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**SBE Cortez (21CB) Owner's Manual**

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*Cortez*  
(SBE · 21CB)



**23 CHANNEL AM  
CITIZENS BAND TRANSCEIVER**

220 AIRPORT BLVD., WATSONVILLE, CA. 95076

The SBE Cortez 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 Cortez. 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 radio-telephone license.

## 1.0 GENERAL DESCRIPTION AND SPECIFICATIONS

The SBE Cortez is a fully solid state 23 channel Citizen Band radio intended for use as a Class D Station in the Citizen Radio Service. The Cortez features include built-in public address, power/signal strength meter, switchable noise blanker and illuminated channel selector. The equipment comes complete with a hand held dynamic microphone, mobile mounting bracket, power cable and crystals installed for all 23 channels.

### 1.1 General

Channels:	23
Frequency Range:	26.965 to 27.255 MHz
Frequency Control:	Synthesizer
Frequency Tolerance:	+ .003%
Operating Temperature Range:	-20°C to +50°C
Humidity:	95%
Input Voltage:	11.7V DC to 15.9V DC, positive or negative ground.
Microphone:	Dynamic
Size:	2-1/8"H, 5-7/8"W, 8-3/4"D
Weight:	4 pounds

### 1.2 Transmitter

Power Input:	5 watts
Modulation:	95 - 100%
Modulator Response:	300-2500 Hz
Output Impedance:	50 ohms, unbalanced
Output Indicator:	Back lit front panel meter

### 1.3 Receiver

Sensitivity:	less than 1 microvolt for 10db S+N/N ratio.
Selectivity:	-6db @ +6 KHz, -60db @ +20 KHz
I. F. Frequencies:	10 MHz, 455 KHz
Automatic Gain Control:	less than 8db change in audio output for signal inputs from 10-100,000 microvolts.
Squelch Threshold:	1 microvolt

Audio Output Power:  
Frequency Response:

2 watts @ 10% distortion @ 1 KHz  
300-2500 Hz

1.4 Miscellaneous

Power Consumption:

@ 13.8V DC  
Receive (squellch) 400ma  
Receive (2 watts audio) 1.0 amps  
Transmit (100% modulation) 1.7 amps

## 2.0 INSTALLATION

### 2.1 Antennas

One of the important keys to achieving optimum communications 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.

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.

### 2.2 Mobile

The Cortez 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 loss and ignition interference. The unit is designed for a 12 volt positive or 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 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 SO-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.

## 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 NL Switch

Normally left in the OFF position. Turn to ON when high atmospheric noise level is present.

#### 3.1.4 Channel

Selects the desired channel for transmission and reception. Channels 10 thru 15 and 23 may be used for communications between stations operating under different licenses and between units sharing the same licenses. 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 or immediate protection of property. Channel 9 may also be used to render assistance to a motorist; it is commonly called the HELP channel.

#### 3.1.5 PA-CB Switch

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

### 3.1.6 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 the switch to receive. When transmitting, hold the microphone two inches from the mouth and speak clearly in a normal voice.

### 3.1.7 Meter

Indicates received signal strength and relative transmitter output power.

## 3.2 Operating Procedure

### 3.2.1 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. Place noise limiter switch in the "NL" position if high atmospheric or ignition noise levels are present.
5. Rotate the squelch control clockwise slightly beyond the point where noise disappears.

### 3.2.2 To Transmit

1. Select the desired channel.
2. If the channel is clear, depress the push-to-talk switch on the microphone and speak in a normal voice. The output meter will indicate output power.
3. Release the push-to-talk switch to receive.



#### 4.0 SERVICE MAINTENANCE

Should your Cortez 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 ordering 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.

## SBE-21CB CORTEZ PARTS LIST

<u>Symbol</u>	<u>Part Number</u>	<u>Description</u>
C1	8000-00011-011	Cap., Fixed, 300pfd, +10%, 50V, Mica
C2	8000-00004-024	Cap., Fixed, 30pfd, +10%, 50V, Mica
C3	8000-00004-001	Cap., Fixed, 0.01mfd, 20%, 50V, Cer.
C4	8000-00004-001	Cap., Fixed, 0.01mfd, 20%, 50V, Cer.
C5	8000-00004-001	Cap., Fixed, 0.01mfd, 20%, 50V, Cer.
C6	8000-00004-001	Cap., Fixed, 0.01mfd, 20%, 50V, Cer.
C7	8000-00012-011	Cap., Fixed, 30pfd, N330, 50V, Cer.
C8	8000-00004-016	Cap., Fixed, 20pfd, +10%, 50V, Mica
C9	8000-00004-021	Cap., Fixed, 47pfd, +10%, 50V, Mica
C10	8000-00004-020	Cap., Fixed, 100pfd, +10%, 50V, Mica
C11	8000-00030-006	Cap., Fixed, 20pfd, N750, 50V, Cer.
C12	8000-00004-001	Cap., Fixed, 0.01mfd, 20%, 50V, Cer.
C13	8000-00004-001	Cap., Fixed, 0.01mfd, 20%, 50V, Cer.
C14	8000-00012-002	Cap., Fixed, 1.5pfd, +0.5pfd, 50V, Mica
C15	8000-00011-009	Cap., Fixed, 56pfd, +10%, 50V, Mica
C16	8000-00004-001	Cap., Fixed, 0.01mfd, 20%, 50V, Cer.
C17	8000-00004-001	Cap., Fixed, 0.01mfd, 20%, 50V, Cer.
C18	8000-00004-003	Cap., Fixed, 0.04mfd, +10%, 50V, Mylar
C19	8000-00012-002	Cap., Fixed, 1.5pfd, +0.5pfd, 50V, Mica
C20	8000-00004-007	Cap., Fixed, 10pfd, +10%, 50V, Mica
C21	8000-00004-003	Cap., Fixed, 0.04mfd, +10%, 50V, Mylar
C22	8000-00004-018	Cap., Fixed, 0.1mfd, 10%, 50V, Mylar
C23	8000-00004-001	Cap., Fixed, 0.01mfd, 20%, 50V, Cer.
C24	8000-00004-001	Cap., Fixed, 0.01mfd, 20%, 50V, Cer.
C25	8000-00004-044	Cap., Fixed, 220mfd, 16V, Elect.
C26	8000-00004-011	Cap., Fixed, 0.001mfd, 20%, 50V, Cer.
C27	Not Used	
C28	8000-00004-001	Cap., Fixed, 0.01mfd, 20%, 50V, Cer.
C29	8000-00004-042	Cap., Fixed, 1mfd, 16V, Elect.
C30	8000-00004-011	Cap., Fixed, 0.0001mfd, 20%, 50V, Cer.
C31	8000-00004-018	Cap., Fixed, 0.1mfd, 10%, 50V, Mica
C32	8000-00030-005	Cap., Fixed, 0.01mfd, +10%, 50V, Mylar
C33	8000-00004-042	Cap., Fixed, 1mfd, 16V, Elect.
C34	8000-00004-030	Cap., Fixed, 4.7mfd, 16V, Elect.
C35	8000-00004-018	Cap., Fixed, 0.1mfd, 10%, 50V, Mylar
C36	8000-00004-001	Cap., Fixed, 0.01mfd, 20%, 50V, Cer.
C37	8000-00004-001	Cap., Fixed, 0.01mfd, 20%, 50V, Cer.
C38	8000-00004-001	Cap., Fixed, 0.01mfd, 20%, 50V, Cer.