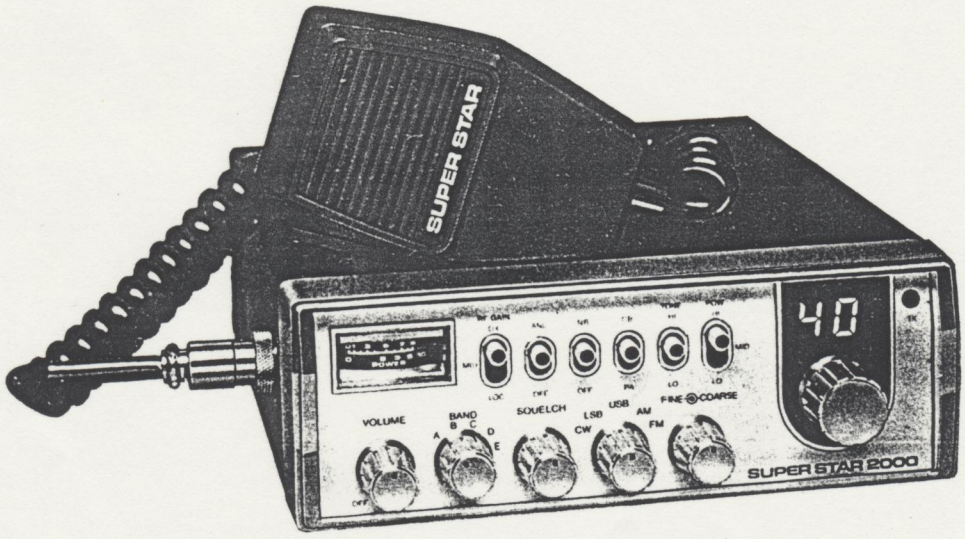
Operation Manual

SUPER STAR 2000
200 Channel Mobile
5-Mode Transceiver



General Description

The Super Star 2000 is a combination transmitter-receiver designed primarily for mobile use. It employs the very latest technology to provide 200 channels of operation by means of digital frequency synthesis with PLL (phase-locked-loop) circuitry. The use of PLL assures a precise on-frequency operation on every channel in both transmit and receive mode. The Super Star 2000 also includes many other features which will provide greater operating convenience and assure optimum communications under a wide range of conditions.

Operable on 200 channels divided into five groups of 40 channels.
3-way RF Gain switch.
Full noise reduction features – ANL and noise blanker.
5 modes of operation – CW, LSB, USB, AM, or FM – selectable with a rotary switch.
Provision of PA.
Concentrically mounted Fine and Coarse controls to fine tune to any transmissions or operate in inter-channel frequencies.
Tone switch to select receive tonal quality in 2-way.
RF power output switchable in 3-way for required communication range.
TX lamp that indicates you are on-the-air.
External speaker jack for an extra sound source.
Electrically floating chassis for negative or positive ground operation without switching.
A high-sensitivity dynamic microphone equipped.

Specifications

General

Frequency composition.	PLL synthesizer
Frequency range.	A – 26.065 to 26.505 MHz B – 26.515 to 26.955 MHz C – 26.965 to 27.405 MHz D – 27.415 to 27.855 MHz E – 27.865 to 28.305 MHz
Channels.	200
Frequency space.	10 kHz
Emission.	AM/FM/USB/LSB/CW
Power source.	13.8 V DC

Receiver

Sensitivity.	AM – 1 micro-V @ 10 dB S/N FM – 1 micro-V @ 20 dB S/N SSB/CW – 0.5 micro-V @ 10 dB S/N
Selectivity.	60 dB
Audio Output.	2 W @ 8 Ohm
Fine Tune range.	± 800 Hz
Coarse Tune range.	± 5 kHz
Squelch range.	0.5 to 300 micro-V
Intermediate frequency.	AM/FM – 10.695 MHz/455 kHz SSB/CW – 10.695 MHz

Transmitter

RF power output.		High	Mid	Low
	SSB/CW	12 W	8 W	2 W
	AM	7.5 W	4 W	1 W
	FM	10 W	7 W	2 W
SSB generation.	Double–balanced modulator with crystal latice filter			
Coarse Tune range.	± 5 kHz			

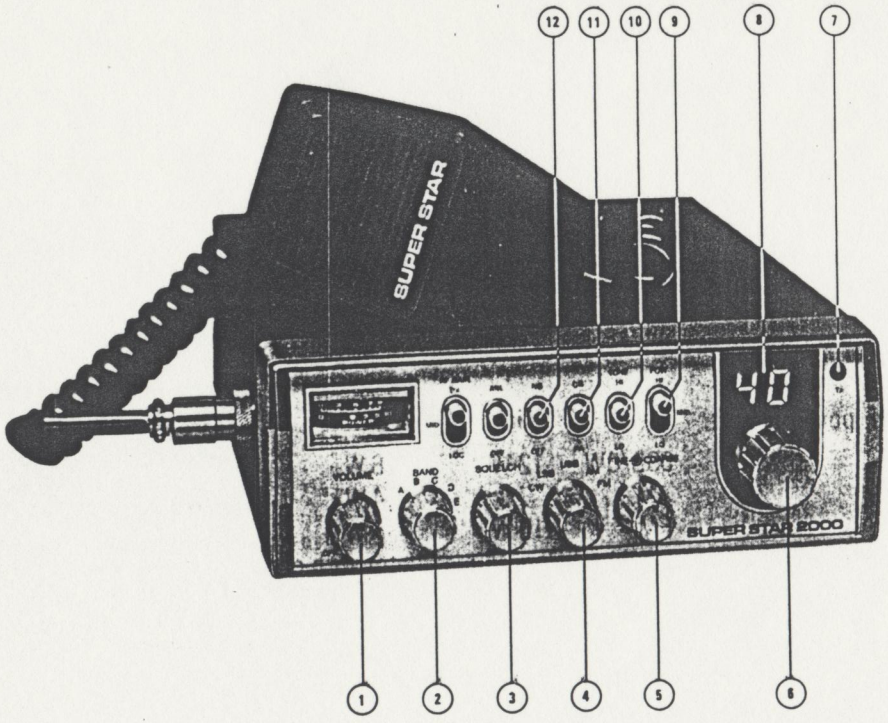
Operating Controls and Features

(1) **Off/Volume Control**
Varies the sound output from the speaker. Also incorporates an on-off switch at the extremely counterclockwise position.

(2) **Band Selector**
Selects a group of 40 channels in five positions – A, B, C, D, or E (200 in all).

(3) **Squelch Control**
Used to eliminate any annoying background noise when no signals are present. The degree of sensitivity to incoming signals is adjustable. When the Squelch control is rotated to the fully clockwise position, it provides maximum squelch; in the fully counterclockwise position, it provides minimum squelch.

(4) **Mode Selector**
Selects the mode of reception and transmission – CW (continuant wave), LSB (lower side band), USB (upper side band), AM (amplitude modulation), or FM (frequency modulation).



(5) **Fine/Coarse Control**
This is concentrically located control that permits individual adjustment of receiving and/or transmitting frequencies.
Fine (inner knob). Provides fine tuning of the receiver section. On regular AM and FM reception, this will permit adjustment to off-frequency transmissions. In the SSB (either upper side band or lower side band) mode, this is used as a voice clarifier to adjust for clearer voice reception. This control will not affect the transmitter frequency.
Coarse Tune (outer knob). This control operates in the same manner as the Fine knob except it provides adjustment of both receive and transmit frequencies.

(6) **Channel selector.**
A 40-detent rotary switch to select any of 200 channels in conjunction with the Band Selector switch.
Window above this switch indicates the channel selected using an LED (Light-emitting-diode) digital readout.

(7) **TX indicator**
Lights up when transmitting.

(8) **Channel indicator**
A digital LED display to show channel selected.
Turned off when operating PA.

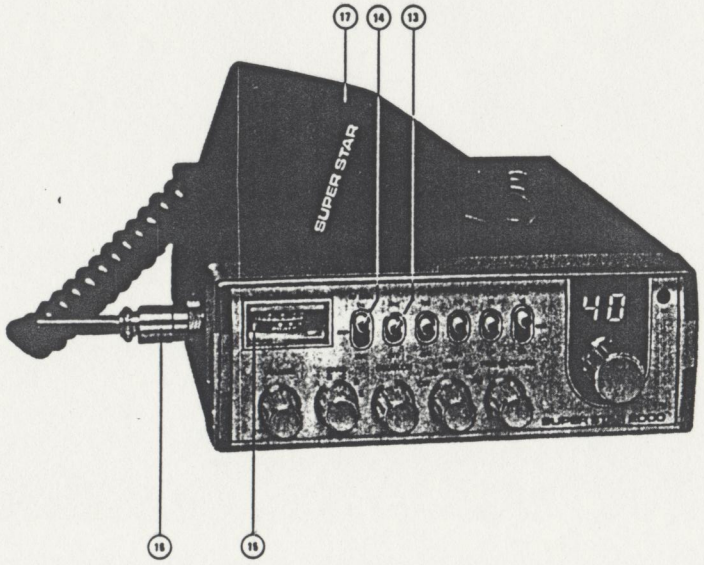
(9) **Power Selector**
Enables you to select the RF power output of the transceiver in 3 ways:
High. In this position the transceiver produces full rated RF power for maximum communication range.
Middle. In this position, the RF power is medium level.
Low. In this position, the minimum RF power output is obtained, may be used for short range communication.
Note. The RF power output level (W) which each position provides is dependent on the mode of operation. See Specifications section for specific RF power output.

(10) **Tone Switch**
Changes tonal quality in receiving in 2 ways:
High. High tones in the sound output are emphasized.
Low. Low tones in the sound output are emphasized.

(11) **CB-PA switch**
When set to PA (lever down) position, the transceiver acts as a public address amplifier. Before operating PA, you must first connect an external PA speaker (8 Ohm, more than 2 W) to the PA Speaker jack on the unit rear panel.

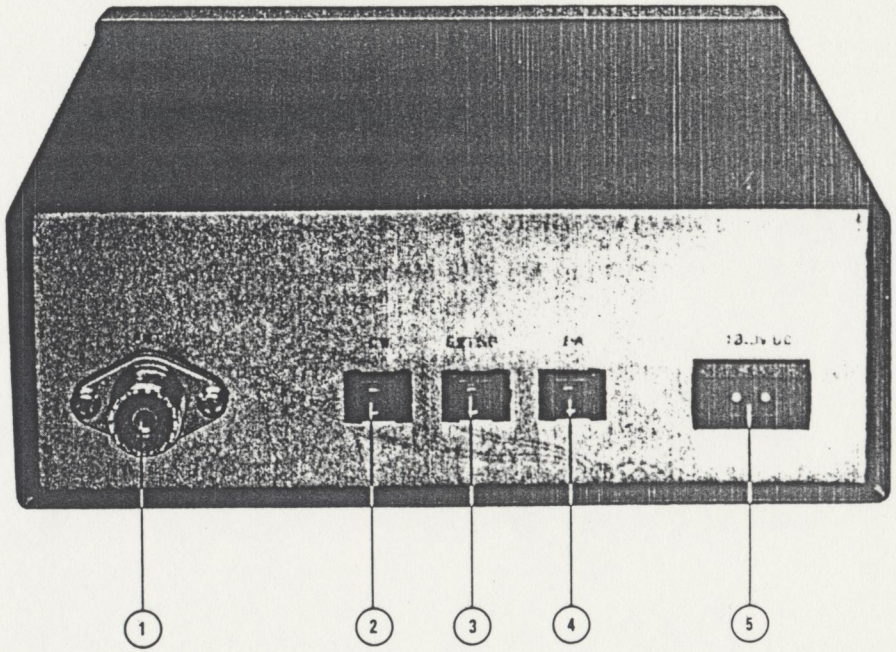
(12) **NB switch**
Activates the noise blanker circuit which is effective in reduction of impulse type noises (ignition noise, etc.).

(13) **ANL switch**
Activates the automatic noise limiter in the audio. The ANL will be effective in reduction of atmospheric (discharge) interference.
(14) **RF Gain switch**
Selects RF Gain (receiver sensitivity) of the transceiver in 3 ways:
DX. In this position, the receiver section provides maximum sensitivity so that it can pick up even weak signals.
Normally this switch should be placed in this position.
Mid. In this position, the receiver sensitivity is medium, and may be used when you desire to pick only strong or fairly strong signals.
Local. In this position, the receiver sensitivity is minimum, and the receiver will pick up only the strong signals. May be used when receiving strong (close) signals which are causing overload in receiving sound.
(15) **Meter**
Serves to dual purpose:
When receiving, this meter gives the relative strength of incoming signals in 'S' units. When transmitting, this gives RF power output in lower scale.
(16) **Microphone jack**
Accepts plug from the microphone supplied. The jack has a locating key inside and allows the plug inserted in only one way. Do not force the plug but align key way properly onto the jack.
(17) **Microphone**
Supplied. With transmit pushbar (PTT) mounted at the left side.



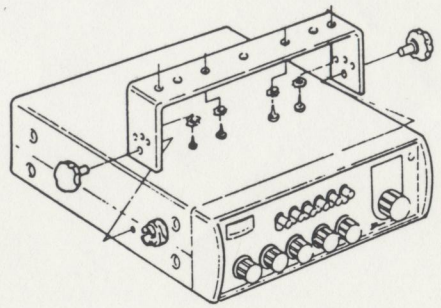
Rear Panel Connection

(1) **Antenna**
Accepts a PL-259 type coaxial connector from the antenna lead-in cable.
(2) **CW Key jack**
Accepts a 3.5 mm 2-conductor phone plug to connect a CW key.
(3) **External Speaker jack**
Used to connect an external speaker (8 Ohm 4 W) as an extra sound source. Insertion of the plug from a speaker will silence the internal speaker automatically.
(4) **PA Speaker jack**
Used to connect a PA speaker (8 Ohm 4 W) for PA operation.
Before operating PA you must first connect a PA speaker to this jack.
(5) **13.8 V DC jack**
13.8 V DC power for the transceiver supplied through this socket (using DC power cable supplied).



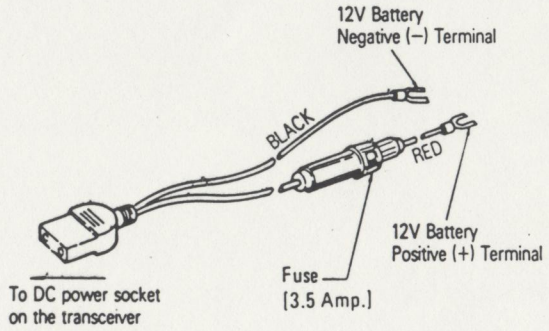
Mobil Installation

Before installing the transceiver in a car, truck, boat, etc., be sure to choose a location which is convenient to the operating controls, and will not interfere with the normal functions of the driver. The transceiver may be mounted to the underside of the instrument panel or deshboard of a car, truck, etc., by means of the special bracket that is supplied with the transceiver.



Power Connection

The transceiver is designed to operate from a battery source of 13.8 Volt DC, in vehicles [or boats] employing either negative or positive ground electrical systems. The fused DC power cable supplied is used to make the necessary power connection to the transceiver. The red [fused] lead is connected to the positive [+] side of the electrical system in the vehicle, and the black lead is connected to the negative [–] side of the system.



Antenna Connection

RG-58/u cable is generally used to connect the CB antenna to the transceiver. The cable should be terminated with a PL-259 connector for connection to the antenna input on the transceiver.

Channel Selection

The transceiver is capable of operation on 200 channels which are divided into 5 groups of 40 channels – A, B, C, D, and E. These groups are selected with the Band Selector switch as the following:

Band switch Position	Frequency Range
A	26.065 to 26.505 MHz
B	26.515 to 26.955 MHz
C	26.965 to 27.405 MHz
D	27.415 to 27.855 MHz
E	27.865 to 28.305 MHz

After the band to which the channel you desire to operate belongs is selected, rotate the Channel selector to find the channel. Rotating the channel selector clockwise or counterclockwise by 1 detent will tune the transceiver 10 kHz upscale or downscale. i.e. If you desire to operate on 27.405 MHz, first set the Band selector switch to 'C', then turn the channel selector to the position at which the channel readout shows '40'.

Operation

(1) Turn the Volume control clockwise to apply power to the transceiver. The S-RF meter should be illuminated.
(2) Rotate the Squelch control counterclockwise fully.
(3) Set the CB-PA switch to CB position. Now background noise or transmission should be heard.
(4) Select the mode of reception – AM, SSB, FM, or CW.
(5) Set the RF Gain switch to DX position.
(6) Select the channel desired.
(7) To transmit, depress the transmit switch on microphone; to receive, release the switch.

RF Gain Switch Adjustment

Normally, this control should be set to DX position to provide maximum receiver sensitivity for long range reception. However, when communicating with a nearby station, you may find that the strong signal from this station may cause overloading of your receiver. In such a case, you can use this switch to reduce the receiver sensitivity and thus prevent any overloading and distortion that may occur as a result of the extremely strong incoming signals. First set the switch to Mid position and if this position will not provide a sufficient reduction of overloading condition, set to Local position.

Fine Control Opeation

This control provides fine tuning of the receiver by ± 0.8 kHz. On regular AM or FM reception, this will permit slight adjustment of your tuning in cases where the received signal is slightly off-frequency. For SSB reception, this control is used as a voice clarifier by turning it for clearest, most intelligible voice.

Coarse Tune Control Operation

This control acts like a VFO (variable frequency oscillator) allowing inter-channel reception and transmission. This shifts the assigned center frequency of the channel 5 kHz up (when rotated clockwise fully) or down (when rotated counterclockwise fully). In the center position, the receiving and transmitting frequency is normal (as listed in the Frequency/Channel Chart).

CW Operation

(1) Set the Mode selector to CW position.
(2) Connect a CW key to the CW Key jack on the rear panel.
(3) To transmit with Morse codes, simply operate the key.

Note. To transmit CW, you may not depress the transmit switch (PTT) on the microphone.

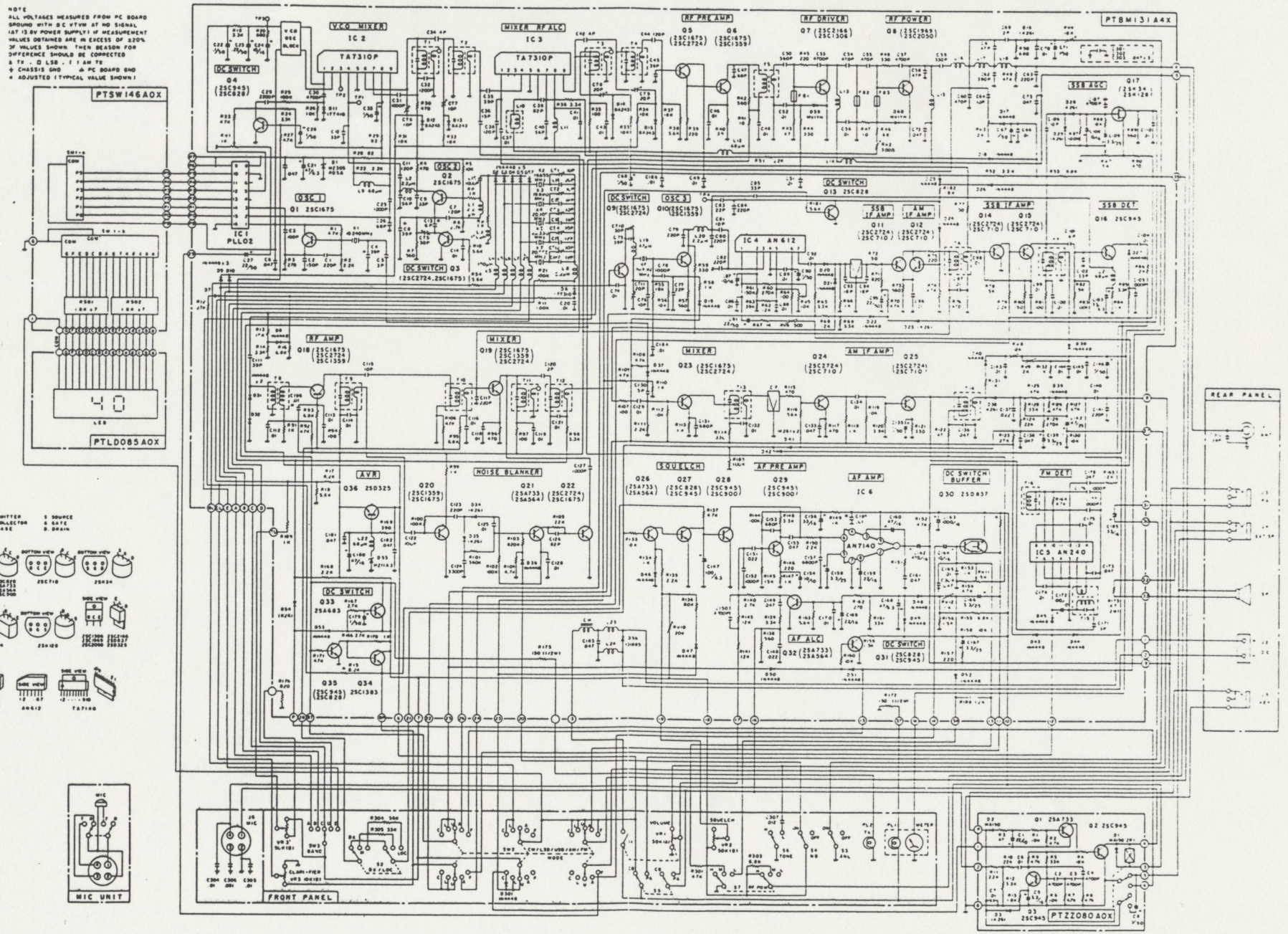
Morse Codes

A	(·–)	1	(·––––)
B	(–···)	2	(··–––)
C	(–·–·)	3	(···––)
D	(–··)	4	(····–)
E	(·)	5	(·····)
F	(··–·)	6	(–····)
G	(––·)	7	(––···)
H	(····)	8	(–––··)
I	(··)	9	(––––·)
J	(·–––)	0	(–––––)
K	(–·–)		
L	(·–··)		
M	(––)		
N	(–·)		
O	(–––)		
P	(·––·)		
Q	(––·–)		
R	(·–·)		
S	(···)		
T	(–)		
U	(··–)		
V	(···–)		
W	(·––)		
X	(–··–)		
Y	(–·––)		
Z	(––··)		

Frequency/Channel Chart

A-Band		B-Band		C-Band		D-Band		E-Band	
Channel	MHz Frequency	Channel	MHz Frequency	Channel	MHz Frequency	Channel	MHz Frequency	Channel	MHz Frequency
1	26.065	1	26.515	1	26.965	1	27.415	1	27.[illegible]
2	26.075	2	26.525	2	26.975	2	27.425	2	27.[illegible]
3	26.085	3	26.535	3	26.985	3	27.435	3	27.[illegible]
4	26.105	4	26.555	4	27.005	4	27.455	4	27.[illegible]
5	26.115	5	26.565	5	27.015	5	27.465	5	27.[illegible]
6	26.125	6	26.575	6	27.025	6	27.475	6	27.[illegible]
7	26.135	7	26.585	7	27.035	7	27.485	7	27.[illegible]
8	26.155	8	26.605	8	27.055	8	27.505	8	27.[illegible]
9	26.165	9	26.615	9	27.065	9	27.515	9	27.[illegible]
10	26.175	10	26.625	10	27.075	10	27.525	10	27.[illegible]
11	26.185	11	26.635	11	27.085	11	27.535	11	27.[illegible]
12	26.205	12	26.655	12	27.105	12	27.555	12	28.005
13	26.215	13	26.665	13	27.115	13	27.565	13	28.015
14	26.225	14	26.675	14	27.125	14	27.575	14	28.025
15	26.235	15	26.685	15	27.135	15	27.585	15	28.035
16	26.255	16	26.705	16	27.155	16	27.605	16	28.055
17	26.265	17	26.715	17	27.165	17	27.615	17	28.065
18	26.275	18	26.725	18	27.175	18	27.625	18	28.075
19	26.285	19	26.735	19	27.185	19	27.635	19	28.085
20	26.305	20	26.755	20	27.205	20	27.655	20	28.105
21	26.315	21	26.765	21	27.215	21	27.665	21	28.115
22	26.325	22	26.775	22	27.225	22	27.675	22	28.125
23	26.355	23	26.805	23	27.255	23	27.705	23	28.155
24	26.335	24	26.785	24	27.235	24	27.685	24	28.135
25	26.345	25	26.795	25	27.245	25	27.695	25	28.145
26	26.365	26	26.815	26	27.265	26	27.715	26	28.165
27	26.375	27	26.825	27	27.275	27	27.725	27	28.175
28	26.385	28	26.835	28	27.285	28	27.735	28	28.185
29	26.395	29	26.845	29	27.295	29	27.745	29	28.195
30	26.405	30	26.855	30	27.305	30	27.755	30	28.205
31	26.415	31	26.865	31	27.315	31	27.765	31	28.215
32	26.425	32	26.875	32	27.325	32	27.775	32	28.225
33	26.435	33	26.885	33	27.335	33	27.785	33	28.235
34	26.445	34	26.895	34	27.345	34	27.795	34	28.245
35	26.455	35	26.905	35	27.355	35	27.805	35	28.255
36	26.465	36	26.915	36	27.365	36	27.815	36	28.265
37	26.475	37	26.925	37	27.375	37	27.825	37	28.275
38	26.485	38	26.935	38	27.385	38	27.835	38	28.285
39	26.495	39	26.945	39	27.395	39	27.845	39	28.295
40	26.505	40	26.955	40	27.405	40	27.855	40	28.305

Schematic


PTSW146AOX
PTLD085AOX
PTBM131A4X
PTZZ080AOX
VCO MIXER
IC 2
TA7310P
MIXER AF ALC
IC 3
RF PRE AMP
RF DRIVER
RF POWER
DC SWITCH
OSC 1
OSC 2
OSC 3
IC1 PLL02
IC 4 AN 612
358 IF AMP
AM IF AMP
358 AGC
358 DET
RF AMP
MIXER
AM IF AMP
AVR
NOISE BLANKER
SQUELCH
AF PRE AMP
AF AMP
DC SWITCH BUFFER
FM DET
AF ALC
IC 6
AN7140
IC 5 AN240
REAR PANEL
FRONT PANEL
MIC UNIT
MODE
VOLUME
SQUELCH
METER