

SBE

Sidebander



**23 CHANNEL SSB/AM
CITIZENS BAND TRANSCEIVER**

LINEAR SYSTEMS, INC.
220 AIRPORT BLVD., WATSONVILLE, CA. 95076

The SBE Sidebander transceiver is designed and engineered for licensed Class D operation on any of the 23 channels designated as Citizens Band frequencies by the Federal Communications Commission. You are required to read and understand Part 95 of the FCC regulations prior to operation of this unit. Copies of Part 95, covering regulations for the Citizens Band Radio Service are available from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.

You must also obtain a license and call sign before operating your Sidebander. If you do not have a Class D station license, request an application for a Class D station license for the Citizens Radio Service (FCC form 505) obtainable from any FCC Field office.

WARNING: Transmitter section adjustments must be performed by a qualified technician holding a valid first or second class FCC radiotelephone License.

1.0 GENERAL DESCRIPTION AND SPECIFICATIONS

1.1 The SBE Sidebander transceiver is a fully solid-state two-way radio intended for use as a Class D station in the Citizens Radio Service. The unit will operate in both a standard full carrier AM mode, as well as fully suppressed A3J single sideband mode, upper or lower. The Sidebander features fully synthesized 23 channel operation, proportional output indicator, crystal lattice filter and dual conversion receivers for both SSB and AM. The equipment comes complete with microphone, mobile mounting bracket, power cable and crystals installed for all 23 channels.

1.2 General

Channels	23
Frequency Range	26.965 to 27.255 MHz
Frequency Control	Synthesizer
Frequency Tolerance	0.0025%
Frequency Stability	0.001%
Operating Temperature Range	-20°C to +50°C
Humidity	95%
Microphone	Dynamic w/p.t.t. switch and coil cord
Input Voltage	13.8VDC nom. 15.9V max. 11.7V min.
Current Drain	Transmit: AM full mod., 1.5A SSB, full pep output, 1.6A Receive: Squelched, 0.250A 1W audio output, 0.750A
Size	2.55"H, 9.0"W, 9.7"D
Weight	6.3 pounds
Antenna Connector	UHF, S0239

1.3 Transmitter

Power Input	AM, 5 watts SSB, 15 watts, p.e.p.
Modulation	AM, high and low level Class B
Modulation Capability	AM, 100%
Intermodulation Distortion	SSB: 3rd order - 20db 5th order - 25db
Carrier Supression	SSB: -40db
Unwanted Sideband	-40 db

Freq. Response	AM and SSB: 350-2500Hz
Output Impedance	50 ohms, unbalanced
Automatic Load Control	Adjustable, Holds p. e. p. to 1db increase w/10db increase of input
SSB Filter	7.8 MHz, crystal lattice type. 6db @ 2.1 kHz 50db @ 5.5 kHz
Output Indicator	Lamp gives true proportional RF output indication, AM and SSB

1.4 Receiver

Sensitivity	SSB: Less than 0.5uV for 10db S+N/N AM: Less than 1.0uV for 10db S+N/N
Selectivity	SSB: 6db @ 2.1 kHz, 50db @ 5.5 kHz AM: 6db @ 5 kHz, 40db @ 20 kHz, 60db @ 60 kHz
Image Rejection	50db
I. F. Freq.	AM: Double conversion, 7.3 MHz, .455 MHz SSB: 7.8 MHz
Automatic Gain Control	(AGC): Less than 10db change in audio output for inputs from 10 to 50,000 microvolts
Squelch	Adjustable. Threshold less than 1uV
Noise Blanker	Series gate type (uses FET)
Clarifier Range	+600 Hz
Balanced Detector	4 diodes
Audio Output Power	3 watts into 8 ohms
Frequency Response	300-2500 Hz
Distortion	7% @ 0.5 watts @ 1000 Hz
Hum and Noise	35db
Built-in Speaker	8 ohms, oval
External Speaker (Not Supplied)	8 ohms. Disables internal speaker when connected

1.5 PA System

Power Output	3 watts into external speaker
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External Speaker for PA
(Not Supplied)

8 ohms. When PA-CB switch
is in PA, the PA speaker also
monitors the receiver

- 1.6 The Sidebander complies fully with Part 95 of Volume VI Rules and Regulations of the F. C. C. for Class D mobile operation in the Citizens Band.

2.0 INSTALLATION

2.1 Antennas

One of the most important keys to achieve optimum system performance is the installation of a good antenna system. Only a properly matched antenna system will allow maximum power transfer from the 52 ohm transmission line to the radiating element. Most quality antennas previously suitable for use on AM will also be satisfactory for SSB. Due to the nature of an SSB transmitter, the VSWR must be kept below 2:1 or instability of the final amplifier might occur.

The recommended method of antenna tuning is to use an in-line wattmeter or VSWR bridge to adjust the antenna for minimum reflected power on channel 11 in the AM mode. When the antenna system is adjusted for proper matching in the AM mode, no further adjustment for SSB will be necessary.

2.2 Mobile

The Sidebender is supplied with a universal mounting bracket and microphone holder. The transceiver may be mounted in any plane and on any rigid surface, such as, underneath an automobile dashboard, truck roof or vertically on a boat bulkhead.

DC power should be derived directly from the vehicle's battery in order to minimize voltage losses and ignition interference. The unit is designed for a 12 volt negative ground system. Connect the red wire to the positive (+) battery terminal, black wire to the negative (-). If the transceiver's power lead must be lengthened, use #14 (or larger) wire.

2.2.1 Mobile Antenna

The antenna type best suited for mobile applications is either a base/center loaded or full length quarter wave vertical whip. This type of antenna is non-directional thus assuring minimum signal variation as the vehicle changes direction. If directional capabilities are desired in a mobile installation, it is recommended that only a properly matched pair of antennas and phasing harness be used. A phasing control that allows the operator to shift antenna phase may also be used providing no reactive component is reflected back to the transmission line. An in-line wattmeter or VSWR bridge may be used to check this characteristic since a reactive component will appear as an increase in the standing wave ratio. A standard antenna connector (type S0-239) is located on the rear panel for convenient connection to a PL-259 cable plug. Type RG-8/U or RG-58/U cable is recommended for transmission line.

2.3 Base Station

For base station operation, the SBE model SBE3AC Base Station Power Supply is recommended. The supply provides a regulated 13.8 volts DC output with an input voltage of 110-120 volts AC, 50 - 60 Hz.

2.3.1 Base Station Antenna

The Sidebender may be used with any type of 52 ohm base station antenna. A ground plane vertical antenna will provide the most uniform horizontal coverage. This type of antenna is best suited for communication with a mobile unit. For point-to-point operation where both stations are fixed, a directional beam will usually increase communication range since this type of antenna concentrates transmitted energy in one direction. The beam antenna also allows the receiver to "listen" in only one direction thus reducing interfering signals.

Antenna height is an important factor when maximum range is desired. Keep the antenna clear of surrounding structures or foliage. FCC regulations limit antenna height to 20 feet above an existing structure.

2.4 Public Address

An external 8 ohm, 3 watt speaker may be connected to the phono jack located on the rear panel when the Sidebender is used as a public address system. The speaker should be directed away from the microphone to prevent acoustic feedback.

2.5 Remote Speaker

The external speaker jack on the rear panel is used for remote receiver monitoring. The external speaker should have 8 ohms impedance and be able to handle at least 3 watts. When the external speaker is plugged in, the Sidebender's internal speaker is disconnected.

3.0 OPERATION

3.1 Control Functions

3.1.1 Off/On Volume

Turn clockwise to apply power to the unit and to set the desired listening level.

3.1.2 Squelch

Blanks out unwanted noise when no signals are present. Turn fully counterclockwise then slowly clockwise until the receiver noise disappears. Any signal to be received must now be slightly stronger than the average received noise. Further clockwise rotation will increase the threshold level which a signal must overcome in order to be heard. Only strong signals will be heard at a maximum clockwise setting.

3.1.3 Noise Blanker Switch

This is a dual purpose control designed to tailor receiver performance for a wide range of operating extremes. When the AM mode is in use, the noise blanker switch is placed in the NB position to eliminate impulse and atmospheric noise so that very weak signals may be copied. The switch may normally be expected to be left in the NB position during AM operation in a mobile installation to reduce alternator and ignition noise. The AM receiver sensitivity is the same in both positions of the switch, however, when the noise blanker is energized in AM, a very slight loss of high voice tones might be noticed. During base station operation, the NB switch may be left off when in the AM mode unless a high atmospheric noise level is present.

In the SSB mode the noise blanker switch functions to switch in a different noise blanker circuit in the NB position. In this case, the noise blanker has no effect on receiver fidelity but instead has the effect of enhancing receiver performance by reduction of incoming noise. During normal operation the NB switch in the SSB mode is always left in the NB position. In the LOC position special circuitry is activated to serve as receiver desensitization when listening to very strong local signals. The receiver sensitivity is automatically reduced from .5 microvolts to approximately 50 microvolts so that even the very strong signals may be received with optimum clarity. When the noise blanker is switched to the LOC position during SSB the sensitivity reduction may be heard by noticing the loss of weak

signals entering the receiver as well as a reduction in background noise. It is important to remember that weak signals will not be heard when the NB switch is in the LOC position in either the USB or LSB mode.

3.1.4 Channel

Selects the desired channel for transmission and reception on both AM and SSB. Channels 10 thru 15 and 23 may be used for communications between stations operating under different licenses and between units sharing the same licenses whereas all other channels, except channel 9, may be used only between units operating under the same license. Channel 9 has been reserved by the FCC for emergency communications involving the immediate safety of life of individuals or immediate protection of property. Channel 9 may also be used to render assistance to a motorist. This is an FCC rule and applies to both AM and SSB modes of transmission.

3.1.5 Mode

Selects either of the SSB modes (USB or LSB) or standard double sideband AM. Unless the station with which communications is desired is equipped with SSB, the AM mode is normally used. The mode selector switch changes the mode of operation of both transmitter and receiver simultaneously. An explanation of how to determine which mode to use is contained in the following paragraphs under Operating Procedure.

3.1.6 Clarifier

Allows variation of both the transmitter and receiver operating frequencies above and below the assigned frequency. Although this control is intended primarily to tune in SSB signals, it may be used to optimize AM signals as described in the Operating Procedure paragraphs.

3.1.7 PA-CB Switch

Selects the mode of operation. The PA function should not be used unless an external speaker is connected as described in Installation Section of this manual. In the CB position, the PA function is disabled and the unit will transmit and receive on the selected frequency.

3.1.8 Press-to-Talk Microphone

The receiver and transmitter are controlled by the press-to-talk switch on the microphone. Press the switch and the transmitter is activated; release switch to receive. When transmitting, hold the microphone two inches from the mouth and speak clearly in a normal voice.

3.1.9 Output Indicator Lamp

The red jeweled lamp located adjacent to the channel selector is a proportional output indicating device for both AM and SSB. During AM transmissions, when the transmitter is keyed, the lamp will be illuminated to approximately 60% of full brightness and will brighten as the transmitter is modulated. The first brightness level is indicative of the AM carrier output strength and full brightness is achieved when voice modulation is applied to the carrier since the carrier peak output is increased with modulation. In the SSB mode, the lamp will not be illuminated until modulation is applied since an SSB signal does not transmit an RF carrier. During normal operation the lamp will blink rapidly, thus indicating true RF output.

3.2 Operating Procedure

3.2.1 Receiving General

There are three types of signals presently in use for communications in the Citizens Band. The Sideband receiver is capable of receiving any of these types when the proper mode of operation is selected. When the Sideband mode switch is placed in the AM position, only standard double sideband full carrier signals will be detected. An SSB signal may be recognized while in the AM mode by its characteristic intermittent pulsing or fluttering and the inability of the AM receiver to produce an intelligible output.

The SSB modes will detect upper sideband, lower sideband, double sideband (DSB) and standard AM signals. In order to determine whether to use upper sideband or lower sideband, the following explanation should be considered.

SSB reception differs from standard AM reception in that the SSB receiver does not require a carrier or opposite sideband to produce an intelligible signal. A single sideband transmitted signal consists only of the upper or the lower sideband and no carrier is transmitted. A double sideband (DSB) signal consists of two sidebands, each sideband being equal in amplitude and equally distant in frequency above and below the operating frequency of the transmitter. The

operating frequency is defined as the frequency where the carrier would normally be during AM operation. In AM operation a carrier, or reference signal, is transmitted along with two sidebands; each sideband being of equal amplitude and equal distance above and below the carrier frequency. It can be seen that since a single sideband receiver requires only one of the sidebands and no carrier, all modes of transmission may be received since all modes contain at least one sideband. The SSB receiver selects only the required portion of the signal (the sideband) and rejects the carrier and opposite sideband of an AM signal and rejects the opposite sideband of a DSB signal. The method of tuning AM and DSB signals in the SSB mode is explained later on in this chapter.

An SSB signal may only be received when the listening receiver is functioning in the same mode. In other words, an upper sideband signal (USB) may be made intelligible only if the receiver is functioning in the USB position. A lower sideband (LSB) signal will be heard when the receiver is in the USB mode, however, no amount of tuning will make the signal intelligible. The reason for this may be understood if you consider that when in the USB mode, a transmitter's output frequency is in direct proportion to the modulating tone whereas in the LSB mode the transmitter's output frequency is in inverse proportion to the modulating tone. When modulation is applied to the transmitter's microphone in the USB mode, the transmitter's output frequency is increased whereas in the LSB mode the transmitter's output frequency is decreased. The result in listening to the receiver is that when the mode switch is in the proper position (either USB or LSB), a true reproduction of a single tone of modulation will result, and if the tone is increased in frequency, such as a low pitched whistle to a high pitched whistle, you will hear the increase in the output tone of the receiver. If the incorrect mode is selected, an increase in tone of a whistle applied to the transmitter will cause a decrease in the resultant tone from the receiver. Thus when a voice is used in place of a whistle or tone, in the proper listening mode the voice will be received correctly whereas in the incorrect mode, the voice will be translated backwards and can not be made intelligible by the clarifier control. When listening to an AM or DSB transmission, a correct sideband is heard in either mode since both an upper and lower sideband are received.

Once the desired SSB mode has been selected, frequency adjustment may be necessary in order to make the incoming signal intelligible. The clarifier control allows the operator to vary frequency above and below the exact center frequency of the received signal. If the sound of the incoming signal is high or low pitched adjust the clarifier to produce the correct sound. In order to understand the operation of the clarifier, consider it as performing the same function as a phonograph speed control. When the speed is set too high, voices will be

high pitched and if set too low voices will be low pitched. There is only one correct speed that will make a particular record produce the same sound that was recorded. If the record is played on a turntable that rotates in the wrong direction, (opposite sideband) no amount of speed control (clarifier) will produce an intelligible sound.

An AM signal received while listening in one of the SSB modes will produce a steady tone (carrier) in addition to the intelligence unless the SSB receiver is tuned to exactly the same frequency by the clarifier control. For simplicity it is recommended that the AM mode be used to listen to AM signals.

DSB signals may be received in either SSB mode and the clarifier control is adjusted in the same manner as in true single sideband operation.

3.2.2 Operating Procedure to Receive

1. Place CB-PA switch in CB position.
2. Turn the Off/On - Volume control clockwise.
3. Select the desired operating channel.
4. Select the desired mode (AM - USB - LSB).
5. Place noise blanker switch in the "NB" position.
6. Rotate the squelch control clockwise slightly beyond the point where noise disappears.
7. When a signal is heard (SSB only) adjust clarifier for correct voice sound.
8. If the signal is very strong (SSB only), place the noise blanker switch in the "Off" position.

3.2.3 To Transmit

1. Select the desired channel and mode of transmission.
2. Set clarifier control to the centered position.
3. If the channel is clear, depress the push-to-talk switch on the microphone and speak in a normal voice. The output lamp will illuminate indicating true output power.
4. Release the push-to-talk switch to receive.

4.0 SERVICE MAINTENANCE

Should your Sidebander fail to perform as stated in this manual, it is recommended that SBE be contacted in writing. SBE will either authorize return of the unit to the factory or refer you to an authorized SBE repair agency in your area. DO NOT SHIP EQUIPMENT WITHOUT PRIOR WRITTEN AUTHORIZATION FROM SBE. Your letter to SBE must include the following particulars:

1. Model number and serial number of equipment.
2. Date of purchase of equipment.
3. Nature of trouble.
4. Cause of trouble if known.
5. Name of distributor from whom the equipment was purchased.
6. Your return address.
7. Method of shipment by which the equipment should be returned.

In addition, include any information that you feel will be helpful in locating or correcting the problem.

5.0 PARTS ORDERING INFORMATION

When order replacement parts, you should direct your order to an SBE distributor or SBE, Replacement Parts Department, 220 Airport Boulevard, Watsonville, California 95076. Please furnish the following information.

1. Quantity required.
2. SBE part number and description.
3. Item or symbol number obtained from parts list, schematic, component location drawing.
4. SBE model number and serial number.

Unless specified, SBE will determine the best method of shipment for the parts involved. All parts will be sent C. O. D. unless ordered through an SBE distributor.

SYM.	PART #	DESCRIPTION
C101	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C102	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C103	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C104	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C105	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C106	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C107	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C108	8000-00004-040	Capacitor, Fixed, 3 pfd, +.5 pf, 50V, Mica
C109	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C110	8000-00004-003	Capacitor, Fixed, .04 mfd, + 20%, 50V, Mylar
C111	8000-00004-004	Capacitor, Fixed, 1 mfd, 25V, Electrolytic
C112	8000-00004-005	Capacitor, Fixed, 10 mfd, +100% -10%, 16V, Elect.
C113	8000-00004-005	Capacitor, Fixed, 10 mfd, +100% -10%, 16V, Elect.
C114	8000-00004-011	Capacitor, Fixed, .001 mfd, +20%, 50V
C201	8000-00004-006	Capacitor, Fixed, 24 pfd, + 10%, 50V, Mica
C202	8000-00004-007	Capacitor, Fixed, 10 pfd, + 10%, 50V, Mica
C203	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C204	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C205	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C206	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C207	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C208	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C209	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C210	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C211	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C212	8000-00004-008	Capacitor, Fixed, 1.5 pfd, + 10%, 50V, Mica
C213	8000-00004-002	Capacitor, Fixed, 15 pfd, + 10%, 50V, Mica
C214	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C215	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C216	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C217	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C218	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C219	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C220	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C221	8000-00004-009	Capacitor, Fixed, 47 mfd, +100% -10%, 16V, Elect.
C301	8000-00004-010	Capacitor, Fixed, 22 pfd, N750, Ceramic
C302	8000-00004-011	Capacitor, Fixed, .001 mfd, + 20%, 50V, Ceramic
C303	8000-00004-012	Capacitor, Fixed, .047 mfd, +80% -20%, 50V, Ceram
C304	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic

SYM.	PART #	DESCRIPTION
C305	8000-00004-013	Capacitor, Fixed, 2 pfd, + 0.5 pf, 50V, Mica
C306	8000-00004-011	Capacitor, Fixed, .001 mfd, + 20%, 50V, Ceramic
C307	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C308	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C309	8000-00004-014	Capacitor, Fixed, 1500 pfd, + 10%, 25V, Styrol
C310	Not Used	
C311	8000-00004-015	Capacitor, Fixed, .05 mfd, + 20%, 50V, Mylar
C312	8000-00004-005	Capacitor, Fixed, 10 mfd, +100% -10%, 16V, Elect.
C313	8000-00004-012	Capacitor, Fixed, .047 mfd, +80% -20%, 50V, Ceramic
C314	8000-00004-012	Capacitor, Fixed, .047 mfd, +80% -20%, 50V, Ceramic
C315	8000-00004-003	Capacitor, Fixed, .04 mfd, + 20%, 50V, Mylar
C316	8000-00004-015	Capacitor, Fixed, .05 mfd, + 20%, 50V, Mylar
C317	8000-00004-011	Capacitor, Fixed, .001 mfd, + 20%, 50V, Ceramic
C318	8000-00004-012	Capacitor, Fixed, .047 mfd, +80% -20%, 50V, Ceramic
C319	8000-00004-011	Capacitor, Fixed, .001 mfd, + 20%, 50V, Ceramic
C320	8000-00004-016	Capacitor, Fixed, 20 pfd, + 10%, 50V, Mica
C321	Not Used	
C322	8000-00004-017	Capacitor, Fixed, 500 pfd, + 10%, 50V, Mica
C323	Not Used	
C324	8000-00004-003	Capacitor, Fixed, .04 mfd, + 20%, 50V, Mylar
C325	8000-00004-018	Capacitor, Fixed, .1 mfd, + 20%, 50V, Mylar
C401	8000-00004-010	Capacitor, Fixed, 22 pfd, N750, Ceramic
C402	8000-00004-010	Capacitor, Fixed, 22 pfd, N750, Ceramic
C403	8000-00004-019	Capacitor, Fixed, 1,000 pfd, + 10%, 50V, Mica
C404	8000-00004-020	Capacitor, Fixed, 100 pfd, + 10%, 50V, Mica
C405	8000-00004-020	Capacitor, Fixed, 100 pfd, + 10%, 50V, Mica
C406	8000-00004-019	Capacitor, Fixed, 1,000 pfd, + 10%, 50V, Mica
C407	8000-00004-012	Capacitor, Fixed, .047 mfd, + 80%, -20%
C408	8000-00004-021	Capacitor, Fixed, 47 pfd, + 10%, 50V, Mica
C409	8000-00004-021	Capacitor, Fixed, 47 pfd, + 10%, 50V, Mica
C410	8000-00004-012	Capacitor, Fixed, .047 mfd, +80%, -20%
C411	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C412	8000-00004-011	Capacitor, Fixed, .001 mfd, + 20%, 50V, Ceramic
C413	8000-00004-011	Capacitor, Fixed, .001 mfd, + 20%, 50V, Ceramic
C414	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C415	8000-00004-010	Capacitor, Fixed, 22 pfd, N750, Ceramic
C416	8000-00004-010	Capacitor, Fixed, 22 pfd, N750, Ceramic
C417	8000-00004-010	Capacitor, Fixed, 22 pfd, N750, Ceramic
C418	8000-00004-010	Capacitor, Fixed, 22 pfd, N750, Ceramic

SYM.	PART #	DESCRIPTION
C419	8000-00004-022	Capacitor, Fixed, 30 pfd, N470, Ceramic
C420	8000-00004-022	Capacitor, Fixed, 30 pfd, N470, Ceramic
C421	8000-00004-022	Capacitor, Fixed, 30 pfd, N470, Ceramic
C422	8000-00004-022	Capacitor, Fixed, 30 pfd, N470, Ceramic
C423	8000-00004-022	Capacitor, Fixed, 30 pfd, N470, Ceramic
C424	8000-00004-022	Capacitor, Fixed, 30 pfd, N470, Ceramic
C425	8000-00004-010	Capacitor, Fixed, 22 pfd, N750, Ceramic
C426	8000-00004-010	Capacitor, Fixed, 22 pfd, N750, Ceramic
C427	8000-00004-010	Capacitor, Fixed, 22 pfd, N750, Ceramic
C428	8000-00004-010	Capacitor, Fixed, 22 pfd, N750, Ceramic
C429	8000-00004-010	Capacitor, Fixed, 22 pfd, N750, Ceramic
C430	8000-00004-019	Capacitor, Fixed, 1,000 pfd, +10%, 50V, Mica
C431	8000-00004-023	Capacitor, Fixed, 330 pfd, +10%, 50V, Mica
C432	8000-00004-019	Capacitor, Fixed, 1,000 pfd, +10%, 50V, Mica
C433	8000-00004-024	Capacitor, Fixed, 30 pfd, +10%, 50V, Mica
C434	8000-00004-025	Capacitor, Fixed, 120 pfd, +10%, 50V, Mica
C435	8000-00004-001	Capacitor, Fixed, .01 mfd, +20%, 50V, Ceramic
C436	8000-00004-020	Capacitor, Fixed, 100 pfd, +10%, 50V, Mica
C437	8000-00004-001	Capacitor, Fixed, .01 mfd, +20%, 50V, Ceramic
C438	8000-00004-025	Capacitor, Fixed, 120 pfd, +10%, 50V, Mica
C439	8000-00004-001	Capacitor, Fixed, .01 mfd, +20%, 50V, Ceramic
C440	8000-00004-024	Capacitor, Fixed, 30 pfd, +10%, 50V, Mica
C441	8000-00004-024	Capacitor, Fixed, 30 pfd, +10%, 50V, Mica
C442	8000-00004-026	Capacitor, Fixed, 40 pfd, +10%, 50V, Mica
C443	8000-00004-020	Capacitor, Fixed, 100 pfd, +10%, 50V, Mica
C444	8000-00004-021	Capacitor, Fixed, 47 pfd, +10%, 50V, Mica
C445	8000-00004-021	Capacitor, Fixed, 47 pfd, +10%, 50V, Mica
C446	8000-00004-027	Capacitor, Fixed, 220 pfd, +10%, 50V, Mica
C447	8000-00004-001	Capacitor, Fixed, .01 mfd, +20%, 50V, Ceramic
C448	8000-00004-001	Capacitor, Fixed, .01 mfd, +20%, 50V, Ceramic
C449	8000-00004-001	Capacitor, Fixed, .01 mfd, +20%, 50V, Ceramic
C450	8000-00004-028	Capacitor, Fixed, 1 pfd, +0.5 pf, 50V, Mica
C451	8000-00004-001	Capacitor, Fixed, .01 mfd, +20%, 50V, Ceramic
C452	8000-00004-027	Capacitor, Fixed, 220 pfd, +10%, 50V, Mica
C453	8000-00004-001	Capacitor, Fixed, .01 mfd, +20%, 50V, Mica
C501	8000-00004-007	Capacitor, Fixed, 10 pfd, +10%, 50V, Mica
C502	8000-00004-001	Capacitor, Fixed, .01 mfd, +20%, 50V, Ceramic
C503	8000-00004-001	Capacitor, Fixed, .01 mfd, +20%, 50V, Ceramic
C504	8000-00004-180	Capacitor, Fixed, 56 pfd, +10%, 50V, Mica
C505	8000-00004-001	Capacitor, Fixed, .01 mfd, +20%, 50V, Ceramic

SYM.	PART #	DESCRIPTION
C506	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C507	8000-00004-027	Capacitor, Fixed, 220 pfd, + 10%, 50V, Mica
C508	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C509	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C510	8000-00004-025	Capacitor, Fixed, 120 pfd, + 10%, 50V, Mica
C511	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C512	8000-00004-012	Capacitor, Fixed, .047 mfd, +80% -20%, 50V, Ceramic
C513	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C514	8000-00004-029	Capacitor, Fixed, 33 pfd, + 10%, 50V, Mica
C515	8000-00004-020	Capacitor, Fixed, 100 pfd, + 10%, 50V, Mica
C516	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C517	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C518	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C519	8000-00004-030	Capacitor, Fixed, 4.7 mfd, +100% -10%, 16V, Elect.
C520	8000-00004-005	Capacitor, Fixed, 10 mfd, +100% -10%, 16V, Elect.
C521	8000-00004-030	Capacitor, Fixed, 4.7 mfd, +100% -10%, 16V, Elect.
C522	8000-00004-008	Capacitor, Fixed, 1.5 pfd, + 0.5% pf, 50V, Mica
C523	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C524	8000-00004-041	Capacitor, Fixed, 150 pfd, + 10%, 50V, Mica
C525	8000-00004-027	Capacitor, Fixed, 220 pfd, + 10%, 50V, Mica
C526	8000-00004-027	Capacitor, Fixed, 220 pfd, +10%, 50V, Mica
C527	8000-00004-007	Capacitor, Fixed, 10 pfd, + 10%, 50V, Mica
C528	8000-00004-042	Capacitor, Fixed, 1 mfd, +150% -10%, 16V, Elect.
C529	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C530	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C601	8000-00004-004	Capacitor, Fixed, 1 mfd, 25V, Electrolytic
C602	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C603	8000-00004-005	Capacitor, Fixed, 10 mfd, +100% -10%, 16V, Elect.
C604	8000-00004-009	Capacitor, Fixed, 47 mfd, +100% -10%, 16V, Elect.
C605	8000-00004-005	Capacitor, Fixed, 10 mfd, +100% -10%, 16V, Elect.
C606	8000-00004-004	Capacitor, Fixed, 1 mfd, 25V, Electrolytic
C607	8000-00004-009	Capacitor, Fixed, 47 mfd, +100% -10%, 16V, Elect.
C608	8000-00004-004	Capacitor, Fixed, 1 mfd, 25V, Electrolytic
C609	8000-00004-004	Capacitor, Fixed, 1 mfd, 25V, Electrolytic
C610	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C611	8000-00004-005	Capacitor, Fixed, 10 mfd, +100% -10%, 16V, Elect.
C612	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C613	8000-00004-004	Capacitor, Fixed, 1 mfd, 25V, Electrolytic
C614	8000-00004-042	Capacitor, Fixed, 1 mfd, +150% -10%, 16V, Elect.

SYM.	PART #	DESCRIPTION
C615	8000-00004-001	Capacitor, Fixed, .01 mfd, $\pm 20\%$, 50V, Ceramic
C616	8000-00004-009	Capacitor, Fixed, 47 mfd, $\pm 100\%$ -10%, 16V, Elect.
C617	8000-00004-004	Capacitor, Fixed, 1 mfd, 25V, Electrolytic
C618	8000-00004-004	Capacitor, Fixed, 1 mfd, 25V, Electrolytic
C619	8000-00004-004	Capacitor, Fixed, 1 mfd, 25V, Electrolytic.
C620	8000-00004-003	Capacitor, Fixed, .04 mfd, $\pm 20\%$, 50V, Mylar
C621	8000-00004-009	Capacitor, Fixed, 47 mfd, $\pm 100\%$ -10%, 16V, Elect.
C622	8000-00004-004	Capacitor, Fixed, 1 mfd, 25V, Electrolytic
C623	8000-00004-163	Capacitor, Fixed, .2 mfd, 50V, Elect.
C624	8000-00004-001	Capacitor, Fixed, .01 mfd, $\pm 20\%$, 50V, Ceramic
C625	8000-00004-044	Capacitor, Fixed, 220 mfd, $\pm 100\%$ -10%, 16V, Elect.
C626	8000-00004-044	Capacitor, Fixed, 220 mfd, $\pm 100\%$ -10%, 16V, Elect.
C627	8000-00004-044	Capacitor, Fixed, 220 mfd, $\pm 100\%$ -10%, 16V, Elect.
C628	Not Used	
C629	8000-00004-018	Capacitor, Fixed, .1 mfd, $\pm 20\%$, 50V, Ceramic
C630	Not Used	
C631	8000-00004-046	Capacitor, Fixed, 100 mfd, $\pm 100\%$ -10%, 16V, Elect.
C632	8000-00004-001	Capacitor, Fixed, .01 mfd, $\pm 20\%$, 50V, Ceramic
C701	8000-00004-009	Capacitor, Fixed, 47 mfd, $\pm 100\%$ -10%, 16V, Elect.
C702	8000-00004-001	Capacitor, Fixed, .01 mfd, $\pm 20\%$, 50V, Ceramic
C703	8000-00004-009	Capacitor, Fixed, 47 mfd, $\pm 100\%$ -10%, 16V, Elect.
C704	Not Used	
C705	Not Used	
C706	8000-00004-004	Capacitor, Fixed, 1 mfd, 25V, Electrolytic
C707	8000-00004-043	Capacitor, Fixed, .2 mfd, $\pm 20\%$, 25V, Elect.
C708	8000-00004-046	Capacitor, Fixed, 100 mfd, $\pm 100\%$ -10%, 16V, Elect.
C709	8000-00004-005	Capacitor, Fixed, 10 mfd, $\pm 100\%$ -10%, 16V, Elect.
C710	8000-00004-001	Capacitor, Fixed, .01 mfd, $\pm 20\%$, 50V, Ceramic
C711	8000-00004-003	Capacitor, Fixed, .04 mfd, $\pm 20\%$, 50V, Mylar
C712	8000-00004-003	Capacitor, Fixed, .04 mfd, $\pm 20\%$, 50V, Mylar
C713	8000-00004-004	Capacitor, Fixed, 1 mfd, 25V, Electrolytic
C714	8000-00004-004	Capacitor, Fixed, 1 mfd, 25V, Electrolytic
C801	8000-00004-048	Capacitor, Fixed, 1,000 pfd, 500V, Feedthrough
C802	8000-00004-009	Capacitor, Fixed, 47 mfd, $\pm 100\%$ -10%, 16V, Elect.
C803	8000-00004-049	Capacitor, Fixed, 1,000 mfd, $\pm 100\%$ -10%, 16V, Elect.
C804	8000-00004-001	Capacitor, Fixed, .01 mfd, $\pm 20\%$, 50V, Ceramic
C805	8000-00004-009	Capacitor, Fixed, 47 mfd, $\pm 100\%$ -10%, 16V, Elect.
C806	8000-00004-001	Capacitor, Fixed, .01 mfd, $\pm 20\%$, 50V, Ceramic

SYM.	PART #	DESCRIPTION
C807	8000-00004-009	Capacitor, Fixed, 47 mfd, +100% -10%, 16V, Elect.
C808	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C809	8000-00004-001	Capacitor, Fixed, .01 mfd, \pm 20%, 50V, Ceramic
C901	8000-00004-001	Capacitor, Fixed, .01 mfd, + 20%, 50V, Ceramic
C902	8000-00004-001	Capacitor, Fixed, .01 mfd, \pm 20%, 50V, Ceramic
CH1	8000-00004-053	Coil, Fixed, 22 uh
CH2	8000-00004-053	Coil, Fixed, 22 uh
CH3	8000-00004-054	Coil, Fixed, 3 uh
CH4	8000-00004-055	Coil, Fixed, .65 uh
CH5	8000-00004-054	Coil, Fixed, 3 uh
CH6	8000-00004-056	Coil, Fixed, 15 uh
CH7	8000-00004-053	Coil, Fixed, 22 uh
CH8	8000-00004-057	Coil, Fixed, 150 uh
CH9	8000-00004-057	Coil, Fixed, 150 uh
CH10	8000-00004-058	Choke, Line Filter
CH11	8000-00004-053	Coil, Fixed, 22 uh
CH12	8000-00004-059	Coil, Fixed, .85 uh
CH13	8000-00004-056	Coil, Fixed, 15 uh
CV1	8000-00004-050	Capacitor, 20 pfd, Ceramic Trimmer
CV2	8000-00004-050	Capacitor, 20 pfd, Ceramic Trimmer
CV3	8000-00004-050	Capacitor, 20 pfd, Ceramic Trimmer
CV4	8000-00004-050	Capacitor, 20 pfd, Ceramic Trimmer
CV5	8000-00004-052	Capacitor, 30 pfd, Air Trimmer
CV6	8000-00004-050	Capacitor, 20 pfd, Ceramic Trimmer
CV7	8000-00004-050	Capacitor, 20 pfd, Ceramic Trimmer
CV8	8000-00004-050	Capacitor, 20 pfd, Ceramic Trimmer
CV9	8000-00004-050	Capacitor, 20 pfd, Ceramic Trimmer
CV10	8000-00004-051	Capacitor, 30 pfd, Ceramic Trimmer
CV11	8000-00004-051	Capacitor, 30 pfd, Ceramic Trimmer
CV12	8000-00004-051	Capacitor, 30 pfd, Ceramic Trimmer
CV13	8000-00004-051	Capacitor, 30 pfd, Ceramic Trimmer
CV14	8000-00004-051	Capacitor, 30 pfd, Ceramic Trimmer
CV15	8000-00004-051	Capacitor, 30 pfd, Ceramic Trimmer
CV16	8000-00004-050	Capacitor, 20 pfd, Ceramic Trimmer
CV17	8000-00004-050	Capacitor, 20 pfd, Ceramic Trimmer
CV18	8000-00004-050	Capacitor, 20 pfd, Ceramic Trimmer
CV19	8000-00004-050	Capacitor, 20 pfd, Ceramic Trimmer
CV20	8000-00004-050	Capacitor, 20 pfd, Ceramic Trimmer

SYM.	PART #	DESCRIPTION
D101	8000-00004-060	Diode, 1N34A
D102	8000-00004-060	Diode, 1N34A
D103	8000-00004-060	Diode, 1N34A
D104	8000-00004-060	Diode, 1N34A
D105	8000-00004-060	Diode, 1N34A
D106	8000-00004-060	Diode, 1N34A
D107	8000-00004-061	Diode, 1S1212
D108	8000-00004-061	Diode, 1S1212
D109	8000-00004-062	Diode, 860011
D201	8000-00004-063	Diode, 1N60P
D202	8000-00004-063	Diode, 1N60P
D203	8000-00004-063	Diode, 1N60P
D204	8000-00004-063	Diode, 1N60P
D205	8000-00004-062	Diode, 860011
D206	8000-00004-062	Diode, 860011
D207	8000-00004-062	Diode, 860011
D208	8000-00004-062	Diode, 860011
D209	8000-00004-063	Diode, 1N60P
D210	8000-00004-063	Diode, 1N60P
D211	8000-00004-062	Diode, 860011
D212	8000-00004-062	Diode, 860011
D301	8000-00004-060	Diode, 1N34A
D302	8000-00004-060	Diode, 1N34A
D303	Not used	
D304	8000-00004-060	Diode, 1N34A
D305	8000-00004-060	Diode, 1N34A
D306	Not Used	
D307	8000-00004-064	Diode, 1S84
D401	8000-00004-062	Diode, 860011
D402	8000-00004-062	Diode, 860011
D403	8000-00004-062	Diode, 860011
D404	8000-00004-062	Diode, 860011
D405	8000-00004-062	Diode, 860011
D406	8000-00004-062	Diode, 860011
D407	8000-00004-063	Diode, 1N60P
D408	8000-00004-063	Diode, 1N60P
D409	8000-00004-063	Diode, 1N60P

SYM.	PART #	DESCRIPTION
D410	8000-00004-063	Diode, 1N60P
D411	8000-00004-060	Diode, 1N34A
D501	8000-00004-062	Diode, 860011
D502	8000-00004-060	Diode, 1N34A
D503	Not Used	
D504	8000-00004-060	Diode, 1N34A
D505	8000-00004-060	Diode, 1N34A
D506	8000-00004-065	Diode, 1N757A
D507	Not Used	
D508	8000-00004-184	Diode, Zener, 1S990A
D601	8000-00004-062	Diode, 860011
D602	8000-00004-062	Diode, 860011
D603	8000-00004-066	Diode, KB262
D604	8000-00004-066	Diode, KB262
D605	8000-00004-062	Diode, 860011
D606	8000-00004-062	Diode, 860011
D607	8000-00004-067	Diode, MV-3
D701	Not Used	
D702	Not Used	
D703	8000-00004-062	Diode, 860011
D704	8000-00004-062	Diode, 860011
D705	8000-00004-060	Diode, 1N34A
D801	8000-00004-062	Diode, 860011
D802	8000-00004-068	Diode, 10D1
D803	8000-00004-068	Diode, 10D1
D804	8000-00004-065	Diode, 1N757A
D805	8000-00004-065	Diode, 1N757A
D806	8000-00004-065	Diode, 1N757A
D807	8000-00004-068	Diode, 10D1
D901	8000-00004-060	Diode, 1N34A
D902	8000-00004-060	Diode, 1N34A
SYM.	PART #	DESCRIPTION
PL1	8000-00004-142	Lamp, 16V, 40MA
PL2	8000-00004-142	Lamp, 16V, 40MA

SYM.	PART #	DESCRIPTION
L1	8000-00004-073	Coil, 19 MHz
L2	8000-00004-074	Coil, 19 MHz
L3	8000-00004-075	Coil, Tx Drive
L4	8000-00004-076	Coil, Tx Ant.
L5	8000-00004-077	Coil, Tx Ant.
L6	8000-00004-078	Coil, Tx Ant.

SYM.	PART #	DESCRIPTION
J1	8000-00004-069	Connector, Socket Antenna SO-239
J2	8000-00004-070	Connector, Microphone, 4P
J3	8000-00004-071	Connector, P. A. Jack
J4	8000-00004-072	Connector, External Jack, SP, 2P

SYM.	PART #	DESCRIPTION
Fil. 1	8000-00004-138	Filter, 7.8 MHz
Fil. 2	8000-00004-139	Filter, 455 KHz

SYM.	PART #	DESCRIPTION
Q1	8000-00004-079	Transistor, 2SC710
Q2	8000-00004-079	Transistor, 2SC710
Q3	8000-00004-080	Transistor, 2SK17
Q4	8000-00004-079	Transistor, 2SC710
Q5	8000-00004-079	Transistor, 2SC710
Q6	8000-00004-081	Transistor, 2SK19
Q7	8000-00004-079	Transistor, 2SC710
Q8	8000-00004-079	Transistor, 2SC710
Q9	8000-00004-079	Transistor, 2SC710
Q10	8000-00004-079	Transistor, 2SC710
Q11	8000-00004-079	Transistor, 2SC710
Q12	8000-00004-081	Transistor, 2SK19
Q13	8000-00004-079	Transistor, 2SC710
Q14	8000-00004-079	Transistor, 2SC710
Q15	8000-00004-079	Transistor, 2SC710
Q16	8000-00004-079	Transistor, 2SC710
Q17	8000-00004-082	Transistor, 2SC773
Q18	8000-00004-083	Transistor, 2SC777
Q19	8000-00004-084	Transistor, 2SC778
Q20	8000-00004-085	Transistor, 2SC458C
Q21	8000-00004-086	Transistor, 2SD77B
Q22	8000-00004-085	Transistor, 2SC458C
Q23	8000-00004-085	Transistor, 2SC458C
Q24	8000-00004-085	Transistor, 2SC458C
Q25	8000-00004-085	Transistor, 2SC458C
Q26	8000-00004-085	Transistor, 2SC458C
Q27	8000-00004-185	Transistor, 2SC931D
Q28	8000-00004-185	Transistor, 2SC931D
Q29	8000-00004-085	Transistor, 2SC458C
Q30	8000-00004-085	Transistor, 2SC458C
Q31	8000-00004-088	Transistor, 2SB77B
Q32	8000-00004-085	Transistor, 2SC458C
Q33	8000-00004-085	Transistor, 2SC458C
Q34	8000-00004-089	Transistor, XA495
Q35	8000-00004-088	Transistor, 2SB77B
IC	8000-00004-090	Transistor, TA7045M or CA3053

SYM	PART #	DESCRIPTION
R-		Resistor, 1/4 or 1/2 watt, 10%, Composition. For resistance values, see schematic
R635	8000-00004-091	Resistor, 1 ohm, 1W, Oxide Film
VR201	8000-00004-092	Resistor, Variable, 500 ohm, Trimmer
VR301	8000-00004-093	Resistor, Variable, 50K ohm, Trimmer
VR303	8000-00004-094	Resistor, Variable, 100K ohm, Trimmer
VR501	8000-00004-092	Resistor, Variable, 500 ohm, Trimmer
VR502	8000-00004-096	Resistor, Variable, 10K ohm, Trimmer
VR504	8000-00004-164	Resistor, Variable, 5K ohm, Trimmer
VR601	8000-00004-096	Resistor, Variable, 10K ohm, Trimmer
VR602	8000-00004-096	Resistor, Variable, 10K ohm, Trimmer
VR603	8000-00004-094	Resistor, Variable, 100K ohm, Trimmer
VR604	8000-00004-098	Resistor, Variable, 2 sections, 10K x 10K, W/Sw
VR702	8000-00004-093	Resistor, Variable, 50K ohm, Trimmer
VR703	8000-00004-094	Resistor, Variable, 100K ohm, Trimmer
VR704	8000-00004-097	Resistor, Variable, 10K ohm, Trimmer
VR705	8000-00004-098	Resistor, Variable, 2 sections, 10K x 10K, W/Sw

RL1	8000-00004-141	Relay, 4P-2T, 12V
RL2	8000-00004-141	Relay, 4P - 2T, 12V
SP1	8000-00004-140	Speaker

SYM.	PART #	DESCRIPTION
S1		Part of VR604
S2	8000-00004-100	Switch, 24T, Rotary
S3	8000-00004-101	Switch, 2P-2T, Slide
S4	8000-00004-102	Switch, 8P-3T, Rotary
S5	8000-00004-101	Switch, 2P-2T, Slide

SYM.	PART #	DESCRIPTION
T1	8000-00004-103	Transformer, 27 MHz, Ant.
T2	8000-00004-104	Transformer, 27 MHz, Ant.
T3	8000-00004-105	Transformer, 7.8 MHz, IF Amp.
T4	8000-00004-106	Transformer, 7.8 MHz, Troidal
T5	8000-00004-107	Transformer, 7.8 MHz, IF Amp.
T6	8000-00004-108	Transformer, 7.8 MHz, IF Amp.
T7	8000-00004-109	Transformer, 7.8 MHz, Osc., Rx.
T8	8000-00004-110	Transformer, 7.8 MHz, IF Amp.
T9	8000-00004-111	Transformer, 455 KHz, IF, CF Match
T10	8000-00004-112	Transformer, 455 KHz, IF Amp.
T11	8000-00004-113	Transformer, 455 KHz, IF Det.
T12	8000-00004-114	Transformer, 11 MHz, Troidal
T13	8000-00004-115	Transformer, 19 MHz, BMT
T14	8000-00004-116	Transformer, 7.8 MHz, Tx
T15	8000-00004-117	Transformer, 27 MHz, Tx Amp.
T16	8000-00004-118	Transformer, 27 MHz, Tx Amp.
T17	8000-00004-119	Transformer, AF Input
T18	8000-00004-186	Transformer, Modulator Inverter

SYM.	PART #	DESCRIPTION
X1	8000-00004-121	Crystal, 7.8015 MHz, HC25/U
X2	8000-00004-122	Crystal, 7.7985 MHz
X3	8000-00004-123	Crystal, 7.3435 MHz
X4	8000-00004-124	Crystal, 7.4615 MHz
X5	8000-00004-125	Crystal, 7.4715 MHz
X6	8000-00004-126	Crystal, 7.4815 MHz
X7	8000-00004-127	Crystal, 7.5015 MHz
X8	8000-00004-128	Crystal, 7.4585 MHz
X9	8000-00004-129	Crystal, 7.4685 MHz
X10	8000-00004-130	Crystal, 7.4785 MHz
X11	8000-00004-131	Crystal, 7.4985 MHz
X12	8000-00004-132	Crystal, 11.705 MHz
X13	8000-00004-133	Crystal, 11.755 MHz, HC25/U
X14	8000-00004-134	Crystal, 11.805 MHz
X15	8000-00004-135	Crystal, 11.855 MHz
X16	8000-00004-136	Crystal, 11.905 MHz
X17	8000-00004-137	Crystal, 11.955 MHz

SYM.	PART #	DESCRIPTION
	8000-00004-143	Heat Sink, Tx Transistor
	8000-00004-144	Transistor, Tx Beryllium Ceramic
	8000-00004-145	Channel Disc
	8000-00004-146	Channel Knob
	8000-00004-147	Knob Mode and Clarifier
	8000-00004-148	Knob Volume
	8000-00004-149	Knob Squelch
	8000-00004-150	Front Die Cast
	8000-00004-151	Fuse Holder, In Line
	8000-00004-152	Fuse, 2A
	8000-00004-153	Microphone
	8000-00004-154	Power Cable Lock
	8000-00004-187	Cabinet
	8000-00004-156	Mounting Bracket
	8000-00004-157	Microphone Hook
	8000-00004-159	Lamp Assembly, Red
	8000-00004-160	Screw, Mounting Bracket
	8000-00004-161	Staple Fiber Washer, Ext. Speaker Jack
	8000-00004-162	Channel Window Plate