

APPENDIX 5
USERS MANUAL

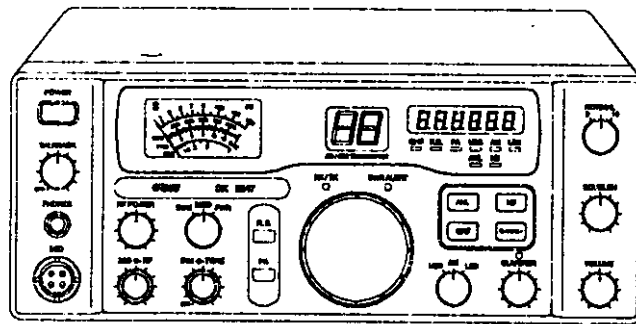
OWNER'S MANUAL (SIXTEEN PAGES) FOLLOWS THIS SHEET

USERS MANUAL
FCC ID: C2R-DX-2547

APPENDIX 5

Galaxy

DX 2547



SSB / AM Two Way
Citizen Band Base Station Transceiver

OWNER'S MANUAL

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SPECIFICATIONS :

GENERAL

Frequency Range	26.9650 -- 27.4050 MHz
Emission Types	AM, USB, LSB.
Frequency Control	Phase - Locked - Loop Synthesizer
Frequency Tolerance	0.005%
Frequency Stability	0.003%
Temperature Range	- 30°C to + 55°C
Antenna Impedance	50 Ohms
Antenna Connectors	Standard SO-239 type
Meter Function	Meter #1 RF Output Power/Antenna SWR. Meter #2 Received signal strength/MOD %.
Input Voltage	AC 120V,60Hz.

TRANSMITTER

RF Power Output	12W : USB, LSB. 4W : AM
Antenna Connector	UHF Type, 50 Ohms
AM Modulation	Up to 100%
Clarifier Range	± 1KHz.
Spurious Emissions	-60dB
Carrier Suppression	-60dB

RECEIVER

Sensitivity for 10dB S/N	AM 0.5uV
Sensitivity for 10dB S/N	USB/LSB 0.3uV
Adjacent Channel Rejection	-60dB
Image Rejection Ratio	-50dB
AGC Figure of Merit	SSB/AM : 80dB for 50mV for 10dB Change in Audio Output
Audio Output Power @ 10% THD	2.5W

(Specifications subject to change without notice)

INSTALLATION :

Location/Connection

The transceiver should be placed in a convenient operating location close to an AC power outlet and the antenna lead in cable(s).

The transceiver is attached with the AC power cord set.

Proceed as follows to complete all necessary connections to the transceiver.

1. Your transceiver has standard antenna connectors of type SO-239 both located on rear panel; for easy connection to standard PL-259 coax plugs. If the coax antenna cable must be made longer, use coax cable with impedance of 50 ohms and use only enough cable to suit your needs. This will insure a proper impedance match and maximum power transfer from the transmitter to the antenna.

2. AC Power Operation : Use 120 volts AC.

Noise Interference

There are several kinds of noise interference you may encounter in base station operation. Some of these noise sources are; fluorescent buzz, nearby commercial broadcast, electrical appliance, lawnmower, and electrical storms, etc. Commercial products are available to reduce interference from these sources. Consult your dealer or professional amateur radio supply shops.

Antennas

Antennas are purchased separately and include installation instructions. Numerous types of antennas are available that range from emphasis on ease of installation to emphasis on performance. Often the difference in performance between many of the antenna is modest.

1. Vertical Ground Plane Antennas

These are omnidirectional antennas that provide optimum performance for contacting other fixed stations using vertical type antennas in addition to all mobile stations. For medium long range communications work.

2. Directional Beam Antennas

Highly efficient and directional antennas generally intended for fixed-to-fixed very long range communications.

Remote Speaker

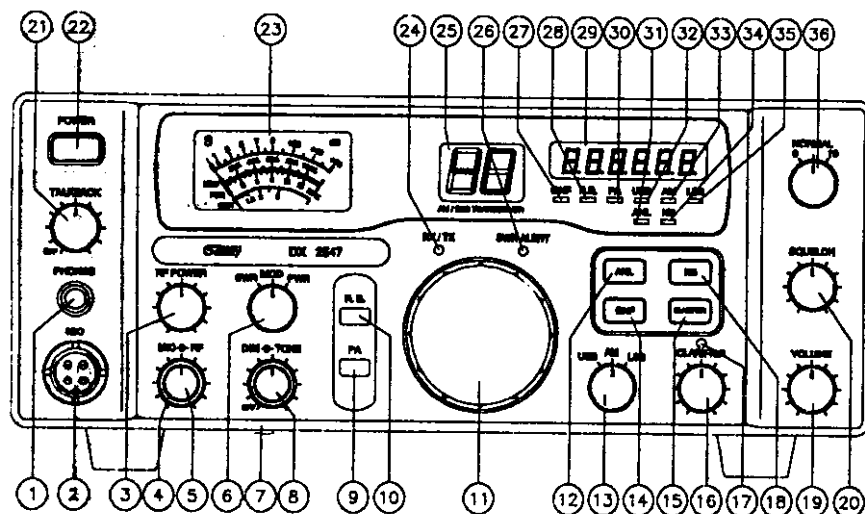
The external speaker jack (EXT.SP) on the rear panel is used for remote receiver monitoring. The external speaker should have 8 ohms impedance and be able to handle at least 3 watts. When the external speaker is plugged in, the internal speaker is disconnected.

Note : The PHONE jack on the front panel overrides both external and internal speakers. When the plug from headphone is plugged to the PHONE jack, both internal and external speakers are silenced simultaneously.

Public Address

An external 8 ohm, 3 watt speaker must be connected to the PA jack located on the rear panel when the transceiver is used as a public address system. The speaker should be directed away from the microphone to prevent acoustic feedback. Physical separation or isolation of the microphone and speaker is important when operating the PA at high output levels.

OPERATION :



INTRODUCTION

This section explains the basic operating procedures for the DX 2547 citizen band base station transceiver.

CONTROL & CONNECTIONS

1. PHONE JACK : Used to connect earphone to listening .
2. MICROPHONE JACK : Used to connect microphone for voice source.
3. RF POWER CONTROL : This control allows the user to adjust RF power output .
4. RF GAIN CONTROL : This control is used to reduce the gain of the receive amplifier under strong signal conditions .

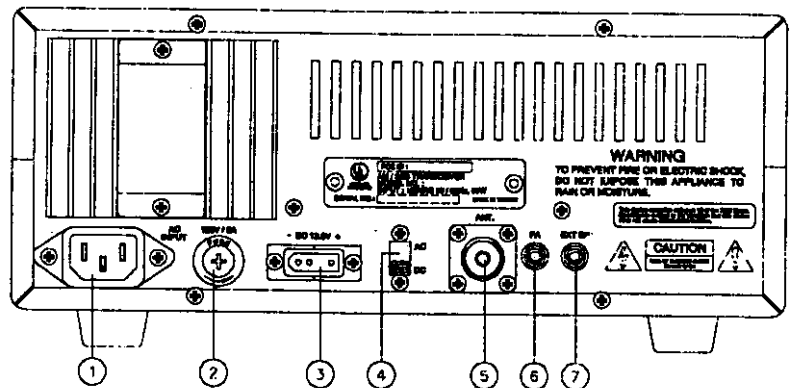
5. **MIC GAIN CONTROL** : This control adjust the microphone gain in the transmute noise environment or to maximize talk power .
6. **SWR/MOD/PWR SWITCH** : This switch controls the function of the meter during the transmute mode . In the "SWR" position , the meter indicates the Standing Wave Ratio (SWR) of your antenna . There are no adjustments because the SWR circuit in this radio calibrates itself automatically . When the switch is in the "MOD" position , the green scale on the meter indicates your percentage of modulation . This operates in AM only , not in SSB . When this switch is in "PWR" position , the meter indicates your power output .
7. **DIMMER CONTROL** : This knob controls the level of brightness for the meter lamp , the frequency display and the channel display .
8. **TONE CONTROL** : This control is the level of tone quality. Turn unclockwise to LO position , bass is increased and turn clockwise to HI position , treble is increased .
9. **PA/OFF SWITCH** : In the "PA" position , your voice will come out of the speaker that you need to plug into the "PA.SP." jack on the back of the radio . The radio does not operate when you are in the "PA" mode .
10. **ROGER BEEP SWITCH** : When this switch is placed in the R.B. position , the radio automatically transmits an audio tone at the end of your transmission . This indicates the end of your transmission so that people who are having trouble hearing you will know that you are done speaking . As a courtesy to others , use the Roger Beep only when necessary .

11. CHANNEL SELECTOR : This control is used to select a desired transmit and receive channel .
12. ANL/OFF SWITCH : In the "ANL" position , the Automatic Noise Limiter is activated .
13. MODE SWITCH : This control allows you to select one of the following operating modes : AM/USB/LSB .
14. GNF/OFF SWITCH : In the "GNF" position , the Galaxy Noise Filter is engage . This is a special noise filter that deemphasizes audio high frequency response in order to increase the signal to noise ratio of weak signals . While you will notice a dramatic reduction in the "rushing" sound when this filter is actived , it does not have much effect on the signal-to-noise ratio strong signal .
15. CLARIFIER/OFF SWITCH : In the "CLARIFIER" position , Allows to proceed clarifier tuning .
16. CLARIFIER CONTROL : Allows variation of the receiver operating frequency above and below the selected frequency. Although this control is intended primarily to tune in SSB signal, it may be used to optimize AM/FM signals as described in the operating procedure paragraphs.
17. CLARIFIER LED : This LED lights when the clarifier is on .
18. NB/OFF SWITCH : In the "NB" position , the Noise Blanker is very effective in eliminating repetitive impluse noise such as ignition interference .
19. VOLUME CONTROL : Turn clockwise to set desired listening level .

20. **SQUELCH CONTROL** : This control is used to control or eliminate receiver background noise in the absence of incoming signal. For maximum receiver sensitivity, it is desired that the control be adjusted only to the point where the receiver background noise is eliminated. 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 signal will be heard at a maximum clockwise setting.
21. **TALK BACK CONTROL** : Turn clockwise to apply the Talkback circuit on. Adjust this knob for desired volume of Talkback. This is used to monitor your own voice. For example, you could use this feature to compare different microphones.
22. **POWER ON/OFF CONTROL** : Push on to apply power to the unit.
23. **FRONT PANEL METER** : The Front Panel Meter allows the user to monitor signals strength, RF output power, SWR level and the AM Modulation level.
24. **RX/TX LED** : This LED is green during receive and red during transmit.
25. **CHANNEL DISPLAY** : The channel display indicates the current selected channel.
26. **SWR ALERT LED** : This LED lights red when your SWR is higher than about 3:1. This is not an exact indicator of 3:1 SWR, but it is an indication that you should check your SWR reading.
27. **GNF LED** : This LED lights red when the GNF is on.

- 28. R.B. LED : This LED lights green when the Roger Beep is on .
- 29. FREQUENCY COUNTER : This display indicates the frequency of the selected channel .
- 30. PA LED : This LED lights red when radio in the PA mode .
- 31. ANL LED : This LED lights red when the ANL is on .
- 32. USB LED : This LED lights red when radio in the USB mode .
- 33. AM LED : This LED lights red when radio in the AM mode .
- 34. NB LED : This LED lights red when the NB is on .
- 35. LSB LED : This LED lights red when radio in the LSB mode .
- 36. CH9/CH19 SWITCH : This control is used to select CH9 or CH19 instantly . When placed in the "NORMAL" position , allows to select a desired transmit and receive of normal channel .

REAR PANEL CONNECTOR



1. **AC POWER** : Connects to AC power outlet for AC mains supply.
2. **FUSE** : Accommodates a fuse for AC input circuit protection. use 125V 7A fuse for replacement.
3. **DC POWER** : This accepts 13.8V DC power cable with built-in fuse . The power cord provided with the radio has a black and red wire . The black goes to negative and the red goes to positive .
4. **-AC/DC POWER SELECTOR** : This control is used to select a desired power supply of AC power or DC power .
5. **ANTENNA** : This jack accepts 50 ohm coaxial cable with a PL-259 type plug.
6. **PA SP** : This jack is for PA operation. Before operating , you must first connect a PA speaker(8 ohm 4w) to this jack.
7. **EXTERNAL SPEAKER** : This jack accepts 4 to 8 ohm, 5 watt external speaker. When the external speaker is connected to this jack , the built-in speaker will be disabled.

FREQUENCY LIST

Channel	Channel Frequency	Channel	Channel Frequency
1	26.965 MHz	21	27.215 MHz
2	26.975 MHz	22	27.225 MHz
3	26.985 MHz	23	27.235 MHz
4	27.005 MHz	24	27.245 MHz
5	27.015 MHz	25	27.255 MHz
6	27.025 MHz	26	27.265 MHz
7	27.035 MHz	27	27.275 MHz
8	27.055 MHz	28	27.285 MHz
9	27.065 MHz	29	27.295 MHz
10	27.075 MHz	30	27.305 MHz
11	27.085 MHz	31	27.315 MHz
12	27.105 MHz	32	27.325 MHz
13	27.115 MHz	33	27.335 MHz
14	27.125 MHz	34	27.345 MHz
15	27.135 MHz	35	27.355 MHz
16	27.155 MHz	36	27.365 MHz
17	27.165 MHz	37	27.375 MHz
18	27.175 MHz	38	27.385 MHz
19	27.185 MHz	39	27.395 MHz
20	27.205 MHz	40	27.405 MHz

PROCEDURE TO RECEIVE AND TRANSMIT

A. MICROPHON

The receiver and transmitter are controlled by the push - to - talk switch on the microphone. Press the switch and transmitter is activated, release switch to receive. When transmitting, hold the microphone two inches from the mouth and speak clearly in a normal voice. This transceiver comes complete with a low impedance dynamic microphone.

B. PROCEDURE TO REECEIVE

1. Be sure that power soource, microphone and antenna are connected _to the proper connectors before going to th next step.
2. Press the POWER button on transceiver for power switch on.
3. Set the VOLUME for a comfortable listening level.
4. Set the mode switch of AM/USB/LSB to the desired mode.
5. Listen to the background noise from the speaker. turn the SQ knob slowly clockwise until the noise just disappears. Leave the control at this setting. this SQUELCH is now properly adjust. The receiver will remain quiet until a signal is atually received. Do not advance the controll too far or some of the weake signals will not be heard.
6. Set the CHANNEL selector switch to the desired channel.
7. Set the RF gain control fully clockwise for maximum receive gain.

C. RF POWER CONTROL

This feature allows for the adjustment of the RF power output continuously over the range 1 to 4 watts in AM and 4 to 12 watts in USB or LSB.

D. PROCEDURE TO TRANSMIT

1. Select the desired channel of transmission.
2. Set the MIC gain control fully clockwise.
3. If the channel is clear, depress the push-to-talk switch on the microphone and speak in normal voice.

RECEIVING SSB SIGNALS

There are three types of signals presently used for communications in the Citizens Band : AM, USB, LSB. When the mode switch on your unit 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 "Donald Duck" sound and the inability of the detector to produce an intelligible output. The USB and LSB modes will detect upper sideband and lower sideband respectively, and standard AM signals.

SSB reception differs from standard AM reception in that an 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. The elimination of the carrier from the AM signal helps to eliminate the biggest cause of whistles and tones heard on channels which make even moderately strong AM signals unreadable. Also, SSB takes only half the space of an AM channel, therefore two SSB conversations will fit into each channel, expanding the 40 AM channels to 80 SSB channels. The reduction in channel space required also helps in the receiver because only *half* of the noise and interference can be received with 100% of the SSB signal.

An SSB signal may be received only the listening receiver is functioning in the same mode. In other words, an upper sideband (USB) may be made intelligible *only* if the receiver is functioning in the USB position.

If a lower sideband (LSB) signal is heard when the receiver is in the USB mode, no amount of tuning will make the signal intelligible. The reason for this may be understood if you consider that when the modulation is applied to the transmitter's microphone in the USB mode, the transmitter 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 or a high-pitched whistle) you will hear the 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 cannot be made intelligible by the CLARIFIER control. When listening to an AM transmission, a correct sideband is heard in either mode since both upper and lower side bands 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 the frequency above or below the exact frequency of the channel. If the sound of the incoming signal is high or low pitched, adjust 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 to low, voice will be low-pitched. Also, 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 is rotated 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 intelligible, unless the ssb receiver is tuned to exactly the same frequency by the CLARIFIER control. For simplicity, it is recommended that the AM modes be used to listen to AM signals.

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