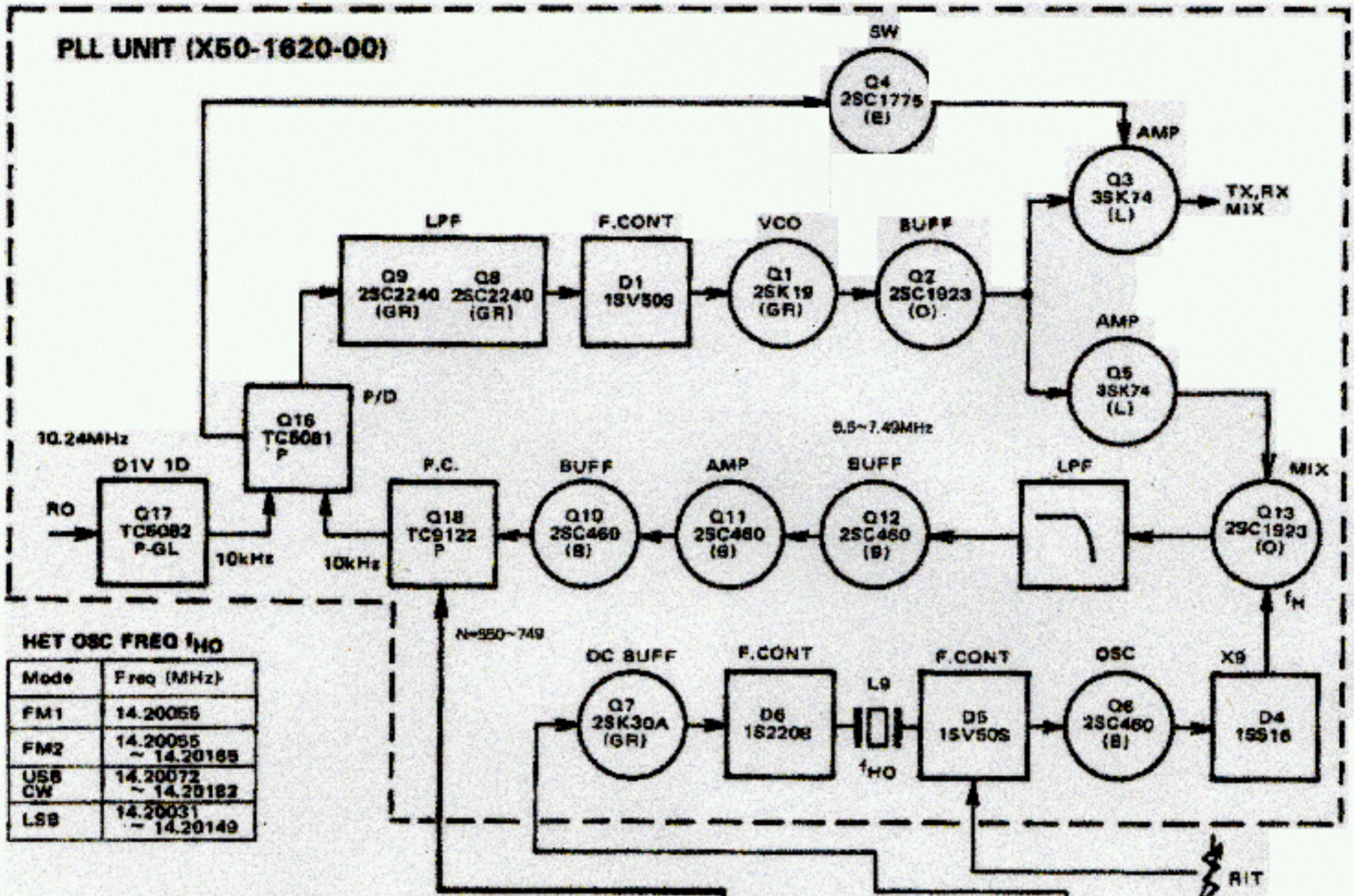


KENWOOD TR-9000

BLOCK DIAGRAM



VCO FREQ

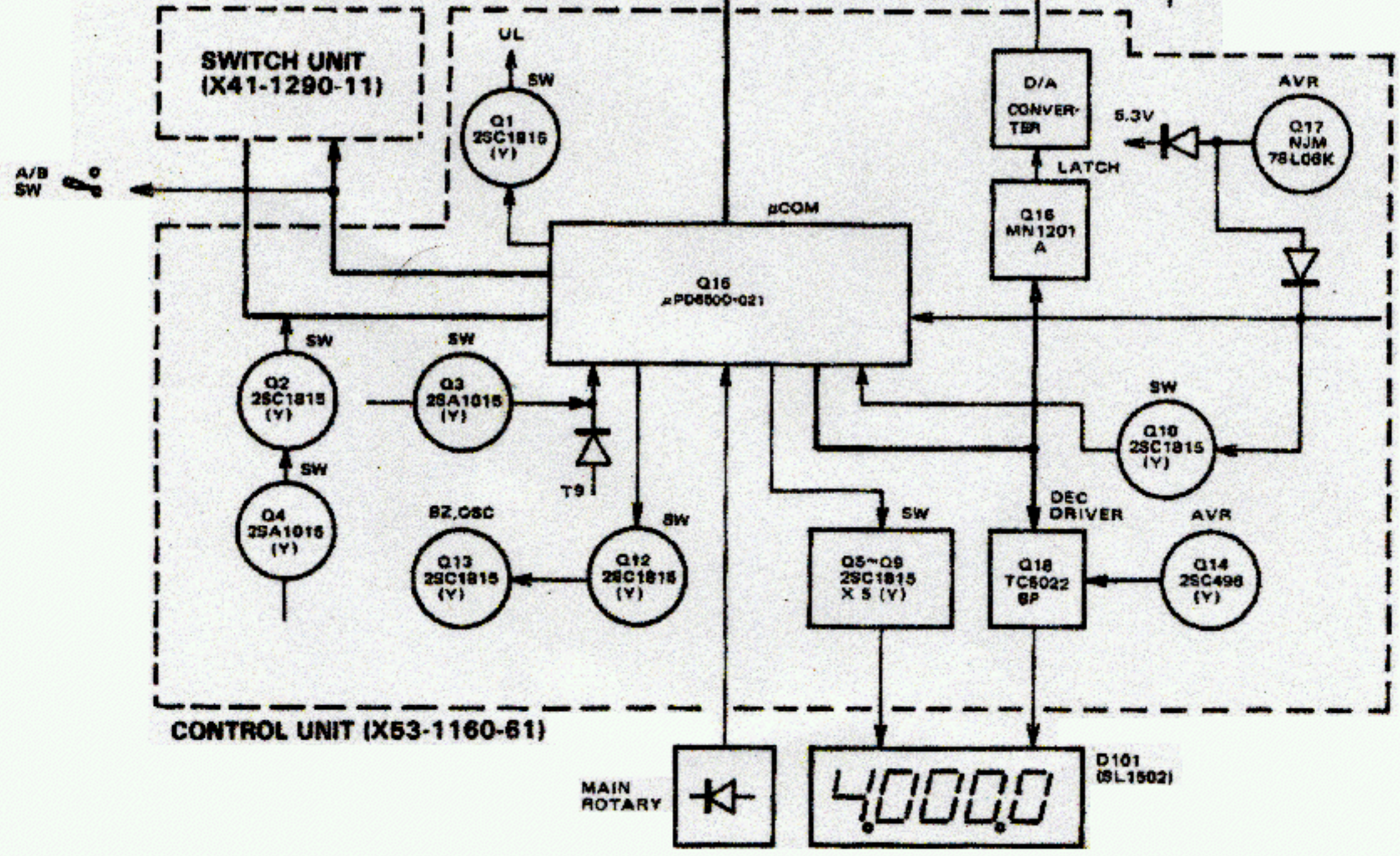
Mode	Freq (MHz)
FM1	132.385 ~ 138.280MHz
FM2	132.385 ~ 138.304MHz
USB CW	132.385 ~ 138.306MHz
LSB	132.385 ~ 138.304MHz

PLL HET FREQ f_H

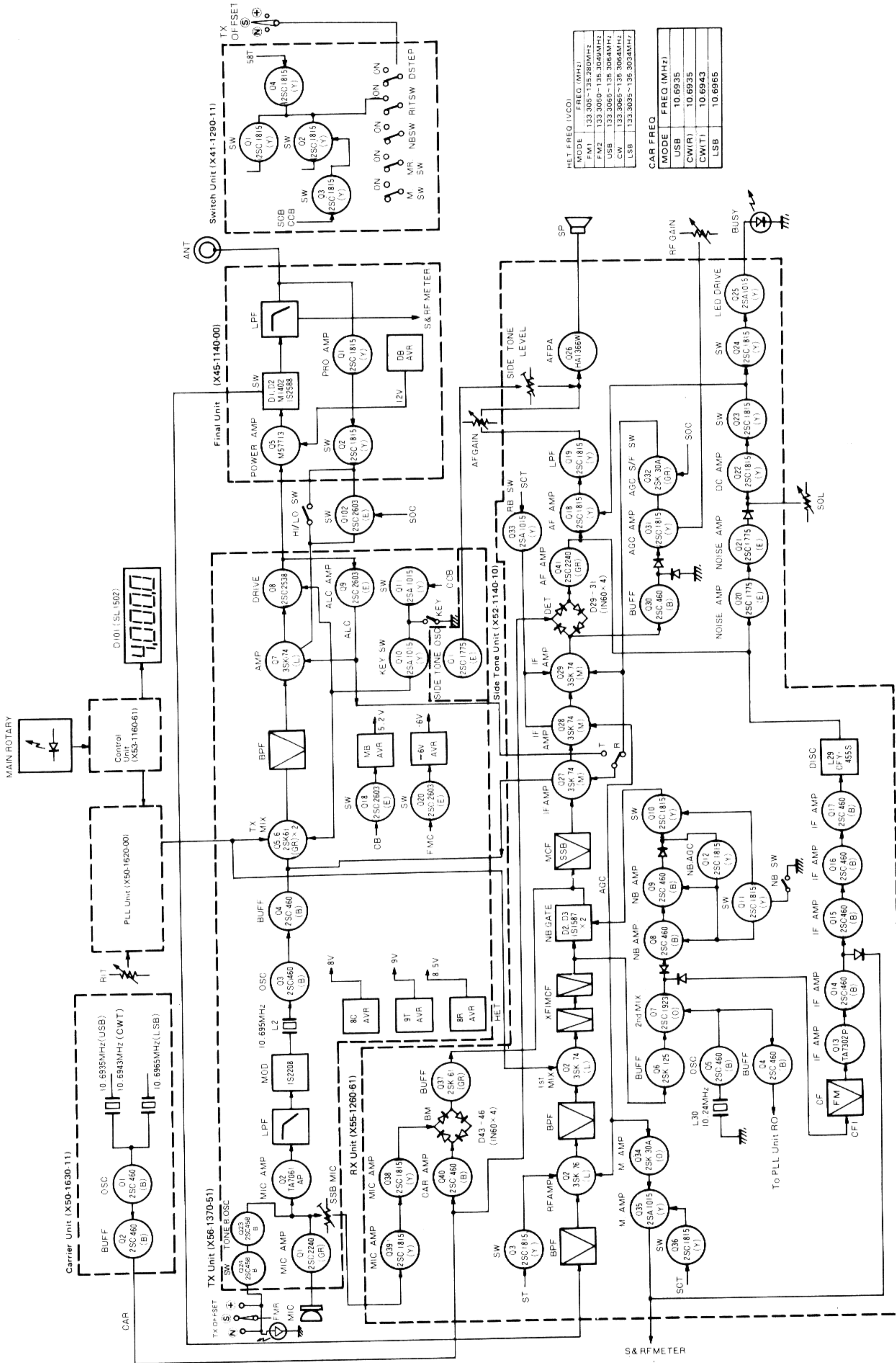
Mode	Freq (MHz)
FM1	127.805
FM2	127.805 ~ 127.8149
USB CW	127.8065 ~ 127.8184
LSB	127.8035 ~ 127.8134

HET OSC FREQ f_{HO}

Mode	Freq (MHz)
FM1	14.20055
FM2	14.20055 ~ 14.20185
USB CW	14.20072 ~ 14.20182
LSB	14.20031 ~ 14.20149



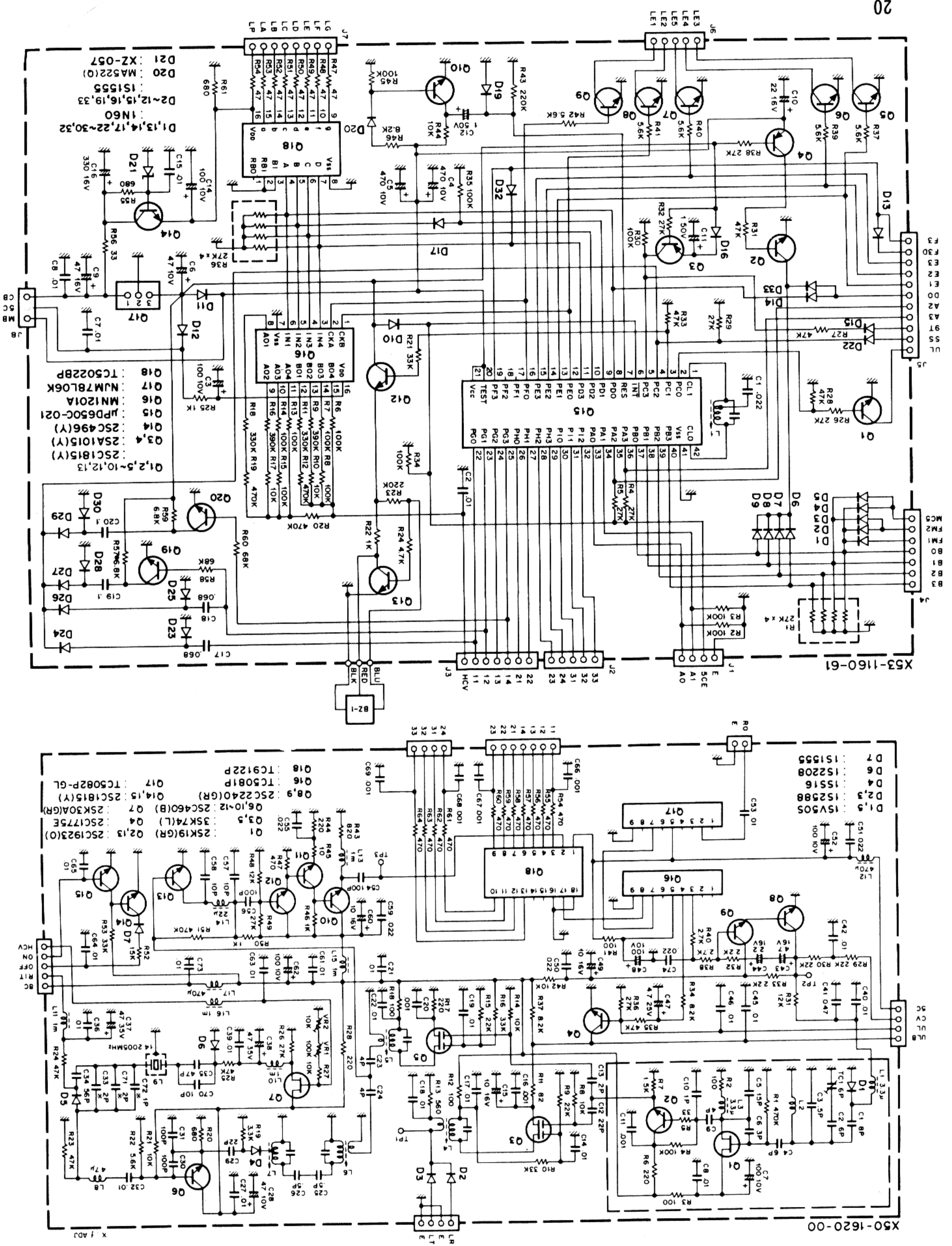
BLOCK DIAGRAM



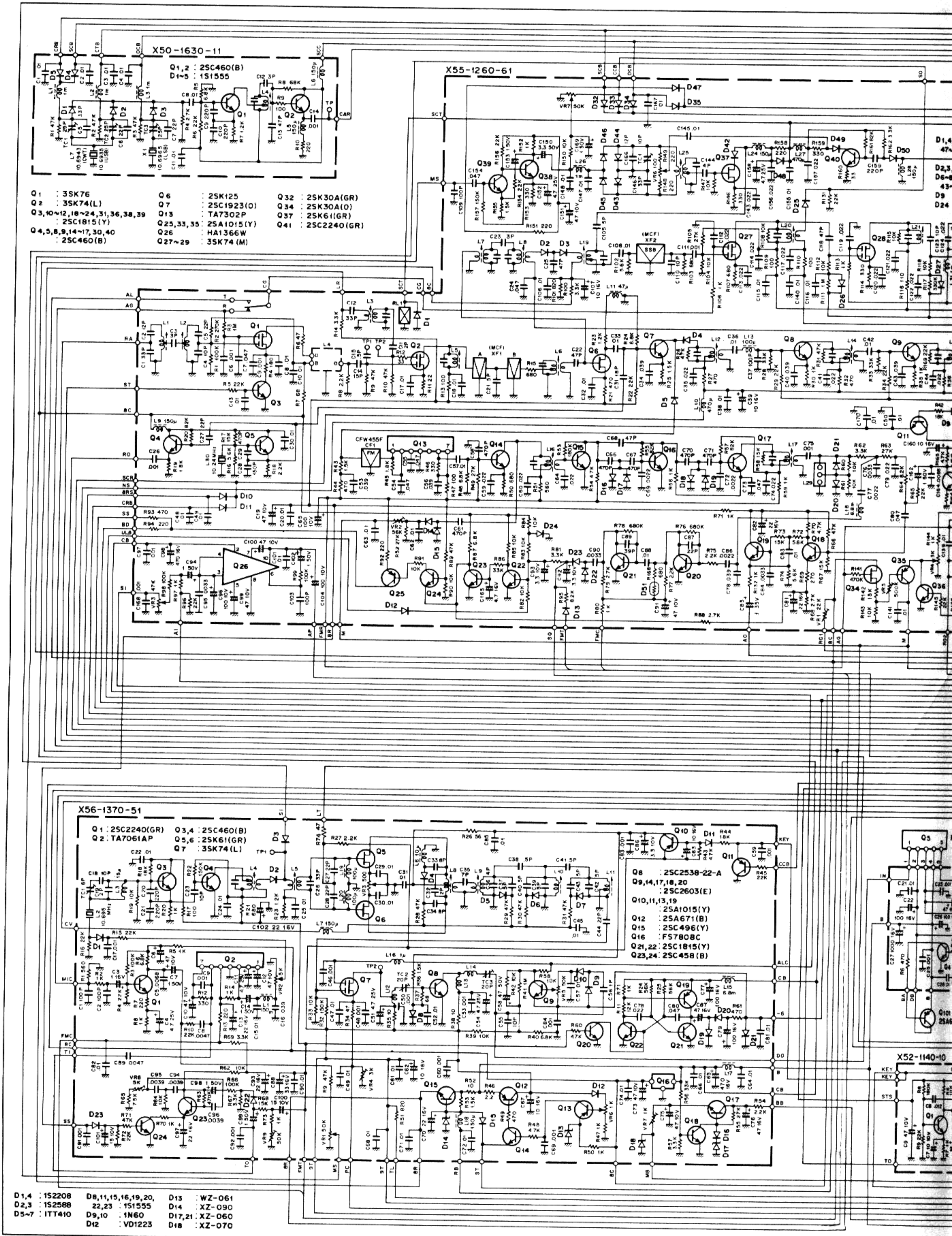
MODE	FREQ. (MHz)
FMT	133.3065-135.280MHz
FMT	133.3065-135.3064MHz
USB	133.3065-135.3064MHz
CW	133.3065-135.3064MHz
LSB	133.3065-135.3064MHz

CAR FREQ	FREQ. (MHz)
MODE	10.6935
USB	10.6935
CW(R)	10.6935
CW(T)	10.6943
LSB	10.6965

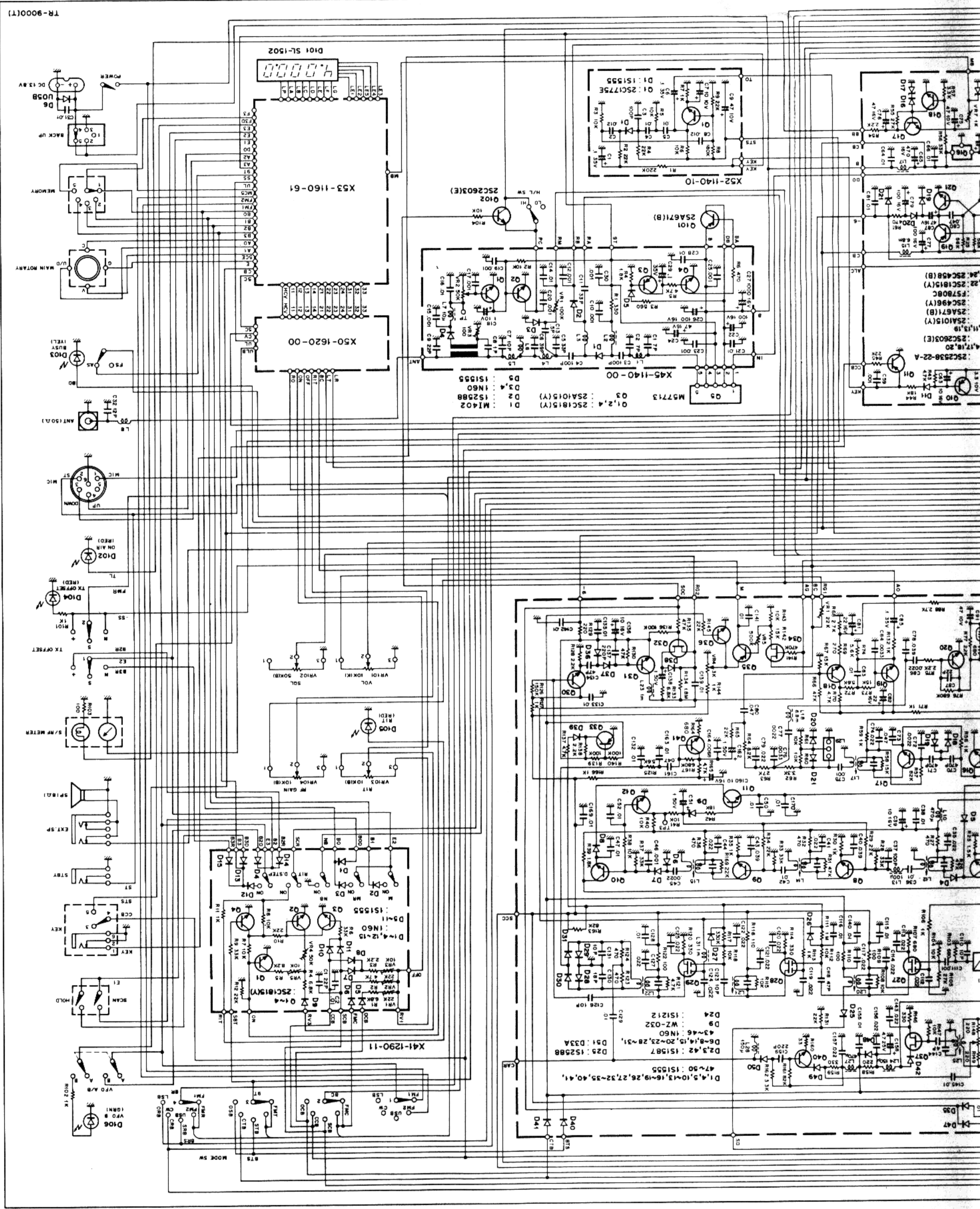
SCHEMATIC DIAGRAM



TR-9000 SCHEMATIC DI



SCHEMATIC DIAGRAM



TR-9000(T)

SPECIFICATIONS

[General]

Semiconductors	ICs	12
	FETs	16
	Transistors	88
	Diodes	143
Frequency range	144.000.0 to 145.999.9 MHz	
Frequency synthesizer	Digital control, phase locked VCO	
Mode	SSB (A3j), FM (F3), CW (A1)	
Frequency stability	Within ± 500 Hz during the first hour after 1 minute of warm up, and within 50Hz any 30 minutes thereafter at 25°C (constant).	
RPT. Tone Burst Frequency	1,750 Hz	
Power requirement	13.8V DC $\pm 15\%$	
Grounding	Negative	
Operating temperature	- 20°C to + 60°C	
Current drain	0.4A in receive mode with no input signal 2.9A in HI transmit mode (Approx) 1.3A in LOW transmit mode (Approx) Less than 2.5mA for memory back up	
Dimensions	170mm (6-11/16) wide 68mm (2-11/16) high 234mm (9-3/16) deep (projections not included)	
Weight	2.5 kg (5.5 lbs)	

[Transmitter Section]

RF output power (at 13.8V DC, 50 Ω load)	HI (SSB, FM, CW)	10W
	Low (FM, CW)	1W approx.
Modulation	FM	Variable reactance direct shift
	SSB	Balanced modulation
Frequency tolerance	SSB, CW	Less than $\pm 10 \times 10^{-6}$
	FM	Less than $\pm 20 \times 10^{-6}$
Spurious radiation	HI	Less than - 60dB
	LOW	Less than - 46dB
Carrier suppression	Better than 40dB	
Unwanted side band suppression	Better than 40dB	
Maximum frequency deviation (FM)	± 5 kHz	
Microphone	Dynamic microphone with PTT switch, 500 Ω	

[Receiver Section]

Circuitry	FM	Double conversion superheterodyne
	SSB, CW	Single conversion superheterodyne
Intermediate frequency	1st IF	10.695MHz
	2nd IF (FM)	455kHz
Receiver sensitivity	FM	Better than 0.5 μ V for 30dB S/N Better than 0.2 μ V for 12 dB SINAD
	SSB, CW	0.2 μ V for 10dB S/N
Receiver selectivity	FM	More than 12kHz (- 6dB) Less than 25kHz (- 60dB)
	SSB, CW	More than 2.2kHz (- 6dB) Less than 4.8kHz (- 60dB)
Spurious interference	Better than 70dB	
Squelch sensitivity	0.16 μ V (threshold)	
Auto scan stop level	Less than 0.2 μ V (threshold)	
Audio output	More than 2.0 watts across 8 ohm load (10% dist.)	

Note: Circuit and ratings are subject to change without notice due to developments in technology.



SERVICE BULLETIN

from: TRIO-KENWOOD COMMUNICATIONS, INC.

TR-9000

#R24

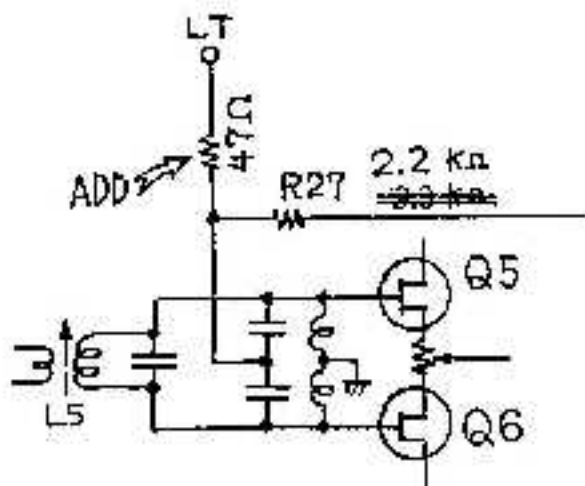
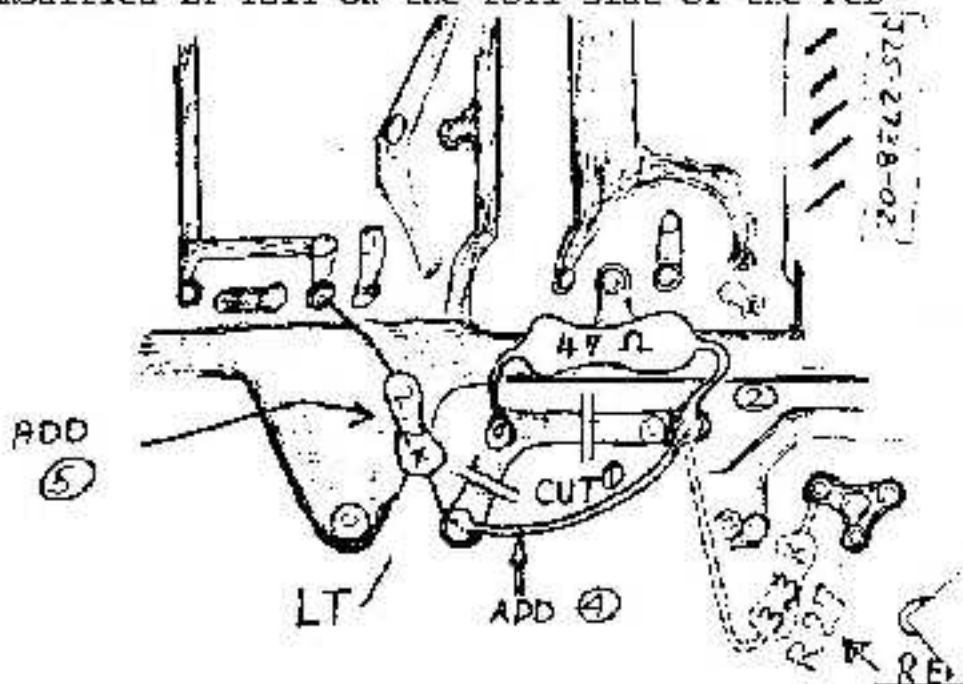
SUBJECT: TR-9000 CW, SSB TX INSTABILITY

DATE 5/29/80

Complaints of FMing in SSB, or CW chirp may be eliminated by minor changes to the TX mixer circuit.

On the TX unit X56-1370-10, perform the following changes:

1. Cut the LT foil path.
2. Install a 47 Ω resistor on the foil side of the PCB.
3. Remove R27, 3.3K Ω and delete.
4. Jumper the cut foil.
5. Install a 2.2K Ω resistor from Q12 collector to the modified LT foil on the foil side of the PCB.



JEB/yn

Pin 1 White	Mic
2 Red	PTT
3 Brown	B+
4,5 Shield	Common ground

Mating chassis connectors;

Four pin,	part no. E06-0403-05
Five pin,	part no. E06-0552-05
Six pin,	part no. E06-0651-05



SERVICE BULLETIN

from: TRIO-KENWOOD COMMUNICATIONS, INC.

TR-9000

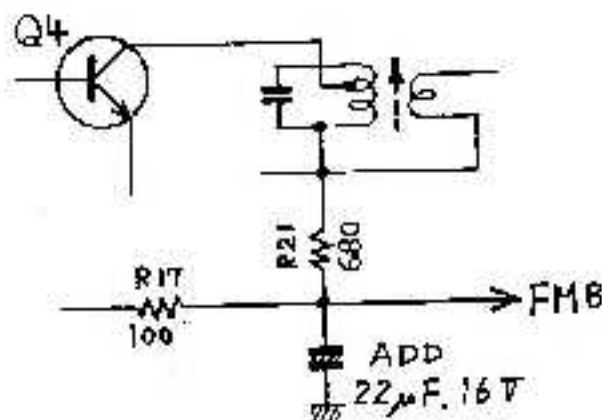
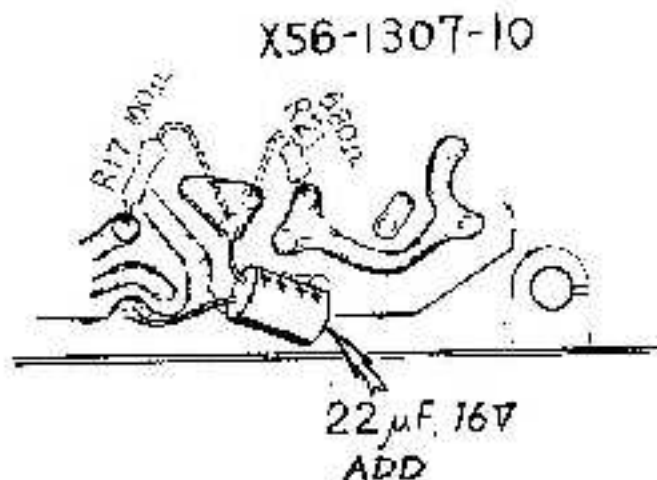
#825

SUBJECT: TR-9000 TX PULSE NOISE IN SSB MODE

DATE 6/2/80

Pulse noise heard during SSB transmission may be reduced or eliminated by adding one capacitor to the TX unit.

On the TX unit X56-1307-10 add a 22 μ F 16V radial lead cap to the FMB line, as illustrated, on the foil side of the PCB. No adjustments are necessary.



JEB/yn



SERVICE BULLETIN

from: TRIO-KENWOOD COMMUNICATIONS, INC.

TR-9000

#859

SUBJECT: TR-9000 Temperature Stability Improvement

DATE 04/14/82

PLL noise or unlock at high temperature may be cured by changing a mixer feed point in the PLL.

Measure TP3 on the PLL unit. If greater than 0.5V RMS signal is available, this change will not be required. If less than this level is present, proceed.

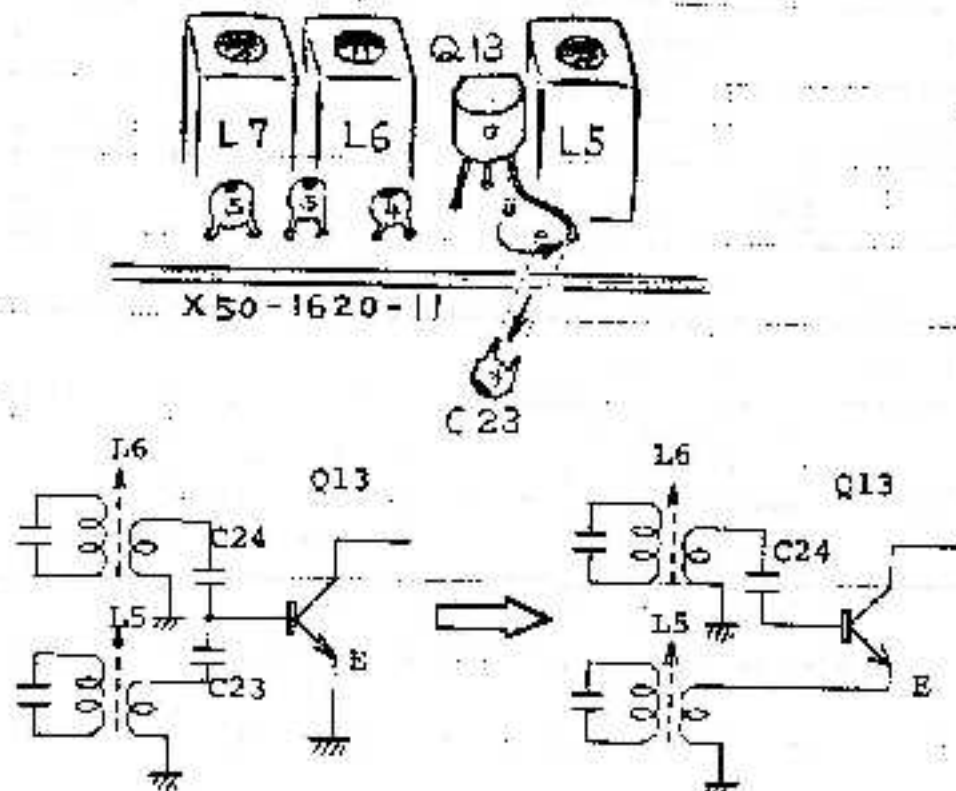
On the PLL unit X50-1620-00 at Q13:

1. Remove and delete C23.
2. Connect Q13 emitter to L5 "hot" (original C23 take-off.)
3. Realign L5, 6, 7 for at least 0.5V RMS at TP3.

Note: Installation time for this procedure is ¼ hour or less.

Alignment Note: To align L6 & 7, first position the slugs flush with the tops of the coils, then alternately adjust these two coils for maximum output at the first peak into the coil (fundamental frequency). Then align L5 for maximum.

TP-3



JEB/sh