

**CDMA Fixed Wireless Terminal
Owner's Manual**

Model: LST-200 & 2200

REVISED HISTORY

DATE	ISSUE	CONTENTS OF CHANGES	S/W VERSION
1999/01	ISSUE 1	Initial release	

Please read this manual before you use this product. This manual is based on the production version of LST-200/2200 FWT. Software changes may have occurred after this printing.

LGIC reserves the right to make changes in technical and product specifications without prior notice.

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1. Before You Start

Safety Information

Warning

To reduce the risk of fire or electric shock, do not expose this product to rain or moisture. Do not use this product near swimming pools or other bodies of water.

IMPORTANT

Before installing or operating this product, read this information..

Optimal Phone Performance

- Do not operate your product when holding the antenna, or when someone is within four inches (ten centimeters) of the antenna. Holding the antenna affects call quality and may cause the telephone to operate at a higher power level than needed.
- For the best call quality, keep the antenna free from obstructions and point the antenna straight up.
- Do not use the unit with a damaged antenna. Have your antenna replaced by a qualified technician immediately. Use only a manufacturer-approved antenna. Non-approved antennas, modifications, or attachments could impair call quality, damage the phone.
- RF energy may affect improperly installed or inadequately shielded personal medical devices such as pace markers, hospital monitor. Consult the manufacturer of any personal medical devices to determine if they are adequately shielded from external RF energy. Turn your terminal OFF in health care facilities when any regulations posted in the areas instruct you to do so. Hospitals or health care facilities may be using equipment that could be sensitive to external RF energy.
- If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
 - Reorient or relocate the receiving antenna
 - Increase the separation between the radio or television and the telephone.
 - Connect the equipment into an outlet on a circuit different from that to which the terminal is connected.
 - Consult you Authorized LGIC Dealer or an experienced radio/TV technician for help.
- Use only the battery, antenna and AC power supply provided by LGIC. Using any other type will invalidate the warranty.
- Only authorized personnel should service the phone and its accessories. Faulty installation or service may be dangerous and may invalidate the warranty.
- Do not use the unit in designated "no cellular phone use" area.
- Avoid exposure to high temperature or humidity.

- Avoid wetting the unit with any liquids. If the unit gets wet, turn the power off immediately and remove the backup battery and AC power supply. If the unit is inoperable, then return to the service agent for service.
- Avoid shock or impact.
- We recommend you to charge the backup battery before initial use. Backup battery may be discharged during delivery.

Care and Service

- Unplug the Telephone from the wall outlet and remove antenna (or disconnect antenna cable) before cleaning. Do not use liquid or aerosol cleaners. Use a damp cloth for cleaning.
- If the unit fails for any reason, do not attempt to disassemble; contact the telephone service provider for assistance.
- If any of the following conditions exist: Unplug the unit at the wall plug, remove battery, and call the service provider.
 - The power supply cord is damaged or frayed.
 - Liquid has been spilled into the unit.
 - The unit has been exposed to rain or water.
 - The unit has been dropped or damaged.
 - The unit does not work normally by following the operating instructions.

2. Introduction

Congratulations on your purchase of the LG Fixed Wireless Terminal that has been designed to operate on the latest digital mobile communications technology, Code Division Multiple Access (CDMA). This CDMA digital technology has greatly enhanced voice clarity and can provide various advanced features. The terminal enables the normal operation and direct connection of standard telephone equipment into the cellular network.

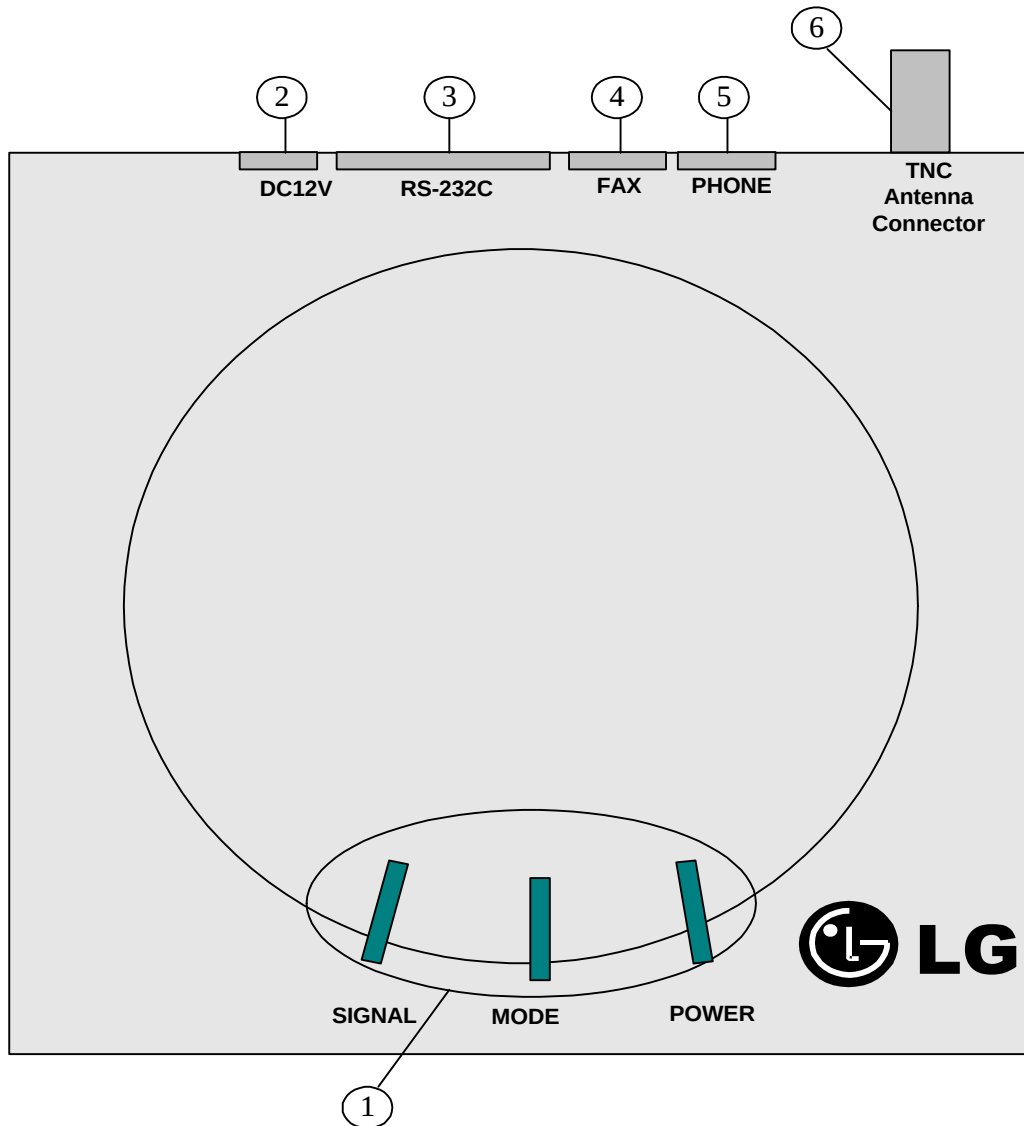
The standard unit provides:

- Dial tone;
- Touch tone (DTMF) or Pulse Dialing;
- Support Caller ID Telephone;
- Voice-Mail Notification ring-alerts you to new voice-mail messages;
- ROH (Receiver off-hook) tone; which is the sound you hear when a telephone handset is left off-hook for an extended period of time with no activity;
- Ring voltage used to ring the telephone connected to the unit, with a Ringer Equivalence Number of 4;
- A phone jack to plug in the telephone equipment (RJ-11 Port);
- A phone jack to plug in the FAX equipment (RJ-11 Port);
- DB9 Data Port for service and repair
- AC Power supply with barrel plug connector;
- Three lights (LEDs) to indicate the status of the unit;
- Diapole Antenna;

Other features as determined by your service provider.

Note: Telephones with multiple terminating impedance should be set for 600ohms.

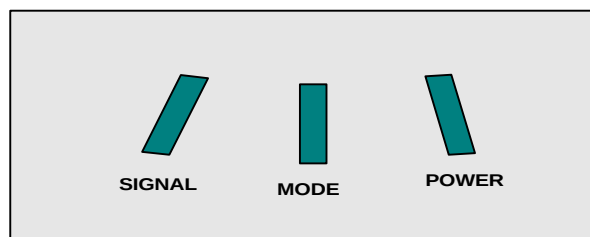
Front View of the Terminal



< Figure 1 >

ITEM	DESCRIPTION
" çLEDs	Indicate the status of the unit
" èDC-12V	AC Power Adapter
" éRS-232C DB 9 Connector	Connecting Port for Data Service to PC
" êFAX (RJ-11 Jack)	Connecting Port for G3 FAX Machine
" ëPhone (RJ-11 Jack)	Connecting Port for Single Line Telephone
" ìTNC Antenna Connector	

3 LEDs Indicators



LED	COLOR	Operating Condition
POWER LED	GREEN-solid	DC Power is applied
	YELLOW-solid	Battery Power is applied
	RED-solid	Low Battery
SIGNAL LED	GREEN-solid	Good Signal
	YELLOW-solid	Poor Signal
	RED-solid	No Service Area
MODE LED	GREEN – blink (0.5sec On / 0.5sec Off)	Voice Message is received
	GREEN – blink (1 sec On / 1 sec Off)	Data Service is working
	RED-blink	G3 Fax option is connected

Installation

STEP I. Check Components

- Each standard unit comes with the Fixed Wireless Terminal, an AC power supply with power cords, an antenna, a Battery and User Manual.
- Please make sure that these components are present and check for evidence of shipping before you begin the unit installation. If components are missing or damage is found, contact your authorized LGIC distributor immediately.

STEP II. Place the Terminal

- Place the terminal on the stable flat secure surface area (desk, table, etc.). Avoid direct exposure to the sun lights and damp area.
- Read the SAFETY INFORMATION located at the first part of this document before you place the terminal.

STEP III. Connect Components

- Connect the antenna to the TNC connector located at the topside of the terminal. (See Figure 1 to locate the TNC connector.) If you placed the terminal on the flat surface, bend the antenna up right.
- Connect your phone cord to the RJ-11C port located at the left side of the terminal.
- Connect the AC power supply cable to the DC input port located at the right side of the terminal.
- If you use Data Service or PC FAX Service, connect your RS-232C cable cord to the DB9 port located at the right side of the terminal.
- If you use G3 FAX machine, connect your line cord of G3 FAX to the RJ-11 port located at the right side of the phone port.

“ Refer to Connection Diagram with external equipment in Figure 2 “

STEP IV. Check LED indicators

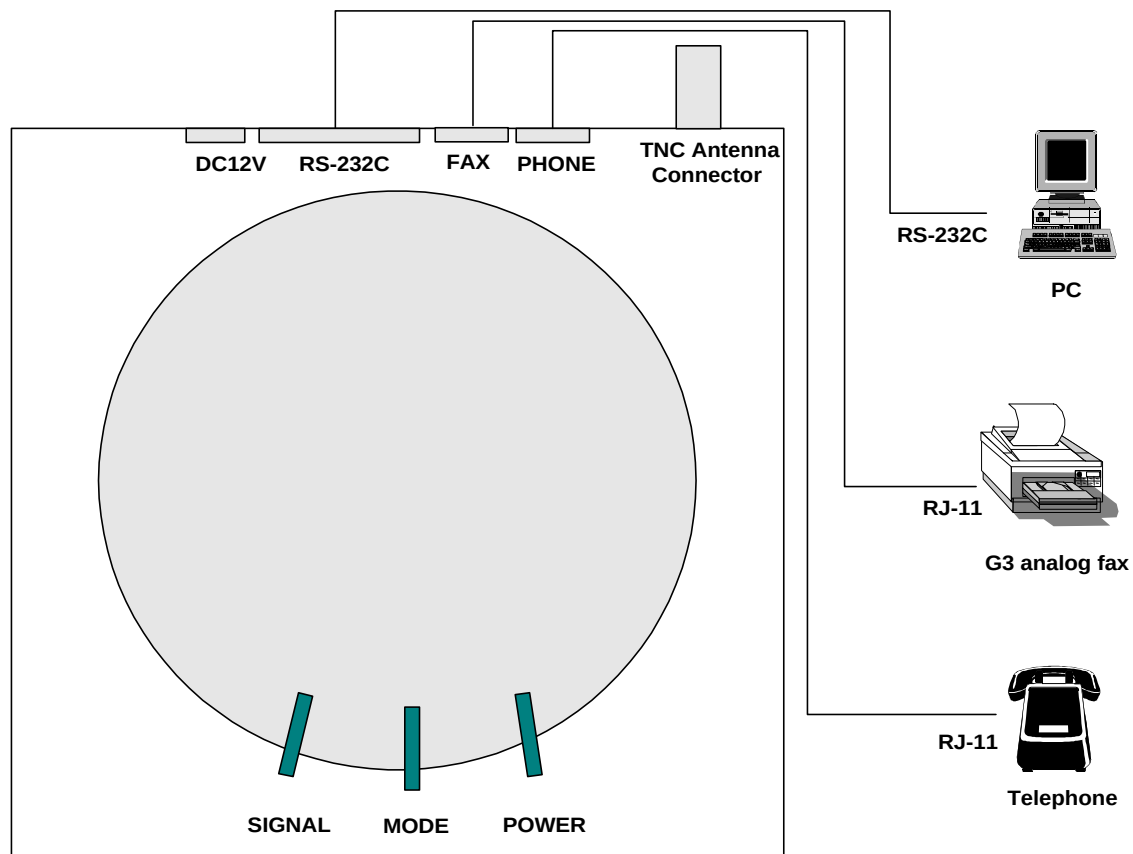
- When you followed the installation instruction STEP I to STEP III, please check the LEDs for normal operation.

STEP V. Wall Mounting Bracket

- The terminal comes with a bracket for wall installation. Before installing it, determine the location which provides the strongest signal and a near by electrical outlet.
 1. Hold the bracket against the wall;
 2. Mark the two openings and select round or panhead type screw;
 3. Drill out the holes with drill bit smaller in diameter than the screws
 4. Secure two screws into the wall, leaving about 1/8inch gap between the screw heads

- and the wall;
5. Place the bracket over the two screws so that the screw head protrudes out of the opening;
6. Slide the bracket downward until the screw head is locked at the top of the opening and the bracket is secure;
7. Tighten the screws the bracket is resting upon;
8. Insert the terminal into the bracket until you hear two snaps (both sides of the unit should snap into the bracket);
9. Insert the DC power pack into an electrical outlet and attach the telephone line into the Phone Jack (RJ-11) of the unit.

Note: Some wall materials may require special inserts or plugs to secure a screw and support the bracket.



< Figure 2. Connection Diagram with External Equipment >

3. Basic Operation

Power On

1. The POWER LED indicates the presents status;
 - 1) Using AC Adapter : Solid Green
 - 2) Using internal battery : Solid Yellow
2. If the radio service is not available or radio signal is too weak to detect;
The SIGNAL LED is Red. (No Service status)
3. When the phone is succeeded in getting the service, SIGNAL LED indicates the strength of the signal.
 - 1) Lifting handset, dial tone is heard and you can enter a phone number.
(Not entering any key for 15 seconds, warning tone will be produced)
 - *) If Hot Line function is enabled, busy tone is not produced and hot line number is automatically connected.
 - *) While having maintenance order from the main system, neither dial tone nor busy tone is produced.

Placing a call

When lifting handset of the connected phone ("off hook"), the terminal determines whether cellular service is available. If it is available, dial tone is produced and a number can be dialed normally. If phone service is not available, LED 2 of the terminal (Signal LED) will be red and no dial tone will be heard.

Receiving a call

The connected telephone rings when an incoming call is detected. Pick up the handset and begin talking.

Ending a call

When you have completed the call, place the handset back on hook. Also you can hook flash more than 1 second to end a call and place a new call without hanging up the handset.

Dial Tone after Remote Disconnect

A warning tone may be heard in the telephone after a remote party hangs up from a call, allowing another call to be initiated after hookflash. To transmit the dialed digits immediately, press "#" key after dialing the phone number.

Dial Delay

The terminal waits 5 seconds (user programmable feature) before transmitting the dialed telephone number into the cellular network. If you want transmit dialed telephone number immediately, then press "#" after dialing digits.

Emergency Call

When emergency call number is connected once, it will not be terminated unless the called party disconnects the call(Emergency Call Hold Service). Therefore even caller hangs up the phone, the line will be still connected, so if the caller picks up the phone again, he can continue talking. If emergency call is connected, cellular service is not supported.

As long as your telephone is registered on a system, you can place a call to emergency number including 911-even if your telephone is locked or restricted.

Please check the available emergency call number with your service provider.

4. System Features

Hookflash

When the terminal receives a hookflash from the connected telephone device, it will automatically allow:

1. For producing dial tone again after a phone number has been dialed without connection.
2. The use of special cellular services which may be available in your cellular service area.

Note: Hookflash is accomplished in a call through either pressing the dedicated hookflash key which is available on some phones or through a rapid single press of the hang-up mechanism upon which the handset rests when the phone is hung up.

Dial Time

When placing a call, the phone number is sent over the network after last digit is dialed. In order to insure adequate time for dialing the last digit, a delay of 5 seconds is programmed into the terminal.

ROH (Receiver Off Hook)

If the telephone equipment remains "off-hook", meaning that the handset is left off of its cradle as it would be when you hang up, with no dialing activity for about 45 seconds, a ROH tone emits from the receiver for a period of 60 seconds.

Special Cellular Services

Many cellular systems offer special services such as call waiting, call forwarding, etc. You can purchase these services from your cellular service provider. There are certain dialing sequences to be entered, which vary from service provider to service provider. The service provider will provide the dialing instructions for your system.

Call Forwarding – An incoming call can be delivered to another telephone number programmed. Please contact your cellular service provider to use this feature.

Call Waiting – You can receive another incoming call during a call. In this case, you will hear beep tone and then you can connect the second call holding the first call by entering a code required by cellular service provider. Your cellular service provider may require hookflashing (a quick, simulated "hang up") to answer the waiting call. Other providers may require entering the codes involving digits 1-9, *, and # to answer a waiting call.

Three-way Conference Calls - For three-way conference calls, a hookflash transmits the SEND command. Please contact your cellular service provider for more information on using this service.

Example

- " ç Dial the first number and wait until connected;
- " è When connected, give hookflash and dial the second number and give one more hookflash to be connected;
- " é When the second call is connected, give hook flash to complete a 3-way conference call.

Voice Mail – Use voice mail service in the same manner as you would on a regular telephone. If you have a new voice-mail message, the WLL-terminal transmits a special Voice-Mail Notification Ring (1sec On / 4sec Off) and Mode LED is blinking (0.5sec On/0.5sec Off). Please contact your cellular service provider for more information on using Voice Mail.

Caller ID – LST-200/2200 can support Caller ID service if you have a telephone with Caller ID feature. Please contact your cellular service provider for more information on using this service.

Applications

Data Communication - LST-200/2200 is capable of transmitting and receiving IS-99 Fax or modem communications. For data communications, you will need a data communication kit and a diskette where needed. For further information, please contact our authorized service dealer.

Multi-extension Installations - For a multi-extension installation, make sure that all the extensions are on-hook. If one extension is off-hook (not hung up), none of the extensions on that line will ring when a call is being received.

PBX/KSU System - Your fixed wireless terminal should be connected to a loop-start PBX/KSU as a standard DID/DOD trunk. Do not parallel the terminal line with an incoming telephone line. It may damage the interface in the terminal. Only an experienced telephone technician should install it.

5. Programming

LST-200/2200 provides various convenient and various features to user. This chapter describes how to program these features and to use them. The followings are main features can be used;

Speed Dial

Emergency Call

Hot Line Call

Wake-up Alarm

Conversation Voice Level

Outgoing Call Lock

■ Programming Instruction

1. Lift Handset and press “#” key twice.
2. Enter the field number (1 ~ 9) and you will hear the Menu Entering tone.
3. Press “#” key and you will hear confirmation tone.
4. Enter sub-fields and their options.
5. Press “*” key to save and you will hear confirmation tone.

Speed Dial

LST-200/2200 has 30 memory locations (1~30:1 or 2 digits) to store frequently used phone numbers and you can make a call by pressing memory location number only when the speed dial feature is enabled.

Storing the Speed Dial Number

1. Press “#” + “#” + “1” continuously to enter speed dial programming mode.
2. Press “#” and one of memory numbers (1~30).
3. Press “#” and the phone number (Max. 32 digits).
4. Press “*” to store.

Enable or Disable Speed Dial

1. Press “#” + “#” + “1” continuously to enter speed dial programming mode.
2. Press “#” and “1” or “2” to enable or disable respectively.

“1” – Speed Dial Enable

“2” – Speed Dial Disable

3. Press "*" to store.

Operation

1. Make a speed dial function enable.
2. Lift handset and dial tone will be heard.
3. Press speed dial number and wait for dial timeout or press "#".

Emergency Call

LST-200/2200 has 3 emergency call numbers (1~3) and max. 32 digits can be stored in each emergency call number.

Entering the emergency phone number

1. Press "#"+ "#"+ "2" continuously to enter emergency call programming mode.
2. Press "#" and one of the emergency memory location numbers (1~3).
3. Press "#" and the phone number (Max. 32 digits).
4. Press "*" to save and enable this function.

Enable or Disable emergency call

1. Press "#"+ "#"+ "2" continuously to enter emergency call programming mode.
2. Press "#" and Enable code ("1") or Disable code ("2").
3. Press "*" to save.

If Emergency Call is disabled and Emergency Call number has been already programmed, you can make enable Emergency Call by pressing "#"+ "#"+ "2"+ "#"+ "1"+ "*" without entering a emergency call number again.

Hot Line

While the Hot line function is enabled, the programmed number will be automatically dialed when you pick up the handset and wait for the programmed hot line time (1~10sec) without any key press.

Programming the Hot Line number

1. Press "#"+ "#"+ "3" continuously to enter Hot Line programming mode.
2. Press "#" and Hot Line Enable code "1".
3. Press "#" and Hot Line phone number (Max. 32 digits).
4. Press "*" to save and enable this function.

Enable the Hot Line Feature

1. Press "#"+ "#"+ "3" continuously to enter Hot Line programming mode.
2. Press "#" and Hot Line Enable code "1".

3. Press “*” to save.

Disable the Hot Line Feature

1. Press “#”+”#”+”3” continuously to enter Hot Line programming mode.
2. Press “#” and Hot Line Disable code “2”.
3. Press “*” to save.

Programming the Hot Line Time

1. Press “#”+”#”+”3” continuously to enter Hot Line programming mode.
2. Press “#” and Hot Line time code “3”.
3. Press “#” and enter desired Hot Line time (1~10 seconds).
4. Press “*” to save.

If Hot Line is disabled and Hot Line number has been already programmed, you can make enable Hot Line feature by pressing “#”+”#”+”3”+”#”+”1”+”*” without entering a Hot Line Number again.

Alarm

If alarm feature is enabled, you will hear ring at the programmed alarm time every day for 1 minute.

Entering Alarm Time (12-hour Mode)

1. Press “#”+”#”+”4” continuously to enter alarm time programming mode.
2. Press “#” and alarm time code “1” for 12-hour mode.
3. Press “#” and alarm time (HHMM +am(“1”)/ pm(“2”)).
4. In the forenoon, time range is 0000~1159.
5. In the afternoon, time range is 1200~1259 or 0100 ~1159.
6. Press “*” to save and enable Alarm Time.

Entering Alarm Time (24-hour Mode)

1. Press “#”+”#”+”4” continuously to enter alarm time programming mode.
2. Press “#” and alarm time code “2” for 24-hour mode.
3. Press “#” and alarm time (HHMM). (0000~2359)
4. Press “*” to save and enable Alarm Time.

Disable Alarm Feature

1. Press “#”+”#”+”4” continuously to enter alarm time programming mode.
2. Press “#” and alarm disable code “2”.
3. Press “*” to save.

If Alarm is disabled and time has been already programmed, you can make enable Alarm feature by pressing “#”+”#”+”4”+”#”+”1”+”*” without entering alarm time again.

Volume Level

There are three voice volume levels to be controlled by software, and you can set the level to the adequate conversation volume.

Changing the Volume Level

1. Press “#”+”#”+”5” continuously to enter Volume Level programming mode.
2. Press “#” and Volume Level (1~3).
 - “1” – LOW Level
 - “2” – MIDDLE Level
 - “3” – HIGH Level
3. Press “*” to save.

Before pressing “*”, you can enter volume level continuously.

Outgoing Call Lock

If you try to make an outgoing call while outgoing call lock is enabled, then you will hear warning tone after pressing “#” or dial time-out as a indication of entering the LOCK code. You should enter LOCK code to make an outgoing call. LOCK code is composed of 4 digits and the initial setting is “0000”. Outgoing Call Lock feature is disabled as a factory setting.

Enable or Disable Outgoing Call Lock

1. Press “#”+”#”+”6”+LOCK code continuously to enter Outgoing Call Lock programming mode.
2. Press “#” and Enable (“1”) or Disable (“2”) code.
3. Press “*” to save.

Changing Outgoing LOCK Code

1. Press “#”+”#”+”6”+LOCK code continuously to enter Outgoing Call Lock programming mode.
2. Press “#” and “3” to change LOCK code.
3. Press “#” and 4 digits of LOCK code to be changed.
4. Press “#” and new LOCK code.
5. Press “*” to save.

G3 FAX Receive Mode

To receive a Data Fax call by G3 FAX connected to your LST-200/2200 terminal from the other devices (Land or Mobile Data Fax), your service provider should support wireless data FAX. And the LST-200/2200 mode should be changed to G3 FAX receive mode to change data path from RS-232C to G3 FAX machine. Even if FAX data path is changed to G3 FAX machine, you can make an outgoing call from your single line telephone and make a FAX outgoing call from G3 FAX. But receiving call is ringing to G3 FAX machine even if the caller is not FAX because the terminal doesn't recognize the call is for FAX or voice. Following is the procedure to change data path and default data path is RS-232C data path.

Enable or Disable G3 FAX Receive mode

1. Press “#”+”#”+”7” continuously to enter G3 FAX Receive programming mode.
2. Press “#” and Enable (“1”) or Disable (“2”) code.

Enable means that Data call path is changed to G3 FAX.

Disable means that Data call path is changed to RS-232C. (Default mode)

3. Press “*” to save.

6. Troubleshooting

In the event you are unable to place or receive telephone calls, first check the appropriate power indication on the LED. In case of no power, check the wiring connections between the power outlet and the terminal. Check for the appropriate service indication on the LED. If an adequate signal is not present, try different locations for the better signal reception.

This will verify the condition of the telephone equipment and the internal wiring of the telephone service to verify that it is working properly. If the telephone system of wiring is not working properly, replace or repair the equipment as required. The unit will not function with equipment that requires data transmission.

Contact your service provider if either of the following condition is true:

- The terminal does not work and the LED indicates No Service and if changing the locations does not resolve the problem.
- The terminal does not work and the LED indicates In Service.
- Power Supply – If the unit does not respond once plugged into a power supply;
 - ✧ Check that the AC power source.
 - ✧ Check that the Barrel Plug of the Power Supply is properly inserted into the terminal.
 - ✧ Check that the terminal Power Supply is properly plugged into the electrical outlet or power source.

Warning! Only Authorized Service Personnel should remove the cover of the fixed wireless terminal for additional service. The contents of the terminal contain components that present an Electric Shock Hazard if handled improperly.

For further assistance, contact your Authorized LGIC Distributor for service and assistance. Please keep your Model number and Serial number ready for quicker service.

< LST-2200 >

Main Unit

Item	Description
Tx Frequency	Digital : 1850 ~ 1910 MHz
Rx Frequency	Digital : 1930 ~ 1990 MHz
Channel Bandwidth	1.25 MHz
Frequency Stability	Digital : ± 150 Hz
Tx Power	Digital : Max. 0.2W
Rx Power Level	-104 ~ -25 dBm
Size	190 X 190 X 46 (L X W X H)
Weight(g)	Below 860 (without battery)

AC/DC Adapter

Item	Description
Input Voltage	110 / 220V(AC), Option
Input Current	2A
Input Frequency	45 ~ 60 Hz
Output Voltage	12V(DC)

Battery

Item	Description
Capacity	7.4V NiMH/2500mAH
Talk duration time	1 Hours
Standby duration time	24 Hours
Charging duration time	Trickle, 24 Hours