHIP R 33 J 1/10W		R215			RK73GB2A684J	CHIP R 680K J 1/10W	
R32			RK73GB2A106J	CHIP R 10M J 1/10W		R218			RK73GB2A684J	CHIP R 680K J 1/10W	
R33			RK73GB2A823J	CHIP R 82K J 1/10W		R219			RK73GB2A103J	CHIP R 10K J 1/10W	
R35			RK73GB2A104J	CHIP R 100K J 1/10W		R220			RK73GB2A123J	CHIP R 12K J 1/10W	
R36			RN73GE1J271D	METAL FILM 270 D 1/16W		R224			RK73GB2A332J	CHIP R 3.3K J 1/10W	
R37			RK73GB2A271J	CHIP R 270 J 1/10W		R225			RK73GB2A470J	CHIP R 47 J 1/10W	
R38			RK73GB2A180J	CHIP R 18 J 1/10W		R227			RK73GB2A8R2J	CHIP R 8.2 J 1/10W	
R39			RK73GB2A271J	CHIP R 270 J 1/10W		R229			RK73GB2A8R2J	CHIP R 8.2 J 1/10W	
R41			RK73GB2A100J	CHIP R 10 J 1/10W		R230			RK73GB2A151J	CHIP R 150 J 1/10W	
R42			RK73GB2A102J	CHIP R 1.0K J 1/10W		R235			RK73GB2A103J	CHIP R 10K J 1/10W	
R43			RK73GB2A473J	CHIP R 47K J 1/10W		R237			RK73GB2A223J	CHIP R 22K J 1/10W	
R44			RK73GB2A100J	CHIP R 10 J 1/10W		R240			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R45			RK73GB2A470J	CHIP R 47 J 1/10W		R241			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R46			RN73GE1J391D	METAL FILM 390 D 1/16W		R242			RK73GB2A680J	CHIP R 68 J 1/10W	
R47			RK73GB2A000J	CHIP R 0 J 1/10W		R243			RK73GB2A000J	CHIP R 0 J 1/10W	
R48			RK73GB2A102J	CHIP R 1.0K J 1/10W		R244			RK73GB2A103J	CHIP R 10K J 1/10W	
R49			RK73GB2A000J	CHIP R 0 J 1/10W		R252,253			RK73GB2A103J	CHIP R 10K J 1/10W	
R50			RK73GB2A102J	CHIP R 1.0K J 1/10W		R254			RK73GB2A473J	CHIP R 47K J 1/10W	
R51			RK73GB2A471J	CHIP R 470 J 1/10W		R255			RK73GB2A000J	CHIP R 0 J 1/10W	
R52			RK73GB2A331J	CHIP R 330 J 1/10W		R256			RK73GB2A5R6J	CHIP R 5.6 J 1/10W	
R53			RK73GB2A100J	CHIP R 10 J 1/10W		R258,259			RK73GB2A000J	CHIP R 0 J 1/10W	
R54			RK73GB2A391J	CHIP R 390 J 1/10W		R261			RK73GB2A470J	CHIP R 47 J 1/10W	
R55			RK73GB2A392J	CHIP R 3.9K J 1/10W		R265			RK73GB2A221J	CHIP R 220 J 1/10W	
R56			RK73GB2A472J	CHIP R 4.7K J 1/10W		R268			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R57 ,58			RK73GB2A271J	CHIP R 270 J 1/10W		R269			RK73GB2A100J	CHIP R 10 J 1/10W	
R59			RK73GB2A101J	CHIP R 100 J 1/10W		R270			RK73GB2A000J	CHIP R 0 J 1/10W	
R60			RK73GB2A822J	CHIP R 8.2K J 1/10W		R272			RK73GB2A000J	CHIP R 0 J 1/10W	
R61			RK73GB2A472J	CHIP R 4.7K J 1/10W		R273			RK73GB2A101J	CHIP R 100 J 1/10W	
R62			RK73GB2A331J	CHIP R 330 J 1/10W		R276,277			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R63			RK73GB2A102J	CHIP R 1.0K J 1/10W		R280			RK73GB2A272J	CHIP R 2.7K J 1/10W	
R64			RK73GB2A330J	CHIP R 33 J 1/10W		R287			RK73GB2A680J	CHIP R 68 J 1/10W	
R65			RK73GB2A101J	CHIP R 100 J 1/10W		R289			RK73GB2A182J	CHIP R 1.8K J 1/10W	
R66			RK73GB2A100J	CHIP R 10 J 1/10W		R295,296			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R67 ,68			RK73GB2A000J	CHIP R 0 J 1/10W		R298			RK73GB2A101J	CHIP R 100 J 1/10W	
R71			RK73GB2A331J	CHIP R 330 J 1/10W		R300			RK73GB2A470J	CHIP R 47 J 1/10W	
R72			RK73GB2A000J	CHIP R 0 J 1/10W		R304			RK73GB2A100J	CHIP R 10 J 1/10W	
						R308			RK73GB2A000J	CHIP R 0 J 1/10W	

## PARTS LIST

RX UNIT (X55-3120-11)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R312			RK73GB2A000J	CHIP R 0 J 1/10W		R512			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R314			RK73GB2A000J	CHIP R 0 J 1/10W		R513			RK73GB2A123J	CHIP R 12K J 1/10W	
R336			RK73GB2A101J	CHIP R 100 J 1/10W		R514			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R343			RK73GB2A000J	CHIP R 0 J 1/10W		R515			RK73GB2A183J	CHIP R 18K J 1/10W	
R346			RK73GB2A221J	CHIP R 220 J 1/10W		R516			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R347			RK73GB2A182J	CHIP R 1.8K J 1/10W		R517			RK73GB2A181J	CHIP R 180 J 1/10W	
R349			RK73GB2A102J	CHIP R 1.0K J 1/10W		R518			RK73GB2A470J	CHIP R 47 J 1/10W	
R351			RK73GB2A102J	CHIP R 1.0K J 1/10W		R519			RK73GB2A104J	CHIP R 100K J 1/10W	
R354			RK73GB2A470J	CHIP R 47 J 1/10W		R520			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R355			RK73GB2A101J	CHIP R 100 J 1/10W		R521			RK73GB2A183J	CHIP R 18K J 1/10W	
R357			RK73GB2A151J	CHIP R 150 J 1/10W		R522			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R360			RK73GB2A390J	CHIP R 39 J 1/10W		R523,524			RK73GB2A103J	CHIP R 10K J 1/10W	
R361			RK73GB2A151J	CHIP R 150 J 1/10W		R525			RK73GB2A471J	CHIP R 470 J 1/10W	
R362			RK73GB2A470J	CHIP R 47 J 1/10W		R526			RK73GB2A122J	CHIP R 1.2K J 1/10W	
R364			RK73GB2A101J	CHIP R 100 J 1/10W		R527			RK73GB2A000J	CHIP R 0 J 1/10W	
R365			RK73GB2A470J	CHIP R 47 J 1/10W		R528			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R366			RK73GB2A000J	CHIP R 0 J 1/10W		R601-603			RK73GB2A180J	CHIP R 18 J 1/10W	
R368			RK73GB2A000J	CHIP R 0 J 1/10W		R604			RK73GB2A100J	CHIP R 10 J 1/10W	
R374			RK73GB2A332J	CHIP R 3.3K J 1/10W		R605			RK73GB2A471J	CHIP R 470 J 1/10W	
R375			RK73GB2A104J	CHIP R 100K J 1/10W		R606			RK73GB2A473J	CHIP R 47K J 1/10W	
R377			RK73GB2A182J	CHIP R 1.8K J 1/10W		R607			RK73GB2A470J	CHIP R 47 J 1/10W	
R378			RK73GB2A000J	CHIP R 0 J 1/10W		R608			RK73GB2A332J	CHIP R 3.3K J 1/10W	
R380			RK73GB2A103J	CHIP R 10K J 1/10W		R609,610			RK73GB2A105J	CHIP R 1.0M J 1/10W	
R381			RK73GB2A473J	CHIP R 47K J 1/10W		R611			RK73GB2A682J	CHIP R 6.8K J 1/10W	
R383			RK73GB2A154J	CHIP R 150K J 1/10W		R612			RK73GB2A271J	CHIP R 270 J 1/10W	
R384			RK73GB2A473J	CHIP R 47K J 1/10W		R613			RK73GB2A100J	CHIP R 10 J 1/10W	
R386			RK73GB2A103J	CHIP R 10K J 1/10W		R614			RK73GB2A101J	CHIP R 100 J 1/10W	
R387			RK73GB2A471J	CHIP R 470 J 1/10W		R615			RK73GB2A221J	CHIP R 220 J 1/10W	
R390			RK73GB2A000J	CHIP R 0 J 1/10W		R616			RK73GB2A561J	CHIP R 560 J 1/10W	
R391			RK73GB2A152J	CHIP R 1.5K J 1/10W		R618			RK73GB2A000J	CHIP R 0 J 1/10W	
R392			RK73GB2A223J	CHIP R 22K J 1/10W		R619			RK73GB2A121J	CHIP R 120 J 1/10W	
R393			RK73GB2A122J	CHIP R 1.2K J 1/10W		R620			RK73GB2A000J	CHIP R 0 J 1/10W	
R396			RK73GB2A681J	CHIP R 680 J 1/10W		R622			RK73GB2A000J	CHIP R 0 J 1/10W	
R399			RK73GB2A103J	CHIP R 10K J 1/10W		R623			RK73GB2A101J	CHIP R 100 J 1/10W	
R400			RK73GB2A334J	CHIP R 330K J 1/10W		R625			RK73GB2A682J	CHIP R 6.8K J 1/10W	
R402			RK73GB2A560J	CHIP R 56 J 1/10W		R626			RK73GB2A332J	CHIP R 3.3K J 1/10W	
R403			RK73GB2A223J	CHIP R 22K J 1/10W		R627			RK73GB2A151J	CHIP R 150 J 1/10W	
R406			RK73GB2A332J	CHIP R 3.3K J 1/10W		R628-632			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R407			RK73GB2A273J	CHIP R 27K J 1/10W		R633			RK73GB2A000J	CHIP R 0 J 1/10W	
R408			RK73GB2A000J	CHIP R 0 J 1/10W		R634			RK73GB2A470J	CHIP R 47 J 1/10W	
R412			RK73GB2A183J	CHIP R 18K J 1/10W		R635			RN73GE1J221D	METAL FILM 220 D 1/16W	
R413			RK73GB2A103J	CHIP R 10K J 1/10W		R636			RK73GB2A000J	CHIP R 0 J 1/10W	
R415			RK73GB2A000J	CHIP R 0 J 1/10W		R638			RK73GB2A100J	CHIP R 10 J 1/10W	
R416			RK73GB2A273J	CHIP R 27K J 1/10W		R639			RK73GB2A821J	CHIP R 820 J 1/10W	
R417			RK73GB2A103J	CHIP R 10K J 1/10W		R640			RK73GB2A5R6J	CHIP R 5.6 J 1/10W	
R419			RK73GB2A473J	CHIP R 47K J 1/10W		R641			RK73GB2A821J	CHIP R 820 J 1/10W	
R420			RK73GB2A123J	CHIP R 12K J 1/10W		R642			RK73GB2A100J	CHIP R 10 J 1/10W	
R421			RK73GB2A101J	CHIP R 100 J 1/10W		R643,644			RK73GB2A104J	CHIP R 100K J 1/10W	
R422			RK73GB2A474J	CHIP R 470K J 1/10W		R645			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R431			RK73GB2A000J	CHIP R 0 J 1/10W		R646			RK73GB2A2R2J	CHIP R 2.2 J 1/10W	
R432			RK73GB2A100J	CHIP R 10 J 1/10W		R648			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R441			RK73GB2A680J	CHIP R 68 J 1/10W		R649			RK73GB2A000J	CHIP R 0 J 1/10W	
R442			RK73GB2A181J	CHIP R 180 J 1/10W		R651			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R501			RK73GB2A470J	CHIP R 47 J 1/10W		R652			RK73GB2A682J	CHIP R 6.8K J 1/10W	
R502			RK73GB2A000J	CHIP R 0 J 1/10W		R653			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R503			RK73GB2A470J	CHIP R 47 J 1/10W		R654			RK73GB2A330J	CHIP R 33 J 1/10W	
R504			RK73GB2A562J	CHIP R 5.6K J 1/10W		R655			RK73GB2A101J	CHIP R 100 J 1/10W	
R505			RK73GB2A332J	CHIP R 3.3K J 1/10W		R656			RK73GB2A104J	CHIP R 100K J 1/10W	
R506			RK73GB2A271J	CHIP R 270 J 1/10W		R657			RK73GB2A000J	CHIP R 0 J 1/10W	
R508			RK73GB2A100J	CHIP R 10 J 1/10W		R659,660			RK73GB2A100J	CHIP R 10 J 1/10W	

## PARTS LIST

RX UNIT (X55-3120-11)  
TX UNIT (X56-3150-11)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R661			RK73GB2A181J	CHIP R 180 J 1/10W		IC503			NJM2878F4-33	BI-POLAR IC	
R663			RK73GB2A682J	CHIP R 6.8K J 1/10W		IC601			LMC7101BIM5	MOS-IC	
R664			RK73GB2A332J	CHIP R 3.3K J 1/10W		IC602			TC7WH126FU-F	MOS-IC	
R665			RK73GB2A470J	CHIP R 47 J 1/10W		IC603			ADF4111BCP7	MOS-IC	
R666			RK73GB2A100J	CHIP R 10 J 1/10W		IC604			TC7WH126FU-F	MOS-IC	
R667			RK73GB2A181J	CHIP R 180 J 1/10W		IC605,606			NJM2878F4-33	BI-POLAR IC	
R668-670			RK73GB2A180J	CHIP R 18 J 1/10W		IC801-804			NJM78M05DL1AZB	ANALOGUE IC	
R671			RK73GB2A102J	CHIP R 1.0K J 1/10W		IC805			BH2220FVM	ANALOGUE IC	
R672			RK73GB2A473J	CHIP R 47K J 1/10W		IC806			LM50BIM3/NOPB	MOS-IC	
R673			RK73GB2A102J	CHIP R 1.0K J 1/10W		IC807			NJM2386ADL3-09	ANALOGUE IC	
R674			RK73GB2A473J	CHIP R 47K J 1/10W		IC808	2D		KIA7805API	BI-POLAR IC	
R675,676			RK73GB2A472J	CHIP R 4.7K J 1/10W		IC809	2D		KIA7808API	BI-POLAR IC	
R677,678			RK73GB2A473J	CHIP R 47K J 1/10W		IC810			AD1582	ANALOGUE IC	
R679,680			RK73GB2A472J	CHIP R 4.7K J 1/10W		IC811			AD7908BRU	MOS-IC	
R681			RK73GB2A473J	CHIP R 47K J 1/10W		IC812			NJM2732V	BI-POLAR IC	
R802			RK73GB2A000J	CHIP R 0 J 1/10W		IC813			S24CS02AFJTBG	ROM IC	
R809			RK73GB2A100J	CHIP R 10 J 1/10W		IC814			NJM2732V	BI-POLAR IC	
R810-812			RK73GB2A101J	CHIP R 100 J 1/10W		Q1			2SC4617(R)	TRANSISTOR	
R813-815			RK73GB2A100J	CHIP R 10 J 1/10W		Q2 -4			2SC4116(BL)F	TRANSISTOR	
R816			RK73GB2A000J	CHIP R 0 J 1/10W		Q5			2SK508NV(K53)	FET	
R817			RK73GB2A102J	CHIP R 1.0K J 1/10W		Q6			2SC4116(BL)F	TRANSISTOR	
R819			RK73GB2A103J	CHIP R 10K J 1/10W		Q7			SSM3K15TE(F)	FET	
R820-822			RK73GB2A102J	CHIP R 1.0K J 1/10W		Q8 -11			2SC5108(Y)F	TRANSISTOR	
R825			RK73GB2A000J	CHIP R 0 J 1/10W		Q201			NESG220034	TRANSISTOR	
R828-830			RK73GB2A104J	CHIP R 100K J 1/10W		Q202			2SC5636	TRANSISTOR	
R832,833			RK73GB2A104J	CHIP R 100K J 1/10W		Q204			NESG220034	TRANSISTOR	
R834,835			RK73GB2A472J	CHIP R 4.7K J 1/10W		Q211			NESG220034	TRANSISTOR	
R837			RK73GB2A100J	CHIP R 10 J 1/10W		Q214			2SC4617(S)	TRANSISTOR	
R838			RK73GB2A000J	CHIP R 0 J 1/10W		Q501			2SC4725	TRANSISTOR	
R839,840			RK73GB2A101J	CHIP R 100 J 1/10W		Q601,602			2SC4617(R)	TRANSISTOR	
R842			RK73GB2A101J	CHIP R 100 J 1/10W		Q603			2SC4725	TRANSISTOR	
R845			RK73GB2A104J	CHIP R 100K J 1/10W		Q604			2SK2539-7	FET	
R847,848			RK73GB2A104J	CHIP R 100K J 1/10W		Q605			2SC4116(BL)F	TRANSISTOR	
R850			RK73GB2A470J	CHIP R 47 J 1/10W		Q606			2SA1832F	TRANSISTOR	
R851,852			RK73GB2A101J	CHIP R 100 J 1/10W		Q607			SSM3K15TE(F)	FET	
R854			RK73GB2A000J	CHIP R 0 J 1/10W		Q608,609			2SC4725	TRANSISTOR	
R855,856			RK73GB2A104J	CHIP R 100K J 1/10W		Q610,611			SSM3K15TE(F)	FET	
R857-860			RK73GB2A103J	CHIP R 10K J 1/10W		Q801			SSM3K15TE(F)	FET	
R861			RK73FB2B000J	CHIP R 0 J 1/8W							
R862-868			RK73GB2A000J	CHIP R 0 J 1/10W							
R870,871			RK73GB2A000J	CHIP R 0 J 1/10W							
D1 -3			1SV278F	VARIABLE CAPACITANCE DIODE							
D5			DA221	DIODE							
D203			HSM88AS-E	DIODE							
D214,215			DB3J314F0L	DIODE							
D601			KV1470-G	VARIABLE CAPACITANCE DIODE							
IC1			LMC7101BIM5	MOS-IC							
IC2			SKY72310-362	MOS-IC							
IC3			LMC7101BIM5	MOS-IC							
IC4			NJM2878F4-33	BI-POLAR IC							
IC201		*	BU7261G	MOS-IC							
IC202			AV111-12LF	ANALOGUE IC							
IC204			NJM2732V	BI-POLAR IC							
IC205			ADL5801ACPZ	MOS-IC							
IC207			TA31136FNG	MOS-IC							
IC208			AD8051ART	ANALOGUE IC							
IC210			NJM2732V	BI-POLAR IC							
IC501			AD607Z	BI-POLAR IC							
IC502			AD8051ART	ANALOGUE IC							
<b>TX UNIT (X56-3150-11)</b>											
D8			B30-2230-05	LED(YG)							
D201			B30-2230-05	LED(YG)							
D920-924			B30-2265-05	LED(BR/PG)							
D925-932			B30-2171-05	LED(D)							
C1			CK73GB1H103K	CHIP C 0.010UF K							
C2			CC73GCH1H101J	CHIP C 100PF J							
C3			CK73GB1H103K	CHIP C 0.010UF K							
C4			CC73GCH1H101J	CHIP C 100PF J							
C7			CK73GB1H104K	CHIP C 0.10UF K							
C8			CC73GCH1H101J	CHIP C 100PF J							
C9			CC73GCH1H471J	CHIP C 470PF J							
C10			CK73GB1H103K	CHIP C 0.010UF K							
C11 -13			CC73GCH1H101J	CHIP C 100PF J							
C14			CC73GCH1H471J	CHIP C 470PF J							

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

## PARTS LIST

TX UNIT (X56-3150-11)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C15			CK73GB1H103K	CHIP C 0.010UF K		C114			CK73GB1H103K	CHIP C 0.010UF K	
C16			CC73GCH1H471J	CHIP C 470PF J		C120			CC73GCH1H090B	CHIP C 9.0PF B	
C18			CS77CA1ER47M	CHIP TNTL 0.47UF 25WV		C121			CC73GCH1H050B	CHIP C 5.0PF B	
C19			CK73GB1E105K	CHIP C 1.0UF K		C122,123			CC73GCH1H470J	CHIP C 47PF J	
C20 -23			CC73GCH1H471J	CHIP C 470PF J		C124			CC73GCH1H040B	CHIP C 4.0PF B	
C24			CK73GB1E105K	CHIP C 1.0UF K		C125			CC73GCH1H470J	CHIP C 47PF J	
C25 -27			CK73GB1H103K	CHIP C 0.010UF K		C126			CC73GCH1H471J	CHIP C 470PF J	
C30			CS77CA1C2R2M	CHIP TNTL 2.2UF 16WV		C127			CC73GCH1H470J	CHIP C 47PF J	
C31			CS77CC1C330M	CHIP TNTL 33UF 16WV		C128			CK73GB1H103K	CHIP C 0.010UF K	
C32			CC73GCH1H101J	CHIP C 100PF J		C129			CC73GCH1H470J	CHIP C 47PF J	
C33			CK73GB1E105K	CHIP C 1.0UF K		C130			CC73GCH1H100C	CHIP C 10PF C	
C34 ,35			CK73GB1H103K	CHIP C 0.010UF K		C131			CC73GCH1H080B	CHIP C 8.0PF B	
C37 ,38			CC73GCH1H471J	CHIP C 470PF J		C132			CC73GCH1H470J	CHIP C 47PF J	
C39			CK73EB1E104K	CHIP C 0.10UF K		C133			CK73GB1E105K	CHIP C 1.0UF K	
C40			CC73GCH1H221J	CHIP C 220PF J		C134			CC73GCH1H030B	CHIP C 3.0PF B	
C41			CC73GCH1H331J	CHIP C 330PF J		C136			CC73GCH1H470J	CHIP C 47PF J	
C42 ,43			CK73GB1H103K	CHIP C 0.010UF K		C137			CK73GB1H223K	CHIP C 0.022UF K	
C44			CC73GCH1H680J	CHIP C 68PF J		C138			CC73GCH1H470J	CHIP C 47PF J	
C45			CK73GB1H104K	CHIP C 0.10UF K		C139			CK73GB1H103K	CHIP C 0.010UF K	
C46			CC73GCH1H180J	CHIP C 18PF J		C140			CC73GCH1H471J	CHIP C 470PF J	
C47			CC73GCH1H470J	CHIP C 47PF J		C141			CC73GCH1H040B	CHIP C 4.0PF B	
C50			CC73GCH1H070B	CHIP C 7.0PF B		C142			CC73GCH1H470J	CHIP C 47PF J	
C52			CC73GCH1H060B	CHIP C 6.0PF B		C144			CC73GCH1H010B	CHIP C 1.0PF B	
C54			CC73GCH1H471J	CHIP C 470PF J		C145			CC73GCH1H470J	CHIP C 47PF J	
C56			CC73GCH1H471J	CHIP C 470PF J		C146			CK73GB1H103K	CHIP C 0.010UF K	
C57			CC73GCH1H181J	CHIP C 180PF J		C147			CC73GCH1H471J	CHIP C 470PF J	
C58			CC73GCH1H470J	CHIP C 47PF J		C149			CC73GCH1H470J	CHIP C 47PF J	
C63 ,64			CC73GCH1H0R5B	CHIP C 0.5PF B		C150			CK73GB1H103K	CHIP C 0.010UF K	
C65			CC73GCH1H471J	CHIP C 470PF J		C153			CC73GCH1H040B	CHIP C 4.0PF B	
C67			CC73GCH1H0R5B	CHIP C 0.5PF B		C155			CC73GCH1H060B	CHIP C 6.0PF B	
C68			CC73GCH1H050B	CHIP C 5.0PF B		C157			CC73GCH1H040B	CHIP C 4.0PF B	
C69			CC73GCH1H040B	CHIP C 4.0PF B		C158,159			CC73GCH1H020B	CHIP C 2.0PF B	
C70			CC73GCH1H060B	CHIP C 6.0PF B		C160			CC73GCH1H030B	CHIP C 3.0PF B	
C72			CC73GCH1H030B	CHIP C 3.0PF B		C161			CC73GCH1H020B	CHIP C 2.0PF B	
C75			CC73GCH1H471J	CHIP C 470PF J		C162			CC73GCH1H060B	CHIP C 6.0PF B	
C76			CK73GB1H103K	CHIP C 0.010UF K		C163			CC73GCH1H090B	CHIP C 9.0PF B	
C77 ,78			CC73GCH1H470J	CHIP C 47PF J		C164			CC73GCH1H040B	CHIP C 4.0PF B	
C79 ,80			CC73GCH1H471J	CHIP C 470PF J		C166			CC73GCH1H090B	CHIP C 9.0PF B	
C82 -84			CC73GCH1H471J	CHIP C 470PF J		C168			CC73GCH1H050B	CHIP C 5.0PF B	
C85			CC73GCH1H090B	CHIP C 9.0PF B		C169			CC73GCH1H020B	CHIP C 2.0PF B	
C86			CC73GCH1H471J	CHIP C 470PF J		C170-172			CC73GCH1H030B	CHIP C 3.0PF B	
C87			CK73GB1H103K	CHIP C 0.010UF K		C173			CC73GCH1H090B	CHIP C 9.0PF B	
C88			CC73GCH1H070B	CHIP C 7.0PF B		C174			CC73GCH1H070B	CHIP C 7.0PF B	
C89			CC73GCH1H060B	CHIP C 6.0PF B		C175			CC73GCH1H090B	CHIP C 9.0PF B	
C90			CC73GCH1H030B	CHIP C 3.0PF B		C177			CC73GCH1H080B	CHIP C 8.0PF B	
C91			CE32BM1E470M	CHIP EL 47UF 25WV		C178			CC73GCH1H030B	CHIP C 3.0PF B	
C92			CC73GCH1H471J	CHIP C 470PF J		C179			CC73GCH1H070B	CHIP C 7.0PF B	
C93 ,94			CS77CC1C330M	CHIP TNTL 33UF 16WV		C180			CC73GCH1H030B	CHIP C 3.0PF B	
C95			CE32CL1V100M	CHIP EL 10UF 35WV		C181			CK73GB1H103K	CHIP C 0.010UF K	
C96			CC73GCH1H471J	CHIP C 470PF J		C182			CC73GCH1H471J	CHIP C 470PF J	
C97			CC73GCH1H100C	CHIP C 10PF C		C201			CK73FB0J106K	CHIP C 10UF K	
C98			CC73GCH1H070B	CHIP C 7.0PF B		C202			CK73GB1H104K	CHIP C 0.10UF K	
C99 -101			CC73GCH1H471J	CHIP C 470PF J		C203,204			CK73FB0J106K	CHIP C 10UF K	
C104			CK73GB1H103K	CHIP C 0.010UF K		C205			CK73GB1H104K	CHIP C 0.10UF K	
C105,106			CC73GCH1H471J	CHIP C 470PF J		C206,207			CK73GB1H103K	CHIP C 0.010UF K	
C107			CK73GB1H103K	CHIP C 0.010UF K		C209			CS77CA1C2R2M	CHIP TNTL 2.2UF 16WV	
C109			CC73GCH1H471J	CHIP C 470PF J		C210			CC73GCH1H100C	CHIP C 10PF C	
C110			CC73GCH1H100C	CHIP C 10PF C		C211			CC73GCH1H471J	CHIP C 470PF J	
C111			CC73GCH1H470J	CHIP C 47PF J		C212			CK73GB1H104K	CHIP C 0.10UF K	
C113			CC73GCH1H470J	CHIP C 47PF J		C213			CE32BM1E470M	CHIP EL 47UF 25WV	

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TX UNIT (X56-3150-11)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C215			CK73GB1H103K	CHIP C 0.010UF K		C324			CK73GB1H104K	CHIP C 0.10UF K	
C216			CC73GCH1H181J	CHIP C 180PF J		C325			CK73GB1H103K	CHIP C 0.010UF K	
C217-219			CK73GB1H103K	CHIP C 0.010UF K		C328-330			CK73GB1H103K	CHIP C 0.010UF K	
C220			CC73GCH1H471J	CHIP C 470PF J		C331			CK73GB1E105K	CHIP C 1.0UF K	
C222			CK73GB1H102K	CHIP C 1000PF K		C332-340			CK73GB1H103K	CHIP C 0.010UF K	
C223			CK73GB1H104K	CHIP C 0.10UF K		C341			CC73GCH1H680J	CHIP C 68PF J	
C224			CE32CL1V100M	CHIP EL 10UF 35WV		C342			CK73GB1H104K	CHIP C 0.10UF K	
C225			C93-1824-05	CHIP C 100UF M		C343			CC73GCH1H221J	CHIP C 220PF J	
C226			CE32CL1V100M	CHIP EL 10UF 35WV		C344			CK73GB1H103K	CHIP C 0.010UF K	
C227			CC73GCH1H121J	CHIP C 120PF J		C345			CC73GCH1H180J	CHIP C 18PF J	
C228			CC73GCH1H100C	CHIP C 10PF C		C346			CC73GCH1H331J	CHIP C 330PF J	
C229			CS77CC1C100M	CHIP TNL 10UF 16WV		C347			CC73GCH1H470J	CHIP C 47PF J	
C230			CC73GCH1H331J	CHIP C 330PF J		C348			CC73GCH1H181J	CHIP C 180PF J	
C231,232			CS77CB21A470M	CHIP TNL 47UF 10WV		C349-352			CK73GB1H103K	CHIP C 0.010UF K	
C233			CC73GCH1H221J	CHIP C 220PF J		C353			CC73GCH1H680J	CHIP C 68PF J	
C234			CS77CC1C100M	CHIP TNL 10UF 16WV		C354			CK73GB1H103K	CHIP C 0.010UF K	
C235			CK73GB1H103K	CHIP C 0.010UF K		C355			CK73GB1H104K	CHIP C 0.10UF K	
C236			CC73GCH1H470J	CHIP C 47PF J		C356			CC73GCH1H221J	CHIP C 220PF J	
C237			CK73GB1H104K	CHIP C 0.10UF K		C357			CC73GCH1H180J	CHIP C 18PF J	
C238			CC73GCH1H180J	CHIP C 18PF J		C358			CC73GCH1H331J	CHIP C 330PF J	
C239			CK73GB1H103K	CHIP C 0.010UF K		C359			CC73GCH1H470J	CHIP C 47PF J	
C240			CK73GB1H104K	CHIP C 0.10UF K		C360			CC73GCH1H181J	CHIP C 180PF J	
C241			CC73GCH1H331J	CHIP C 330PF J		C362-367			CK73GB1H103K	CHIP C 0.010UF K	
C242			CC73GCH1H680J	CHIP C 68PF J		C368			CC73GCH1H680J	CHIP C 68PF J	
C243,244			CK73GB1H103K	CHIP C 0.010UF K		C369,370			CK73GB1H103K	CHIP C 0.010UF K	
C245			CC73GCH1H270J	CHIP C 27PF J		C371			CC73GCH1H680J	CHIP C 68PF J	
C246			CC73GCH1H331J	CHIP C 330PF J		C372,373			CK73GB1H104K	CHIP C 0.10UF K	
C247,248			CK73GB1H104K	CHIP C 0.10UF K		C374			CK73GB1E105K	CHIP C 1.0UF K	
C249,250			C93-1824-05	CHIP C 100UF M		C375			CK73GB1H103K	CHIP C 0.010UF K	
C251			CK73GB1H102K	CHIP C 1000PF K		C376			CK73GB1H104K	CHIP C 0.10UF K	
C252-254			CC73GCH1H100C	CHIP C 10PF C		C401			CK73GB1H104K	CHIP C 0.10UF K	
C255			CK73GB1H104K	CHIP C 0.10UF K		C402			CC73GCH1H100C	CHIP C 10PF C	
C256			CC73GCH1H471J	CHIP C 470PF J		C404			CC73GCH1H270J	CHIP C 27PF J	
C257			CC73GCH1H100C	CHIP C 10PF C		C407			CC73GCH1H100C	CHIP C 10PF C	
C258,259			CK73GB1H103K	CHIP C 0.010UF K		C408-412			CK73GB1H104K	CHIP C 0.10UF K	
C260			CC73GCH1H471J	CHIP C 470PF J		C413-416			CC73GCH1H560J	CHIP C 56PF J	
C261			CK73GB1H103K	CHIP C 0.010UF K		C417-420			CK73GB1H104K	CHIP C 0.10UF K	
C263-265			CK73GB1H103K	CHIP C 0.010UF K		C421-423			CK73GB1H103K	CHIP C 0.010UF K	
C266			CK73GB1H104K	CHIP C 0.10UF K		C424			CK73GB1H104K	CHIP C 0.10UF K	
C267			CC73GCH1H471J	CHIP C 470PF J		C425			CK73GB1H103K	CHIP C 0.010UF K	
C268			CK73GB1H103K	CHIP C 0.010UF K		C426			CK73GB1H104K	CHIP C 0.10UF K	
C269			CK73GB1E105K	CHIP C 1.0UF K		C433,434			CC73GCH1H471J	CHIP C 470PF J	
C271			CK73GB1H103K	CHIP C 0.010UF K		C435			CK73GB1H104K	CHIP C 0.10UF K	
C301			CK73GB1H104K	CHIP C 0.10UF K		C436			CC73GCH1H100C	CHIP C 10PF C	
C302			CK73GB1H103K	CHIP C 0.010UF K		C437			CK73GB1H102K	CHIP C 1000PF K	
C303			CC73GCH1H471J	CHIP C 470PF J		C438			CK73GB1H103K	CHIP C 0.010UF K	
C304,305			CK73GB1H104K	CHIP C 0.10UF K		C439			CK73GB1H104K	CHIP C 0.10UF K	
C306			CC73GCH1H471J	CHIP C 470PF J		C440			CK73GB1H103K	CHIP C 0.010UF K	
C307			CK73GB1H103K	CHIP C 0.010UF K		C441			CK73GB1H104K	CHIP C 0.10UF K	
C309			CE32BM1E470M	CHIP EL 47UF 25WV		C442			CK73FB0J106K	CHIP C 10UF K	
C310			CK73GB1H103K	CHIP C 0.010UF K		C443,444			CK73GB1E105K	CHIP C 1.0UF K	
C311			CK73GB1H223K	CHIP C 0.022UF K		C501			CC73GCH1H100C	CHIP C 10PF C	
C312-314			CK73GB1H103K	CHIP C 0.010UF K		C502-504			CK73GB1H104K	CHIP C 0.10UF K	
C316			CC73GCH1H181J	CHIP C 180PF J		C505			CC73GCH1H221J	CHIP C 220PF J	
C317			CC73GCH1H470J	CHIP C 47PF J		C506			CC73GCH1H121J	CHIP C 120PF J	
C318			CS77CA1ER47M	CHIP TNL 0.47UF 25WV		C507			CC73GCH1H271J	CHIP C 270PF J	
C319			CC73GCH1H331J	CHIP C 330PF J		C508			CC73GCH1H221J	CHIP C 220PF J	
C320			CC73GCH1H180J	CHIP C 18PF J		C509			CC73GCH1H470J	CHIP C 47PF J	
C321			CC73GCH1H221J	CHIP C 220PF J		C510			CC73GCH1H331J	CHIP C 330PF J	
C323			CC73GCH1H680J	CHIP C 68PF J		C511			CK73GB1H104K	CHIP C 0.10UF K	

## PARTS LIST

TX UNIT (X56-3150-11)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C512,513			CC73GCH1H221J	CHIP C 220PF J		C620			CC73GCH1H820J	CHIP C 82PF J	
C514			CC73GCH1H271J	CHIP C 270PF J		C621,622			CC73GCH1H471J	CHIP C 470PF J	
C516			CC73GCH1H470J	CHIP C 47PF J		C623			CC73GCH1H470J	CHIP C 47PF J	
C517			CK73GB1H104K	CHIP C 0.10UF K		C701,702			CK73GB1H104K	CHIP C 0.10UF K	
C518			CC73GCH1H121J	CHIP C 120PF J		C703			CC73GCH1H471J	CHIP C 470PF J	
C519			CC73GCH1H470J	CHIP C 47PF J		C704			CK73GB1E105K	CHIP C 1.0UF K	
C520-522			CK73GB1H104K	CHIP C 0.10UF K		C705			CE32CL1V100M	CHIP EL 10UF 35WV	
C523			CC73GCH1H030B	CHIP C 3.0PF B		C706,707			CK73GB1H104K	CHIP C 0.10UF K	
C524-526			CK73GB1H104K	CHIP C 0.10UF K		C708,709			CC73GCH1H471J	CHIP C 470PF J	
C527			CC73GCH1H471J	CHIP C 470PF J		C710			CK73GB1H104K	CHIP C 0.10UF K	
C528			CK73GB1H104K	CHIP C 0.10UF K		C711			CK73GB1H103K	CHIP C 0.010UF K	
C529			CC73GCH1H331J	CHIP C 330PF J		C712-714			CK73GB1H104K	CHIP C 0.10UF K	
C530-532			CK73GB1H104K	CHIP C 0.10UF K		C715			CE32CL1V100M	CHIP EL 10UF 35WV	
C533			CC73GCH1H030B	CHIP C 3.0PF B		C716			CK73GB1H103K	CHIP C 0.010UF K	
C534			CK73GB1H104K	CHIP C 0.10UF K		C717,718			CE32CL1V100M	CHIP EL 10UF 35WV	
C536-538			CK73GB1H104K	CHIP C 0.10UF K		C719,720			CK73GB1H103K	CHIP C 0.010UF K	
C539			CC73GCH1H820J	CHIP C 82PF J		C721			CK73GB1H104K	CHIP C 0.10UF K	
C540-544			CK73GB1H104K	CHIP C 0.10UF K		C722			CE32CL1V100M	CHIP EL 10UF 35WV	
C545			CC73GCH1H471J	CHIP C 470PF J		C723			CK73GB1H103K	CHIP C 0.010UF K	
C546-549			CK73GB1H104K	CHIP C 0.10UF K		C724			CK73GB1H104K	CHIP C 0.10UF K	
C550			CC73GCH1H471J	CHIP C 470PF J		C725			CE32CL1V100M	CHIP EL 10UF 35WV	
C551-553			CK73GB1H104K	CHIP C 0.10UF K		C726			CK73GB1H103K	CHIP C 0.010UF K	
C554			CC73GCH1H221J	CHIP C 220PF J		C727-729			CC73GCH1H471J	CHIP C 470PF J	
C555			CC73GCH1H121J	CHIP C 120PF J		C730			CK73GB1H103K	CHIP C 0.010UF K	
C556-558			CK73GB1H104K	CHIP C 0.10UF K		C731-734			CC73GCH1H471J	CHIP C 470PF J	
C561			CC73GCH1H100C	CHIP C 10PF C		C735,736			CK73GB1H103K	CHIP C 0.010UF K	
C562			CC73GCH1H471J	CHIP C 470PF J		C737,738			CC73GCH1H471J	CHIP C 470PF J	
C563			CC73GCH1H470J	CHIP C 47PF J		C739			CK73GB1H103K	CHIP C 0.010UF K	
C564			CC73GCH1H331J	CHIP C 330PF J		C740			CC73GCH1H471J	CHIP C 470PF J	
C565			CK73GB1H103K	CHIP C 0.010UF K		C741			CK73GB1H103K	CHIP C 0.010UF K	
C566			CK73GB1H104K	CHIP C 0.10UF K		C801			CK73GB1H103K	CHIP C 0.010UF K	
C567			CK73GB1H103K	CHIP C 0.010UF K		C802,803			CC73GCH1H471J	CHIP C 470PF J	
C568-572			CK73GB1H104K	CHIP C 0.10UF K		C804			CK73GB1H103K	CHIP C 0.010UF K	
C573			CC73GCH1H221J	CHIP C 220PF J		C809			CC73GCH1H331J	CHIP C 330PF J	
C577,578			CC73GCH1H100C	CHIP C 10PF C		C811			CC73GCH1H270J	CHIP C 27PF J	
C579			CK73GB1H104K	CHIP C 0.10UF K		C812			CC73GCH1H331J	CHIP C 330PF J	
C580			CC73GCH1H121J	CHIP C 120PF J		C813			CC73GCH1H270J	CHIP C 27PF J	
C582			CC73GCH1H471J	CHIP C 470PF J		C814			CC73GCH1H471J	CHIP C 470PF J	
C583			CC73GCH1H470J	CHIP C 47PF J		C826			CE32AU1E100M	CHIP EL 10UF 25WV	
C584			CC73GCH1H331J	CHIP C 330PF J		C834,835			CC73GCH1H331J	CHIP C 330PF J	
C585,586			CK73GB1H104K	CHIP C 0.10UF K		C839			C92-0904-05	OS-CON 22UF 35WV	
C589			CK73GB1H103K	CHIP C 0.010UF K		C840			CC73GCH1H470J	CHIP C 47PF J	
C591,592			CK73GB1H103K	CHIP C 0.010UF K		C920-925			CK73GB1H104K	CHIP C 0.10UF K	
C593			CC73GCH1H181J	CHIP C 180PF J		C926			CK73GB1H102K	CHIP C 1000PF K	
C594-598			CK73GB1H104K	CHIP C 0.10UF K		C928,929			CK73GB1H104K	CHIP C 0.10UF K	
C599			CC73GCH1H470J	CHIP C 47PF J		C930,931			CK73GB1E105K	CHIP C 1.0UF K	
C600			CC73GCH1H331J	CHIP C 330PF J		C932			CC73GCH1H470J	CHIP C 47PF J	
C601			CC73GCH1H180J	CHIP C 18PF J		C933,934			CS77CA1A1R5M	CHIP TNL 1.5UF 10WV	
C602			CC73GCH1H221J	CHIP C 220PF J		C935,936			CK73GB1H104K	CHIP C 0.10UF K	
C603			CC73GCH1H680J	CHIP C 68PF J		C937			CK73GB1H103K	CHIP C 0.010UF K	
C604-606			CK73GB1H103K	CHIP C 0.010UF K		C938			CK73FB0J106K	CHIP C 10UF K	
C608			CK73GB1H104K	CHIP C 0.10UF K		C939			CK73GB1H102K	CHIP C 1000PF K	
C609			CK73GB1H103K	CHIP C 0.010UF K		C941			CK73GB1H102K	CHIP C 1000PF K	
C610			CK73GB1H104K	CHIP C 0.10UF K		C943			CK73GB1H104K	CHIP C 0.10UF K	
C611			CK73GB1H103K	CHIP C 0.010UF K		C960-965			CK73GB1H104K	CHIP C 0.10UF K	
C612,613			CK73GB1H104K	CHIP C 0.10UF K		CN104			E23-1280-05	TERMINAL	
C614,615			CK73GB1H103K	CHIP C 0.010UF K		CN108-110			E23-1280-05	TERMINAL	
C616			CK73FB0J106K	CHIP C 10UF K		CN112-120			E23-1280-05	TERMINAL	
C617,618			CK73GB1H104K	CHIP C 0.10UF K		CN130			E23-1330-05	TERMINAL	
C619			CK73FB0J106K	CHIP C 10UF K		CN403			E04-0193-05	PIN SOCKET	

## PARTS LIST

TX UNIT (X56-3150-11)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
CN405,406			E04-0193-05	PIN SOCKET		L314			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
CN407			E04-0154-05	PIN SOCKET		L315,316			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)	
CN408			E04-0193-05	PIN SOCKET		L401			L41-3305-33	SMALL FIXED INDUCTOR(33UH)	
CN801			E41-2672-05	PIN ASSY(3P)		L402,403			L41-4705-33	SMALL FIXED INDUCTOR(47UH)	
CN802			E04-0193-05	PIN SOCKET		L404			L41-2205-33	SMALL FIXED INDUCTOR(22UH)	
CN803			E40-6822-05	FLAT CABLE CONNECTOR(13P)		L405,406			L41-1205-33	SMALL FIXED INDUCTOR(12UH)	
CN804-806			E40-6656-05	PIN ASSY(36P)		L408			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
CN807			E41-2671-05	PIN ASSY(2P)		L410			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
CN920			E41-1493-05	PIN ASSY(10P)		L413			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
CN921			E40-6656-05	PIN ASSY(36P)		L501			L41-3305-33	SMALL FIXED INDUCTOR(33UH)	
CN923			E41-1483-05	PIN ASSY(11P)		L502			L41-5685-33	SMALL FIXED INDUCTOR(0.56UH)	
CN960			E41-1493-05	PIN ASSY(10P)		L503			L41-6885-33	SMALL FIXED INDUCTOR(0.68UH)	
CF401			L72-1019-05	CERAMIC FILTER(6MHZ)		L504			L41-5685-33	SMALL FIXED INDUCTOR(0.56UH)	
L1 -3			L92-0140-05	CHIP FERRITE		L505			L41-6885-33	SMALL FIXED INDUCTOR(0.68UH)	
L4			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)		L506,507			L39-1517-05	TOROIDAL COIL	
L5			L41-1098-40	SMALL FIXED INDUCTOR(1000NH)		L508,509			L41-3395-33	SMALL FIXED INDUCTOR(3.3UH)	
L8 ,9			L41-1098-40	SMALL FIXED INDUCTOR(1000NH)		L510			L41-5685-33	SMALL FIXED INDUCTOR(0.56UH)	
L10			L92-0140-05	CHIP FERRITE		L511			L41-6885-33	SMALL FIXED INDUCTOR(0.68UH)	
L11			L34-4607-15	AIR-CORE COIL(6T)		L512,513			L41-3305-33	SMALL FIXED INDUCTOR(33UH)	
L12			L41-3385-33	SMALL FIXED INDUCTOR(0.33UH)		L515			L41-5685-33	SMALL FIXED INDUCTOR(0.56UH)	
L13			L41-3985-33	SMALL FIXED INDUCTOR(0.39UH)		L516			L41-6885-33	SMALL FIXED INDUCTOR(0.68UH)	
L16 -18			L41-1098-40	SMALL FIXED INDUCTOR(1000NH)		L518			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
L19 ,20			L41-6865-55	SMALL FIXED INDUCTOR(6.8NH)		L519			L41-3385-33	SMALL FIXED INDUCTOR(0.33UH)	
L21			L41-2278-55	SMALL FIXED INDUCTOR(22NH)		L520			L41-3985-33	SMALL FIXED INDUCTOR(0.39UH)	
L22 ,23			L41-1878-55	SMALL FIXED INDUCTOR(18NH)		L521			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)	
L24			L41-1078-55	SMALL FIXED INDUCTOR(10NH)		L701			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)	
L25			L39-1498-05	TOROIDAL COIL		L801,802			L41-2785-33	SMALL FIXED INDUCTOR(0.27UH)	
L28			L41-1878-55	SMALL FIXED INDUCTOR(18NH)		X201			L77-3066-05	VCXO(19.2MHZ)	
L32			L41-3665-55	SMALL FIXED INDUCTOR(3.6NH)		X301			L77-3068-05	VCXO(20MHZ)	
L33			L41-1561-55	SMALL FIXED INDUCTOR(1.5NH)		X401	*		L77-3096-05	TCXO(19.2MHZ)	
L34			L79-1953-05	FILTER(938MHZ)		CP11,12			RK74GB1J102J	CHIP-COM 1.0K J 1/16W	
L35			L41-1561-55	SMALL FIXED INDUCTOR(1.5NH)		CP13			RK75GB1JR00	CHIP-COM 0 J 1/16W	
L37 ,38			L41-3665-55	SMALL FIXED INDUCTOR(3.6NH)		CP14,15			RK74GB1J681J	CHIP-COM 680 J 1/16W	
L39			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		CP16-23			RK74GB1J102J	CHIP-COM 1.0K J 1/16W	
L40 ,41			L41-3965-55	SMALL FIXED INDUCTOR(3.9NH)		R3 ,4			RK73GB2A000J	CHIP R 0 J 1/10W	
L42 ,43			L41-1278-55	SMALL FIXED INDUCTOR(12NH)		R5			RK73GB2A473J	CHIP R 47K J 1/10W	
L45 ,46			L41-3965-55	SMALL FIXED INDUCTOR(3.9NH)		R6			RK73GB2A102J	CHIP R 1.0K J 1/10W	
L47			L41-1078-55	SMALL FIXED INDUCTOR(10NH)		R7			RK73GB2A473J	CHIP R 47K J 1/10W	
L48			L41-1278-55	SMALL FIXED INDUCTOR(12NH)		R8			RK73GB2A101J	CHIP R 100 J 1/10W	
L49			L41-1098-40	SMALL FIXED INDUCTOR(1000NH)		R9			RK73GB2A100J	CHIP R 10 J 1/10W	
L50 ,51			L41-6865-55	SMALL FIXED INDUCTOR(6.8NH)		R10			RK73GB2A101J	CHIP R 100 J 1/10W	
L52			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		R11			RK73GB2A000J	CHIP R 0 J 1/10W	
L201			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		R12			RK73GB2A105J	CHIP R 1.0M J 1/10W	
L202			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)		R13 -15			RK73GB2A100J	CHIP R 10 J 1/10W	
L203			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		R16			RK73GB2A105J	CHIP R 1.0M J 1/10W	
L204			L41-3385-33	SMALL FIXED INDUCTOR(0.33UH)		R17			RK73GB2A151J	CHIP R 150 J 1/10W	
L205			L41-3985-33	SMALL FIXED INDUCTOR(0.39UH)		R18			RK73GB2A221J	CHIP R 220 J 1/10W	
L206			L41-2785-33	SMALL FIXED INDUCTOR(0.27UH)		R19			RK73GB2A104J	CHIP R 100K J 1/10W	
L207,208			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)		R21			RK73GB2A102J	CHIP R 1.0K J 1/10W	
L301			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)		R22			RK73GB2A332J	CHIP R 3.3K J 1/10W	
L302,303			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		R23			RK73GB2A470J	CHIP R 47 J 1/10W	
L304			L41-3385-33	SMALL FIXED INDUCTOR(0.33UH)		R24			RK73GB2A682J	CHIP R 6.8K J 1/10W	
L305			L41-3985-33	SMALL FIXED INDUCTOR(0.39UH)		R25			RK73GB2A100J	CHIP R 10 J 1/10W	
L306-308			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)		R26			RK73GB2A683J	CHIP R 68K J 1/10W	
L309			L41-3985-33	SMALL FIXED INDUCTOR(0.39UH)		R27			RK73GB2A000J	CHIP R 0 J 1/10W	
L310			L41-3385-33	SMALL FIXED INDUCTOR(0.33UH)		R28			RK73GB2A106J	CHIP R 10M J 1/10W	
L311			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)		R29			RK73GB2A471J	CHIP R 470 J 1/10W	
L312			L41-3985-33	SMALL FIXED INDUCTOR(0.39UH)		R32			RK73GB2A221J	CHIP R 220 J 1/10W	
L313			L41-3385-33	SMALL FIXED INDUCTOR(0.33UH)		R35			RK73GB2A470J	CHIP R 47 J 1/10W	
						R38			RK73GB2A000J	CHIP R 0 J 1/10W	

## PARTS LIST

TX UNIT (X56-3150-11)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R39			RK73GB2A224J	CHIP R 220K J 1/10W		R207,208			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R42			RK73GB2A000J	CHIP R 0 J 1/10W		R209,210			RK73GB2A104J	CHIP R 100K J 1/10W	
R43			RK73GB2A101J	CHIP R 100 J 1/10W		R211			RK73GB2A2R2J	CHIP R 2.2 J 1/10W	
R44			RK73GB2A184J	CHIP R 180K J 1/10W		R213,214			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R45			RN73GE1J101D	METAL FILM 100 D 1/16W		R216			RK73GB2A471J	CHIP R 470 J 1/10W	
R46			RN73GE1J271D	METAL FILM 270 D 1/16W		R217,218			RK73GB2A100J	CHIP R 10 J 1/10W	
R48 ,49			RK73GB2A331J	CHIP R 330 J 1/10W		R219			RK73GB2A474J	CHIP R 470K J 1/10W	
R50			RK73GB2A000J	CHIP R 0 J 1/10W		R220			RK73GB2A100J	CHIP R 10 J 1/10W	
R51			RK73GB2A392J	CHIP R 3.9K J 1/10W		R221,222			RK73GB2A473J	CHIP R 47K J 1/10W	
R52			RK73GB2A472J	CHIP R 4.7K J 1/10W		R223			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R53			RK73GB2A103J	CHIP R 10K J 1/10W		R224			RK73GB2A470J	CHIP R 47 J 1/10W	
R54			RK73GB2A272J	CHIP R 2.7K J 1/10W		R225			RK73GB2A101J	CHIP R 100 J 1/10W	
R55			RK73GB2A101J	CHIP R 100 J 1/10W		R226			RK73GB2A104J	CHIP R 100K J 1/10W	
R56			RK73GB2A221J	CHIP R 220 J 1/10W		R228,229			RK73GB2A104J	CHIP R 100K J 1/10W	
R57			RK73GB2A470J	CHIP R 47 J 1/10W		R230,231			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R58			RK73GB2A000J	CHIP R 0 J 1/10W		R232			RK73GB2A154J	CHIP R 150K J 1/10W	
R59			RK73GB2A271J	CHIP R 270 J 1/10W		R233-235			RK73GB2A104J	CHIP R 100K J 1/10W	
R60			RK73GB2A180J	CHIP R 18 J 1/10W		R236			RK73GB2A683J	CHIP R 68K J 1/10W	
R61			RK73GB2A271J	CHIP R 270 J 1/10W		R237			RK73GB2A000J	CHIP R 0 J 1/10W	
R62			RK73GB2A101J	CHIP R 100 J 1/10W		R238			RK73GB2A183J	CHIP R 18K J 1/10W	
R63			RK73GB2A391J	CHIP R 390 J 1/10W		R239			RK73GB2A103J	CHIP R 10K J 1/10W	
R64			RK73GB2A120J	CHIP R 12 J 1/10W		R240			RK73GB2A105J	CHIP R 1.0M J 1/10W	
R65			RK73GB2A391J	CHIP R 390 J 1/10W		R241			RK73GB2A471J	CHIP R 470 J 1/10W	
R66 ,67			RK73GB2A102J	CHIP R 1.0K J 1/10W		R242,243			RK73GB2A000J	CHIP R 0 J 1/10W	
R68			RK73GB2A220J	CHIP R 22 J 1/10W		R244			RK73GB2A681J	CHIP R 680 J 1/10W	
R70			RK73GB2A103J	CHIP R 10K J 1/10W		R245			RK73GB2A100J	CHIP R 10 J 1/10W	
R71			RK73GB2A152J	CHIP R 1.5K J 1/10W		R246-248			RK73GB2A104J	CHIP R 100K J 1/10W	
R74			RK73GB2A000J	CHIP R 0 J 1/10W		R249			RK73GB2A000J	CHIP R 0 J 1/10W	
R77			RK73GB2A221J	CHIP R 220 J 1/10W		R250-252			RK73GB2A100J	CHIP R 10 J 1/10W	
R78			RK73GB2A562J	CHIP R 5.6K J 1/10W		R253-256			RK73GB2A104J	CHIP R 100K J 1/10W	
R79			RK73GB2A152J	CHIP R 1.5K J 1/10W		R257			RK73GB2A332J	CHIP R 3.3K J 1/10W	
R81			RK73GB2A270J	CHIP R 27 J 1/10W		R258			RK73GB2A105J	CHIP R 1.0M J 1/10W	
R83			RK73GB2A000J	CHIP R 0 J 1/10W		R259			RK73GB2A221J	CHIP R 220 J 1/10W	
R85			RK73GB2A000J	CHIP R 0 J 1/10W		R260			RK73GB2A471J	CHIP R 470 J 1/10W	
R86 ,87			RK73GB2A474J	CHIP R 470K J 1/10W		R261			RK73GB2A682J	CHIP R 6.8K J 1/10W	
R89			RK73GB2A000J	CHIP R 0 J 1/10W		R262			RK73GB2A000J	CHIP R 0 J 1/10W	
R91			RK73GB2A102J	CHIP R 1.0K J 1/10W		R263,264			RK73GB2A100J	CHIP R 10 J 1/10W	
R92			RK73GB2A563J	CHIP R 56K J 1/10W		R265-273			RK73GB2A104J	CHIP R 100K J 1/10W	
R93			RK73GB2A392J	CHIP R 3.9K J 1/10W		R274			RK73GB2A101J	CHIP R 100 J 1/10W	
R94			RK73GB2A103J	CHIP R 10K J 1/10W		R275			RK73GB2A822J	CHIP R 8.2K J 1/10W	
R95			RK73GB2A123J	CHIP R 12K J 1/10W		R276			RK73GB2A2R2J	CHIP R 2.2 J 1/10W	
R96			RK73GB2A221J	CHIP R 220 J 1/10W		R277,278			RK73GB2A000J	CHIP R 0 J 1/10W	
R97			RK73GB2A474J	CHIP R 470K J 1/10W		R279			RK73GB2A182J	CHIP R 1.8K J 1/10W	
R98			RK73GB2A220J	CHIP R 22 J 1/10W		R301			RK73GB2A000J	CHIP R 0 J 1/10W	
R99			RK73GB2A4R7J	CHIP R 4.7 J 1/10W		R302			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R100			RK73GB2A000J	CHIP R 0 J 1/10W		R304			RK73GB2A474J	CHIP R 470K J 1/10W	
R103,104			RK73GB2A000J	CHIP R 0 J 1/10W		R305			RK73GB2A100J	CHIP R 10 J 1/10W	
R105			RK73GB2A104J	CHIP R 100K J 1/10W		R306			RK73GB2A474J	CHIP R 470K J 1/10W	
R106,107			RK73GB2A474J	CHIP R 470K J 1/10W		R307			RK73GB2A100J	CHIP R 10 J 1/10W	
R108			RK73GB2A821J	CHIP R 820 J 1/10W		R308			RK73GB2A474J	CHIP R 470K J 1/10W	
R111-114			RK73GB2A472J	CHIP R 4.7K J 1/10W		R309			RK73GB2A101J	CHIP R 100 J 1/10W	
R115			RK73GB2A473J	CHIP R 47K J 1/10W		R310			RK73GB2A100J	CHIP R 10 J 1/10W	
R118,119			RK73GB2A474J	CHIP R 470K J 1/10W		R311			RK73GB2A104J	CHIP R 100K J 1/10W	
R121,122			RK73GB2A000J	CHIP R 0 J 1/10W		R312,313			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R201			RK73GB2A104J	CHIP R 100K J 1/10W		R314			RK73GB2A104J	CHIP R 100K J 1/10W	
R202			RK73GB2A473J	CHIP R 47K J 1/10W		R315			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R203			RK73GB2A2R2J	CHIP R 2.2 J 1/10W		R316			RK73GB2A104J	CHIP R 100K J 1/10W	
R204			RK73GB2A104J	CHIP R 100K J 1/10W		R317			RK73GB2A2R2J	CHIP R 2.2 J 1/10W	
R205			RK73GB2A000J	CHIP R 0 J 1/10W		R318			RK73GB2A103J	CHIP R 10K J 1/10W	
R206			RK73GB2A104J	CHIP R 100K J 1/10W		R319,320			RK73GB2A105J	CHIP R 1.0M J 1/10W	



## PARTS LIST

TX UNIT (X56-3150-11)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R321			RK73GB2A104J	CHIP R 100K J 1/10W		R420			RK73GB2A100J	CHIP R 10 J 1/10W	
R322			RK73GB2A472J	CHIP R 4.7K J 1/10W		R421			RK73GB2A474J	CHIP R 470K J 1/10W	
R323			RK73GB2A470J	CHIP R 47 J 1/10W		R422			RK73GB2A100J	CHIP R 10 J 1/10W	
R324,325			RK73GB2A000J	CHIP R 0 J 1/10W		R423			RK73GB2A101J	CHIP R 100 J 1/10W	
R326			RK73GB2A224J	CHIP R 220K J 1/10W		R424			RK73GB2A100J	CHIP R 10 J 1/10W	
R327			RK73GB2A000J	CHIP R 0 J 1/10W		R425			RK73GB2A332J	CHIP R 3.3K J 1/10W	
R329			RK73GB2A103J	CHIP R 10K J 1/10W		R426			RK73GB2A563J	CHIP R 56K J 1/10W	
R330			RK73GB2A102J	CHIP R 1.0K J 1/10W		R427			RK73GB2A000J	CHIP R 0 J 1/10W	
R331			RK73GB2A221J	CHIP R 220 J 1/10W		R429			RK73GB2A000J	CHIP R 0 J 1/10W	
R332			RK73GB2A100J	CHIP R 10 J 1/10W		R430			RK73GB2A473J	CHIP R 47K J 1/10W	
R333			RK73GB2A822J	CHIP R 8.2K J 1/10W		R431-434			RK73GB2A000J	CHIP R 0 J 1/10W	
R334			RK73GB2A123J	CHIP R 12K J 1/10W		R435			RK73GB2A563J	CHIP R 56K J 1/10W	
R335			RK73GB2A332J	CHIP R 3.3K J 1/10W		R501			RK73GB2A104J	CHIP R 100K J 1/10W	
R336			RK73GB2A2R2J	CHIP R 2.2 J 1/10W		R502			RK73GB2A271J	CHIP R 270 J 1/10W	
R337			RK73GB2A182J	CHIP R 1.8K J 1/10W		R503			RK73GB2A180J	CHIP R 18 J 1/10W	
R338			RK73GB2A471J	CHIP R 470 J 1/10W		R504			RK73GB2A271J	CHIP R 270 J 1/10W	
R339			RK73GB2A104J	CHIP R 100K J 1/10W		R506			RK73GB2A470J	CHIP R 47 J 1/10W	
R340			RK73GB2A100J	CHIP R 10 J 1/10W		R508			RK73GB2A000J	CHIP R 0 J 1/10W	
R341			RK73GB2A221J	CHIP R 220 J 1/10W		R509,510			RK73GB2A104J	CHIP R 100K J 1/10W	
R342			RK73GB2A100J	CHIP R 10 J 1/10W		R511			RK73GB2A1R0J	CHIP R 1 J 1/10W	
R344			RK73GB2A682J	CHIP R 6.8K J 1/10W		R512			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R345			RK73GB2A332J	CHIP R 3.3K J 1/10W		R513			RK73GB2A220J	CHIP R 22 J 1/10W	
R346			RK73GB2A222J	CHIP R 2.2K J 1/10W		R514			RK73GB2A104J	CHIP R 100K J 1/10W	
R347			RK73GB2A471J	CHIP R 470 J 1/10W		R515			RK73GB2A473J	CHIP R 47K J 1/10W	
R348			RK73GB2A100J	CHIP R 10 J 1/10W		R516			RK73GB2A104J	CHIP R 100K J 1/10W	
R349			RK73GB2A470J	CHIP R 47 J 1/10W		R517			RK73GB2A473J	CHIP R 47K J 1/10W	
R350			RK73GB2A682J	CHIP R 6.8K J 1/10W		R518			RK73GH2A333D	CHIP R 33K D 1/10W	
R351			RK73GB2A332J	CHIP R 3.3K J 1/10W		R519			RK73GB2A561J	CHIP R 560 J 1/10W	
R352			RK73GB2A222J	CHIP R 2.2K J 1/10W		R520			RK73GB2A473J	CHIP R 47K J 1/10W	
R353			RK73GB2A221J	CHIP R 220 J 1/10W		R522			RK73GB2A271J	CHIP R 270 J 1/10W	
R354			RK73GB2A100J	CHIP R 10 J 1/10W		R523			RK73GB2A180J	CHIP R 18 J 1/10W	
R355			RK73GB2A470J	CHIP R 47 J 1/10W		R524			RK73GB2A271J	CHIP R 270 J 1/10W	
R356			RK73GB2A000J	CHIP R 0 J 1/10W		R525			RK73GB2A1R0J	CHIP R 1 J 1/10W	
R357			RK73GB2A221J	CHIP R 220 J 1/10W		R526			RK73GB2A220J	CHIP R 22 J 1/10W	
R358			RK73GB2A472J	CHIP R 4.7K J 1/10W		R527,528			RK73GB2A473J	CHIP R 47K J 1/10W	
R359			RK73GB2A331J	CHIP R 330 J 1/10W		R529,530			RK73GB2A104J	CHIP R 100K J 1/10W	
R360			RK73GB2A221J	CHIP R 220 J 1/10W		R532			RK73GB2A100J	CHIP R 10 J 1/10W	
R361			RK73GB2A123J	CHIP R 12K J 1/10W		R533			RK73GB2A391J	CHIP R 390 J 1/10W	
R362			RK73GB2A472J	CHIP R 4.7K J 1/10W		R534			RK73GB2A120J	CHIP R 12 J 1/10W	
R363			RK73GB2A123J	CHIP R 12K J 1/10W		R535			RK73GB2A391J	CHIP R 390 J 1/10W	
R364			RK73GB2A331J	CHIP R 330 J 1/10W		R536			RK73GH2A154D	CHIP R 150K D 1/10W	
R365,366			RK73GB2A100J	CHIP R 10 J 1/10W		R537			RK73GB2A564J	CHIP R 560K J 1/10W	
R367,368			RK73GB2A102J	CHIP R 1.0K J 1/10W		R538			RK73GB2A103J	CHIP R 10K J 1/10W	
R369			RK73GB2A000J	CHIP R 0 J 1/10W		R539			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R401			RK73GB2A471J	CHIP R 470 J 1/10W		R540			RK73GB2A104J	CHIP R 100K J 1/10W	
R402			RK73GB2A561J	CHIP R 560 J 1/10W		R541			RK73GB2A181J	CHIP R 180 J 1/10W	
R403			RK73GB2A682J	CHIP R 6.8K J 1/10W		R542			RK73GB2A563J	CHIP R 56K J 1/10W	
R404			RK73GB2A332J	CHIP R 3.3K J 1/10W		R543			RK73GB2A391J	CHIP R 390 J 1/10W	
R405			RK73GB2A471J	CHIP R 470 J 1/10W		R544			RK73GB2A120J	CHIP R 12 J 1/10W	
R406			RK73GB2A000J	CHIP R 0 J 1/10W		R545			RK73GB2A391J	CHIP R 390 J 1/10W	
R407			RK73GB2A100J	CHIP R 10 J 1/10W		R546			RK73GB2A100J	CHIP R 10 J 1/10W	
R408,409			RK73GB2A471J	CHIP R 470 J 1/10W		R547			RK73GB2A103J	CHIP R 10K J 1/10W	
R410,411			RK73GB2A104J	CHIP R 100K J 1/10W		R548			RK73GB2A181J	CHIP R 180 J 1/10W	
R412			RK73GB2A100J	CHIP R 10 J 1/10W		R550			RK73GB2A564J	CHIP R 560K J 1/10W	
R413			RK73GB2A331J	CHIP R 330 J 1/10W		R551			RK73GH2A154D	CHIP R 150K D 1/10W	
R414			RK73GB2A104J	CHIP R 100K J 1/10W		R552			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R415,416			RK73GB2A102J	CHIP R 1.0K J 1/10W		R553			RK73GB2A104J	CHIP R 100K J 1/10W	
R417			RK73GB2A000J	CHIP R 0 J 1/10W		R554			RK73GB2A333J	CHIP R 33K J 1/10W	
R418			RK73GB2A102J	CHIP R 1.0K J 1/10W		R555			RK73GB2A473J	CHIP R 47K J 1/10W	
R419			RK73GB2A392J	CHIP R 3.9K J 1/10W		R556,557			RK73GB2A470J	CHIP R 47 J 1/10W	

## PARTS LIST

TX UNIT (X56-3150-11)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R558			RK73GB2A333J	CHIP R 33K J 1/10W		R831,832			RK73GB2A000J	CHIP R 0 J 1/10W	
R559			RK73GB2A473J	CHIP R 47K J 1/10W		R835			RK73GB2A000J	CHIP R 0 J 1/10W	
R561			RK73GB2A474J	CHIP R 470K J 1/10W		R845-847			RK73GB2A000J	CHIP R 0 J 1/10W	
R563			RK73GB2A271J	CHIP R 270 J 1/10W		R848			RK73GB2A103J	CHIP R 10K J 1/10W	
R564-566			RK73GB2A102J	CHIP R 1.0K J 1/10W		R849-852			RK73GB2A000J	CHIP R 0 J 1/10W	
R567,568			RK73GB2A104J	CHIP R 100K J 1/10W		R855-859			RK73GB2A000J	CHIP R 0 J 1/10W	
R569			RK73GB2A474J	CHIP R 470K J 1/10W		R860			RK73GB2A103J	CHIP R 10K J 1/10W	
R570			RK73GB2A000J	CHIP R 0 J 1/10W		R920-932			RK73GB2A000J	CHIP R 0 J 1/10W	
R575			RK73GB2A474J	CHIP R 470K J 1/10W		R933			RK73GB2A821J	CHIP R 820 J 1/10W	
R576			RK73GB2A104J	CHIP R 100K J 1/10W		R934,935			RK73GB2A000J	CHIP R 0 J 1/10W	
R577,578			RK73GB2A221J	CHIP R 220 J 1/10W		R936,937			RK73GB2A122J	CHIP R 1.2K J 1/10W	
R580			RK73GB2A101J	CHIP R 100 J 1/10W		R938,939			RK73GB2A821J	CHIP R 820 J 1/10W	
R583			RK73GB2A822J	CHIP R 8.2K J 1/10W		R940			RK73GB2A122J	CHIP R 1.2K J 1/10W	
R584			RK73GB2A471J	CHIP R 470 J 1/10W		R941			RK73GB2A821J	CHIP R 820 J 1/10W	
R585			RK73GB2A100J	CHIP R 10 J 1/10W		R942			RK73GB2A000J	CHIP R 0 J 1/10W	
R586			RK73GB2A124J	CHIP R 120K J 1/10W		R943			RK73GH2A224D	CHIP R 220K D 1/10W	
R587			RK73GB2A102J	CHIP R 1.0K J 1/10W		R944,945			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R588			RK73GB2A223J	CHIP R 22K J 1/10W		R946			RK73GB2A103J	CHIP R 10K J 1/10W	
R589			RK73GB2A100J	CHIP R 10 J 1/10W		R947			RK73GB2A000J	CHIP R 0 J 1/10W	
R590			RK73GB2A181J	CHIP R 180 J 1/10W		R948,949			RK73GH2A104D	CHIP R 100K D 1/10W	
R591			RK73GB2A222J	CHIP R 2.2K J 1/10W		R950			RK73GH2A822D	CHIP R 8.2K D 1/10W	
R592			RK73GB2A221J	CHIP R 220 J 1/10W		R951			RK73GB2A122J	CHIP R 1.2K J 1/10W	
R593			RK73GB2A100J	CHIP R 10 J 1/10W		R960-965			RK73GB2A000J	CHIP R 0 J 1/10W	
R594			RK73GB2A000J	CHIP R 0 J 1/10W		R966,967			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R595			RK73GB2A224J	CHIP R 220K J 1/10W		S920-925			S70-0502-05	TACT SWITCH	
R599			RK73GB2A104J	CHIP R 100K J 1/10W		D1			DA221	DIODE	
R600			RK73GB2A102J	CHIP R 1.0K J 1/10W		D2 -5			1SV283F	VARIABLE CAPACITANCE DIODE	
R601			RK73GB2A392J	CHIP R 3.9K J 1/10W		D6			1SV278F	VARIABLE CAPACITANCE DIODE	
R602			RK73GB2A103J	CHIP R 10K J 1/10W		D7			HSM88AS-E	DIODE	
R603			RK73GB2A153J	CHIP R 15K J 1/10W		D401,402			HSC277	DIODE	
R604			RK73GB2A272J	CHIP R 2.7K J 1/10W		D501,502			UDZW3.0(B)	ZENER DIODE	
R605			RK73GB2A562J	CHIP R 5.6K J 1/10W		D503			HSC277	DIODE	
R606,607			RK73GB2A682J	CHIP R 6.8K J 1/10W		D504-506			HSM88AS-E	DIODE	
R608			RK73GB2A332J	CHIP R 3.3K J 1/10W		D507			HSC277	DIODE	
R609,610			RK73GB2A000J	CHIP R 0 J 1/10W		D509,510			HSC119	DIODE	
R612-614			RK73GB2A000J	CHIP R 0 J 1/10W		D511,512			UDZW3.0(B)	ZENER DIODE	
R615			RK73GB2A102J	CHIP R 1.0K J 1/10W		D515			HSM88AS-E	DIODE	
R619			RK73GB2A000J	CHIP R 0 J 1/10W		D516-519			HSC277	DIODE	
R621			RK73GB2A470J	CHIP R 47 J 1/10W		D801			CSA70-401L	SURGE ABSORBER	
R622			RK73GH2A393D	CHIP R 39K D 1/10W		D933,934			HSM88AS-E	DIODE	
R701,702			RK73GB2A100J	CHIP R 10 J 1/10W		D935,936			1SS355	DIODE	
R703			RK73GB2A104J	CHIP R 100K J 1/10W		D960,961			PSA05-11SRWA	LED	
R704			RK73GB2A100J	CHIP R 10 J 1/10W		IC1 ,2			TC7WH126FU-F	MOS-IC	
R705			RK73GB2A104J	CHIP R 100K J 1/10W		IC3			LMC7101BIM5	MOS-IC	
R706			RK73GB2A474J	CHIP R 470K J 1/10W		IC5			SKY72310-362	MOS-IC	
R707,708			RK73GB2A104J	CHIP R 100K J 1/10W		IC6			LMC7101BIM5	MOS-IC	
R709			RK73GB2A100J	CHIP R 10 J 1/10W		IC7			NJM2386ADL3-09	ANALOGUE IC	
R710			RK73GB2A474J	CHIP R 470K J 1/10W		IC8			NJM2904E-ZB	ANALOGUE IC	
R711,712			RK73GB2A104J	CHIP R 100K J 1/10W		IC201			BH2220FVM	ANALOGUE IC	
R713-715			RK73GB2A102J	CHIP R 1.0K J 1/10W		IC202			S24CS02AFJTBG	ROM IC	
R717			RK73GB2A102J	CHIP R 1.0K J 1/10W		IC203			NJM2732V	BI-POLAR IC	
R718-721			RK73GB2A100J	CHIP R 10 J 1/10W		IC204			ADF4001BRUZ	MOS-IC	
R722			RK73GB2A102J	CHIP R 1.0K J 1/10W		IC205			NJU6368PF1	MOS-IC	
R801			RK73GB2A000J	CHIP R 0 J 1/10W		IC206			NJM2732V	BI-POLAR IC	
R812			RK73GB2A104J	CHIP R 100K J 1/10W		IC207			M62364FP-F	MOS-IC	
R813			RK73GB2A103J	CHIP R 10K J 1/10W		IC208			LMC7101BIM5	MOS-IC	
R816,817			RK73GB2A000J	CHIP R 0 J 1/10W		IC301			NJU6368PF1	MOS-IC	
R822			RK73GB2A000J	CHIP R 0 J 1/10W		IC302			LMC7101BIM5	MOS-IC	
R823			RK73GB2A104J	CHIP R 100K J 1/10W		IC303			ADF4001BRUZ	MOS-IC	
R824-829			RK73GB2A000J	CHIP R 0 J 1/10W							

## PARTS LIST

TX UNIT (X56-3150-11)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
IC401			AD9835BRUZ	MOS-IC							
IC402			NJU6368PF1	MOS-IC							
IC403			TK71733S	BI-POLAR IC							
IC501,502			TA75S01F-F	MOS-IC							
IC503			TC7WH74FU-F	MOS-IC							
IC504			NJU6368PF1	MOS-IC							
IC505,506			TC75S59F-F	MOS-IC							
IC701			BU4094BCFV	MOS-IC							
IC702			AD1582	ANALOGUE IC							
IC703			AD7908BRU	MOS-IC							
IC704			LM50BIM3/NOPB	MOS-IC							
IC705			AD5312BRM	MOS-IC							
IC707-710			NJM78M05DL1AZB	ANALOGUE IC							
IC711			TC7WH126FU-F	MOS-IC							
IC808,809	1B		KIA7808API	BI-POLAR IC							
IC810			NJM2878F4-33	BI-POLAR IC							
IC920-922			TC7SET126FU-F	MOS-IC							
IC923-925			BU4094BCFV	MOS-IC							
IC926			NJM2732V	BI-POLAR IC							
IC960-963			BU4094BCFV	MOS-IC							
Q1 ,2			SSM3K15TE(F)	FET							
Q3			2SC4617(R)	TRANSISTOR							
Q4			2SK2539-7	FET							
Q5 ,6			2SC5108(Y)F	TRANSISTOR							
Q7			2SC4116(BL)F	TRANSISTOR							
Q8 ,9			2SC5108(Y)F	TRANSISTOR							
Q10			2SC5337	TRANSISTOR							
Q11			RD01MUS1-T113	FET							
Q13			SSM3K15TE(F)	FET							
Q14			SSM3J01F	FET							
Q15			SSM3K15TE(F)	FET							
Q16			SSM3J01F	FET							
Q201			SSM3K15TE(F)	FET							
Q202			2SA1832F	TRANSISTOR							
Q203,204			SSM3K15TE(F)	FET							
Q205,206			2SC4617(R)	TRANSISTOR							
Q301-304			SSM3K15TE(F)	FET							
Q305			2SA1832F	TRANSISTOR							
Q306-311			2SC4617(R)	TRANSISTOR							
Q401,402			2SC4617(R)	TRANSISTOR							
Q403			SSM3K15TE(F)	FET							
Q404			SSM3J01F	FET							
Q405-407			SSM3K15TE(F)	FET							
Q501			SSM3J01F	FET							
Q502			SSM3K15TE(F)	FET							
Q503,504			RD01MUS1-T113	FET							
Q505,506			3SK294-FP	FET							
Q507			SSM3J01F	FET							
Q508			SSM3K15TE(F)	FET							
Q509,510			SSM6L05FU-F	FET							
Q511			2SC4617(R)	TRANSISTOR							
Q512			SSM3K15TE(F)	FET							
Q513,514			2SC4617(R)	TRANSISTOR							
Q515-518			SSM3K15TE(F)	FET							
Q920-930			UMG1N	TRANSISTOR							
Q931			2SC4116(Y)F	TRANSISTOR							
Q932			2SA1586(Y)F	TRANSISTOR							
Q960-976			UMG1N	TRANSISTOR							
TH1			157-302-65801	THERMISTOR							

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

# NXR-901

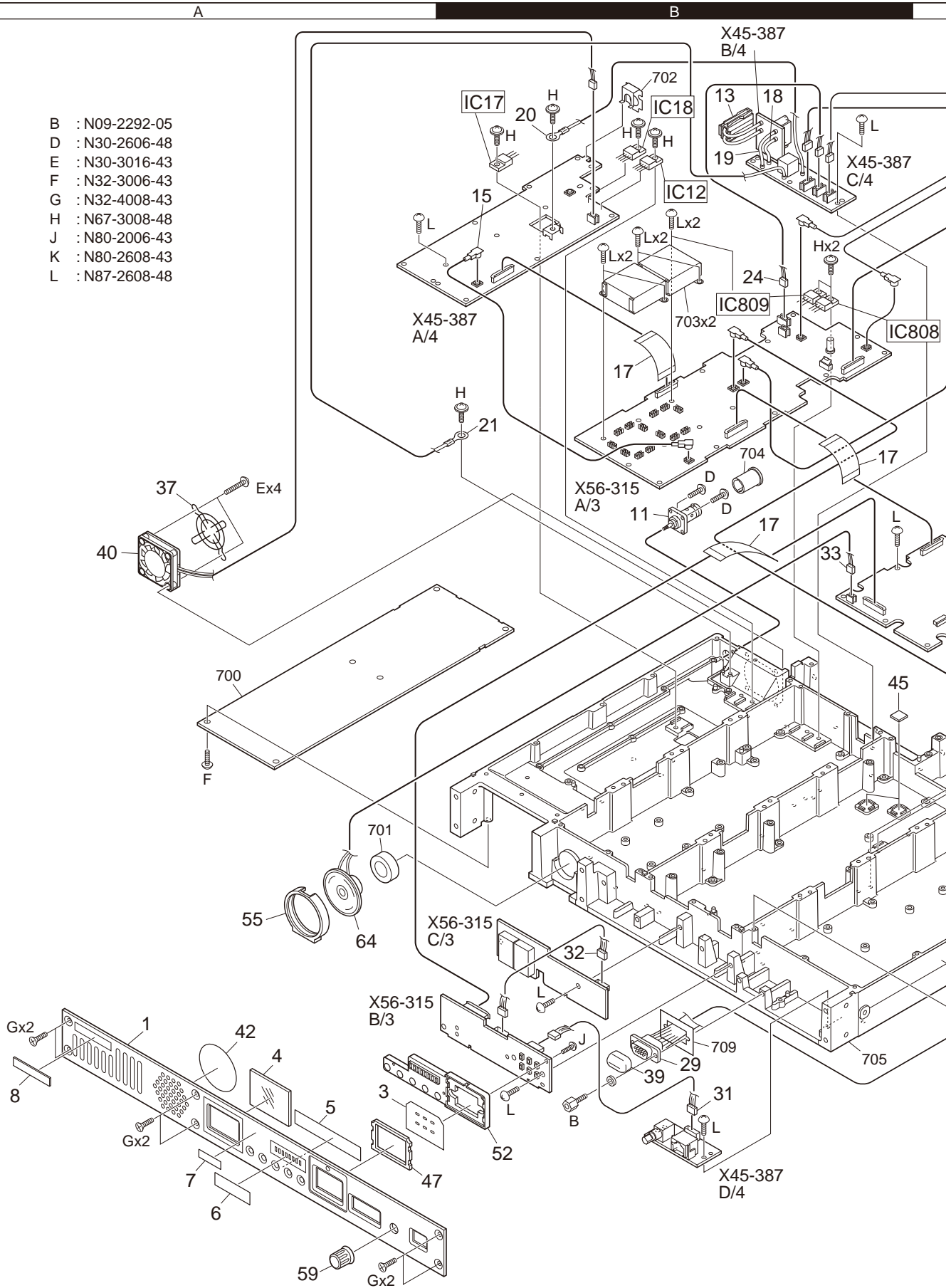
## EXPLODED VIEW

- B : N09-2292-05
- D : N30-2606-48
- E : N30-3016-43
- F : N32-3006-43
- G : N32-4008-43
- H : N67-3008-48
- J : N80-2006-43
- K : N80-2608-43
- L : N87-2608-48

1

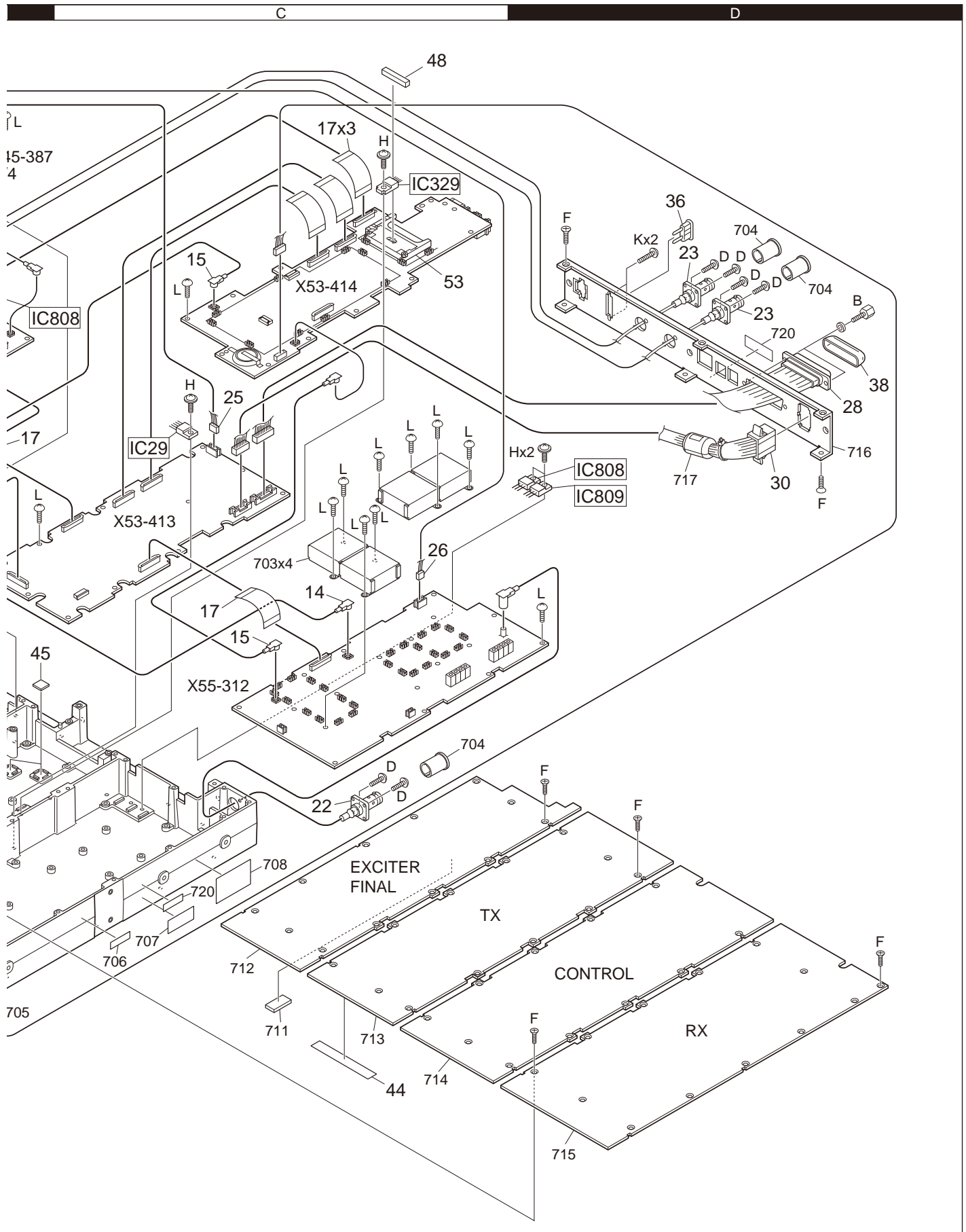
2

3



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

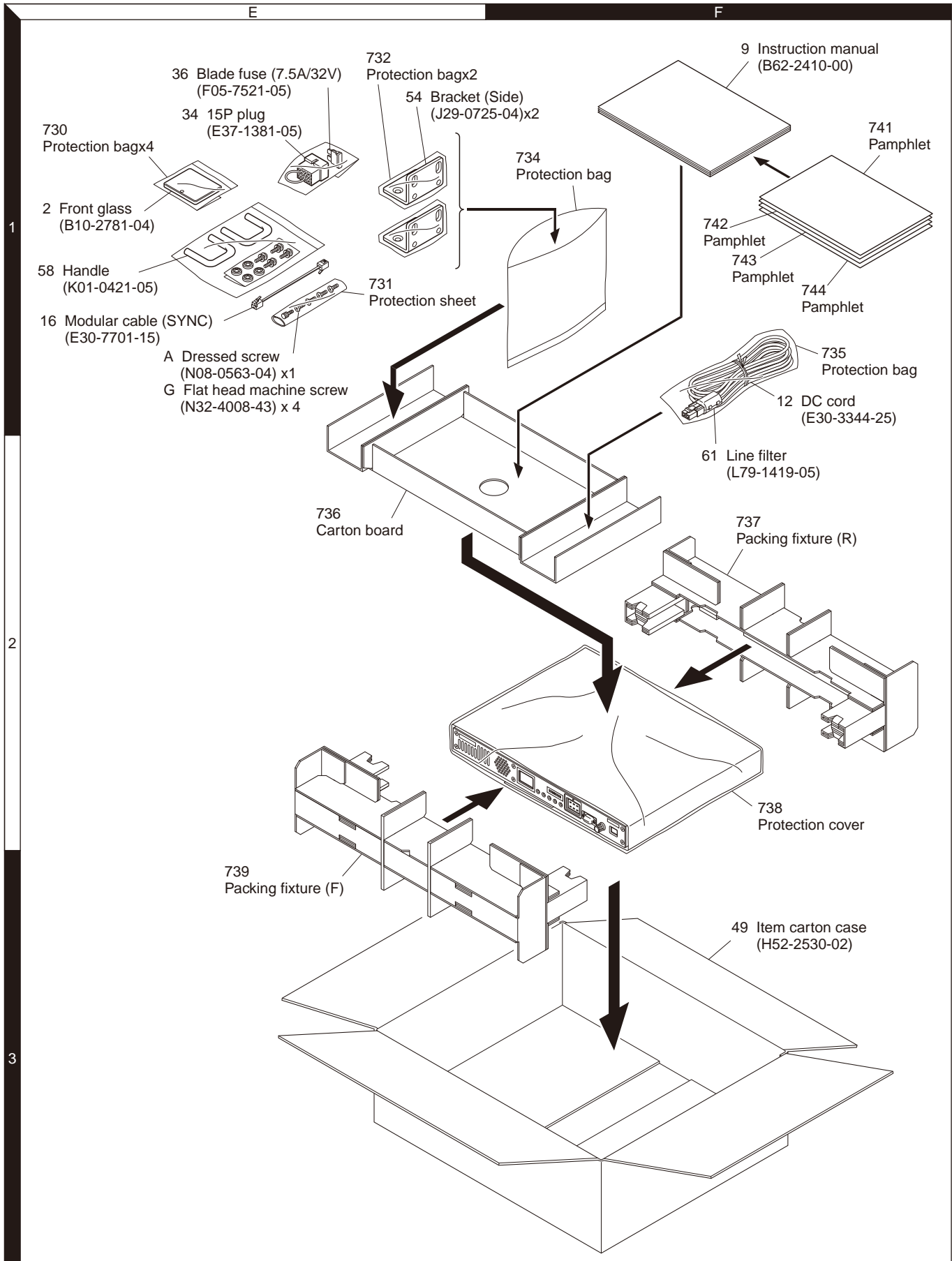
## EXPLODED VIEW



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

If a part reference number is listed in a box on the exploded view of the PCB, that part does not come with the PCB. These parts must be ordered separately.

## PACKING



## TROUBLE SHOOTING

### Procedure for Traceability of BGA Package and How to Replace Control Unit

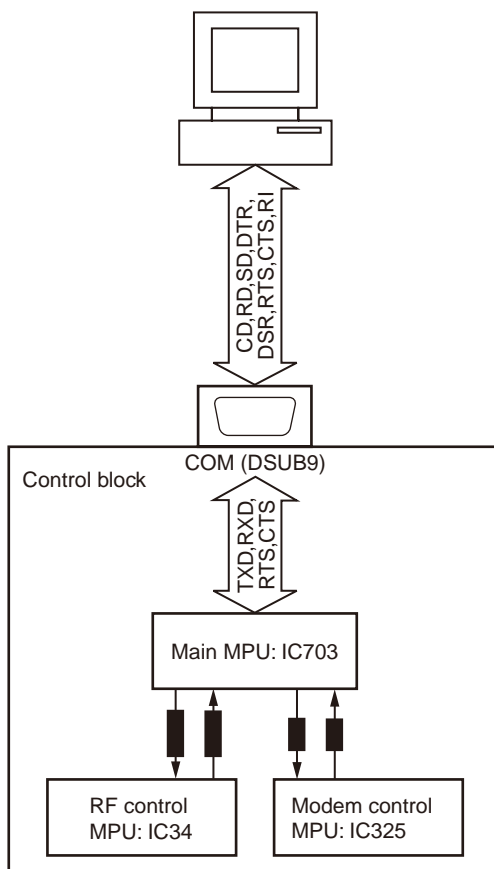
This clause is procedure when you replace Control unit on you repair. Implement traceability of BGA package in order to make sure BGA failure in prior to replace Control Unit. You choose appropriate procedure accordingly.

### 1. Traceability of BGA Package ICs in Control Unit

The control unit (X53-414) of NXR-901 series have BGA package ICs. BGA package IC is difficult to trace whether it be broken. So, control unit is difficult to confirm whether it has a problem. This document shows a simple method by PC to confirm the control unit has problem. The two methods for traceability in BGA packages IC are provided as below.

#### 1-1. Simplified traceability

- Open the top cover of control unit.
- Slide the tab on DIP\_SW4 (Ref No. S700) to the ON position. (See Fig. 1.)
- Connect a cross-wired RS-232C cable to COM port on the front panel of NXR-901. Plug the other end of the cable to PC. (See Fig. 2.)
- Run a communication software, example a Hyper Terminal in Windows, and set the following parameters.
- COM port: COM port of NXR-901 used in step c.



### Configuration in communication port

Communication speed: 115200bps  
 Data Length: 8-bit  
 Parity: None  
 Stop bits: 1  
 Flow control: Hardware

- Apply 13.8VDC to NXR-901. When BGA ICs mounted in this control unit works correctly, the following messages appears on the screen of communication software. If the software doesn't show below messages, it's supposed that BGA package IC is broken.

```
NEXEDGE IPL 1.00 *1
COPYRIGHT KENWOOD CORPORATION
2007 ALL RIGHTS RESERVED
CPU[R] Version 1.00 *2
CPU[M] Version 1.00 *3
```

- \*1: Appearing this information means the boot program in Main MPU (IC703) is correctly working.
- \*2: Appearing this information means the boot program at the RF control MPU (IC34) is correctly working.
- \*3: Appearing this information means the boot program at the Modem control in MPU(IC325) is correctly working.

**Note:** IPL and CPU[R], CPU[M] version will be updated by any modification or improvement in future.

- After that slide the tab on DIP\_SW4 to OFF position, before close the top cover of control unit.

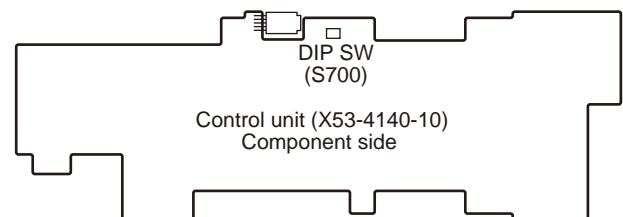


Fig. 1

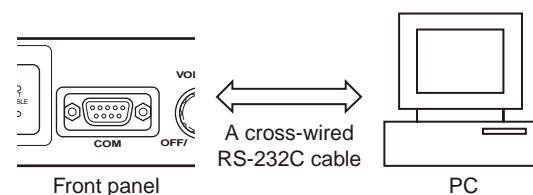
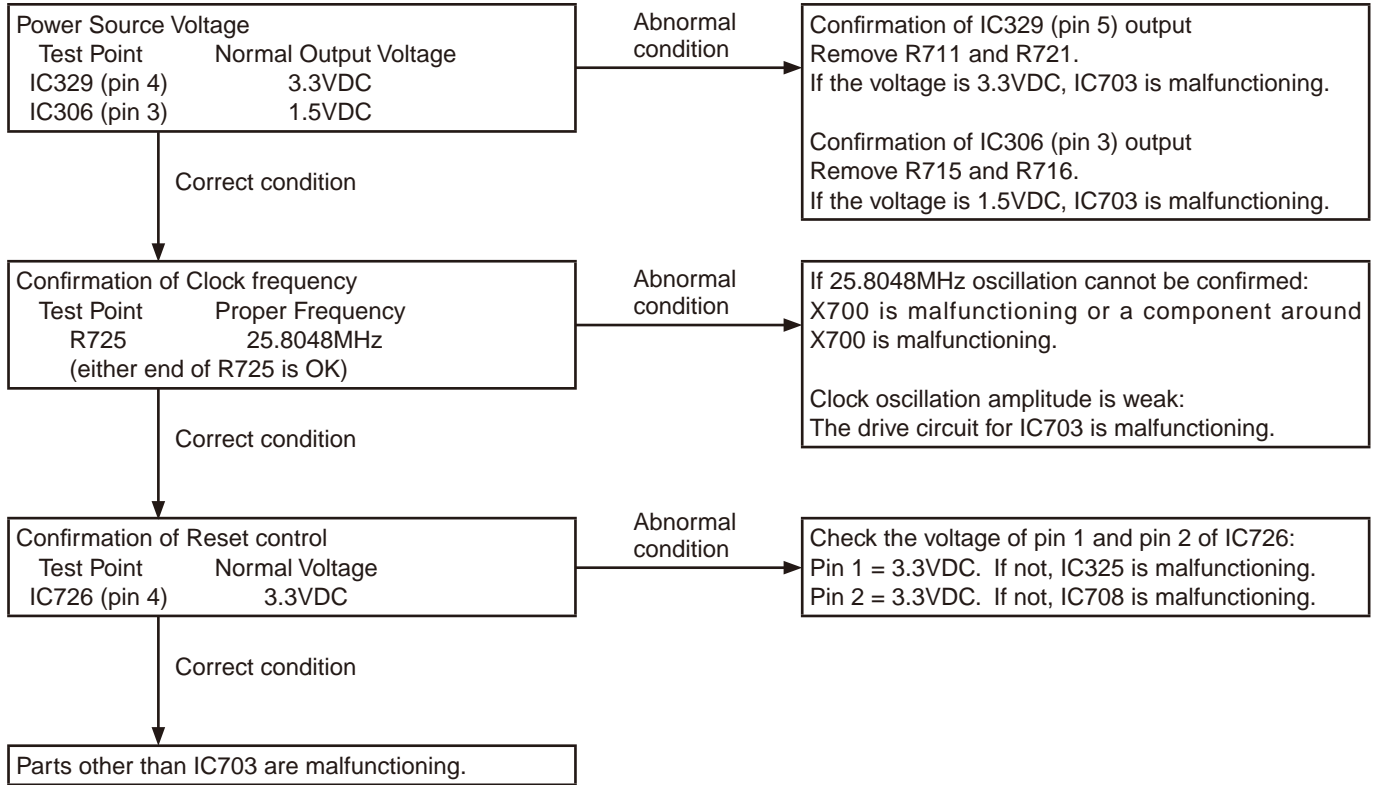


Fig. 2

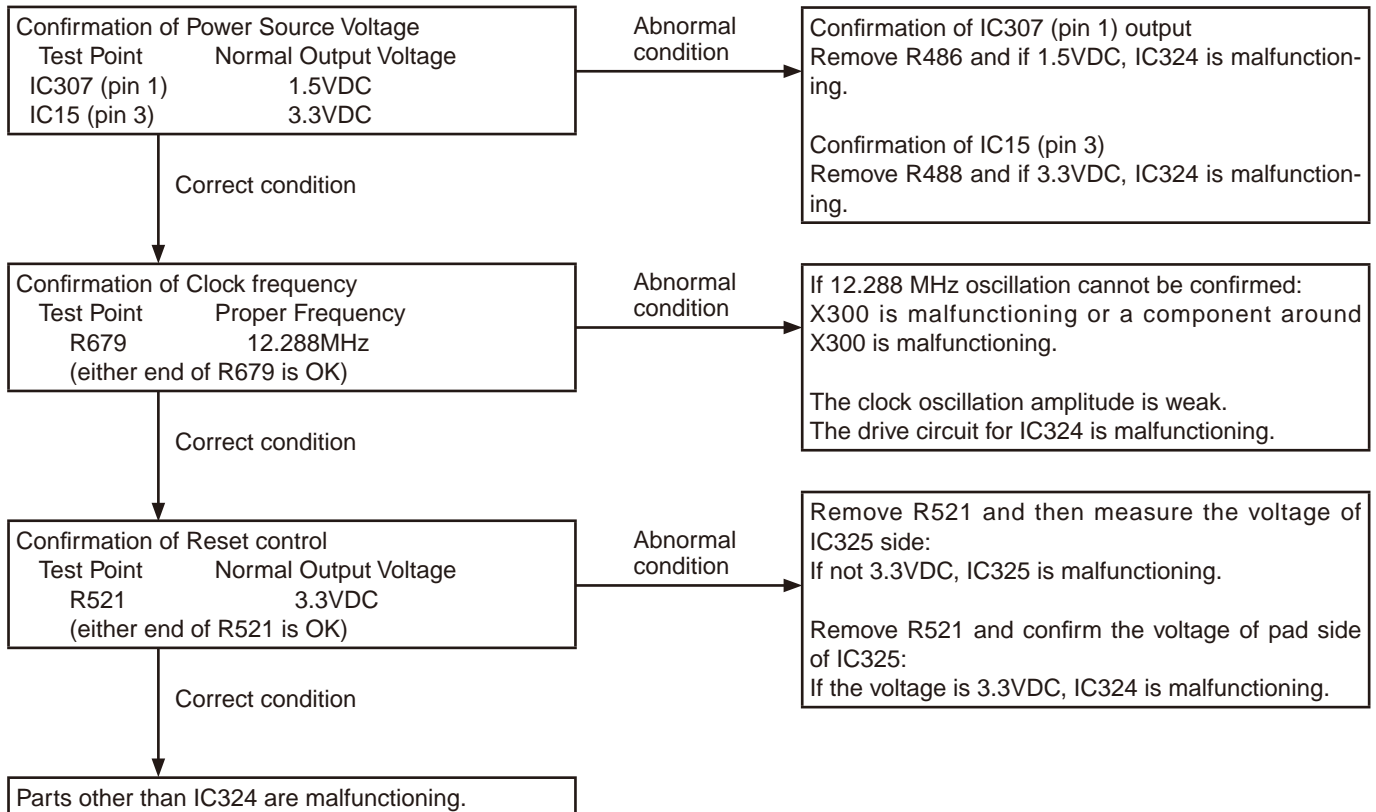
## TROUBLE SHOOTING

### 1-2. Hardware Traceability (Method1)

#### ■ Procedure for IC703 (Main MPU) traceability



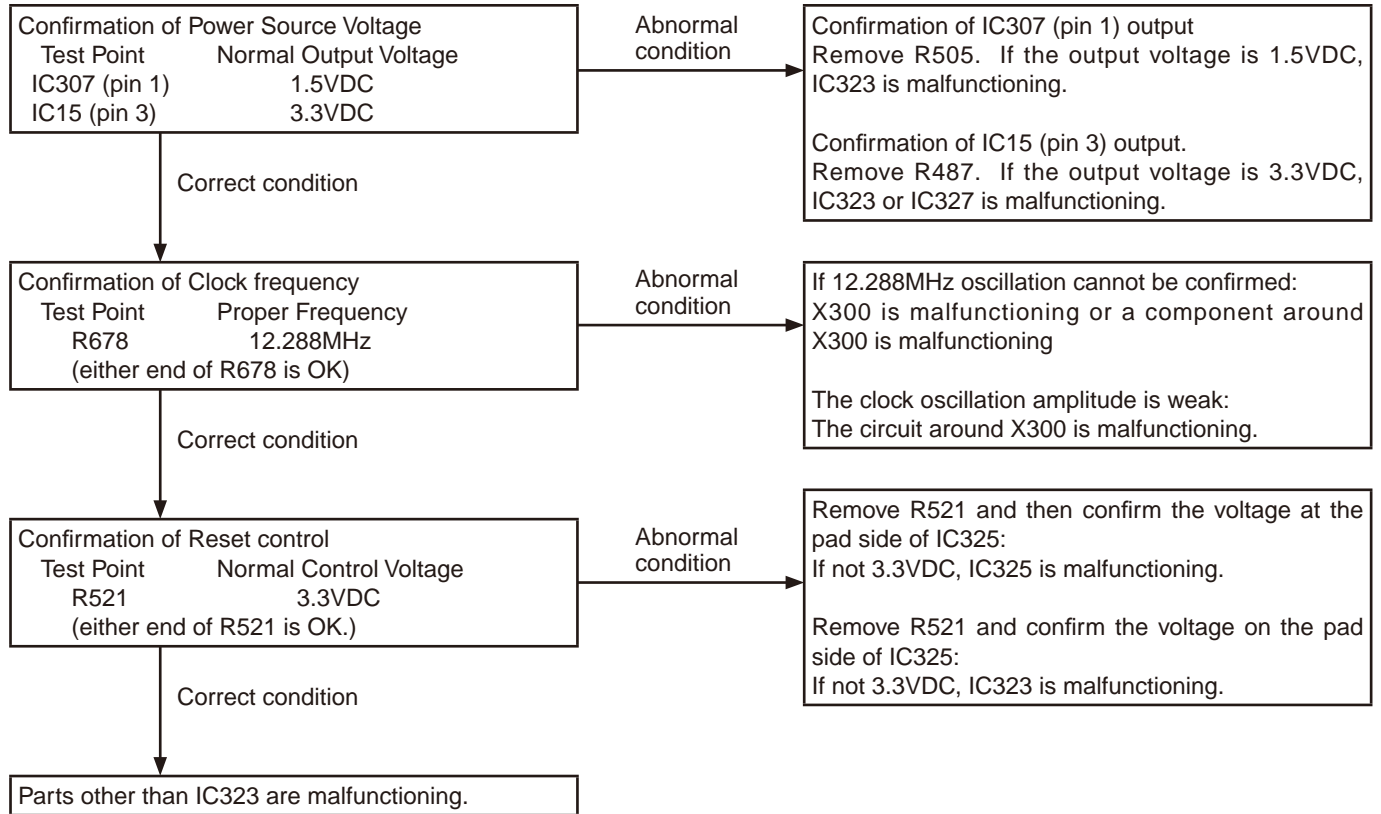
#### ■ Traceability Procedure of IC324 (TX Vocoder\_DSP)



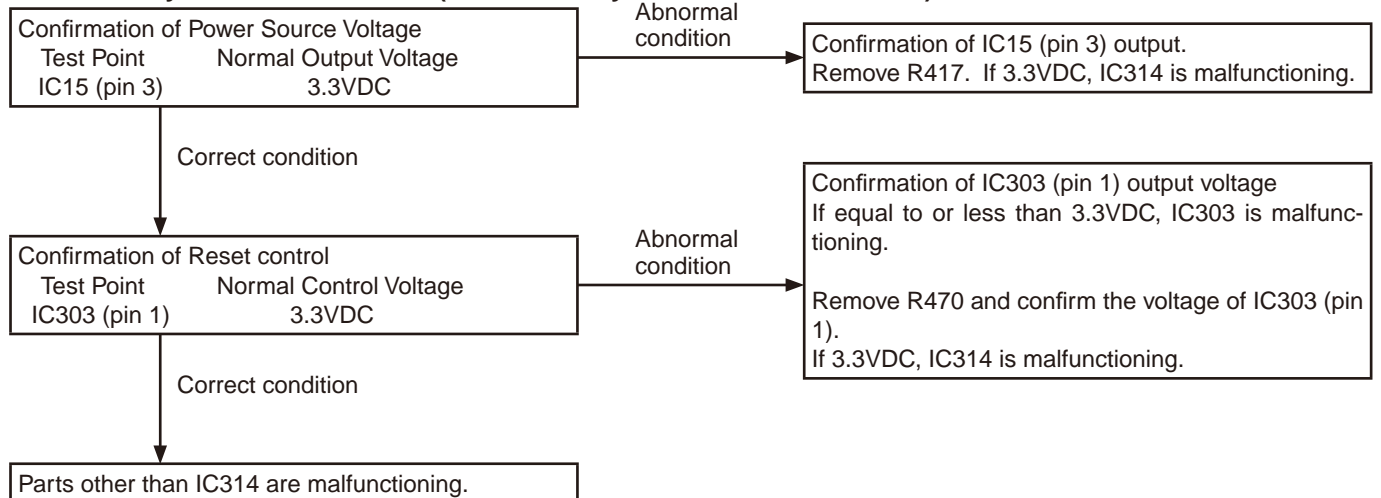


## TROUBLE SHOOTING

### ■ Traceability Procedure of IC323 (RX\_DSP)

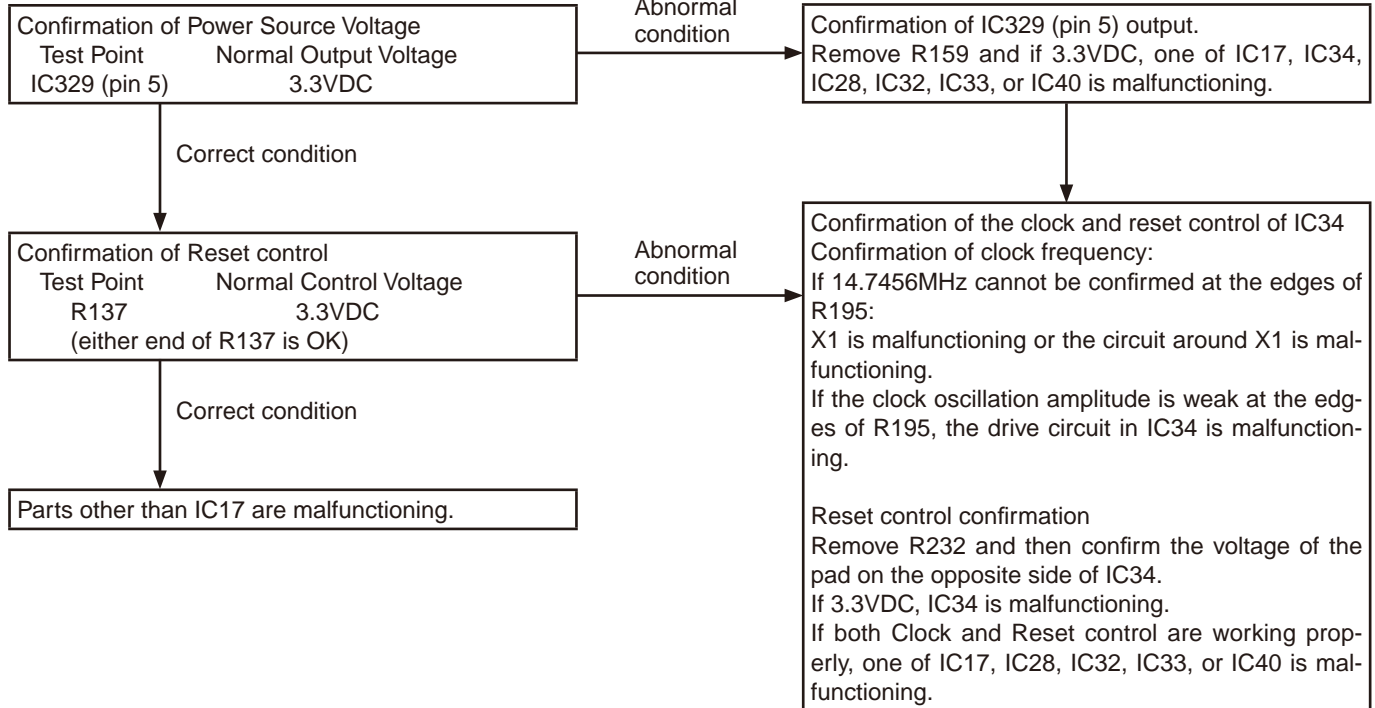


### ■ Traceability Procedure of IC314 (Flash Memory of modem control MPU)

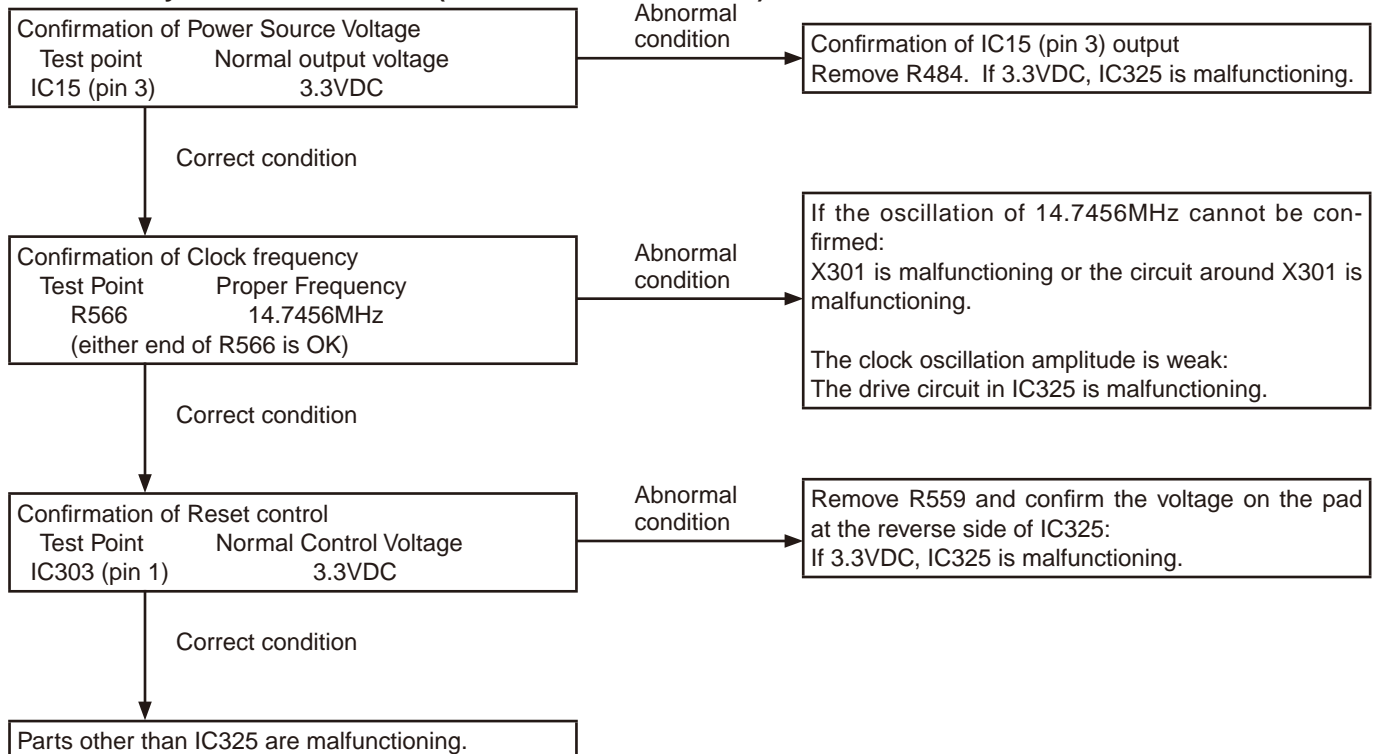


## TROUBLE SHOOTING

### ■ Traceability Procedure of IC17 (Flash Memory of RF control MPU)

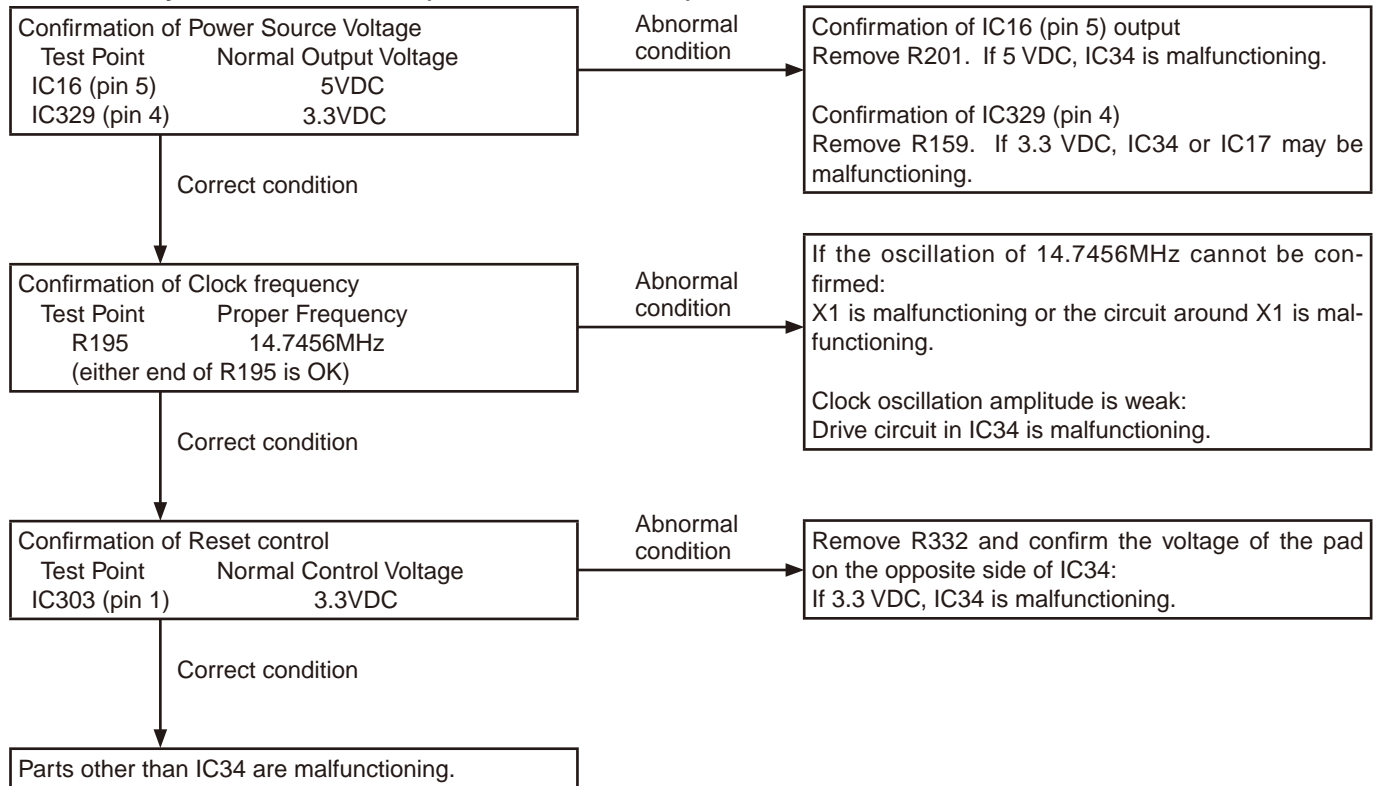


### ■ Traceability Procedure of IC325 (The Modem control MPU)



## TROUBLE SHOOTING

### ■ Traceability Procedure of IC34 (The RF control MPU)



### 1-3. Hardware traceability (Method 2)

The NXR-901 control circuit executes the following procedures when the system starts up.

1. An external DC 13.8V power source is applied to the NXR-901 terminal.
2. The Modem control MPU (IC325) starts up.
3. The Modem control MPU (IC325) initiates all circuit blocks.
4. The Main MPU (IC703) and the RF control MPU (IC34) start up.

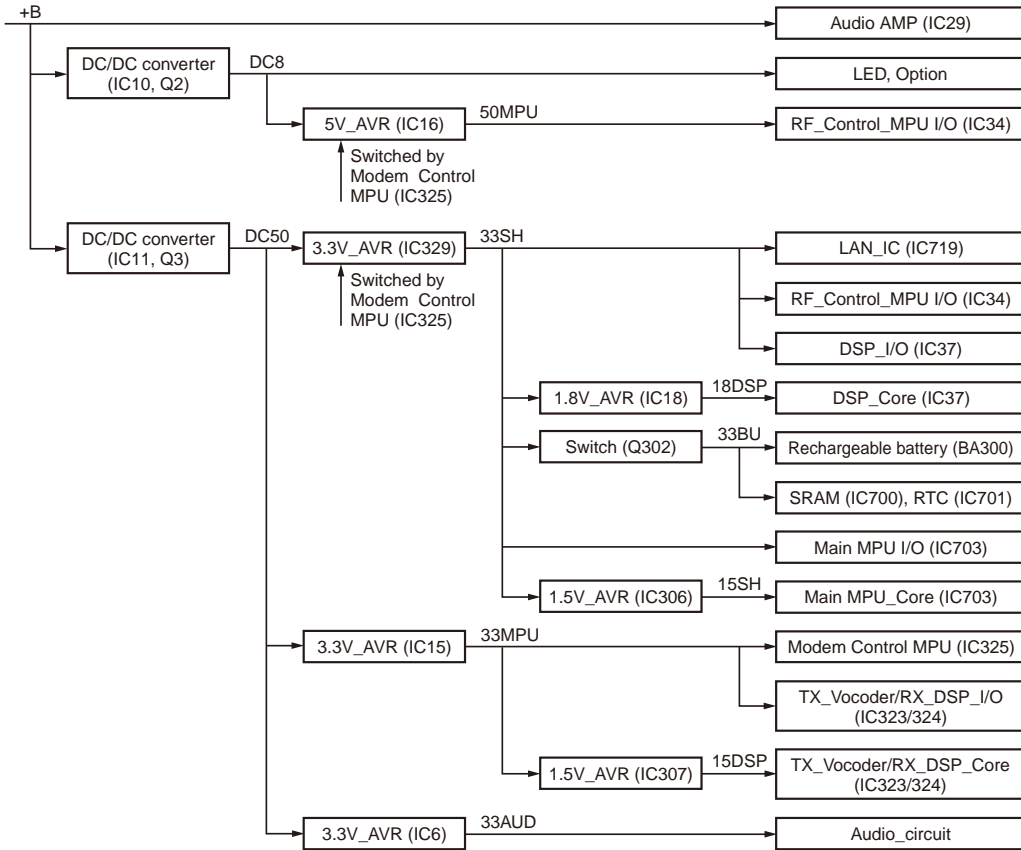
5. The Main MPU (IC703) confirms the operational status of the Modem control MPU (IC325) and the RF control MPU (IC34) by using 115.2kbps UART communications and then the operation transfer commands will be exchanged in order to integrate all hardware blocks.

The above steps 1 to 5 will be executed as follows.

## TROUBLE SHOOTING

### External DC 13.8V Power Source applied to the NXR-901 Terminal

Refer to the power supply diagram sequence below.

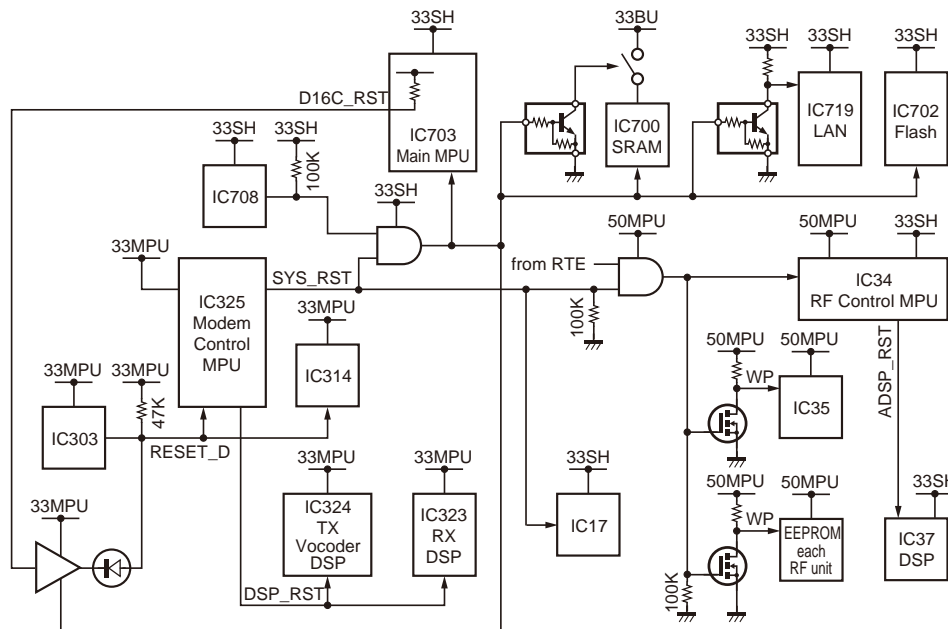


### Initialization of the Modem control MPU (IC325) (normal oscillation of X301 and normal reset-unlock of IC303)

Refer to Traceability procedure for IC325.

### Unlocking "SYS\_RST" Signal on the Modem control MPU (IC325) starts Up all Hardware Blocks

Refer to the Reset circuit below.



Reset circuit

## TROUBLE SHOOTING

### ■ Start-up of each Control Block

#### • Main MPU Block

- Component elements:
- Main MPU: IC703
  - Flash memory: IC702
  - SDRAM: IC704 and IC707
  - LAN IC: IC719
  - RTC: IC701

#### Overview of Start-up Operation:

When MPU reset line logic switches as high, the MPU starts reading the program from the flash memory and expands the program to SDRAM. Linux OS begins operation on the SDRAM after main MPU transfers the program. Main MPU works usage of Linux OS codes. The other higher-level applications software to the Linux OS will also be expanded in SDRAM. On starting up, main MPU verify the status of the registers in LAN IC except SDRAM which is purpose of backup data even if abnormal symptom detects in either LAN IC or SDRAM, the start-up process is not affected by this error; main MPU behaves operation as if it works properly. To express another word, either Flash memory or SDRAM has defective, a circuit behaves as if main MPU happens malfunction. After executing all initialization routines, the Main MPU verifies the operational status of each MPU then transmits/ receives the operation transfer command set to from the Modem control MPU (IC325) and the RF control MPU (IC34) using 115.2kbps UART communications.

#### • RF Control MPU Block

- Component elements:
- RF control MPU: IC34
  - Flash memory: IC17
  - DSP: IC37

#### Overview of Start-up Operation:

When the RF control MPU (IC34) reset line logic switches as high, this MPU reads the boot program from the internal ROM of MPU and then initializes the peripheral devices. After this boot process completes, the MPU starts working with the programs (application programs) stored in flash memory (IC17) to process the preprogrammed tasks. During the process, the MPU transfers the program to the DSP IC (IC37). It also verifies the operating status of DSP at certain interval.

After a series of processes completes, the RF control MPU verifies the operational status and then transmits and receives the operation transfer command set to/from Main MPU (IC703) using 115200bps UART communications.

#### • Modem Control MPU Block

- Component elements:
- Modem control MPU: IC325
  - Flash memory: IC314
  - RX DSP: IC323
  - TX Vocoder DSP: IC324

#### Overview of Start-up Operation

When the Modem control MPU (IC325) reset line logic switches as high, the MPU reads the boot program from the internal ROM of MPU and then initializes the peripheral devices. After this boot-up process completes, the MPU starts working with the programs (application programs) stored in flash memory (IC314) to process the preprogrammed tasks. During the process, the MPU transfers the program to the RX DSP IC (IC323) and TX Vocoder DSP IC (IC324). It also confirms the operating status of these DSP ICs. After a series of processes completes, the Modem control MPU confirms the operational status and then transmits and receives the operation transfer command set to/from Main MPU (IC703) using 115200 bps UART communications.

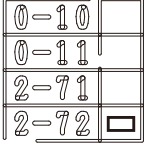
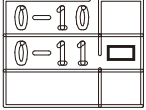
#### • Possible Symptoms if the Block (mainly BGA IC) Malfunctions

Ref. No.	Element of Block	Presumption Symptoms
IC703	Main MPU	<ul style="list-style-type: none"> <li>• Since the boot program cannot be executed at all, the LEDs do not light or flash.</li> <li>• The operations that should be executed by IC703 are not processed.</li> <li>• Runaway of IC703.</li> </ul>
IC17	Flash Memory on RF control MPU block	<ul style="list-style-type: none"> <li>• Migrated to the programming mode (Write). ("PG" appears on the 17-segment LED display.)</li> <li>• The operations that should be executed by IC34 are not processed.</li> <li>• Runaway of IC34.</li> </ul>
IC314	Flash Memory on Modem control block	<ul style="list-style-type: none"> <li>• Migrated to the programming mode (Write). ("PG" appears on the 17-segment LED display.)</li> <li>• The operations that should be executed by IC325 are not processed.</li> <li>• Runaway of IC325.</li> </ul>
IC323	RX DSP	<ul style="list-style-type: none"> <li>• While the boot program is executed, the operation stops (the status LED is flashing).</li> <li>• The operations that should be executed by IC323 are not processed.</li> <li>• Runaway of IC323.</li> </ul>
IC324	TX Vocoder DSP	<ul style="list-style-type: none"> <li>• While the boot program is executed, the operation stops (the status LED is flashing).</li> <li>• The operations that should be executed by IC324 are not processed.</li> <li>• Runaway of IC324.</li> </ul>

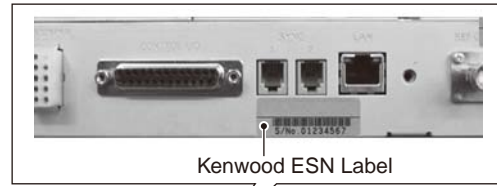
## TROUBLE SHOOTING

### 2. Replacing Control Unit

#### 2-1. Control Unit Information

Original Control Unit	Control Unit (Service Unit)	Difference between original unit and Service Unit
X53-4132-71	X53-4132-72	Mounted chip at 2-72 location for Service Unit. 
X53-4140-10	X53-4140-11	Mounted chip at 0-11 location for Service Unit. 

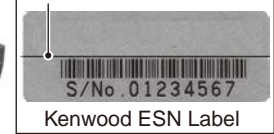
Rear View



Kenwood ESN Label



Cut-off Line



Kenwood ESN Label

Side View



Kenwood ESN Label  
NXDN ESN Label (12 digits)

#### 2-2. Supplied Accessories

Item (Including Part Number)	Quantity	
	X53-413	X53-414
Control Unit (X53-413)	1	-
Control Unit (X53-414)	-	1
Kenwood ESN Label	-	2
NXDN ESN Label	-	1
Addendum (B59-2536-XX)	1	1

#### 2-3. Printed Circuit Board Data

The following data is written on the printed circuit board:

Data Type	Description
Firmware	NXR-700/800/900/901 Firmware
FPU Data (PC programming mode)	NXR-700 K type data.
Various Adjustment Data (PC test mode)	General adjustment values for the NXR-700/800/900/901.
Kenwood ESN (X53-414 only)	Model Name: NXR-700/800S Type: K The same number as the Kenwood ESN label is written.
NXDN ESN (X53-414 only)	The same number as the NXDN ESN label is written.

**Note:** For the X53-414, a UPC code and UPC barcode is not printed on the Kenwood ESN Label. If necessary, cut the label at the cut-off line and attach only the serial number.

#### 2-4. After Changing the PCB

1. After changing the printed circuit board, write the up-to-date Firmware following the instructions in the "REALIGNMENT 4. Firmware Programming Mode".
2. Using the KPG-109D, select your desired item (Model Name and Frequency) from the Model > Product Information menu, then use Program > Write Data to the repeater to write the FPU data (PC Programming mode). When writing to the repeater, a Warning Message, corresponding to the item selected, appears. Click [OK] to continue writing the data.
3. Turn the transceiver power ON again after turning the transceiver power OFF.
4. Enter Program > Test mode, then adjust the various adjustment data (PC Test mode) as described in the "ADJUSTMENT".
5. For the X53-414, attach the new labels corresponding to the new printed circuit board. (Refer to the images below for label placement.)
6. If necessary, write the FPU data used by the customer with the KPG-109D or KPG-110SM.

**Note:**

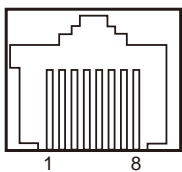
- When a new printed circuit board is used, the Kenwood ESN changes, as does the Repeater Information display of the KPG-109D, but this does not have any effect on the operation of the transceiver.
- If changing to the original Kenwood ESN and NXDN ESN, please contact our service center.
- Re-installing other parts from original unit to Service unit is not required after changing to Service unit.

## ADJUSTMENT

### Test Equipment Required for Alignment

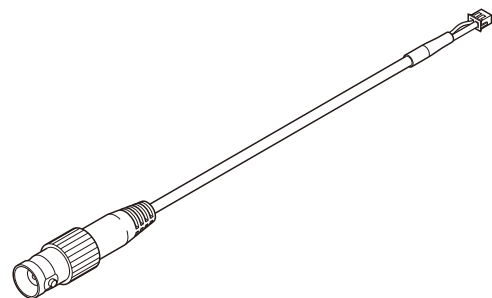
Test Equipment	Major Specifications	
1. Standard Signal Generator (SSG)	Frequency Range Modulation Output	800 to 950MHz Frequency modulation and external modulation 0.1μV to greater than 1mV
2. RF Power Meter	Input Impedance Operation Frequency Measurement Capability	50Ω 800 to 950MHz 25mW to 2.5W
3. Deviation Meter	Frequency Range	800 to 950MHz
4. Digital Volt Meter (DVM)	Measuring Range Input Impedance	1V to 20V DC High input impedance for minimum circuit loading
5. Oscilloscope		DC through 30MHz
6. High Sensitivity Frequency Counter	Frequency Range Frequency Stability	10Hz to 1000MHz 0.01ppm or less
7. DC Ammeter		15A or more
8. AF Volt Meter (AF VM)	Frequency Range Voltage Range	50Hz to 10kHz 3mV to 3V
9. Audio Generator (AG)	Frequency Range Output	50Hz to 5kHz 0 to 1V
10. Distortion Meter	Capability Input Level	1% or less at 1kHz 50mV to 10Vrms
11. Voltmeter	Measuring Range Input Impedance	10V to 1.5V DC or less 50kΩ/V or greater
12. 4Ω Dummy Load		Approx. 4Ω, 5W
13. Spectrum Analyzer	Frequency Range Input Level Input Sensitivity Resolution Bandwidth Video Bandwidth	1MHz to 950MHz Up to +20dBm -100dBm 100Hz 100Hz
14. Tracking Generator	Frequency Range Output Level	1MHz to 950MHz -30dBm to 0dBm

### MIC connector (Front panel view)

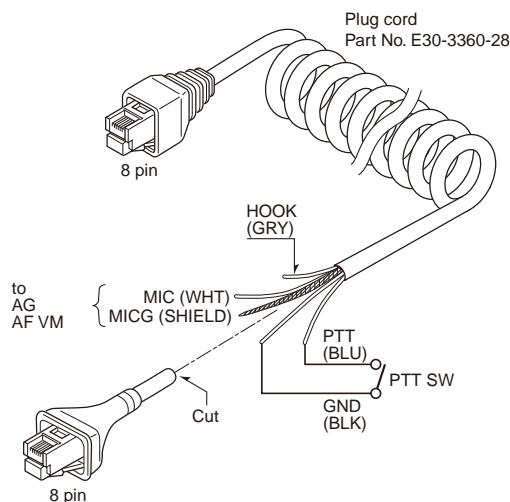


- 1: NC
- 2: SB
- 3: GND
- 4: PTT
- 5: MIG
- 6: MIC
- 7: HOOK
- 8: NC

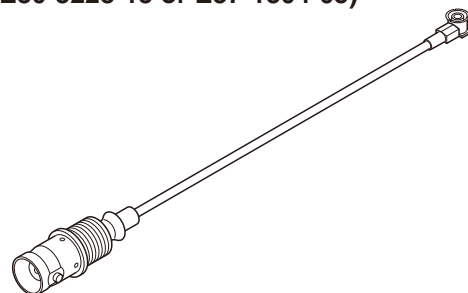
### Jig for MCF adjustment (W05-1000-00)



### Test cable for microphone input (E30-3360-28)

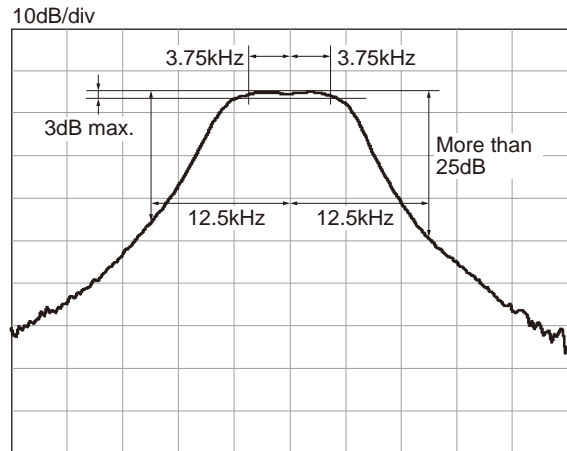
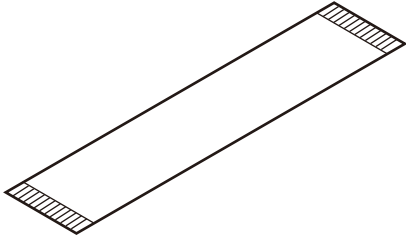


### Jig for Drive AMP adjustment and RF AGC adjustment (E30-3228-15 or E37-1304-05)



## ADJUSTMENT

Flat cable (36-pin) about 256mm (E37-0979-05)



Center frequency: 73.05MHz  
 Span: 50kHz  
 Pass bandwidth:  $\pm 3.75\text{kHz}$  at 3dB

**Fig. 1**

### Test Signaling

#### ■ Analog

No.	RX (Decode Signaling)	TX (Encode Signaling)
1	None	None
2	None	100Hz Square Wave
3	QT 67.0Hz	QT 67.0Hz
4	QT 151.4Hz	QT 151.4Hz
5	QT 210.7Hz	QT 210.7Hz
6	QT 254.1Hz	QT 254.1Hz
7	DQT D023N	DQT D023N
8	DQT D754I	DQT D754I
9	None	CWID Encode (ID: VVV)
10	None	Single Tone
11	DTMF Decode (Code: 159D)	DTMF Encode (Code: 159D)
12	None	DTMF Encode (Code: 9)
13	None	Courtesy Tone

#### ■ NXDN

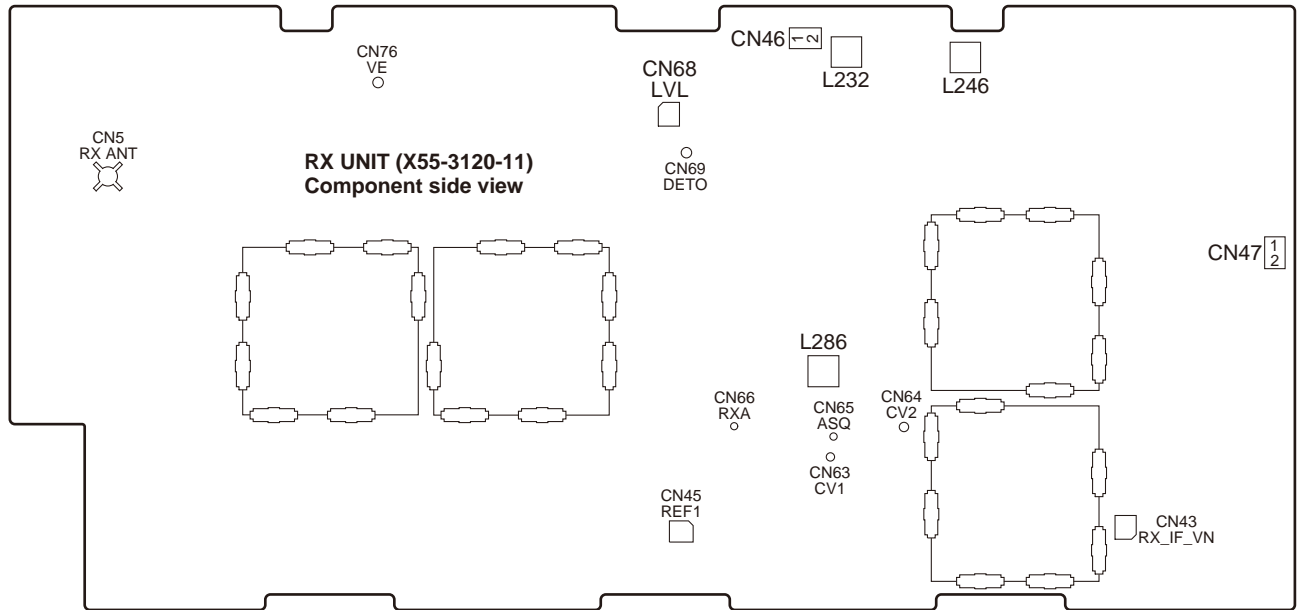
No.	RX (Decode Signaling)	TX (Encode Signaling)
1	RAN1	RAN1
2	RAN1	PN9
3	RAN1	Maximum deviation pattern

- Signaling number 1 is used for link test.
- Signaling number 2 is used for TX modulation signal quality test. i.e, TX adjacent channel power, FSK error, Occupied bandwidth, Emission mask, etc.
- Signaling number 3 is used for TX deviation test. If the modulation mode is very narrow, the modulation frequency is 600Hz. If the modulation mode is narrow, the modulation frequency is 1200Hz.

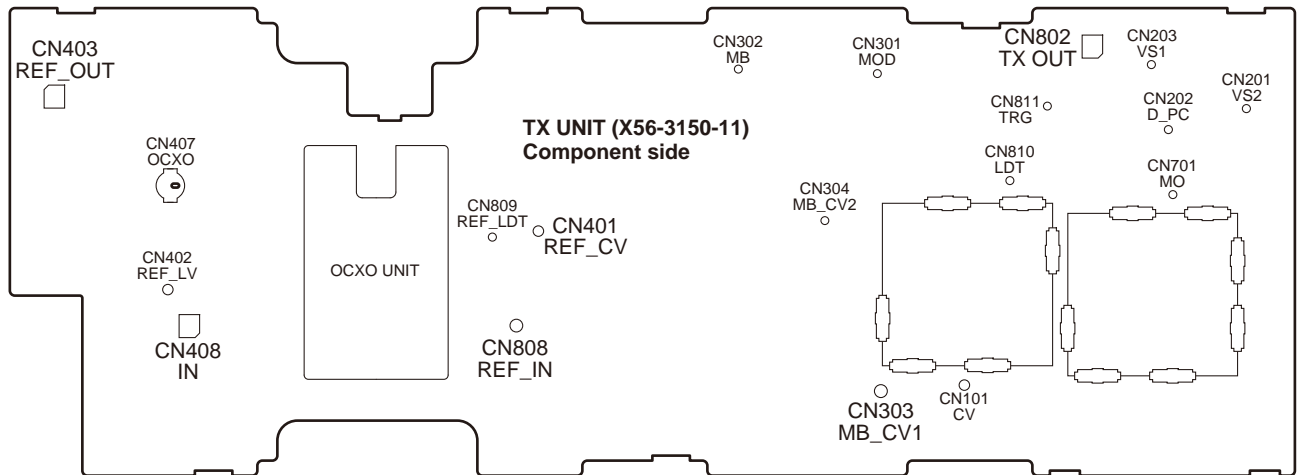


## ADJUSTMENT

### Adjustment Points



L232, L246: MCF Narrow  
L286: Discriminator



## ADJUSTMENT

### Common Section

Item	Condition	Measurement			Adjustment			Specifications / Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Setting	1) Connect the DC power output to the rear panel DC terminal (13.8V). 2) Connect the front panel COM port (D-sub 9-pin connector) to the PC serial port with a cross-wired cable. 3) Activate the FPU to go to the test mode.							
2. Temperature Sensor	1) Receive unit (Celsius or Fahrenheit)	Thermometer		Room temperature	RX	PC ADJ	Measuring room temperature, write the value with PC.	
	2) Transmit unit (Celsius or Fahrenheit)				TX			
3. Driver Amplifier Power (Pre ADJ)	1) Low 2) Center 3) High					PC ADJ	Value: 1	Fixed value writing
4. VCXO Lock Voltage	1) REF Low SSG frequency: 10MHz -10ppm (9.9999MHz) SSG output: 0dBm	SSG DVM	Rear TX	REF IN REF_ CV (CN401)			Check	0.65V or more
	2) REF High SSG frequency: 10MHz +10ppm (10.0001MHz) SSG output: 0dBm							2.35V or less
	3) MOD Low SSG frequency: 10MHz -10ppm (9.9999MHz) SSG output: 0dBm			1.5V or more				
	4) MOD High SSG frequency: 10MHz +10ppm (10.0001MHz) SSG output: 0dBm			2.6V or less				
5. Transmit VCO Lock Voltage (Adjustment)	1) Low					PC ADJ	Value: 76~80	
	2) High						Confirm that the value is 180 or less.	
6. Receive VCO Lock Voltage (Adjustment)	1) High					PC ADJ	Value: 136~138	
	2) Low						Confirm that the value is 40 or more.	
7. Reference Signal  The switching circuit to switch the OCXO and the internal reference oscillation	1) Connecting SSG to REF IN and 50Ω-load parallel. SSG frequency: 10MHz SSG output: 0dBm (224mV)	SSG Spectrum analyzer	Rear	REF IN REF OUT			Check	REF OUT: +5dBm or more The OCXO LED (orange) lights.
	2) SSG frequency: 10MHz SSG output: -7dBm (99.9mV)							REF OUT: +5dBm or more The OCXO LED goes off.
8. VCXO	1) Confirm that there is no OCXO and external reference input.	F. counter PC	Rear	REF OUT		PC ADJ	10MHz	±0.05ppm (9.9999995~10.0000005MHz) It takes a time from movement of adjustment value to stability.

## ADJUSTMENT

### Transmitter Section

Item	Condition	Measurement			Adjustment			Specifications / Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Maximum Deviation (NXDN)	1) NXDN Narrow					PC ADJ	Value: 22800	Fixed value writing
	2) NXDN Very Narrow						Value: 10000	
2. Driver Amplifier Power	Disconnect the cable from TX OUT and insert a cable from power meter. After the adjustment, connect the cable to TX OUT. 1) Low 2) Center 3) High	Power meter	TX	TX OUT (CN802)		PC ADJ	+16dBm (40mW)	±0.1dB  Disconnect the cable from TX OUT and insert a cable from power meter. After the adjustment, connect the cable to TX OUT.
3. High Transmit Power	Frequency 1) Low 2) Center 3) High Attach the EXCITER/FINAL shield cover.	Power meter	Rear	TX ANT		PC ADJ	360mW	±5mW
							100mW	±5mW
4. Low Transmit Power	Frequency 1) Low 2) Center 3) High Attach the EXCITER/FINAL shield cover.							
5. Deviation (NXDN Very Narrow)	Modulation Pattern : 100Hz Square Signal Connect the deviation meter to the TX ANT end via the ATT. Deviation meter setting HPF: OFF LPF: 15kHz De-emp: OFF Detector: (p-p)/2 1) Low 2) Center 3) High	Deviation meter Oscilloscope PC	Rear	TX ANT		PC ADJ	±1.10kHz Adjust it into clean square wave with changing "Sub-audible Gain" and "Audible Gain".	±0.05kHz  Connect the deviation meter to the TX ANT end via the ATT.
								±3.06kHz±0.20kHz Clean sine wave.
(NXDN Narrow)	Exit "Deviation" screen to "Test Mode" screen, then set test signaling mode to be "NXDN" and signaling number to be "3". Set Narrow/Very Narrow drop down list to be "Narrow". Set test channel to be "1". Modulation Pattern : Maximum Deviation Pattern Deviation meter setting HPF: OFF LPF: 15kHz De-emp: OFF Detector: +peak, -peak 1) Low Push "Transmit" button, then measure the deviation.							

## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications / Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
6. Maximum Deviation (Analog)	1) Channel: 3 (Center) Channel spacing : Analog Narrow Connect the deviation meter to the TX ANT end via the ATT. Deviation meter setting HPF: OFF LPF: 15kHz De-emp: OFF Detector: (p-p)/2 AG setting: 1kHz/55mVrms (Sine wave, Terminal load)	Deviation meter AG DVM	Rear Front	TX ANT MIC		PC ADJ	±1.7kHz	±0.1kHz  Connect the deviation meter to the TX ANT end via the ATT.
7. Standard Modulation Check	1) Channel: 3 (Center) Channel spacing : Analog Narrow Connect the deviation meter to the TX ANT end via the ATT. Deviation meter setting HPF: OFF LPF: 15kHz De-emp: OFF Detector: (p-p)/2 AG setting : 1kHz±1.5kHz DEV (Sine wave, Terminal load)	Deviation meter AG DVM	Rear Front	TX ANT MIC			Check	5.5mV±1.5mV  Connect the deviation meter to the TX ANT end via the ATT.
8. QT Deviation	1) Channel: 3 (Center) Channel spacing : Analog Narrow Connect the deviation meter to the TX ANT end via the ATT. Deviation meter setting HPF: OFF LPF: 3kHz De-emp: OFF Detector: p-p/2	Deviation meter	Rear	TX ANT		PC ADJ	±0.35kHz	±0.05kHz  Connect the deviation meter to the TX ANT end via the ATT.
9. DQT Deviation	1) Channel: 3 (Center) Channel spacing : Analog Narrow Connect the deviation meter to the TX ANT end via the ATT. Deviation meter setting HPF: OFF LPF: 3kHz De-emp: OFF Detector: Peak hold	Deviation meter	Rear	TX ANT		PC ADJ	±0.35kHz	±0.05kHz  Connect the deviation meter to the TX ANT end via the ATT.
10. CW ID Deviation	1) Channel: 3 (Center) Channel spacing : Analog Narrow Connect the deviation meter to the TX ANT end via the ATT. Deviation meter setting HPF: OFF LPF: 15kHz De-emp: OFF Detector: +peak, -peak	Deviation meter	Rear	TX ANT		PC ADJ	±1.00kHz	±0.05kHz  Connect the deviation meter to the TX ANT end via the ATT.

## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications / Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
11. Test Tone Deviation	1) Channel: 3 (Center) Channel spacing : Analog Narrow Connect the deviation meter to the TX ANT end via the ATT. Deviation meter setting HPF: OFF, LPF: 15kHz De-emp: OFF Detector: +peak, -peak	Deviation meter	Rear	TX ANT		PC ADJ	±1.50kHz	±0.05kHz  Connect the deviation meter to the TX ANT end via the ATT.
12. DTMF Deviation	1) Channel: 3 (Center) Channel spacing : Analog Narrow Connect the deviation meter to the TX ANT end via the ATT. Deviation meter setting HPF: OFF, LPF: 15kHz De-emp: OFF Detector: +peak, -peak	Deviation meter	Rear	TX ANT		PC ADJ	±1.50kHz	±0.05kHz  Connect the deviation meter to the TX ANT end via the ATT.
13. Courtesy Tone Deviation	1) Channel: 3 (Center) Channel spacing : Analog Narrow Connect the deviation meter to the TX ANT end via the ATT. Deviation meter setting HPF: OFF, LPF: 15kHz De-emp: OFF Detector: +peak, -peak	Deviation meter	Rear	TX ANT		PC ADJ	±0.50kHz	±0.05kHz  Connect the deviation meter to the TX ANT end via the ATT.
14. TD Deviation	1) Channel: 3 (Center) Channel spacing : Analog Narrow Connect the deviation meter to the TX ANT end via the ATT. Deviation meter setting HPF: OFF, LPF: 3kHz De-emp: OFF Detector: +peak, -peak AG setting : 0.1kHz/0.5Vp-p (177mVrms)	Deviation meter AG DVM	Rear	TX ANT CON- TROL I/O jack TD (pin 8)		PC ADJ	±0.75kHz	±0.02kHz  Connect the deviation meter to the TX ANT end via the ATT.
15. Transmit Audio Input (TA)	1) Channel: 3 (Center) Channel spacing : Analog Narrow Connect the deviation meter to the TX ANT end via the ATT. Deviation meter setting HPF: OFF, LPF: 15kHz De-emp: OFF Detector: +peak, -peak AG setting : 1kHz/280mVrms	Deviation meter AG DVM	Rear	TX ANT CON- TROL I/O jack TA (pin 9)		PC ADJ	±1.50kHz	±0.02kHz  Connect the deviation meter to the TX ANT end via the ATT.

## ADJUSTMENT

### Receiver Section

Item	Condition	Measurement			Adjustment			Specifications / Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1 MCF	1) Narrow Tracking generator Output: -20dBm Spectrum analyzer Frequency: 73.05MHz Span: 50kHz	Tracking generator Spectrum analyzer	RX	CN46 CN47	RX	L232 L246	Adjust it to look like the wave in figure 1.	Refer to Fig. 1. (Page 80)
2. Discriminator	1) Narrow Frequency: Desired frequency SSG output: -53dBm (501µV) SSG MOD: 1kHz SSG DEV: 1.5kHz AF output: 2V/4Ω	SSG AF VM	Rear	RX ANT TEST/ SPKR jack SPO (pin 12) 4Ω load	RX	L286	Adjust AF output max.	
3. RD Level	1) Channel spacing : Analog Narrow Connect the SSG to the RX ANT. SSG setting Frequency: Desired frequency Output: -53dBm (501µV) MOD: 1kHz DEV: ±1.5kHz	SSG AF VM	Rear	RX ANT CON- TROL I/O jack RD (pin 10)		PC ADJ	80mV	±5mV
4. RA Level	1) Channel spacing : Analog Narrow Connect the SSG to the RX ANT. SSG setting Frequency: Desired frequency Output: -53dBm (501µV) MOD: 1kHz DEV: ±1.5kHz	SSG AF VM	Rear	RX ANT CON- TROL I/O jack RA (pin 11)		PC ADJ	400mV	±20mV
5. Receiver Sensitivity Check	1) Channel spacing : Analog Narrow Connect the SSG to the RX ANT. SSG setting Frequency: Desired frequency MOD: 1kHz DEV: ±1.5kHz AF: 0.45V/4Ω	SSG Distortion meter	Rear	RX ANT TEST/ SPKR jack SPO (pin 12) 4Ω load			Check	-115dBm (0.4µV) or less  Measure 12dB SINAD SSG level to use squelch adjustment.
6. RF AGC	1) Channel spacing : Analog Narrow SSG setting Frequency: Desired frequency MOD: OFF Level: 0dBm	SSG Spectrum analyzer	Rear RX	RX ANT CN68		PC ADJ	Value: 128	Measure CN68 terminal level : -38dBm~-26dBm
	2) Channel spacing : Analog Narrow SSG setting Frequency: Desired frequency MOD: OFF Level: -25dBm						Check	Measure CN68 terminal level : -45dBm~-40dBm

## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications / Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
7. Tight Squelch	1) Channel spacing : Analog Narrow Connect the SSG to the RX ANT. SSG setting Frequency: Low, Low', Center, High', High Output: 12dB SINAD level +7dB MOD: 1kHz DEV: ±1.5kHz	SSG Oscilloscope Audio analyzer	Rear	RX ANT TEST/ SPKR jack SPO (pin 12) 4Ω load		PC ADJ		Press [Apply] button to store the adjustment value.
	2) SSG output: OFF							Check
8. Open Squelch	1) Channel spacing : Analog Narrow Connect the SSG to the RX ANT. SSG setting Frequency: Low, Low', Center, High', High Output: 12dB SINAD level -1dB MOD: 1kHz DEV: ±1.5kHz	SSG Oscilloscope Audio analyzer	Rear	RX ANT TEST/ SPKR jack SPO (pin 12) 4Ω load		PC ADJ		Press [Apply] button to store the adjustment value.
	2) SSG output: OFF							Check
9. RSSI (Analog)	1) Channel spacing : Analog Narrow Connect the SSG to the RX ANT. SSG setting Frequency: Low, Low', Center, High', High Output: -53dBm (501μV) MOD: OFF	SSG AF VM	Rear	RX ANT TEST/ SPKR jack RSSI (pin 8)		PC ADJ	3.5V	±0.1V
	2) Point: High level SSG output : 12dB SINAD level +7dB							Press [Apply] button to store the adjustment value.
	3) Point: Low level SSG output : 12dB SINAD level -2dB							
10. RSSI (NXDN Very Narrow)	1) Connect the SSG to the RX ANT. SSG setting Frequency: Low, Low', Center, High', High Output: -121dBm (0.2μV) MOD: OFF	SSG	Rear	RX ANT		PC ADJ		Press [Apply] button to store the adjustment value.

# NXR-901

## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications / Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
11. Repeater Gain	1) Channel spacing : Analog Narrow Connect the SSG to the RX ANT. SSG setting Frequency: Desired frequency Output: -53dBm (501 $\mu$ V) MOD: 1.0kHz DEV: $\pm$ 1.0kHz Connect the deviation meter to the TX ANT end via the ATT. Deviation meter setting HPF: OFF LPF: 15kHz De-emp: OFF Detector: +peak, -peak	SSG Deviation meter	Rear	RX ANT TX ANT		PC ADJ	$\pm$ 1.00kHz	$\pm$ 0.10kHz



## ADJUSTMENT

### Adjustment for KXK-3 (M3) (OCXO unit)

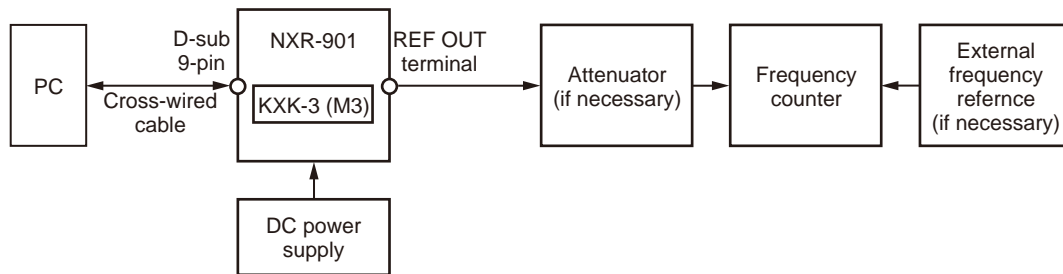
We recommend that the frequency adjustment be checked each time the radio is serviced, or at least once per two years. Maintenance should only be performed under normal temperatures.

#### ■ Test Equipment Required for Alignment

Test Equipment	Major Specifications	
1. Frequency Counter	Frequency Range	Up to 50MHz
	Resolution	10 digits
	Reference Frequency Accuracy	Smaller than 0.0001ppm
	Input level	Up to 5Vpp

#### ■ Adjustment Setup

The KXK-3 (M3) OCXO unit must be mounted on the NXR-901 repeater. Adjustment setup is shown as follows.



To adjust the KXK-3 (M3) OCXO unit, some preparations are required.

1. The NXR-901 with the KXK-3 (M3) OCXO unit must be warmed up at least 72 hours before the adjustment is made. The environment temperature must be stable.
2. The frequency counter (or reference oscillator) must be warmed up as defined by the equipment manufacturer.

#### ■ Adjustment

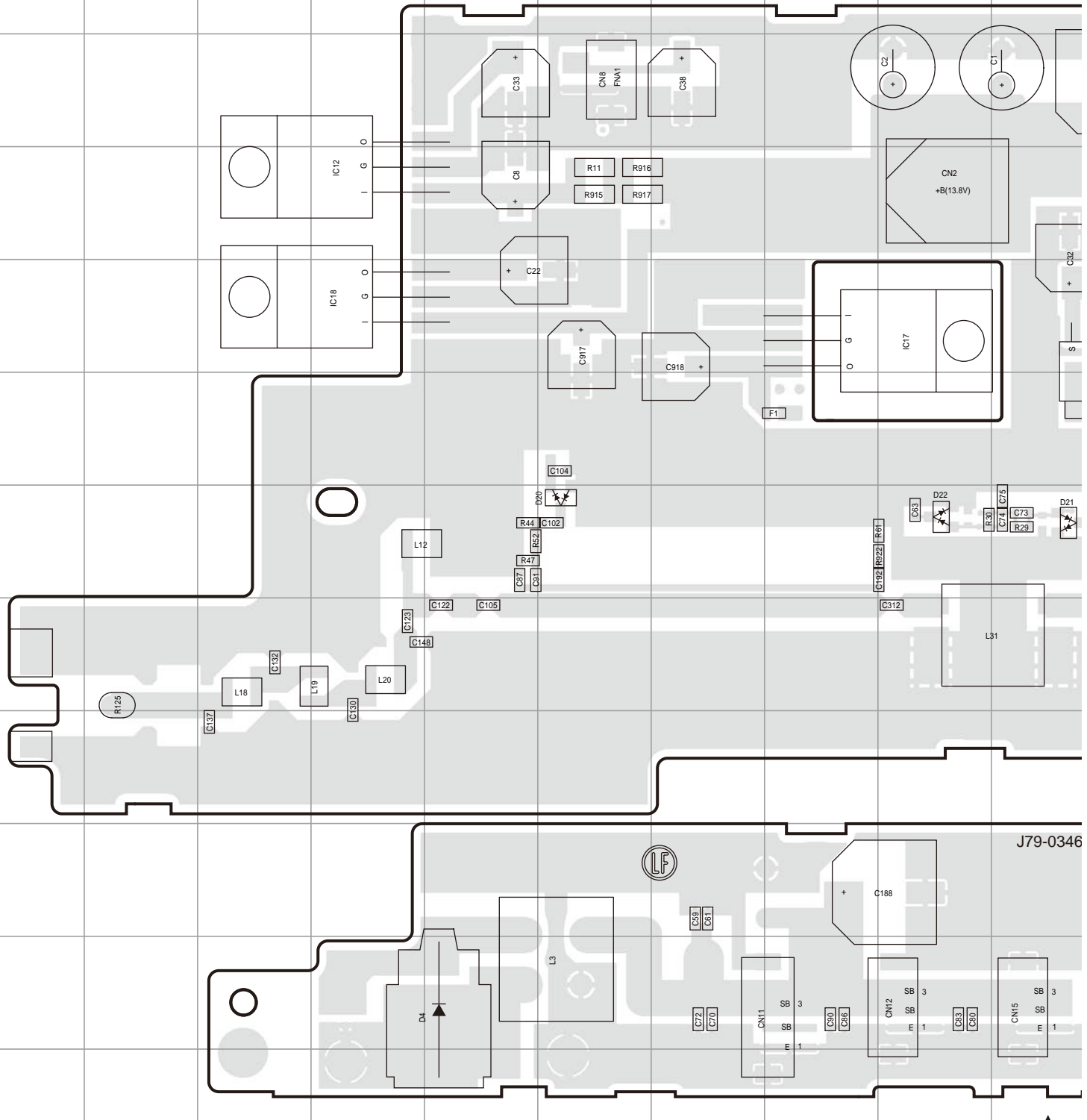
Item	Condition	Measurement			Adjustment			Specifications / Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Setting	1) Connect the DC power output to the rear panel DC terminal (13.8V). 2) Connect the "REF OUT" terminal to the frequency counter. 3) Warm-up the equipment and KXK-3 (M3) properly. 4) Connect the front panel COM port (D-sub 9-pin connector) to the PC serial port with a cross-wired cable. 5) Activate the FPU to go to the test mode.							
2. OCXO frequency adjustment		f. counter	Rear	REF OUT		PC ADJ		±0.002ppm 9.9999998MHz~ 10.0000002MHz

#### Note:

Adjusted data is stored in the KXK-3 (M3) internal memory, therefore no re-adjustment is required when the adjusted KXK-3 (M3) is moved to another NXR-901.

# NXR-901 PC BOARD

**FINAL UNIT (X45-3870-11)  
Component side view (J79-0346-09)**

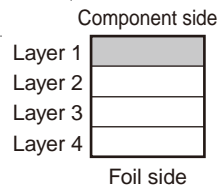
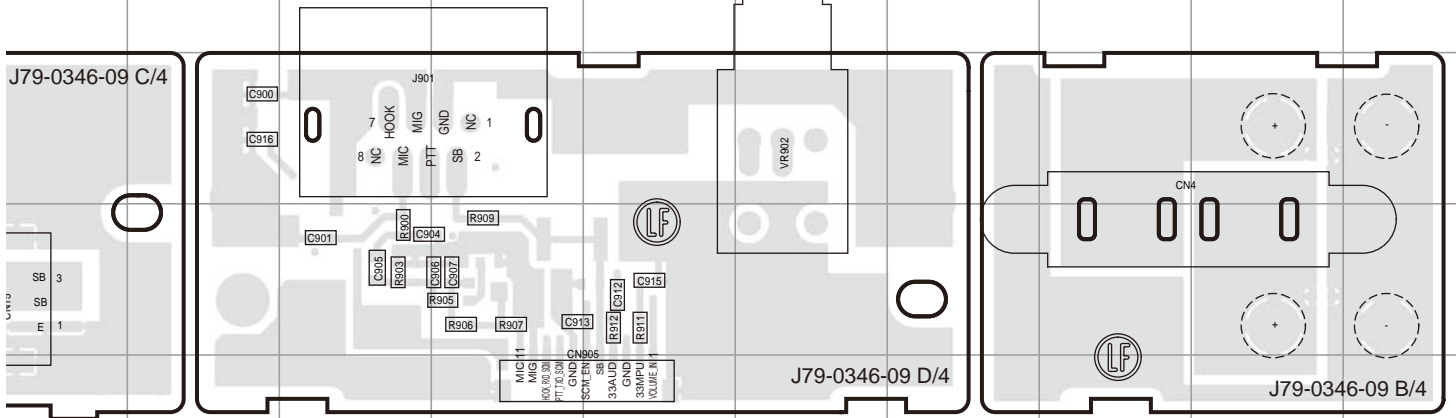
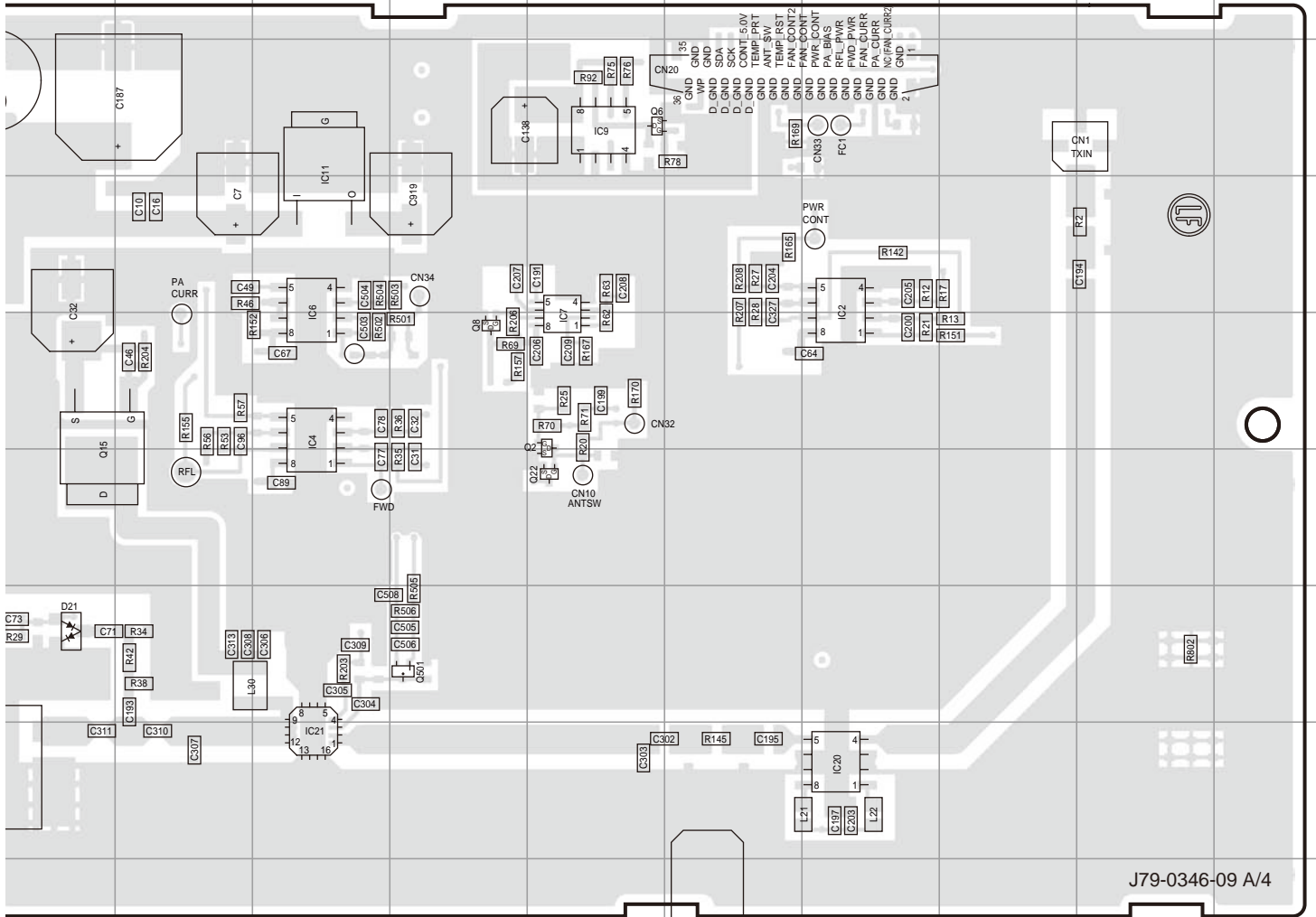


J79-0346

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IC4	5L	IC12	4D	Q2	5N	Q501	7M		
IC6	4L	IC17	5I	Q6	3N	D4	11E		
IC7	5N	IC18	5D	Q8	5M	D20	7F		
IC9	3N	IC20	8P	Q15	6J	D21	7J		

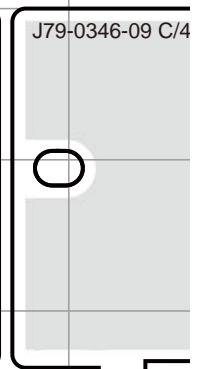
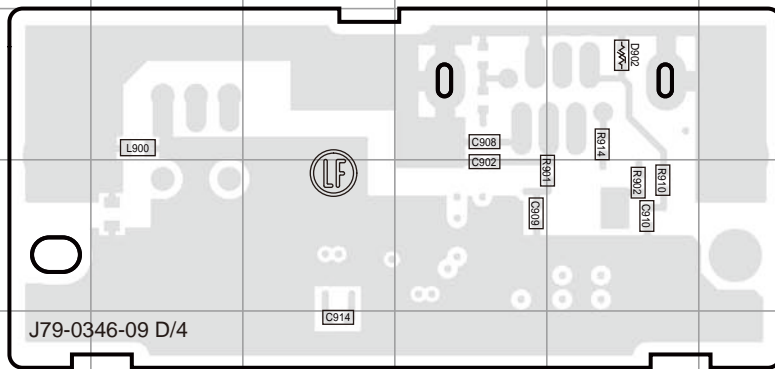
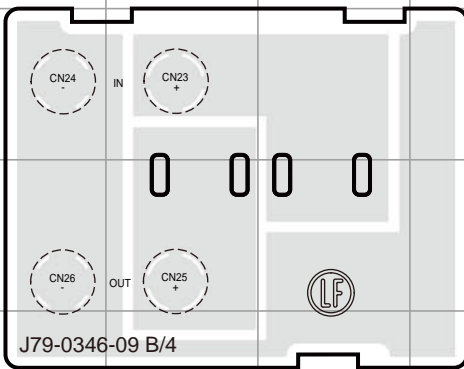
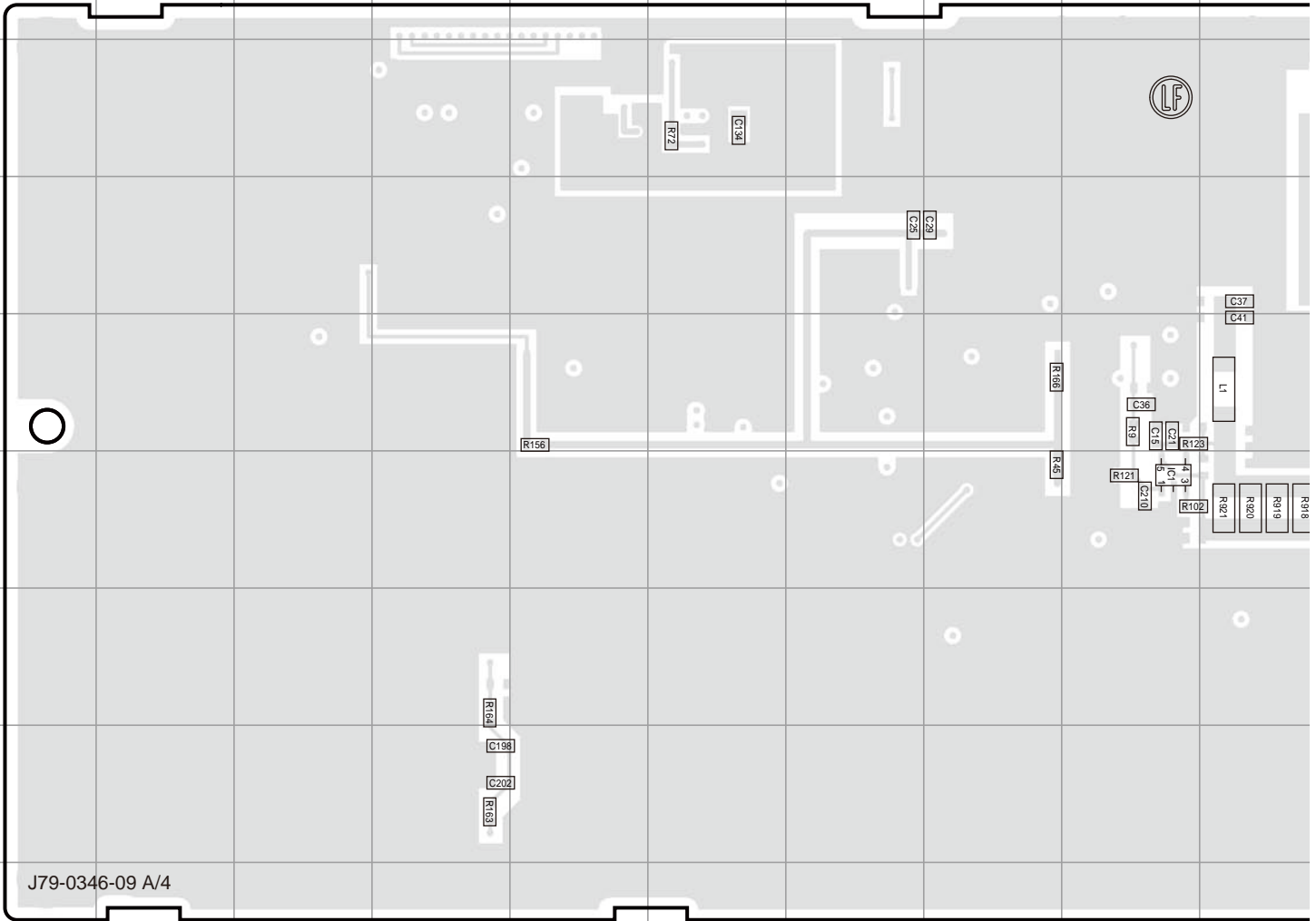
# PC BOARD NXR-901

## FINAL UNIT (X45-3870-11) Component side view (J79-0346-09)



# NXR-901 PC BOARD

FINAL UNIT (X45-3870-11)  
Foil side view (J79-0346-09)

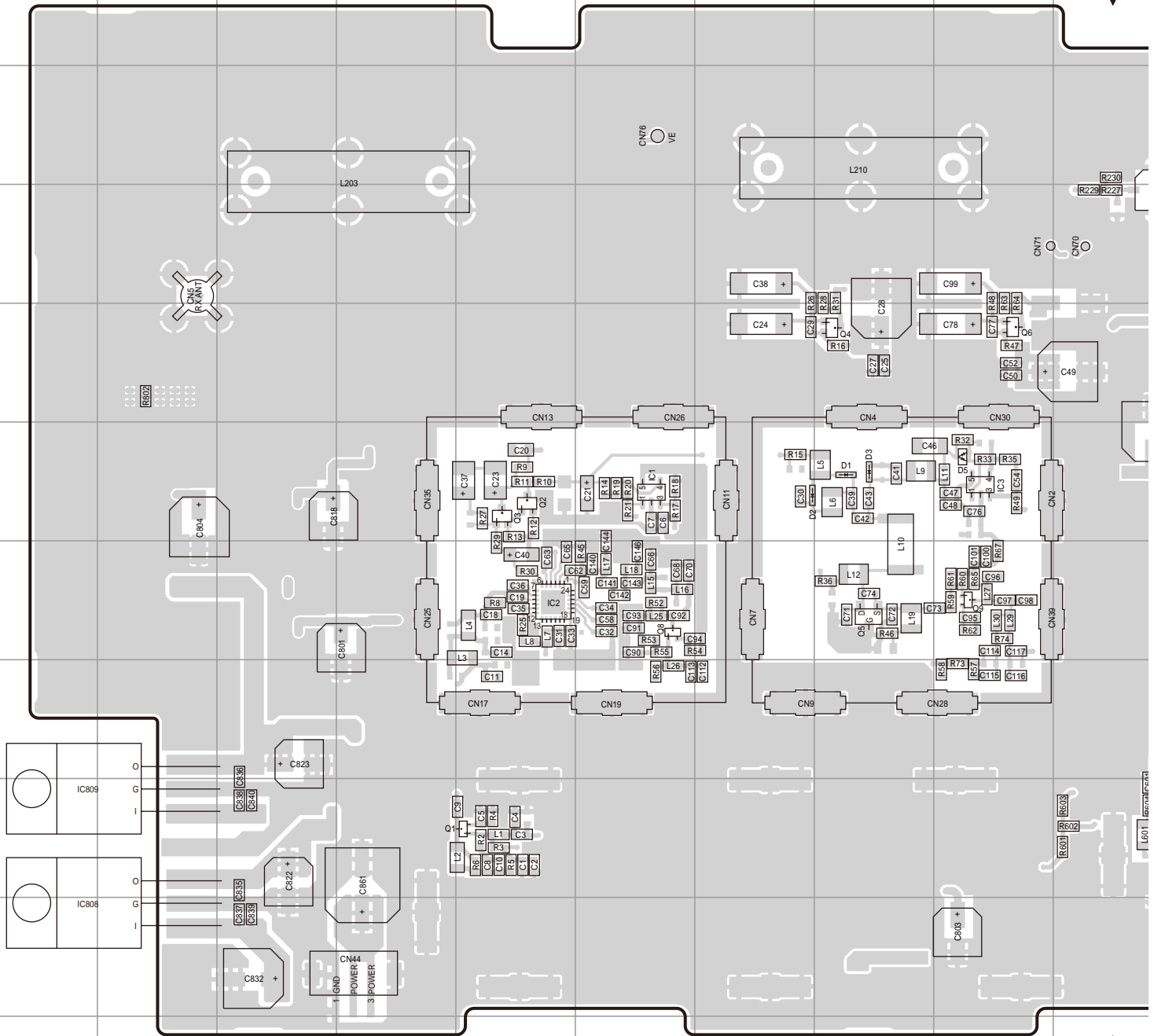


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IC15	4M	D6	3N
Q3	3N	D23	4M
Q14	3N	D902	10H



# NXR-901 PC BOARD

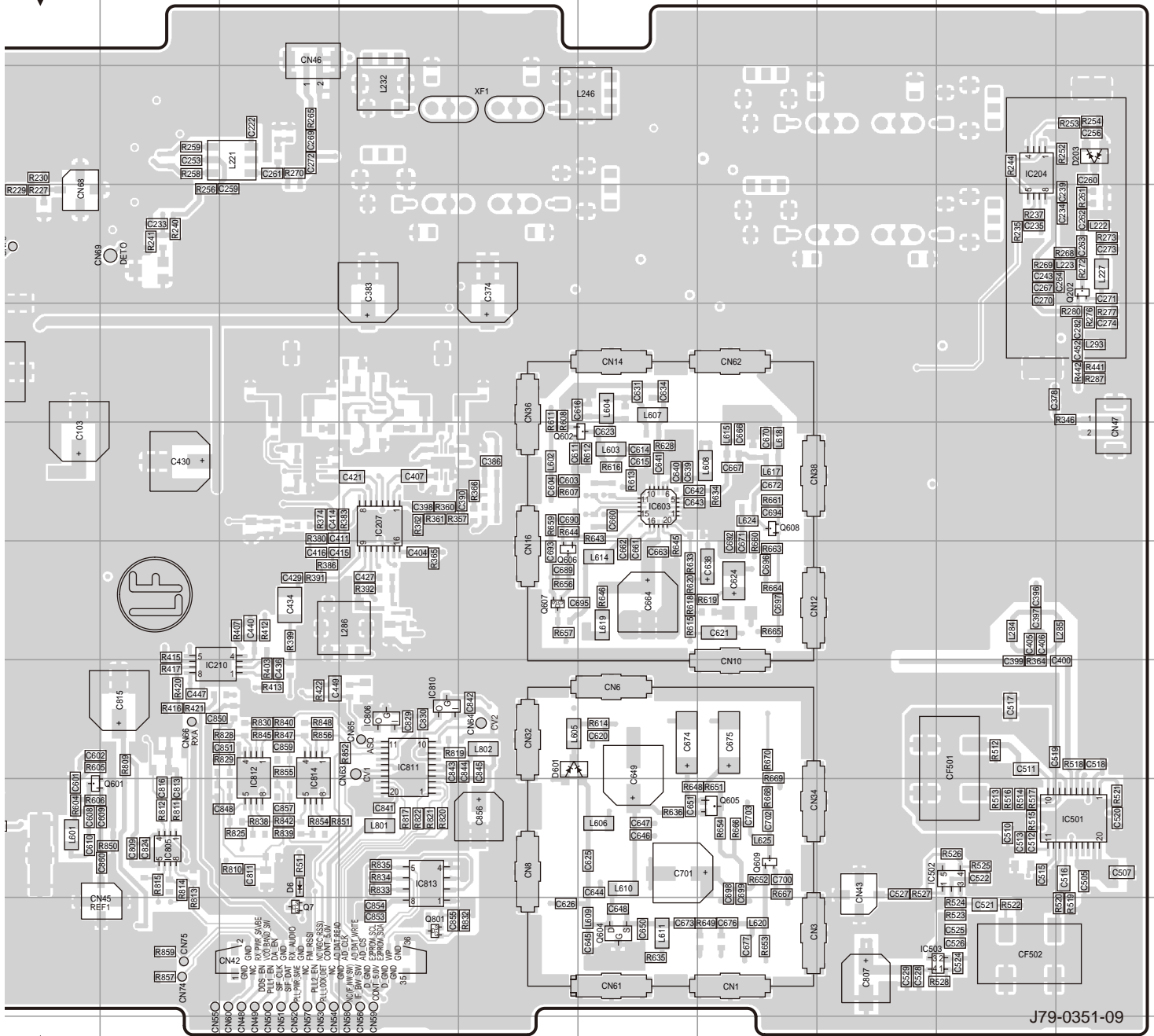
RX UNIT (X55-3120-11)  
Component side view (J79-0351-09)



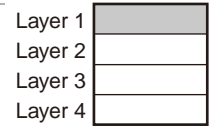
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IC1	6F	IC603	6O	IC814	8L	Q9	7I	Q609	9P
IC2	7E	IC805	9K	Q1	9E	Q202	4S	Q801	10M
IC3	6I	IC806	8M	Q2	6E	Q601	9J	D1	6H
IC204	3R	IC808	10A	Q3	6E	Q602	6O	D2	6G
IC207	6M	IC809	9A	Q4	5H	Q604	10O	D3	6H
IC210	8K	IC810	8M	Q5	7H	Q605	9P	D5	6I
IC501	9S	IC811	8M	Q6	5I	Q606	7N	D6	9L
IC502	9R	IC812	8L	Q7	10L	Q607	7N	D203	3S
IC503	10R	IC813	9M	Q8	7F	Q608	6P	D601	8N

# PC BOARD NXR-901

RX UNIT (X55-3120-11)  
Component side view (J79-0351-09)



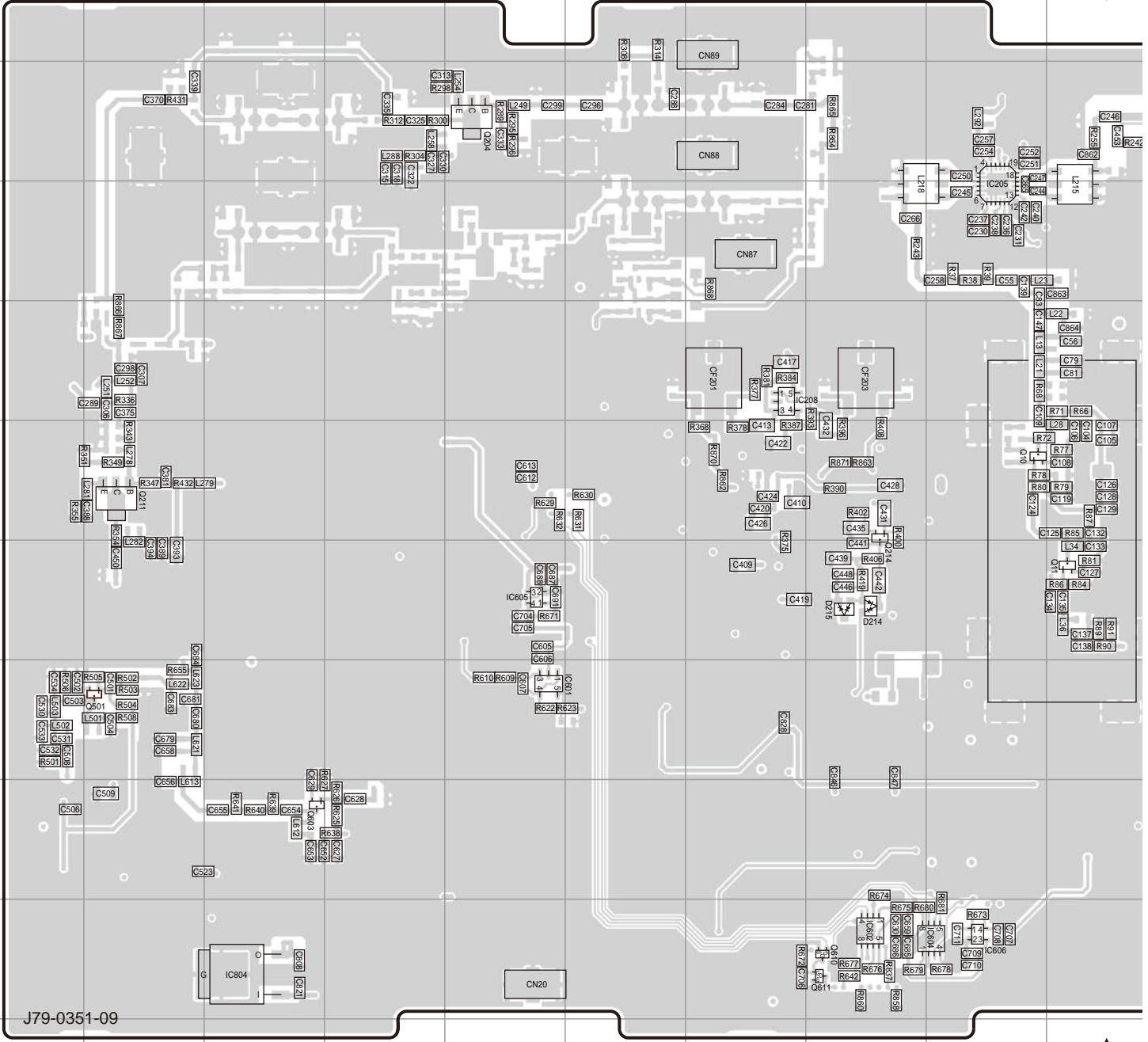
Component side



Foil side

# NXR-901 PC BOARD

RX UNIT (X55-3120-11)  
Foil side view (J79-0351-09)



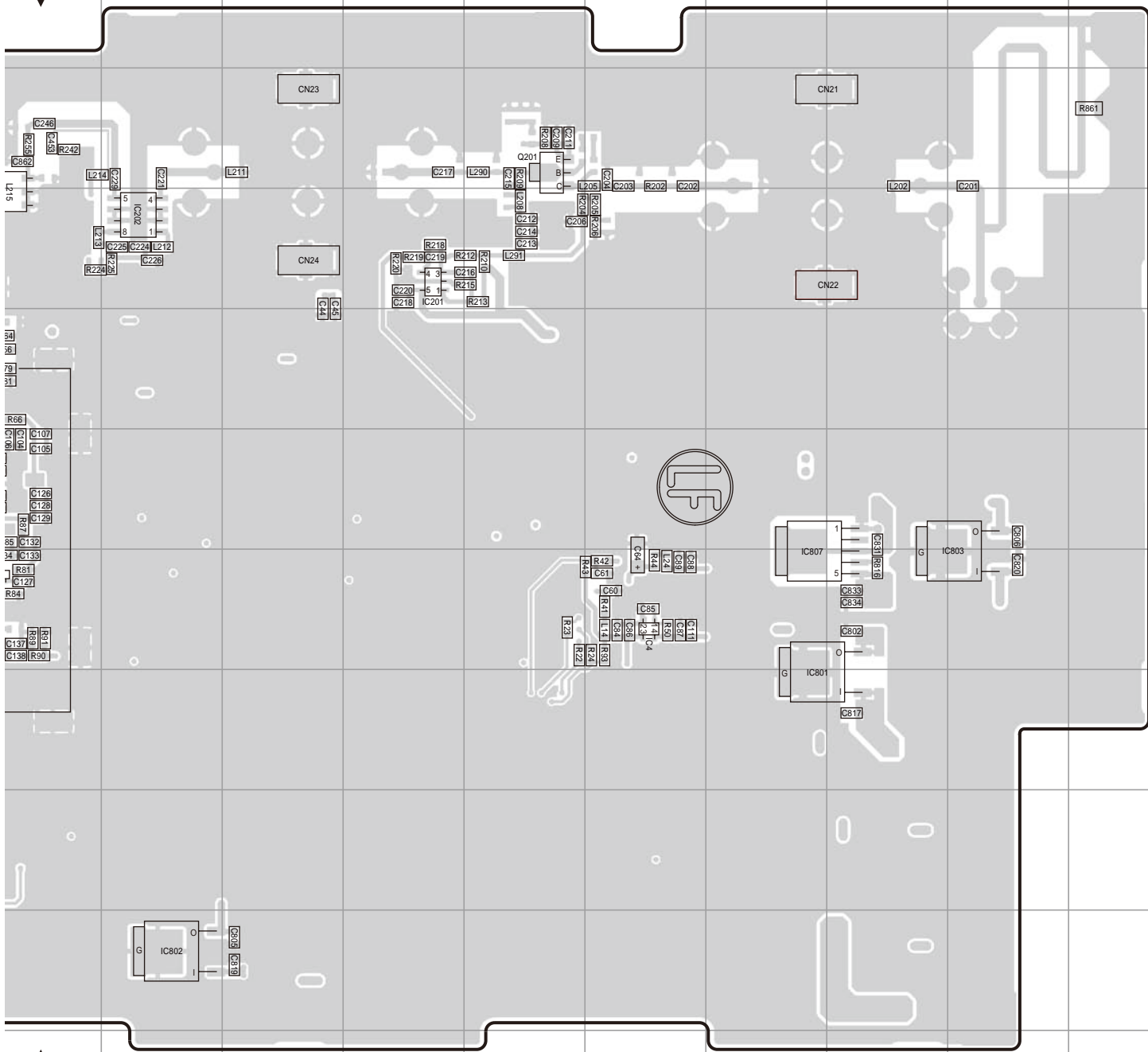
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IC201	4M	IC606	10I	Q201	3N	D214	7H
IC202	4K	IC801	8P	Q204	3E	D215	7H
IC205	4I	IC802	10K	Q211	6B		
IC208	5G	IC803	7R	Q214	6H		
IC601	8E	IC804	10C	Q501	8B		
IC602	10H	IC807	7P	Q603	9C		
IC604	10I	Q10	6I	Q610	10H		

**Note:** Because L215 and L218 have 5 legs each, be careful of the direction when attaching them to the RX unit.

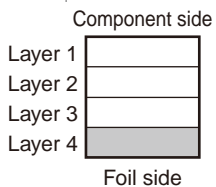


# PC BOARD NXR-901

RX UNIT (X55-3120-11)  
Foil side view (J79-0351-09)

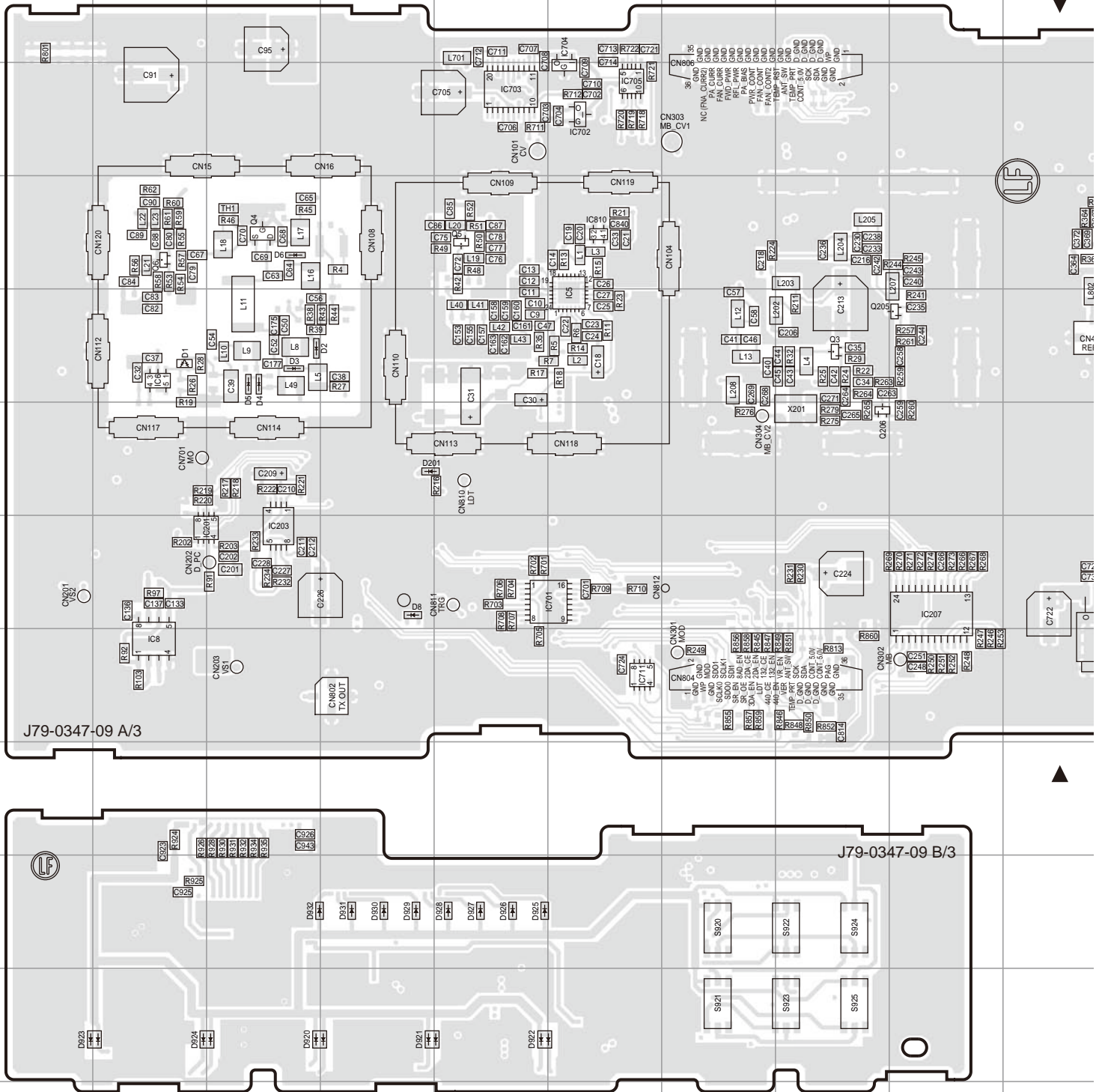


h,



# NXR-901 PC BOARD

## TX UNIT (X56-3150-11) Component side view (J79-0347-09)

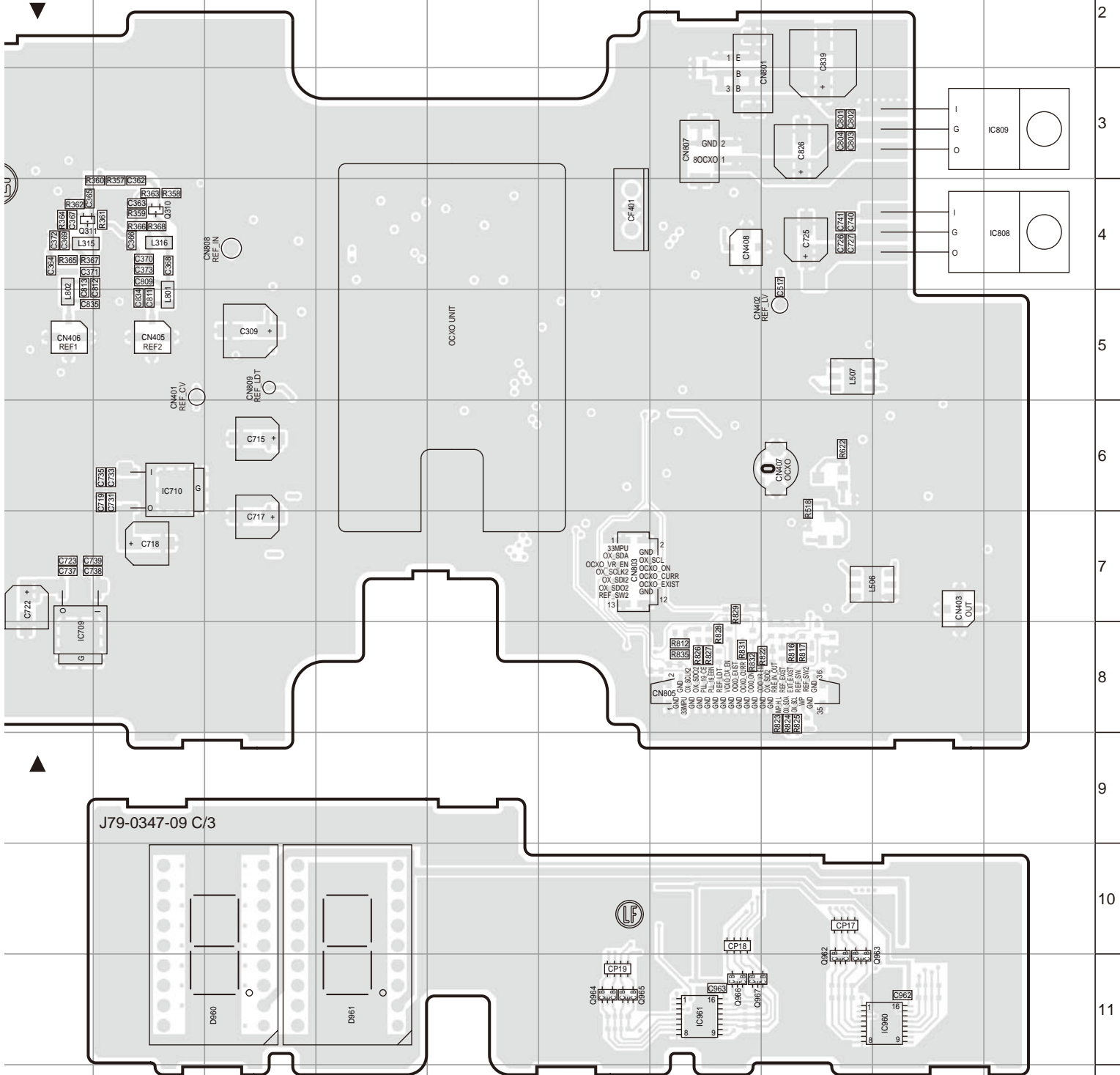


Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC5	5F	IC702	3F	IC808	4S	Q5	4E	Q963	11Q	D3	5C	D921	11D	D928	10E
IC6	5B	IC703	3E	IC809	3S	Q6	4B	Q964	11O	D4	5C	D922	11E	D929	10D
IC8	8B	IC704	3F	IC810	4F	Q205	5I	Q965	11O	D5	5C	D923	11B	D930	10D
IC201	7B	IC705	3F	IC901	11R	Q206	6H	Q966	11P	D6	4C	D924	11C	D931	10D
IC203	7C	IC709	8J	IC902	11P	Q310	4K	Q967	11P	D8	7D	D925	10E	D932	10C
IC207	7I	IC710	6K	Q3	5H	Q311	4J	D1	5B	D201	6D	D926	10E	D960	11L
IC701	7F	IC711	8F	Q4	4C	Q962	11Q	D2	5C	D920	11C	D927	10E	D961	11M

# PC BOARD NXR-901

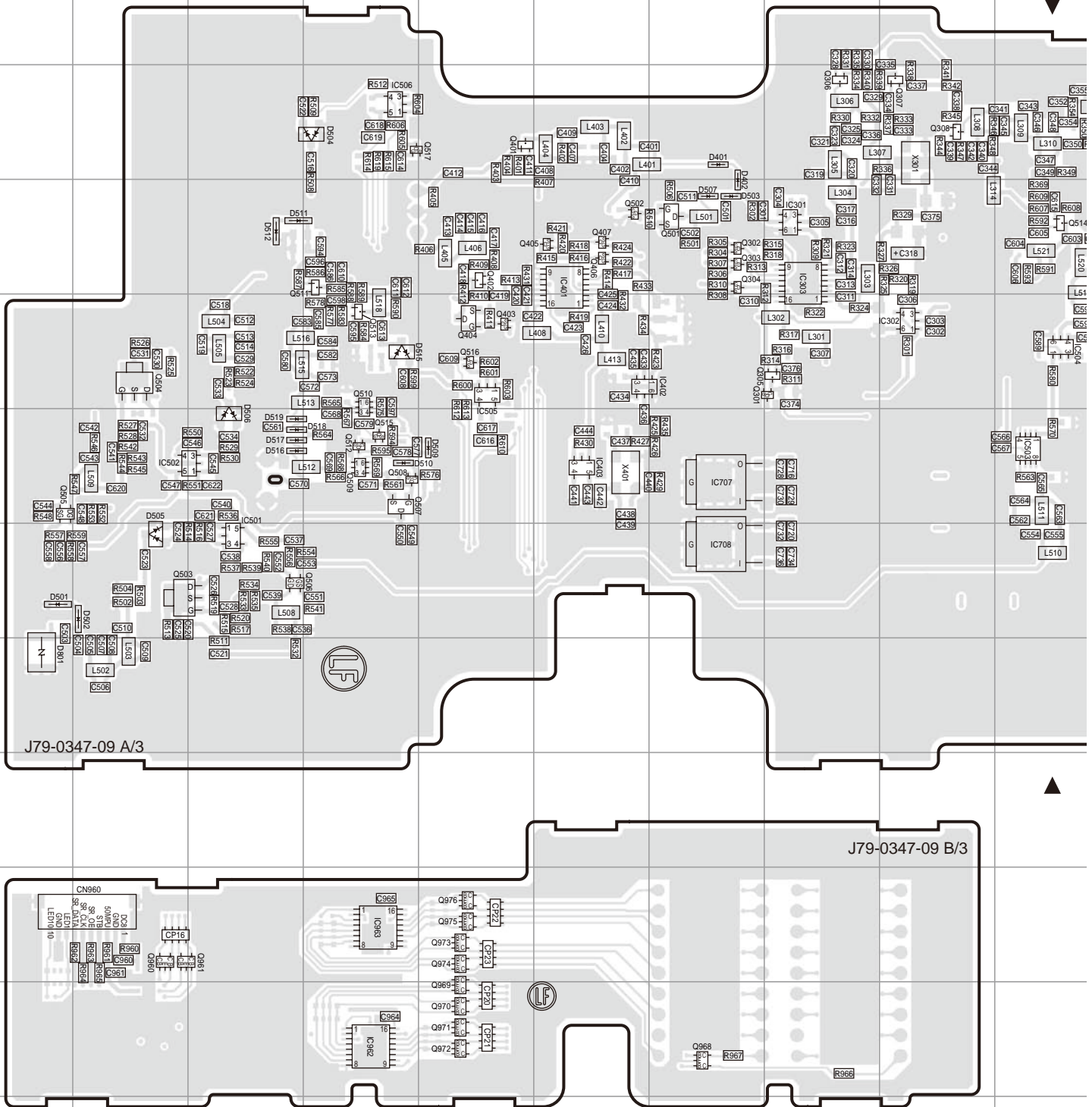
TX UNIT (X56-3150-11)

Component side view (J79-0347-09)



# NXR-901 PC BOARD

**TX UNIT (X56-3150-11)**  
**Foil side view (J79-0347-09)**



J79-0347-09 A/3

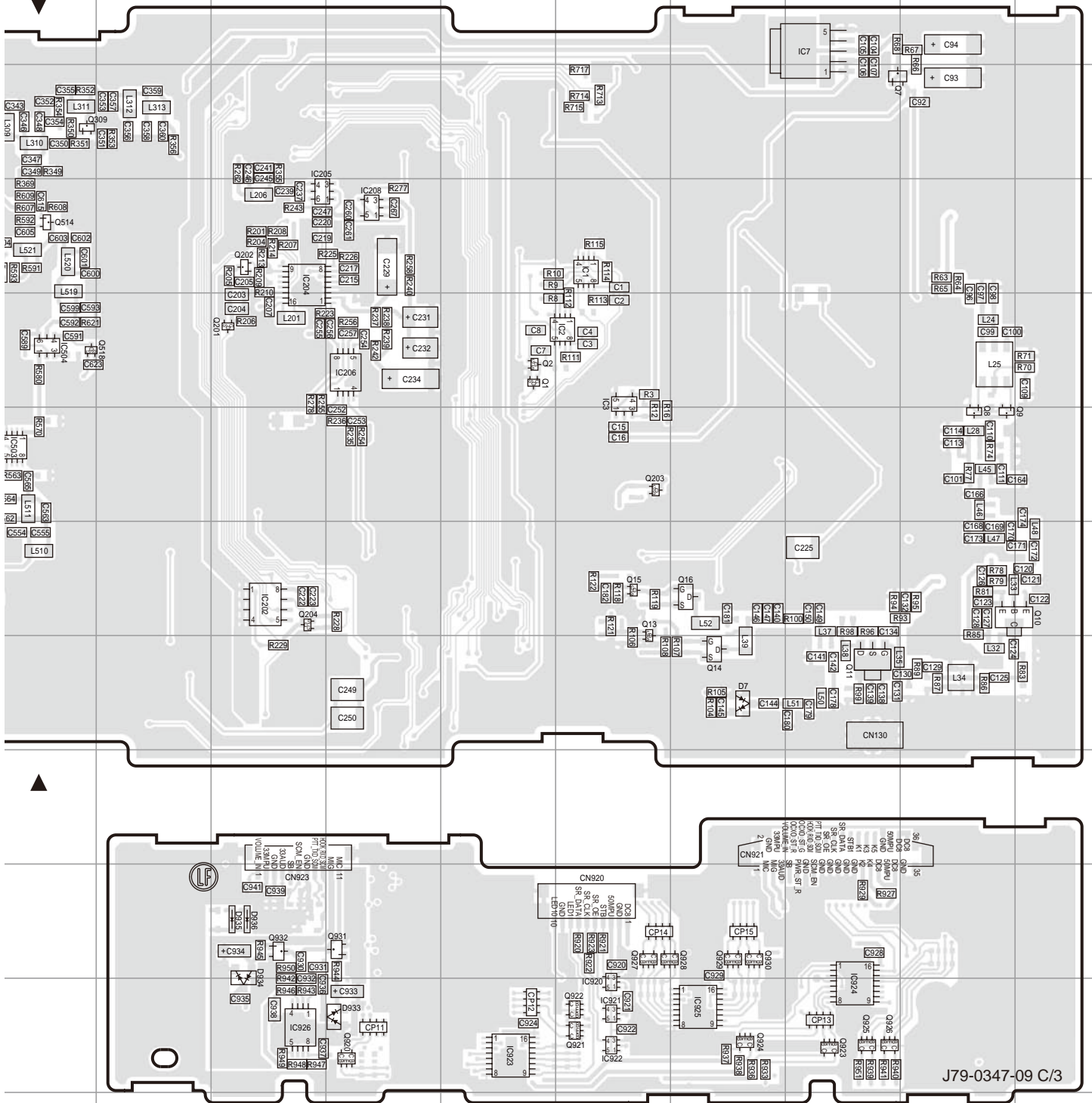
J79-0347-09 B/3

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IC1	4O	IC301	4H	IC504	5J	IC924	11Q	Q9	6R	Q203	6O	Q308	3I	Q501	4G	Q510	5D
IC2	5O	IC302	5I	IC505	5E	IC925	11P	Q10	7R	Q204	7L	Q309	3J	Q502	4F	Q511	4D
IC3	5O	IC303	4H	IC506	3D	IC926	11L	Q11	8Q	Q301	5H	Q401	3E	Q503	7B	Q512	6D
IC7	2Q	IC401	4F	IC707	6G	IC962	11D	Q13	7O	Q302	4G	Q402	4E	Q504	5B	Q513	5D
IC202	7L	IC402	5F	IC708	7G	IC963	10D	Q14	8P	Q303	4G	Q403	5E	Q505	6A	Q514	4J
IC204	4L	IC403	6F	IC920	11O	Q1	5N	Q15	7O	Q304	4G	Q404	5E	Q506	7C	Q515	6D
IC205	4L	IC501	7C	IC921	11O	Q2	5N	Q16	7P	Q305	5H	Q405	4F	Q507	6D	Q516	5E
IC206	5M	IC502	6C	IC922	11O	Q7	3Q	Q201	5L	Q306	3H	Q406	4F	Q508	6D	Q517	3D
IC208	4M	IC503	6J	IC923	11N	Q8	6R	Q202	4L	Q307	3I	Q407	4F	Q509	6D	Q518	5J

# PC BOARD NXR-901

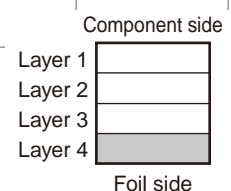
TX UNIT (X56-3150-11)

Foil side view (J79-0347-09)



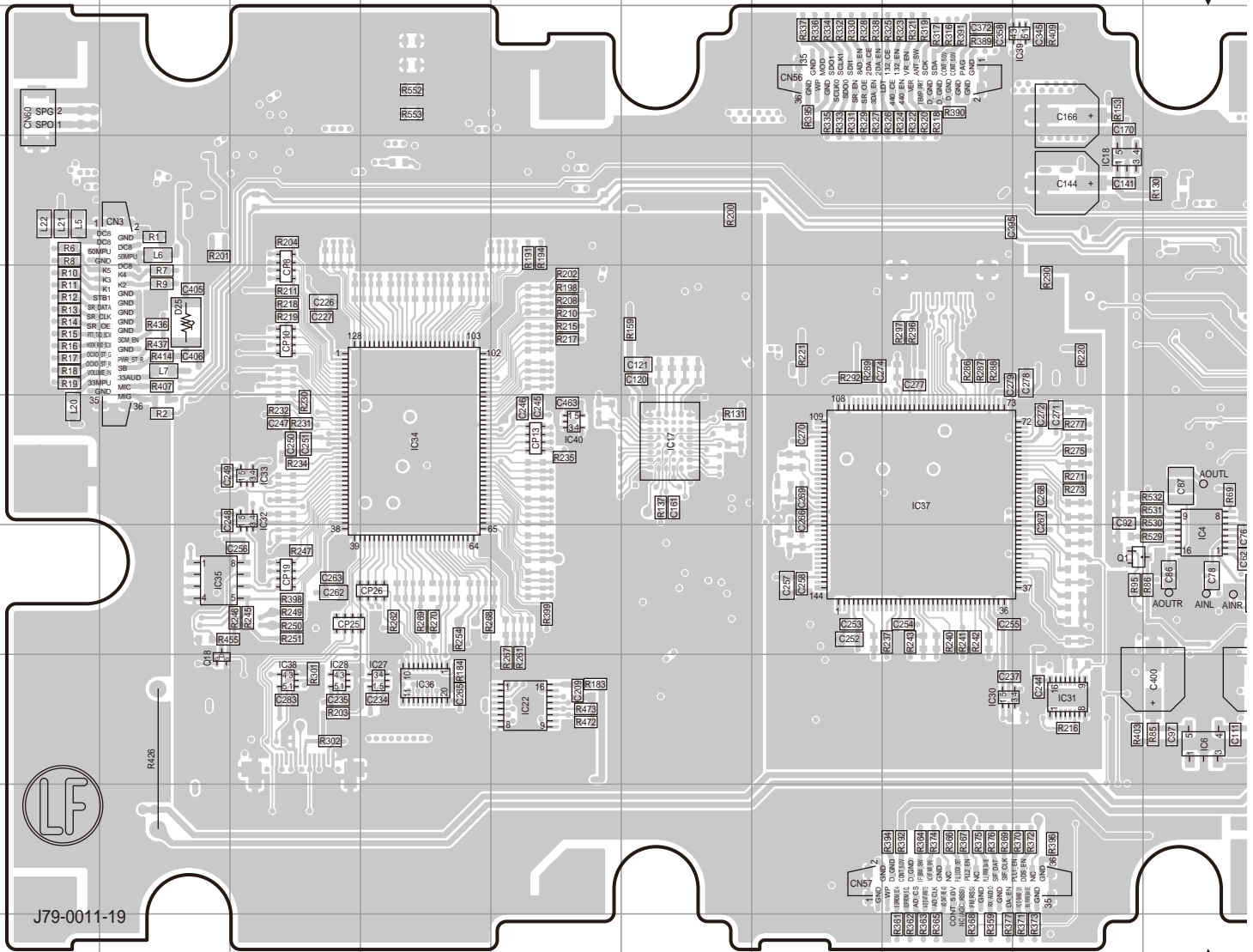
J79-0347-09 C/3

No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
i10	5D	Q920	11M	Q929	10P	Q971	11E	D501	7A	D511	4C	D934	10L
i11	4D	Q921	11O	Q930	10P	Q972	11E	D502	7B	D512	4C	D935	10L
i12	6D	Q922	11Q	Q931	10M	Q973	10E	D503	4G	D515	5D	D936	10L
i13	5D	Q923	11Q	Q932	10L	Q974	10E	D504	3D	D516	6C		
i14	4J	Q924	11P	Q960	10B	Q975	10E	D505	7B	D517	6C		
i15	6D	Q925	11Q	Q961	10B	Q976	10E	D506	6C	D518	6C		
i16	5E	Q926	11Q	Q968	11G	D7	8P	D507	4G	D519	6C		
i17	3D	Q927	10O	Q969	11E	D401	3G	D509	6E	D801	8A		
i18	5J	Q928	10O	Q970	11E	D402	4G	D510	6D	D933	11M		



# NXR-901 PC BOARD

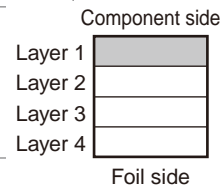
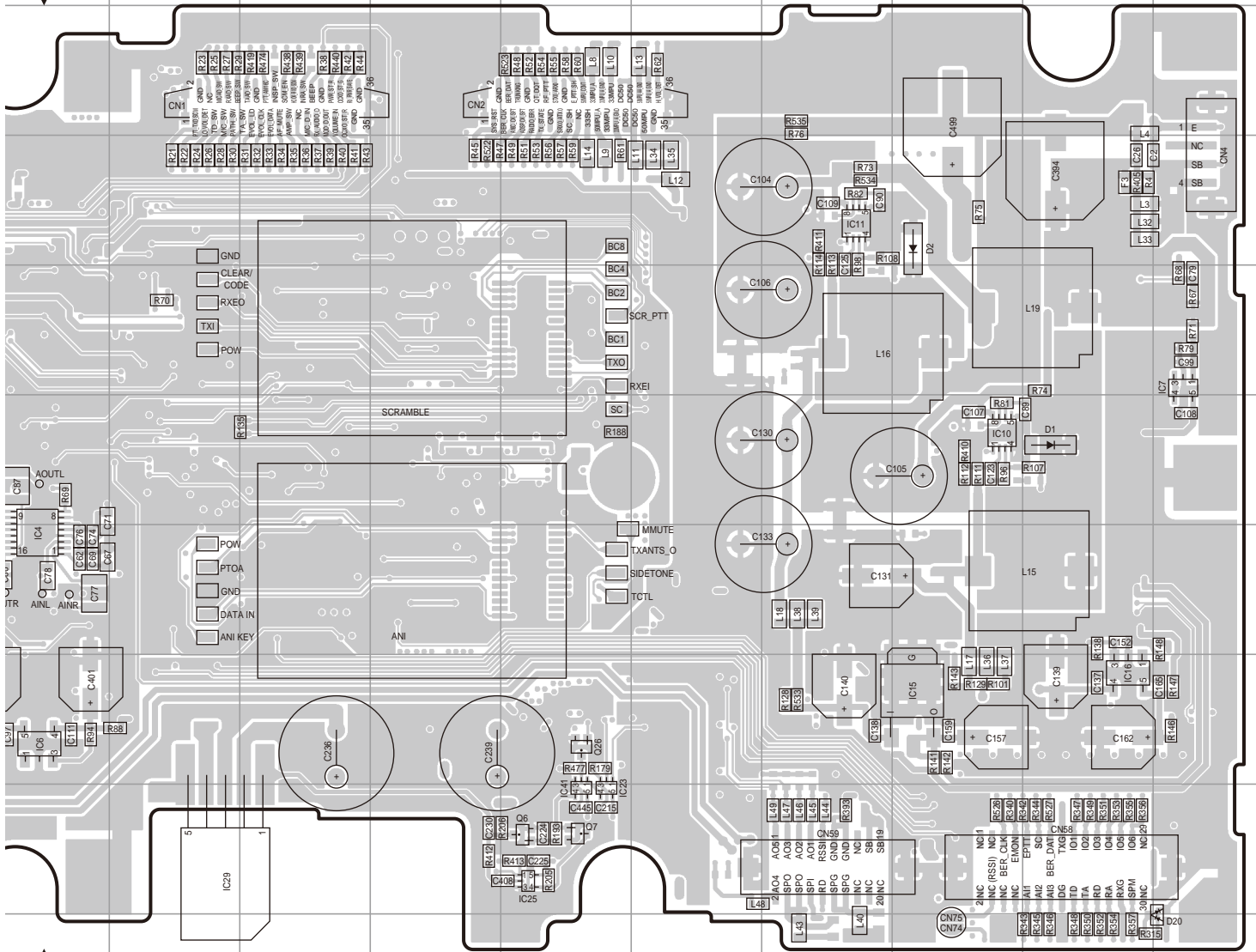
CONTROL UNIT (X53-4132-XX) -71 : K -72 : For service  
Component side view (J79-0011-19)



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IC4	7J	IC22	8E	IC33	6C	Q1	7I
IC6	8J	IC23	9N	IC34	6D	Q6	9N
IC7	5S	IC25	9N	IC35	7B	Q7	9N
IC10	6Q	IC27	8D	IC36	8D	Q18	8B
IC11	4P	IC28	8C	IC37	6H	Q26	8N
IC15	8Q	IC29	9K	IC38	8C	D1	6R
IC16	8R	IC30	8H	IC39	3I	D2	4Q
IC17	6F	IC31	8I	IC40	6E	D20	10S
IC18	4I	IC32	6C	IC41	9N	D25	5B

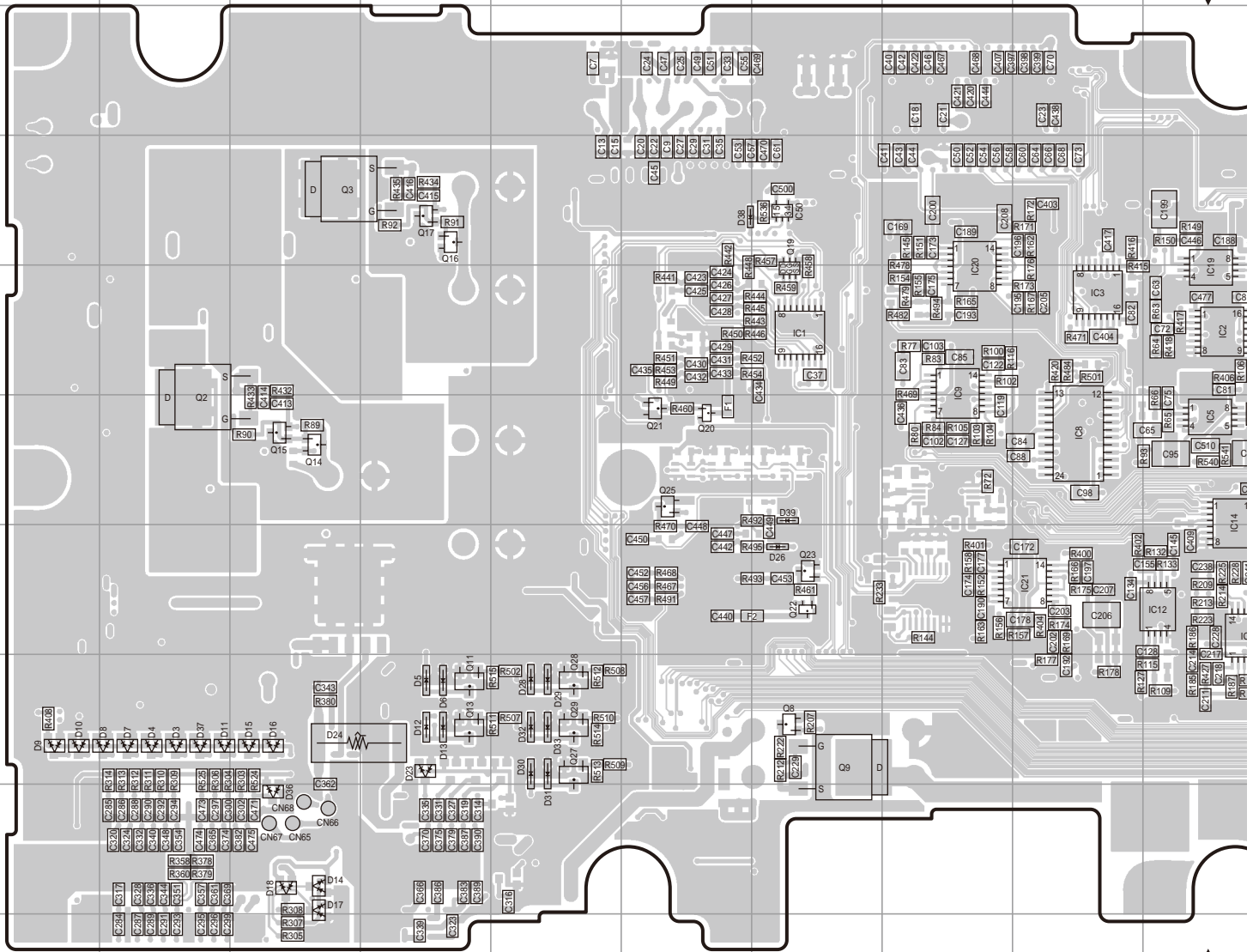
# PC BOARD NXR-901

CONTROL UNIT (X53-4132-XX) -71 : K -72 : For service  
Component side view (J79-0011-19)



# NXR-901 PC BOARD

**CONTROL UNIT (X53-4132-XX) -71 : K -72 : For service**  
**Foil side view (J79-0011-19)**

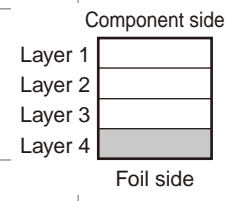
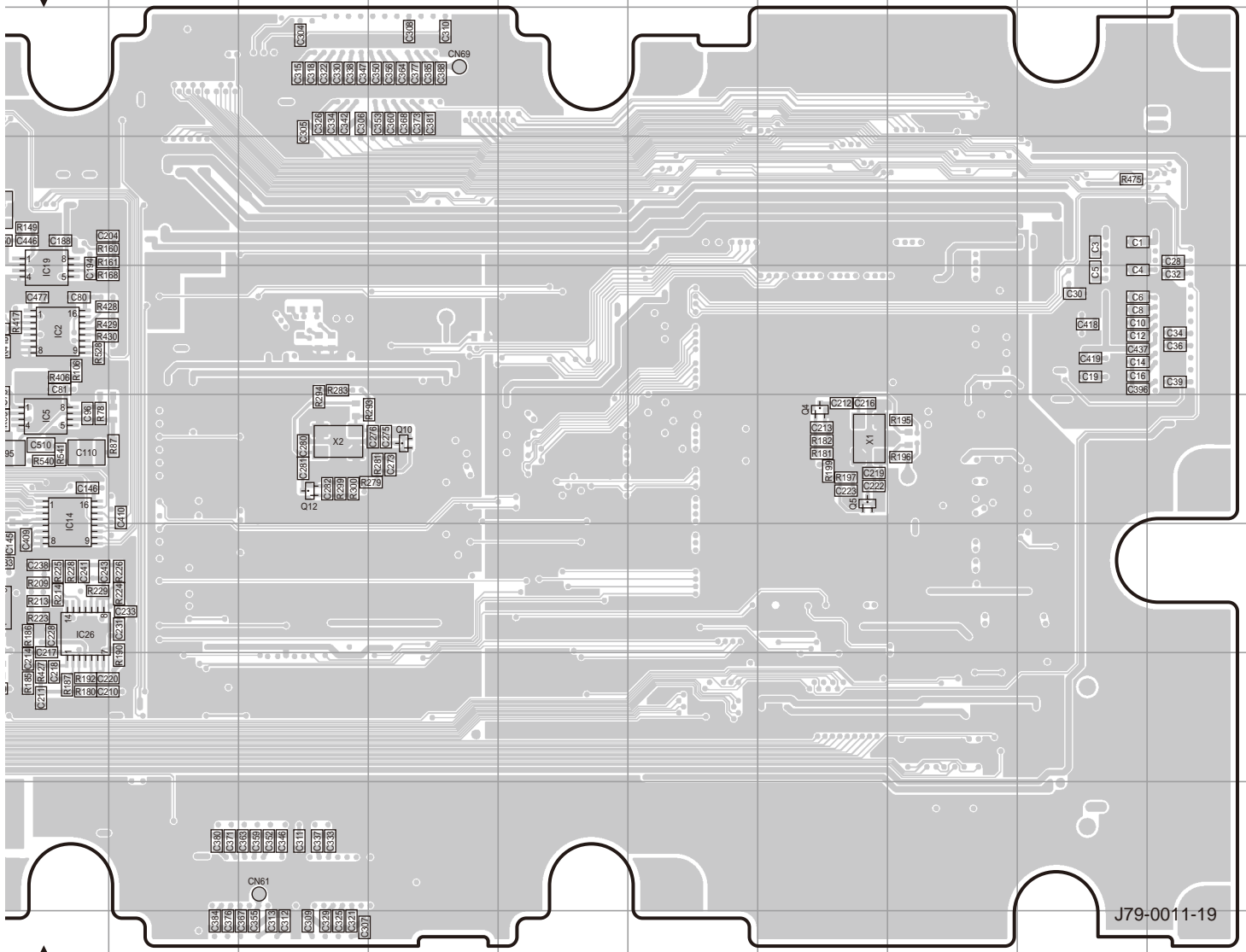


Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
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IC2	5J	Q3	4C	Q19	5G	D7	8B	D24	8C
IC3	5I	Q4	6P	Q20	6F	D8	8B	D26	7G
IC5	6J	Q5	6P	Q21	6F	D9	8A	D28	8E
IC8	6I	Q8	8G	Q22	7G	D10	8A	D29	8E
IC9	5H	Q9	8G	Q23	7G	D11	8B	D30	8E
IC12	7J	Q10	6M	Q25	6F	D12	8D	D31	8E
IC14	6J	Q11	8D	Q27	8E	D13	8D	D32	8E
IC19	5J	Q12	6L	Q28	8E	D14	9C	D33	8E
IC20	5H	Q13	8D	Q29	8E	D15	8C	D36	9C
IC21	7I	Q14	6C	D3	8B	D16	8C	D37	8B
IC26	7J	Q15	6C	D4	8B	D17	9C	D38	4F
IC50	4G	Q16	4D	D5	8D	D18	9C	D39	6G



# PC BOARD NXR-901

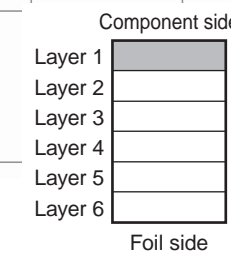
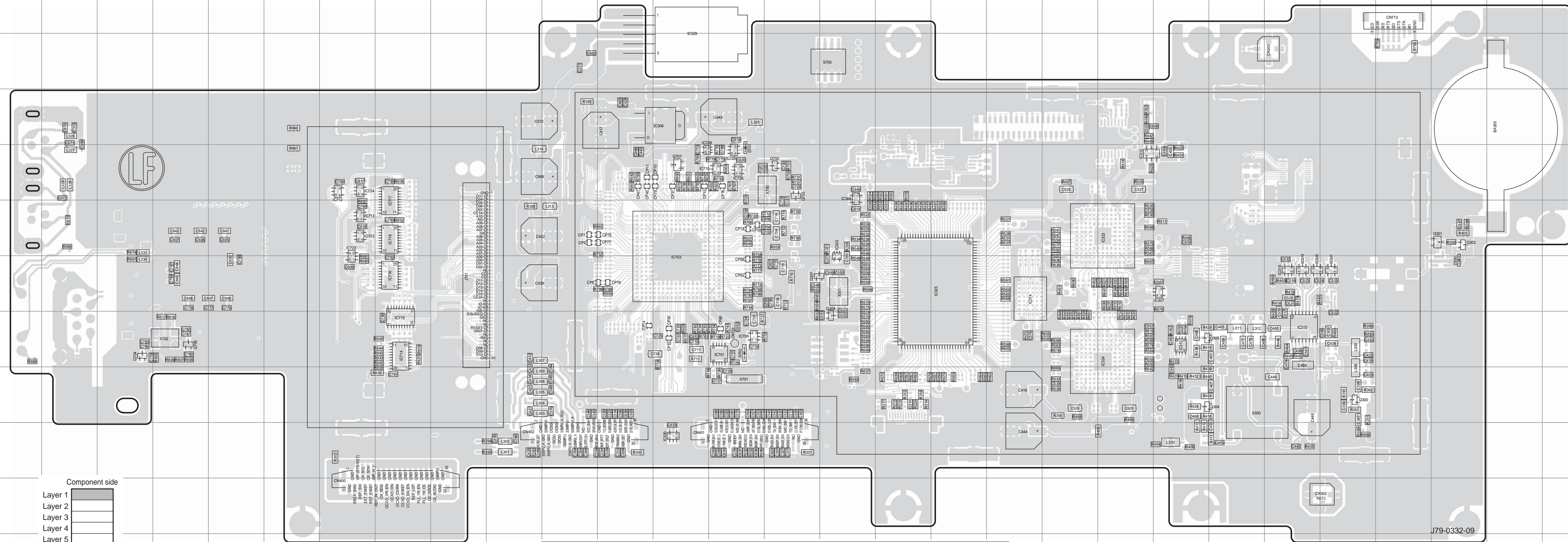
CONTROL UNIT (X53-4132-XX) -71 : K -72 : For service  
Foil side view (J79-0011-19)



# PC BOARD NXR-901

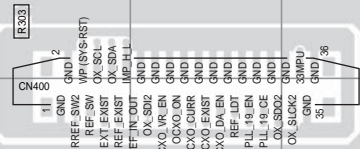
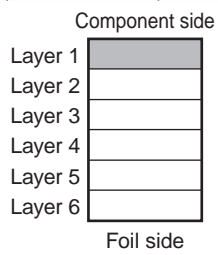
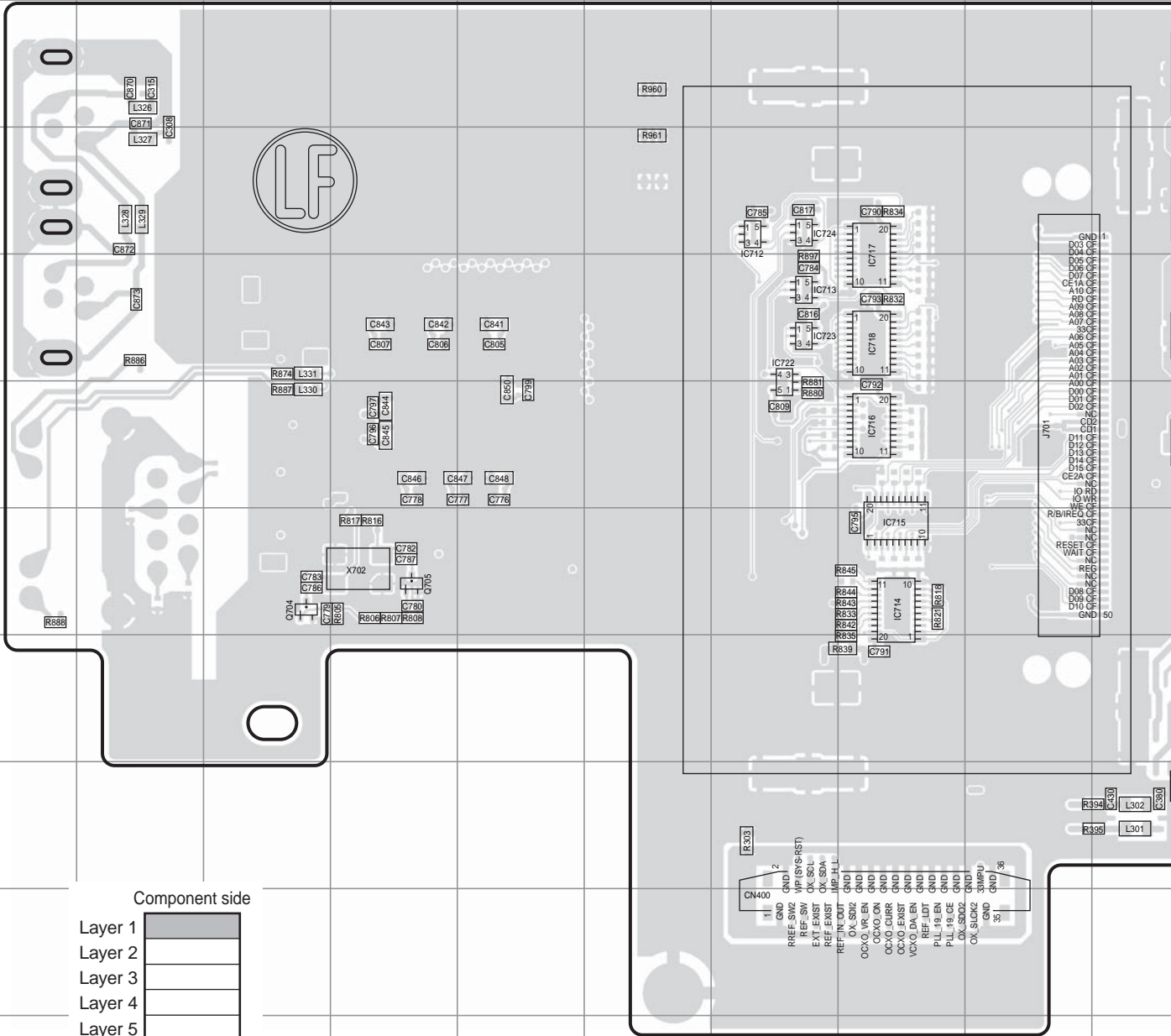
CONTROL UNIT (X53-4140-XX) -10 : K -11 : For service  
Component side view (J79-0332-09)

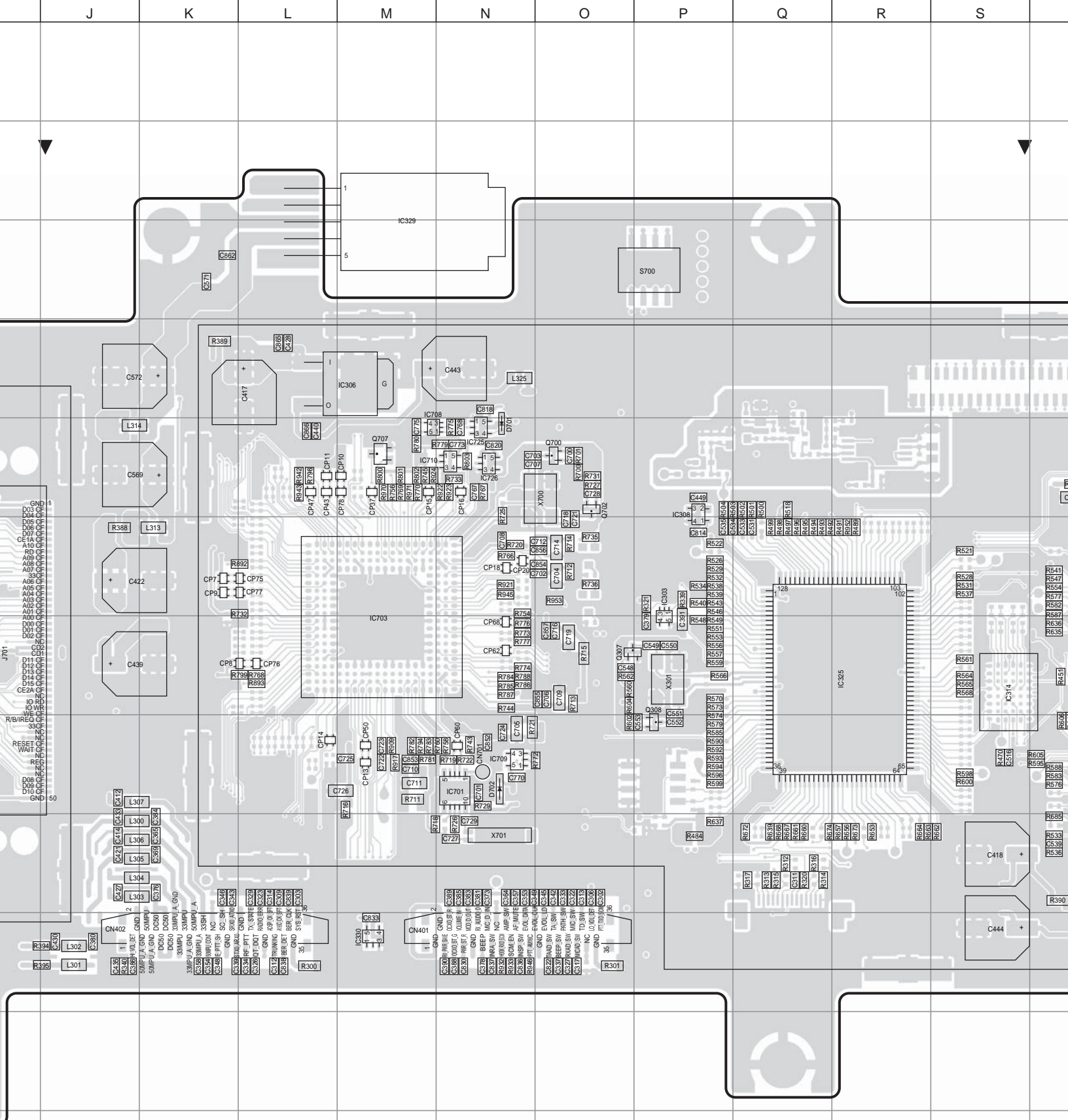
CONTROL UNIT (X53-4140-XX) -10 : K -11 : For service  
Component side view (J79-0332-09)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC303	7P	IC318	7X	IC327	7V	IC710	5N	IC718	6H	Q301	6AA	Q702	5O
IC306	4M	IC319	7X	IC329	3M	IC712	5G	IC722	7G	Q302	6AA	Q704	8C
IC308	5P	IC320	7X	IC330	10M	IC713	6G	IC723	6G	Q304	9V	Q705	8D
IC312	5U	IC321	7Y	IC701	8N	IC714	8H	IC724	5G	Q305	8V	Q707	5M
IC313	8V	IC322	6U	IC703	7M	IC715	8H	IC725	5N	Q307	7O	D300	7AA
IC314	7S	IC324	8U	IC708	5M	IC716	7H	IC726	5N	Q308	8P	D701	5N
IC315	8X	IC325	7R	IC709	8N	IC717	5H	Q300	9Y	Q700	5O	D702	8N

**CONTROL UNIT (X53-4140-XX) -10 : K -11 : For service**  
**Component side view (J79-0332-09)**





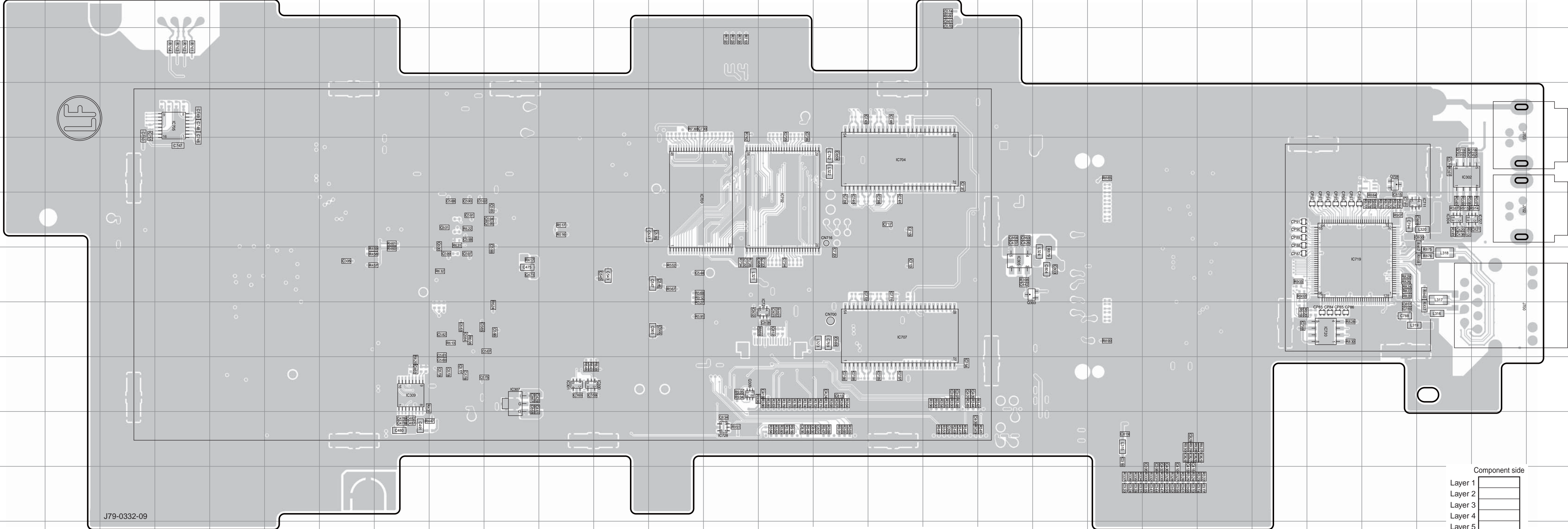
Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC303	7P	IC318	7X	IC327	7V	IC710	5N	IC718	6H	Q301	6AA	Q702	5O
IC306	4M	IC319	7X	IC329	3M	IC712	5G	IC722	7G	Q302	6AA	Q704	8C
IC308	5P	IC320	7X	IC330	10M	IC713	6G	IC723	6G	Q304	9V	Q705	8D
IC312	5U	IC321	7Y	IC701	8N	IC714	8H	IC724	5G	Q305	8V	Q707	5M
IC313	8V	IC323	6U	IC703	7M	IC715	8H	IC725	5N	Q307	7O	D300	7AA
IC314	7S	IC324	8U	IC708	5M	IC716	7H	IC726	5N	Q308	8P	D701	5N
IC315	8X	IC325	7R	IC709	8N	IC717	5H	Q300	9Y	Q700	5O	D702	8N



# NXR-901 PC BOARD

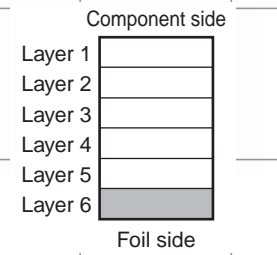
CONTROL UNIT (X53-4140-XX) -10 : K -11 : For service  
Foil side view (J79-0332-09)

CONTROL UNIT (X53-4140-XX) -10 : K -11 : For service  
Foil side view (J79-0332-09)



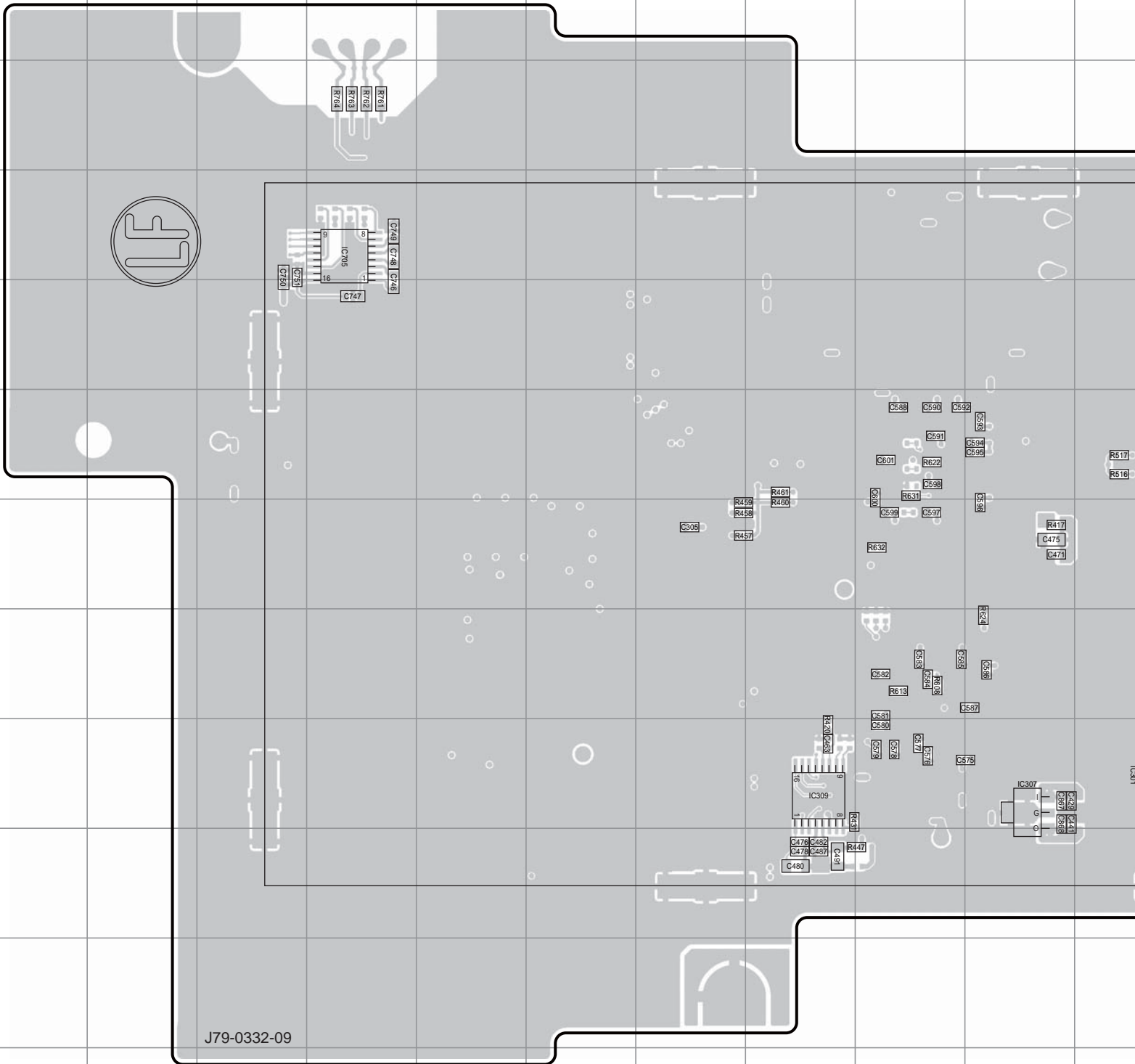
J79-0332-09

Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC300	9K	IC700	6M	IC720	8Y
IC301	9K	IC702	6O	IC721	8O
IC302	5AA	IC704	5Q	IC727	6AB
IC304	6AA	IC705	4D	IC728	10N
IC305	7S	IC707	8Q	Q303	7S
IC307	9J	IC711	6Z	Q309	9N
IC309	9H	IC719	7Y	Q706	5Z

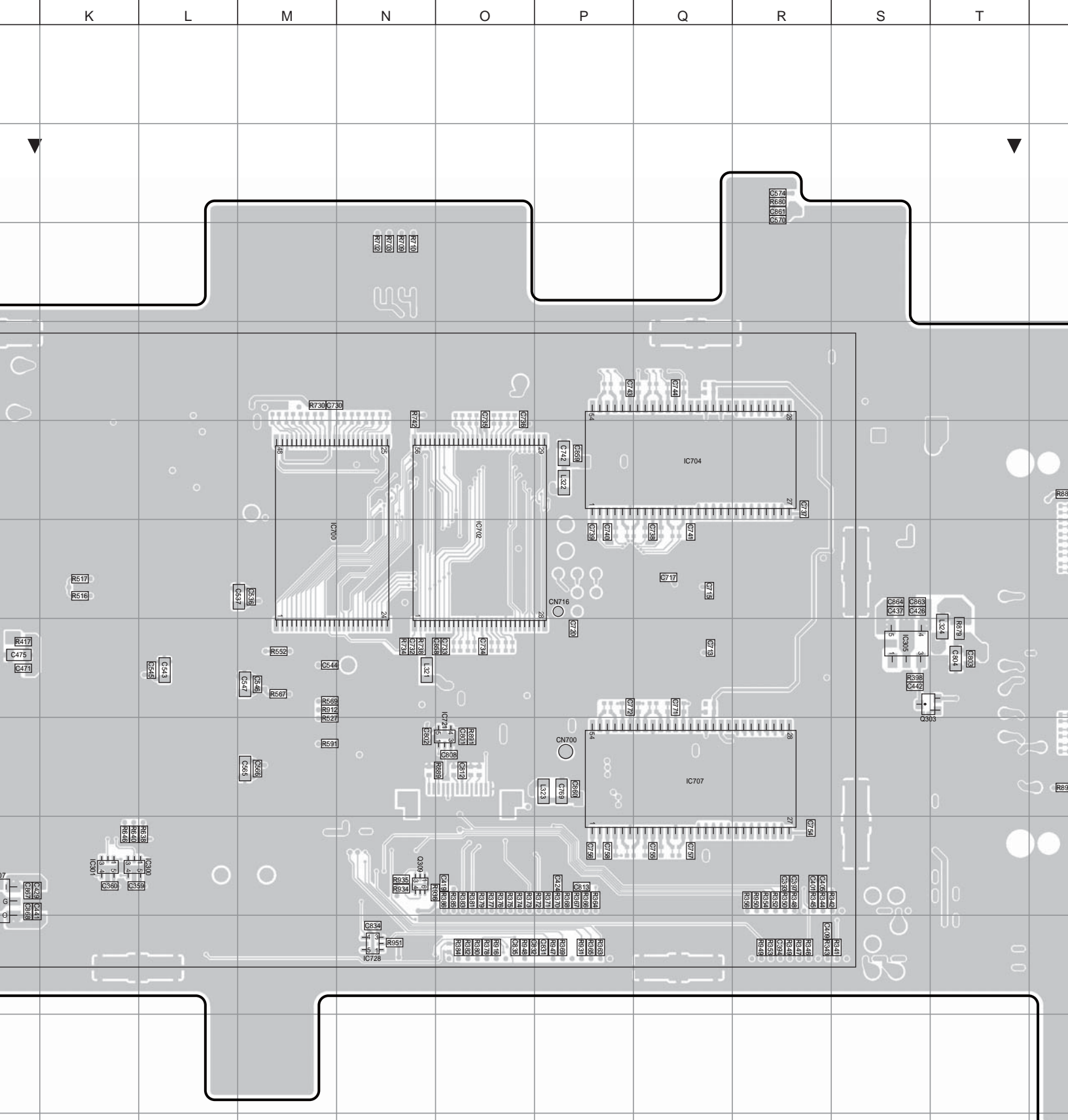


# NXR-901 PC BOARD

CONTROL UNIT (X53-4140-XX) -10 : K -11 : For service  
Foil side view (J79-0332-09)



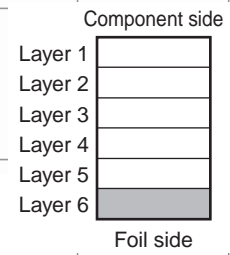
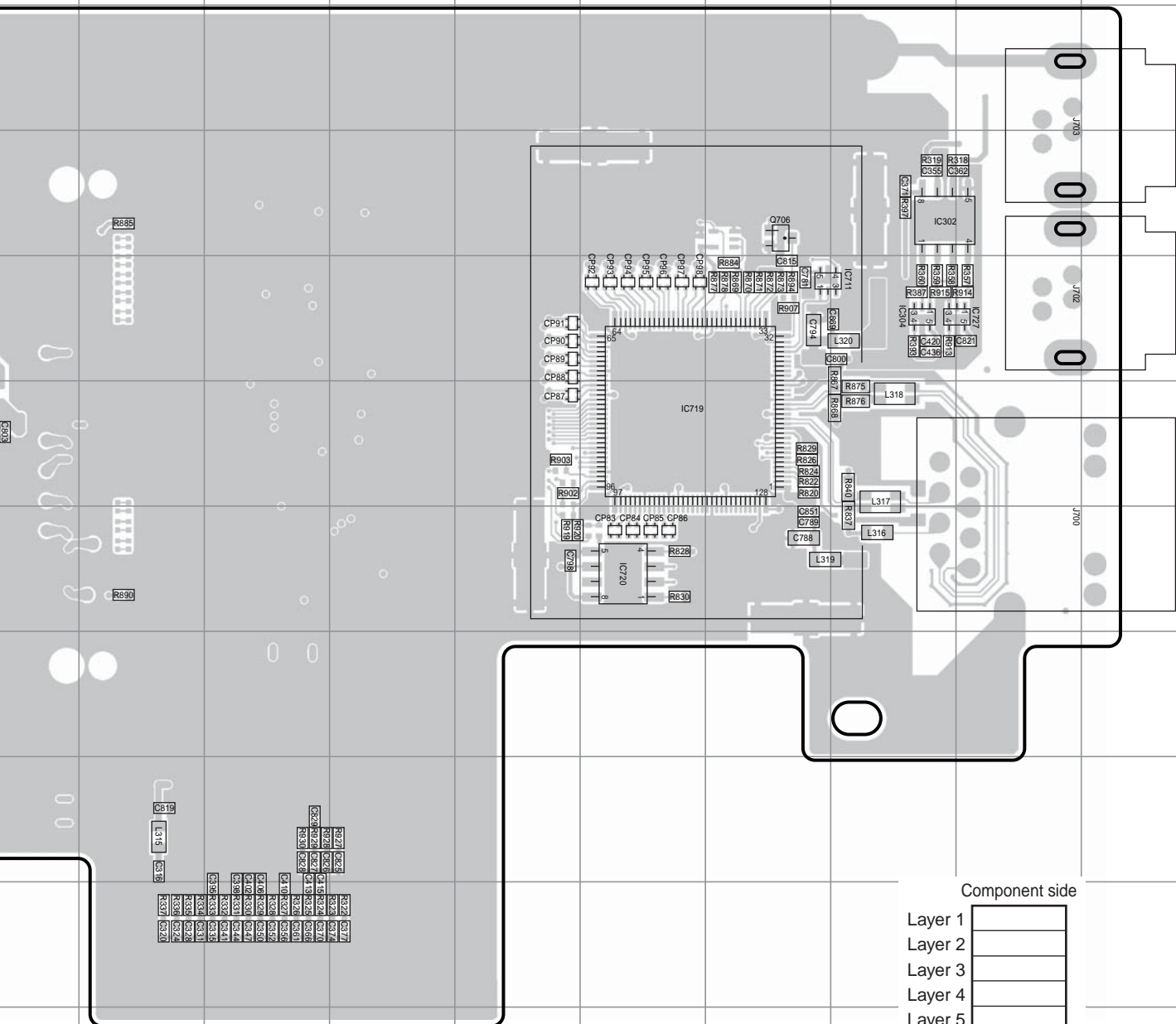
J79-0332-09



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC300	9K	IC700	6M	IC720	8Y
IC301	9K	IC702	6O	IC721	8O
IC302	5AA	IC704	5Q	IC727	6AB
IC304	6AA	IC705	4D	IC728	10N
IC305	7S	IC707	8Q	Q303	7S
IC307	9J	IC711	6Z	Q309	9N
IC309	9H	IC719	7Y	Q706	5Z

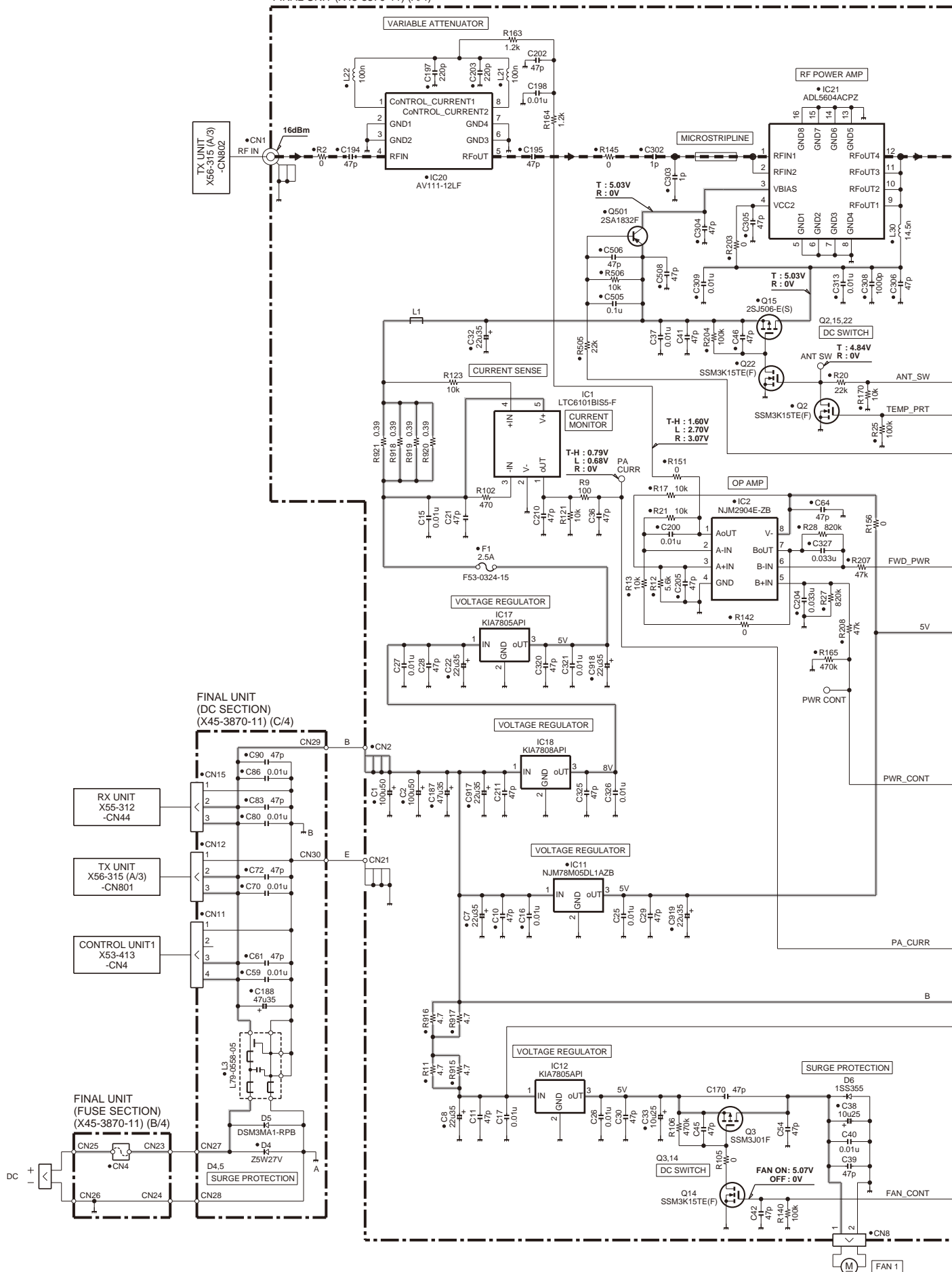


**CONTROL UNIT (X53-4140-XX) -10 : K -11 : For service**  
**Foil side view (J79-0332-09)**



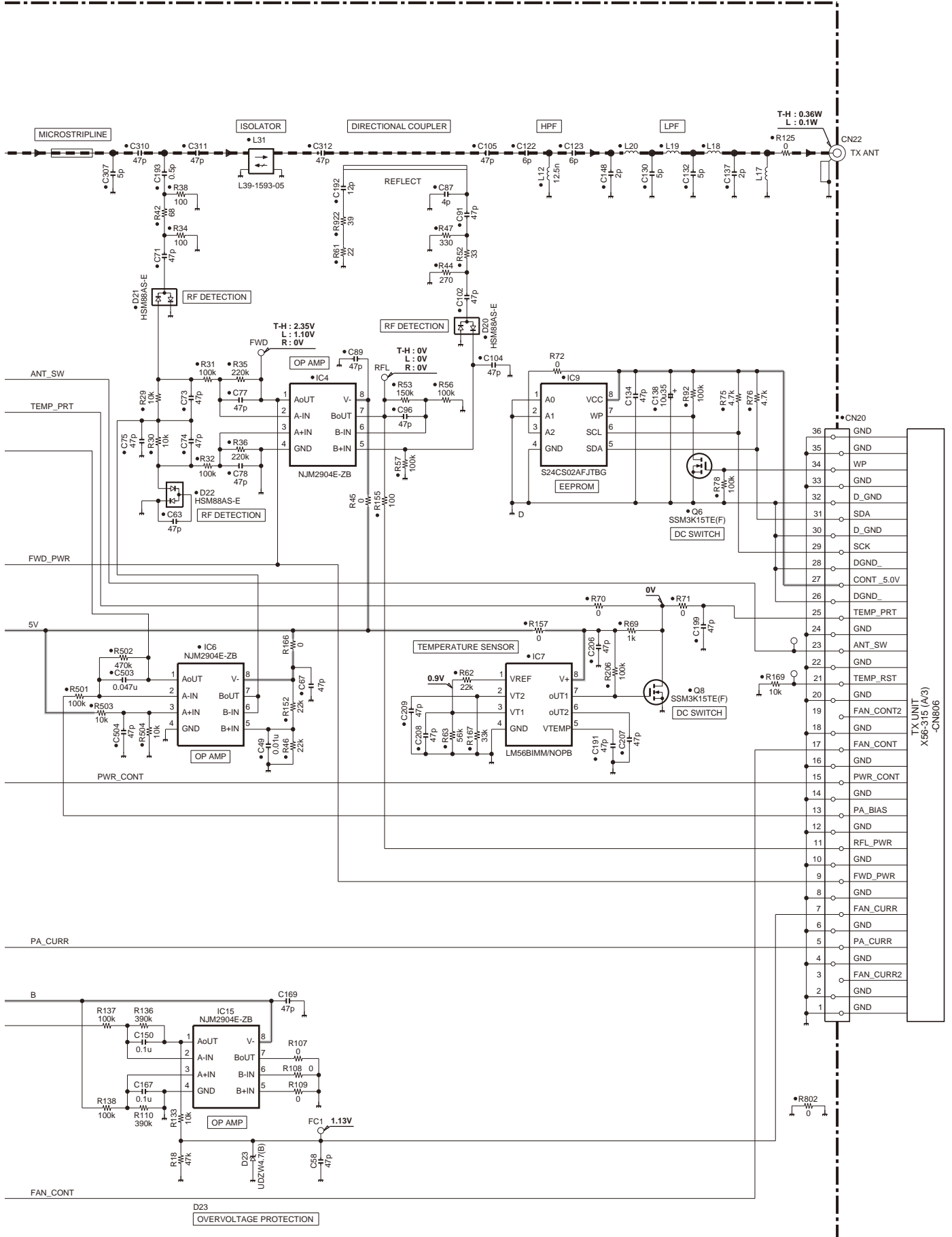
# NXR-901 SCHEMATIC DIAGRAM

FINAL UNIT (X45-3870-11) (A/4)



# SCHEMATIC DIAGRAM NXR-901

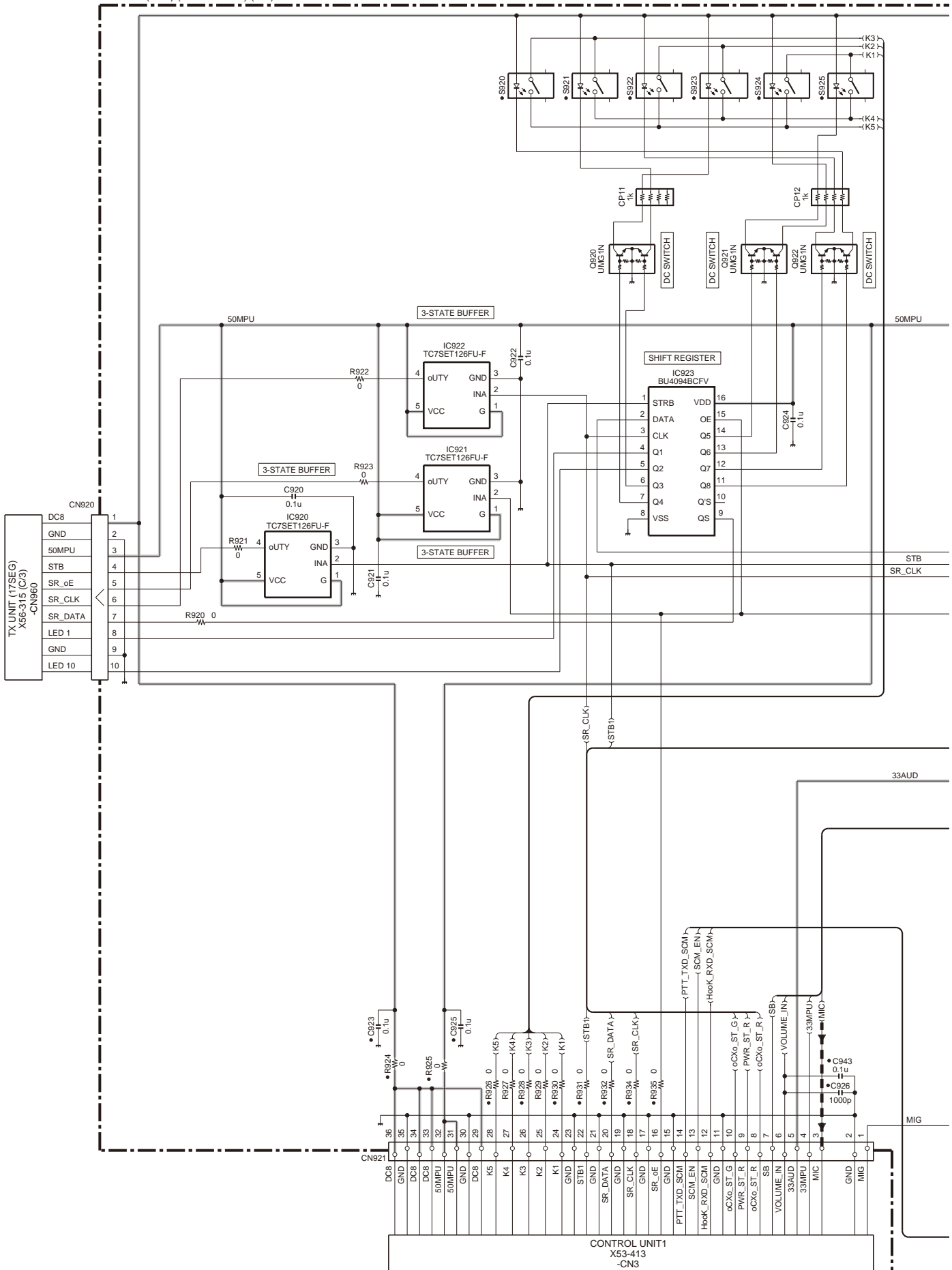
FINAL UNIT (X45-3870-11) (A/4)



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

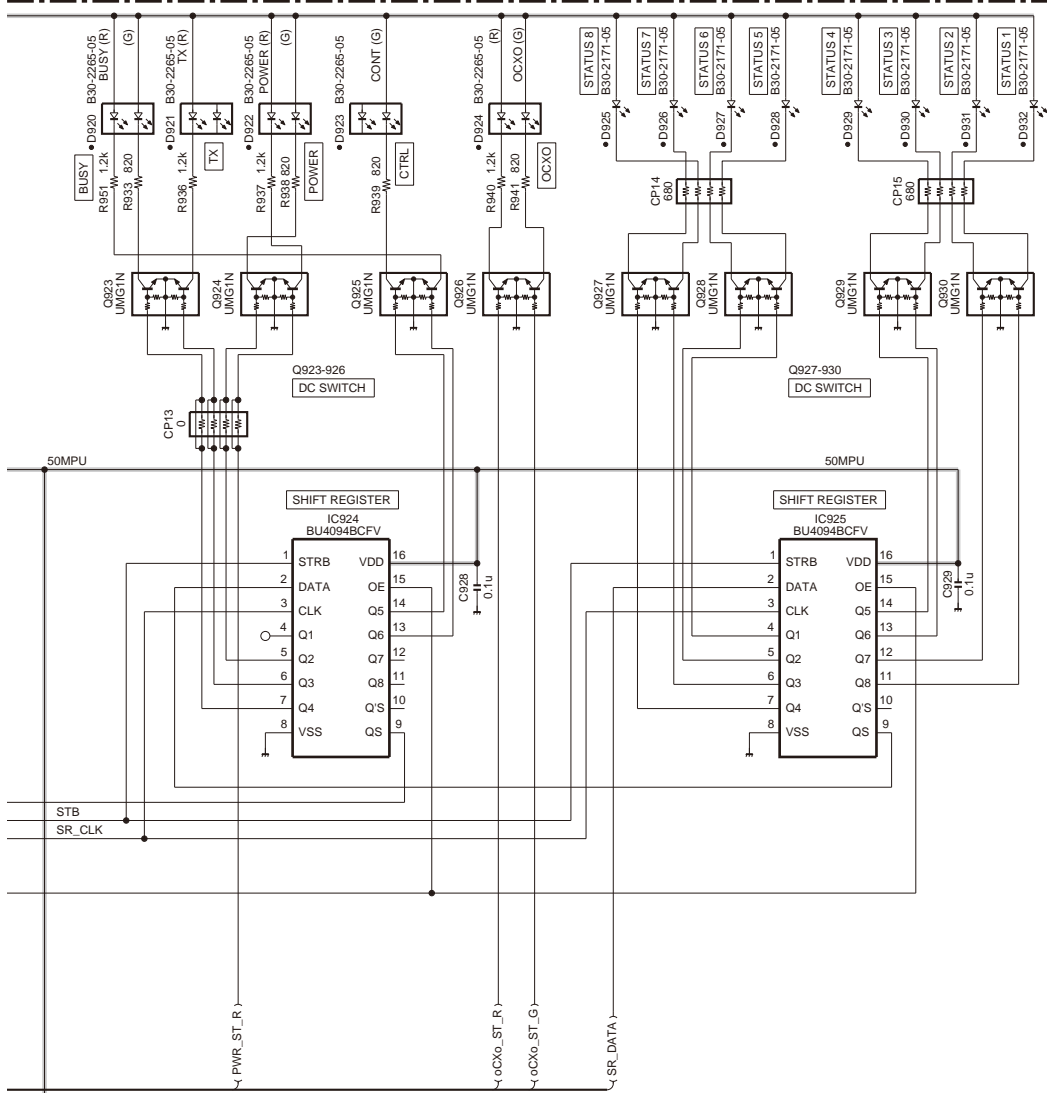
# NXR-901 SCHEMATIC DIAGRAM

TX UNIT (LED) (X56-3150-11) (B/3)

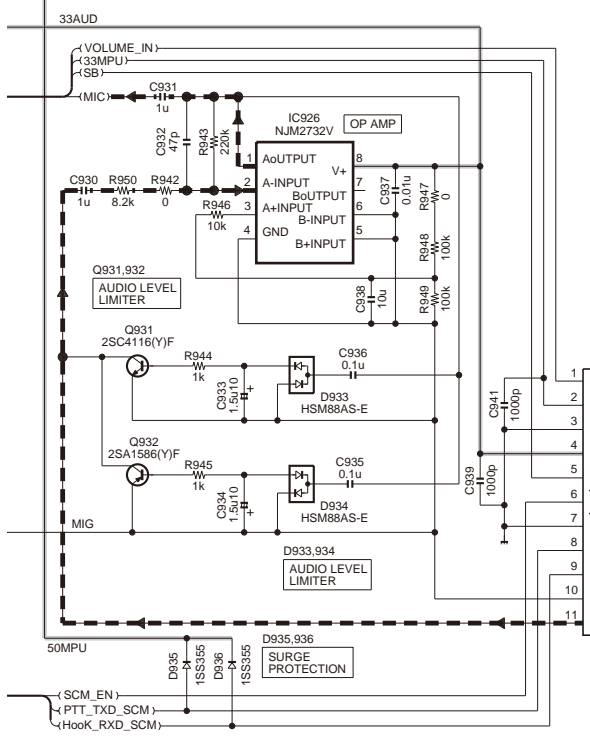


# SCHEMATIC DIAGRAM NXR-901

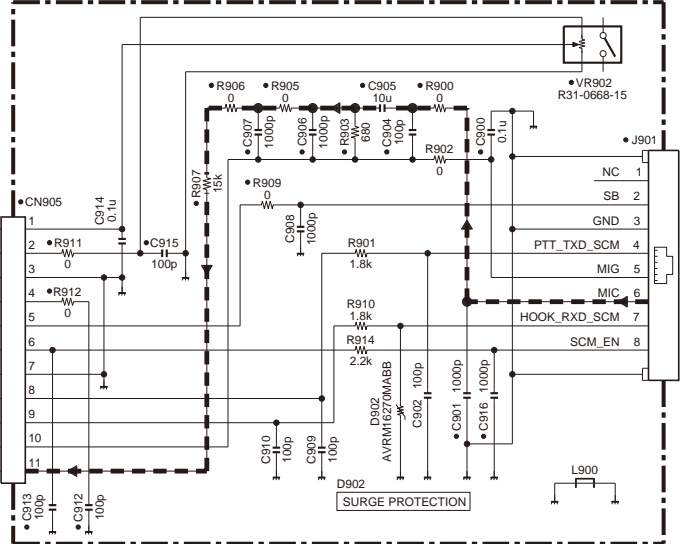
TX UNIT (LED) (X56-3150-11) (B/3)



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

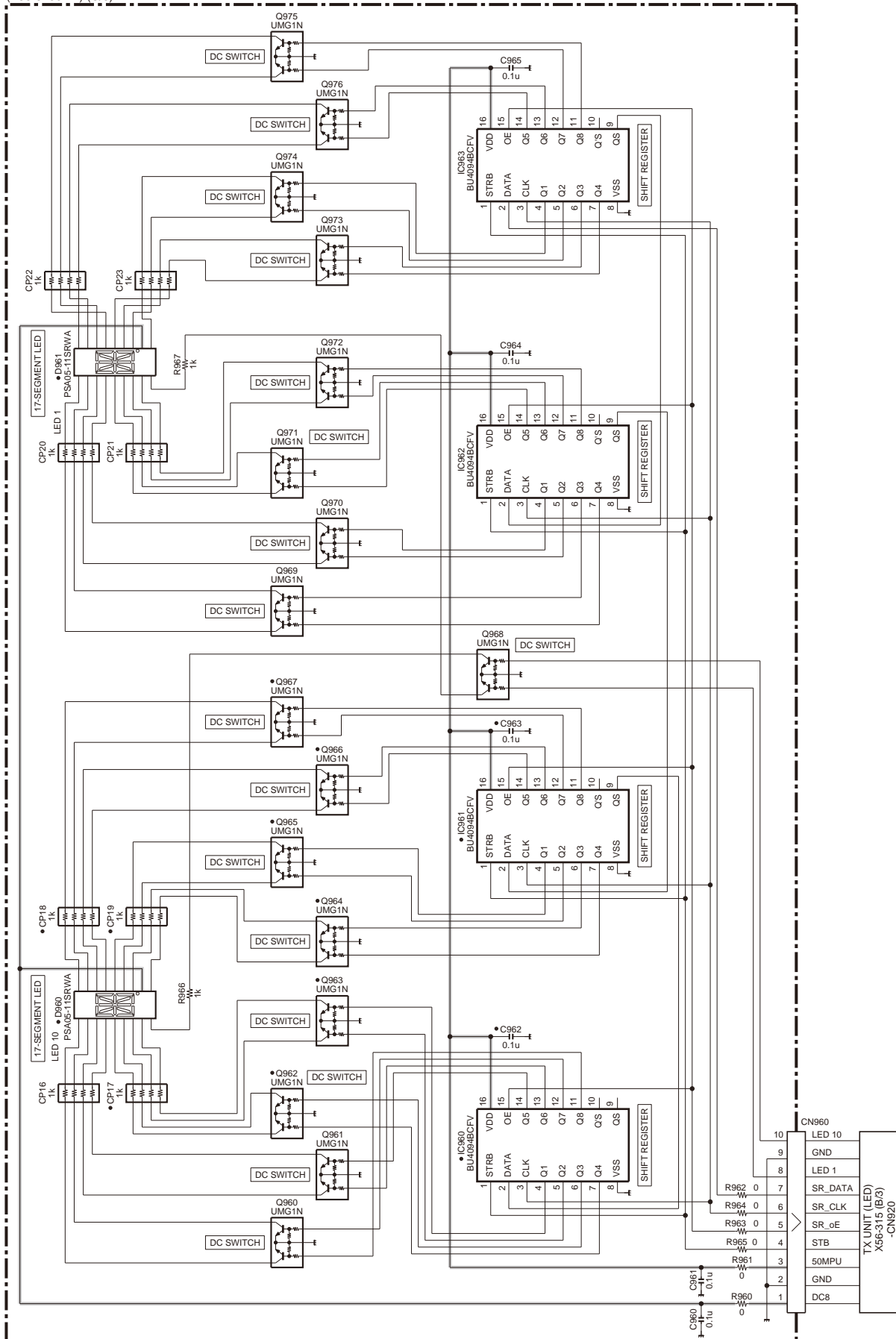


FINAL UNIT (MIC SECTION) (X45-3870-11) (D/4)



# NXR-901 SCHEMATIC DIAGRAM

TX UNIT (17SEG)  
(X56-3150-11) (C/3)



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

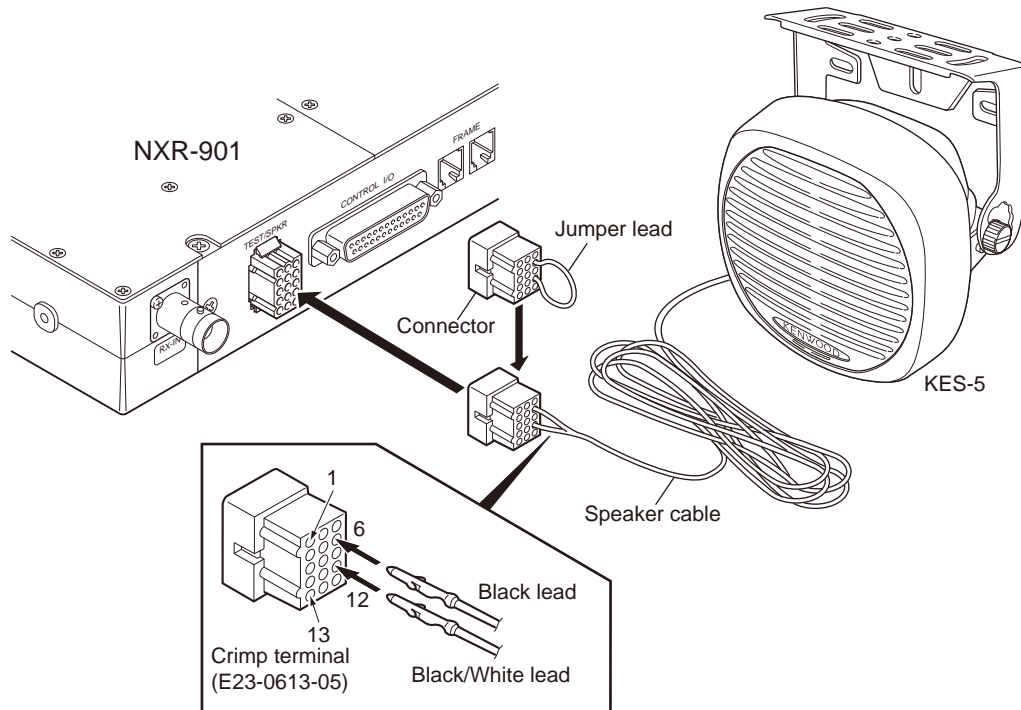
## OPTIONAL ACCESSORIES: KES-5 (EXTERNAL SPEAKER)

### When Using an External Speaker

1. Make sure the unit's power is tuned off.
2. When using the external speaker, remove the jumper lead from the connector, and attach the speaker cable.
3. When not using the external speaker, replace the jumper lead and insert the connector into the speaker jack (pin 9 and 12).

### Specifications

Maximum input power .....	40W
Impedance .....	4Ω
Dimensions (W x H x D) projection not included .....	129 x 129 x 77 mm (5.08 x 5.08 x 3.03 in)
Weight .....	820g (1.8 lb)



# NXR-901

## OPTIONAL ACCESSORIES: KXK-3 (M3) (OCXO UNIT)

### Components Description

#### ■ ACCESSORY UNIT (X42-3280-21)

Ref. No.	Part Name	Description
IC3	IC	Digital potentiometer
IC4	IC	OP AMP
IC6	IC	OP AMP
IC9	IC	Voltage regulator
IC10	IC	Inverter
IC11	IC	EEPROM
IC12	IC	IC ADC
IC13	IC	Voltage regulator
Q2~4	FET	DC switch
Q5,6	Transistor	RF AMP
Q13~17	FET	DC switch
D5	Diode	DC switch
D8	Diode	Detector

### Parts List

\* New Parts.

Ref. No.	Address	New parts	Parts No.	Description	Destination
<b>KXK-3 (M3)</b>					
		*	B62-2420-00	INSTRUCTION MANUAL	
			E31-3269-15	LEAD WIRE WITH MINIPIN PLUG	
		*	E37-1405-05	FLAT CABLE	
		*	E37-1406-05	LEAD WIRE WITH CONNECTOR	
			N67-3008-48	PAN HEAD SEMS SCREW	
			490-0174-05	ADHESIVE TAPE	
<b>ACCESSORY UNIT (X42-3280-21)</b>					
C1 -4			CK73GB1H471K	CHIP C 470PF K	
C5			CK73GB1H104K	CHIP C 0.10UF K	
C6			CK73GB1H471K	CHIP C 470PF K	
C7			CK73GB1H102K	CHIP C 1000PF K	
C8			CK73GB1H471K	CHIP C 470PF K	
C10			CK73GB1H471K	CHIP C 470PF K	
C12			CK73GB1H103K	CHIP C 0.010UF K	
C13			CK73GB1H104K	CHIP C 0.10UF K	
C14			CC73GCH1H090B	CHIP C 9.0PF B	
C16 -19			CK73GB1H104K	CHIP C 0.10UF K	
C20			CK73GB1H471K	CHIP C 470PF K	
C21 ,22			CK73GB1H104K	CHIP C 0.10UF K	
C24			CC73GCH1H030B	CHIP C 3.0PF B	
C26			CK73GB1H471K	CHIP C 470PF K	
C27			CK73GB1H103K	CHIP C 0.010UF K	

Ref. No.	Address	New parts	Parts No.	Description	Destination
C28			CK73GB1H104K	CHIP C 0.10UF K	
C29			CC73GCH1H060B	CHIP C 6.0PF B	
C30			CE32AU1C330M	CHIP EL 33UF 16WV	
C31			CK73GB1H104K	CHIP C 0.10UF K	
C33			CK73GB1H104K	CHIP C 0.10UF K	
C35			CK73GB1H104K	CHIP C 0.10UF K	
C36 -39			CK73GB1H471K	CHIP C 470PF K	
C46			CC73GCH1H820J	CHIP C 82PF J	
C47			CK73GB1H104K	CHIP C 0.10UF K	
C54			CK73GB1H104K	CHIP C 0.10UF K	
C56			CK73GB1H104K	CHIP C 0.10UF K	
C59			CK73GB1H104K	CHIP C 0.10UF K	
C61			CC73GCH1H560J	CHIP C 56PF J	
C62			CK73GB1H104K	CHIP C 0.10UF K	
C63			CC73GCH1H391J	CHIP C 390PF J	
C64			CK73GB1H104K	CHIP C 0.10UF K	
C71			CC73GCH1H101J	CHIP C 100PF J	
C72			CC73GCH1H270J	CHIP C 27PF J	
C73			CC73GCH1H101J	CHIP C 100PF J	
C80			CK73GB1H104K	CHIP C 0.10UF K	
C81			CC73GCH1H050B	CHIP C 5.0PF B	
C82			CC73GCH1H1R5B	CHIP C 1.5PF B	
C84			CC73GCH1H220J	CHIP C 22PF J	
C86			CK73GB1E105K	CHIP C 1.0UF K	
C87 ,88			CK73GB1H471K	CHIP C 470PF K	
C89			CC73GCH1H101J	CHIP C 100PF J	
C90			CK73GB1H104K	CHIP C 0.10UF K	
C91			CK73GB1H103K	CHIP C 0.010UF K	
C93			CK73GB1H104K	CHIP C 0.10UF K	
C94			CK73GB1H103K	CHIP C 0.010UF K	
C95 ,96			CS77CC1C100M	CHIP TINTL 10UF 16WV	
C97			CK73GB1H104K	CHIP C 0.10UF K	
C99			CK73GB1H103K	CHIP C 0.010UF K	
C100,101			CK73GB1H104K	CHIP C 0.10UF K	
C102,103			CK73GB1H471K	CHIP C 470PF K	
C104			CK73GB1H103K	CHIP C 0.010UF K	
C105			CK73GB1H104K	CHIP C 0.10UF K	
C106			CK73GB1H471K	CHIP C 470PF K	
C107			CK73GB1E105K	CHIP C 1.0UF K	
C110			CK73GB1H471K	CHIP C 470PF K	
C111			CK73GB1E105K	CHIP C 1.0UF K	
CN1			E40-6822-05	FLAT CABLE CONNECTOR(13P)	
CN2			E04-0154-05	PIN SOCKET	
CN3			E41-2671-05	PIN ASSY(2P)	
F1			F53-0324-15	FUSE(2.5A)	
L4			L41-2205-33	SMALL FIXED INDUCTOR(22UH)	
L5			L41-1205-33	SMALL FIXED INDUCTOR(12UH)	
L6			L41-1505-33	SMALL FIXED INDUCTOR(15UH)	
L8			L41-2205-33	SMALL FIXED INDUCTOR(22UH)	
L10			L41-3305-33	SMALL FIXED INDUCTOR(33UH)	
L15			L41-3305-33	SMALL FIXED INDUCTOR(33UH)	
L17		*	L41-2292-28	SMALL FIXED INDUCTOR(2.2UH)	
L19			L41-2295-33	SMALL FIXED INDUCTOR(2.2UH)	
L20			L41-6885-33	SMALL FIXED INDUCTOR(0.68UH)	
L21			L41-5685-33	SMALL FIXED INDUCTOR(0.56UH)	
X1		*	L77-3076-05	OCXO(10MHZ)	
R1 -3			RK73GB2A474J	CHIP R 470K J 1/10W	



## OPTIONAL ACCESSORIES: KXK-3 (M3) (OCXO UNIT)

### ACCESSORY UNIT (X42-3280-21)

Ref. No.	Address	New parts	Parts No.	Description	Destination
R4 -6			RK73GB2A471J	CHIP R 470 J 1/10W	
R10			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R12 ,13			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R15			RK73GB2A104J	CHIP R 100K J 1/10W	
R16			RK73GB2A000J	CHIP R 0 J 1/10W	
R17			RK73GB2A474J	CHIP R 470K J 1/10W	
R19			RK73GB2A221J	CHIP R 220 J 1/10W	
R20			RK73GB2A101J	CHIP R 100 J 1/10W	
R21			RK73GB2A103J	CHIP R 10K J 1/10W	
R22			RK73GB2A562J	CHIP R 5.6K J 1/10W	
R23			RK73GB2A470J	CHIP R 47 J 1/10W	
R24			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R25			RK73GB2A331J	CHIP R 330 J 1/10W	
R26			R92-3475-05	CHIP R 0.27 F 1/2W	
R27			RK73GB2A105J	CHIP R 1.0M J 1/10W	
R28			RK73GB2A101J	CHIP R 100 J 1/10W	
R29			RK73GB2A103J	CHIP R 10K J 1/10W	
R30			RK73GB2A181J	CHIP R 180 J 1/10W	
R31			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R32			RK73GB2A104J	CHIP R 100K J 1/10W	
R33			RK73GB2A473J	CHIP R 47K J 1/10W	
R34			RK73GB2A153J	CHIP R 15K J 1/10W	
R36			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R43			RK73GB2A332J	CHIP R 3.3K J 1/10W	
R55			RK73GB2A180J	CHIP R 18 J 1/10W	
R59 ,60			RK73GB2A821J	CHIP R 820 J 1/10W	
R62			RK73GB2A332J	CHIP R 3.3K J 1/10W	
R63 ,64			RK73GB2A331J	CHIP R 330 J 1/10W	
R67			RK73GB2A101J	CHIP R 100 J 1/10W	
R68			RK73GB2A103J	CHIP R 10K J 1/10W	
R69			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R72			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R73			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R74			RK73GB2A104J	CHIP R 100K J 1/10W	
R75			RK73GB2A223J	CHIP R 22K J 1/10W	

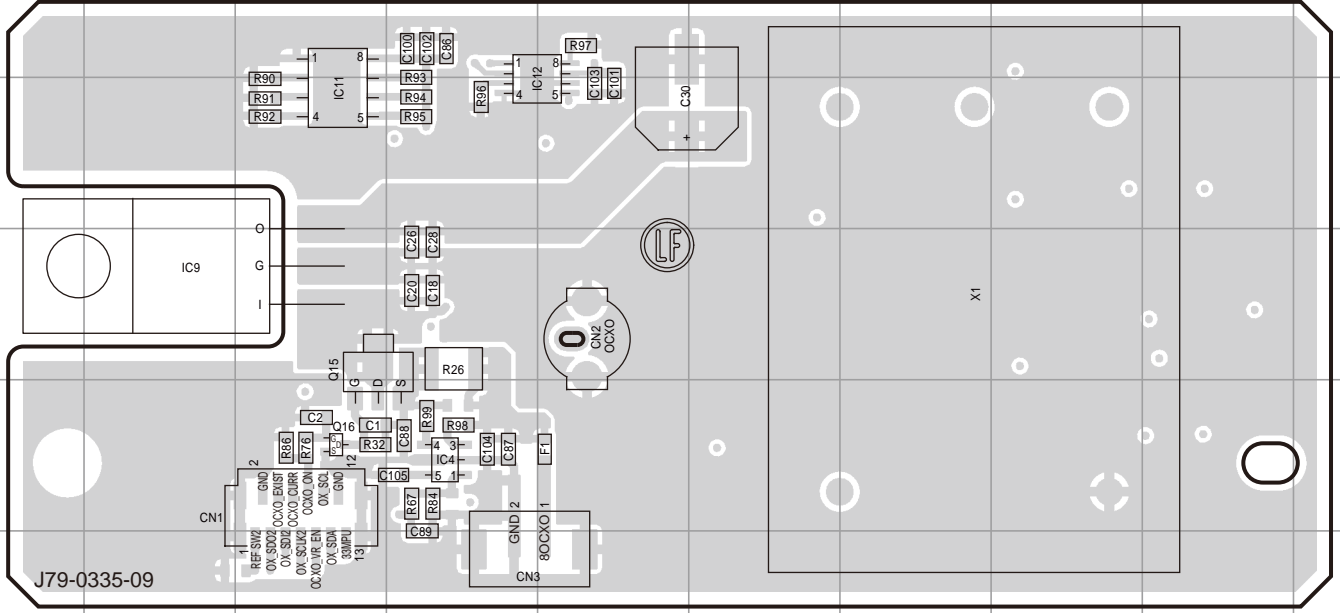
Ref. No.	Address	New parts	Parts No.	Description	Destination
R76			RK73GB2A471J	CHIP R 470 J 1/10W	
R77			RK73GB2A470J	CHIP R 47 J 1/10W	
R78 ,79			RK73GB2A104J	CHIP R 100K J 1/10W	
R80			RK73GB2A471J	CHIP R 470 J 1/10W	
R81			RK73GB2A000J	CHIP R 0 J 1/10W	
R82 ,83			RK73GB2A104J	CHIP R 100K J 1/10W	
R84			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R85			RK73GB2A000J	CHIP R 0 J 1/10W	
R86			RK73GB2A104J	CHIP R 100K J 1/10W	
R87			RK73GB2A100J	CHIP R 10 J 1/10W	
R88 ,89			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R90 -92			RK73GB2A000J	CHIP R 0 J 1/10W	
R93 -95			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R96 ,97			RK73GB2A103J	CHIP R 10K J 1/10W	
R98 ,99			RK73GB2A561J	CHIP R 560 J 1/10W	
R100			RK73GB2A221J	CHIP R 220 J 1/10W	
D5			JDP4P02U	DIODE	
D8			HSM88AS-E	DIODE	
IC3		*	AD5231BRU10	MOS-IC	
IC4			LTC6101BIS5-F	ANALOGUE IC	
IC6			TC75S59F-F	MOS-IC	
IC9			KIA7805API	BI-POLAR IC	
IC10			TC7SHU04F-F	MOS-IC	
IC11			S24CS02AFJTBG	ROM IC	
IC12		*	AD7418ARMZ	ANALOGUE IC	
IC13		*	ADR395AUJZ	ANALOGUE IC	
Q2 -4			SSM3K15TE(F)	FET	
Q5 ,6			2SC4617(R)	TRANSISTOR	
Q13			SSM6L05FU-F	FET	
Q14			SSM3K15TE(F)	FET	
Q15			2SJ484	FET	
Q16 ,17			SSM3K15TE(F)	FET	

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

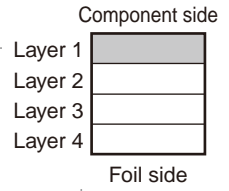
# NXR-901 OPTIONAL ACCESSORIES : KXK-3 (M3)(OCXO UNIT)

## PC Board

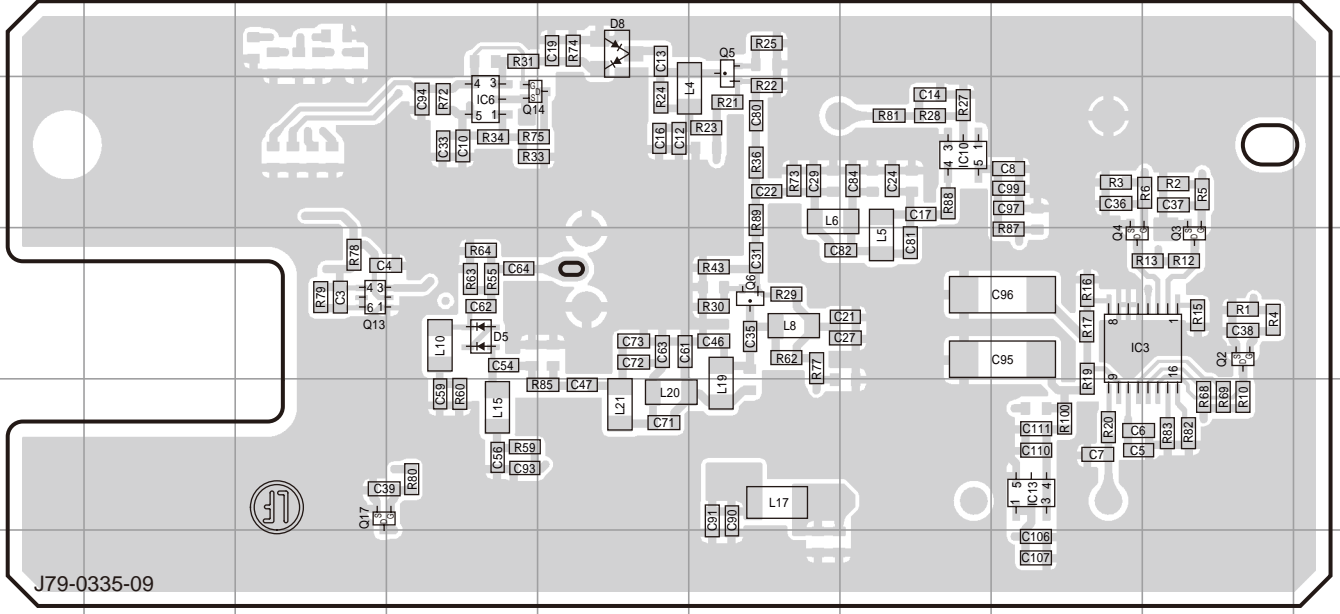
### ACCESSORY UNIT (X42-3280-21) Component side view (J79-0335-09)



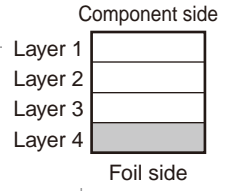
Ref. No.	Address	Ref. No.	Address
IC4	5D	IC12	3D
IC9	4B	Q15	4C
IC11	3C	Q16	5C



### ACCESSORY UNIT (X42-3280-21) Foil side view (J79-0335-09)

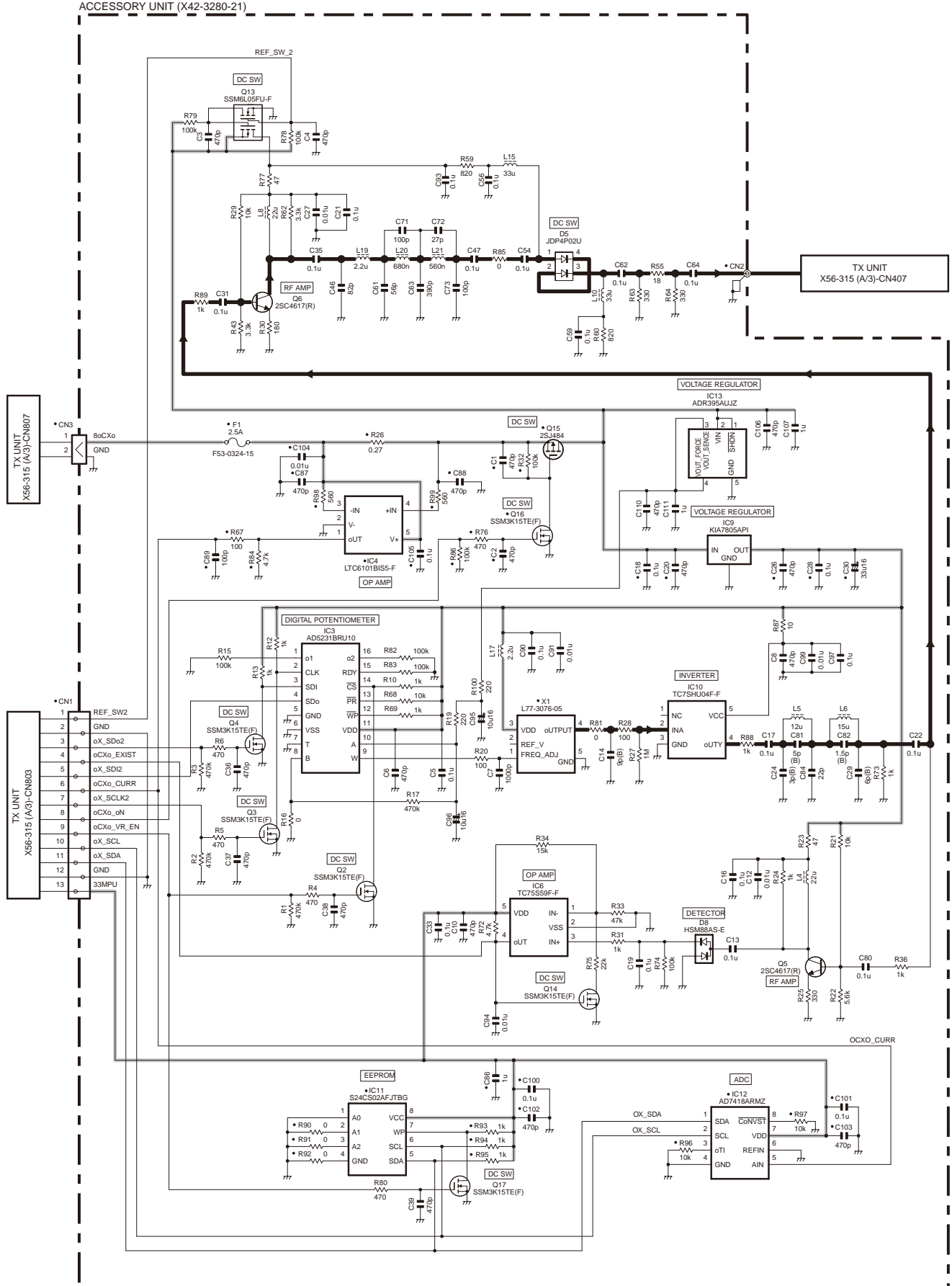


Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC3	10I	Q2	10I	Q6	10F	D5	10D
IC6	9D	Q3	10I	Q13	10C	D8	8E
IC10	9G	Q4	10H	Q14	9D		
IC13	11H	Q5	8F	Q17	11C		



# OPTIONAL ACCESSORIES: KXK-3(M3) (OCXO UNIT) NXR-901

## Schematic Diagram



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

# NXR-901

## SPECIFICATIONS

### GENERAL

Frequency Range	
RX.....	896~902MHz
TX.....	935~941MHz
Channel Spacing	
Analog.....	12.5kHz
Digital.....	6.25/12.5kHz
PLL Channel Step.....	3.125/ 6.25kHz
Frequency Stability.....	±0.5ppm
with KXK-3 (M3).....	±0.1ppm
Operating Voltage.....	10.8~15.9V DC
Operating Temperature Range	
.....	-22°F~+140°F (-30°C~+60°C)
Antenna Impedance.....	50Ω
Dimensions (W x H x D) (Projections not included)	
.....	19.02 x 1.73 x 13.03 in (483 x 44 x 331 mm)
Weight.....	11 lb (5kg)

### TRANSMITTER

RF Power Output.....	100~360mW
Spurious & Harmonics.....	73dB
FM Hum & Noise (Analog).....	45dB
Audio Distortion.....	Less than 1% at 1000Hz
Modulation	
Narrow.....	11K0F3E, 8K30F1E, 8K30F1D, 8K30F7W
VN.....	4K00F1E, 4K00F1D, 4K00F7W, 4K00F2D

### RECEIVER

Sensitivity	
Digital@6.25kHz (3% BER).....	0.27μV
Digital@12.5kHz (3% BER).....	0.33μV
Analog (12dB SINAD).....	0.30μV
Selectivity (Analog) *1.....	73dB
FM Hum & Noise (Analog).....	50dB
Intermodulation Distortion (±50kHz/±100kHz).....	82dB
Spurious Response.....	93dB
Audio Distortion (EXT. SP).....	Less than 2% (at 0.3W)
Audio Output (EXT. SP)	
.....	3W (at 4Ω, less than 5% distortion)

\*1: Analog measurements made per TIA/EIA 603 and specifications shown are typical.

Without \*1: Analog measurements made per TIA/EIA 603A.

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

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Talavera Business Park Building A, 4 Talavera Road,  
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### 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

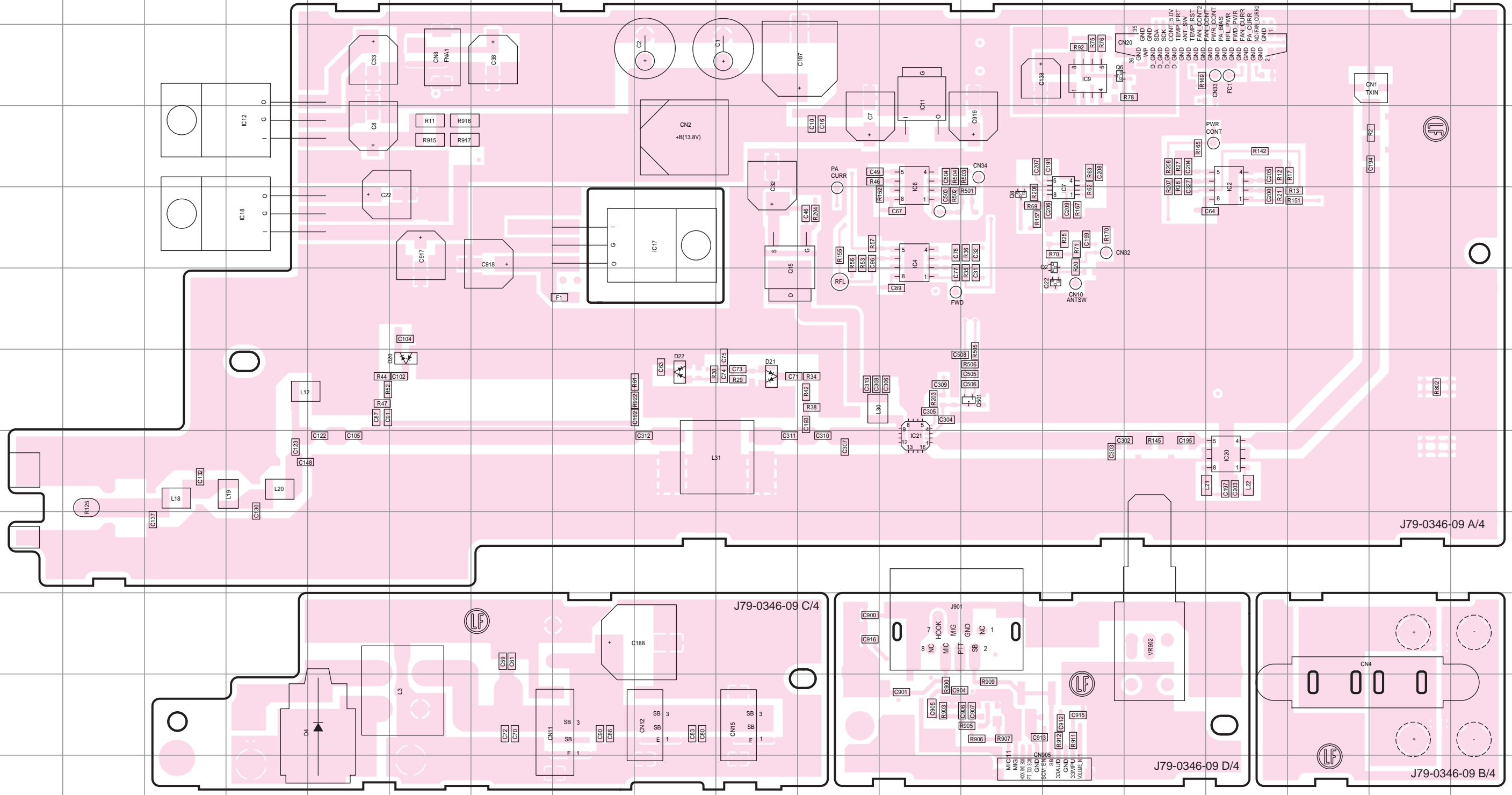
1 Ang Mo Kio Street 63, Singapore 569110

# NXR-901 PC BOARD

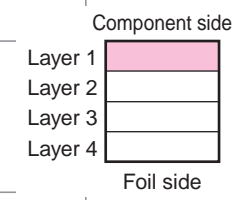
# PC BOARD NXR-901

FINAL UNIT (X45-3870-11)  
Component side view (J79-0346-09)

FINAL UNIT (X45-3870-11)  
Component side view (J79-0346-09)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC2	4P	IC11	3L	IC21	8L	Q22	6N	D22	7I
IC4	5L	IC12	4D	Q2	5N	Q501	7M		
IC6	4L	IC17	5I	Q6	3N	D4	11E		
IC7	5N	IC18	5D	Q8	5M	D20	7F		
IC9	3N	IC20	8P	Q15	6J	D21	7J		

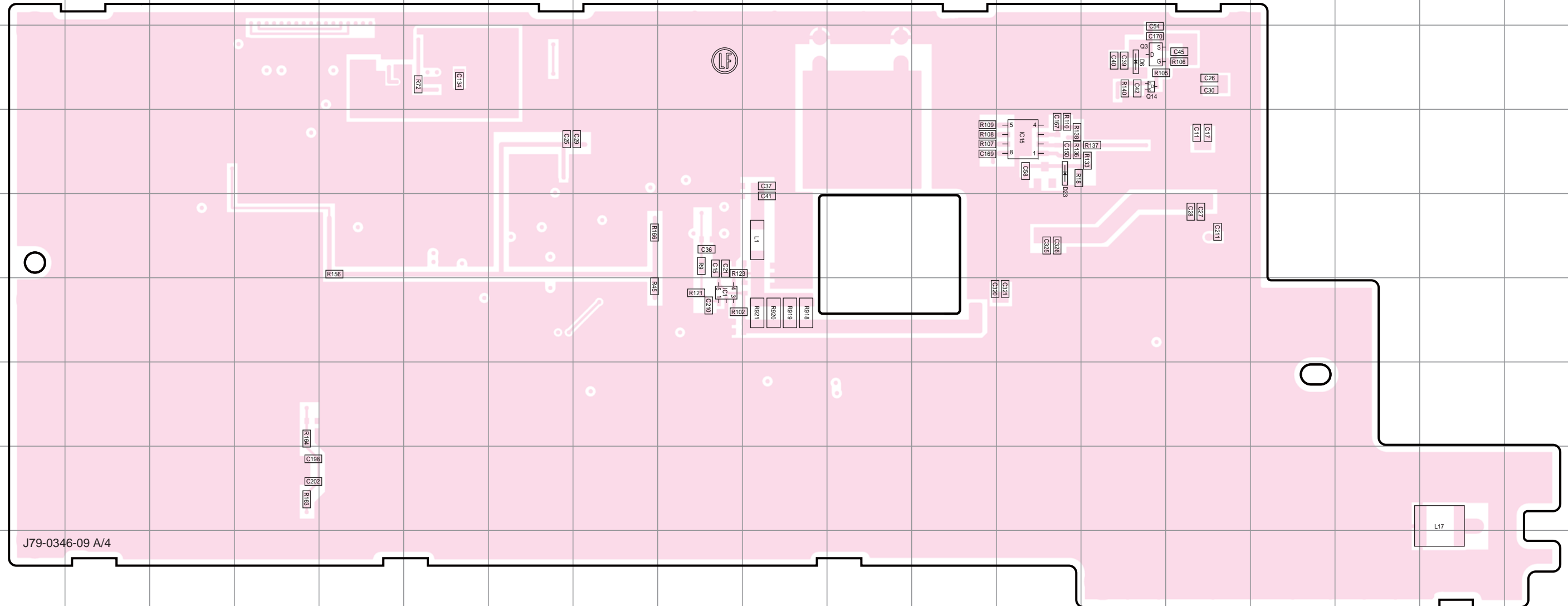


# NXR-901 PC BOARD

# PC BOARD NXR-901

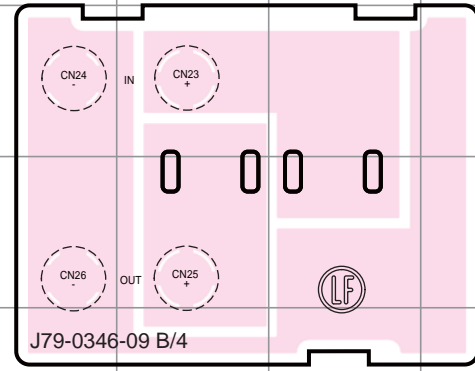
FINAL UNIT (X45-3870-11)  
Foil side view (J79-0346-09)

FINAL UNIT (X45-3870-11)  
Foil side view (J79-0346-09)

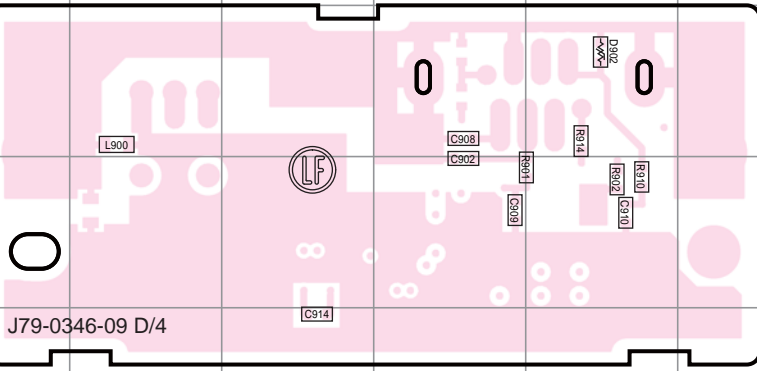


J79-0346-09 A/4

J79-0346-09 C/4

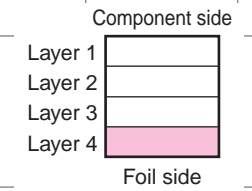


J79-0346-09 B/4



J79-0346-09 D/4

Ref. No.	Address	Ref. No.	Address
IC1	6I	D5	11O
IC15	4M	D6	3N
Q3	3N	D23	4M
Q14	3N	D902	10H

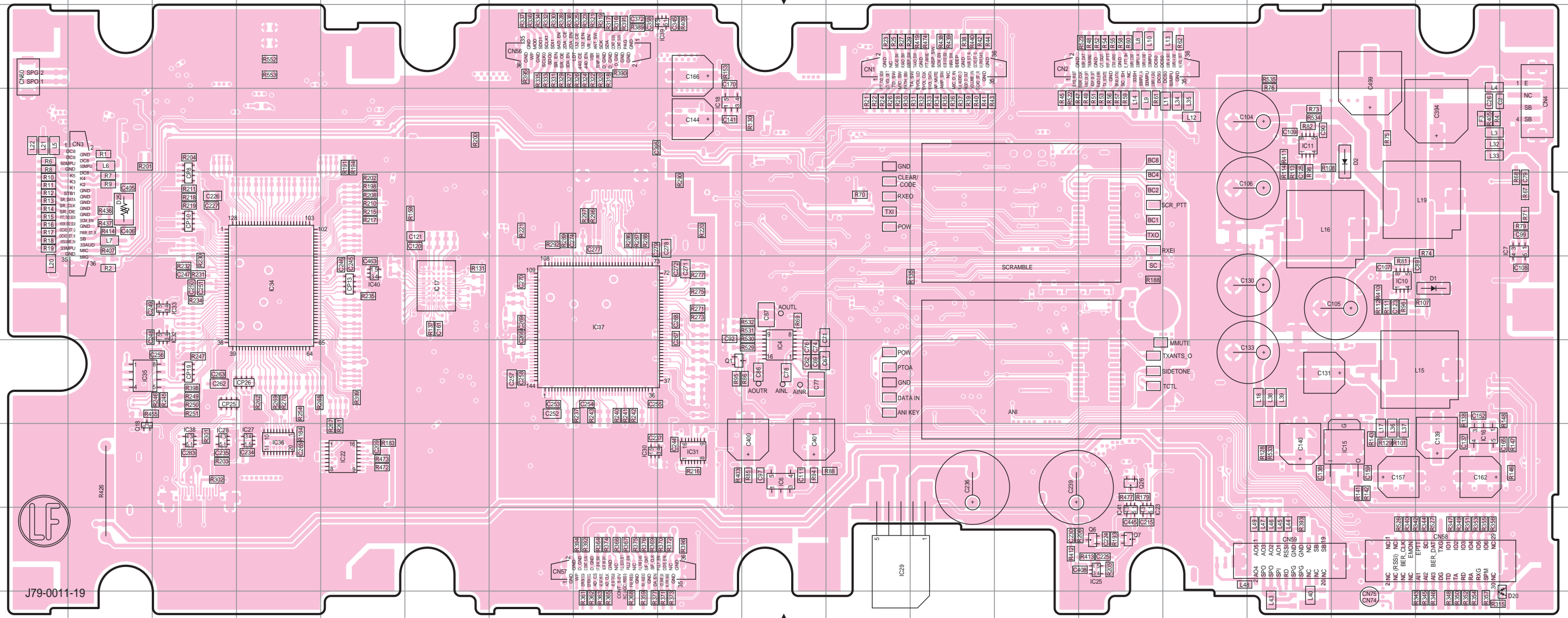


# NXR-901 PC BOARD

# PC BOARD NXR-901

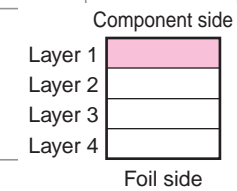
CONTROL UNIT (X53-4132-XX) -71 : K -72 : For service  
Component side view (J79-0011-19)

CONTROL UNIT (X53-4132-XX) -71 : K -72 : For service  
Component side view (J79-0011-19)



J79-0011-19

Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC4	7J	IC22	8E	IC33	6C	Q1	7I
IC6	8J	IC23	9N	IC34	6D	Q6	9N
IC7	5S	IC25	9N	IC35	7B	Q7	9N
IC10	6Q	IC27	8D	IC36	8D	Q18	8B
IC11	4P	IC28	8C	IC37	6H	Q26	8N
IC15	8Q	IC29	9K	IC38	8C	D1	6R
IC16	8R	IC30	8H	IC39	3I	D2	4Q
IC17	6F	IC31	8I	IC40	6E	D20	10S
IC18	4I	IC32	6C	IC41	9N	D25	5B

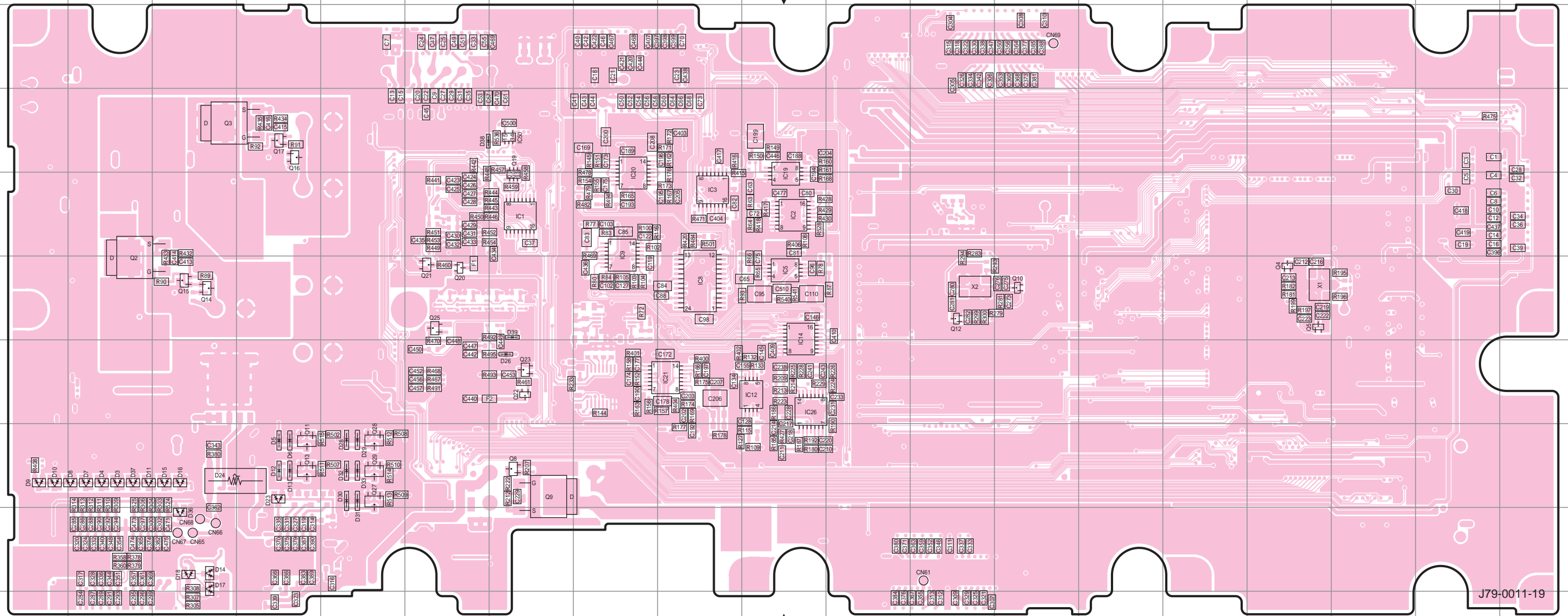


# NXR-901 PC BOARD

# PC BOARD NXR-901

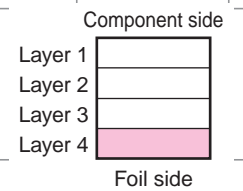
CONTROL UNIT (X53-4132-XX) -71 : K -72 : For service  
Foil side view (J79-0011-19)

CONTROL UNIT (X53-4132-XX) -71 : K -72 : For service  
Foil side view (J79-0011-19)



J79-0011-19

Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC1	5G	Q2	6B	Q17	4D	D6	8D	D23	8D
IC2	5J	Q3	4C	Q19	5G	D7	8B	D24	8C
IC3	5I	Q4	6P	Q20	6F	D8	8B	D26	7G
IC5	6J	Q5	6P	Q21	6F	D9	8A	D28	8E
IC8	6I	Q8	8G	Q22	7G	D10	8A	D29	8E
IC9	5H	Q9	8G	Q23	7G	D11	8B	D30	8E
IC12	7J	Q10	6M	Q25	6F	D12	8D	D31	8E
IC14	6J	Q11	8D	Q27	8E	D13	8D	D32	8E
IC19	5J	Q12	6L	Q28	8E	D14	9C	D33	8E
IC20	5H	Q13	8D	Q29	8E	D15	8C	D36	9C
IC21	7I	Q14	6C	D3	8B	D16	8C	D37	8B
IC26	7J	Q15	6C	D4	8B	D17	9C	D38	4F
IC50	4G	Q16	4D	D5	8D	D18	9C	D39	6G



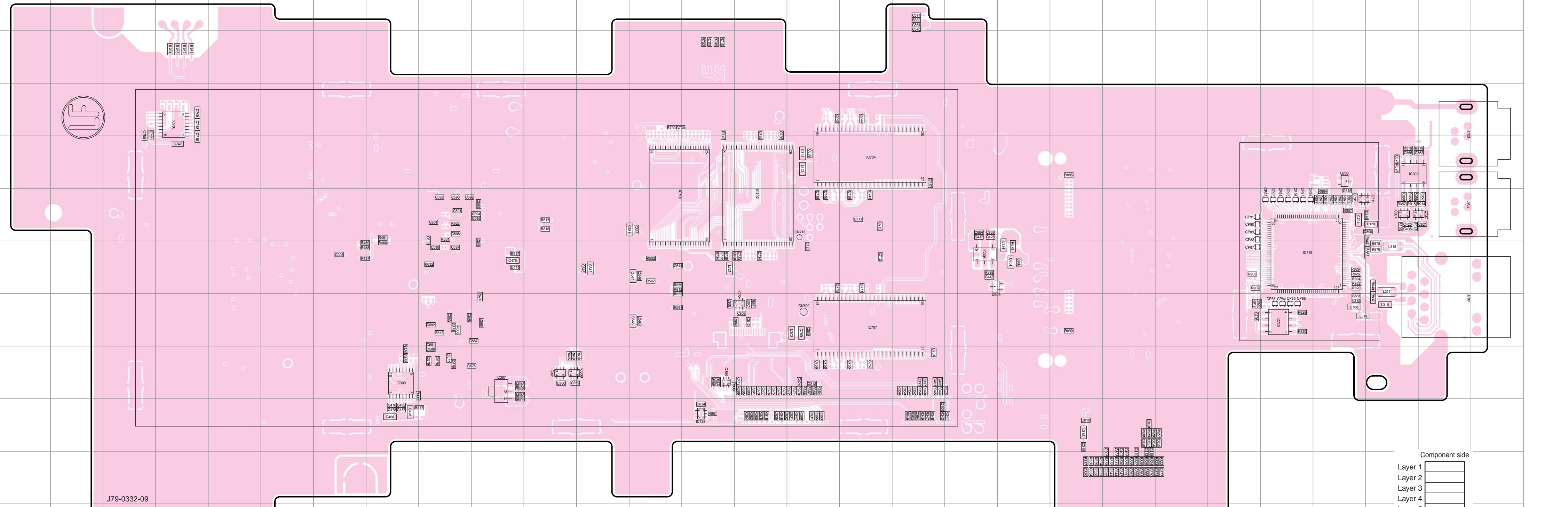




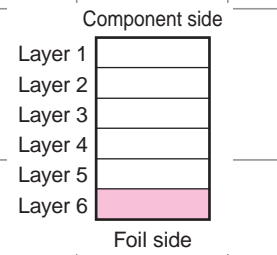
# NXR-901 PC BOARD

CONTROL UNIT (X53-4140-XX) -10 : K -11 : For service  
Foil side view (J79-0332-09)

CONTROL UNIT (X53-4140-XX) -10 : K -11 : For service  
Foil side view (J79-0332-09)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC300	9K	IC700	6M	IC720	8Y
IC301	9K	IC702	6O	IC721	8O
IC302	5AA	IC704	5Q	IC727	6AB
IC304	6AA	IC705	4D	IC728	10N
IC305	7S	IC707	8Q	Q303	7S
IC307	9J	IC711	6Z	Q309	9N
IC309	9H	IC719	7Y	Q706	5Z

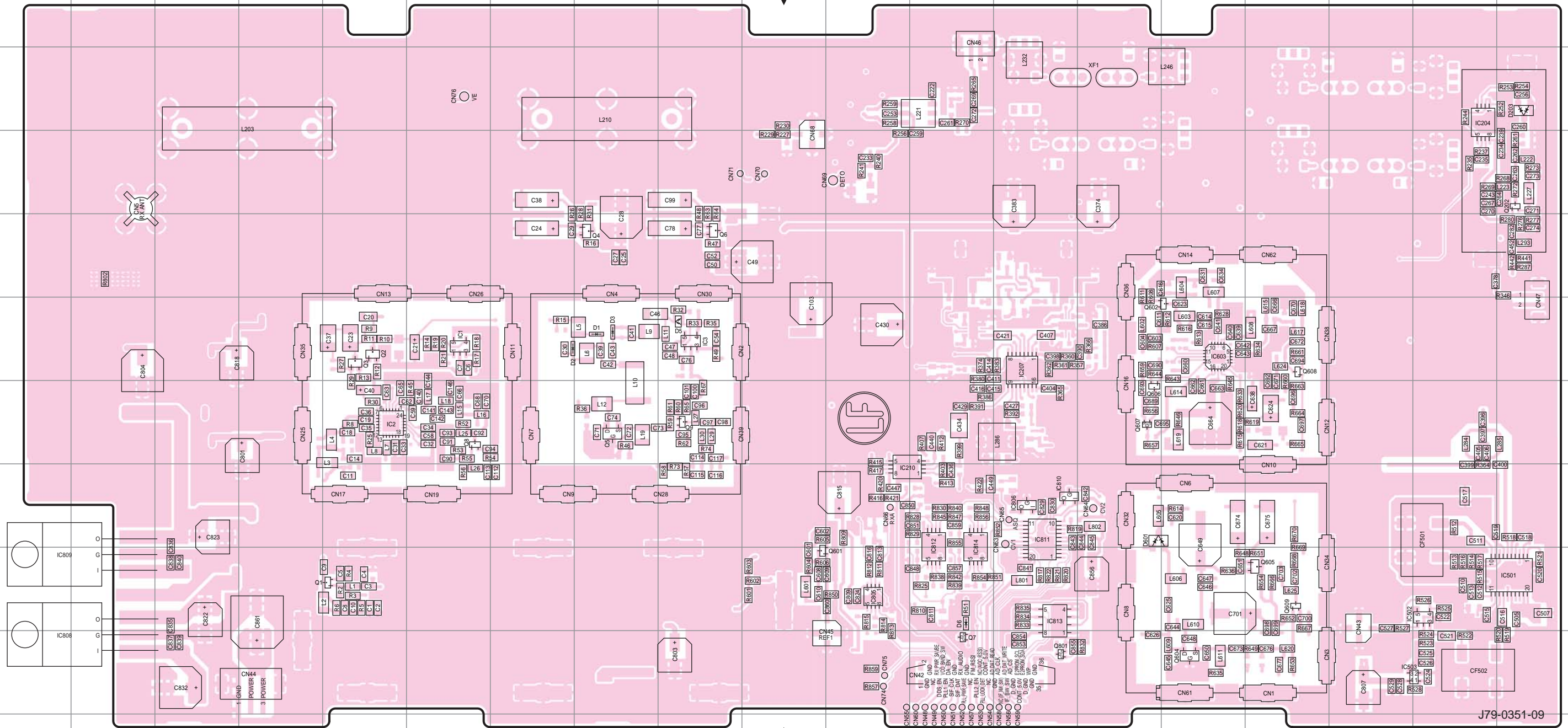


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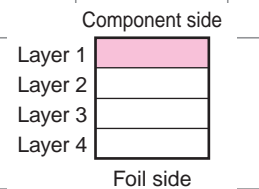
RX UNIT (X55-3120-11)  
Component side view (J79-0351-09)

# PC BOARD NXR-901

RX UNIT (X55-3120-11)  
Component side view (J79-0351-09)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC1	6F	IC603	6O	IC814	8L	Q9	7I	Q609	9P
IC2	7E	IC805	9K	Q1	9E	Q202	4S	Q801	10M
IC3	6I	IC806	8M	Q2	6E	Q601	9J	D1	6H
IC204	3R	IC808	10A	Q3	6E	Q602	6O	D2	6G
IC207	6M	IC809	9A	Q4	5H	Q604	10O	D3	6H
IC210	8K	IC810	8M	Q5	7H	Q605	9P	D5	6I
IC501	9S	IC811	8M	Q6	5I	Q606	7N	D6	9L
IC502	9R	IC812	8L	Q7	10L	Q607	7N	D203	3S
IC503	10R	IC813	9M	Q8	7F	Q608	6P	D601	8N

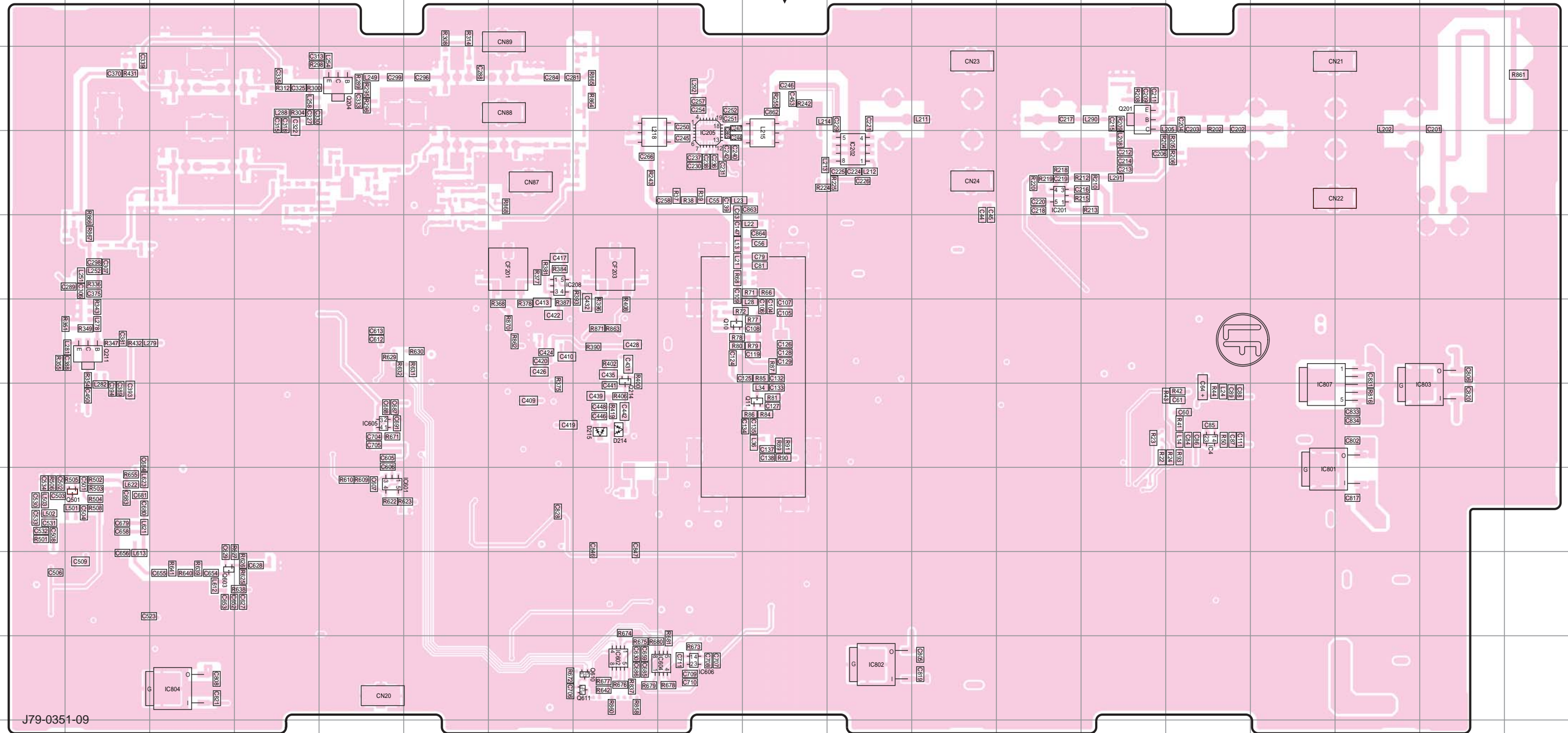


# NXR-901 PC BOARD

RX UNIT (X55-3120-11)  
Foil side view (J79-0351-09)

# PC BOARD NXR-901

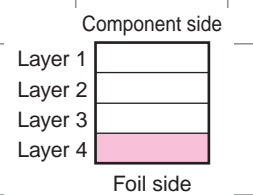
RX UNIT (X55-3120-11)  
Foil side view (J79-0351-09)



J79-0351-09

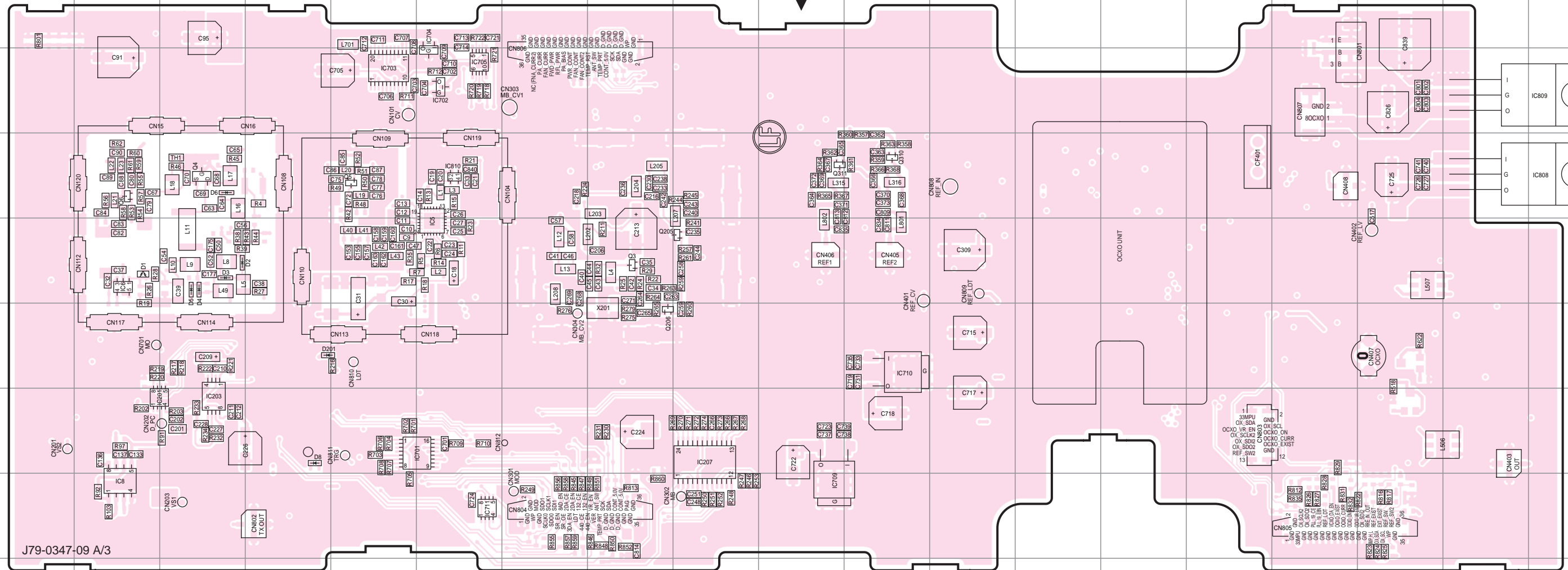
Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC4	7O	IC605	7E	Q11	7J	Q611	10H
IC201	4M	IC606	10I	Q201	3N	D214	7H
IC202	4K	IC801	8P	Q204	3E	D215	7H
IC205	4I	IC802	10K	Q211	6B		
IC208	5G	IC803	7R	Q214	6H		
IC601	8E	IC804	10C	Q501	8B		
IC602	10H	IC807	7P	Q603	9C		
IC604	10I	Q10	6I	Q610	10H		

**Note:** Because L215 and L218 have 5 legs each, be careful of the direction when attaching them to the RX unit.



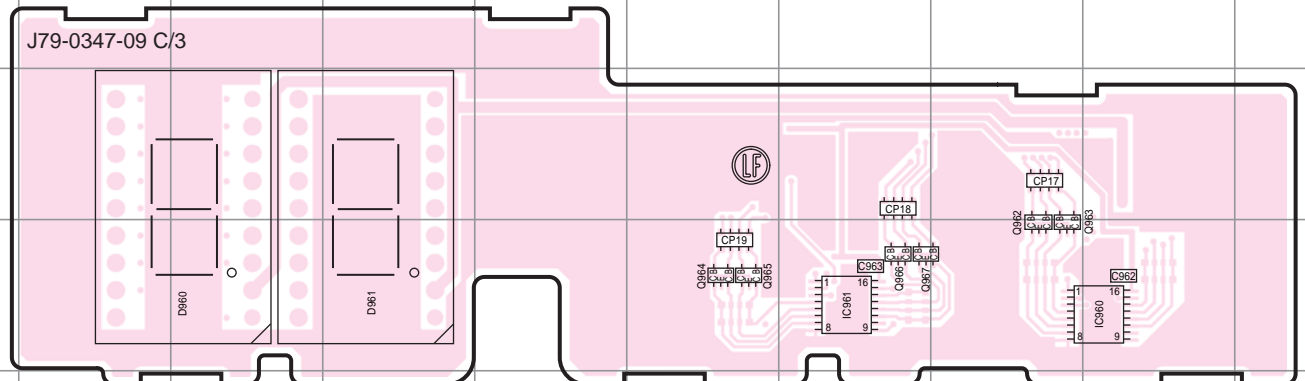
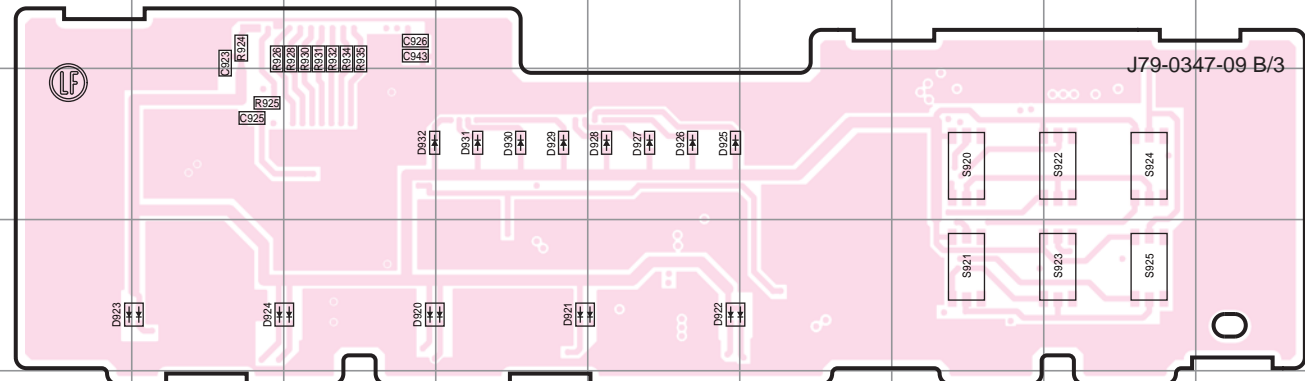
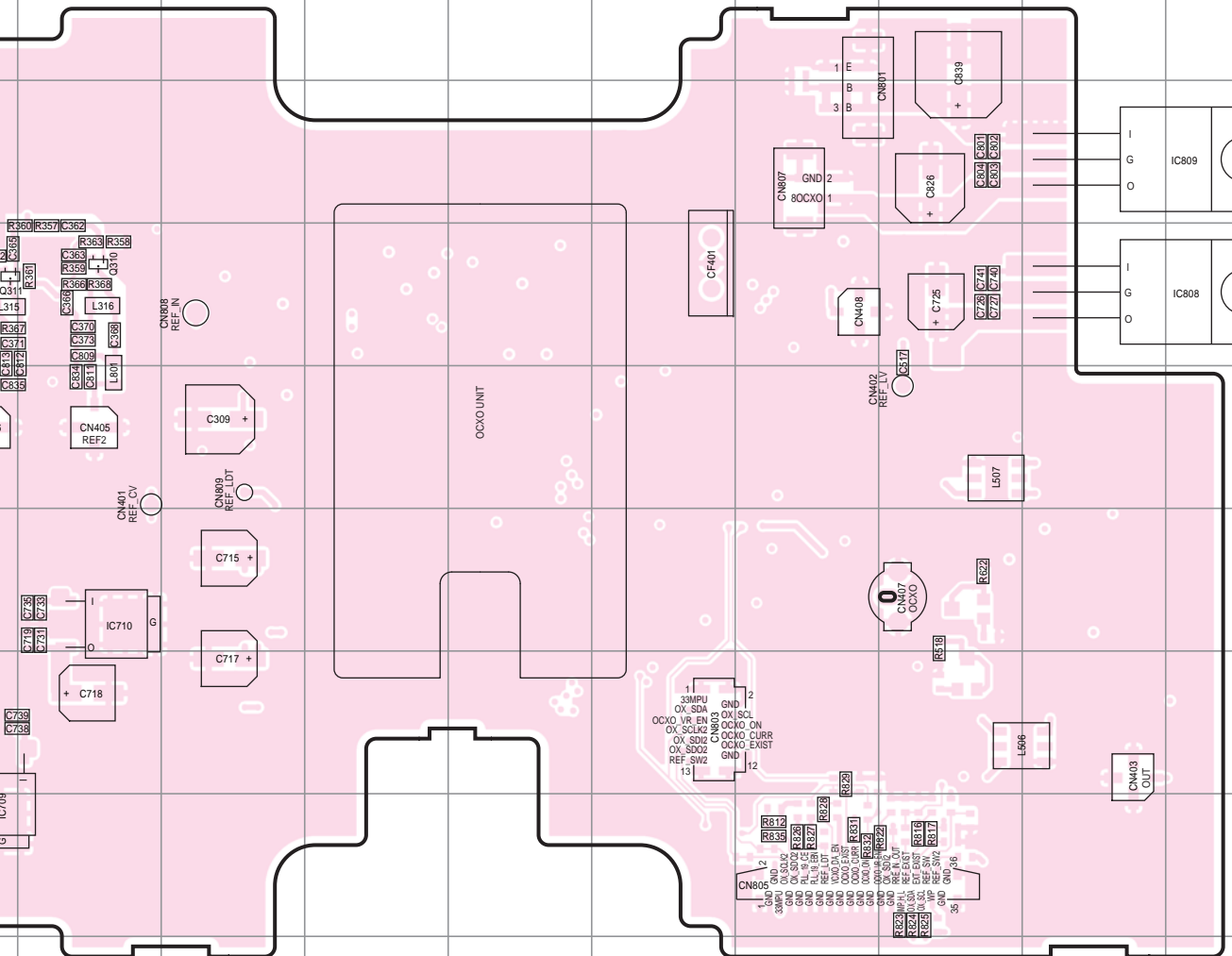
# NXR-901 PC BOARD

**TX UNIT (X56-3150-11)**  
**Component side view (J79-0347-09)**

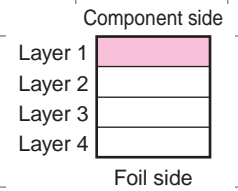


# PC BOARD NXR-901

**TX UNIT (X56-3150-11)**  
**Component side view (J79-0347-09)**



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC5	5F	IC702	3F	IC808	4S	Q5	4E	Q963	11Q	D3	5C	D921	11D
IC6	5B	IC703	3E	IC809	3S	Q6	4B	Q964	11O	D4	5C	D922	11E
IC8	8B	IC704	3F	IC810	4F	Q205	5I	Q965	11O	D5	5C	D923	11B
IC201	7B	IC705	3F	IC960	11R	Q206	6H	Q966	11P	D6	4C	D924	11C
IC203	7C	IC709	8J	IC961	11P	Q310	4K	Q967	11P	D8	7D	D925	10E
IC207	7I	IC710	6K	Q3	5H	Q311	4J	D1	5B	D201	6D	D926	10E
IC701	7F	IC711	8F	Q4	4C	Q962	11Q	D2	5C	D920	11C	D927	10E

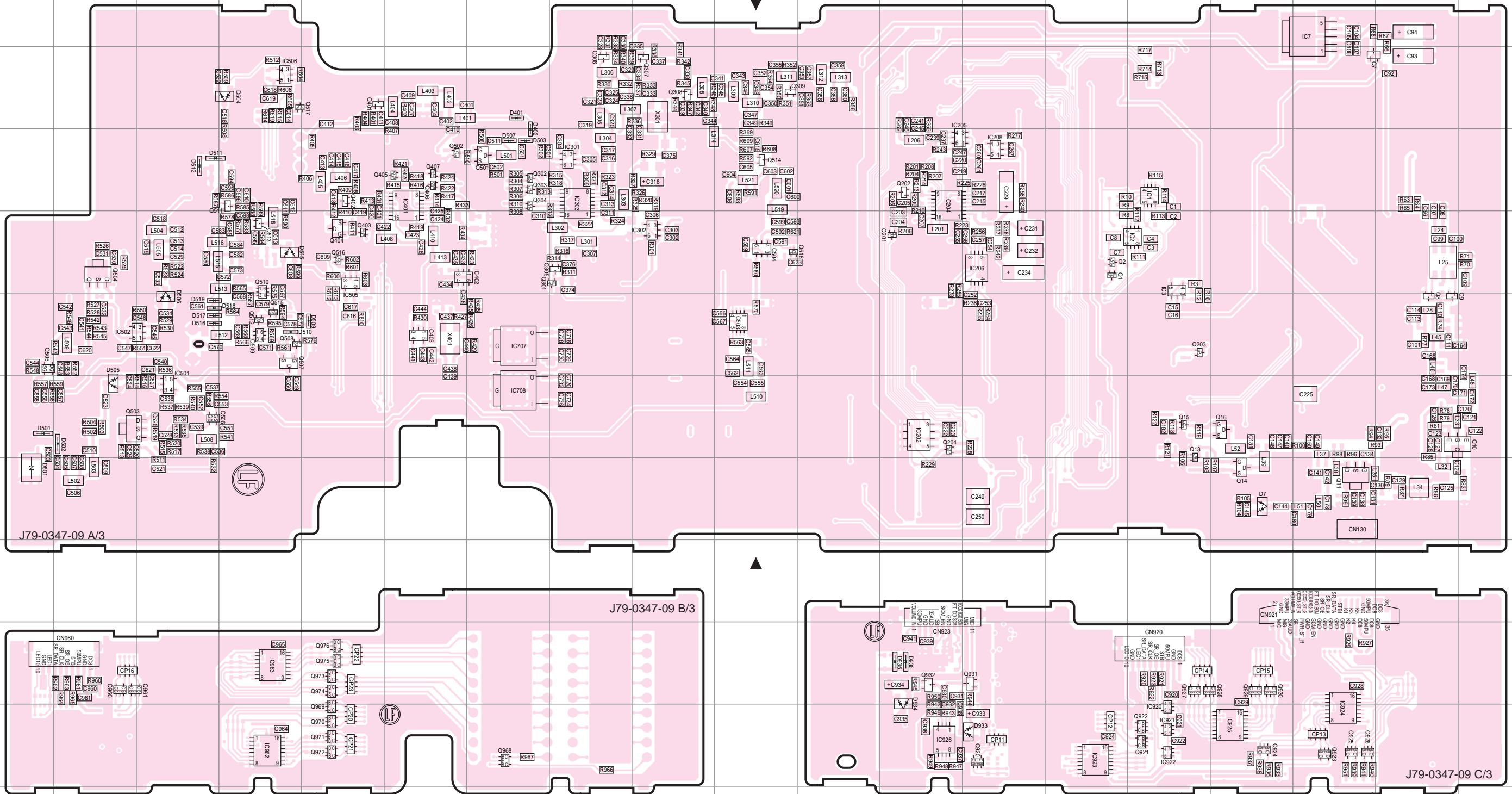


# NXR-901 PC BOARD

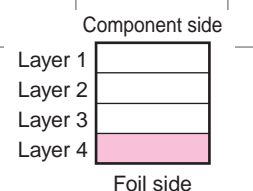
TX UNIT (X56-3150-11)  
Foil side view (J79-0347-09)

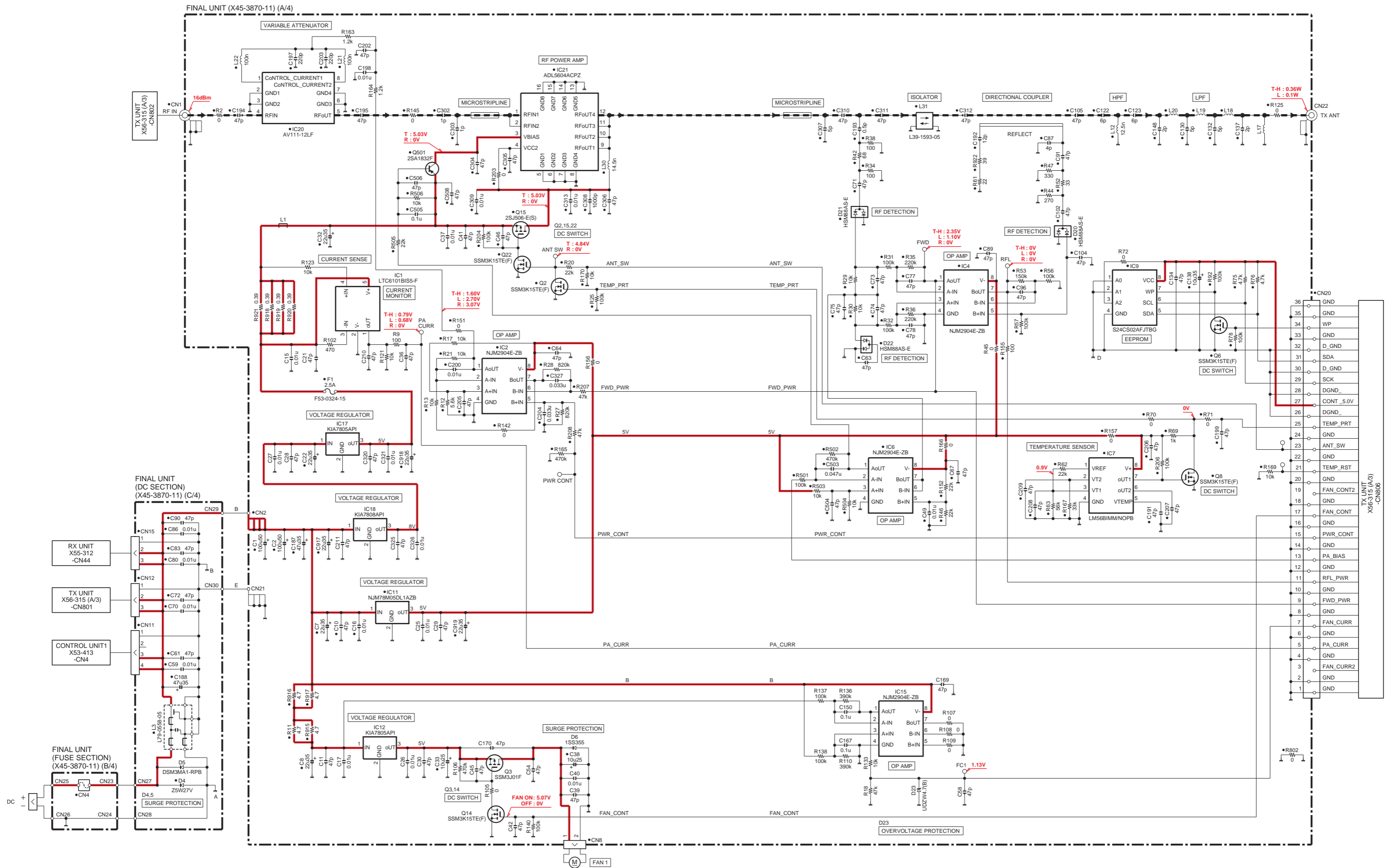
# PC BOARD NXR-901

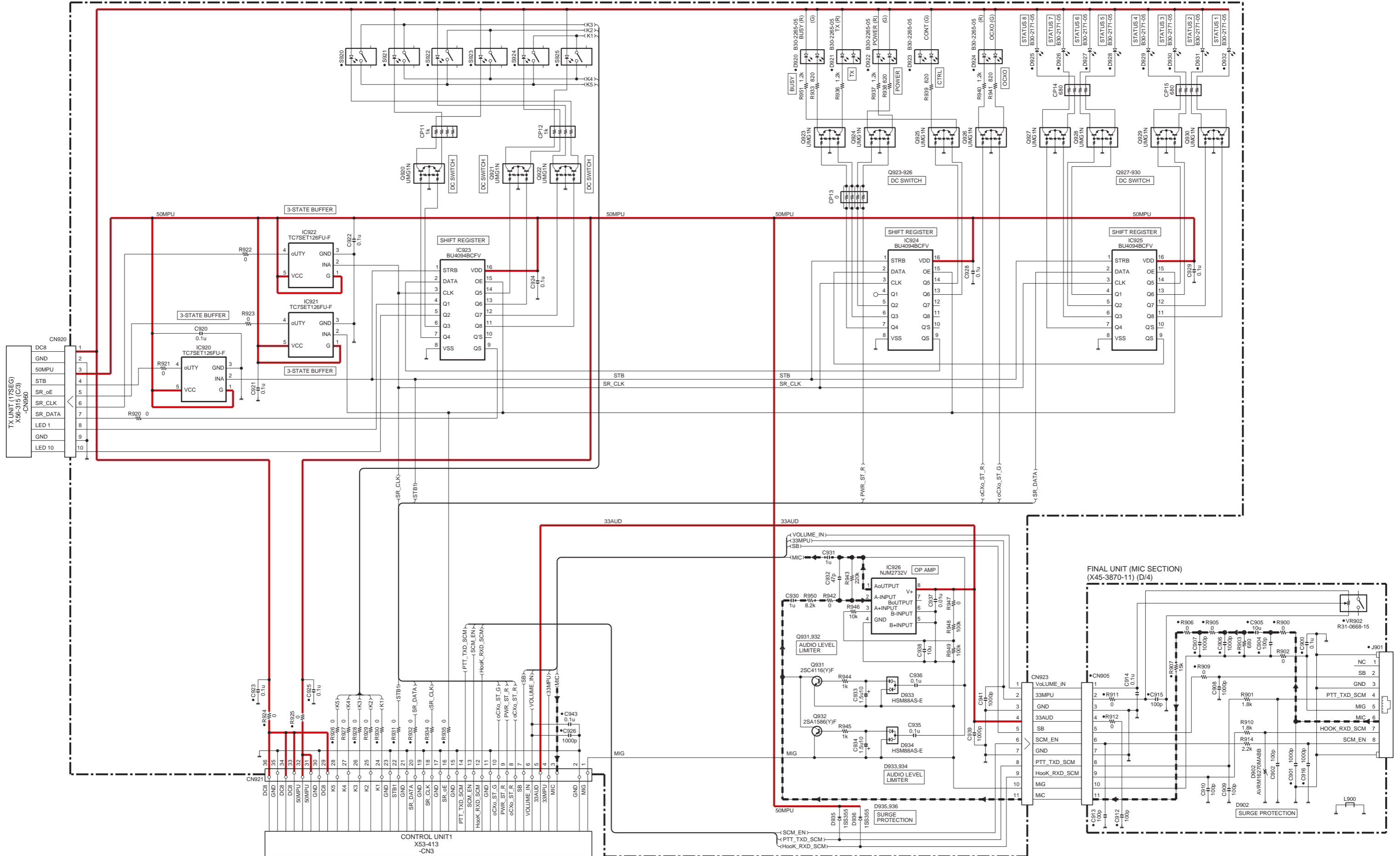
TX UNIT (X56-3150-11)  
Foil side view (J79-0347-09)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC1	4O	IC301	4H	IC504	5J	IC924	11Q	Q9	6R	Q203	6O	Q308	3I	Q501	4G	Q510	5D	Q920	11M	Q929	10P	Q971	11E	D501	7A	D511	4C	D934	10L				
IC2	5O	IC302	5I	IC505	5E	IC925	11P	Q10	7R	Q204	7L	Q309	3J	Q502	4F	Q511	4D	Q921	11O	Q930	10P	Q972	11E	D502	7B	D512	4C	D935	10L				
IC3	5O	IC303	4H	IC506	3D	IC926	11L	Q11	8Q	Q301	5H	Q401	3E	Q503	7B	Q512	6D	Q922	11O	Q931	10M	Q973	10E	D503	4G	D515	5D	D936	10L				
IC7	2Q	IC401	4F	IC707	6G	IC962	11D	Q13	7O	Q302	4G	Q402	4E	Q504	5B	Q513	5D	Q923	11Q	Q932	10L	Q974	10E	D504	3D	D516	6C						
IC204	7L	IC402	5F	IC708	7G	IC963	10D	Q14	8P	Q303	4G	Q403	5E	Q505	6A	Q514	4J	Q924	11P	Q960	10B	Q975	10E	D505	7B	D517	6C						
IC204	4L	IC403	6F	IC920	11O	Q1	5N	Q15	7O	Q304	4G	Q404	5E	Q506	7C	Q515	6D	Q925	11Q	Q961	10B	Q976	10E	D506	6C	D518	6C						
IC205	4L	IC501	7C	IC921	11O	Q2	5N	Q16	7P	Q305	5H	Q405	4F	Q507	6D	Q516	5E	Q926	11Q	Q968	11G	D7	8P	D507	4G	D519	6C						
IC206	5M	IC502	6C	IC922	11O	Q7	3Q	Q201	5L	Q306	3H	Q406	4F	Q508	6D	Q517	3D	Q927	10O	Q969	11E	D401	3G	D509	6E	D801	8A						
IC208	4M	IC503	6J	IC923	11N	Q8	6R	Q202	4L	Q307	3I	Q407	4F	Q509	6D	Q518	5J	Q928	10O	Q970	11E	D402	4G	D510	6D	D933	11M						

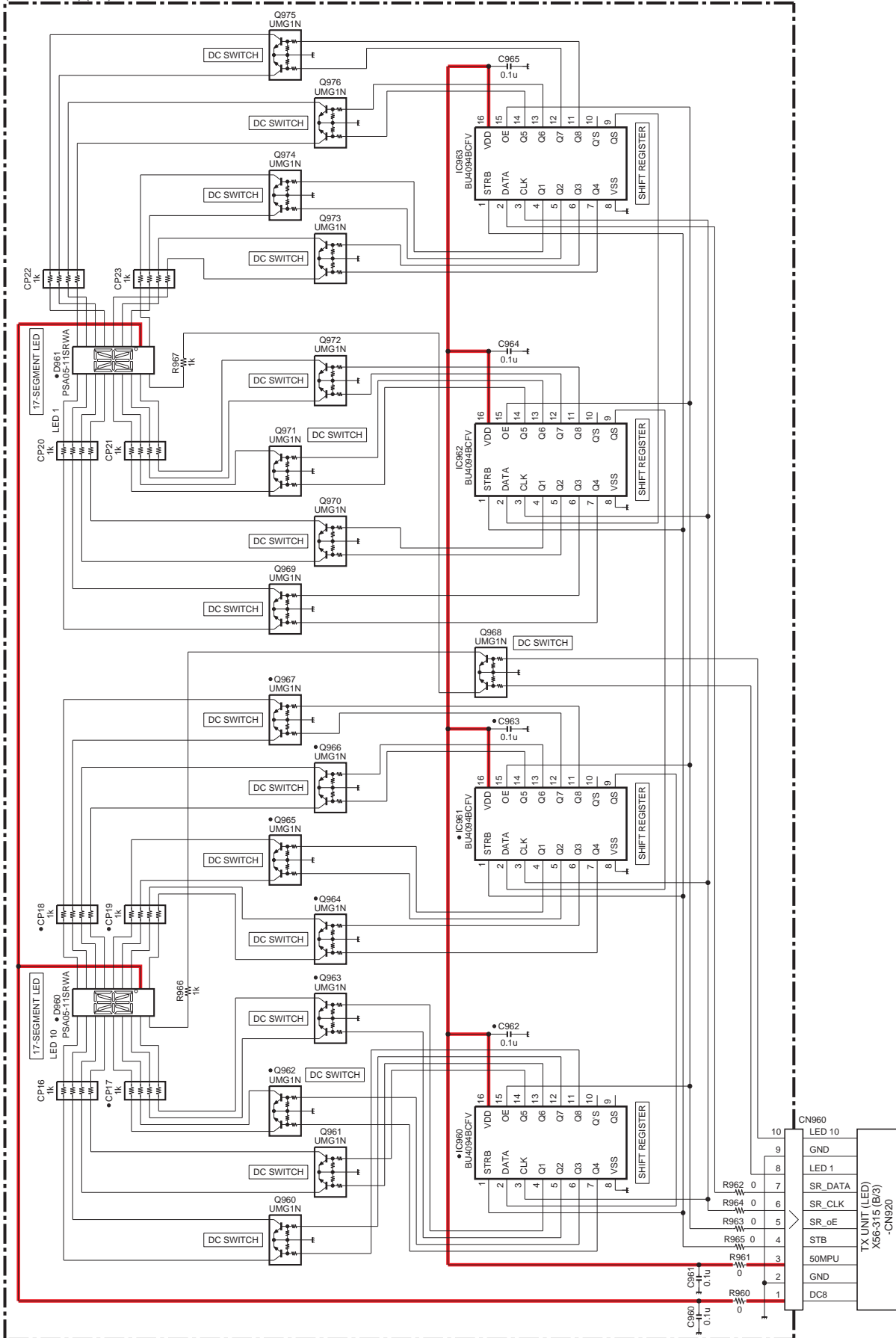






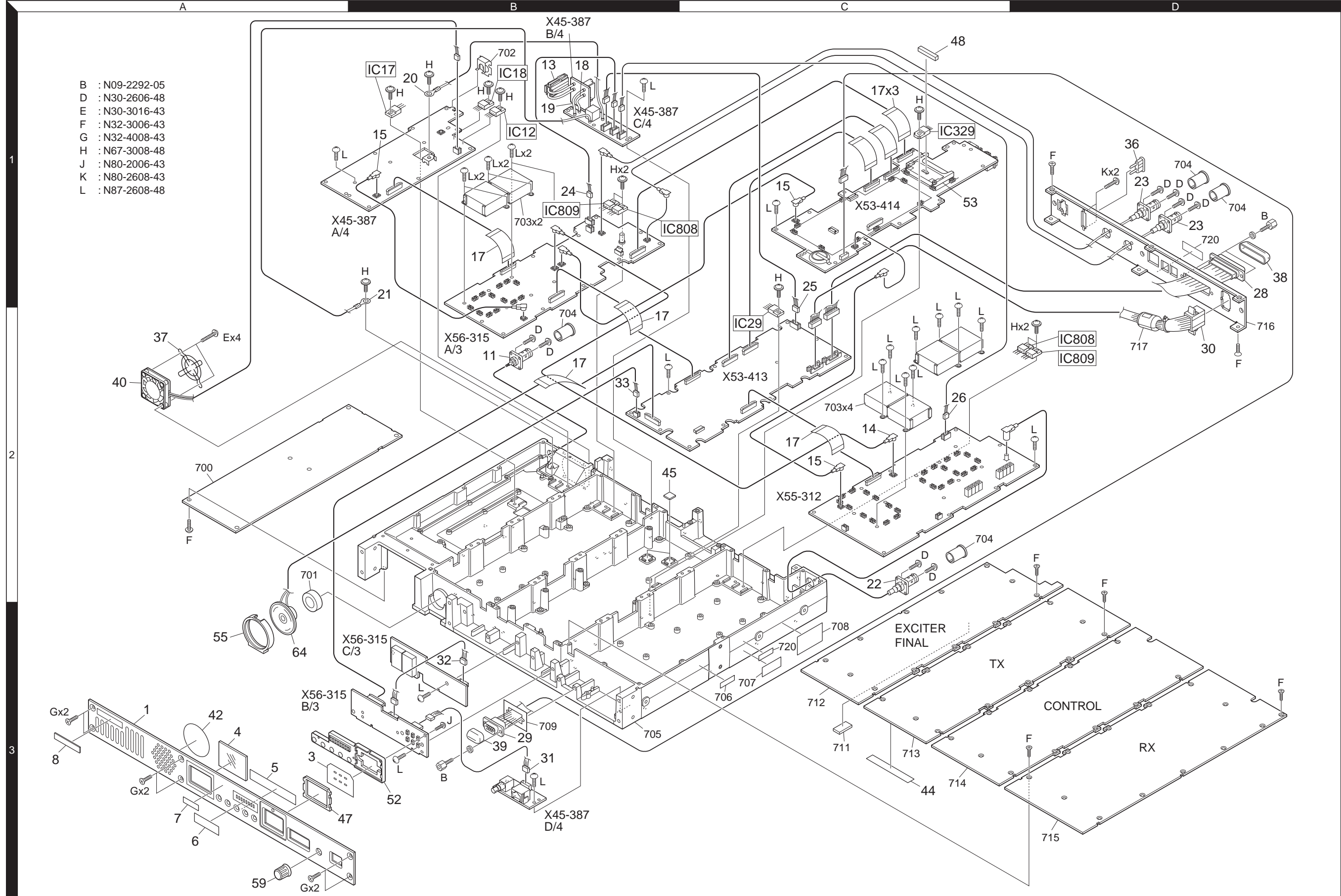


TX UNIT (17SEG)  
(X56-3150-11) (C/3)



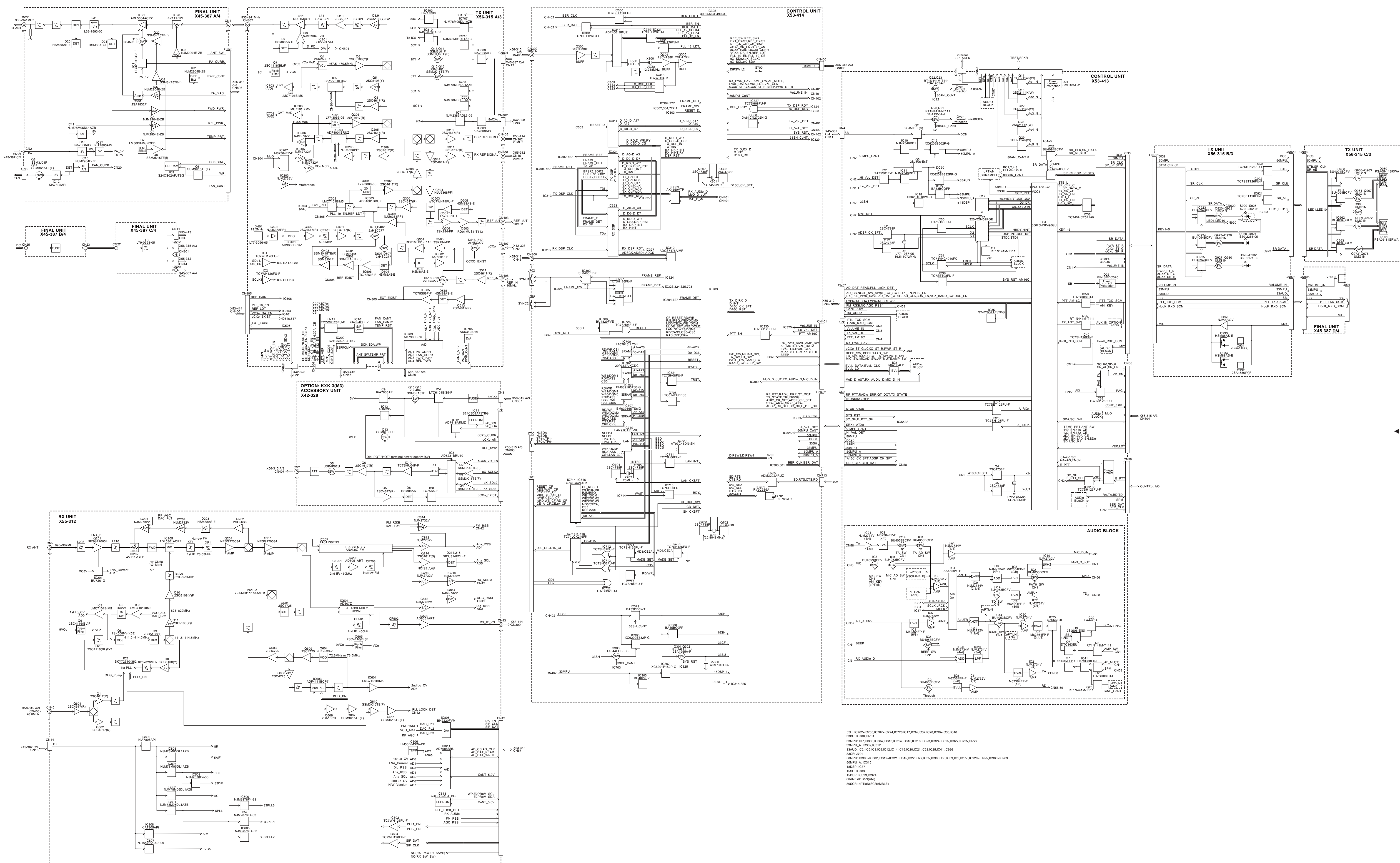
A B C D

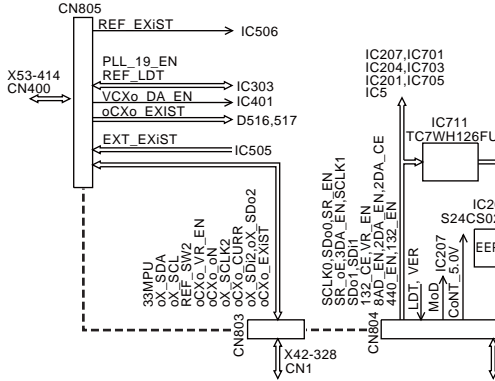
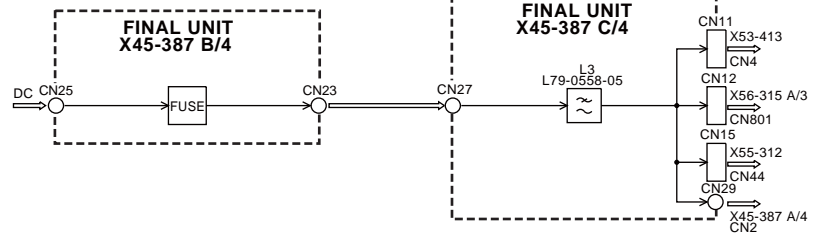
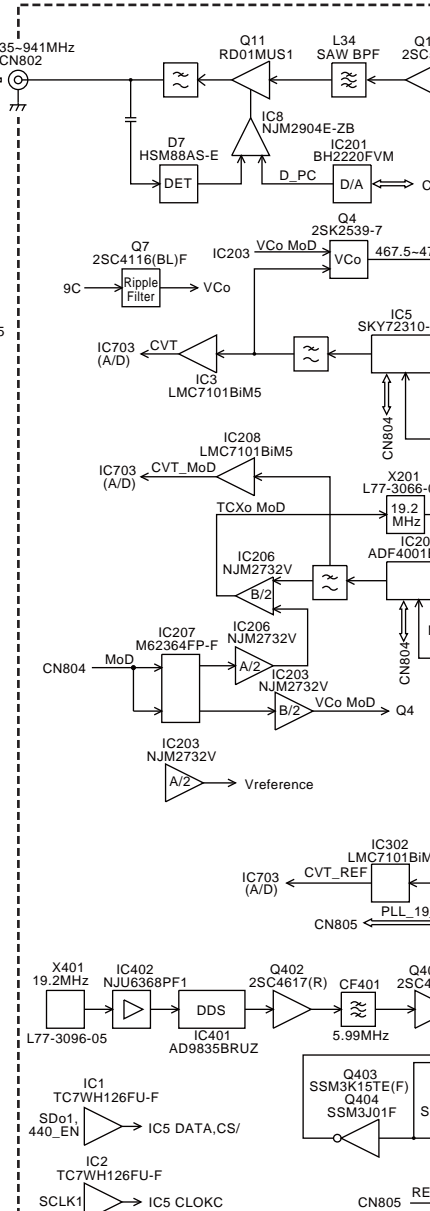
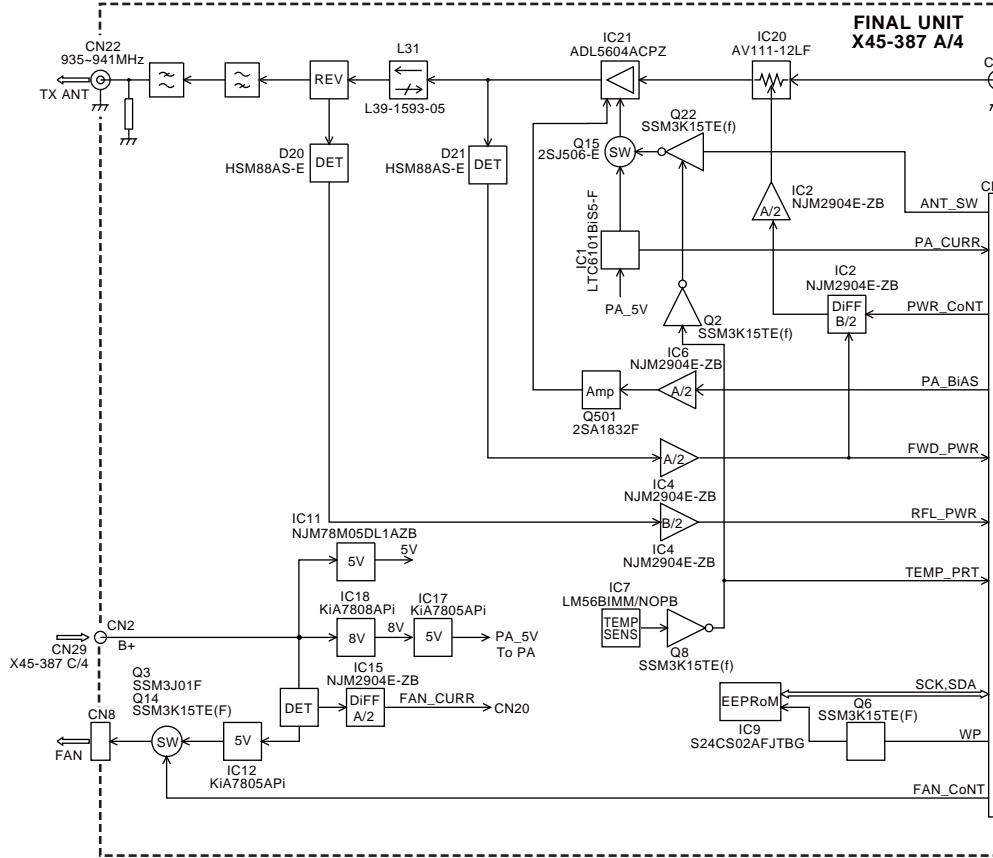
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- D : N30-2606-48
- E : N30-3016-43
- F : N32-3006-43
- G : N32-4008-43
- H : N67-3008-48
- J : N80-2006-43
- K : N80-2608-43
- L : N87-2608-48



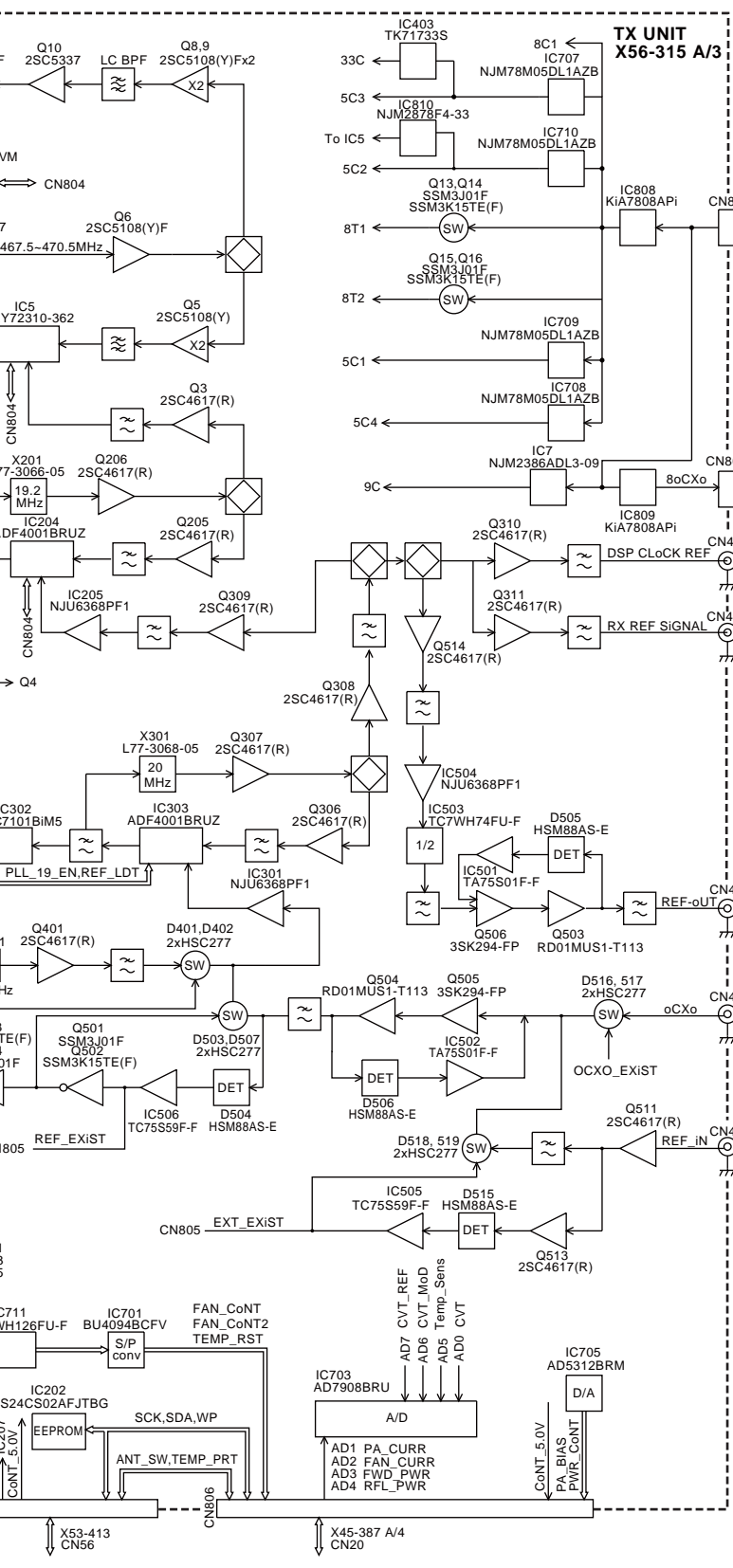
2

3

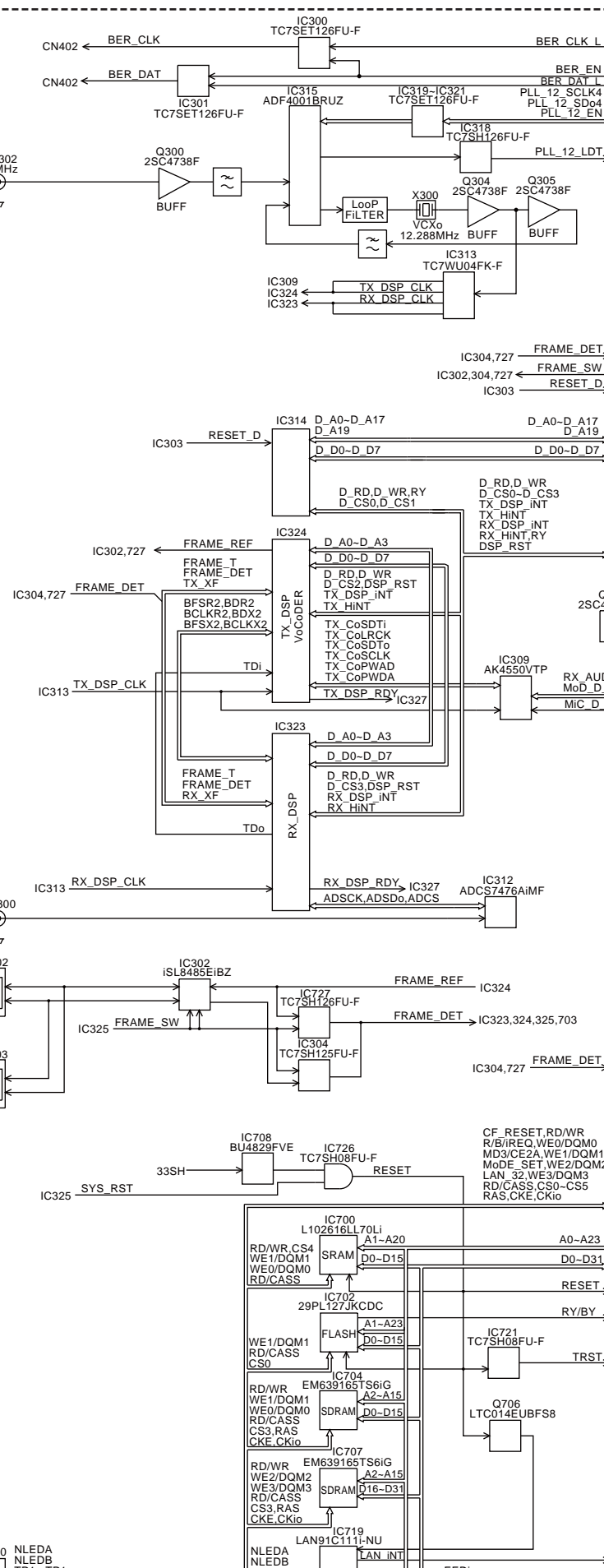




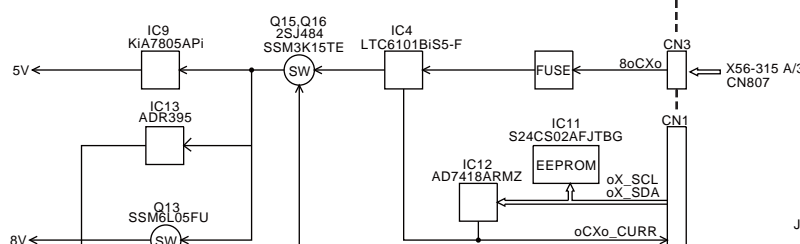
**OPTION: KKK-3(M3)  
ACCESSORY UNIT  
X42-328**



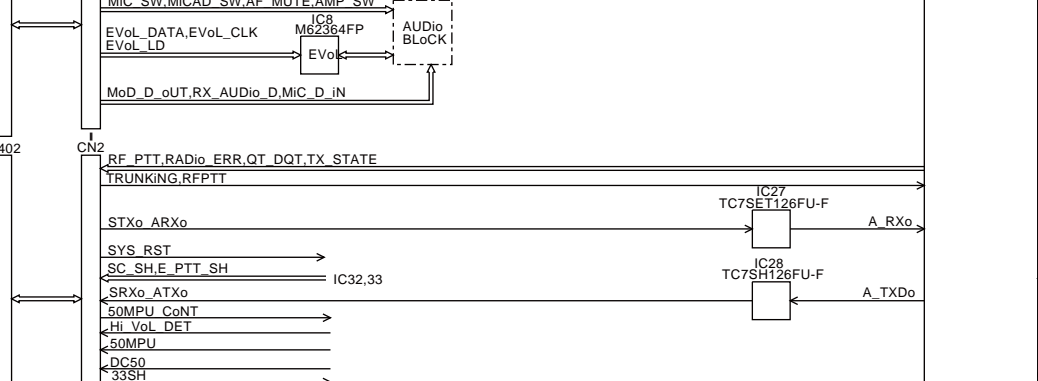
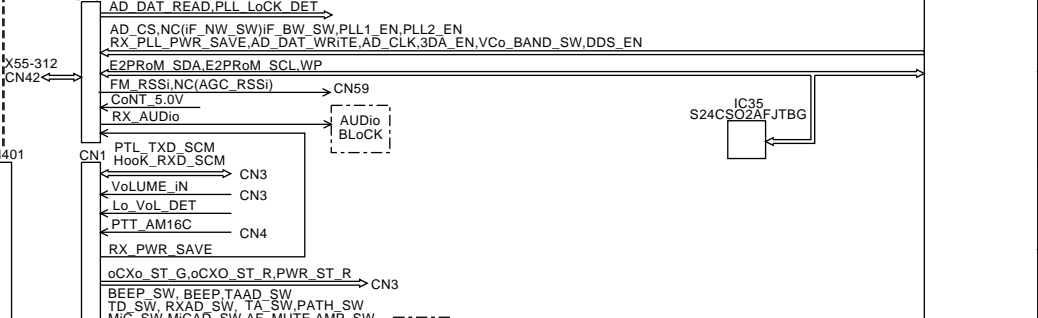
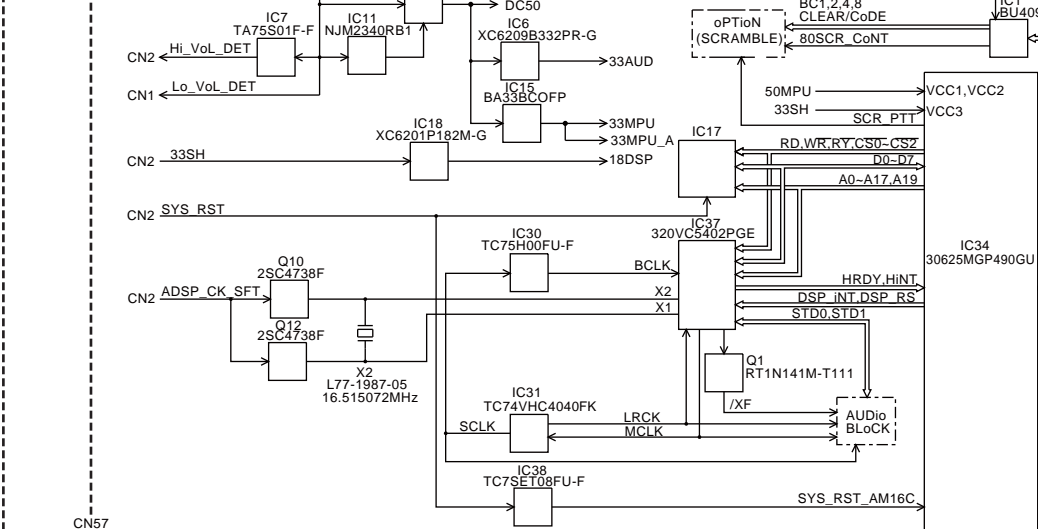
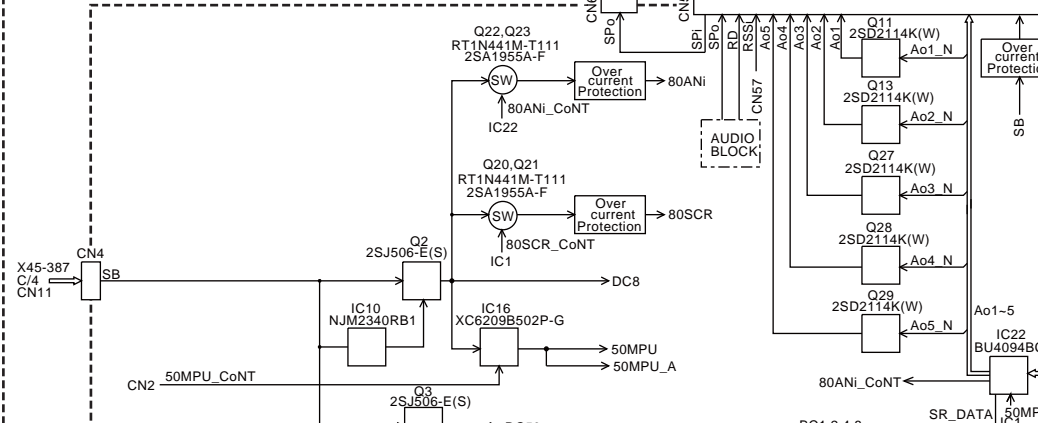
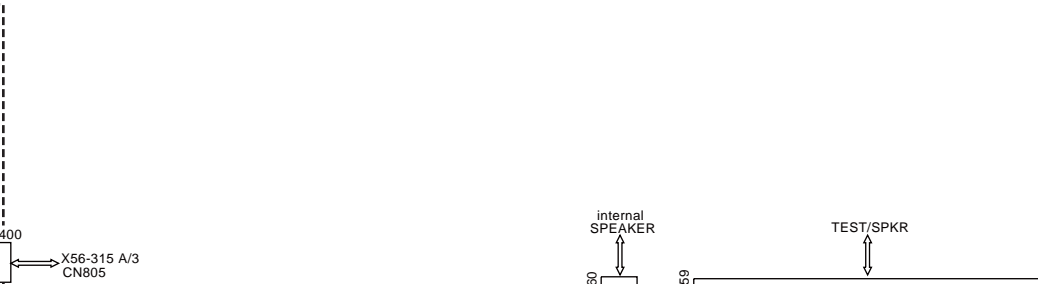
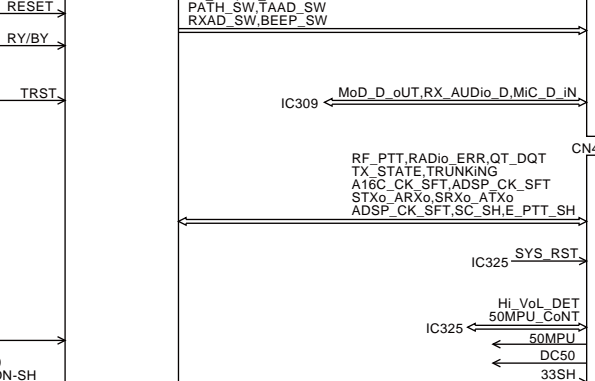
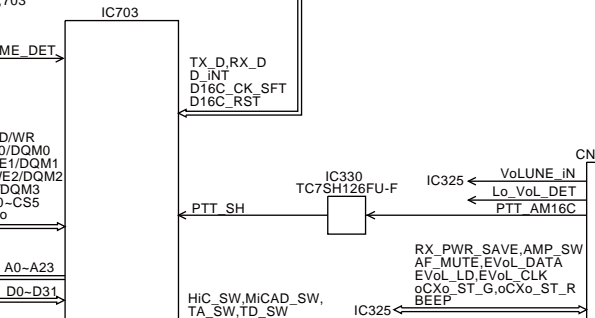
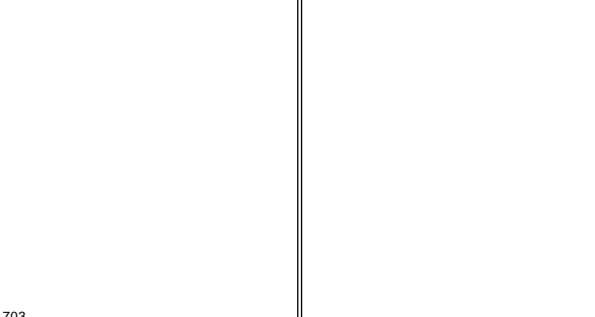
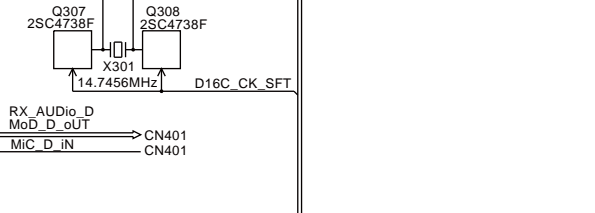
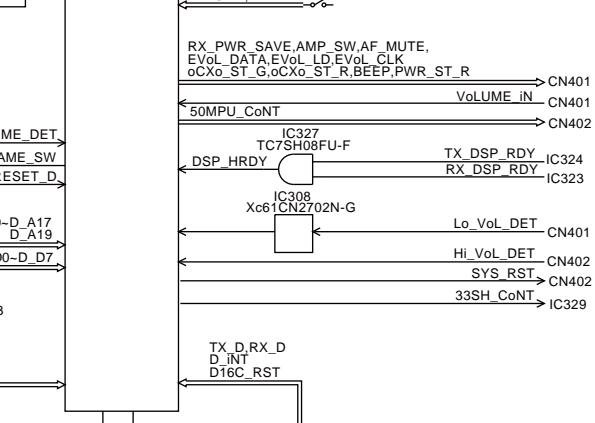
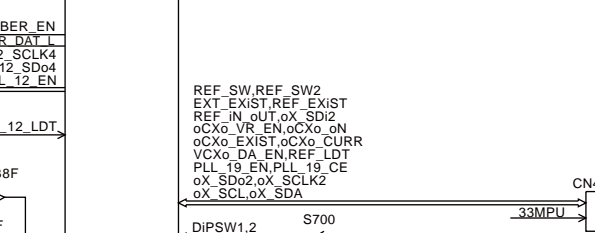
**TX UNIT  
X56-315 A/3**



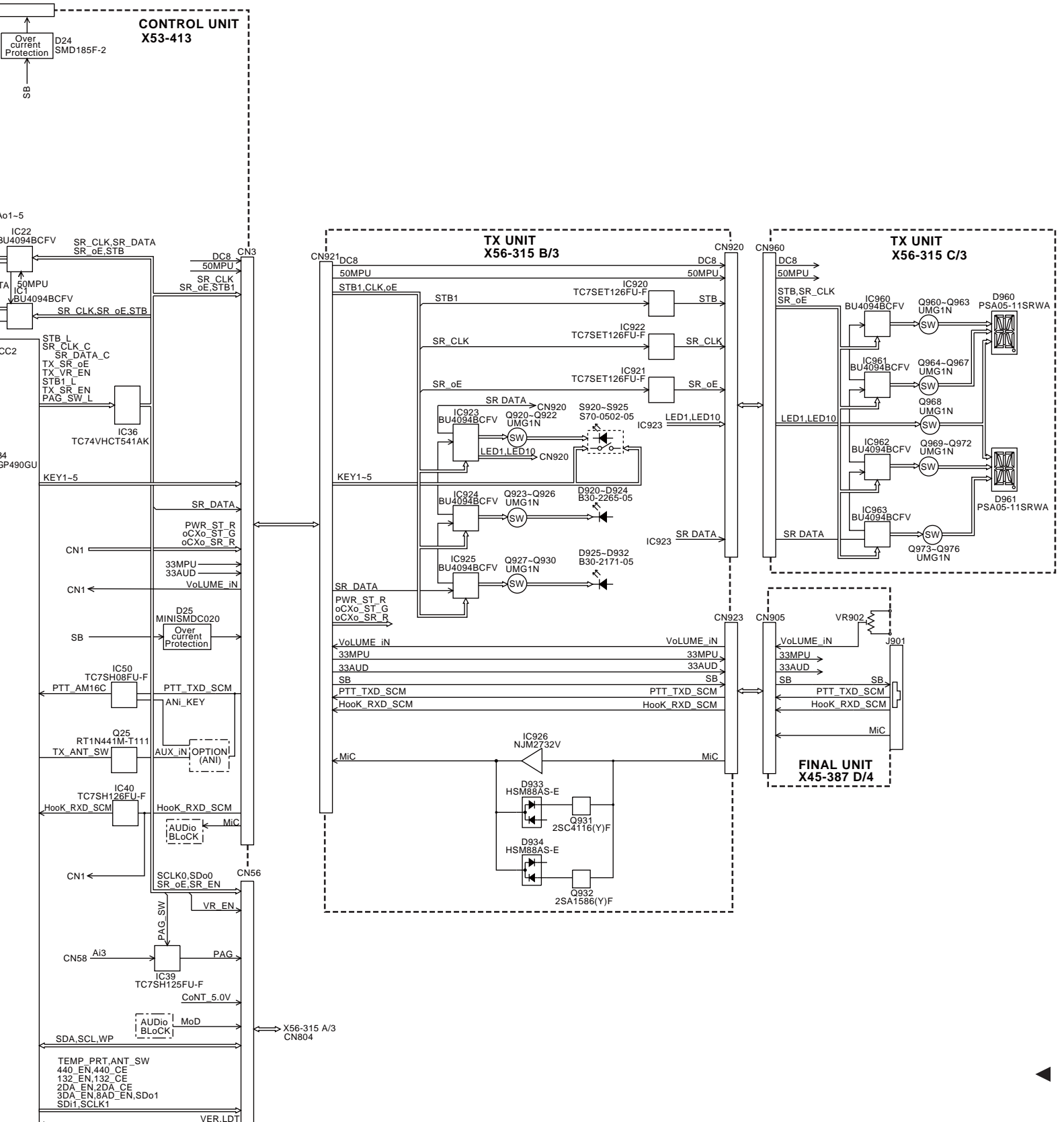
**-3(M3)  
UNIT**

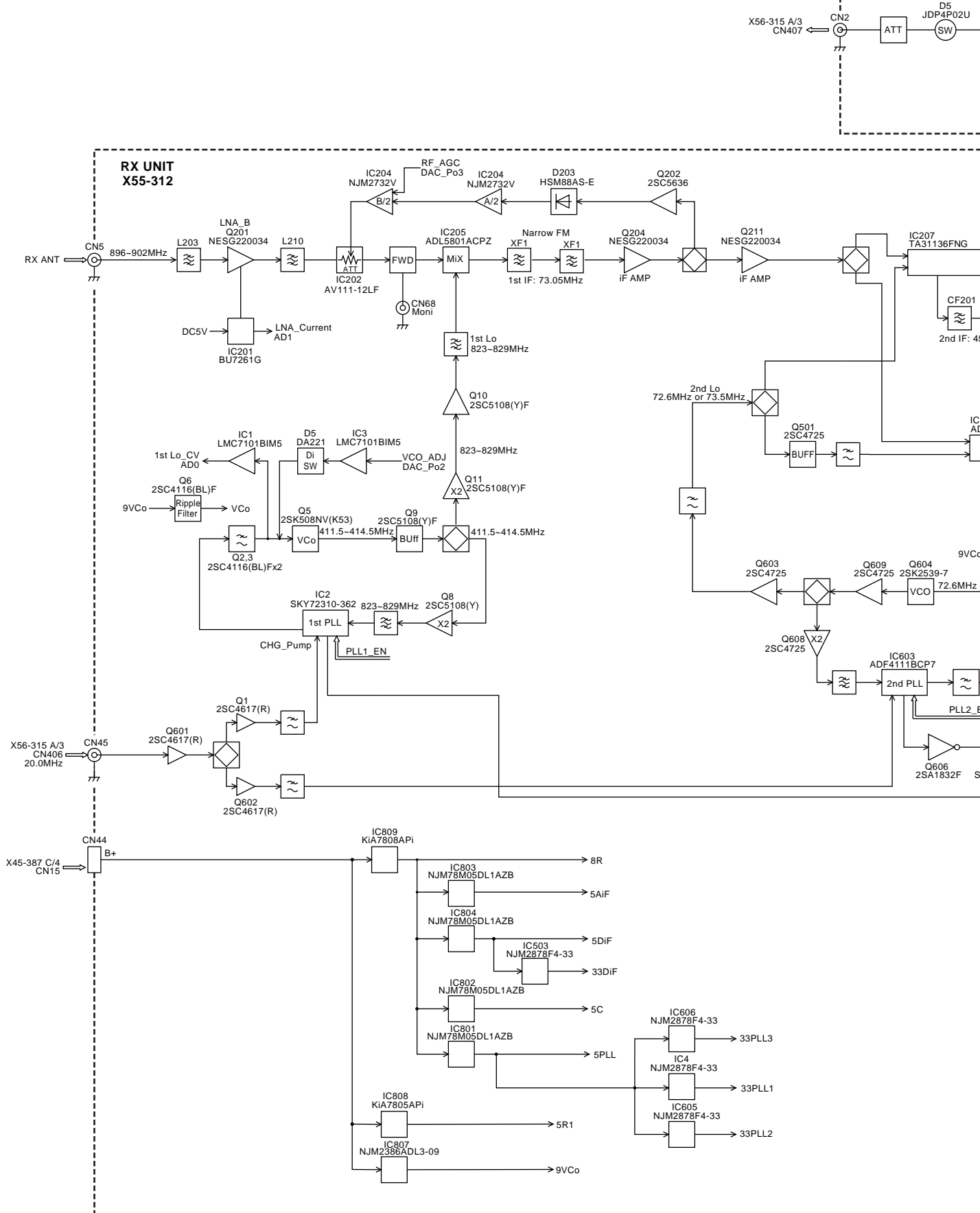


**CONTROL UNIT X53-414**

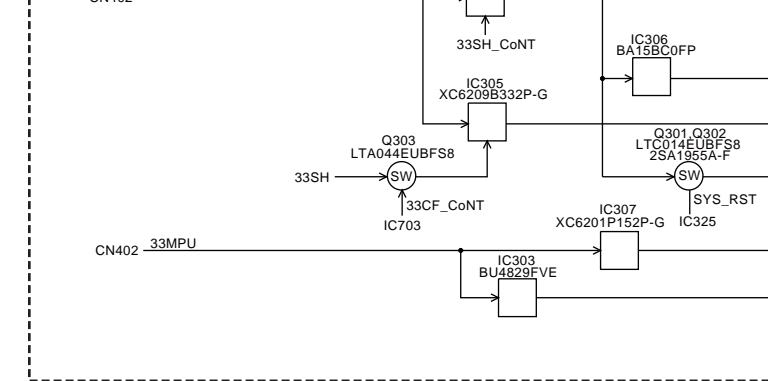
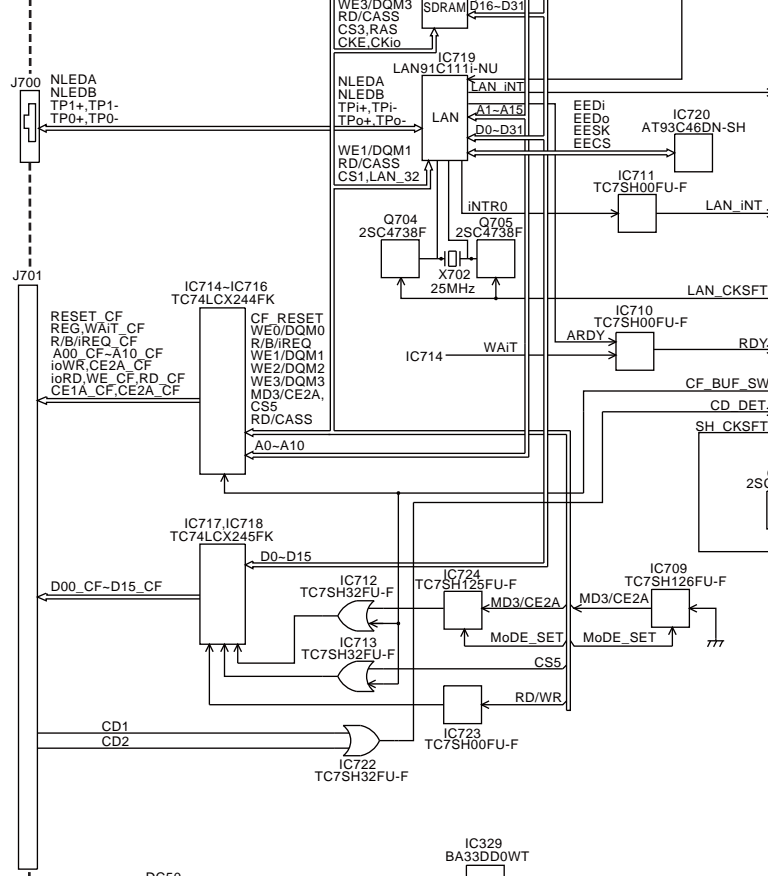
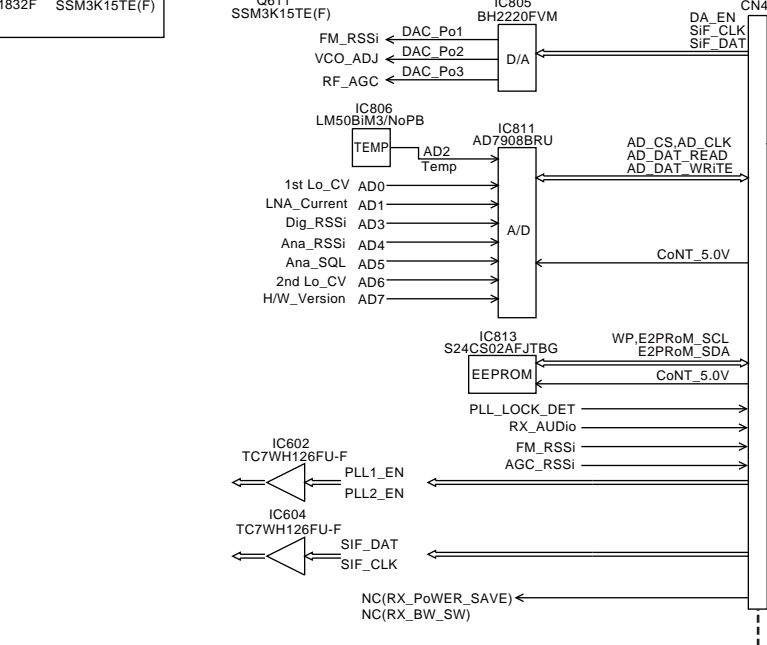
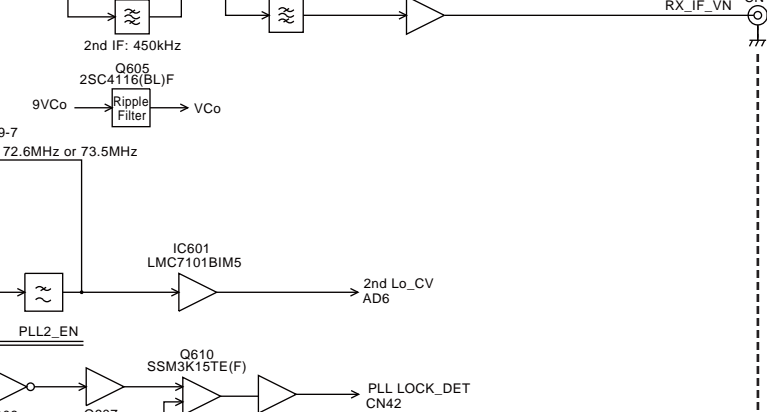
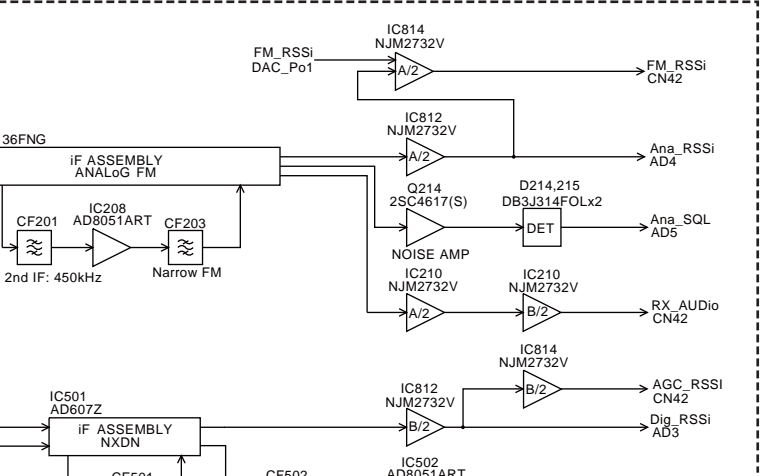
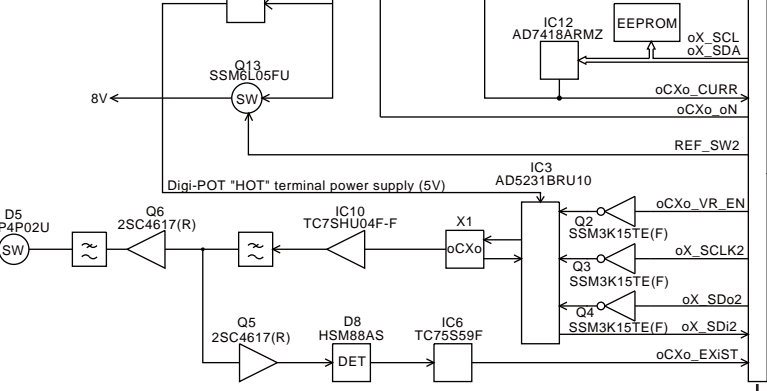


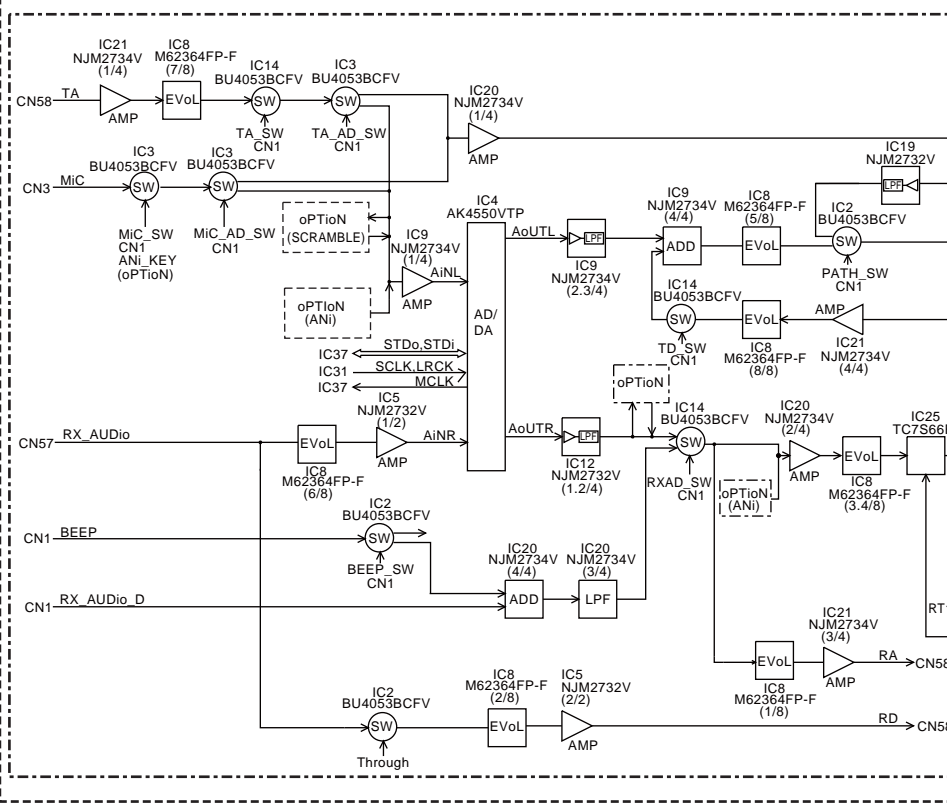
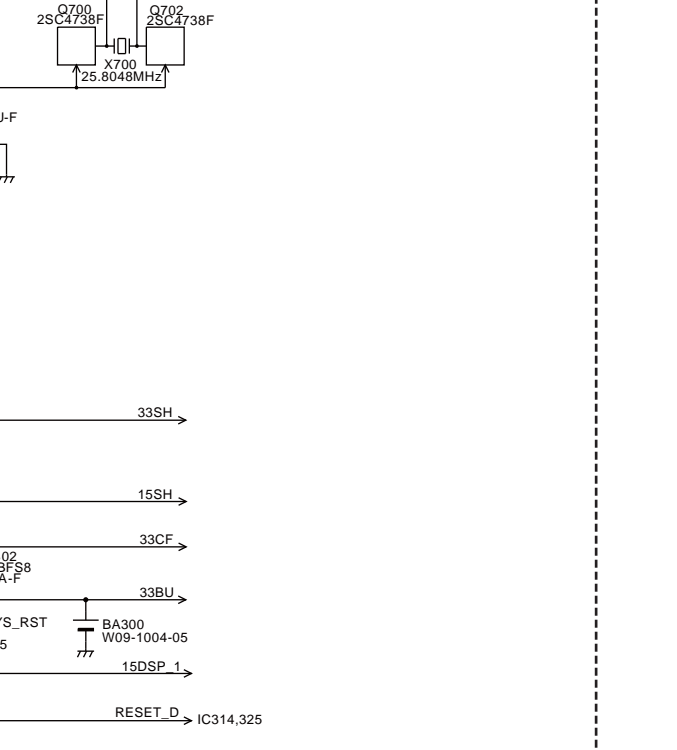
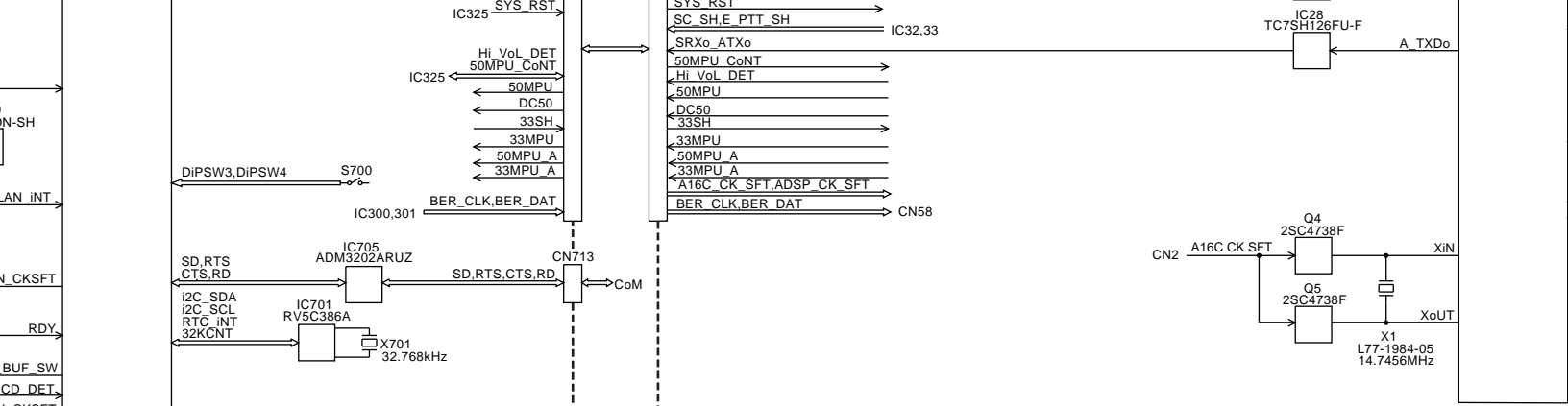
# NXR-901 APPENDIX 1 (BLOCK DIAGRAM)



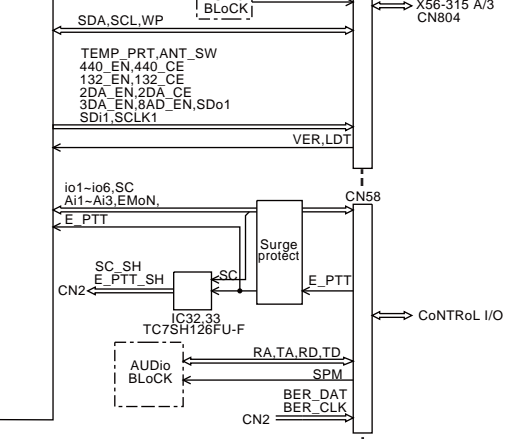




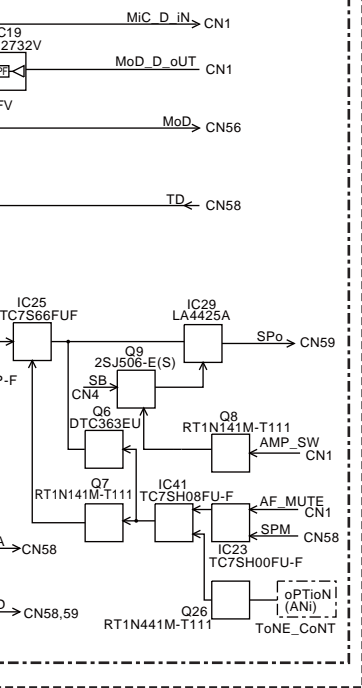




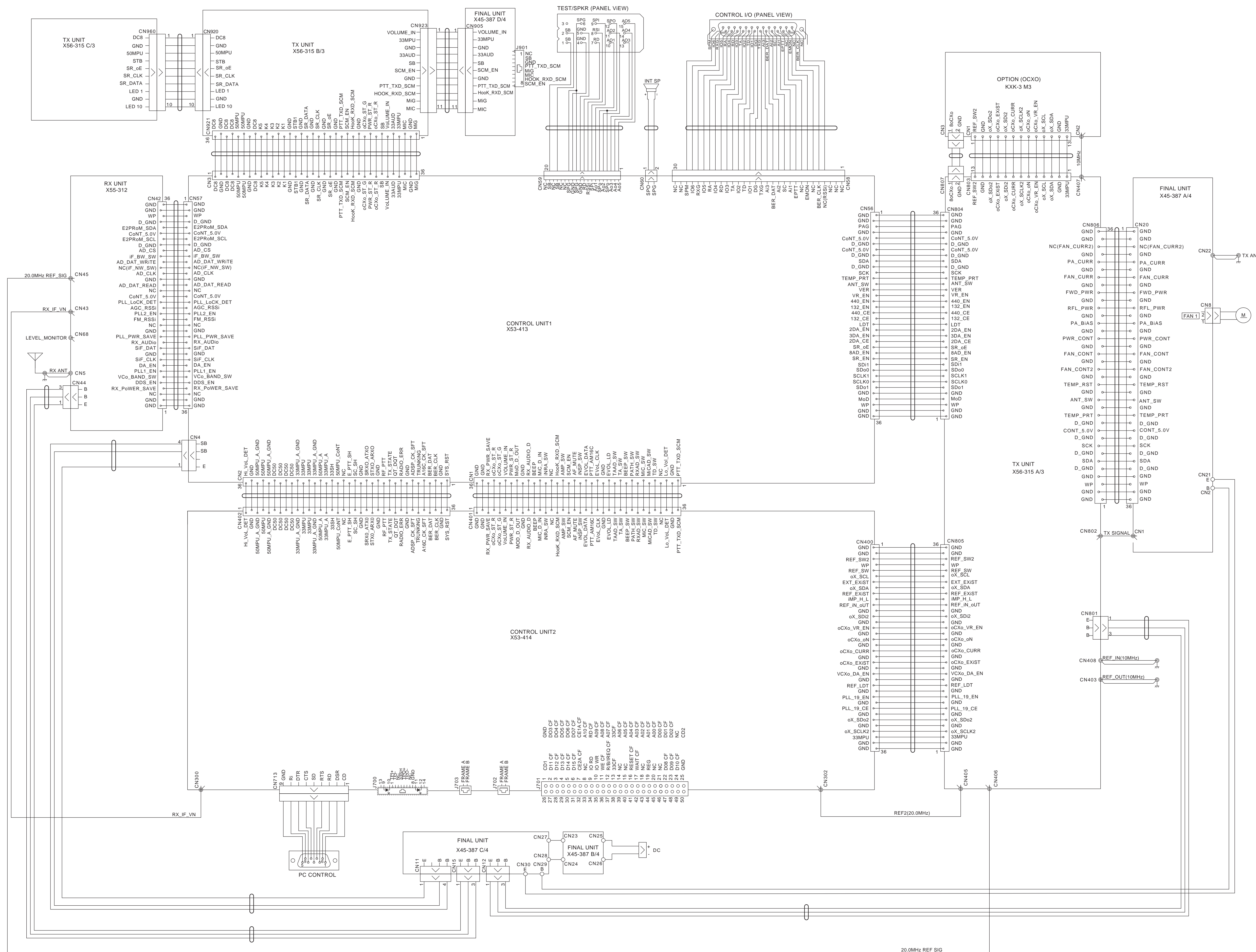
- 33H: IC702-IC705,IC707-IC724,IC726,IC17,IC34,IC37,IC28,IC30-IC33,IC40
- 33BU: IC700,IC701
- 33MPU: IC7,IC303,IC304,IC313,IC314,IC316,IC318,IC323,IC324,IC325,IC327,IC725,IC727
- 33MPU\_A: IC309,IC312
- 33AUD: IC2-IC5,IC8,IC9,IC12,IC14,IC19,IC20,IC21,IC23,IC25,IC41,IC926
- 33CF: J701
- 50MPU: IC300-IC302,IC319-IC321,IC315,IC22,IC27,IC35,IC36,IC38,IC39,IC1,IC150,IC920-IC925,IC960-IC963
- 50MPU\_A: IC315
- 18DSP: IC37
- 15SH: IC703
- 15DSP: IC323,IC324
- 80ANI: oPTioN(ANI)
- 80SCR: oPTioN(SCRAMBLE)

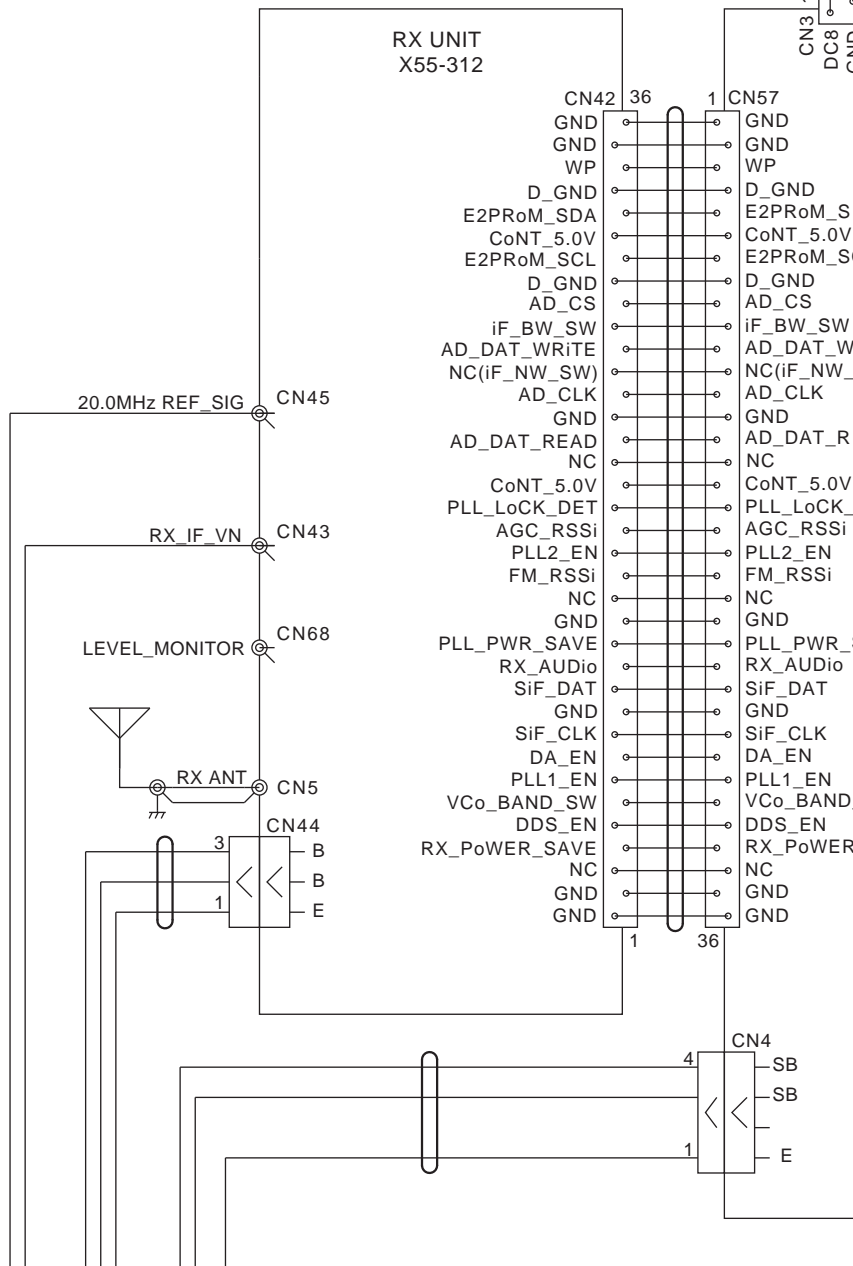
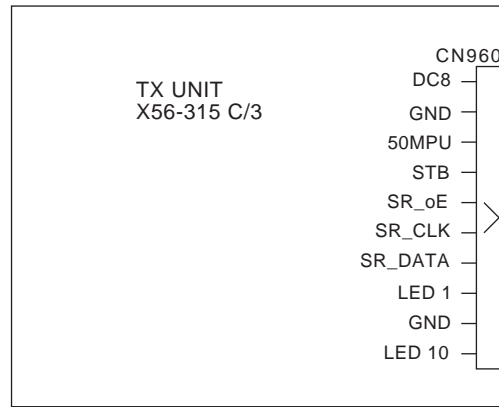


**AUDIO BLOCK**









CN920  
 DC8  
 GND  
 50MPU  
 STB  
 SR\_oE  
 SR\_CLK  
 SR\_DATA  
 LED 1  
 GND  
 LED 10

**TX UNIT**  
 X56-315 B/3

CN923  
 VOLUME\_IN  
 33MPU  
 GND  
 33AUD  
 SB  
 SCM\_EN  
 GND  
 PTT\_TXD\_SCM  
 HOOK\_RXD\_SCM  
 MiG  
 MIC

**FINAL UNIT**  
 X45-387 D/4

CN905  
 VOLUME\_IN  
 33MPU  
 GND  
 33AUD  
 SB  
 SCM\_EN  
 GND  
 PTT\_TXD\_SCM  
 HooK\_RXD\_SCM  
 MiG  
 MIC

J901  
 1 NC  
 SB  
 GND  
 PTT\_TXD\_SCM  
 MiG  
 MIC  
 HOOK\_RXD\_SCM  
 SCM\_EN  
 8

TEST/SPKR (PANEL VIEW)

3 0 SPG 06 SPI 90 SPO 12  
 2 0 SB 50 GND 80 RSI 11 AO2 10  
 1 0 SB 40 GND 70 RD 10 AO1 10

DC8  
 GND  
 DC8  
 DC8  
 DC8  
 50MPU  
 50MPU  
 GND  
 DC8  
 K5  
 K4  
 K3  
 K2  
 K1  
 GND  
 STB1  
 GND  
 SR\_DATA  
 GND  
 SR\_CLK  
 GND  
 SR\_oE  
 GND  
 PTT\_TXD\_SCM  
 SCM\_EN  
 HooK\_RXD\_SCM  
 GND  
 oCXo\_ST\_G  
 PWR\_ST\_R  
 oCXo\_ST\_R  
 SB  
 VoLUME\_IN  
 33AUD  
 33MPU  
 MIC  
 GND  
 MiG

CN311  
 DC8  
 GND  
 DC8  
 DC8  
 DC8  
 50MPU  
 50MPU  
 GND  
 DC8  
 K5  
 K4  
 K3  
 K2  
 K1  
 GND  
 STB1  
 GND  
 SR\_DATA  
 GND  
 SR\_CLK  
 GND  
 SR\_oE  
 GND  
 PTT\_TXD\_SCM  
 SCM\_EN  
 HooK\_RXD\_SCM  
 GND  
 oCXo\_ST\_G  
 PWR\_ST\_R  
 oCXo\_ST\_R  
 SB  
 VoLUME\_IN  
 33AUD  
 33MPU  
 MIC  
 GND  
 MiG

D  
 oM\_SDA  
 .5.0V  
 oM\_SCL  
 D  
 S  
 /\_SW  
 AT\_WRITE  
 \_NW\_SW)  
 LK  
 AT\_READ  
 .5.0V  
 oCK\_DET  
 RSSI  
 EN  
 SSI

PWR\_SAVE  
 UDio  
 AT  
 CLK  
 N  
 EN  
 BAND\_SW  
 EN  
 oWER\_SAVE

36

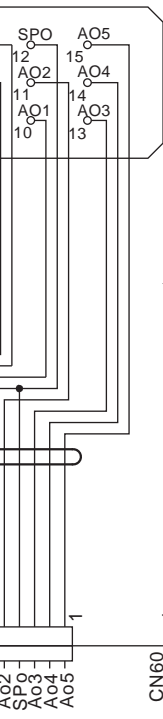
20

**CONTROL UNIT1**  
 X53-413

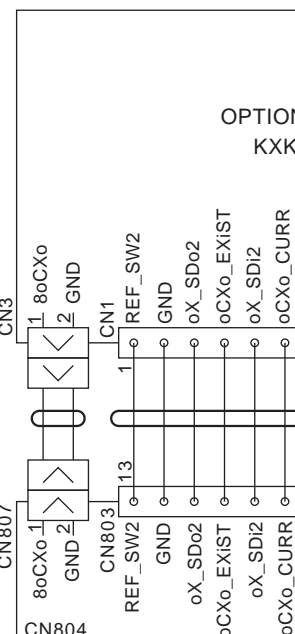
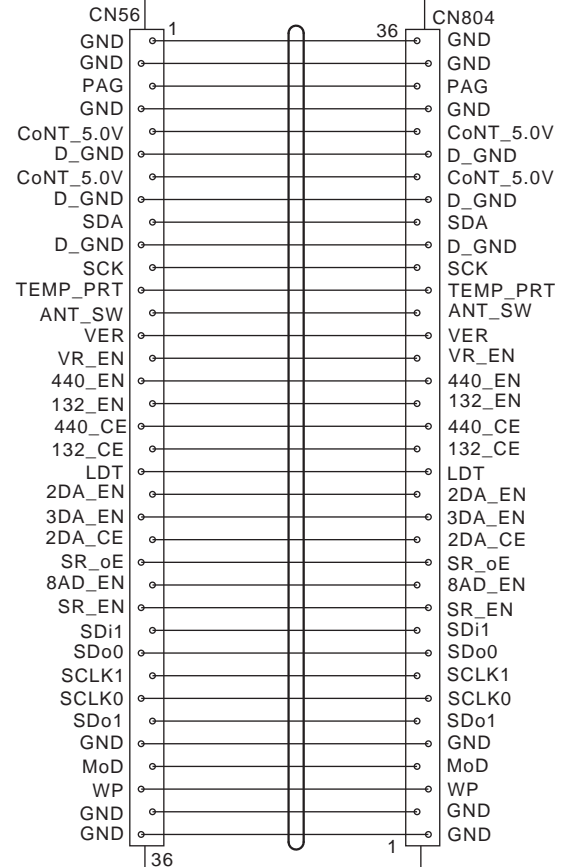
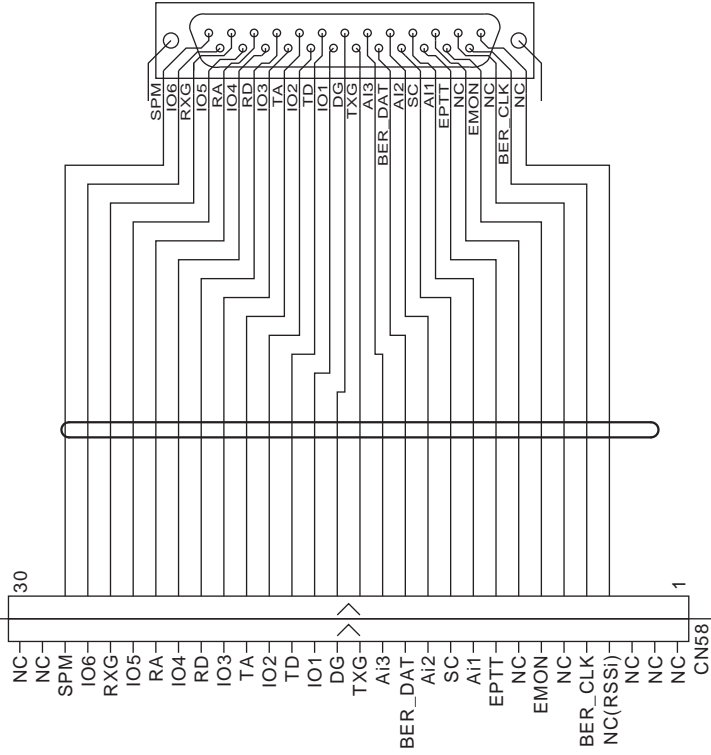
36|CN2  
 Hi\_VoL\_DET  
 GND  
 50MPU\_A\_GND  
 50MPU  
 50MPU\_A\_GND  
 DC50  
 DC50  
 DC50  
 33MPU\_A\_GND  
 33MPU  
 33MPU  
 50MPU\_A  
 33MPU\_A  
 33SH  
 50MPU\_CoNT  
 NC  
 E\_PTT\_SH  
 SC\_SH  
 GND  
 SRXO\_ATXO  
 STXO\_ARXO  
 GND  
 RF\_PTT  
 TX\_STATE  
 QT\_DQT  
 RADIO\_ERR  
 GND  
 ADSP\_CK\_SFT  
 TRUNKING  
 A16C\_CK\_SFT  
 BER\_DAT  
 BER\_CLK  
 GND  
 SYS\_RST

36|CN1  
 GND  
 GND  
 RX\_PWR\_SAVE  
 oCXo\_ST\_R  
 oCXo\_ST\_G  
 VOLUME\_IN  
 PWR\_ST\_R  
 Mod\_D\_OUT  
 GND  
 RX\_AUDIO\_D  
 BEEP  
 MiG\_IN  
 iNRA\_SW  
 NC  
 HooK\_RXD\_SCM  
 AMP\_SW  
 SCM\_EN  
 AF\_MUTE  
 iNSP\_SW  
 EVOL\_DATA  
 PTT\_AM16C  
 EVoL\_CLK  
 GND  
 EVOL\_LD  
 TAAD\_SW  
 TA\_SW

ANEL ViEW)



CONTROL I/O (PANEL VIEW)

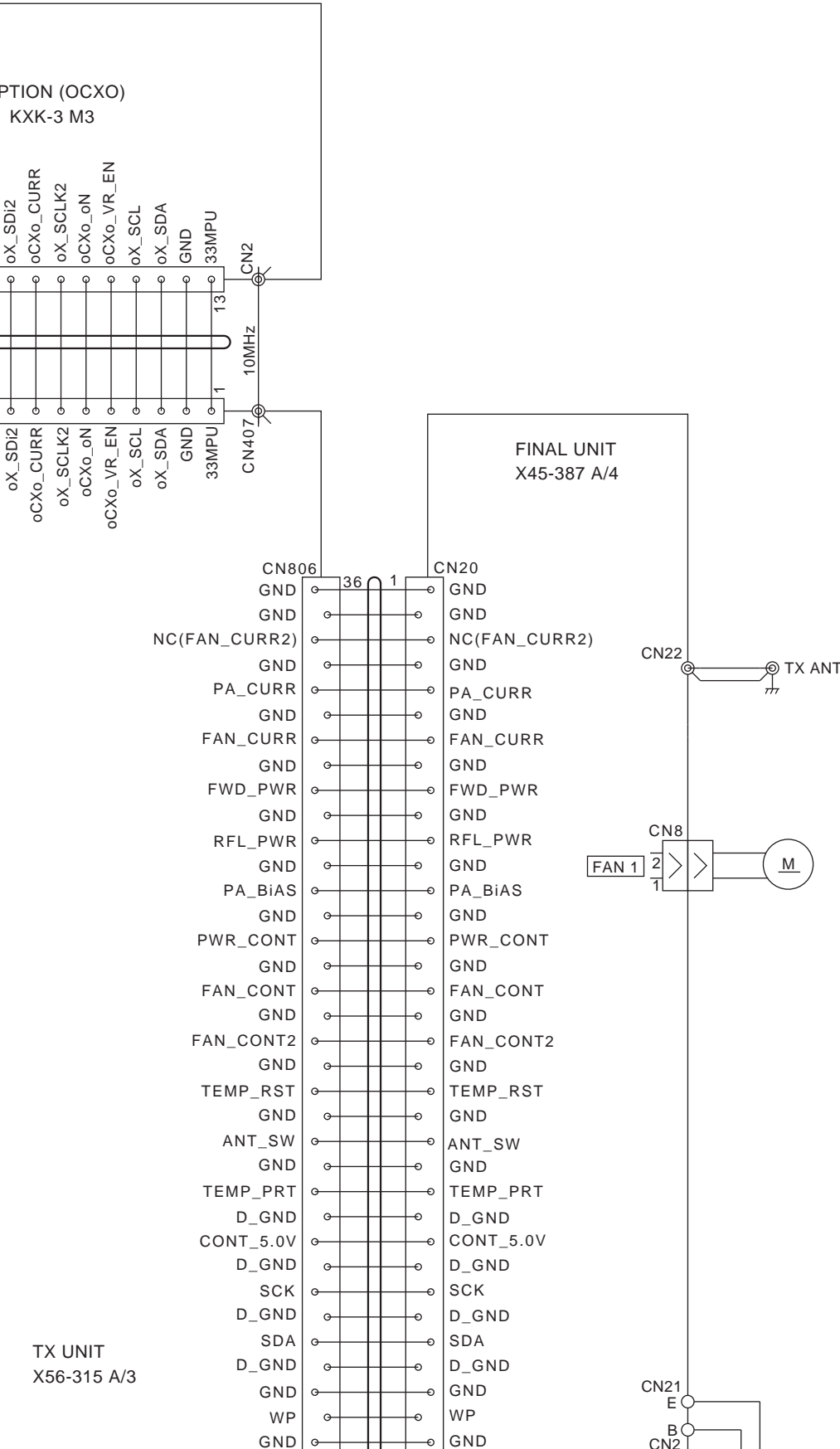


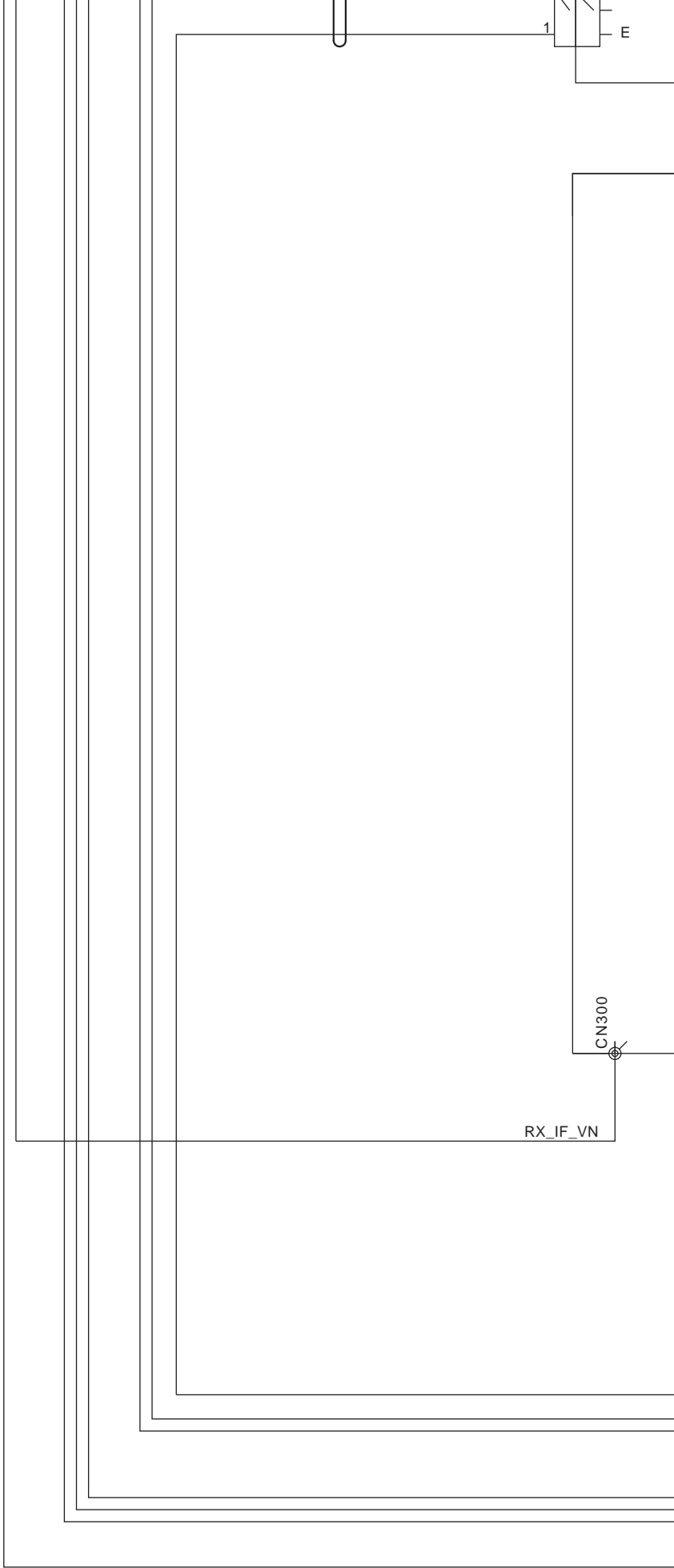
OPTION  
KXX

T  
X



# NXR-901 APPENDIX 2 (INTERCONNECTION DIAGRAM)





1

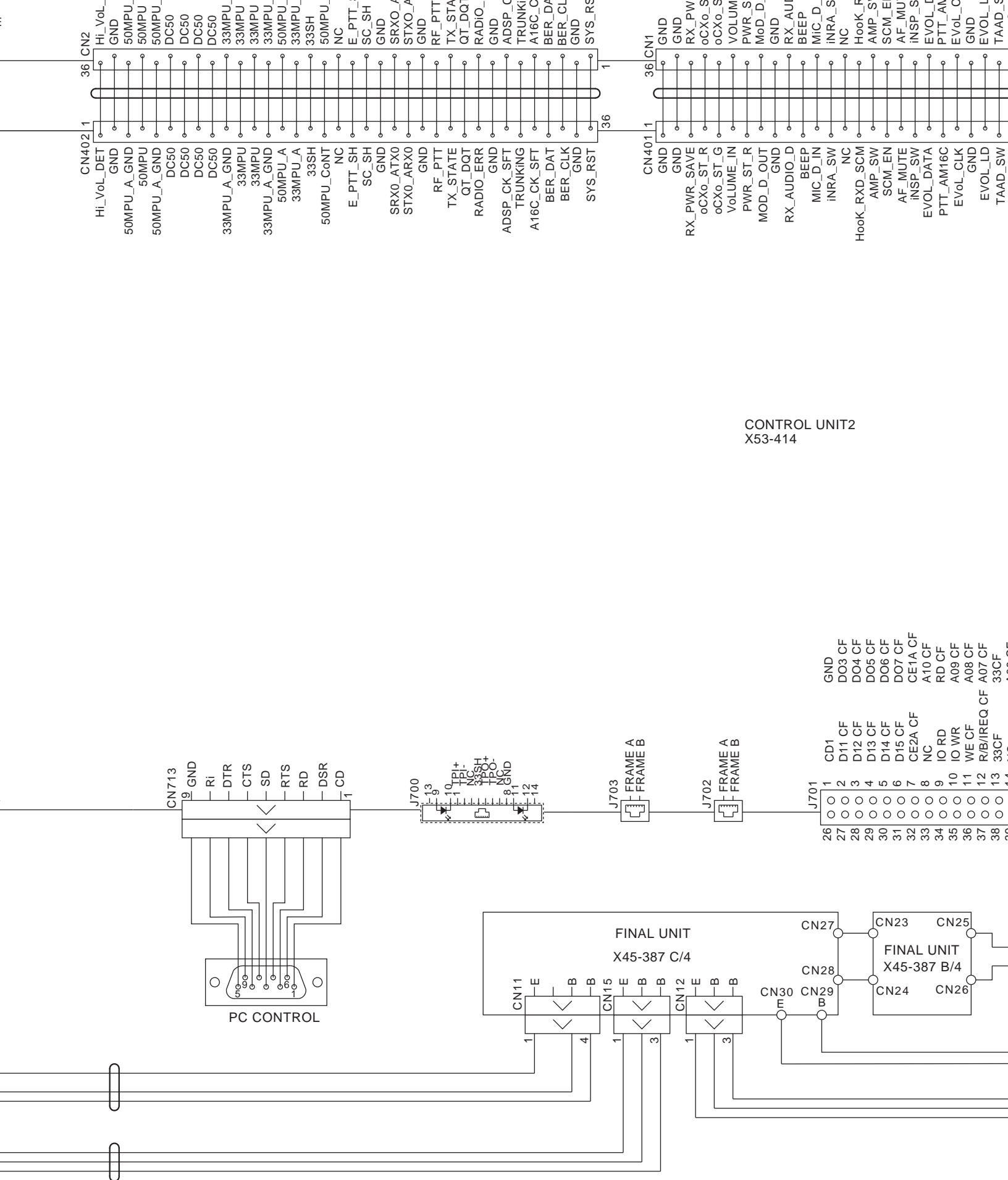
E

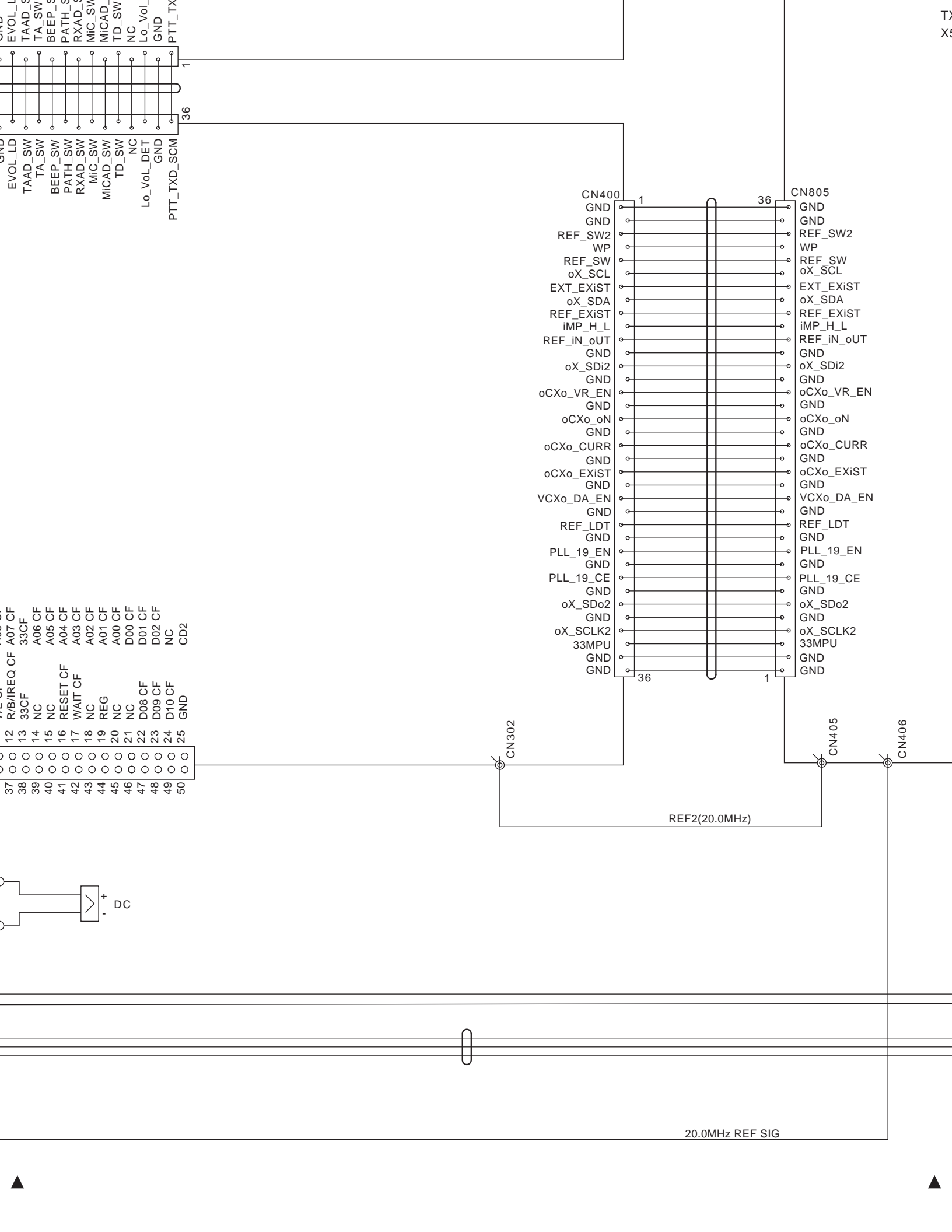
CN300

RX\_IF\_VN



CONTROL UNIT2  
X53-414



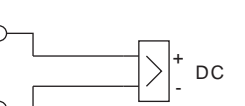


- 37 ○ ○ ○ R/B/REQ CF A07 CF
- 38 ○ ○ ○ 33CF
- 39 ○ ○ ○ A06 CF
- 40 ○ ○ ○ NC
- 41 ○ ○ ○ A05 CF
- 42 ○ ○ ○ RESET CF
- 43 ○ ○ ○ A04 CF
- 44 ○ ○ ○ A03 CF
- 45 ○ ○ ○ A02 CF
- 46 ○ ○ ○ A01 CF
- 47 ○ ○ ○ REG
- 48 ○ ○ ○ NC
- 49 ○ ○ ○ D00 CF
- 50 ○ ○ ○ D01 CF
- ○ ○ D02 CF
- ○ ○ NC
- ○ ○ D08 CF
- ○ ○ D09 CF
- ○ ○ D10 CF
- ○ ○ NC
- ○ ○ CD2

- EVOL\_LD
- TAAD\_SW
- TAAD\_SW
- TAAD\_SW
- BEEP\_SW
- PATH\_SW
- RXAD\_SW
- MIC\_SW
- MICAD\_SW
- TD\_SW
- TD\_SW
- NC
- Lo\_Vol\_DET
- GND
- PTT\_TX

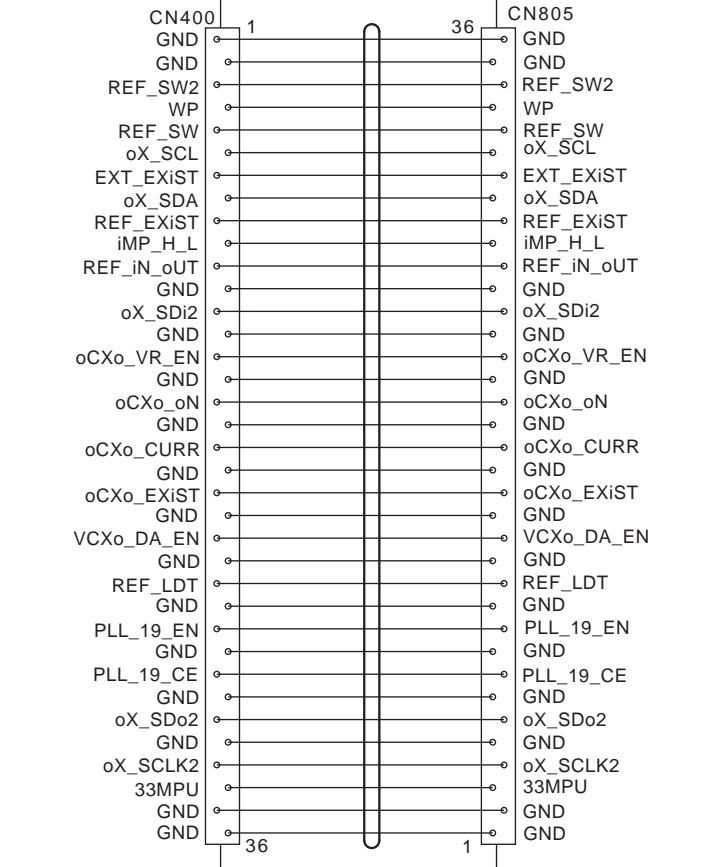
- EVOL\_LD
- TAAD\_SW
- TAAD\_SW
- BEEP\_SW
- PATH\_SW
- RXAD\_SW
- MIC\_SW
- MICAD\_SW
- TD\_SW
- TD\_SW
- NC
- Lo\_Vol\_DET
- GND
- PTT\_TXD\_SCM

- 12 ○ ○ ○ R/B/REQ CF A07 CF
- 13 ○ ○ ○ 33CF
- 14 ○ ○ ○ A06 CF
- 15 ○ ○ ○ NC
- 16 ○ ○ ○ A05 CF
- 17 ○ ○ ○ RESET CF
- 18 ○ ○ ○ A04 CF
- 19 ○ ○ ○ A03 CF
- 20 ○ ○ ○ A02 CF
- 21 ○ ○ ○ A01 CF
- 22 ○ ○ ○ REG
- 23 ○ ○ ○ NC
- 24 ○ ○ ○ D00 CF
- 25 ○ ○ ○ D01 CF
- ○ ○ D02 CF
- ○ ○ NC
- ○ ○ D08 CF
- ○ ○ D09 CF
- ○ ○ D10 CF
- ○ ○ NC
- ○ ○ CD2



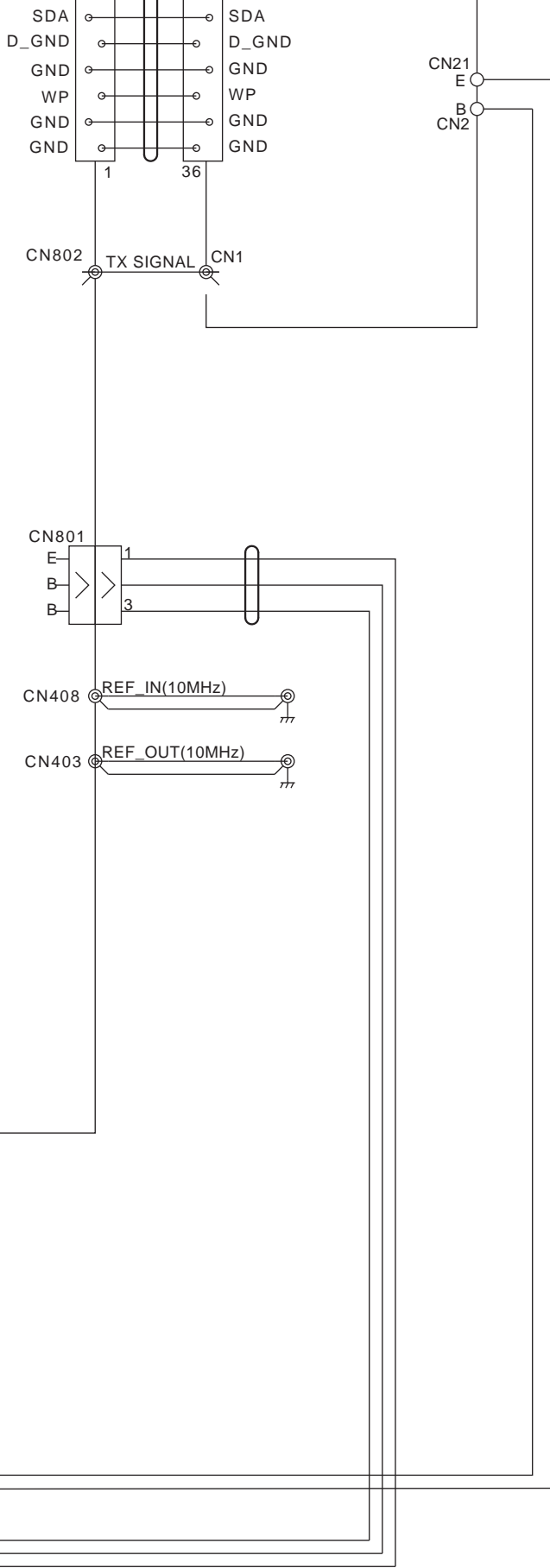
REF2(20.0MHz)

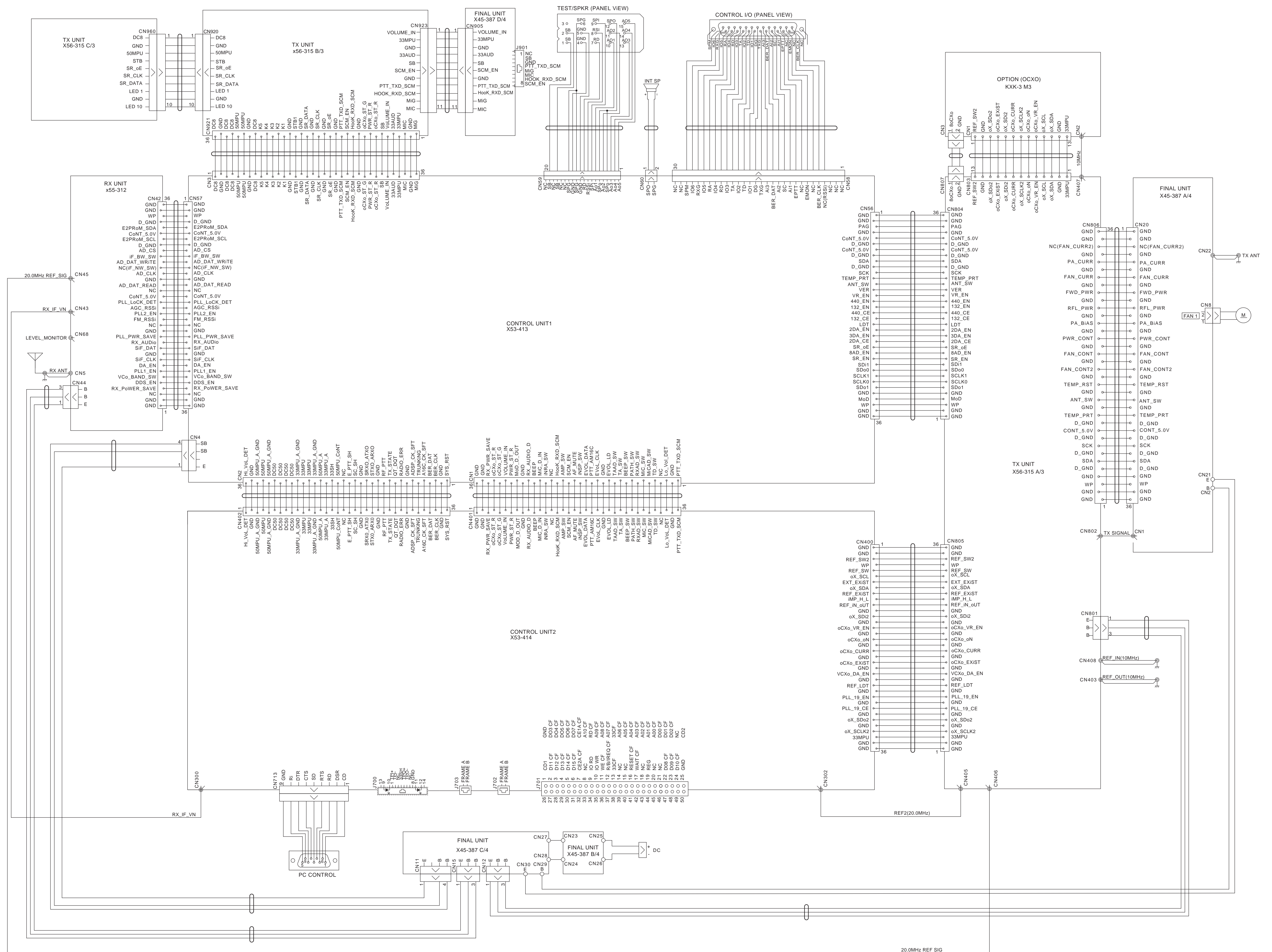
20.0MHz REF SIG



TX  
XS

TX UNIT  
X56-315 A/3

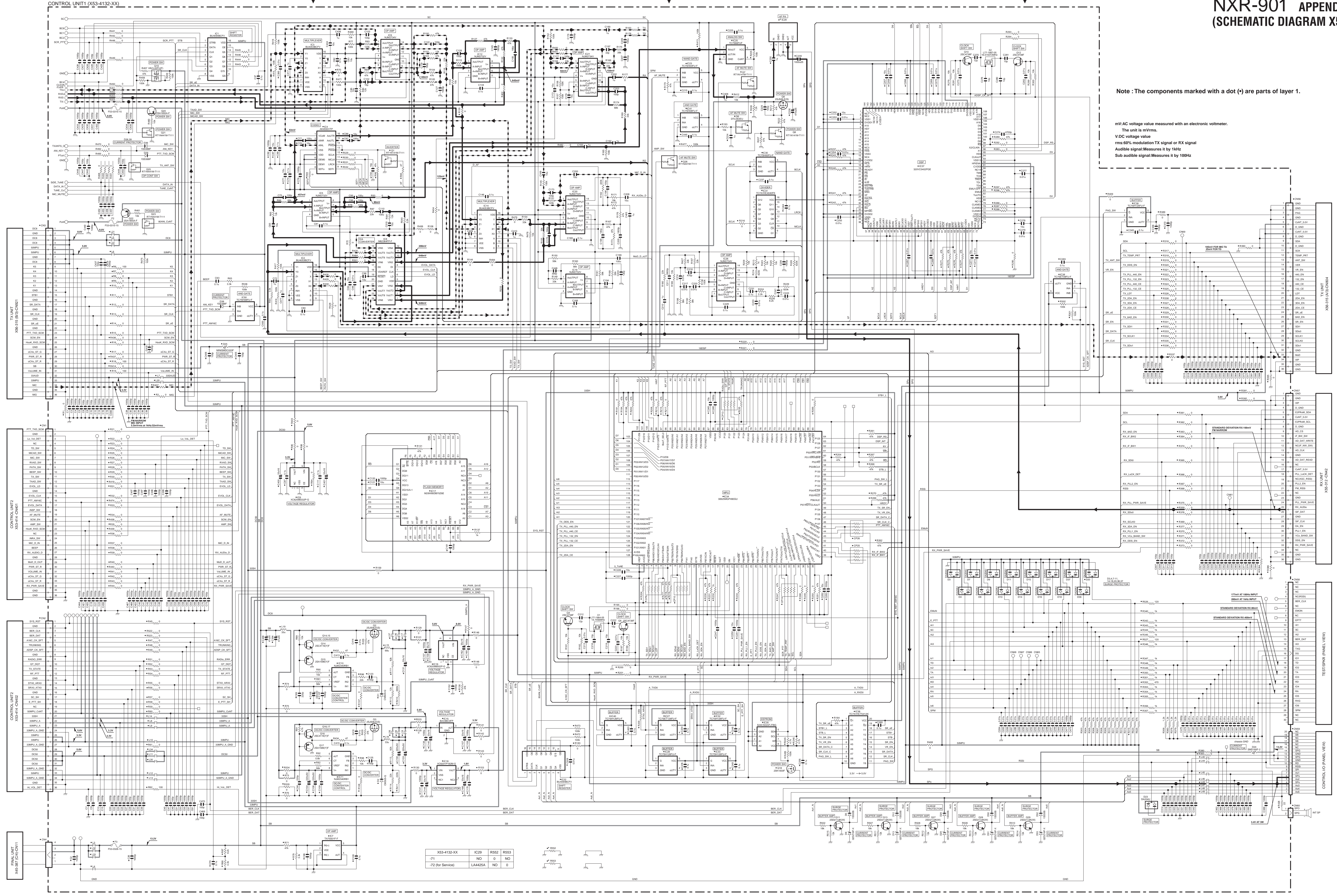




20.0MHz REF SIG

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

mV:AC voltage value measured with an electronic voltmeter.  
The unit is mVrms.  
V:DC voltage value  
rms:60% modulation TX signal or RX signal  
Audible signal: Measures it by 1kHz  
Sub audible signal: Measures it by 100Hz



X53-413-XX	IC29	R552	R553
-71	NO	NO	NO
-72 (for Service)	LA4425A	NO	0

2

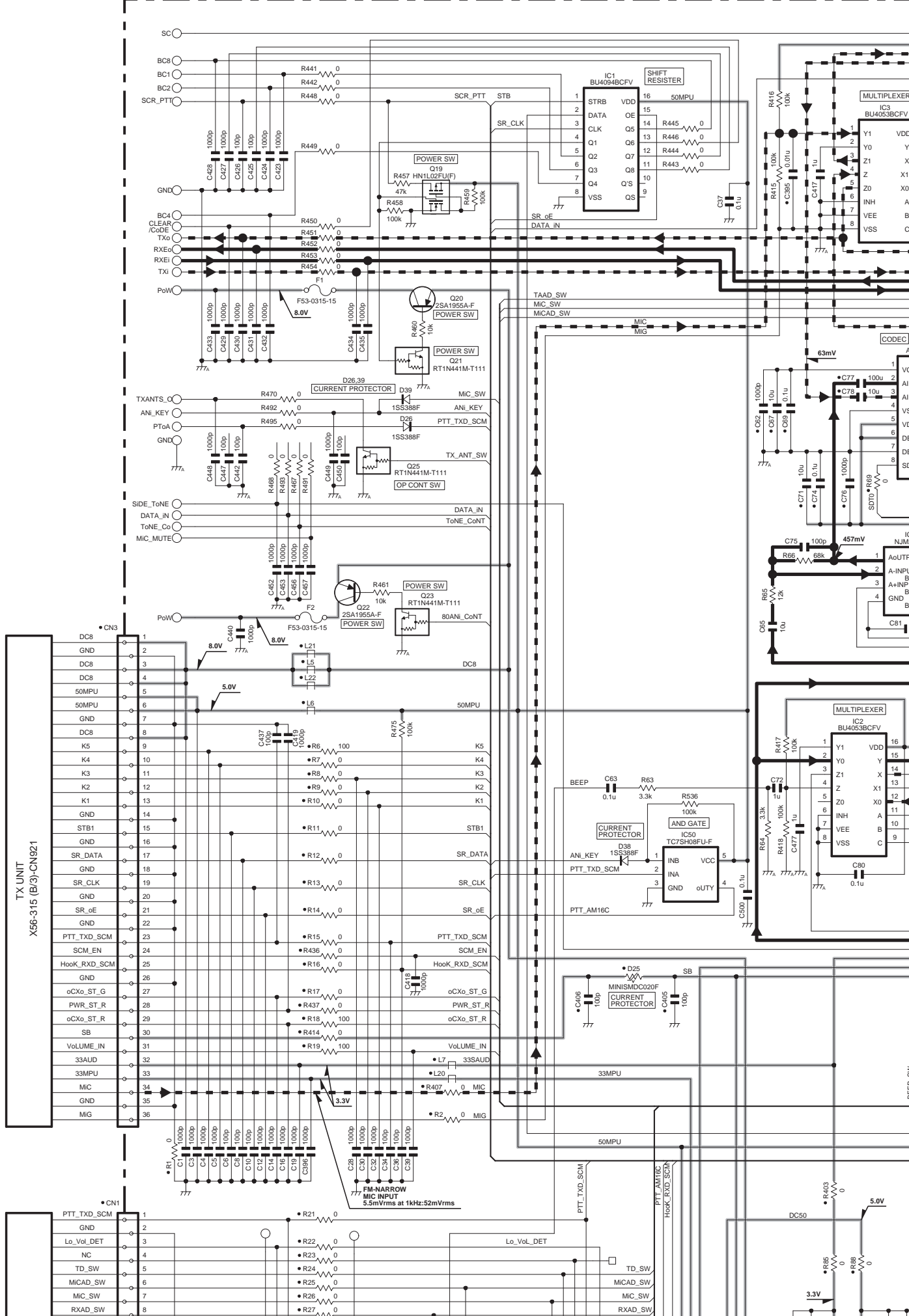
3

4

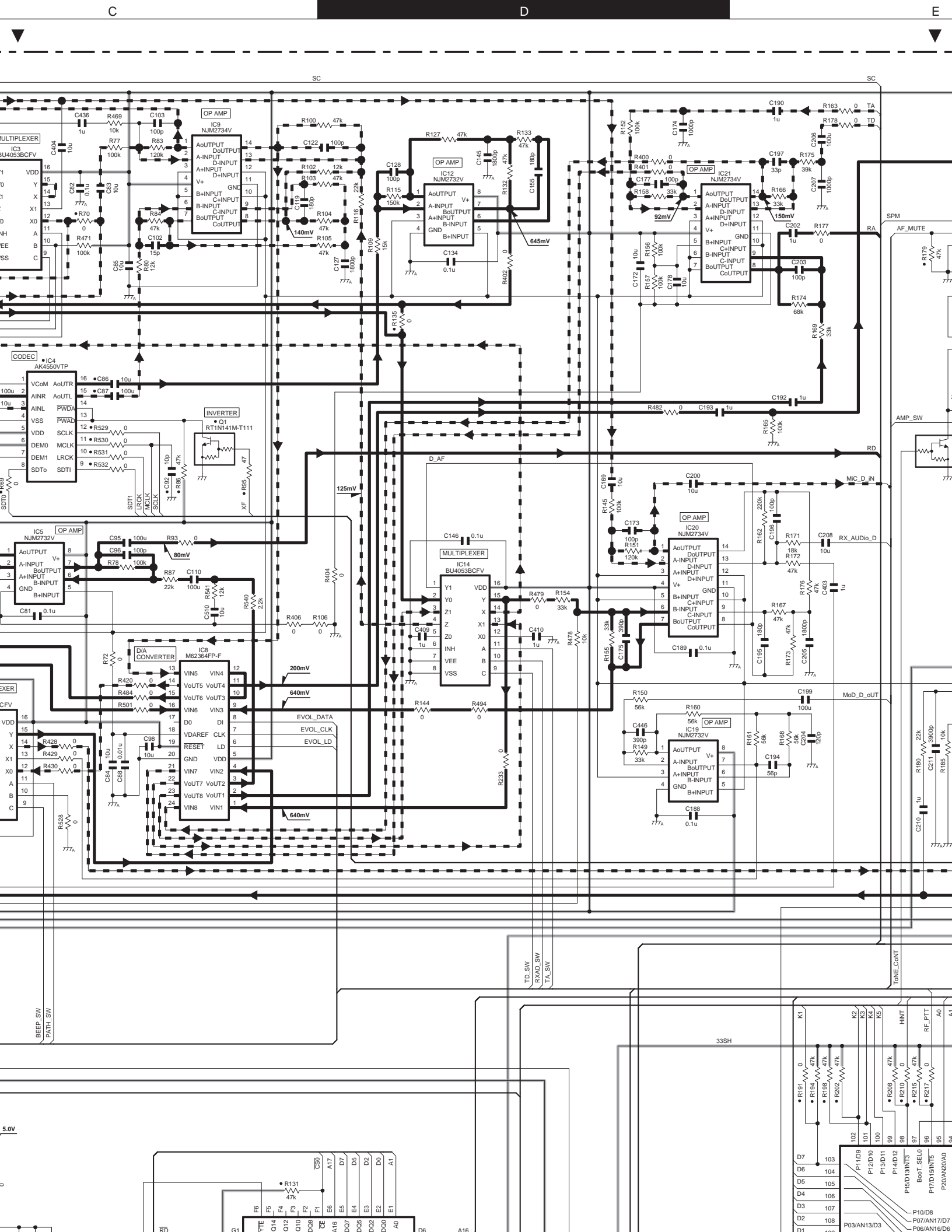
5

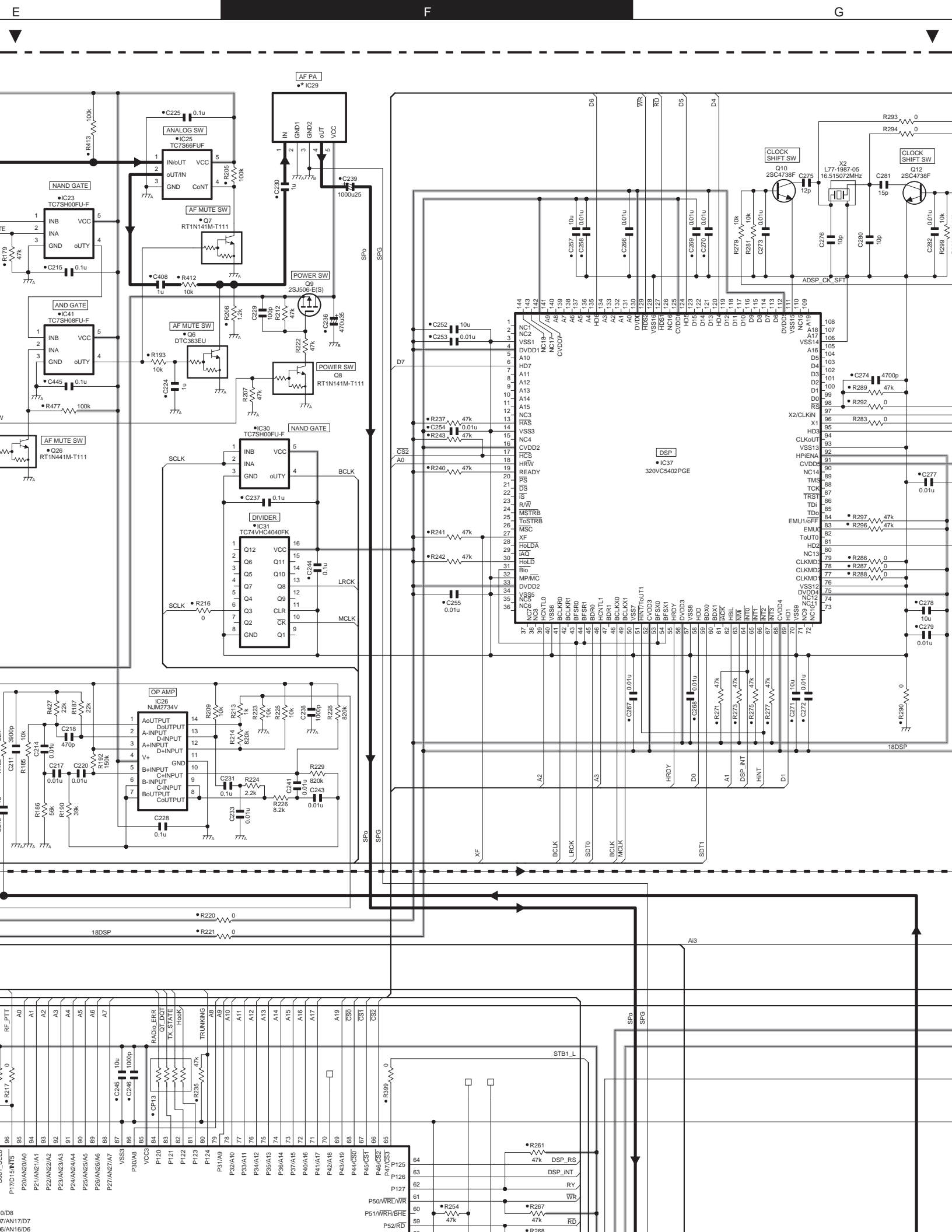
6

### CONTROL UNIT1 (X53-4132-XX)









# NXR-901 APPENDIX 3 (SCHEMATIC DIAGRAM X53-413)

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

mV: AC voltage value measured with an electronic voltmeter.

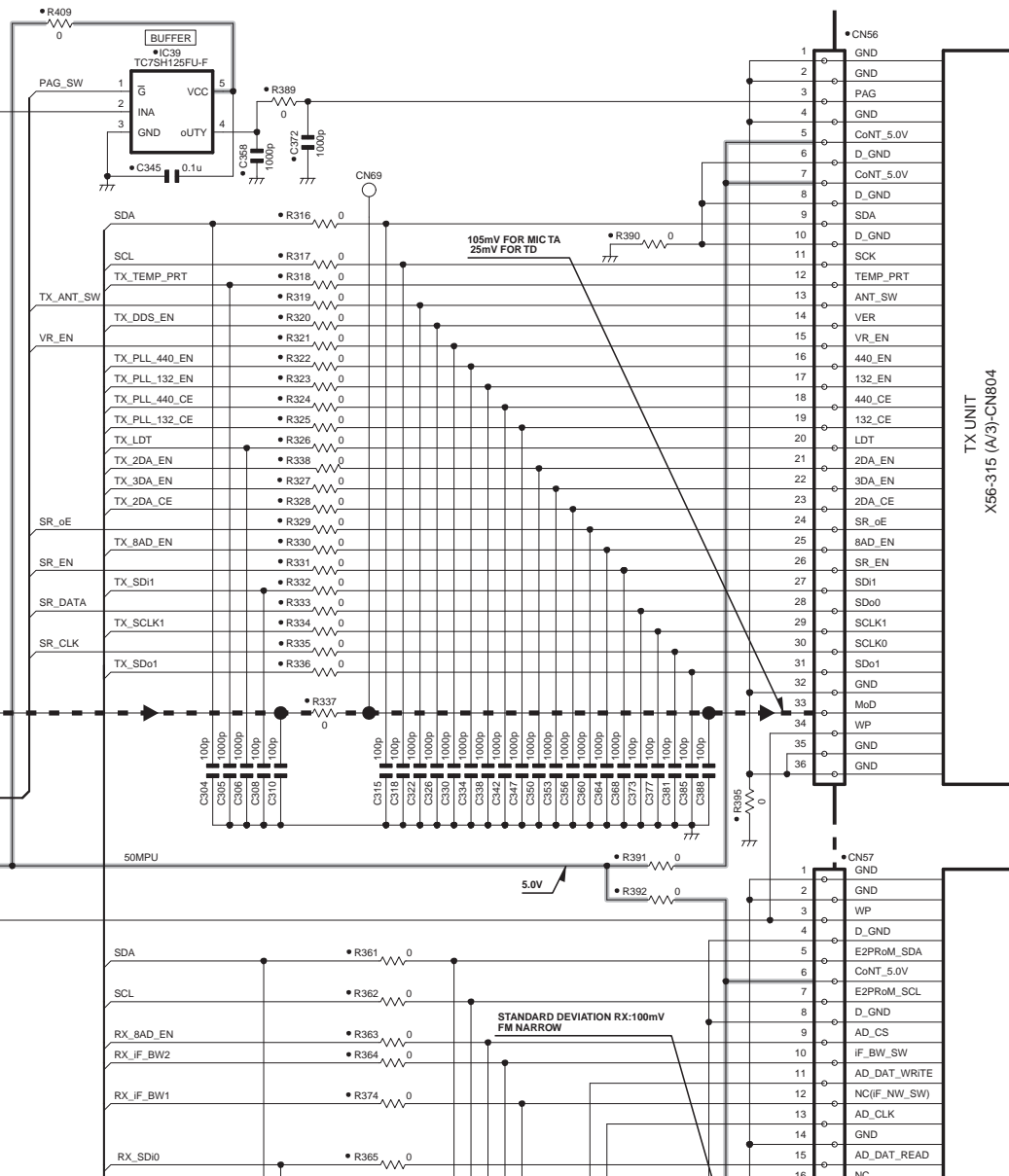
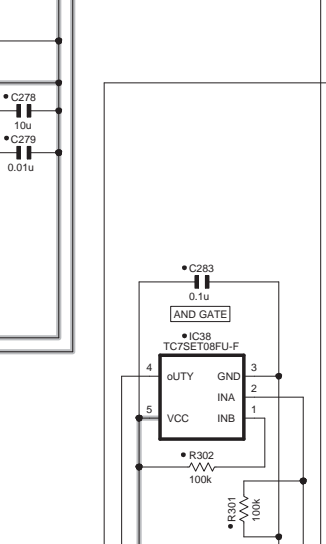
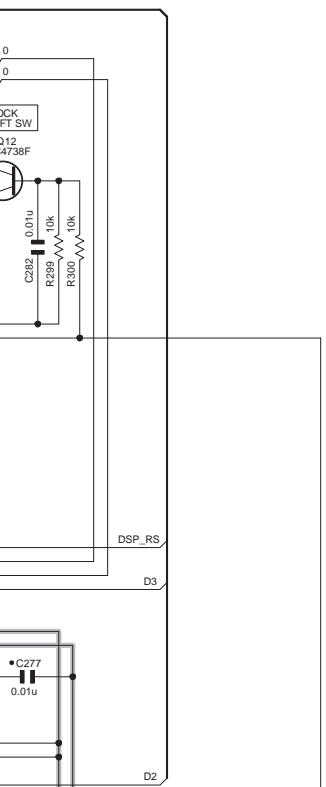
The unit is mVrms.

V: DC voltage value

rms: 60% modulation TX signal or RX signal

Audible signal: Measures it by 1kHz

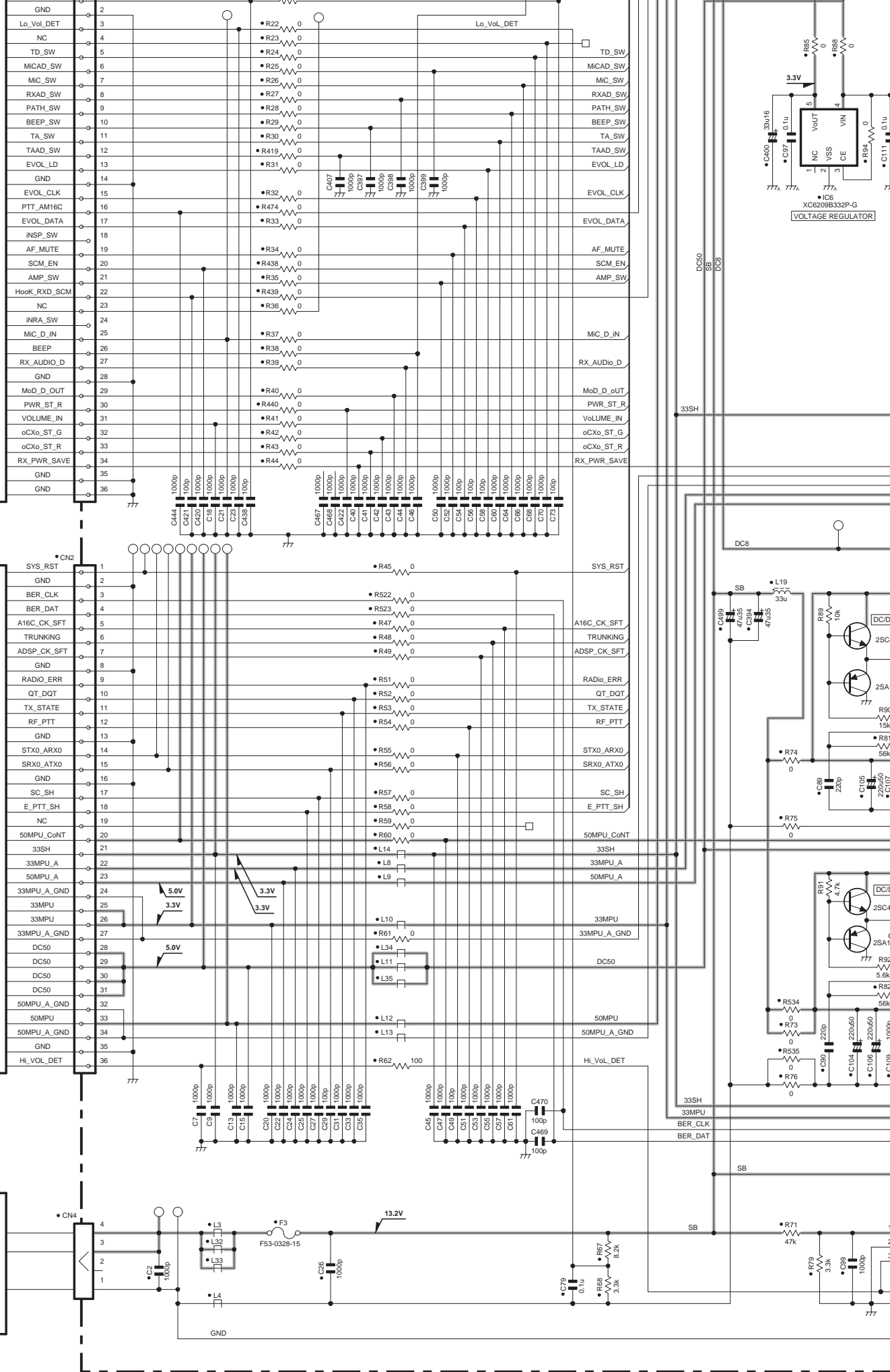
Sub audible signal: Measures it by 100Hz

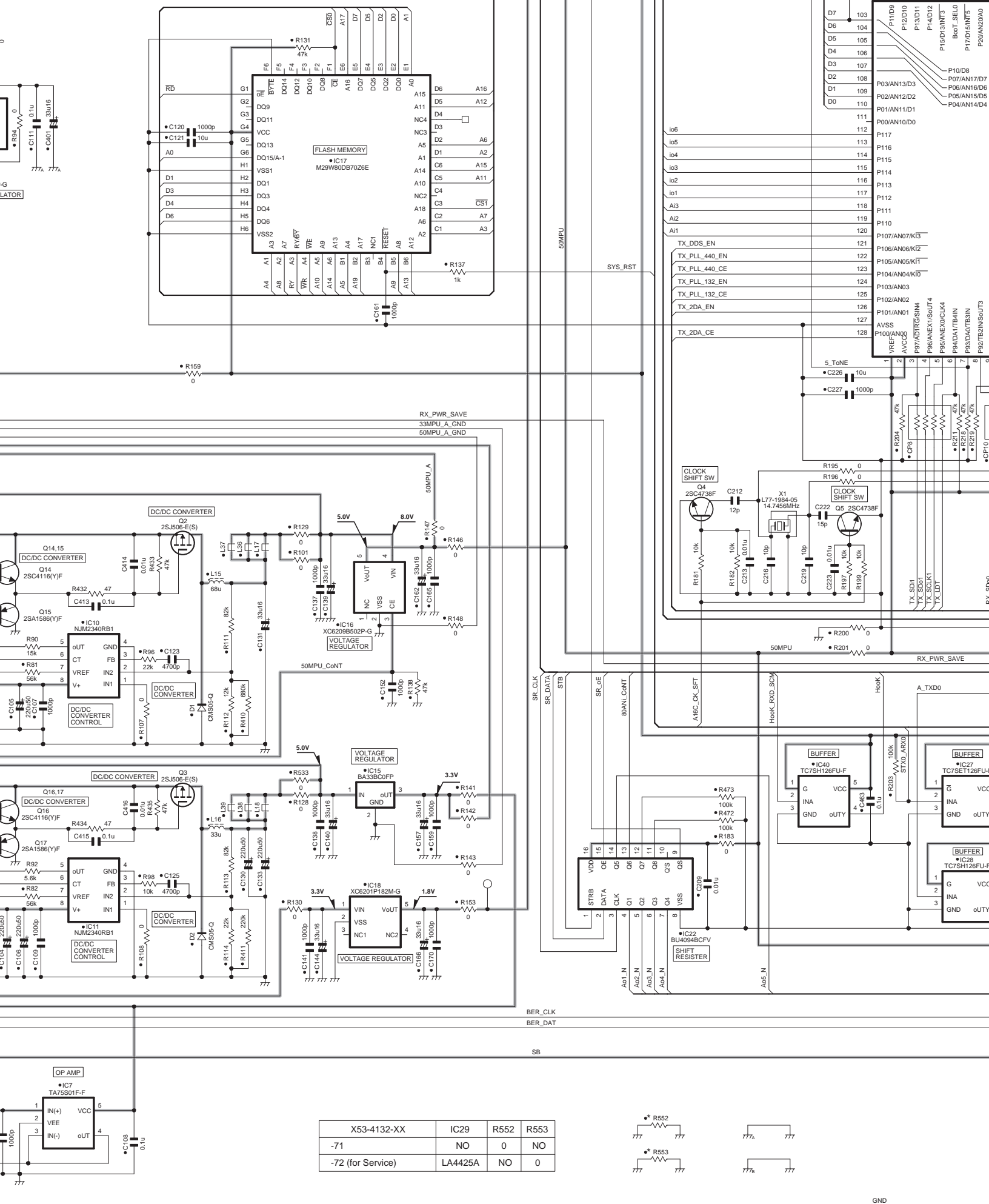


**CONTROL UNIT2**  
X53-414 -CN401

**CONTROL UNIT2**  
X53-414 -CN402

**FINAL UNIT**  
X45-387 (C/4)-CN11

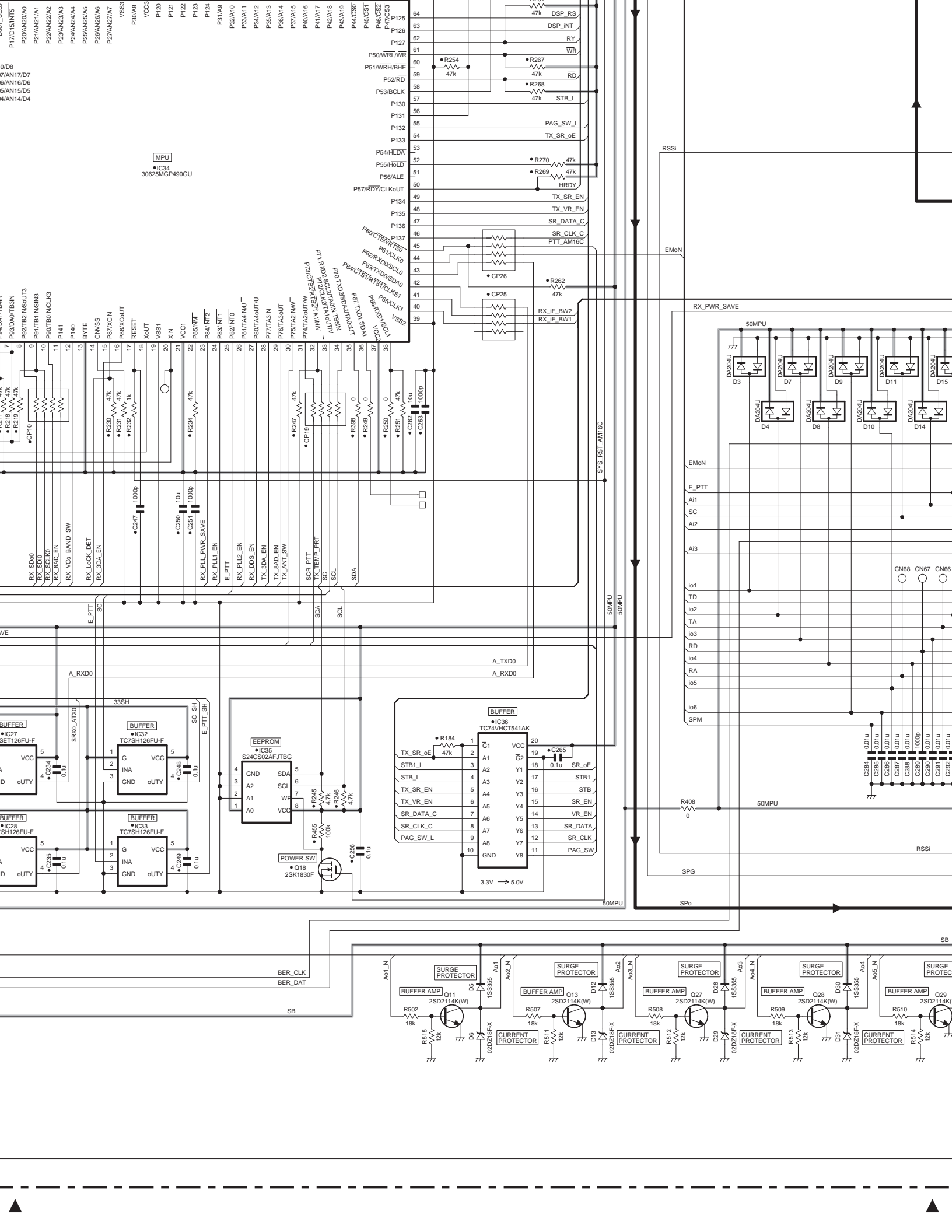


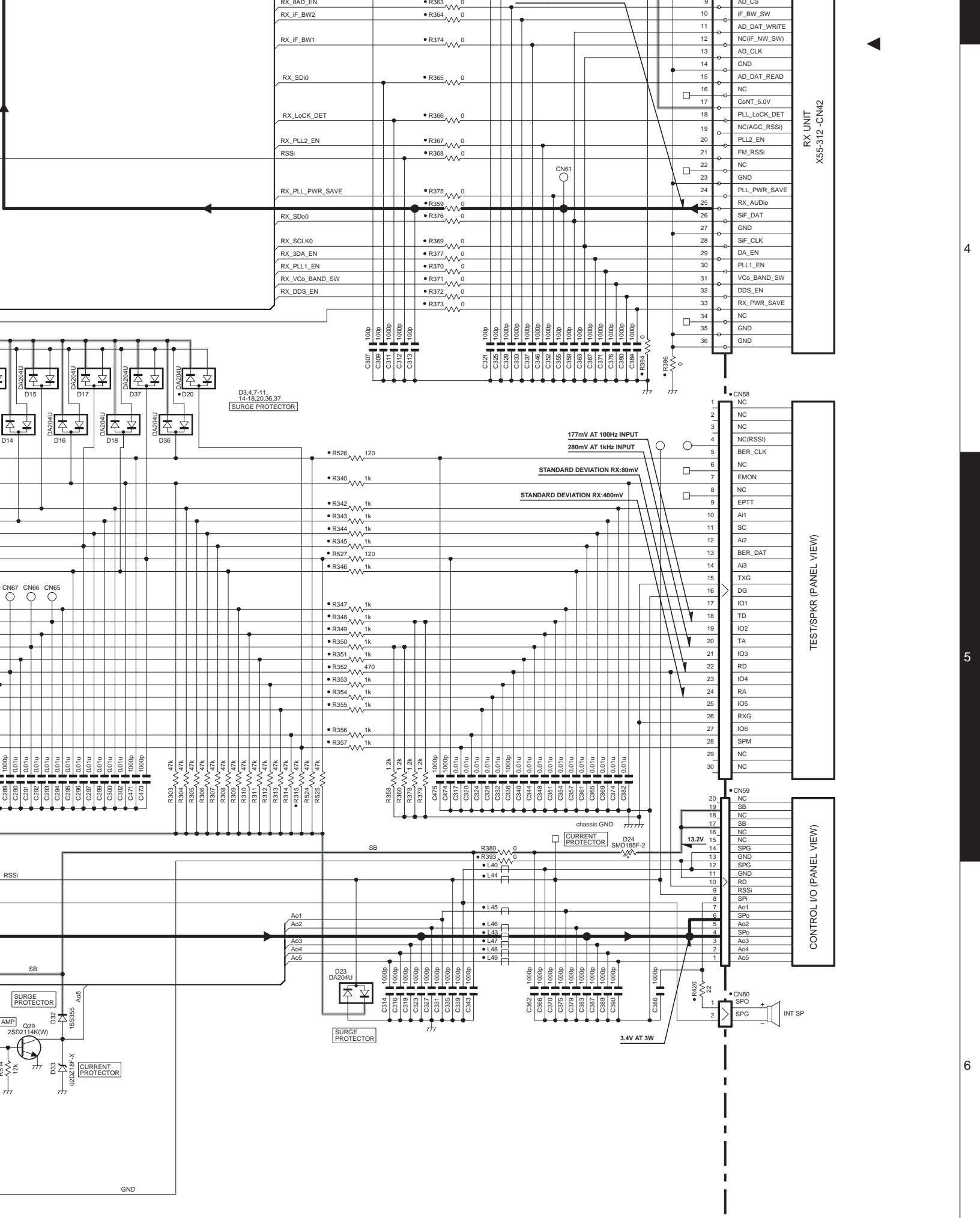


X53-4132-XX	IC29	R552	R553
-71	NO	0	NO
-72 (for Service)	LA4425A	NO	0



GND





RX UNIT  
X55-312 -CN42

TEST/SPKR (PANEL VIEW)

CONTROL I/O (PANEL VIEW)

177mV AT 100Hz INPUT  
280mV AT 1kHz INPUT

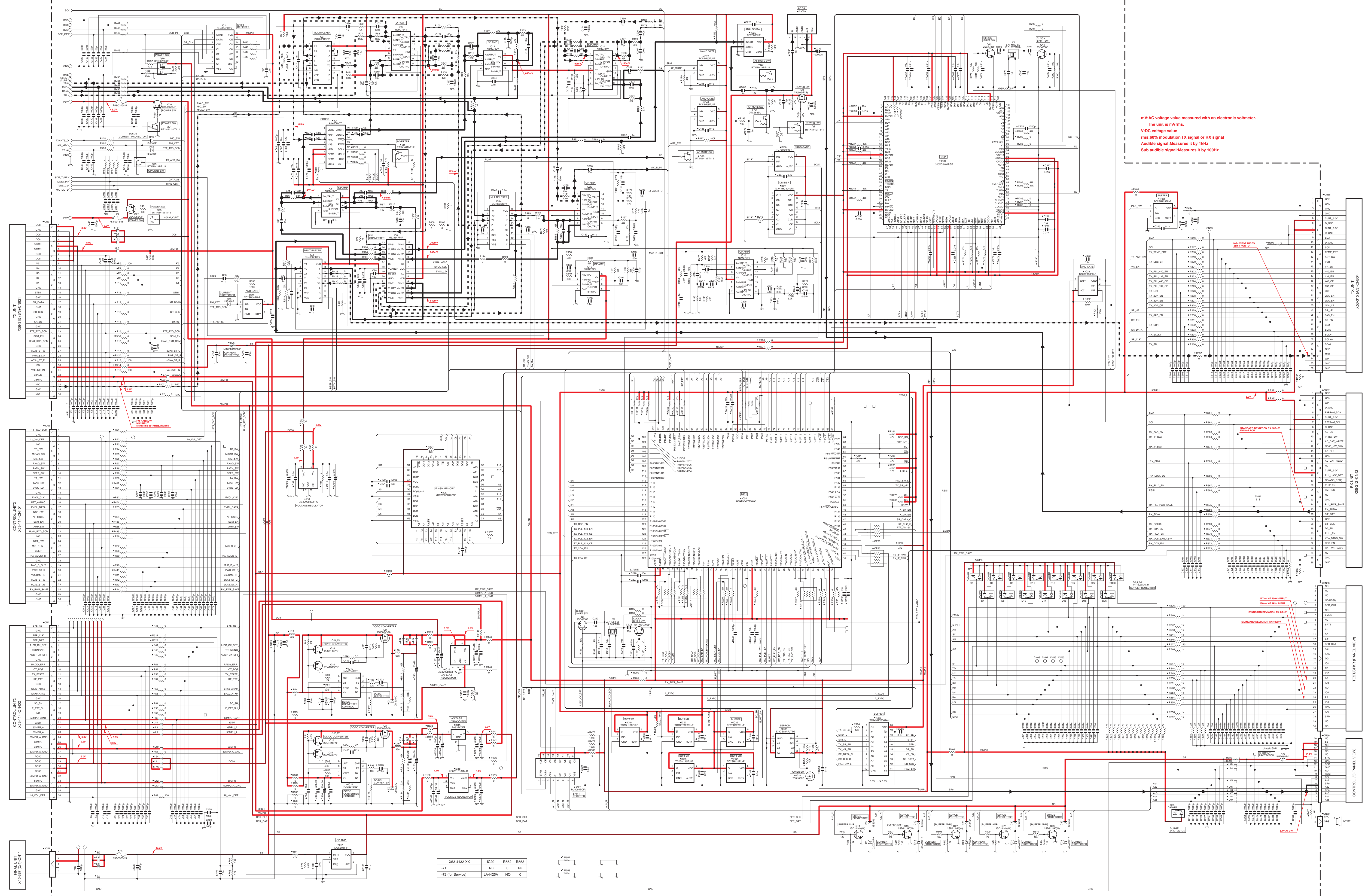
STANDARD DEVIATION RX:80mV

STANDARD DEVIATION RX:400mV

chassis GND  
CURRENT PROTECTOR  
D24 SMD185F-2

3.4V AT 3W

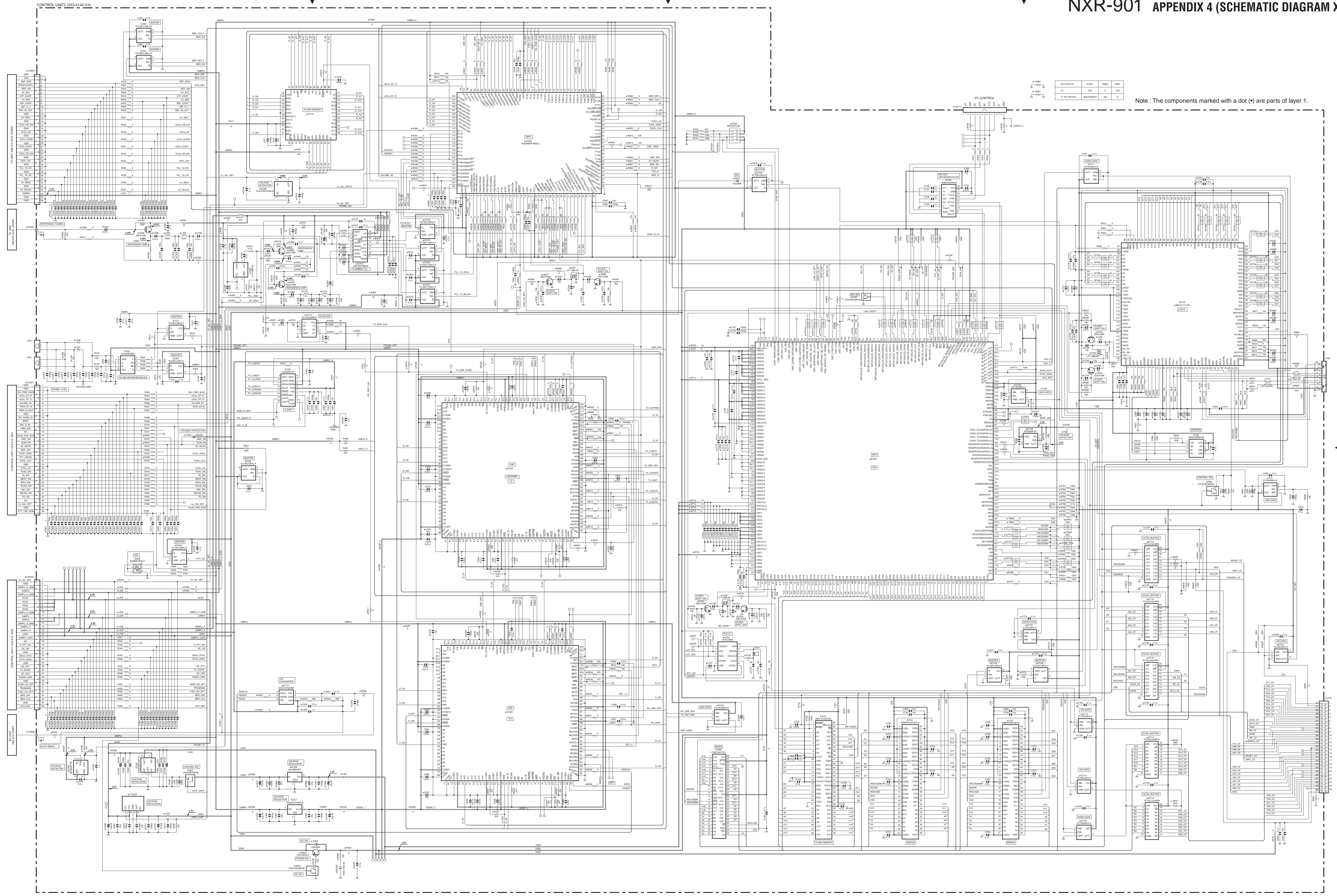
CONTROL UNIT (X53-4132-XX)



mV-AC voltage value measured with an electronic voltmeter.  
 The unit is mVrms.  
 V-DC voltage value  
 rms:50% modulation TX signal or RX signal  
 Audible signal: Measures it by 1kHz  
 Sub audible signal: Measures it by 100Hz

X53-4132-XX	IC29	R552	R553
01	NO	0	NO
12 (for Service)	LA4425A	NO	0

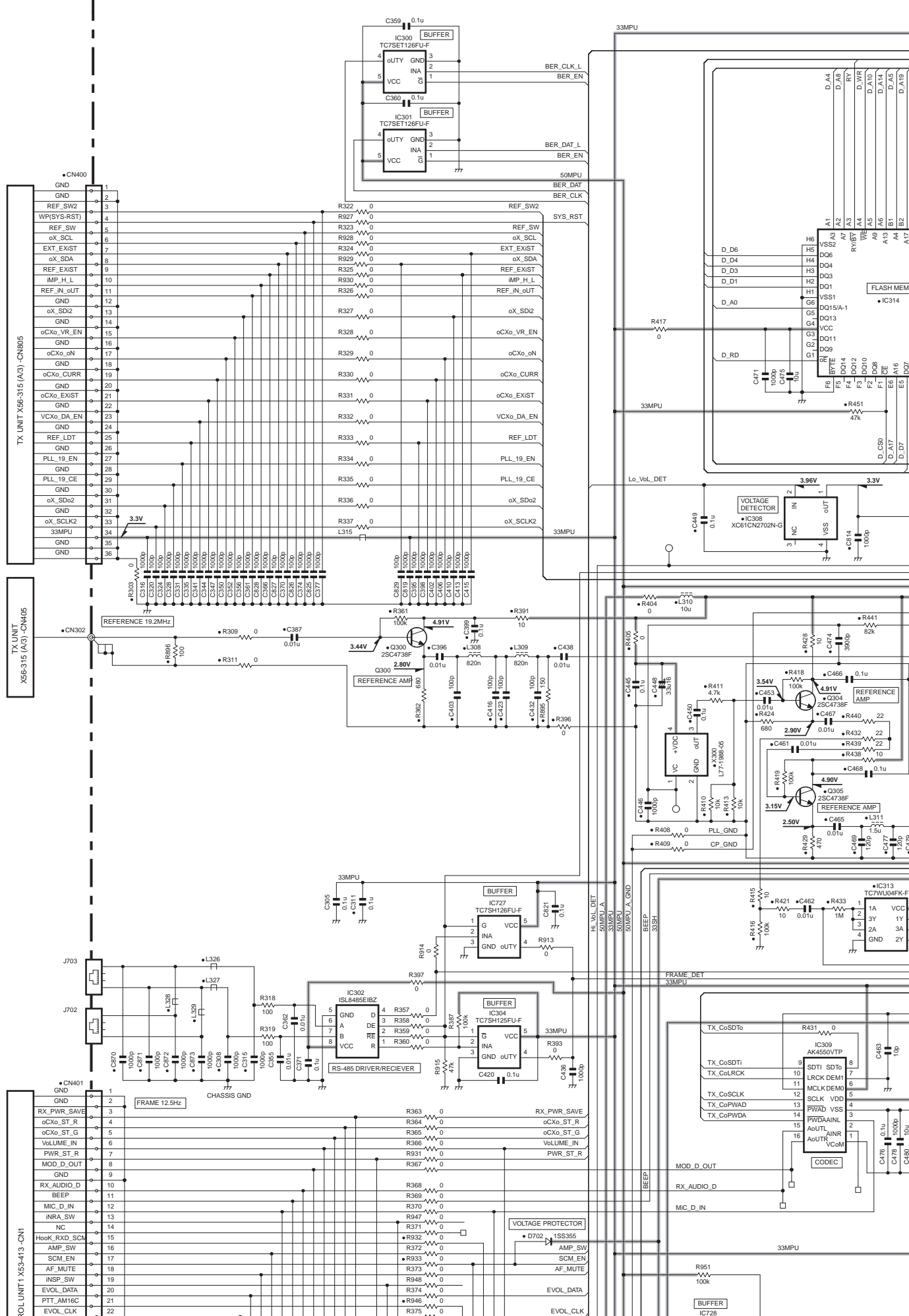




KEY	IC30	IC31	IC32	IC33
PC CONTROL	NO	NO	NO	NO
BY BUS DEVICE	NO	NO	NO	NO

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

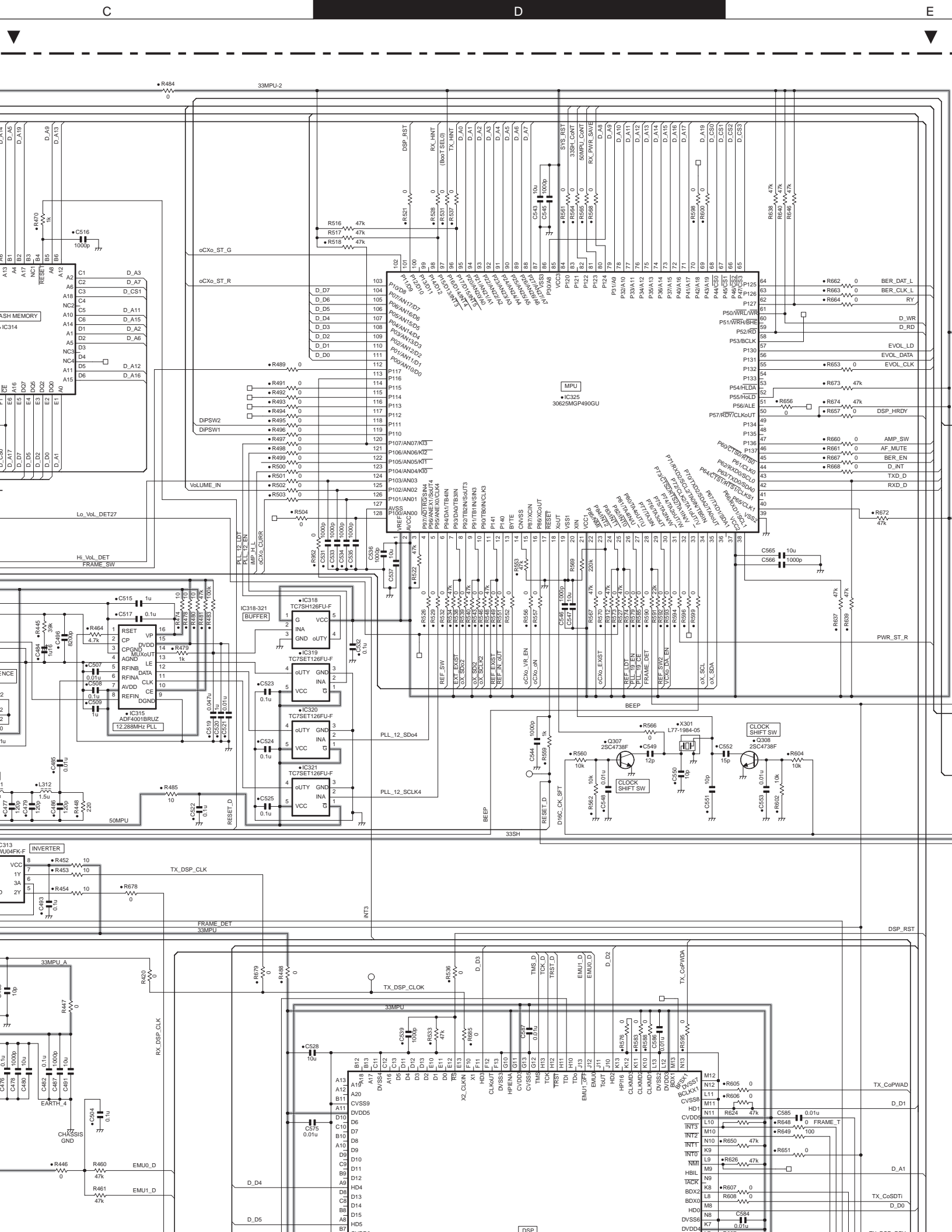
CONTROL UNIT2 (X53-4140-XX)

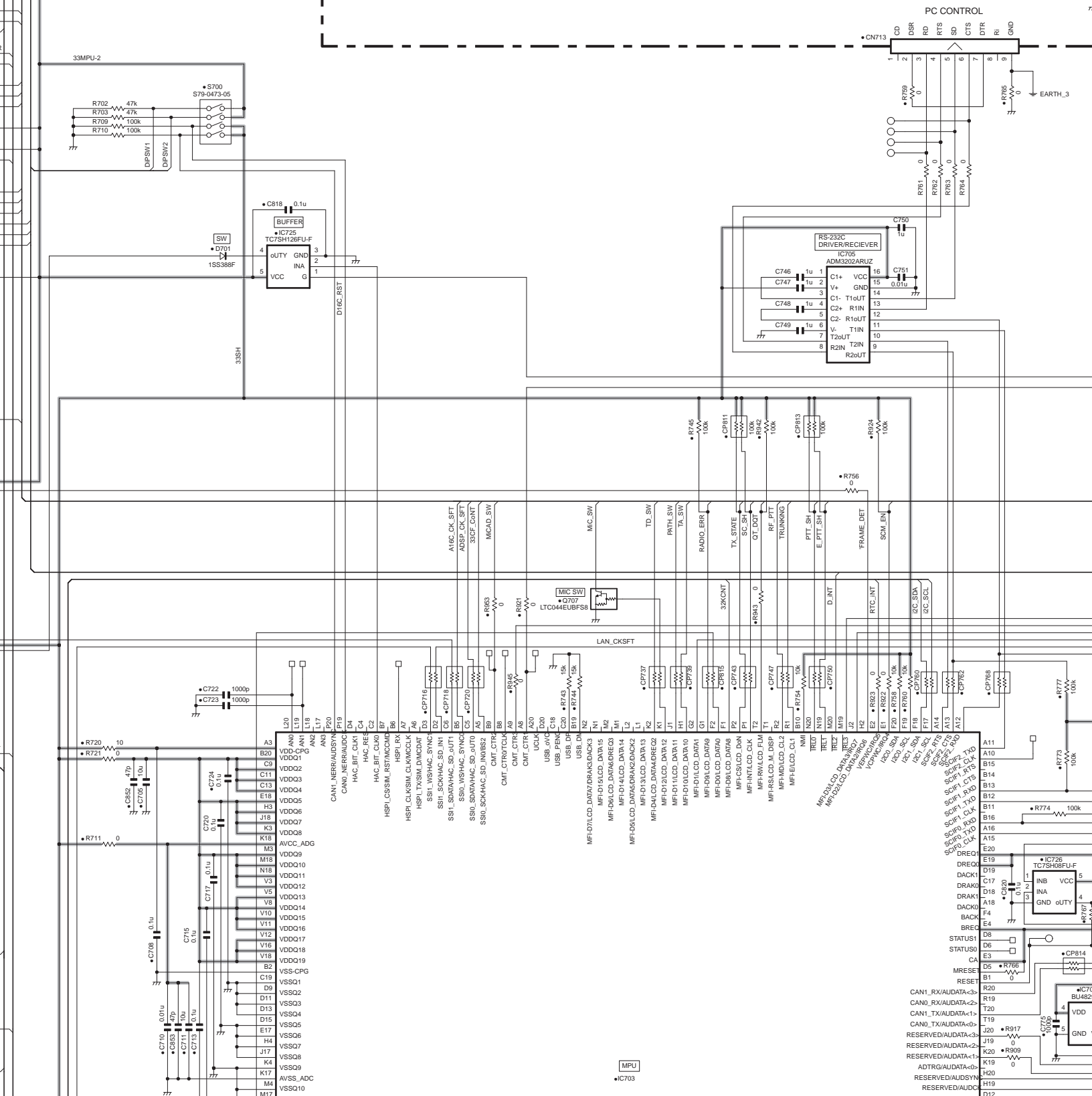


1

2

3





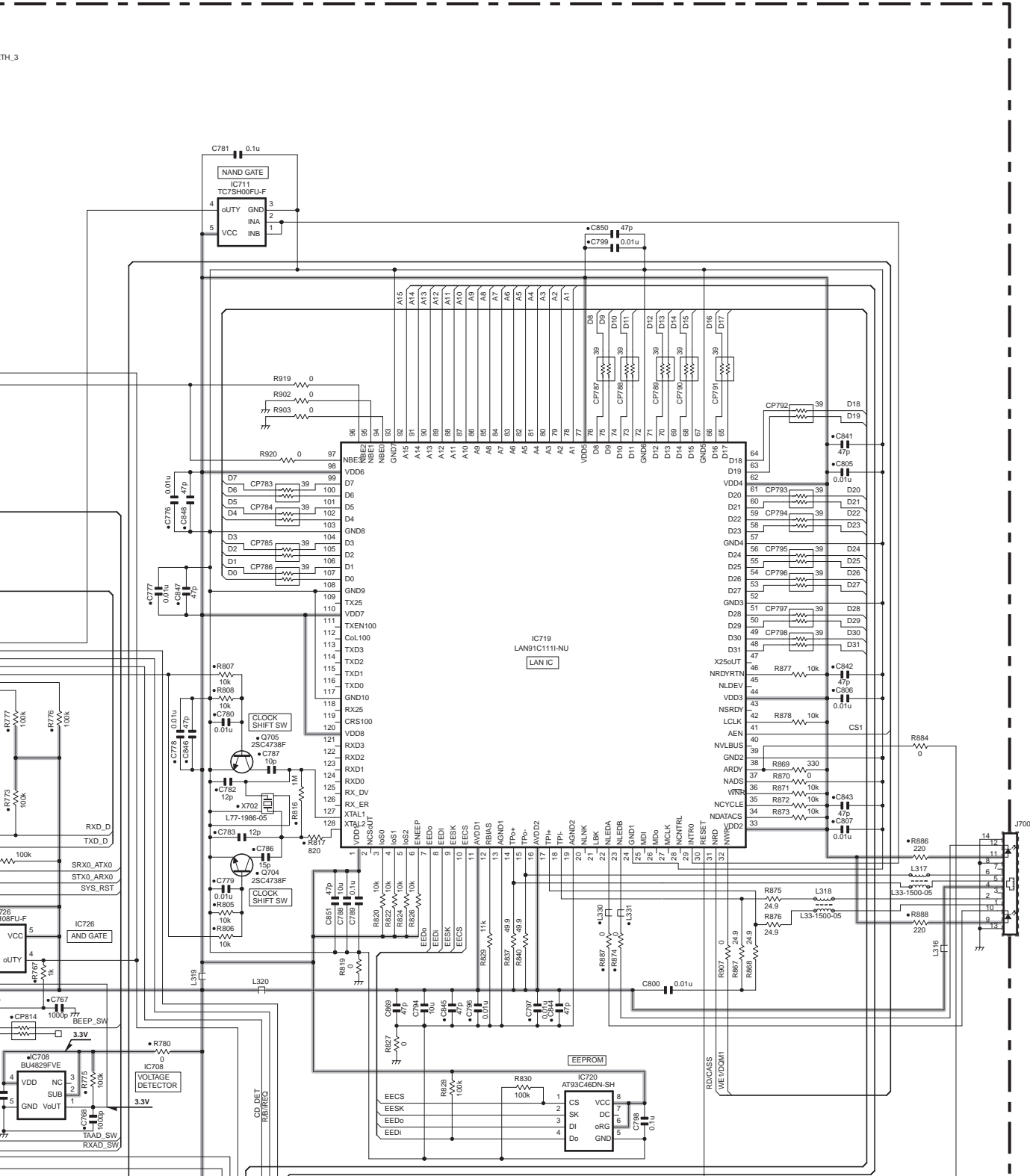
# NXR-901 APPENDIX 4 (SCHEMATIC DIAGRAM X53-414)

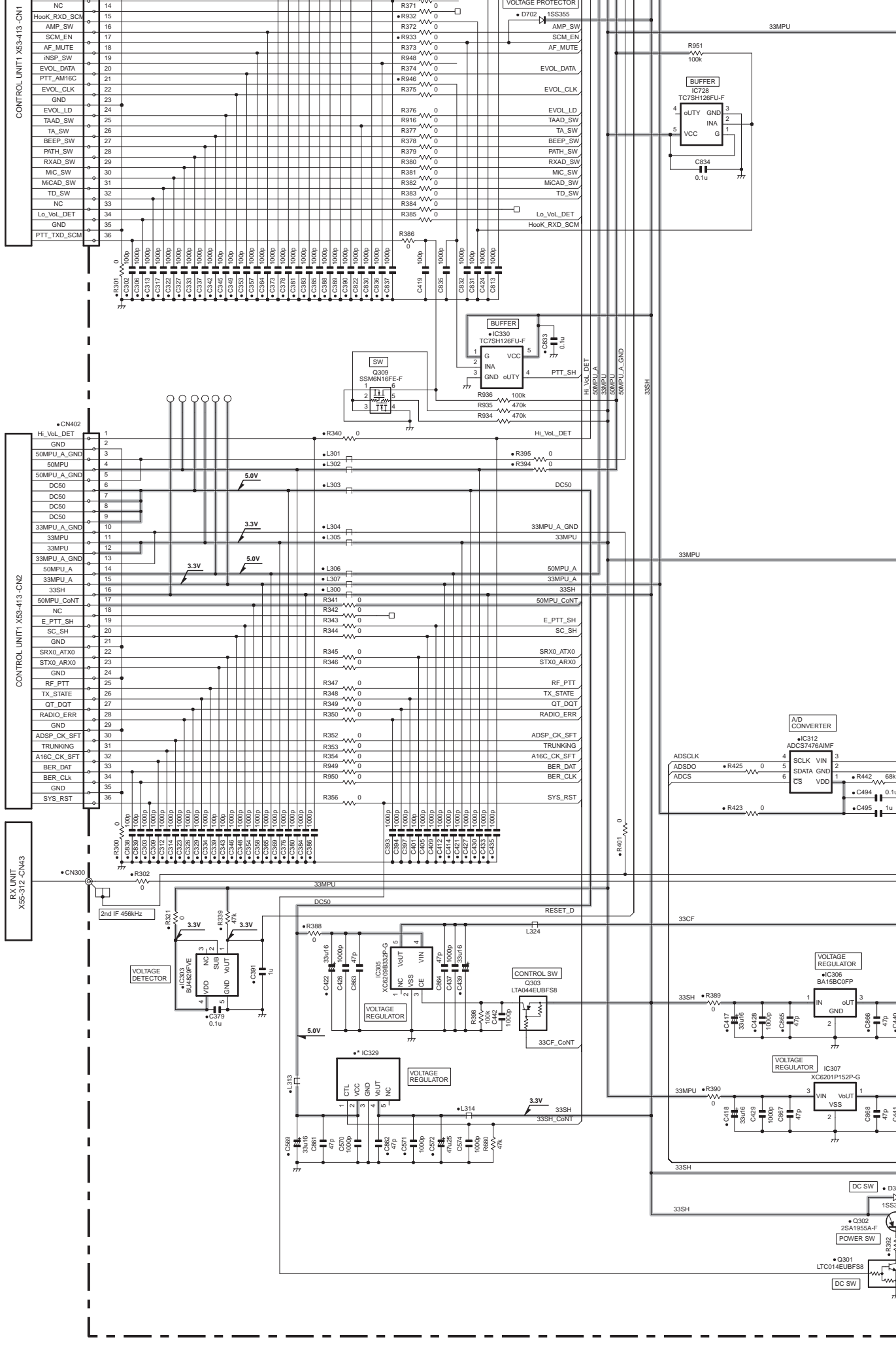


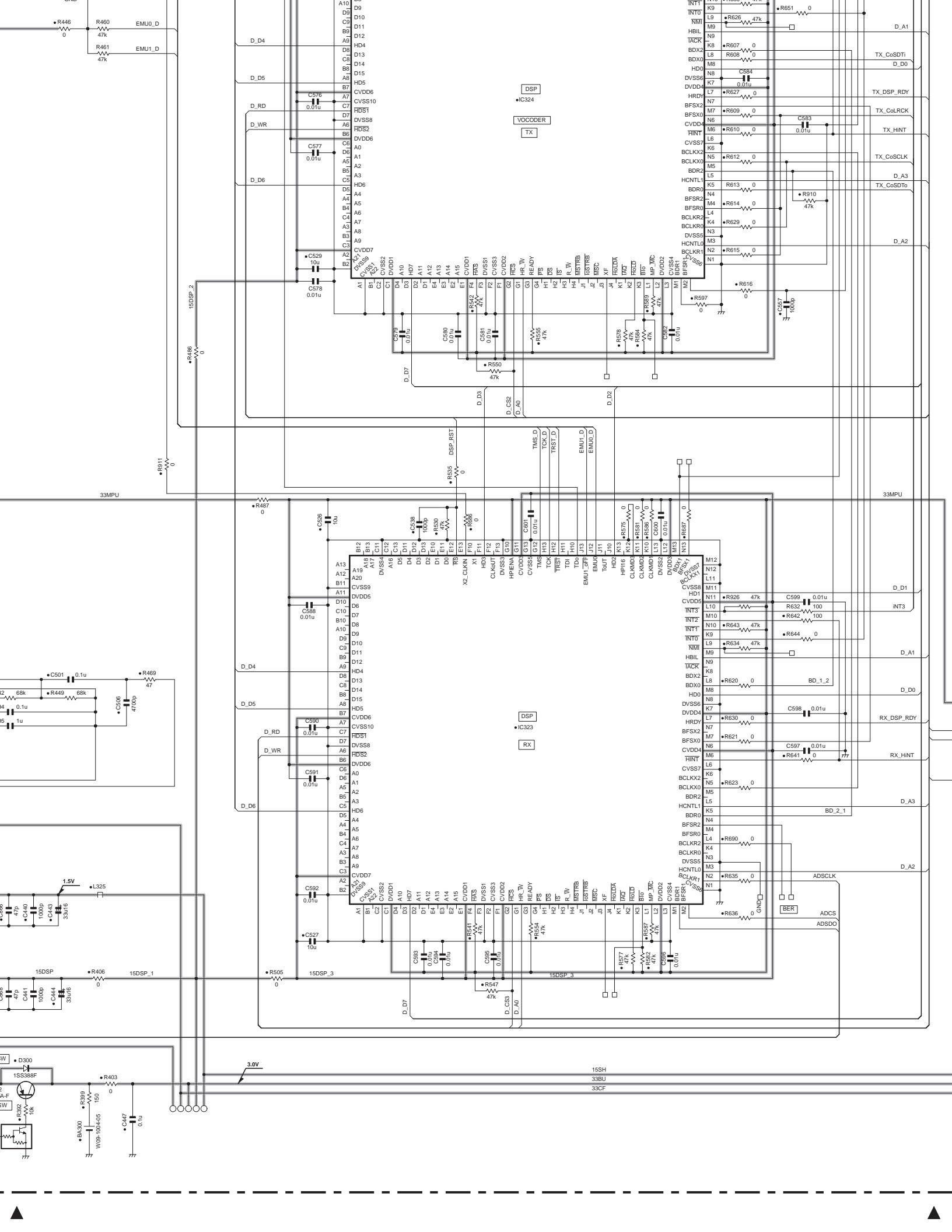
X53-4140-XX	IC329	R960	R961
-10	NO	0	NO
-11 (for Service)	BA33DD0WT	NO	0

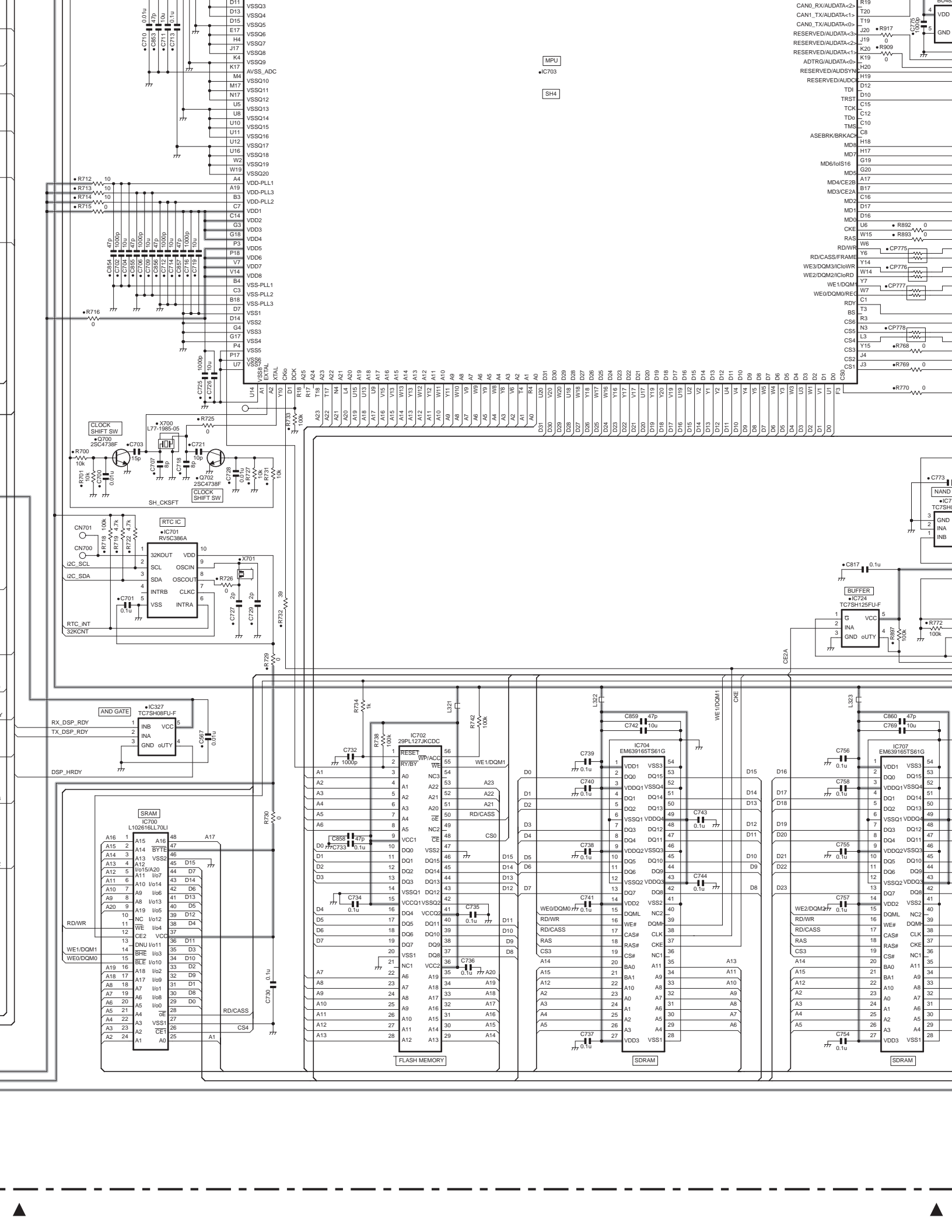
Note : The components marked with a dot (•) are parts of layer 1.

TH\_3

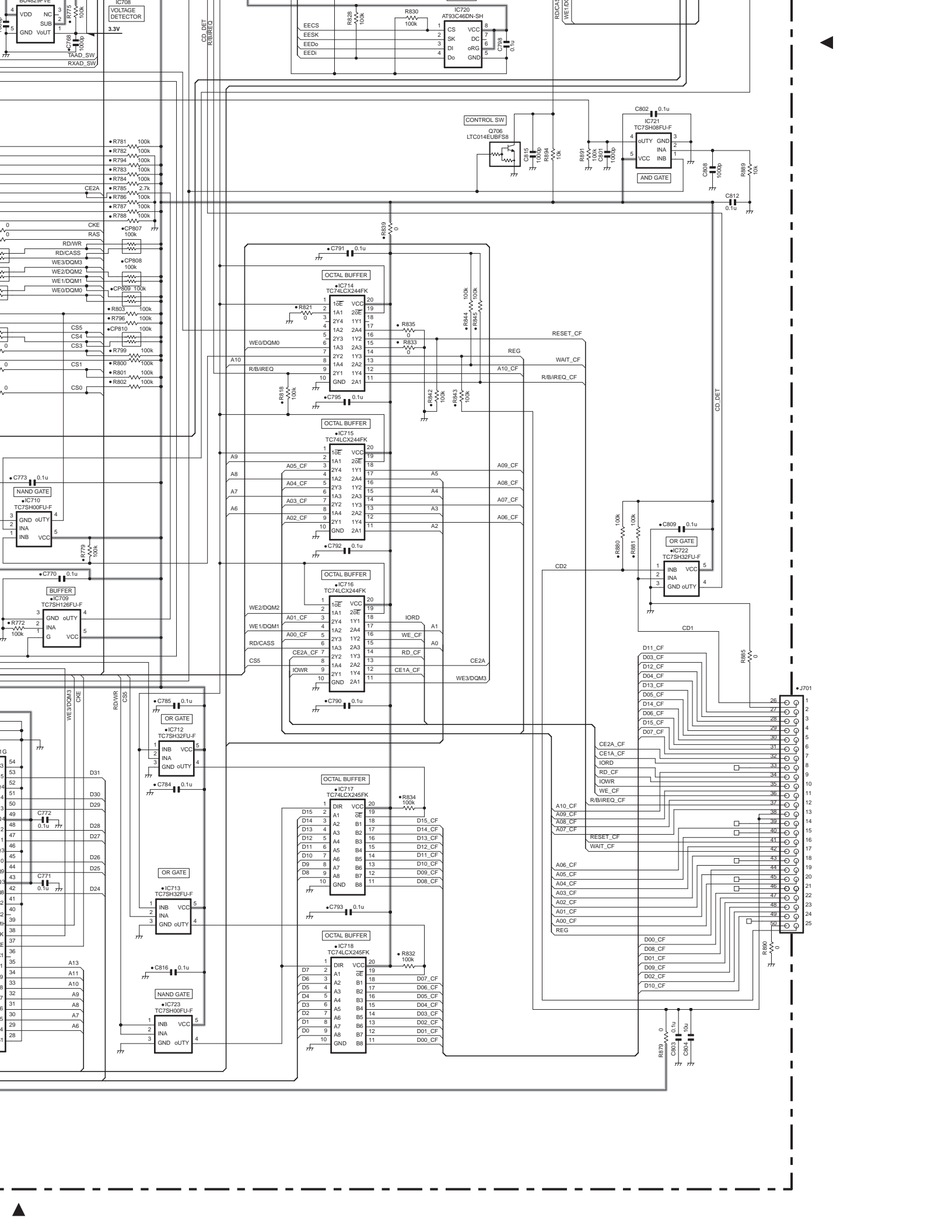


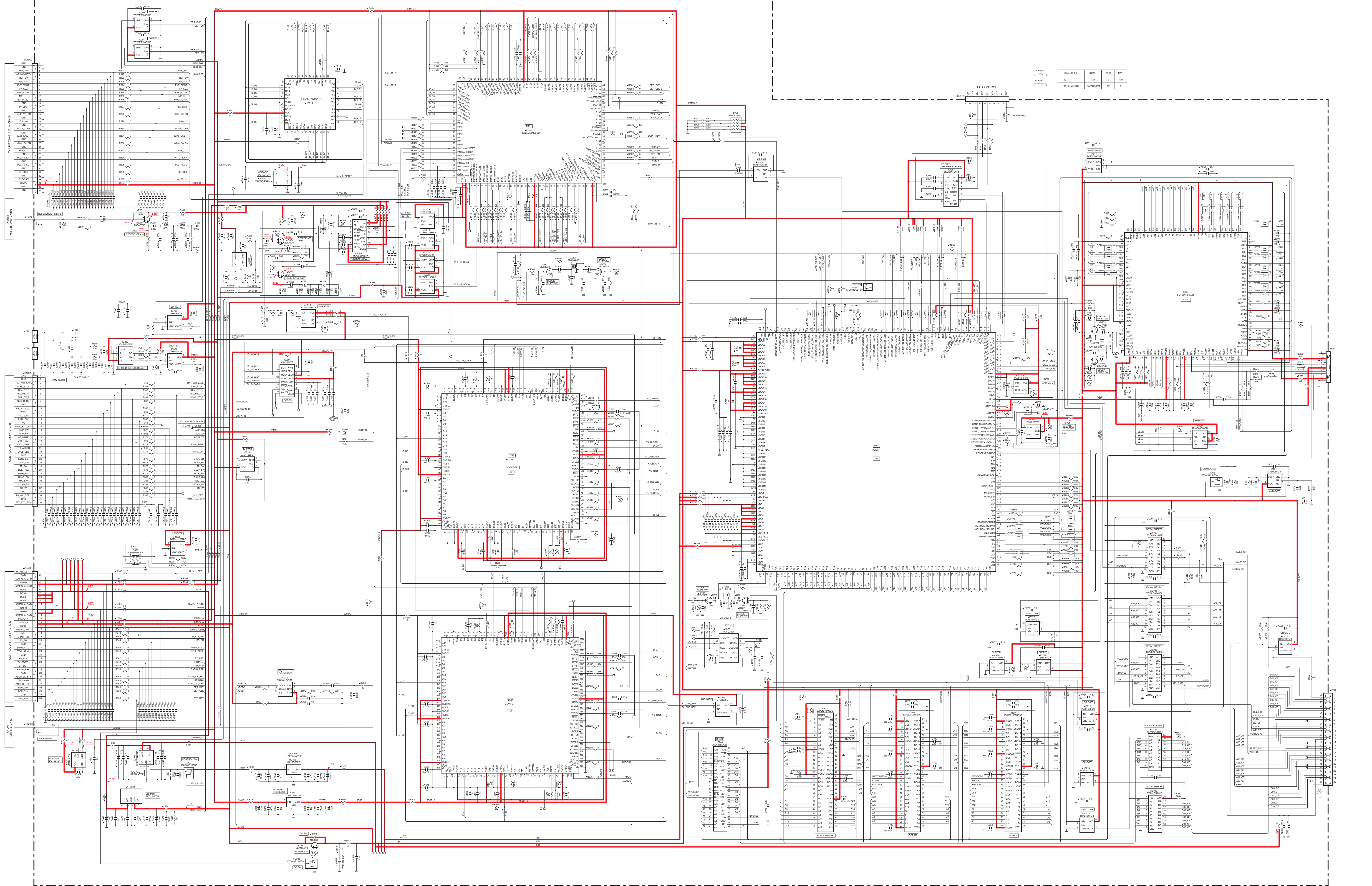












NO.	REV.	DATE	BY	CHK.	
1	1	11/19/88	BAJ/DOONAN	NO	0

TO: [REDACTED]

FROM: [REDACTED]

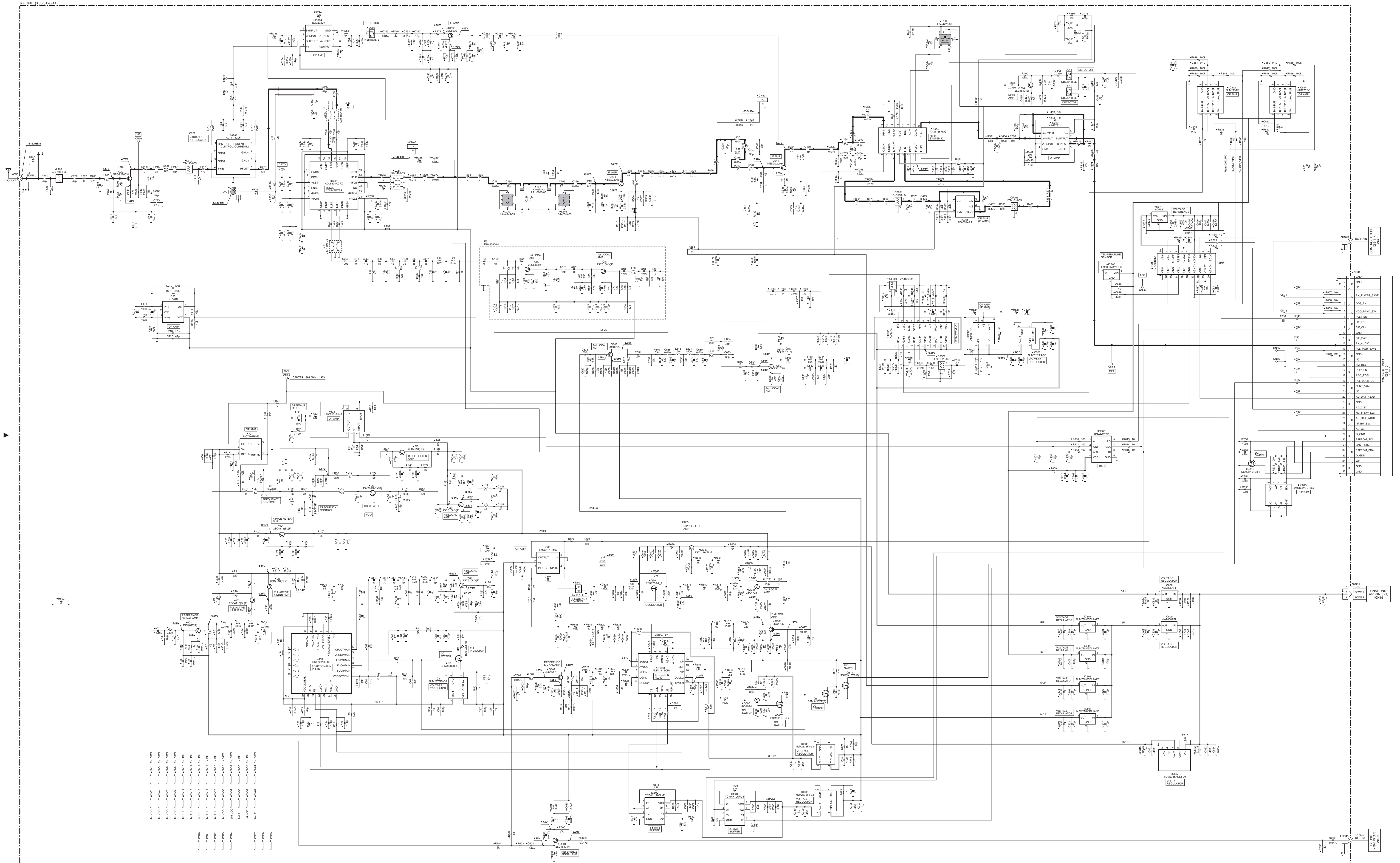
DATE: [REDACTED]

CONTROL UNIT (K53-4140-XX)

REVISION: [REDACTED]

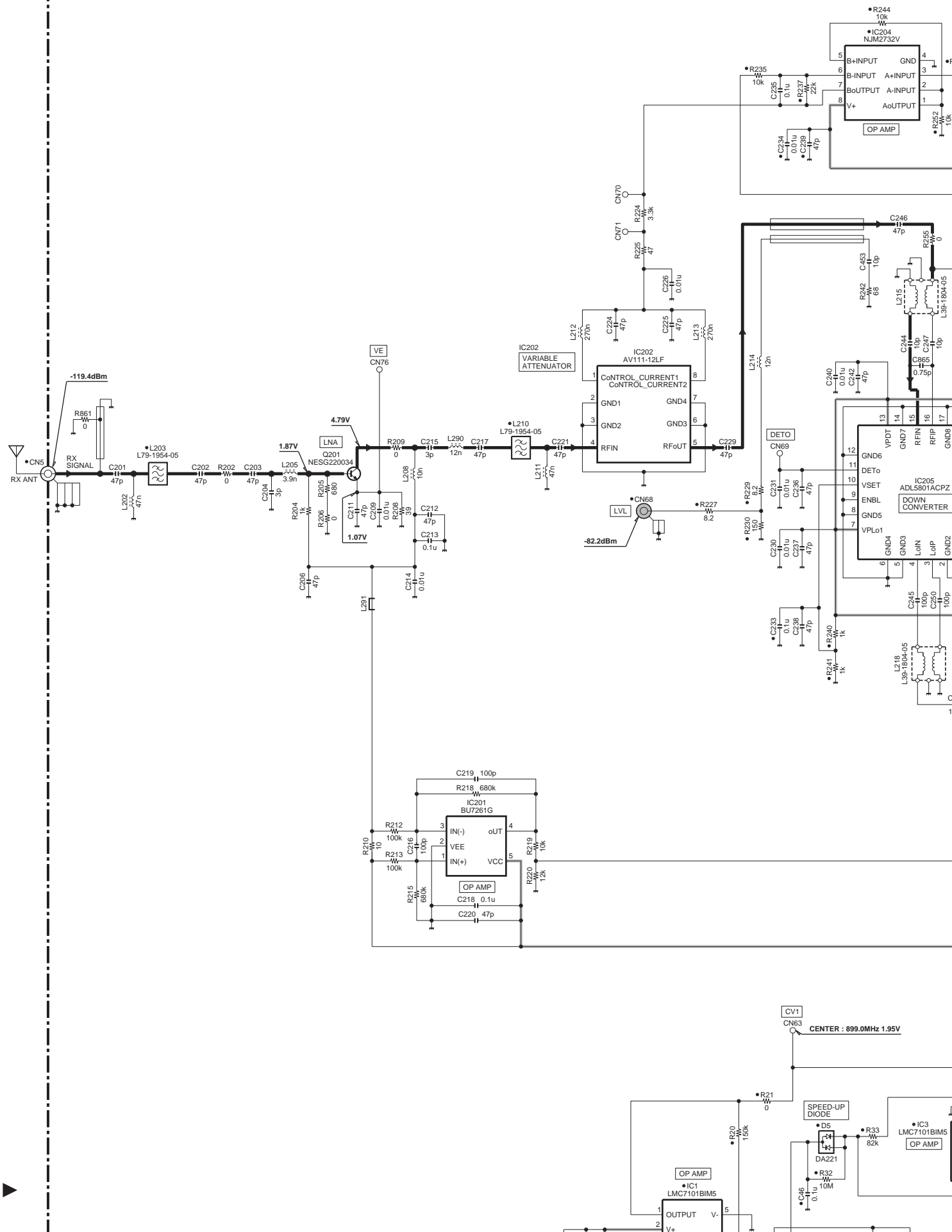
DESCRIPTION: [REDACTED]

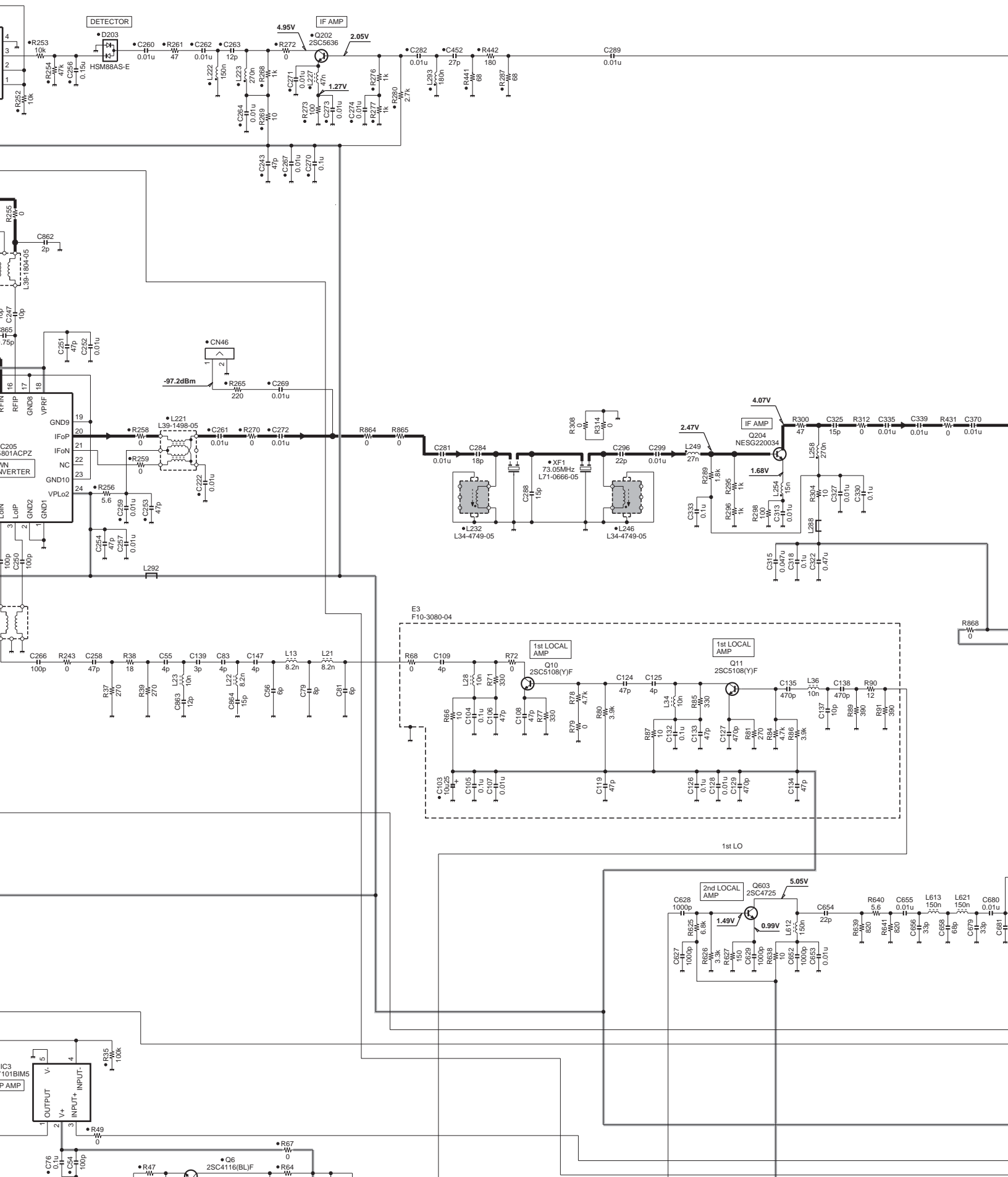
RX UNIT (X55-3120-11)

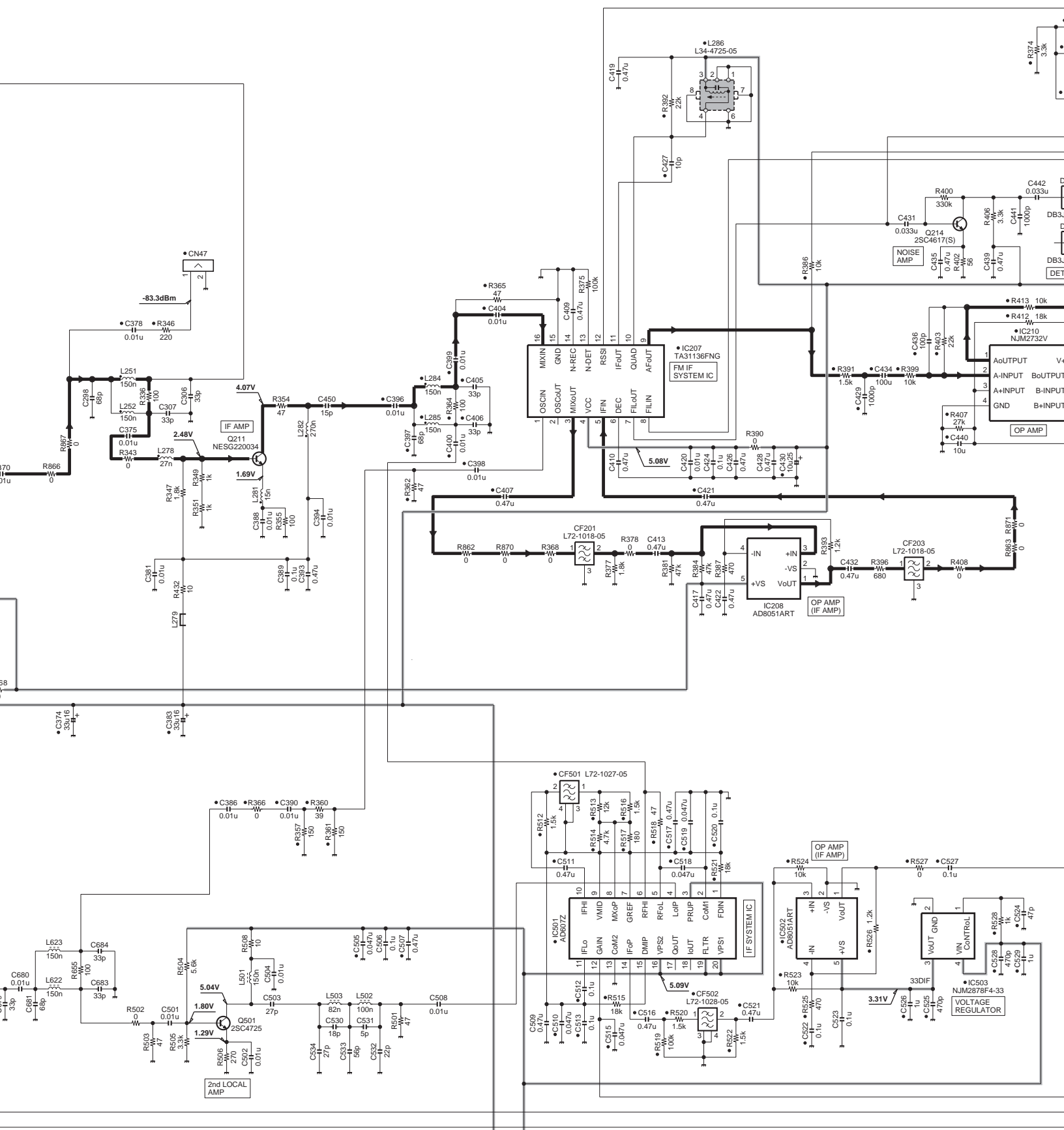


Note: The components marked with a dot (\*) are parts of layer 1.

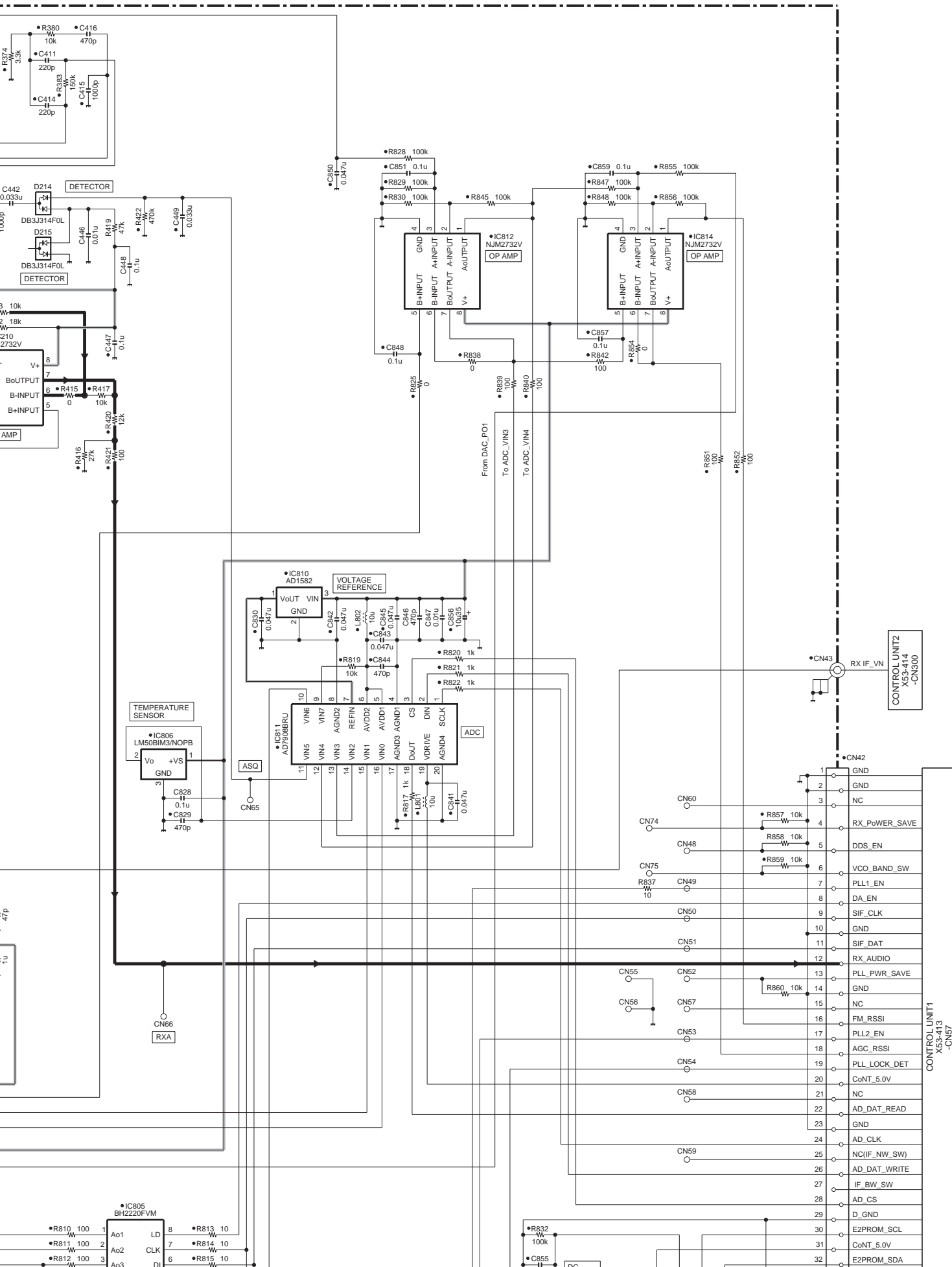
RX UNIT (X55-3120-11)







# NXR-901 APPENDIX 5 (SCHEMATIC DIAGRAM X55-312)



1  
2  
3

CONTROL UNIT2  
X53-414  
-CN300

CONTROL UNIT1  
X53-413  
-CN57

•R810 100  
•R811 100  
•R812 100  
•R813 10  
•R814 10  
•R815 10

•R832  
•C855

•R857 10k  
•R858 10k  
•R859 10k

•R860 10k

•R874 10k

•R875 10k

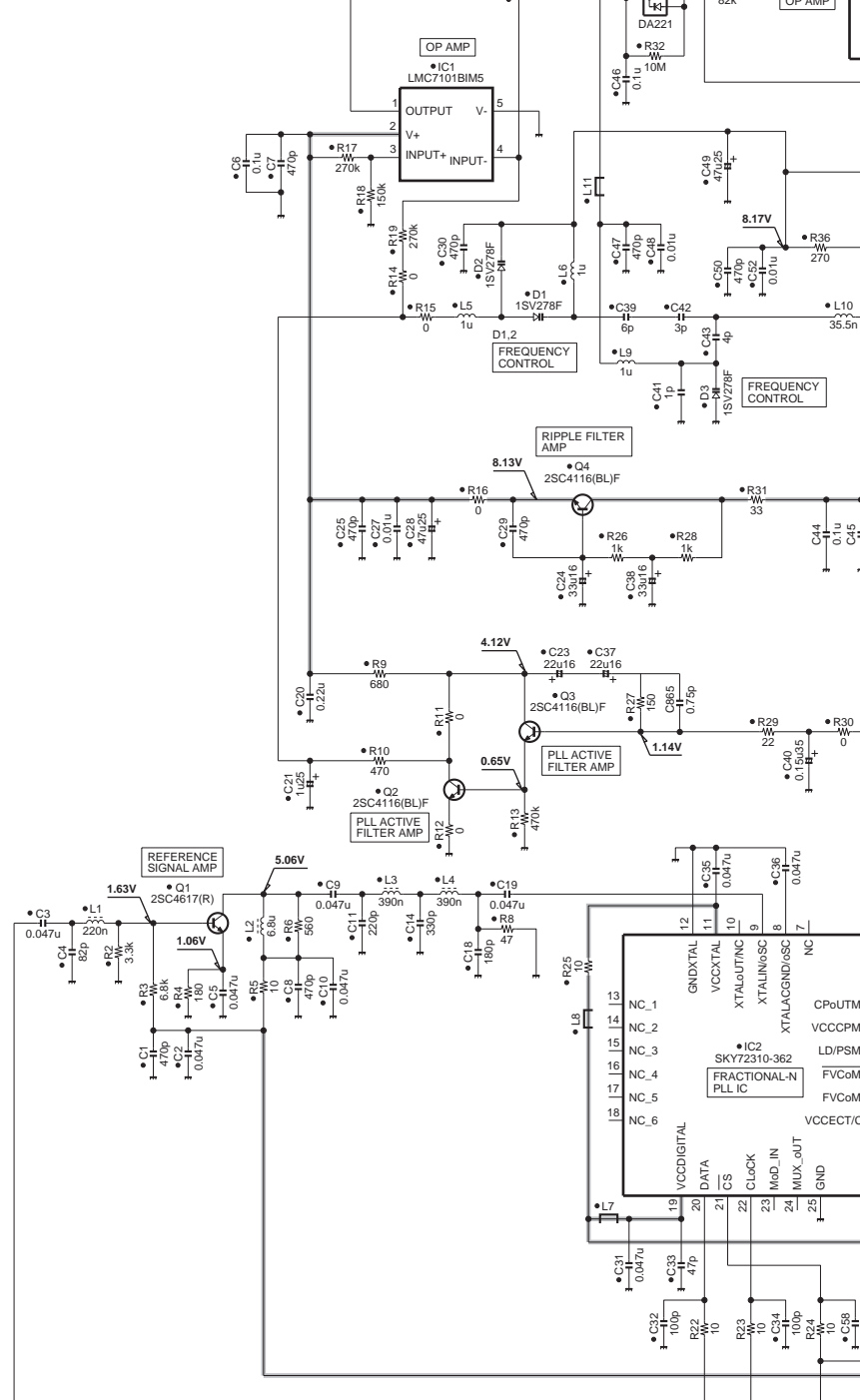
•R876 10k

•R877 10k

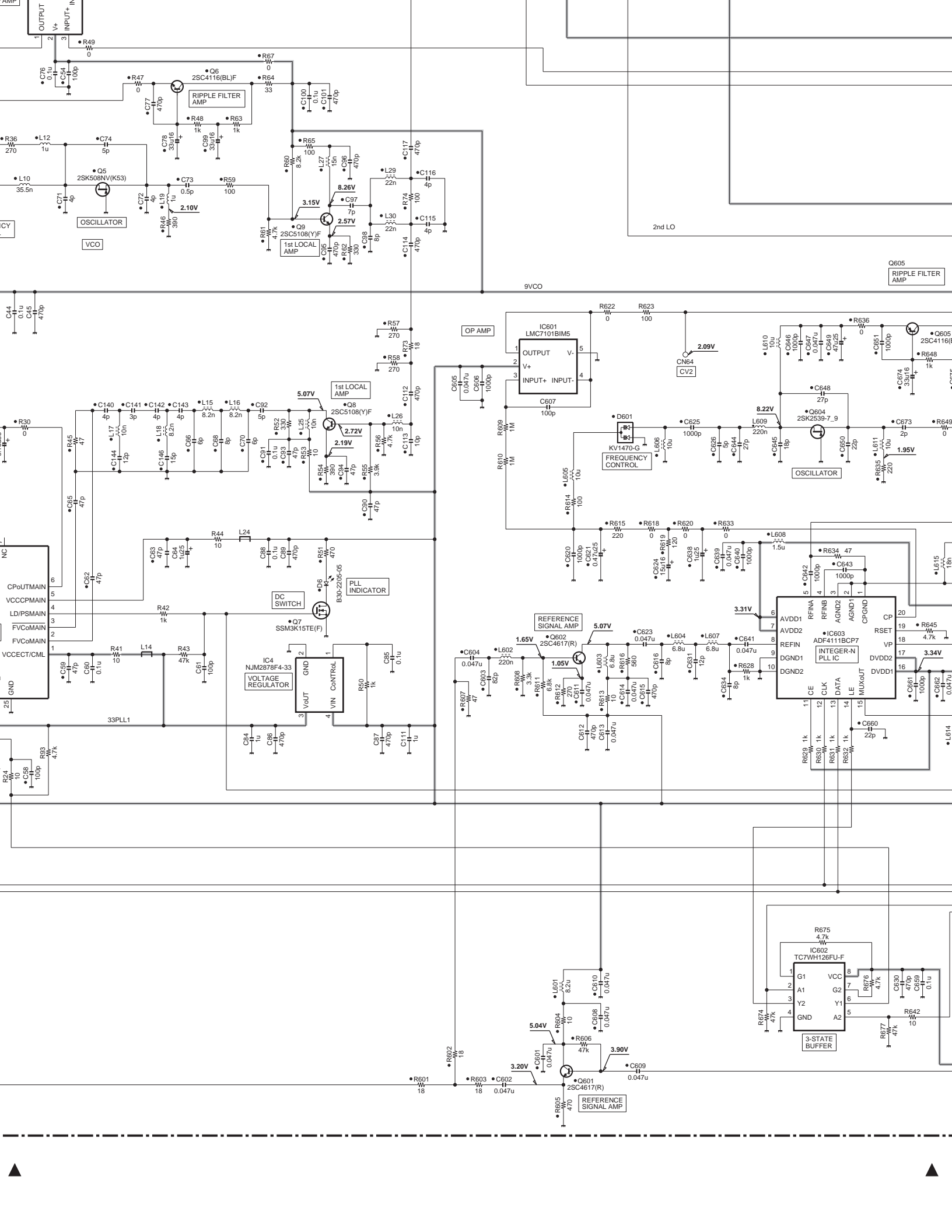
•R878 10k



- 1st VCO → ○ CN1 → 2nd VCO
- 1st VCO → ○ CN3 → 2nd VCO
- 1st VCO → ○ CN4 → 2nd VCO
- 1st VCO → ○ CN7 → 2nd VCO
- 1st VCO → ○ CN8 → 2nd VCO
- 1st VCO → ○ CN9 → 2nd VCO
- 1st PLL → ○ CN10 → 2nd PLL
- 1st PLL → ○ CN12 → 2nd PLL
- 1st PLL → ○ CN13 → 2nd PLL
- 2nd PLL → ○ CN14 → 2nd PLL
- 1st PLL → ○ CN17 → 1st PLL
- 1st PLL → ○ CN25 → 1st PLL
- 1st VCO → ○ CN28 → 1st VCO
- 1st VCO → ○ CN32 → 2nd VCO
- 2nd VCO → ○ CN34 → 2nd VCO
- 2nd PLL → ○ CN36 → 1st PLL
- 1st VCO → ○ CN39 → 2nd PLL
- 2nd PLL → ○ CN62 → 1st VCO
- CN20
- CN21
- CN22
- CN23
- CN24
- CN87
- CN88
- CN89







2nd LO

9VCO

Q605  
RIPPLE FILTER  
AMP

OP AMP

IC601  
LMC7101BIMS  
OUTPUT V-  
INPUT+ INPUT-  
C607 100p

2.09V

D601  
KV1470-G  
FREQUENCY CONTROL

8.22V

Q604  
2SK2539-7.9  
OSCILLATOR

1.95V

DC SWITCH

PLL INDICATOR

VOLTAGE REGULATOR

REFERENCE SIGNAL AMP

5.07V

3.31V

IC603  
ADF4111BCP7  
INTEGER-N  
PLL IC

3.34V

3-STATE BUFFER

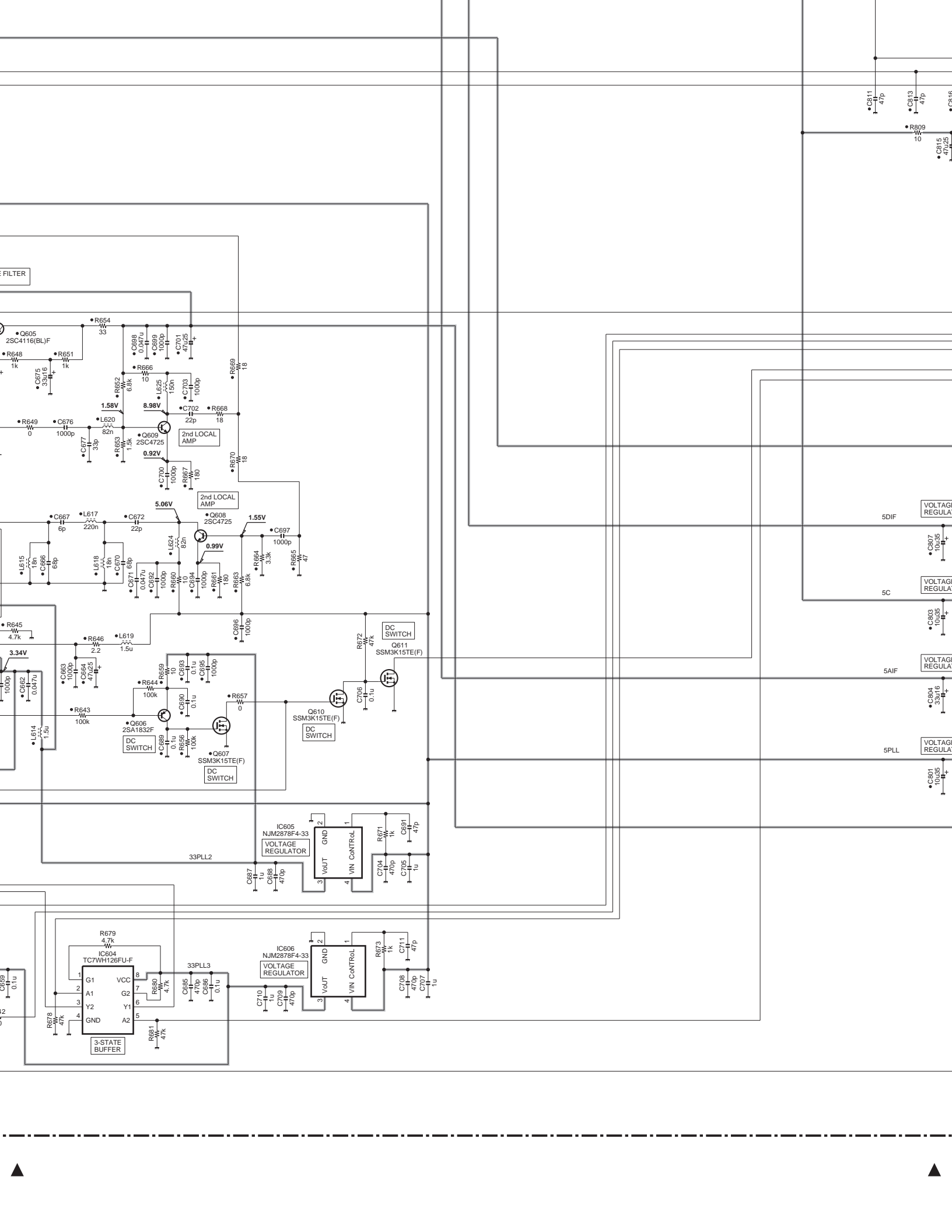
REFERENCE SIGNAL AMP

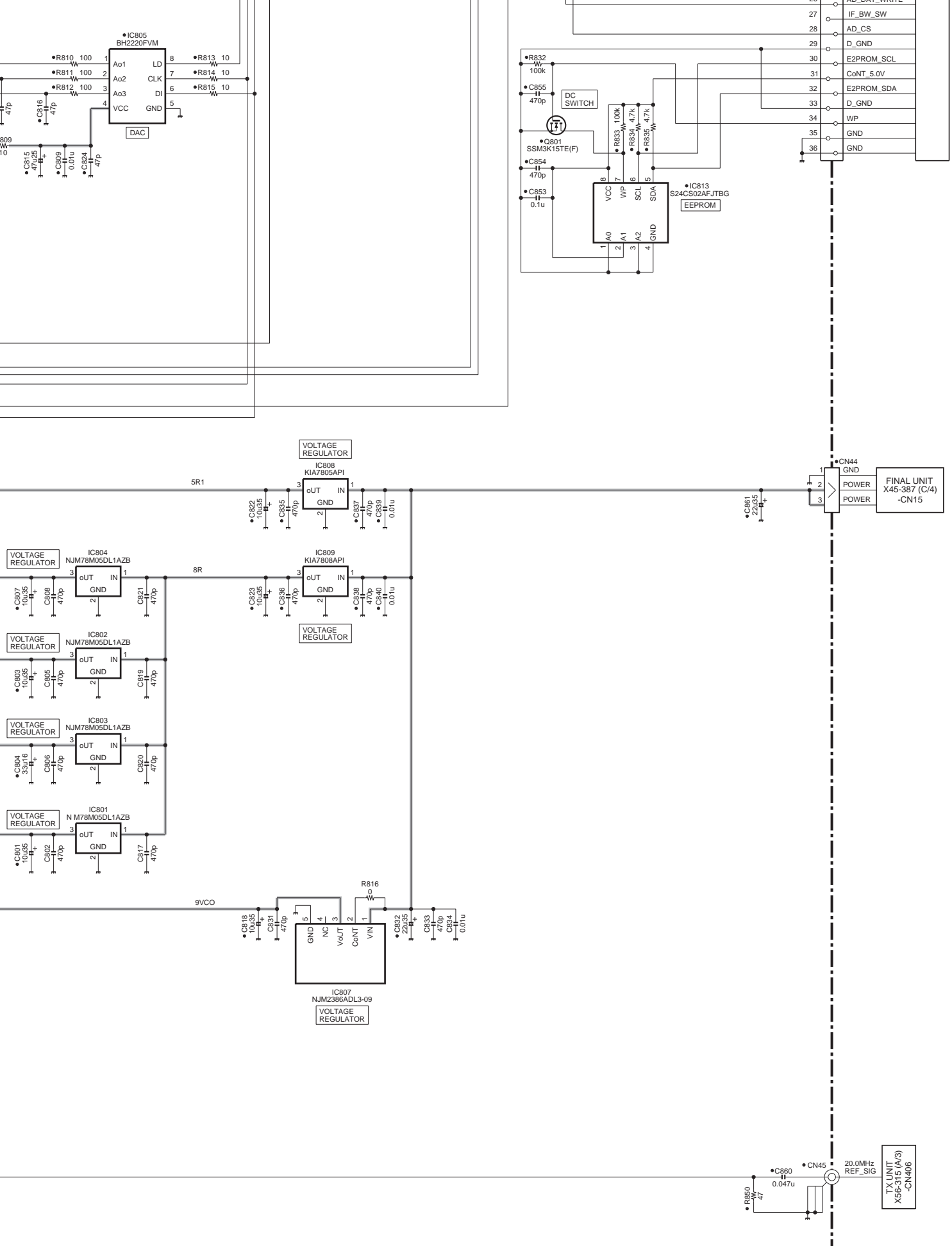
5.04V

3.20V

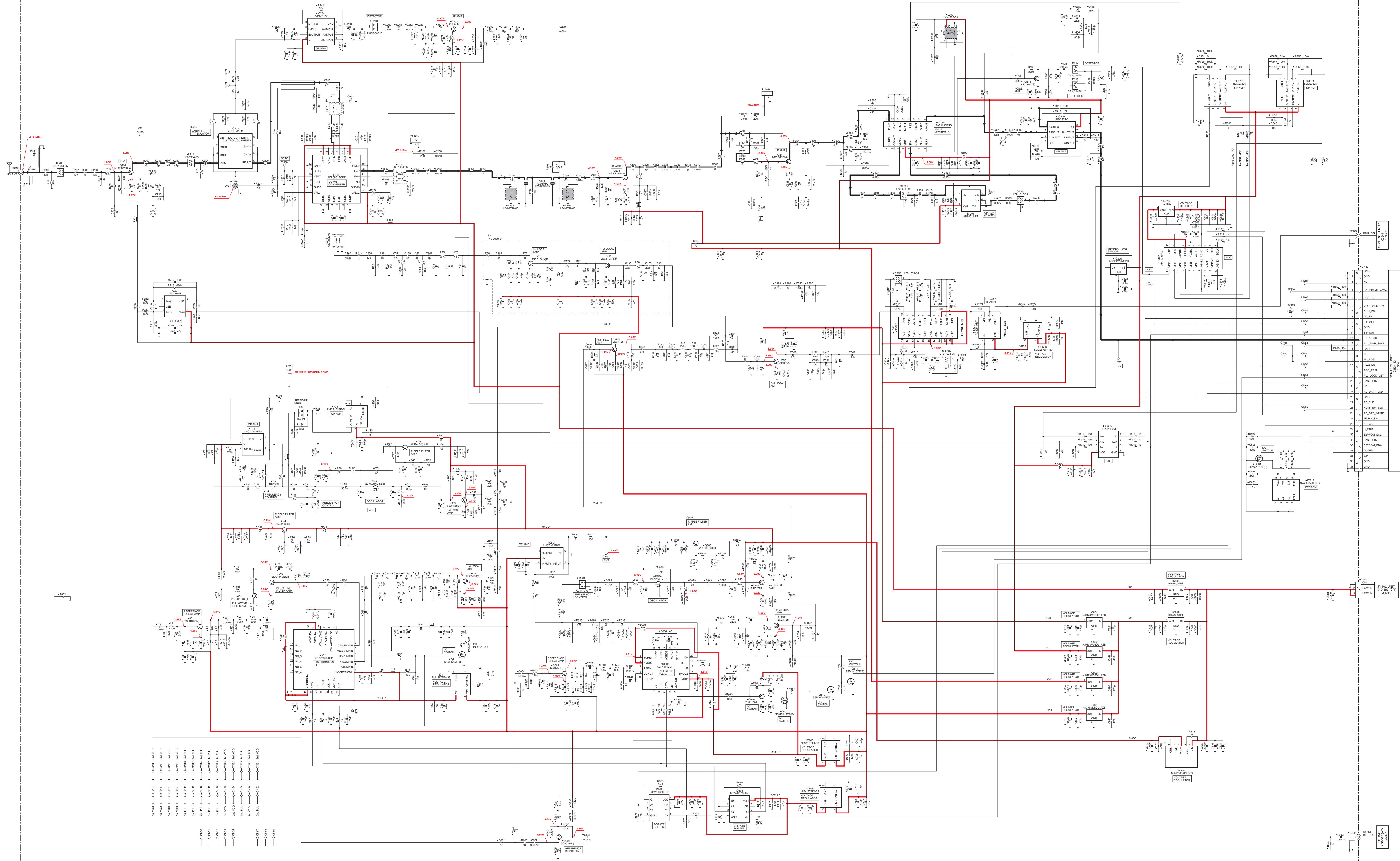
3.90V

3-STATE BUFFER





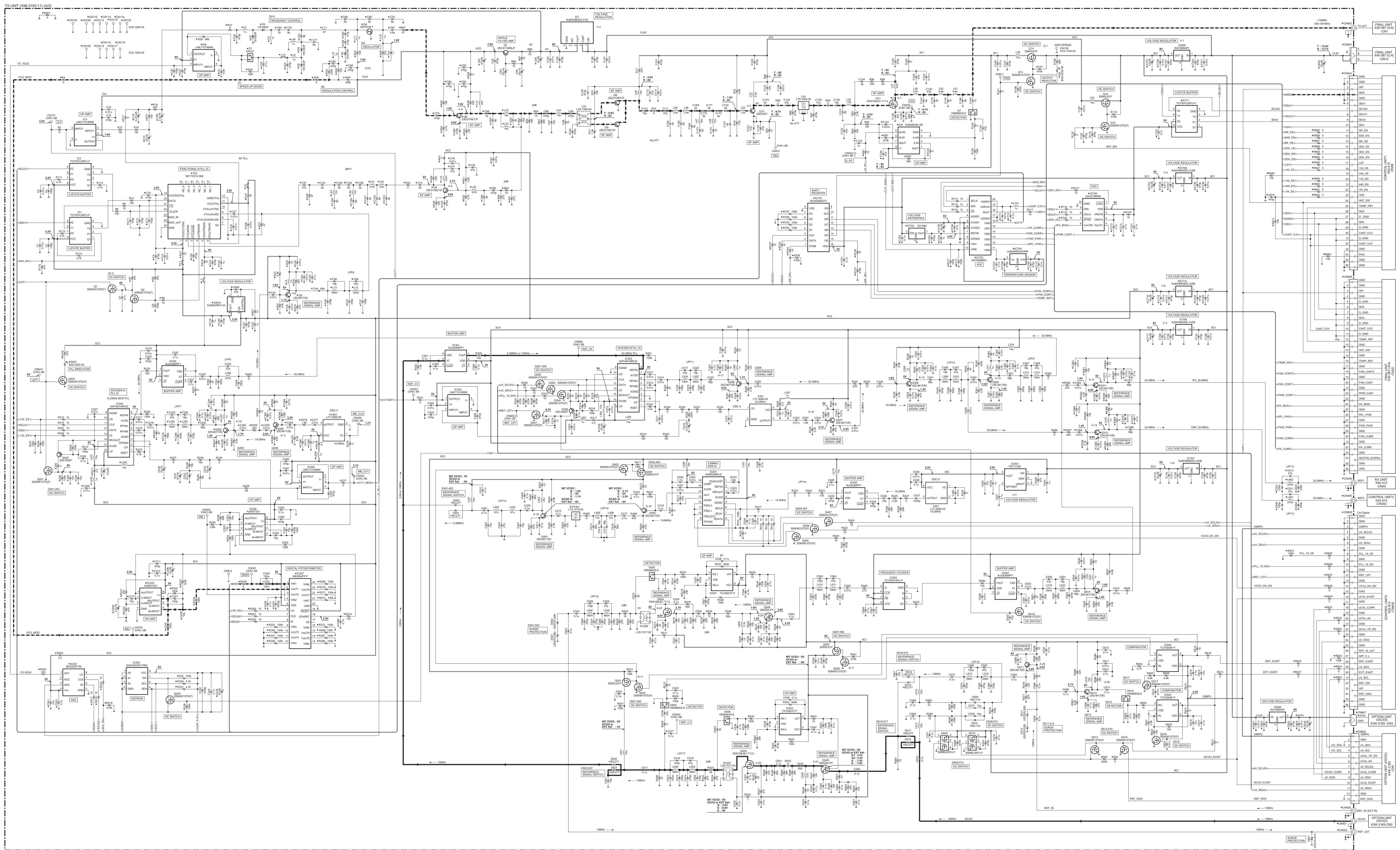
Note : The components marked with a dot (•) are parts of layer 1.



- CH01 -> CH02
- CH03 -> CH04
- CH05 -> CH06
- CH07 -> CH08
- CH09 -> CH10
- CH11 -> CH12
- CH13 -> CH14
- CH15 -> CH16
- CH17 -> CH18
- CH19 -> CH20
- CH21 -> CH22
- CH23 -> CH24
- CH25 -> CH26
- CH27 -> CH28
- CH29 -> CH30
- CH31 -> CH32
- CH33 -> CH34
- CH35 -> CH36
- CH37 -> CH38
- CH39 -> CH40
- CH41 -> CH42
- CH43 -> CH44
- CH45 -> CH46
- CH47 -> CH48
- CH49 -> CH50
- CH51 -> CH52
- CH53 -> CH54
- CH55 -> CH56
- CH57 -> CH58
- CH59 -> CH60
- CH61 -> CH62
- CH63 -> CH64
- CH65 -> CH66
- CH67 -> CH68
- CH69 -> CH70
- CH71 -> CH72
- CH73 -> CH74
- CH75 -> CH76
- CH77 -> CH78
- CH79 -> CH80
- CH81 -> CH82
- CH83 -> CH84
- CH85 -> CH86
- CH87 -> CH88
- CH89 -> CH90
- CH91 -> CH92
- CH93 -> CH94
- CH95 -> CH96
- CH97 -> CH98
- CH99 -> CH100

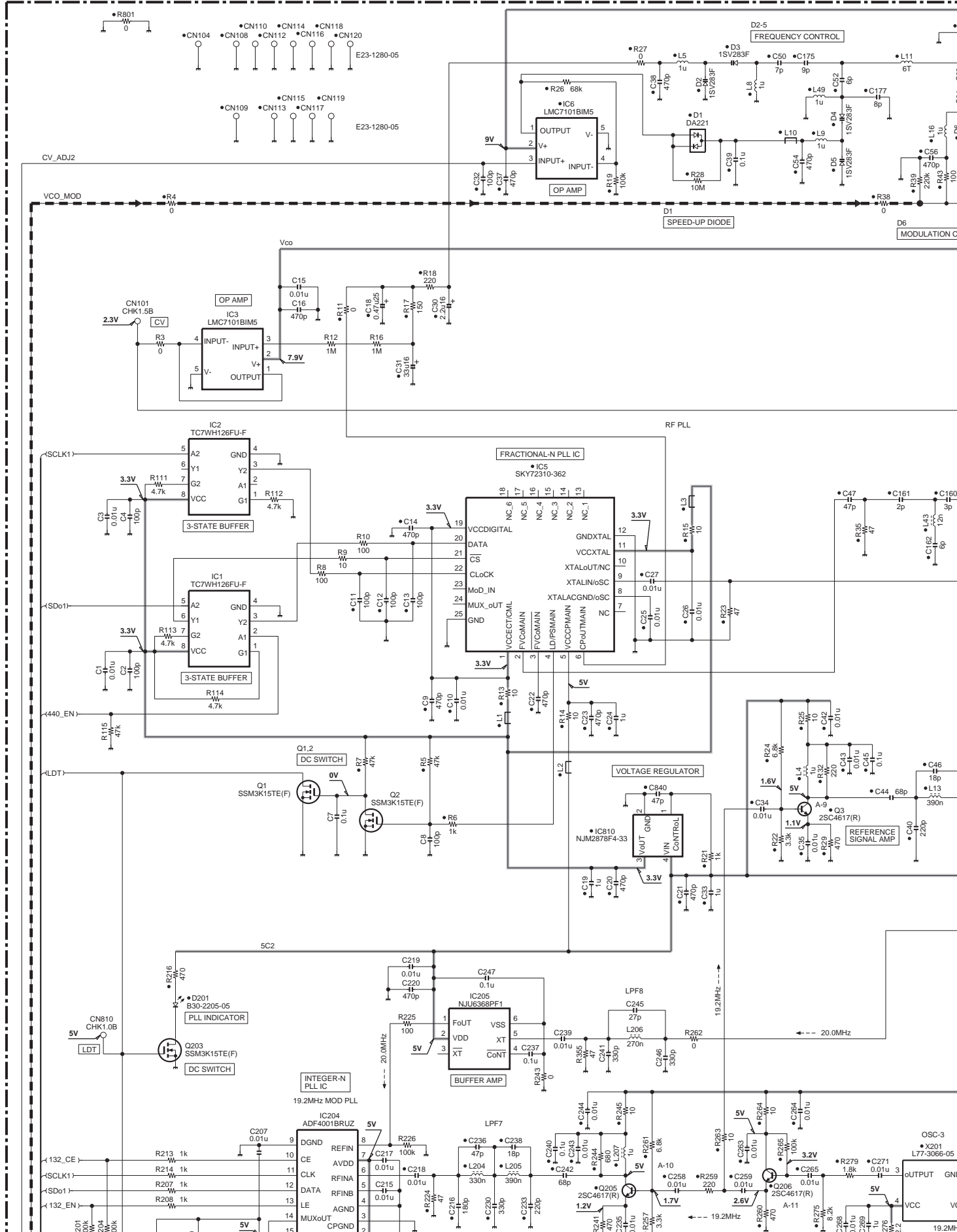
CONTROL UNIT

1	CH01	CH01
2	CH02	CH02
3	CH03	CH03
4	CH04	CH04
5	CH05	CH05
6	CH06	CH06
7	CH07	CH07
8	CH08	CH08
9	CH09	CH09
10	CH10	CH10
11	CH11	CH11
12	CH12	CH12
13	CH13	CH13
14	CH14	CH14
15	CH15	CH15
16	CH16	CH16
17	CH17	CH17
18	CH18	CH18
19	CH19	CH19
20	CH20	CH20
21	CH21	CH21
22	CH22	CH22
23	CH23	CH23
24	CH24	CH24
25	CH25	CH25
26	CH26	CH26
27	CH27	CH27
28	CH28	CH28
29	CH29	CH29
30	CH30	CH30
31	CH31	CH31
32	CH32	CH32
33	CH33	CH33
34	CH34	CH34
35	CH35	CH35
36	CH36	CH36
37	CH37	CH37
38	CH38	CH38
39	CH39	CH39
40	CH40	CH40
41	CH41	CH41
42	CH42	CH42
43	CH43	CH43
44	CH44	CH44
45	CH45	CH45
46	CH46	CH46
47	CH47	CH47
48	CH48	CH48
49	CH49	CH49
50	CH50	CH50



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

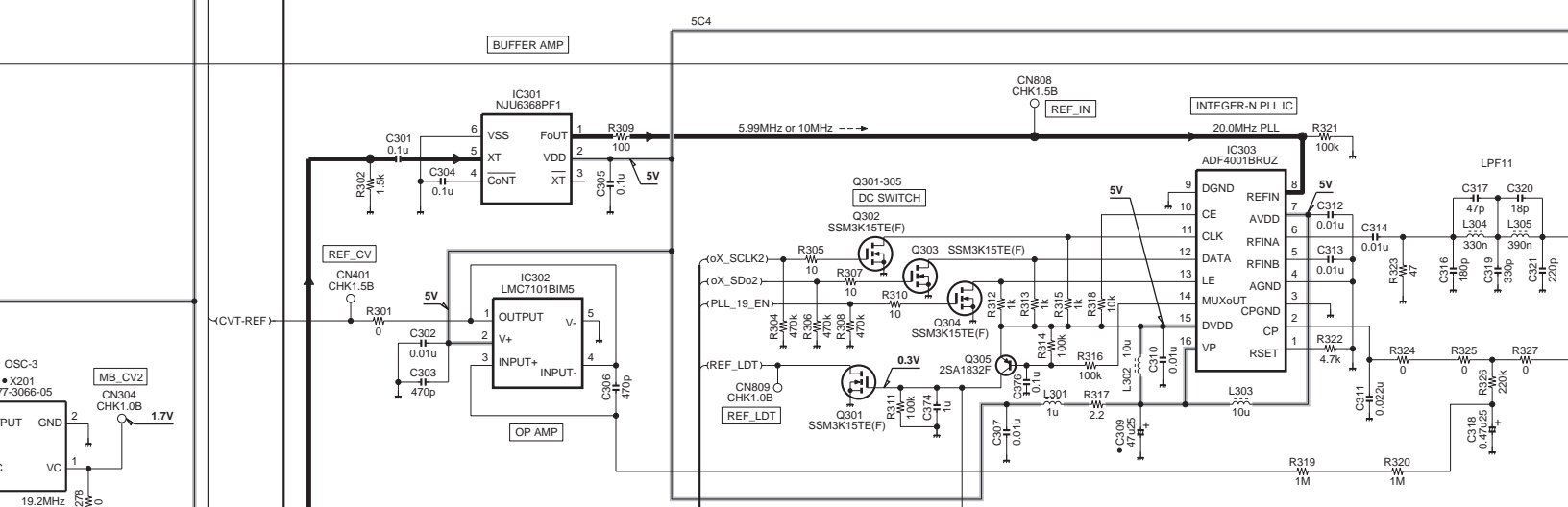
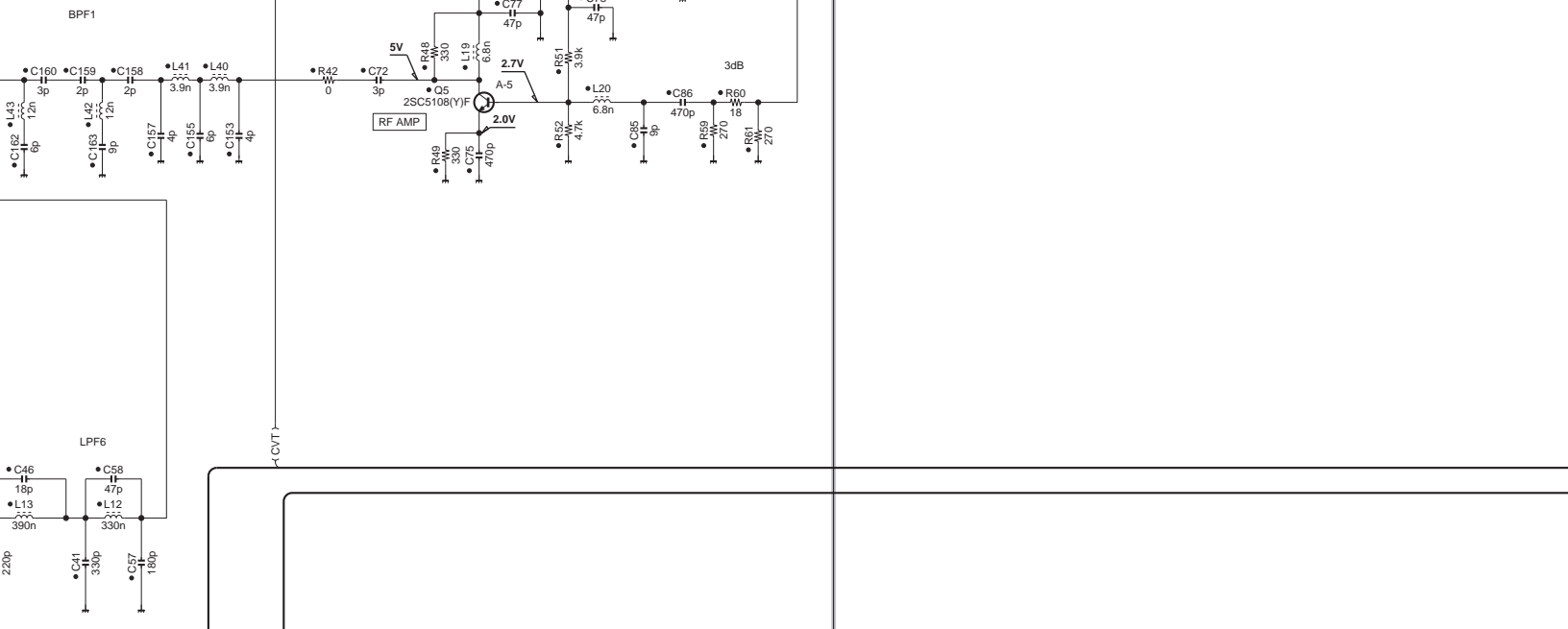
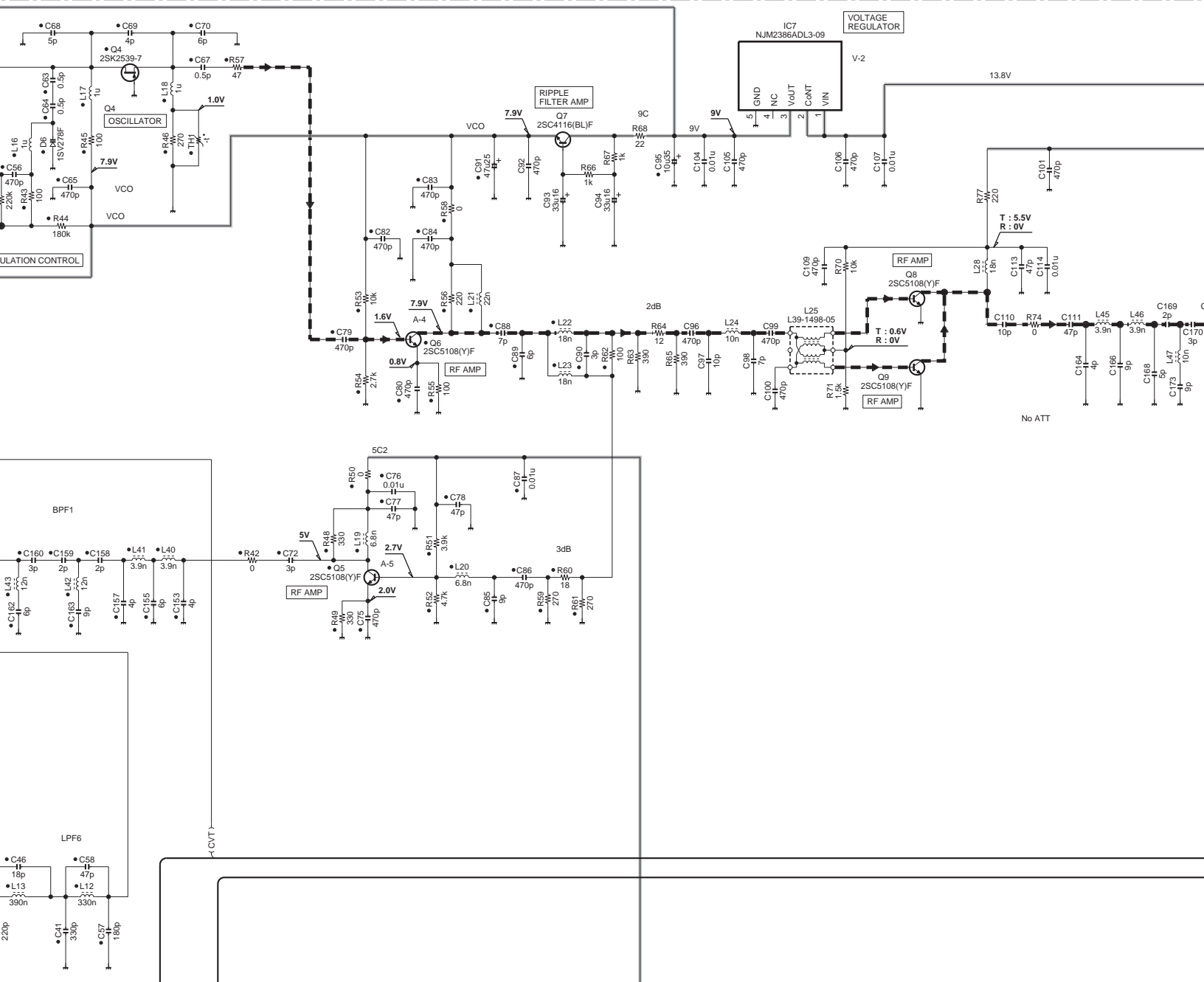
TX UNIT (X56-3150-11) (A/3)

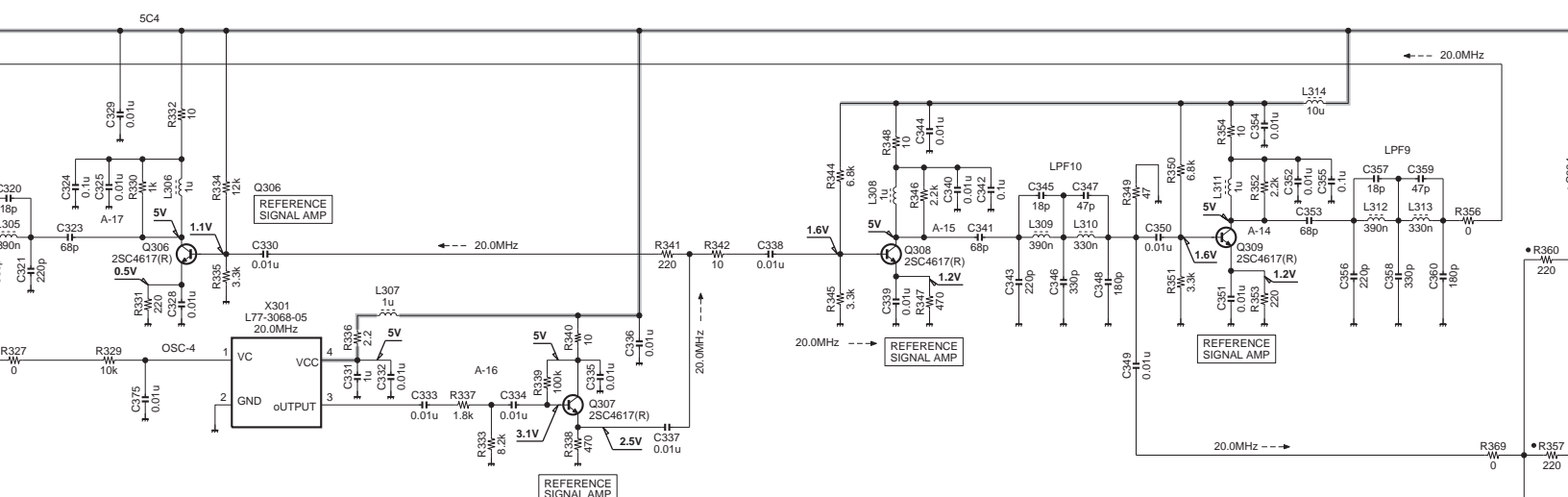
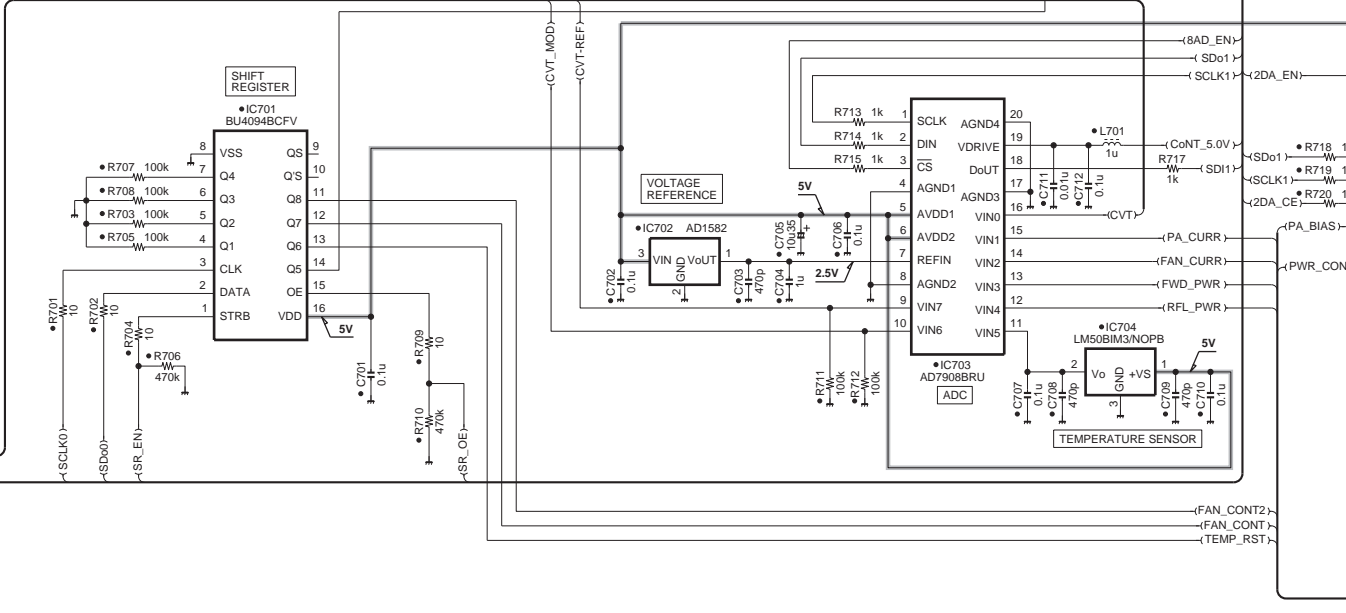
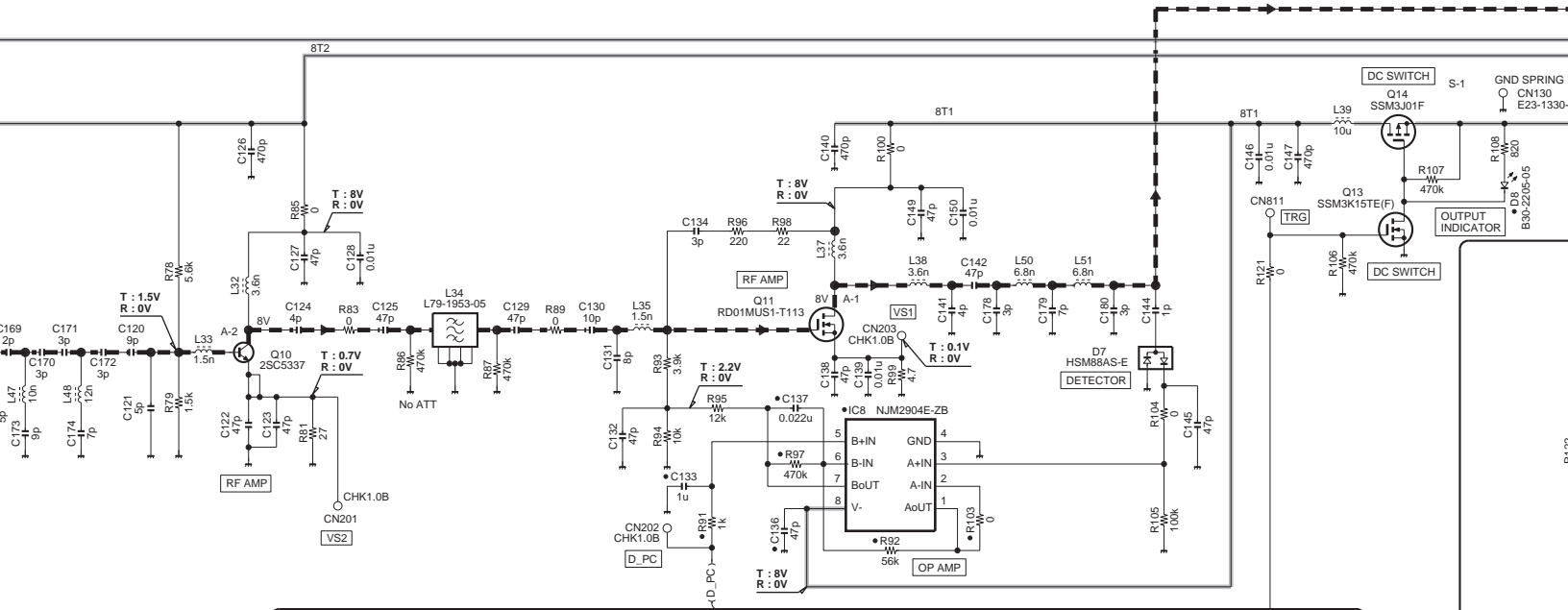


1

2

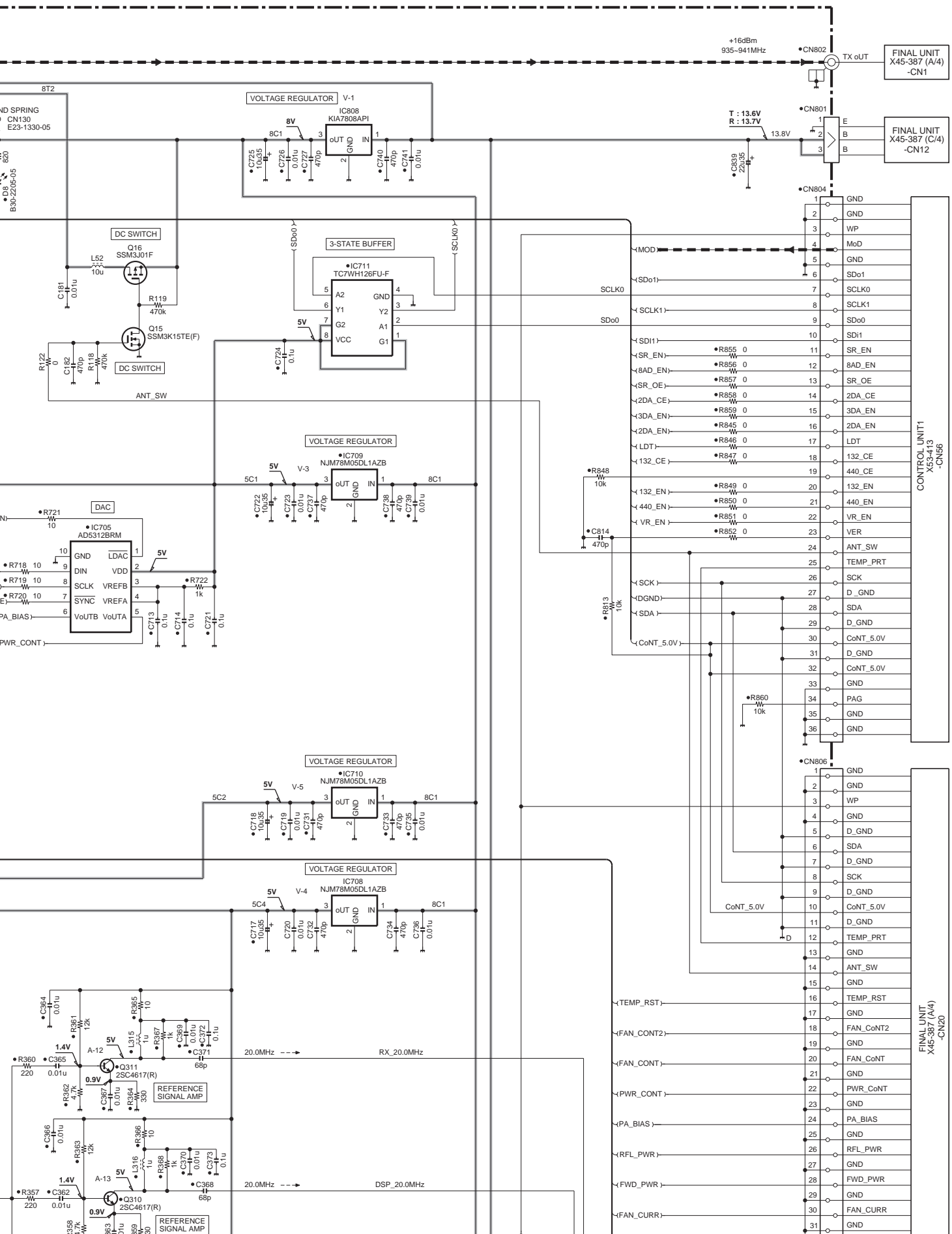
3

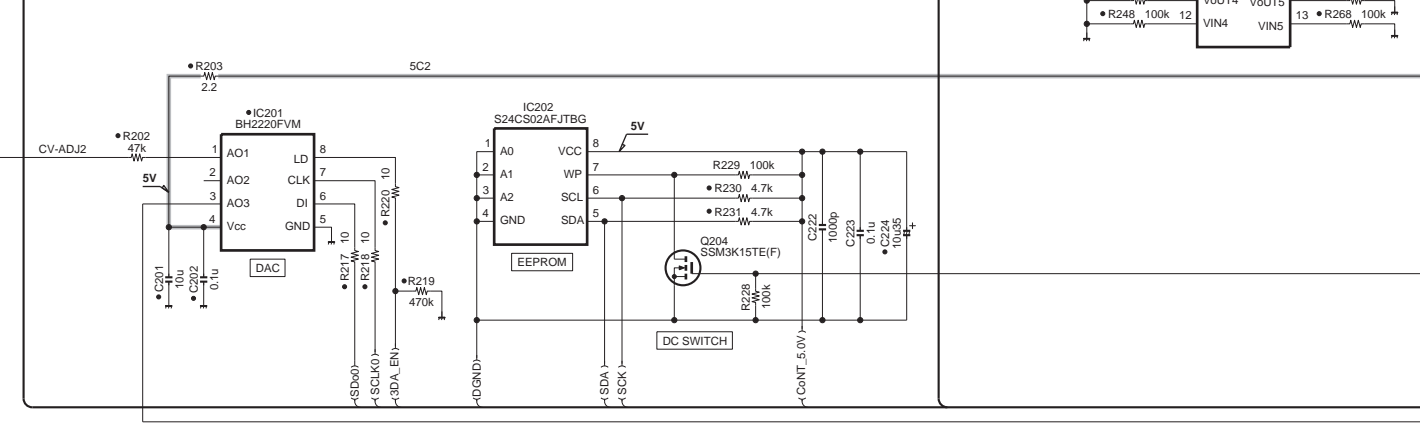
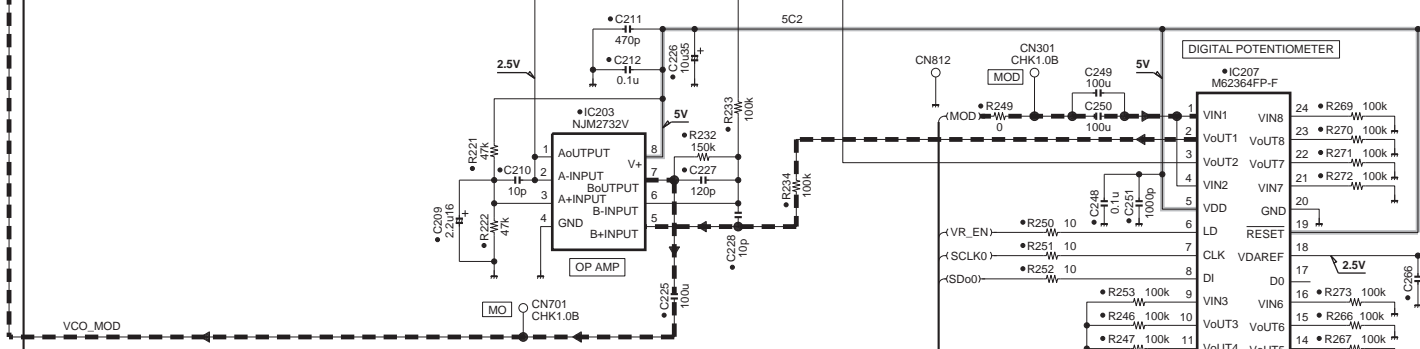
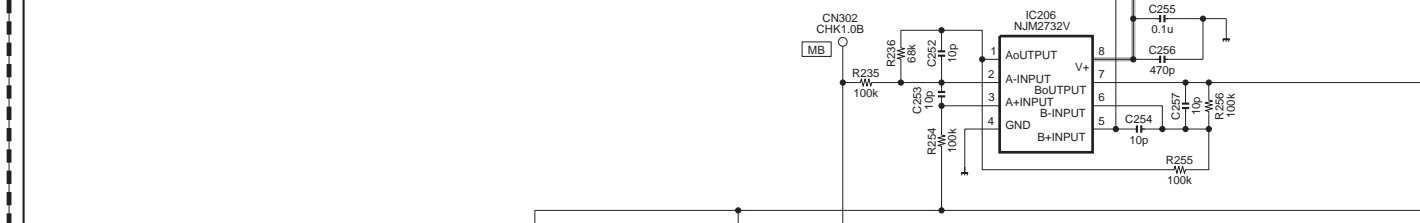
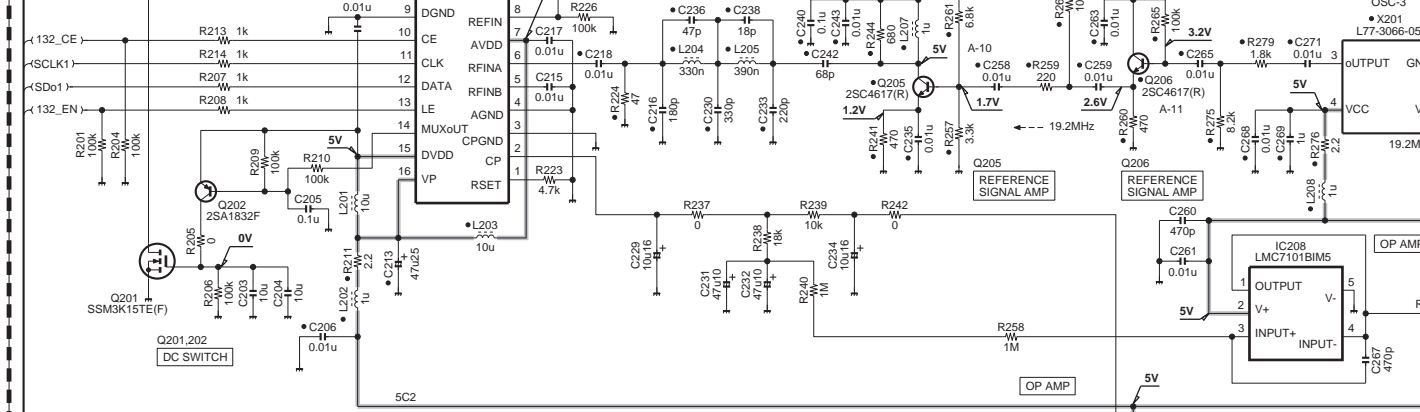


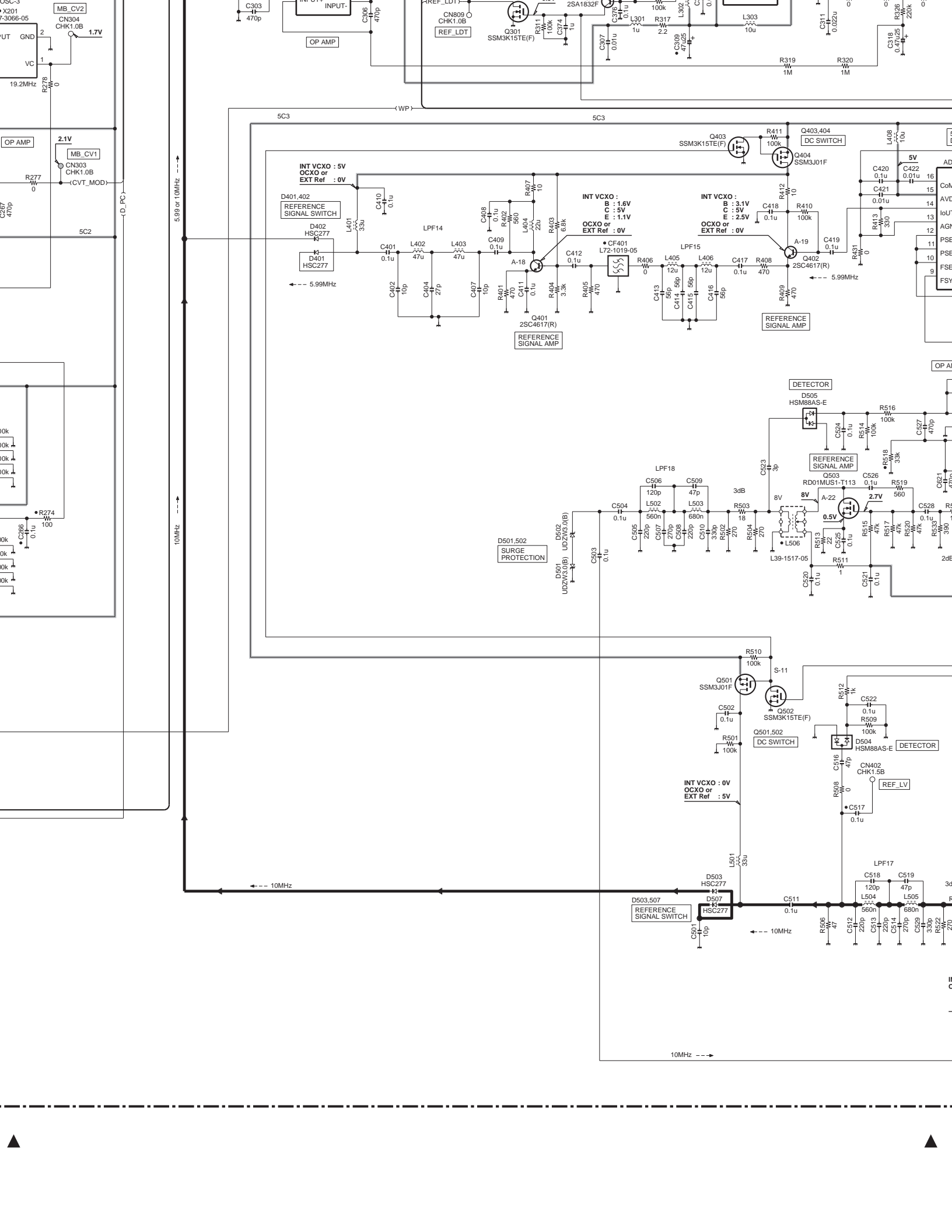


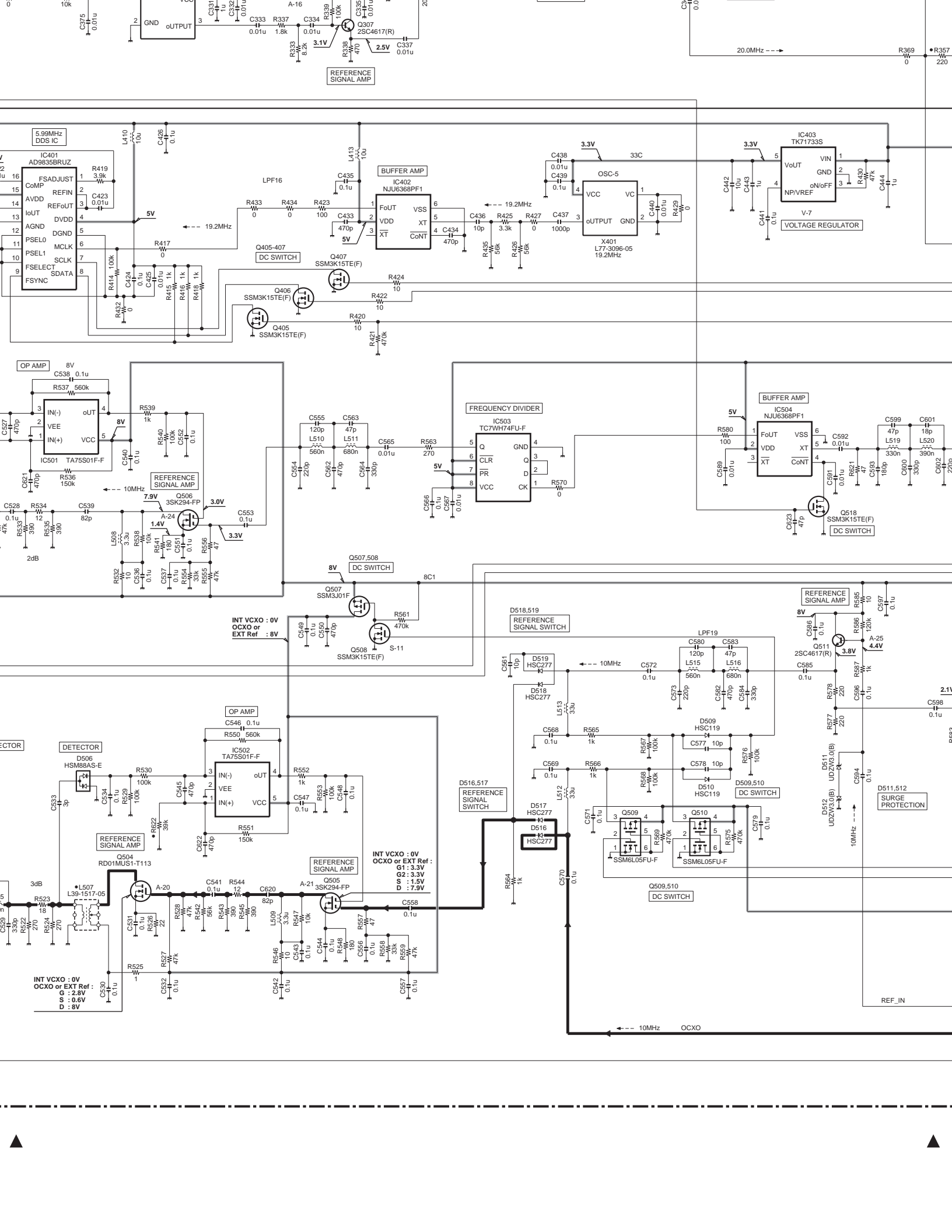


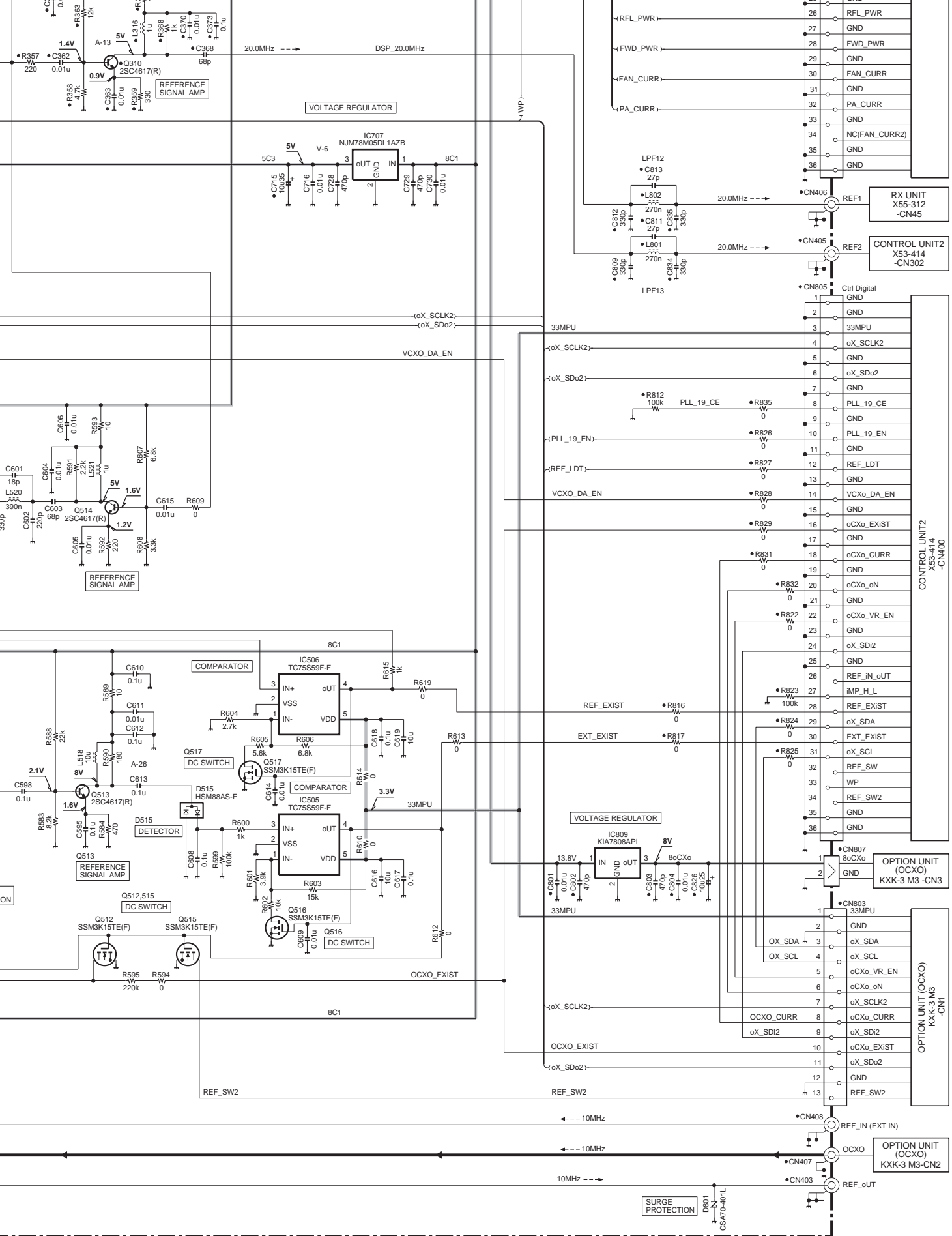
# NXR-901 APPENDIX 6 (SCHEMATIC DIAGRAM X56-315 A/3)











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

