OPERATION MANUAL

SEALAB – LT2001

- VHF Marine Radiotelephone
- All U.S. and International Channels
- Including 10 weather Channels
- Channel 16 priority key
- Full 25 Walt
- 13/67 easy switch LOW / HI power
- Full and 10 menu channel scanning
- Water – resistant, soft-touch key switches

IMPORTANT

The **Link Tech**., LT2001 is a VHF / FM transceiver designed for use in the frequency range of 156.000 to 163.275 MHz on the USA and International Marine Channels indicated.

This transceiver is sold for purposes of marine communications only. As with all wireless devices, its performance may be degraded by environmental conditions, static, interference or circuit failure. Other equipment is available for marine navigation and safety, and communications should never be relied on for these important marine procedures.

In compliance with certain state laws. **Link Tech.** The manufacturer of the equipment you have purchased, is required to provide suitable space in your Operation Manual to enable you to record the model and serial numbers of the equipment and to provide you with a description of the location of such numbers on the equipment. When you have entered the required information in the spaces provided below, you s hould retain the manual so that you have a permanent record of the model and serial numbers.

Unit description: _____

Model No.:

(Located on the rear of the unit)

Serial No.: _____

(Located on the rear of the unit)

LINK TECH
COMMUNICATIONS
EXHIBIT : 7

1. REGULATORY INFORMATION

The Model LT2001 complies with all United States Federal Communications Commission, Canadian Department of Communications and United Kingdom Radio Communications Agency regulations for maritime radio services. The user is required to be knowledgeable concerning and comply with all rules and regulations of the maritime radio service for the country in which the operating license is issued and in the countries where the transceiver may be used. Rules and regulations may be obtained from the regulatory authority or printing office in each country.

RULES AND REGULATIONS

United States Superintendent of Documents
Government Printing Office
Washington, DC 20402

Canada Regional Offices

Atlantic Regional Office
4th Floor
1045 Main Street
P.O. Box N.B.
Moncton, N.B.
E1C 8R2
(506) 851-6525

Ontario Regional Office
9th Floor
55 St. Clair Ave., East
Toronto, Ont.
M4T 1M2
(416) 973-8215

Prairies and Northwest Territories Regional Office
Room 200
386 Broadway Ave.
Winnipeg, Man.
R3C SY9
(204) 983-3182

Quebec Regional Office
Suite 306
715 Peel Street
Montreal, Quebec
HSC 4S2
(514) 283-2307

B.C./Yukon Regional Office
Suite 1700
800 Burrard Street
V6Z 2J7
(604) 666-5468

United Kingdom
Marine Licensing Section
Radio Regulatory Division
Waterloo Bridge House
Waterloo Road
London, England SE1 8UA

1. LICENSE APPLICATIONS

The user must obtain a license and call sign from the appropriate regulatory authority. Contact your local authorities for applications forms.

United States

Effective May 21, 1990, each Ship Radio Station Application (FCC 506) must include a fee of $35.00 payable to the FCC in the form of a single check or

money order. Approximately May 1, 1994, the license processing fee will increase to about $45.00 and an additional $70.00 for a 10 year License fee will be required. DO NOT SEND CASH. Send application to:

Federal Communications Commission
Marine Ship Service
PO Box 358275
Pittsburgh, PA 15251-5275

The following date pertaining to the LT2001 is helpful when filling out your FCC license application:

EXEMPTIONS: Applicants filing as a Governmental Entity do not require a fee, and should send their application to:

Federal Communications Commission
1270 Fairfield Rd.
Gettysburg, PA 17325-7245

FLEET APPLICANTS: Applicants for new and renewed Marine Fleet licenses must compute their application fee by multiplying the number of ship in the Fleet by $35.00. For Fleet license modification applications, compute the fee by multiplying the number of stations to be modified by $35.00. When adding stations to be added by $35.00.

Questions about fees may be directed to the FCC'S Private Radio Bureau Consumer Assistance Branch, Gettysbury, PA, phone (717) 337-1212.

Other FCC Information:
The LT2001 radiotelephone meets all applicable sections of FCC Rules Part 80.

The following data pertaining to the LT2001 is helpful when filling out your FCC license application:

Type acceptance	FCC Part 80
Out put Power	1 Watt low and 25 watts high
Frequency Range	156.000 to 162.000 MHz
Emission Designator	16KOG3E
FCC ID	PS2VMR2001A

The operator is at all times responsible for the lawful operation of the radio.
Distress and safety communications must have absolute priority over other kinds of ship-to-ship or ship-to-shore calls.
The FCC does not allow any of the following to be transmitted from your radios:

Message using obscene, indecent, or profane language
False distress or emergency messages
Messages from a boat on land such as a trailer.

Canadian Regional Offices

Atlantic Regional Office
4th Floor
1045 Main Street
P.O. Box N.B.
Moncton, N.B.
E1C 8R2
(506) 851-6525

Ontario Regional Office
9th Floor
55 St. Clair Ave., East
Toronto, Ont.
M4T 1M2
(416) 973-8215

Prairies and Northwest Territories Regional Office
Room 200
386 Broadway Ave.
Winnipeg, Man.
R3C SY9
(204) 983-3182

Quebec Regional Office
Suite 306
715 Peel Street
Montreal, Quebec
HSC 4S2
(514) 283-2307

B.C./Yuko Regional Office
Suite 1700
800 Burrard Street
Vancouver, B.C.
V6Z 2J7
(604) 666-5468

Canadian Certification Number
477822104V

2. UNPACKING

Equipment Supplied

- Radio
- Mounting Bracket
- Two mounting Knobs
- Microphone
- Microphone hanger clip
- Power cord with fuse
- Instruction Manual
- Warranty Card
- License Application form for USA

Unpack all items carefully. Retain the carton all packing materials for possible future use.

3. INSTALLATION

Choose a location for your radio that is free from direct water spray, Rain and direct sunlight. If the radio is mounted in a location subject to extreme vibration or pounding when running, a suitable shock mount must be used. Allow sufficient room behind your radio for cables to be installed and do not install the unit too close to the compass. The “Compass Safe Distance” should be 12 to

15 inches.

3.1 Mounting Bracket

The mounting bracket may be used for base or gimbals type overhead mounting.
Secure the bracket to the mounting surface by using at least four Screws.

3.2 Antenna Connection

Use VHF marine antenna, which has the 50 ohm impedance and the correct termination. It should be mounted as high as possible for maximum range. Connect the antenna connector to the corresponding connector on the back of the radio, using a 50 ohm coaxial cable with a PL 259 connector. Do not cut or shorten your antenna lead wire, as it will effect the VSWR and could damage your unit. LT manufactures an complete line of VHF antennas that are perfectly matched and tuned to the LT2001. IMPORTANT: Do not attempt to transmit without an antenna (or with an improper antenna) connected. This may cause permanent damage to your radio.

3.3 Power Connection

This unit operates from a 12 volt. negative ground electrical system. Do not attempt to use it in a positive ground system. The DC power cable supplied is used to make the necessary DC connection to your boat battery. Choose a point which is able to handle at least 6 amps. Your best location would be the switched side of your ignition switch. If you must extend the power leads, keep wiring as short as possible, since long wires can reduce the transmitter performance. Use #10 wire size for up to 10feet and size #8 for up to 25 feet. Be sure to connect the red (fused) lead to the positive terminal and the black to the (-) or ground. The radio is equipped with “reverse polarity protection.” This will automatically blow the fuse, thus protecting the unit from harm if the polarity should be reversed during installation. If the fuse should blow, immediately turn off the radio and re-check your battery connections. Always replace the fuse with one having the same rating. Replacement with a higher rated fuse could cause damage to the radio.

3.4 Microphone Connection

Microphone supplied with the radio on the front panel.

3.5 External Speaker Connection

The radio can be used with an external speaker system by making use of the EXT SP jack on the rear panel. Connect the external speaker designed of this purpose.

3.6 Factory Preset For 1 st Switch On

USA Version	USA Channel
Intl Version	Intl Channel
French Version	Intl Channel
CH 39 On/OFF	

3.7 Reception

A. Set Squelch control fully counter clockwise.
B. Turn On/Off volume control on and set volume on background noise.
C. With no signal received, turn squelch clockwise until background noise is just quiet.
D. Select mode of operation and/or select channel.

3.8 Transmission

A. Select mode of operation and/or channel.
B. Monitor channel to make certain it is not in use by others.
C. Select power-High or Low - (Some channels are fixed at low power.)
D. Press Push to talk button (PTT) and speak into microphone at a distance of approximately one (1) inch.
E. Do not use the international emergency signal “MAYDAY” unless there is immediate danger to property or loss of life.
F. Call other vessels by name or “call sign.”
G. When you expect a reply, end your transmission with the word, “OVER.” If you are finished use the word, “OUT.”
H. Always release PTT immediately after each transmission. A timer restricts the length of any transmission to 5 minutes. The LT2001 is designed to meet the new FCC Rules Part 80.203. which states, if the Push-TO-Talk switch is pressed for over 5 minutes continuously, transmission is forcibly inhibited.

4.0 OPERATING CONTROLS AND FUNCTIONS

When your transceiver is first turned on, it will begin operating in the following condition:

1. All liquid crystal display segments are lighted up (indicated) for about 1 second.
2. Normal channel model, Channel 01.
3. Programmable memory (10 Channel Scan) erased.
4. Weather Channel 01.
5. Transmissions power 25 watts (when battery is fully charged).
6. Scan/dual/tri watch and M Channel functions are deactivated.
7. USA/Intl. Channel selection is USA.

4.1 Volume Control (ON/OFF)

Turns radio on/off and controls audio volume of speaker.

4.2 Squelch Control

Adjusts input signal level so as to quiet background noise.

4.3 Push to talk (transmit) switch and Channels 13/67 Override

Pushing in this rubber covered PTT button switch activates the transmit (talk) function of the transceiver.

During operation on channels 13 or 67, the FCC requires that your transmitter power is automatically limited to 1 watt. Your radio is equipped with this limiting feature.

If it becomes necessary in an emergency to be heard, you may override this

feature by depressing and holding the override switch of microphone. Pushing in the button marked 13/67. Will increase power form 1 watt to 25 watts on Channels 13 and 67 only. Pushing the PTT button will suspend all receiving functions including scanning. Trans mission will occur on channel shown at instant PTT is pushed. Upon release of PTT, receive function will resume and scanning functions will resume 5 seconds after no signal is received. PTT will not operate if transceiver is on weather or vacant (null)

Channels in program model. (If PTT key is pushed during the time a signal is being received, a short beep tone will sound.) Transmission may continue. (If PTT is pressed continuously for 5 minutes, 3 short beep tones will be heard and transmission will be terminated until PTT is released and repressed.)

4.4 Keypad

The Keypad has various keys (push buttons) which control the functions of the transceiver.

A. USA/International

Pressing the USA/International key will select either USA or International channel. USA or International will be indicated on the liquid crystal display. USA channels include 01-28, 60-74, 77-88. International channels include 01-28, 37, 39, 60-74, 77-88, M0, M1, and M2. M1 and M2 are not authorized for use in USA waters.

B. High or Low power

Pressing the normal key allows any USA / Intl. Channel to be selected by resetting the up or down keys. One press will raise or lower the channel number by 1. Holding either the up or down key for more than 1.5 seconds will speed up the channel selection process to 4 steps per second. Channel number will be indication on LCD.

C. Normal All Channel Scanning

With transceiver in normal model, normal key pressed and normal indicated, press “scan” key to activate scanning. Transceiver will scan all channels in either USA or International list. (M0, M1, M2 cannot be scanned). They can be selected manually in normal model. “Scan” will be indicated on liquid crystal display.

During all channel scan if “scan” key is pressed again, scanning will stop on indicated channel. “Scan” indication will disappear from liquid crystal display. If the transceiver hears a signal the scanning function will cease and the receiver will stay on that channel for four (4) seconds minimum or as long as the signal continues. During this stop scan period, the scanning function can be suspended by pressing the “scan” key again. The scan indication will flash continuously. Press scan key once again to reactivate scanning.
Press normal key to terminate scanning. The normal channel is recovered from memory and shown on the liquid crystal display.

When the all channel “scan” mode is selected, the squelch control should be adjusted fully clockwise (instead of just past first silent position). This will avoid the scan function stopping on a channel where interference or a week and unintelligible signal may exist.

D. Channel 16

Press key “16” to immediately access. Channel 16 will be indicated on LCD. Dual, Tri, All Scan and Weather Channel functions will be cancelled. Press normal key to terminate Channel 16 function and return to normal channel.

E. Weather Channels

Press “WX” key to access weather channel mode. WOX is indicated on LCD.
When first turned on the weather channel is 01.
Press “up” or “down” key to select the desired weather channel. Total 10 weather channel (from 00 to 99) are available.
Press “normal” key to terminate the weather channel function and return back to normal channel function.

F. M Channels Mode

Press “M” key to activate M channel function. “M” indicator is shown. Channel number show “00.”
Press “M” key again to access next M channel. Channel number shows “01.
Press “M” key again will access M2 channel and then cycle back to M0.
Press “normal” button to exit from M channel mode. NOTE: Dual Watch and Tri Watch functions can be can be used in M channels mode.

G. Dual Watch Mode

Press normal key and select any channel you may wish to scan, with Channel 16, in the dual watch mode. Press Dual Watch. Dual will be indicated on the LCD. Dual Watch can only be selected when transceiver is in normal mode.
When hearing a signal on either channel, Dual Watch will be suspended for a minimum of 5 seconds or as long as the received signal continues.
Press Dual key again or normal key to terminate Dual function.

H. Tri Watch Mode

Press normal key and select one channel to be Tri watched (scanned). Press, and hold for 1.5 seconds, program key and select one more channel to be Tri watched (scanned). Press normal and then press Tri. Tri will be indicated on LCD. The two channel selected above will be Tri watched (Scanned) together with Channel 16.
When hearing a signal on any of these three (3) channels, the Tri watch

scanning will be suspended for a minimum of 5 seconds or as long as the received signal continues.
Press Tri key again or normal key to terminate Tri watch function.

I. Programmed Priority 10 Channel Scanning Mode

Press and hold Prog. key for 1.5 seconds to access 10 Channel Priority Programming Mode. Press up or down key again to select first channel to be scanned. Hold up or down key for 1.5 seconds for fast selection of channel.
Press Prog key again for 1.5 seconds, to access second priority channel selection mode. Ten (10) priority channels are selectable.
Programmed priority channels may now be manually selected by pressing the Prog Key. Program numbers 1 through 10 and Channel Numbers will be shown as selected or scanned.
To scan up to 10 programmed priority channels, press Scan key after Prog key has been pressed and programming completed. Scan will be indicated on LCD.
During programmed priority channel scan if scan key pressed again, scanning will stop on indicated channel. Scan indication will disappear from liquid crystal display.
If the transceiver hears a signal the scanning function will cease and the receiver will stay on that channel for four (4) seconds minimum or as long as the signal continues. During this stop scan period, the scanning function can be suspended by pressing the scan key again. The scan indication will flash continuously. Press scan key once again to reactivate scanning.
Press normal key to terminate scanning. The normal channel is recovered from memory and shown on the liquid crystal display.
Dual Watch scanning may also be set up using one of the above programmed priority channels (number 1) and Channel 16. Proceed as in normal Dual Watch (with transceiver in Prog mode.

Memory Retention Function

The unit automatically stores all user-programmed channels when it is sw itched off. The programmed channels can be recalled and accessible next time when the unit is switched on.
However, if the power connection is disconnected, the memory retention function will hold for 1 minute only: the unit will lose its memory if it is disconnected from its power source for more than 1 minute.

4.5 Key Lock Mode

Press lock key to lock all functions except:

A. PTT function
B. CH 13/67 Override function
C. CH 16 button
D. H
E. Hi / Lo button

5.0 Power Connector (13.6 VDC)

DC power to operate the unit is fed through this connector using DC power cable supplied.

5.1 External Speaker Jack

This jack is used for connection to an external speaker (optional accessory.) Insertion of the speaker plug in this jack automatically silences the built-in speaker.

5.2 Antenna Connector

This jack accepts the antenna connector. The antenna must be connected before transmitting, otherwise the radio could be seriously damaged.

6.1 Hide For Operate To Call Anther Vessel

A. Select Channel 16 (Be sure it is not in use)
B. Call vessel by name or "call sign."
C. End transmission with "OVER."
D. After contact is established, arrange to meet one anther on ship to ship channel

NOTE: Due to congestion on channel 16 caused by frequent hailing of other vessels, the FCC has approved channel 9 as a second hailing channel.

Avoid excessive calling and radio checks
Always monitor before transmitting
Never interrupt emergency communications

6.2 Channel 13 Operation

Communications on Channel 13, by regulation, can only concern navigation at docks and bridges. Transmission on Channel 13 is automatically limited to low power. However, in emergencies or blind river bends, pushing the 13/67 override portion of the PTT will raise the power to 25 watts. Use and power limitations are in accordance with USA regulations ONLY. Authorized use and power may vary in other countries.

6.3 Channel 67 Operations

Communications on Channel 67, by regulation, can only concern bridge-to-bridge navigation traffic between ships. Pushing the override portion of the PTT can temporarily use high power. Use and power limitations are in accordance with USA regulations ONLY. Authorized use and power may vary in other countries.

6.4 Calling the Marine Operator For Telephone Calls

Use a channel which is assigned for this purpose. After contact is made, identify and ask the operator to connect you to the telephone lines. Charges vary for this service. (See list for ship to shore Channels.)

6.5 Simplex/Duplex Channel Use

A. A simplex channel is used for ship-to-ship communication. The transmit And receive frequencies are the same.
Example: CH 22A 157.000 MHz, transmit & receive (USA mode)

B. A duplex channel is a public correspondence, ship-to-coast channel Which is mainly used by Marine Telephone Operators. A duplex channel cannot be used for ship-to-ship communication because the transmit and receive frequencies are not the same. Example CH 24 157.200 MHz transmit and 161.800 MHz receive, (USA mode.)

NOTE: All channels are factory programmed in accordance with FCC (USA) and IC (Canada), and International regulations. Mode of operation cannot be altered from simplex to duplex or vice-versa.

"The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment."

7. SPECIFICATIONS

A. General

Frequency Range: 156.0 to 1562.550 MHz
Input Voltage: 9.0 – 13.6V DC
Dimensions: H2 1/3" X W6 1/3" X D8"
Operating Temperature: -20 to + 60
Frequency Stability: +/- 10PPM

B. Receiver

Receiver Section: -6DB 12DB SINAD
Usable Sensitivity: -6DB 20DB QUETING
Squelch Sensitivity:
Threshold: -12DB Full Squelch Tight: -3DB
Adjacent Channel Rejection: 60DB FCC, 70DB MPT
Spurious and Image Rejection: 60DB
Intermediate Frequencies
10.7 MHz
First I.F.: 21.6 MHz
Second I.F.: 455 KHz
Audio Output (fully charged): 1.2W MAX 2W
Hum and Noise: -40DB
Audio Distortion: 5%
Current Drain
At Standby: 200mA

C. Transmitter

R.F. Output
At 13.4V: 25Watts
(Hi Power Setting) (Limited to 1 Watt at Lo Power Setting)
Conducted Spurious Emissions: -50DB
Modulation Deviation: ± 5 KHz
Current Drain
At Hi Power 25W: 6A
At Lo Power 1W: 450mA

8. MAINTENANCE

Link Tech products are maintained by highly skilled and trained technical personnel using the latest electronic equipment.

TROUBLESHOOTING CHART

SYMPTOM	PROBABLE CAUSE	REMEDY
Radio fails to power UP	No DC voltage to the radio or blown fuse	Check power cable for DC voltage or replace the 7A fuse with length 31.8mm, diameter 6.35mm
Radio blows fuse upon connection to power supply	Reversed power connections.	Make sure the RED wire is connected to the POSITIVE battery terminal and the BLACK wire is connected to NEGATIVE. If radio, contact LT for service.
Popping or whining noise from the speaker while the engine runs.	Engine Noise.	Reroute the DC power cables away from the engine. Add noise suppressor on power cable. Change to resistive spark plug wires and/or add an alternator whine filter.

External speaker plug does not fit into jack	Incorrect plug or speaker.	The external speaker jack will accept only RCA phone plugs.
Radio transmits but does not receive.	Channel mode.	The radio may be tuned to a duplex channel meant for ship-to-shore radio telephone
Radio transmits on low power only.	Antenna.	Have antenna checked or test the radio on another antenna. If problem persists, contact LT for service.

9. ONE YEAR LIMITED WARRANTY
THIS WARRANTY IS TO THE ORIGINAL PURCHASER

Link Tech' equipment is warranted to be free defects in workmanship and materials for a period of one year from date of purchase.

In the event of malfunction due to a defect during the one year warranted period, Link Tech at its option, will either repair or replace the equipment. Any approved repair will be made without charge to the owner for parts and labor.

This equipment must be properly package and returned to Link Tech for authorized service. Any transportation, the purchaser whenever incurred in connection with this warranty will pay removal or reinstallation charge.

A copy of the original sales receipt to establish date of purchase must accompany all claims under this limited warranty.

This limited warranty does not extend to equipment which has been improperly installed, (including those units that have been damaged due to reverse polarity), operated, subjected to misuse or abuse, neglected, water damaged, altered or modified. In addition, any equipment which has been used in violation of operating instructions or which have had the serial number altered or removed will be ineligible for service under this limited warranty. LT Marine Electronics will not be liable for any incidental or consequential damages resulting from the equipment or any defect. The limited warranty is void if service done at any unauthorized service station.

This warranty gives you specific legal rights, and you may have other rights which vary from state to state. Some states do not allow the exclusion or limitation of incidental or consequential damages so the above exclusion or limitation may not apply to you.

10. EASY REFERENCE GUIDE

Channel 16 – Emergency

Your ship is sinking, or on fire
Someone has been lost overboard
There exists grave and imminent danger

Channel 22 – U.S. Coast Guard

Use: Working channel for exchange of communications with stations of the U.S. Coast Guard

Between: Ship to U.S. Coast Guard ship, coast to aircraft stations

Comments: U.S. Coast Guard does not regularly monitor this channel. Establish contact on channel 16 and shift to channel 22 as directed.

Channel 6 – Inter ship Safety

Use: Communicating navigational and weather warnings to other ship Communicating with U.S. Coast Guard stations or other vessels during search and rescue operations

Between: Ship-To-Ship Only

Comments: Do not use for routine communications. This is a safety channel.

Channel 15 – Environmental

Vessels: any (receive only)

Use: Broadcast of information concerning the environmental conditions in which vessels operate-weather, sea conditions, time signals, notices to mariner, hazards to navigation

Between: One-way broadcast from coast to ship stations

Note: Currently used for Class C EPIRB emergency signals.

Channel 17 – State Control

Vessels: State and local government

Use: Coordination, regulation and control of boating activities and the rendering of assistance to vessels.

Between: Ship and coast stations associated with state and local governments.

Commercial

Channels: 7, 8, 9, 10, 11, 18, 19, 67, 79, 90, (88)

Vessels: Those used primarily for commercial transport of persons or goods, or engaged in servicing other vessels

Use: Communications pertaining to the purpose for which the vessel is used

Between: Commercial transport vessels (ship-to-ship) or between commercial transport vessels and limited coast stations

Channels 8, 67 and 88 may not be used for ship-to-coast communications

Recreational boats are not permitted to use these channels

Channel 88 not available on Great Lakes and St. Lawrence Seaway.

Non Commercial (Boat Operations)

Channels: 9, 68, 69, 71, 72, 78

Vessels: Recreational boats and any other not used primarily for commercial transport.

Use: Communications pertaining to the needs of the vessel (i.e., fishing, rendezvous, maneuvers, berthing scheduling of repairs, provisioning, etc.)

Between: Ship-to-ship or ship to limited coast stations

Comments: Channel 72 may not be used for ship to coast communications. Channel 9 is shared with commercial users.

If you regularly monitor one of these channels with a second receiver, please notify frequently called stations of this practice. Help reduce congestion on channel 16.

Port Operations

Channels: 5, 12, 14, 20, 65, 66, 73, 74, (77)

Vessels: Any

Use: Messages relating to the operational handling, movement and safety of vessels in or near ports, locks and waterways

Between: Ship-to-ship or ship-to-coast

Comments: Channel 77 is limited to communications to and from commercial pilots concerning the movement and docking of vessels.

Note: Channels 11, 12, 13 and 14 are used for vessel traffic service on the Great Lakes, St. Lawrence Seaway and designated major ports.

Marine Operator

Channels: 24, 25, 26, 27, 28, 84, 85, 86, 87, 88

Vessels: Any

Use: To place a telephone call to any location in the world or to a vessel outside of your transmitting range

Between: Vessels and public coast stations

Comments: Contact the marine operator on the channel assigned to your navigating area. If unable to determine this channel, use channel 16

Be patient. Do not interrupt calls in progress. Avoid excessive calling if the operator does not answer – give the operator a chance to reply.

11. U.S.A., CANADIAN AND INTERNATION CHANNELS

COMPREHENSIVE LIST OF ALL CHANNELS AVAILABLE IN TRANSCEIVER

CHANNEL	TX FREQ (MHz)	RX FREQ USA (MHz)	RX FREQ INTL (MHz)	SIMPLEX/ DUPLEX USA	SIMPLEX/ DUPLEX INTL	POWER
01	156.050	156.050	160.650	D	D	HI/LO
02	156.100	Intl Only	160.700		D	HI/LO
03	156.150	Intl Only	160.750		D	HI/LO

04	156.200	Intl Only	160.800		D	HI/LO
05	156.250	156.250	160.850	S	D	HI/LO
06	156.300	156.300	156.300		S	HI/LO
07	156.350	156.350	160.950	S	D	HI/LO
08	156.400	156.400	156.400	S	S	HI/LO
09	156.450	156.450	156.450	S	S	HI/LO
10	156.500	156.500	156.500	S	S	HI/LO
11	156.550	156.550	156.550	S	S	HI/LO
12	156.600	156.600	156.600	S	S	HI/LO
13*	156.650	156.650	156.650	S	S	LO
14	156.700	156.700	156.700	S	S	HI/LO
15	156.750	156.750	156.750	S	S	LO
16	156.800	156.800	156.800	S	S	HI/LO
17	156.850	156.850	156.850	S	S	LO
18	156.900	154.900	161.500	S	D	HI/LO
19	156.950	156.950	161.550	S	D	HI/LO
20	157.000	157.000	161.000	S	D	HI/LO
21	157.050	157.050	161.650	S	D	HI/LO
22	157.100	157.100	161.700	S	D	HI/LO
23	157.150	157.150	161.750	S	D	HI/LO
24	157.200	161.800	161.800	D	D	HI/LO
25	157.250	161.850	161.850	D	D	HI/LO
26	157.300	161.900	161.900			HI/LO
27	157.350	161.950	161.950	D	D	HI/LO
28	157.400	162.000	161.950	D	D	HI/LO
37	157.850	Intl Only	157.850		S	HI/LO
39	157.950	Intl Only	157.950		S	HI/LO

This page contains a comprehensive list of channels available in the transceiver for transmit and receive as indicated. (USA and International use). You may use only those channel authorized by the regulatory authorities in the waters of the country in which you are operating. Also you may use only those channel authorized for your type of vessel or maritime service.
The regulatory authorities can provide you with an updated list of channel which will indicate the type of traffic, type of vessel, area authorized and type of use allowed.

CHANNEL	(MHz)	USA (MHz)	INTL (MHz)	USA	INTL	POWER
60	156.025	156.025	160.625	S	D	HI/LO
61	156.075	Intl Only	160.675		D	HI/LO
62	156.125	Intl Only	160.725		D	HI/LO
63	156.175	156.175	160.775	S	D	HI/LO
64	156.225	156.225	160.825	S	D	HI/LO
65	156.275	156.275	160.875	S	D	HI/LO
66	156.325	156.325	160.925	S	D	HI/LO
67*	156.375	156.375	156.375	S	S	LO
68	156.425	156.425	156.425	S	S	HI/LO

69	156.475	156.475	156.475	S	S	HI/LO
70	156.525	156.525	156.525	S	S	HI/LO
71	156.575	156.575	156.575	S	S	HI/LO
72	156.625	156.625	156.625	S	S	HI/LO
73	156.675	156.675	156.675	S	S	HI/LO
74	156.725	156.725	156.725	S	S	HI/LO
75						
76						
77	156.875	156.875	156.875	S	S	HI/LO
78	156.925	156.925	161.525	S	D	HI/LO
79	156.975	156.975	161.575	S	D	HI/LO
80	157.025	157.025	161.625	S	D	HI/LO
81	157.075	157.075	161.675	S	D	HI/LO
82	157.125	157.125	161.725	S	D	HI/LO
83	157.175	157.175	161.775	S	D	HI/LO
84	157.225	161.825	161.825	D	D	HI/LO
85	157.275	161.875	161.875	D	D	HI/LO
86	157.325	161.925	161.925	D	D	HI/LO
87	157.375	161.975	161.975	D	D	HI/LO
88	157.425	157.425	162.025	S	D	HI/LO
M0	157.850	Intl Only	157.850		S	HI/LO
M1**	161.625	Intl Only	157.025		D	HI/LO
M2	161.425	Intl Only	161.425		S	HI/LO

*May be increased to 25 watts on PTT
*Not currently assigned for USA or International use.

WEATHER RECEIVER ONLY CHANNELS

	TX	RX FREQ		TX		RX FREQ	
CH	FREQ	USA	INTL	CH	FREQ	USA	INTL
00	-	163.275	163.275	05	-	162.450	162.450
01	-	162.550	162.550	06	-	162.500	162.500
02	-	162.400	162.400	07	-	162.525	162.525
03	-	162.475	162.475	08	-	161.650	161.650
04	-	162.425	162.425	09	-	161.775	161.775

This page contains comprehensive list of channels available in the transceiver for transmit and receive as indicated. (USA and International use). You may use only those channels authorized by regulatory in the waters of the country in which you are operating. Also, you may use only those channels authorized for your type of vessel or maritime service.

The regulatory authorities can provide you with an updated list of channels, which will indicate the type of traffic, type of vessel, area authorized and type of use allowed.

U.S.A. CHANNEL AUTHORIZATION

CH	TX FREQ	RX FREQ	AUTHORIZED USE
01A	156.050	156.050	Public Correspondence, Port Operation

05A	156.250	156.250	Public Correspondence, Port Operation
06	156.300	156.300	Safety (Compulsory)
07A	156.350	156.350	Commercial
08	156.400	156.400	Commercial, Internship
09	156.450	156.450	Commercial/Non-Commercial
10	156.500	156.500	Commercial
11	156.550	156.550	Commercial/VTS
12	156.600	156.600	Port Operations/VTS
13	156.650	156.650	Bridge to Bridge, (1W) Navigational
14	156.700	156.700	Port Operations/VTS
15		156.750	RX ONLY – Coast to ship
16	156.800	156.800	Calling and Safety (Compulsory)
17	156.850	156.850	State Controlled Ship to Coast (1W)
18A	156.900	156.900	Commercial
19A	156.950	156.950	Port Operation
20	157.000	157.000	Port Operation
21A	157.050	157.050	U.S. Government Only
22A	157.100	157.100	USCG ONLY
23A	157.150	157.150	Port Operation (U.S. Govt. Only)
24	157.200	161.800	Public Correspondence
25	157.250	161.850	Public Correspondence
26	157.300	161.900	Public Correspondence
27	157.350	161.950	Public Correspondence
28	157.400	162.000	Public Correspondence

Please Note: Channels 13 and 67 are limited to 1 watt except as overridden (When necessary and allowable) by PTT.

Channel 70 reserved for digital selective calling

U.S.A. CHANNEL AUTHORIZATION

CH	TX FREQ	RX FREQ	AUTHORIZED USE
63a	156.175	156.175	Public Correspondence, Port Operation
64		156.225	Public Correspondence, Port Operation
65A	156.275	156.275	Port Operation, VTS
66A	156.325	156.325	Port Operation, VTS
67	156.375	156.375	Commercial, VTS (1W)
68	156.425	156.425	Non-Commercial
69	156.475	156.475	Non-Commercial
70	156.525	156.525	Non-Commercial
71	156.575	156.575	Inter-Ship, Port Operation, Non-Commercial
72	156.625	156.625	Non-Commercial
73	156.675	156.675	Port Operation, VTS
74	1156.725	156.725	Port Operation, VTS
77	156.875	156.875	Inter-Ship, Port Operation
78A	156.925	156.925	Non-Commercial
79A	156.975	156.975	Commercial
80A	157.025	157.025	Commercial

81A	157.075	157.075	U.S. Government Only
82A	157.125	157.125	U.S. Government Only
83A	157.175	157.175	U.S. Government Only
84	157.225	161.825	Public Correspondence
85	157.275	161.875	Public Correspondence
86	157.325	161.925	Public Correspondence
87	157.375	161.975	Public Correspondence
88	157.425	157.425	Commercial, Aircraft
WX02		162.400	Weather (RX Only)
WX03		162.475	Weather (RX Only)
WX04		162.425	Weather (RX Only)
WX06		162.500	Weather (RX Only)
WX07		162.525	Weather (RX Only)
WX08		161.650	Weather (RX Only)
WX09		161.775	Weather (RX Only)

CANNDIAN CHANNEL AUTHORIZATION

CH	TX	RX	Inter Ship	Ship Shore	Comm-ercial	Non-Comm	Safety	Ship Movement	Public Corres	Area of OP.	Notes and Remarks
1	156.050	160.650							X	PC	
2	156.100	160.700							X	PC	
3	156.150	160.750							X	PC	
4A	156.200	156.200	X	X			X			PC	Canadian coast guard search and rescue
4A	156.200	156.200	X	X	X					EC	Commercial fishing only.
5A	156.250							X			
6	156.300	N/A	X		X	X	X			All areas	May by used for search and rescue between ships and air.
7A	156.350	156.350	X	X	X					All areas	
8	156.40	N/A	X		X		X			WC,EC	Also assigned for op in Lake Winnipeg area.
9	156.450	156.450	X	X	X	X		X		AC	Used to communicate w/aircraft and helicopters predominantly maritime support operations.
10	156.500	156.500	X	X	X	X	X	X		AC,GL	Used also for communications w/aircraft engaged in coordinated search & rescue and antipollution op.
11	156.550	156.550	X	X	X	X		X		PC,AC,GL	Also used for pilot age purposes.

12	156.600	156.00	X	X	X	X		X		WC,AC,GL	Port operations & pilot in for and messages.
13	156.650	156.650	X		X	X		X		All areas	Exclusively for bridge-to-bridge navigational traffic.
14	156.700	156.700	X	X	X	X		X		AC,GL	Port operations and pilot info and messages.
15	156.750	156.750	X	X	X	X		X		All areas	All operations limited to1-watt max power. May also be used for on-board communications.
16	156.800	156.800								All areas	INTERATIONAL DISTRESS, SAFETY 7 CALLING
17	156.850	156.850	X	X	X	X		X		All areas	All operations limited to 1-watt max power. May also be used for on-board communications.
18A	156.900	156.900	X	X	X					All areas	Towing on the Pacific Coast.
19A	156.950	156.950	X	X						All areas	Not in PC/Canadian Coast Guard Only.
19A	156.950	156.950	X	X						PC	Various Government departments.
20	157.000	161.600		X			X	X		All areas	Port operations only with 1-watt max power.
21A	157.050	157.050	X	X						All areas	Canadian Coast Guard Only.
21B	N/A	161.650					X			All areas	Continuous Marine Broadcast (CMB) service.
22A	157.100	157.100	X	X	X	X				All areas	For communication between Canadian Coast Guard and non-Canadian Coast Guard stations only.
23	157.150	161.750		X					X	PC	Also inland waters of British Columbia & Yukon.
24	157.200	161.800		X					X	All areas	
25	157.250	161.850		X					X	PC	Also assigned op in Lake Winnipeg area.
25B	N/A	161.850					X			AC	Continuous Marine Broadcast (CMB) service.
26	157.300	161.900		X			X		X	All areas	
27	157.350	161.950		X					X	AC,GL,PC	

CANADIAN CHANNEL AUTORIZATION (Continued)

CH	TX	RX	Inter-Ship	Ship/ Shore	Comm-ercial	Non-Comm	Safety	Ship Movement	Public Corres	Area of OP.	Notes Remarks
28	157.400	162.000		X			X		X	PC	
28B	N/A	162.000								AC	Continuos Marine Broadcast (CNB) Service.
60	156.025	160.625		X					X	PC	
61A	156.075	156.075	X	X						PC	Canadian Coast Guard Only.
61A	156.075	156.075	X	X	X					EC	Commercial fishing only.
62A	156.125	156.125	X	X						PC	Canadian Coast Guard Only.
64	156.225	160.825		X					X	PC	
64A	156.225	156.225	X	X	X				X	EC	Commercial fishing only.
65A	156.275	156.275	X	X	X	X	X				Search & rescue & antipollution ops. On the Great Lakes. Towing on the Pacific Coast. Port op. Only in St. Lawrence.
66A	156.325	156.325	X	X	X	X	X	X			Port op only in the St. Lawrence River with 1-watt max.
67	156.375	156.375	X	X	X					EC	Commercial fishing only.
67	156.375	156.375	X	X	X	X	X			All areas	Not EC, also for comm. with air engaged in search & rescue and antipollution operations.

68	156.425	156.425	X	X		X				All areas	For marine and yacht clubs.
69	156.475	156.475	X	X	X	X				All Areas	Not EC.
69	156.475	156.475	X	X	X					EC	Commercial fishing only.
70	156.525	156.525									DIGITAL SELECTIVE CALLING FOR DISTRESS, SAFETY, AND CALLING.
71	156.575	156.575	X	X	X	X	X	X			
71	156.575	156.575	X	X		X					
72	156.625	N/A	X		X	X				EC,PC	Marine & yacht clubs on East Coast & Lake Winnipeg. Use for comm. w/aircraft and helicopters in predominantly maritime support operations.
73	156.675	156.675	X	X	X					EC	Commercial fishing only.
73	156.675	156.675	X	X	X	X	X			All areas	Not EC. Also used for comm. With aircraft engaged in coordinated search & rescue and antipollution op.
74	156.725	156.725	X	X	X	X		X		EC,PC	
75											Not available-guard band for Channel 16
76											Not available-guard band for Channel 16
77	156.875	156.875	X	X			X	X			Pilot age on Pacific Coast Port op only in St. Lawrence River/Great Lake areas with 1-watt maximum power.
78A	156.925	156.925	X	X	X					EC,PC	

CANADIAN CHANNEL AUTORIZATION (Continued)

CH	TX	RX	Inter-Ship	Ship/ Shore	Comm-ercial	Non-Comm	Safety	Ship Movement	Public Corres	Area of OP.	Notes Remarks
79A	156.975	156.975	X	X	X					EC,PC	
80A	157.025	157.025	X	X	X					EC,PC	
81A	157.075	157.075	X	X							Canadian Coast Guard use only in St. Lawrence River/Great Lakes areas.
81A	157.075	157.075	X	X			X			PC	Canadian Coast Guard antipollution.
82A	157.125	157.125	X	X			X			PC	Canadian Coast Guard use only.
82A	157.125	157.125	X	X							Canadian Coast Guard use only in St. Lawrence River/Great Lakes areas.
83	157.175	161.775		X			X			PC	Canadian Coast Guard use only.
83A	157.175	157.175	X	X						EC	Canadian Coast Guard & other Governmental agencies.
83B	N/A	161.775					X			AC,GL	Continuous Marine Broadcast (CMB) Service.
84	157.225	161.825		X					X	PC	
85	157.275	161.875		X					X	AC,GL,NL	
86	157.325	161.925		X					X	PC	

87	157.375	161.975		X					X	AC,GL,NL	
88	157.425	162.025		X					X	AC,GL,NL	
WX1	N/A	162.550					X			EC,PC	Continuous Marine Broadcast (CMB) Service.
WX2	N/A						X			EC,PC	Continuous Marine Broadcast (CMB) Service.
WX3							X			EC,PC	Continuous Marine Broadcast (CMB) Service.

EC (East Coast) Includes: NL, AC, GL and Eastern Arctic Areas
NL: Newfoundland and Labrador
AC: Atlantic Coast, Gulf and St. Lawrence River up to and including Montreal
GL: Great Lakes (including St. Lawrence above Montreal)
WC (West Coast): Pacific Coast, Western Arctic and Athabasca-Mackenzie Watershed areas
PC: Pacific Coast
All areas: Includes East and West Coast areas