



## User's Guide

Copyright 2011, 2012



American Printing House for the Blind, Inc.

2012/7/6

# Introduction

Measuring less than 6.5 inches by 4.1 inches and just over one inch in height, Braille Plus 18 combines a high-quality braille keyboard and refreshable braille display with an advanced mobile platform and specialized accessible software to create the world's first Android smart phone designed for blind students and professionals.

- Improve retention, enjoy privacy, and increase literacy with the 18-cell refreshable braille display.
- Quickly move the cursor or click on a button with one of the 18 cursor routing keys located above each braille cell.
- Easily understand the human sounding speech.
- Use the 5 megapixel (MP) camera and flash to quickly and accurately convert menus, papers, and books into braille or speech.(1)
- Use GPS to determine current location, discover nearby businesses, and get directions.
- Efficiently start apps or find information with the Google search technology that is built into the platform.
- Maintain privacy and convenience with the separate braille navigation stick.
- Read books and periodicals from the National Library Service (NLS), Learning Ally (formerly RFBD), and bookshare.org.
- Create, edit, and read documents in multiple formats and change them to braille with the Word Processor.
- Take full advantage of the Internet including compatibility with HTML5, Flash, and plug-ins, including Readability, which strips clutter from Web pages.
- Read and write email messages with the email program compatible with both POP3 and IMAP protocols.
- Automatically read everything in contracted braille.
- Schedule appointments and alarms with the calendar and clock.
- Record lectures or music with the built-in stereo microphones and the recorder.
- Play music on the device or from the cloud with the music player.
- Connect to Wi-Fi hot spots with wireless "N" technology.
- Enjoy stereo playback through the speakers or with a Bluetooth headphone.
- Share media and documents with the full size SD card or USB port.
- Send and receive text messages.(2)
- Make and receive phone calls.(2)

- Stay connected with 3G wireless connections.(2)
- Enjoy thousands of additional apps written for Android smart phones.(3)
- Share or collaborate with sighted peers, teachers, or parents with the TV signal outputs.(4)

## Notes

1. Does not recognize handwriting.
2. Requires a cell phone plan from AT&T or T-Mobile. Verizon compatible starting in 2012.
3. Not all programs written for Android are accessible.
4. TV not included.

## Getting Started

This device combines the power, convenience, and capabilities of the Android operating system with the benefits of specialized software to create a platform that meets the needs of both students and professionals.

If you are familiar with Android, you have a head start on knowing how to use this device effectively. You only need to learn the braille aspects and the specialized software such as OCR and GPS.

If you don't already know Android, this documentation gets you up to speed quickly, so you will soon be productive with your computing and organizational needs.

## In the Box

The box contains the following:

- Braille Plus 18
- AC Adapter
- USB charging cable
- Earbuds
- Carrying case
- Video cable
- Large print Quick Start guide
- Braille Quick Start guide

Please ensure that all these items are included. If something is missing, contact APH Customer Support by emailing [cs@aph.org](mailto:cs@aph.org) or call 800-223-1839.

## About This Manual

### Accuracy

This manual was complete and accurate at the time of its writing. It is available on the CD, the Braille Plus, and on the Web site at [http://tech.aph.org/plus\\_info.htm](http://tech.aph.org/plus_info.htm). The manual is updated periodically, and the latest version is always on the Web site. As you install software updates, new documentation for those updates is also installed directly onto the device. To read documentation on the device, select Help from the Home screen.

## Organization

The unique combination of accessible software, a mainstream operating system, and custom braille hardware is a technical revolution. It moves the blind user squarely into the mobile computing community, affording her all the power and capabilities associated with it. With these tools comes some complexity. It is the purpose of this documentation to organize the concepts necessary to effectively use this device to its and your maximum potential.

The "Preliminaries" chapter familiarizes you with the location and function of the buttons and controls on the device.

The "First Time Use" chapter guides you through the steps necessary to get the device charging, started, and operational. It describes the way to always return to the Home screen, start apps, and open menus.

The "Networks and Connections" chapter describes how to connect to Wi-Fi hot spots, use the cellular network, and display the screen on a TV.

After taking care of the basics and connections, it is time to step back and learn about other operating system concepts. This chapter describes notifications, context menus, and other key concepts.

Each of the apps is next covered in its own chapter.

Finally, appendixes provide reference and supplemental documentation.

## Assumptions

The documentation assumes some knowledge of braille. It often uses braille letters to represent commands.

In addition to basic braille knowledge, you may wish to learn about computer braille. Computer braille is a code that is necessary to enter Web addresses or other non-literary type text.

There is a computer braille code chart in [Appendix A](#).

## Nomenclature

This documentation refers to the device as Braille Plus. There are actually two models of the Braille Plus. They are the Braille Plus 18, which includes an 18-cell braille display, and the Braille Plus, which is audio only. With the exception of the braille display, these two units operate identically, and they are both documented in these pages as simply Braille Plus. Where there are differences, they are pointed out.

## Keys

This documentation represents keys you may type by naming the key. The Menu key, for example, is written "Menu."

When it takes several keys to make a command, such as those that include modifier keys like Alt+T, the keys are separated with the "+" character. The first key is the modifier, so you press and hold it; then while it is still depressed, press the other keys in the combination. So if this documentation says, Alt+T,

it means to press and hold the Alt key, then, while that key is still down, press and release the T key. Finally, release the Alt key.

Braille dot patterns are provided in one of two methods. Where reasonable, the braille letter is used. If, for example, the instructions say to press Space+A, you should press and hold Space, then press and release dot 1, the A, and then release the Space. At other times, it may be clearer to provide dot numbers to represent a command. The command, for example, to move to the top of a document is Space+dots 1-2-3. Since this command is the inverse of Space+dots 4-5-6 to go to the end of the document, this manual may use Space+dots 1-2-3 instead of Space+L. (The braille letter "l" is made by pressing dots 1-2-3.)

## Menus

Multiple layers of menus are represented in a short hand form as follows:

Instead of explaining that you should select the Settings menu, then pick Wireless and Networks, and then Mobile Networks, this manual represents this series of menu options like this:

Settings / Wireless and Networks / Mobile Networks

## Other Resources

In addition to this documentation, there are other resources to help you learn the device. You may wish to subscribe to the Braille Plus email list. This list discusses the product and has members from the development team, customer service, and other users who discuss various aspects of the device. To subscribe to the list, send a blank email to [plus-subscribe@tech.aph.org](mailto:plus-subscribe@tech.aph.org).

## Orientation

Place the Braille Plus 18 on a surface in front of you with the keys facing up. Orient the device so the wider front edge with the slots for the SD card and SIM card is closest to you.



## The Left Edge

The left edge contains the Power button, a Reset button, and two USB connection slots.



## USB On-The-Go and Charging

The smaller USB port is located toward the back of the device on the left edge. On-The-Go means the port works both as a client and as a host.

Use this port to charge the device or to connect it to your computer for transferring files.

## USB Host Port

The USB connector closest to the front edge is a full sized USB host connector. Thumb drives and other USB devices connect to this slot.

## Power Button

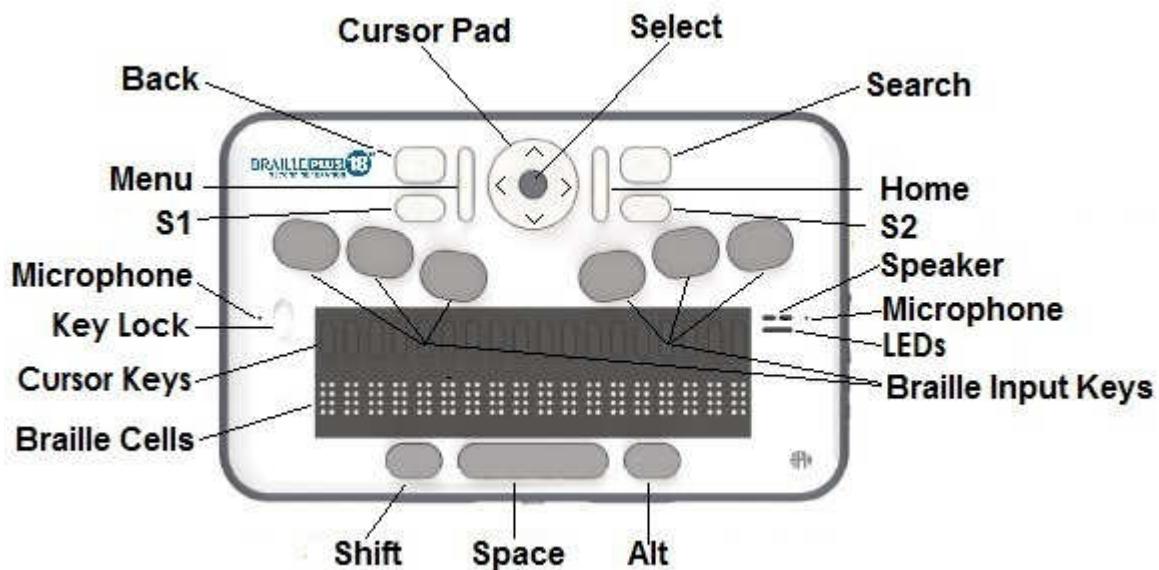
The Power button is on the left side about an inch from the front. It is recessed to help prevent accidental usage. This button turns the device on and off, puts it into sleep mode, and wakes it from sleep.

## Reset

The Reset button is located in front of the Power button. It is a small hole in which you must insert a paper clip or other small pointed device. Use this button only as a last resort if your device does not respond to other forms of input.

## The Top Face

The top face contains the braille cells and most of the keys and buttons.



## Space, Shift, and Alt

On the face, the Space Bar flanked by Shift and Alt are closest to you. The Space is the widest key. To its left is Shift, and to the right of Space is Alt. The Shift and Alt also serve as dots 7 and 8 when typing with 8-dot braille.

## **Braille Cells**

Just behind the Space Bar, moving toward the back, is a line of 18 braille cells. Each braille cell is an 8-dot cell. Above each cell is a cursor routing bar. As you use the device, braille appears on these cells. You may use the cursor routing keys to click on buttons or to move the cursor to the position of the routing button in an editing environment.

## **Key Lock**

The Key Lock slide switch is left of the braille cells. Slide it toward the back of the device to lock the keys. Slide it to the front to unlock them.

## **LEDS for Charge and Power**

To the right of the braille cells, there are two light-emitting diodes (LEDs). There is a green LED for power, and a red LED for charging status.

## **Braille Input Keys**

Above the cursor routing keys, toward the back of the device, the six traditional braille input keys are arranged in an ergonomic configuration. Use these keys to type text or hold down the Space Bar with dot combinations to perform special functions. In 8-dot braille, use the thumbs to press dot 7 (the Shift key) or dot 8 (the Alt key).

## **Microphone and Speaker**

The microphones are located on the left and right side of the face.

The speaker, which can be used for phone calls, is located on the right side of the face.

While the unit is designed to use Bluetooth headsets or as a speakerphone when making or receiving phone calls, it is also possible, although a bit clumsy, to hold the device to your ear like a phone.

## **Cursor Pad and Select**

Just above the braille input keys, between dots 1 and 4, there is the cursor pad with four arrow keys and a Select key in the middle. Press the arrows to move through documents or menus, and press Select to make a choice.

## **Menu and Home**

To the left and right of the arrow keys are two long vertical bars. The bar on the left side is the Menu key, and the bar on the right is the Home key. The Menu key opens a menu for the app you are currently running. The Home key takes you back to the Home screen. Hold Home to retrieve a list of recently used apps.

Pressing Space+H on the braille keyboard activates the Home key.

Pressing Space+M activates the Menu key.

## **Back and S1**

To the left of Menu are two buttons, one above the other. The top key is Back, and the bottom key is S1. The Back key backs out of a program or activity, and the S1 key dials a phone number.

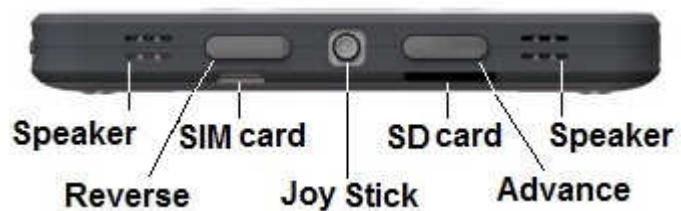
Pressing Space+Z also activates the Back key.

## **Search and S2**

To the right of Home are also two buttons. The top key is Search, and the bottom key is S2. The Search key lets you search either in the current application or throughout the system and even the Web. The S2 key lets you adjust the voice parameters or activate the Read All function.

## **The Front Edge**

The front edge contains speakers, controls for the braille display, and slots for a standard Secure Digital (SD) Card and a Subscriber Identity Module (SIM) card for GSM cellular networks such as AT&T or T-Mobile. The SIM card slot is not used with some carriers such as Verizon.



## **SIM Card**

The SIM card slot is located on the front edge very close to the bottom and slightly left of center. Insert a SIM card into the slot by positioning the card with its cutout corner to the right side and so that the side with the cutout goes into the slot first. Push the card in until you feel a slight spring resistance, and then push a little farther until the mechanism grasps the card. To remove the card, push in until it clicks and pops out a little. Grasp the card and pull. Do not force any of these operations. If you insert the SIM card while the device is running, you must restart it for the system to use the cellular network.

## **SD Card**

The SD card slot is located on the front edge very close to the bottom and slightly right of center. Insert an SD card into this slot by holding the card with the connector fingers facing down and so they go into the slot first. Push against the slight spring tension until the card clicks into place. Do not force the card into the slot. To remove the card, press in until it clicks and pops out a little. Grasp the card and pull to remove it from the slot.

## **Reverse and Advance Braille**

There are three buttons on the front edge. The buttons on the left and right side reverse or advance the braille display, respectively.

### **Braille Joy Stick**

The center button on the front edge is a joy stick with four directions and a center Select. Use this to move the braille display in the direction of the key you press.

### **Speakers**

The two stereo speakers are located at the left and right side of the front edge.

### **The Right Side**

The right side contains the volume key, buttons for camera and recording, and jacks for earphone/video and microphone.



### **Volume**

The volume key is a long bar. Press the side of the bar closest to the front edge to turn down the volume. Press the edge toward the back to turn up the volume. While on a call, this button controls the call volume.

If the device is speaking, the volume key changes the volume of the speech. If it is not speaking, the volume key controls the other audio on the system.

### **Camera**

The Camera button is located on the left side closest to the front of the device. It opens the Look app where you may either snap a picture or snap a picture and recognize text.

### **Record**

The Record button is behind the Camera button. It works in two ways--press it to open the Recorder app. Press it again to begin recording.

In addition to pressing the Record button to open the Recorder app, you may press and hold the Record button to start a recording from anywhere.

## **Earphone/Video Jack**

The earphone/video jack is the jack closest to the back edge. Use standard 8 MM (1/8-inch) earphones to connect earbuds or earphones. Use the included video cable to connect to a television display.

## **Microphone Jack**

Use the microphone/aux-in jack to connect external stereo microphones or a stereo aux cable for recording directly from another device.

## **Bottom**

### **Camera Lens and Flash**

The bottom side contains the camera lens and flash.

## **First Time Use**

1. Remove all items from the shipping carton.
2. If you have a SIM card for use with a cellular network, insert it into the SIM card slot.
3. Plug the large end of the USB cable into the AC adapter.
4. Plug the AC adapter into a wall socket.
5. Plug the small end of the USB cable into the USB client port. The red "Charge" light blinks to inform you that the device is charging. It turns solid when fully charged.
6. Press the Power button. The green "Power" LED blinks, and the unit vibrates briefly to let you know it is starting. After about a minute, it speaks and shows the Home screen on the braille display. The green Power light also turns solid.
7. After use, press the Power button to put the device to sleep, or follow the complete power down procedure to turn it off in preparation for long-term storage.

This relatively long startup process applies only to powering on the device from complete power down. Normally, instead of complete power down, you put the unit to sleep when not in use. To put it to sleep, briefly press the Power button. It responds with a confirmation sound and optional vibration, and then it goes into sleep mode. It also goes into sleep mode automatically when you do not press any keys for a predetermined amount of time, 5 minutes by default. When in sleep mode, the device still receives calls, texts, and notifications, and apps such as the clock and alarm continue to function in a very low power state.

To wake up the device, press Power. It announces the time and immediately resumes where you left it when you put it to sleep. If it does not seem to wake, ensure the keys are not locked by sliding the Key Lock switch toward the front of the device.

To completely power down, hold down the Power button. Android responds with a menu of three choices:

1. Silent Mode
2. Airplane Mode
3. Power Off

Press the Down Arrow to highlight Power Off, and then press Select. Another alert explains that you are about to power off. Press Select to finish the power down process.

## Reset

In the unlikely event that the software ever hangs, and your device does not respond, press the Reset button. This action powers down the device even if it is hung. Do not use this method to power down unless it is necessary, because it stops all apps without giving them a chance to respond with important activities, e.g., saving their preferences, writing files, or some other function that constitutes a smooth shutdown process.

## Battery Usage and Charging

How long your device can run on a charge depends on how you use it. Leaving on the Bluetooth radio and Wi-Fi with heavy browsing or talking on the phone takes more energy than just reading books or email.

It should be possible to get a full day's work from the unit for the more simple tasks, but if you use the browser heavily or talk for hours at a time on the phone, you may wish to keep the charger handy so you can plug it in during the day.

The battery charges fully in about 4 hours if the unit is idle or in sleep mode. If, on the other hand, you use it while charging or if the battery is completely depleted, the time to obtain a full charge can be longer. Expect five to six hours under these conditions.

To charge the battery, plug the USB cable into the USB socket on the AC adapter on one end and into the USB On-The-Go socket of the device on the other end. It is important to use the AC adapter that came with the Braille Plus or another adapter with equivalent attributes.

Plug the AC adapter into an electrical outlet. If the unit is on, it announces, "Charging." If it is off, it comes on. When the unit is charging, it is on. You cannot turn it off during charge. You may, however, put it to sleep by pressing the Power button.

If the battery gets too low, Android warns you that you have 15% or less. To see what has been using the battery, see About Phone in the Settings application discussed in the Settings chapter.

Note that Lithium batteries such as the one used in this device do not suffer from the "memory effect" that plagued Nickel Cadmium batteries found in earlier generations of battery technology, so it is perfectly acceptable and safe to keep the device plugged in as much as is feasible.

To check the battery, press the Speech and Braille key, then press the Down Arrow until reaching the Battery Status option.

## The Home Screen

The Home screen is where you launch applications and check notifications. It is what shows up when you first turn on the device or when you press the Home key.

The Home screen contains shortcuts to commonly used applications and documents. You may add

additional items to the Home screen, or you may remove existing applications. For a list of all the applications on your device, see the All Applications folder on the Home screen.

To select an option on the Home screen, use the arrow keys to move from item to item. As you move, the Home screen announces and shows on the braille display the item that is highlighted. To start using that application, press the Select key or Space+dots 4-6.

To close an app and return to the Home screen, press the Back key or press Space+Z. You may also press the Home key or Space+H to leave the app running so you may continue to use it later.

Some of the options on the Home screen are applications, and some are folders that contain several applications, documents, or other files. If the item is a folder, Home indicates it with the label, "folder" following its name.

To close a folder, press Back.

## Menus

Many apps, including Home, feature a menu of activities associated with the app. Press the Menu key to open this menu. Note that if the app does not have a menu, pressing Menu does nothing.

Press Menu while in the Home screen to list activities that relate to the Home screen and to the system.

The Home menu includes Settings, Notifications, and Search.

Note that most top level menus are horizontally oriented, so use the Left Arrow and Right Arrow to find the appropriate menu option. Most secondary menus are vertically oriented, so use the Up Arrow and Down Arrow to select the appropriate option.

## Speech, Braille, and Status: S2

The S2 key serves as the gateway to controlling other braille and speech settings and obtaining system information. It works in two ways--press or hold. Pressing the S2 key makes the currently running app speak as much as it can. If in the Word Processor, pressing the S2 key makes it start reading the current document. If on a Web page, it reads the Web page from the current position to the end of the page. If on a status item, it repeats the item. Once it starts reading, stop it by pressing the S2 key again or any key that does not affect the current document. The Shift or Alt keys are usually good choices for this.

To open the Braille and Speech Preferences, hold the S2 key. The Braille and Speech Settings screen appears. It contains several items as follows:

The Time option shows the current date and time. To set the time, press Select.

The Battery option shows the state of the battery. It shows the percentage of battery life left and indicates whether or not the device is charging.

The Sleep Timer sets the amount of time the device continues to read before sleeping.

Speech Rate sets how fast speech talks.

Punctuation Level controls how much punctuation is spoken.

Key Echo adjusts how much speech feedback you get with each key or word typed.

Braille Table adjusts the translation table for braille.

## Search and the Home Screen

Android includes a powerful search function that, at first, may take getting familiar with but proves incredibly useful. To activate a search, just type a few letters of your search query. Android responds by showing a list of search results. So, if you were looking for a contact named Bob Jones, you could simply type "jo" or "bob" at the Home screen. The Search Results dialog shows apps, contacts, and web searches that match what you typed. Use Down Arrow to move through the list, and press Select on the appropriate result.

You may control what search results get returned by following these steps:

1. Press Home to go to the Home screen.
2. Press Menu to open Home's menu.
3. Select Search from the menu.
4. Press Menu again to open the Search menu.
5. Select Search Settings
6. Select Searchable Items
7. Check the kinds of results you want returned when you search

/

## Braille Key Commands

In addition to using the dedicated keys for functions such as opening a menu or navigating through a document, you may also use braille keys. Some of these braille key commands also access functions to which there is no other keyboard equivalent. Space+t, for example, announces the time and date, but there is no dedicated key for this purpose.

./tr>	
Home	Space+H
Menu	Space+M
Back	Space+Z
Select	Space+E
Turn Speech On or Off	Space+S
Braille Translation Table	Space+G
Announce Time and Date	Space+t
Announce Status	Space+Dots 3 4
Video/Audio	Space+V
Notifications	Space+N
S1	Space+dots 2 6
S2	Space+dots 3 5

Enter	Space+dots 4 6
Backspace	Space+B
Line up	Space+dot 1
Down Line	Space+dot 4
Next Word	Space+dot 5
Previous Word	Space+dot 2
Next Letter	Space+dot 6
Previous Letter	Space+dot 3
Top of File or List	Space+dots 1 2 3
End of File or List	Space+dots 4 5 6
Open Help	Space+dots 1 3 4 5 6

Also note that pressing the Shift key modifies the key press to activate a hold rather than a press of the key.

## **Silence Speech: Shift**

Pressing Shift by itself silences speech.

## **Touch Object: Alt**

While it is usually sufficient to press Select to pick an item, there are some programs, written by third party venders, that do not work this way. It is for such programs that Braille Plus supports the Touch Object command. It works by simulating a touch of the finger on a touch screen at the current item's position.

One program that requires this technique is the [Amazon App Store which you may download here](#)

## **Connect to Wi-Fi Network**

Connecting to the Internet greatly enhances the utility of your device, and while you may connect using the cell data, WiFi hotspots are less expensive to use, and they are much faster than a cell data connection.

To connect to a Wi-Fi network, follow these steps:

1. Press Home to get to the Home screen.
2. Press Menu to open the Home menu.
3. Select Settings to open the Settings Application.
4. Select Wireless and Network Settings.
5. Check Wi-Fi if it is not already checked. (This turns on the Wi-Fi radio.)
6. Select Wi-Fi Settings. The networking application responds by showing a list of all the wireless networks in the area and any networks you previously configured.  
Each item in the list of networks contains the name of the network, its security type (if not secured,) and its status. The status is either Connected, Connecting, or Remembered.  
If a network is secured, you must know the password for the network before connecting to it.

7. To connect to one of the networks in the list, move to it, and then press Select. Android responds with the Network Connection screen.
8. If a password is required, enter it here.
9. Press the Down Arrow until you get to the Connect button.
10. Press Select to activate the Connect button.

Once connected to a wireless network, you do not need to perform these steps again to use that wireless network. As long as the Wi-Fi radio is on, the networking software automatically connects to the network anytime the device comes in range of the network.

## Video Output

In its normal use, Braille Plus has no screen. You may, however, use a standard TV with aux-in jacks to connect the included video cable to a TV to provide video output.

To use a TV as a monitor, follow these steps:

1. Press Chord+V to turn on Video mode. The device responds, "Video On."
2. Connect the 8 MM (small) end of the video cable to the earphone/video connector jack on the Braille Plus.
3. Connect the three color-coded cables to the input jacks on the TV. (One is for video, and two are for audio.)
4. Turn on the TV.
5. Select Aux-in as the input type on the TV. In most portable TVs, this is a separate button, but in some more expensive TV sets, it could be contained within the TV's menu system. Consult the TV's documentation for the exact procedure if it is not clear.
6. Turn up the volume on the TV so you may hear the output from the Braille Plus.

## Key Concepts

Braille Plus manages many activities including background synchronization, networking, receiving texts and calls, and more. The methods you use to access these features helps make your use of the device more effective.

## Editing

Android contains many places where it expects you to type some text. Braille Plus indicates these places by announcing, "Edit." In most cases, you may use contracted braille, but there are some exceptions. Certain kinds of text cannot accurately be represented in contracted braille. Think, for example of an email address where a period appears in the middle of the word. Braille rules do not take these conditions into consideration. It is necessary, therefore, to use computer braille in places where input may be confusing. In those places where computer braille is required, Braille Plus announces "Computer Braille" to let you know you must type in computer braille.

## Notifications: Space+N

The Android system provides a mechanism for applications to post notifications that may be important to the user. Such notifications may include missed calls, emails, text messages, calendar appointments,

and update notifications. These events occur from both external sources such as an incoming call and internally running applications such as the calendar or alarm.

When an event occurs that requires a notification, the app plays the notification ringtone, and the speech announces the notification. Your work is not interrupted. Instead, the notification gets put into a list of notifications where you may review them.

These notifications are presented as a list of items with the first item being Clear All. Selecting Clear All removes all the notifications from the list.

On a normal Android phone with a touch screen, you slide your finger from the top edge of the screen down to open the notification area. There are also ways to get to the notifications through the menus or various apps.

On the Braille Plus, use the Space+N hot key to open notifications from anywhere, or use the menu system.

To get to the list of notifications through the menus, follow these steps:

1. Press Home to get to the Home screen.
2. Press Menu to open the Home screen menu.
3. Select Notifications from the Home screen menu. Home screen responds by opening the notification list.

To find and read all the notifications, press the Up Arrow or Down Arrow.

To select a notification, press Select. Pressing Select starts the app that posted the notification and lets you perform some action on it. If, for example, an appointment is approaching, the Calendar app posts the notification. It may say, "Piano lesson in 10 minutes." When you press Select, Calendar starts and displays details about the appointment and buttons to take action on it. Use the Up Arrow and Down Arrow to move to the different fields and controls on the appointment.

The buttons include Dismiss and Snooze. To be reminded again, press the Snooze button. To dismiss the appointment and remove it from the notification list, press Dismiss.

If you miss a call, the Phone app posts a notification such as, "Missed call from Mr. Anderson." To return the call, press Select.

If you miss more than one call, the Phone app posts a notification saying how many calls you missed. To work with the notification, press Select. The Phone app starts and displays the Call Log.

Highlight the call of interest and press Select to return the call. Press and hold Select to get additional options about what you may wish to do with the call. Options offered include add the number to Contacts, return the call, and send the caller a text message.

To close the Notifications list, press the Back key.

## Context Menus

Context menus exist to help quickly get to actions relevant to the particular task you are performing. If

you are editing a document, for example, the context menu includes options to work with the text you are editing. Context menus customize their options based on both what you are doing and what state the activity is in. If, for example, you had selected some text before opening the context menu, it would also include options related to working with selected text such as copying, cutting, or pasting.

To use the context menu, press and hold the Select button.

Not every activity or control includes a context menu. If the activity does not have a context menu, nothing happens when you hold Select.

## About Networks

Braille Plus is a tool designed for connectivity, and it offers several ways to get online. You may use either Wi-Fi or the cellular network or both.

Your choice of which method to use depends on several factors.

In general, even if you use a cellular network, you will likely wish to use Wi-Fi for most Internet related activities. Wi-Fi is faster, and it is generally much less expensive. The disadvantage of Wi-Fi is that it only works close to a "hot spot." Hot spots are Internet access points provided by wireless routers, either in your home or at a commercial or governmental facility such as a coffee shop or library.

Cellular networks, on the other hand, provide access wherever the network reaches.

For the simplest operation, keep the Wi-Fi radio turned on. The system automatically uses the preferred Wi-Fi network if it is available.

### Wi-Fi

To use Wi-Fi networks, you must first connect to them. This procedure is needed only once per hot spot. In other words, if you have networks set up at home and at school, you configure them each once, then you may use them without further action. Likewise, each time you travel to a new area with Wi-Fi access, you connect to that network once, then you may use it from then on.

### Notifications

Normally, when you move into an area covered by an open Wi-Fi network, Braille Plus notifies you by posting a notification. Many people do not want to be bothered with such notifications, and these can be turned off if you do not want them.

To connect to a network in the notification list, follow these steps:

1. Open the Home screen by pressing the Home key. The unit responds by showing the Home screen.
2. Press Menu.
3. Select Notifications.
4. Press Down Arrow until you get to the notification that informs you about the open Wi-Fi network. It provides the name of the network.
5. Press Select. Braille Plus opens the Wi-Fi connection screen. This screen provides the name of the

- network, its security setting, and a Connect button.
6. Press Down Arrow until you get to the Connect button.
  7. Press Select to press the Connect button. Braille Plus responds by connecting to the network.

## **Cellular Networks**

Cellular networks are nationwide networks operated by cellular companies such as AT&T or T-Mobile. To use them, you must subscribe to the service for a monthly fee.

It is not necessary to subscribe to a cellular network to effectively use Braille Plus, but you must be subscribed to use the cellular network for phone calls, cellular data, and text messages.

### **Starting Service**

There are a few ways to initiate service with a cellular carrier. Perhaps the most straightforward method is to remove the SIM card from an existing AT&T or T-Mobile phone. Consult the directions for your phone for instructions on the removal procedure. Note that the SIM card in the iPhone IV is smaller than a normal card and will not fit.

To install the card, place it into the SIM card slot with the gold fingers up and the cutout corner on the right side so it goes into the slot first. Press in until the spring mechanism in the slot grabs the card. If you need to remove the card, press in on the card until it releases. The card ejects from the slot. Grasp the card and remove it.

If you don't already have a cell phone plan, here are some considerations about what you may wish to choose:

The hardware on this device is compatible with both Edge and 3G networks. 3G is faster, but the radio frequencies on the device are compatible only with AT&T's 3G network. In many cases, Edge will be fast enough for the times you wish to use the Internet away from a hot spot, but that depends on your usage patterns. At the time of this writing, it appears that T-Mobile has better deals, especially for "pay as you go" plans where you get a certain number of talk minutes, texts, and a specified amount of data transfer. T-Mobile offers a pay as you go plan that provides 1500 minutes or text messages and 30 MB of data. 30 MB is probably enough for a month's use, especially if you keep the cellular data radio turned off until you need it.

What complicates the process is that the carriers like to bundle their plans with a new phone. Unfortunately, they do not offer any phones with braille keyboards and displays. To get a plan from one of the carriers, you need to get a SIM card from the carrier to put into what they call an "unlocked phone"--that is, the phone is not specifically tied to a particular network.

The type of plan you select depends on how you wish to use the device. If you want to use it for phone calls and text messages only, you may use one of the more inexpensive plans. If you also want to use data, such as browsing the Internet or working with email while away from any Wi-Fi networks, you want a plan that includes data.

### **Control Cell Data**

You may turn on and off the use of cellular data.

Go to Settings / Wireless and Network Settings / Mobile Networks

The first option on the Mobile Networks screen is a checkbox called Enable Data. If this item is checked, Braille Plus uses the cellular data when Wi-Fi is not available. If Enable Data is not checked, it fails when you try to access the Internet without a Wi-Fi connection. This option provides an excellent way to minimize data use, and lets you use a cellular plan that is less expensive than those that provide what the carriers call "unlimited data." Keep in mind that even if you do not use cellular data, you may still make and receive calls and texts.

Most carriers let you check the amount of data you have already used. On T-Mobile, for instance, you may dial #web#, and your phone responds with a message outlining the amount of data used and remaining on your plan.

## Make and Receive Calls

If you have a SIM card installed, you may make and receive phone calls.

### Incoming

When you get an incoming call, the Phone app plays your preferred ringtone and announces the name or number of the incoming call.

To silence the ringer, press Volume Down.

To send the call straight to voice mail, press Volume Up. To answer the call, press the S1 key.

To end the call, press and hold S1.

If you miss the call, a notification appears in your Notifications list. To return the call, move to the notification, and then press Select. If you miss more than one call, the notification changes to show how many missed calls you have. Press Select on this notification to open the Call Log.

## Phone Application

To open the Phone application, press the Dial key or select Phone from the Home screen. Braille Plus responds by displaying the Phone application and putting focus into an edit field where you may type the number to dial. To initiate the call by typing a number, type it here, and then press Dial to start the call.

Note that the edit field requires computer braille. Recall that to type a number in computer braille, omit the number sign at the beginning, and drop each letter to the lower half of the cell. The number one, for example, is represented in computer braille by dot two rather than dot 1.

To type a star (\*) or pound (#) use dots 1 6 for star and dots 3 4 5 6 for pound.

The edit field is part of one of four tabs or sections of the Phone application. In addition to Phone, the tabs include Call Log, Contacts, and Favorites.

To return a call, press Up Arrow to move to the Tabs at the top of the screen.

Phone responds, "Phone" to let you know you are on the Phone tab.

Press Right Arrow to get to the Call Log.

Use the Down Arrow key to move through the list of incoming and outgoing calls.

Note: It is not currently possible to distinguish between incoming and outgoing calls in the call log.

When you find the entry to call, press Select. Phone opens a menu with three choices: Call, Text, and View Contact. Press Select on the appropriate action.

## Call a Contact

To call a contact, move to the Contacts tab of the Phone app or select Contacts from the Home screen.

The Contacts app shows a list of all your contacts in alphabetical order.

Move close to a contact in the list or directly to a contact by typing the first letter or two of the contact's name.

Use the arrow keys to move from item to item in the list of contacts.

To call the contact, press Select. The Contacts app responds with a menu of possible actions depending on how many numbers are stored for the contact. If there is only one number, there are two choices. The first choice is to add this contact as a favorite. Checking this box puts a copy of this contact in the Favorites list.

The next choice is to dial this number. Press Select to call the contact.

If there is more than one number, the item might read, "Call Home" or "Call Mobile" depending on which numbers the contact contains.

In addition to pressing Select on a contact's name, you may press and hold Select. This shows a menu of other options including Call Contact, Text Contact, Edit Contact, Delete Contact, and View Contact.

## Favorites

The fourth tab in the Phone app is the Favorites tab. It shows a list of contacts you have marked as favorites. This list can be much more manageable than the complete contact list, especially if you have a lot of contacts.

To add a contact to Favorites, follow these steps:

1. View the contact. From the Call log, hold the Select button and pick View Contact from the context menu.
2. Click the Favorite checkbox at the top of the list.
3. Press Back to close the View Contact screen.

## **Ringer Volume and Vibrate**

Press the Volume keys to raise or lower the ringer volume. As you lower the volume, a beep sounds to provide an indication of the volume level. When you reach the second to the lowest volume setting, the device vibrates. This vibration lets you know the ringer is silenced and that the device vibrates when you receive an incoming call.

## **Ringtones**

To change the ringtone, follow these steps:

1. Go to Settings / Sounds / Phone Ringtone. The Settings app responds by playing the current ringtone and putting you on the current ringtone in the list of possible tones.
2. Use Up Arrow or Down Arrow to move through the choices. As you move, the system plays the current selection to provide a sample of the sound.
3. When you find the desired ringtone, press Select.
4. Press Down Arrow until you get to the OK button.
5. Press Select to verify your choice.

## **Read and Write Documents with Word Processor**

Word Processor lets you type documents or read documents that others have created. It supports a variety of file types, and it can translate from text to contracted braille.

### **Supported File Types**

Word Processor supports the following types of files:

- txt Text
- brf Formatted Braille
- brl Unformatted Braille
- rtf Rich Text Format
- doc Microsoft Word

### **Start Word Processor**

To open the Word Processor, select it from the Home screen in the normal way.

To exit the Word Processor, press the Back key. If you have not modified the current document, Word Processor immediately exits back to the Home screen. If any document you have opened has changed, Word Processor asks what you would like to do with the modified file before it either saves or discards any changes.

## **Typing**

Word Processor starts with a blank screen on which you type text. The program creates a new document that is either braille or text depending on the Grade Setting accessed with Evolve, G. If you are using the Computer Braille setting, the program creates a text based document. If the translation level is set to Grade 1 or Grade 2, the program creates a braille document.

The cursor is represented by raising dots 7 and 8, so when you start a new document, you see the first cell of the display showing the cursor. As you type, the cursor moves to show the next position where the letter you type gets inserted into the document. You may move the cursor directly to any character on the display by pressing the cursor routing button above the letter of interest. The normal navigation commands also move the cursor.

As you type, use either the Select button or Space+dots 4-6 on the braille keyboard to start a new line. This key combination types a Return into your document. Use two Returns for a new paragraph.

## **Navigation**

To move by lines, use Up Arrow or Down Arrow.

To move by characters, use Left Arrow or Right Arrow.

To move by words, use Control+Left Arrow or Control+Right Arrow.

To move by paragraphs, use Control+Up Arrow or Control+Down Arrow.

For other movement options, press and hold Select until the context menu appears, then select Movement from the context menu. See more about the context menu in the [Context Menu](#) section of this documentation.

## **Open File: Alt+O**

To open a file, press Menu / File / Open or press Alt+O. Word Processor responds by showing the File Manager to let you select the file to open. Use Up Arrow and Down Arrow to move through the list, and then press Select to open the highlighted file.

## **Save File: Alt+S**

To save the current document, select Save from the File menu or press Alt+S. Word Processor prompts you to name the file if you have not previously saved the document. If you have saved once or if you are editing a file that you opened from the Open menu, Word Processor immediately saves the file without asking for a name.

## **Save Document As a Different Name**

To save the current document under a new file name, select Save As from the File menu. Word Processor responds by showing the File Explorer screen. Use File Explorer to pick the folder where you wish to save the file.

Press Right Arrow to use the edit control where you may type the file's name.

## Create a New Document: Alt+N

Word Processor lets you edit several documents at once. You may create a new file and switch between the two files.

To create a new document, select New from the File menu or press Alt+N. Word Processor responds by clearing the screen and creating a new document. The original document is still available.

## Switching Among Open Documents

When editing multiple documents, you may switch among any of the open documents. Each time you do, Word Processor returns you to the place in the document to which you switch in the same place your cursor was located when you switched away from the document.

To switch to another open document, select Document from the menu. Word Processor displays a list of all open documents. Use Up Arrow or Down Arrow to find the document of interest, and then press Select to continue editing that document.

## Find: Alt+F

To find text, open the Find option in the menu. Word Processor shows a screen where you type the text to find. Type the text and press Select to start the search.

## Select Text

Selecting text prepares Word Processor to do something with the text you have selected. You may, for instance, copy, cut, or move selected text.

There are two ways to select text. If you hold down the Alt key while using one of the arrow keys, the Word Processor and other editing areas select the text as the cursor moves. The other way to select text uses the program's context menu as described below.

## The Context Menu

The text selection commands all reside on Word Processor's context menu. To open the context menu, press and hold the Select key.

To select all text, pick Select All from the context menu or press Alt+A.

There are two ways to select portions of the text in a document. The first way is to hold down the Shift key while moving with any of the navigation commands. This is a quick and convenient method to select small portions of text; however, when it comes to selecting larger portions, it is often more useful to mark the beginning of the portion to select, move to the end, and then select the text between the beginning and the current position.

To select a portion of the document by marking the beginning, follow these steps:

1. Move the cursor to the beginning of the text to select.

2. Open the context menu.
3. Pick Select Text.
4. Use the arrow keys to move to the end of the text to select. Use any of the normal cursor movement commands to move the cursor to its destination. As you move, the braille display raises dots 7 and 8 and the speech announces the letter, word, or line you select along with the word, "selected."
5. Press Select to open the context menu again. As context menus are designed, additional options now appear, because the context of your activity is selecting text--the menu provides activities appropriate to working with selected text. These activities include, Stop Selecting Text, Cut, Copy, and Paste.

Once you select text, you may cut, copy, or paste it onto the "clipboard." The clipboard is a temporary holding area that preserves its contents, making it available even to other applications. You may, for example, paste selected text into the Browser or Email.

## **Copy Text: Alt+C**

To copy selected text to the clipboard, choose Copy from the context menu or press Alt+C. Word Processor and other apps that support text selection copies the text to the clipboard. The original text remains intact, but now there is a copy of it on the clipboard as well.

## **Cut Text: Alt+X**

To remove the text from the document and put it into the clipboard, pick Cut from the context menu or press Alt+X. When you cut selected text, Word Processor removes that text from the document. It also preserves the text in its clipboard. You may ignore the clipboard if you no longer care about the text, or you may paste that text into another document or even into another app.

## **Paste Text: Alt+V**

Once selected text is on the clipboard, you have the option to paste it into other places. To paste the clipboard's contents, move to the document or application and position the cursor at the point where you want it to go. Next, select Paste from the context menu or press Alt+V. The app inserts the text at the cursor position.

## **Convert Text to Braille**

To convert a document to braille, pick Braille from the menu. Word Processor translates the text with the translation you specify in the Speech and Braille Settings dialog.

## **Convert Braille to Text**

## **Word Processor To Do**

Spell Check, Marts, formatting, printing.

# Scan Paper Documents

Even in today's electronic world, it is easy to find daily examples of inaccessible paper documents. The camera and flash combined with the Look program allows you to snap a shot of a page, recognize the typed text (no handwriting), and convert it to text and braille.

To scan a page, do the following:

1. Position the document on a flat surface in a well-lighted area.
2. Start the Look app by selecting it from the Home screen.
3. Hold the camera about 10-12 inches from the page.
4. Hold the camera steady. A stand is a tremendous advantage to getting better results from the scanning process.
5. Try to hold the camera so that it can see the entire page.
6. Press Select to take the shot. Look responds by clicking to let you know it took the picture. If it does not click or take the picture, check ambient lighting conditions.  
Once it gets a picture, Look then announces, "Recognizing Text" and converts the image into text. When finished recognizing, Look announces, "Done" and opens an editing control from which you read or edit the text.  
Use normal editing navigation commands with the arrow keys to move through the text as desired.
7. If the scan comes out inaccurately, press Back to discard the attempt and try again.
8. To save the page, press Select. Look saves the text and prepares for another picture. The program saves to a file called ocr.txt. If the file exists, Look adds to the end of the existing file.
9. Repeat the process to scan additional pages.

## Scanning Tips

Ambient light is important. Always make sure there is a light on in the room before you take the shot.

Hold the camera steady or use a stand to stabilize the camera.

Align the camera so that it can see the entire page. This takes practice.

Look automatically converts multiple columns into one continuous flow of text.

## Look To Do

Add settings to respect columns.

# Library

The Library app plays Digital Talking Books from the National Library Service (NLS), Learning Ally (formerly RFBD), and bookshare.org.

To put books onto the device, use one of the following methods:

Copy books from your computer to the library/books folder on the internal drive.

Press Menu and select Bookshare from the menu that appears.

When Library starts, it shows a list of initial options that include the following:

- Recent Titles
- Authors
- Titles

To resume reading a previously opened title, pick Recent Titles. Library shows the most recent title at the top of the list followed by other recent titles. Use the arrows to highlight the title of interest, and then press Select to open it and resume where you left off.

For a list of authors, pick Authors.

For a list of all titles, pick Titles.

When you pick one of these options, Library shows a list. If you selected authors, it shows a list of authors. Otherwise, it shows a list of titles. To get to the Titles list from the Authors list, select an Author--Library shows all the titles written by that author.

To start reading, select one of the titles in the list. Library starts the Reader app with the book and starts reading. To pause reading, press Select. To resume, press Select again.

To stop reading and return to the Title list, press the Back key.

While reading, use the following commands to navigate:

To move to the previous or next heading, use Space+dots 1-2-6 and Space+dots 3-4-5. These commands default to moving to the heading with the least movement, so if a title had headings at levels one, two, and three, the heading navigation commands move by heading three levels. Note that when moving by level three, heading levels one and two are included.

To change the heading level by which to navigate, press Space+dots 2-3-5-6. Reader responds by announcing the current level movement level, three in this example. Pressing the change level command again moves to level two headings, and yet another press changes the movement to level one. Continue pressing the Change Level command to return to level three heading movement. Once you set the heading level, the previous and next heading commands move by the selected level.

For titles that are text based, use the normal text editing commands to navigate.

For titles that are audio based, use these commands:

To move back or forward by 10 seconds, use the next or previous paragraph command.

To move 10 minutes or, if the Daisy title has pages marked, by pages, use the previous and next page commands. Previous page is Space+dots 1-2-3-4-5. Next page is Space+dots 1-2-4-5-6.

To increase or decrease the playback rate of audio, use Up Arrow or Down Arrow.

# Location and Navigation

Determining one's place on earth has always been of extreme interest. When hunters and gatherers ventured out, they wanted to be able to return home. The earliest methods of position awareness used line of sight to recognize landmarks in the environment. Later, within the last few millennia, travelers began to use the position of the stars in the sky to help determine a rough position. Recently, within the last few hundred years, specialized instruments aided in the calculations, but it often took several days and an intimate knowledge of the instruments and techniques to get an accurate determination.

With the introduction of the global positioning system (GPS) in the last few decades, the power to accurately determine one's place on earth with no training and in very little time is available to anyone. When combined with customizable and current information about points of interest, the tools provide a compelling picture of the vicinity and its characteristics.

The tools this application provides make independent travel for blind pedestrians and passengers efficient, informative, and fun. Knowledge of one's surroundings empowers the individual to explore, discover, and enjoy one's own neighborhood and beyond with poise and confidence.

The information that Nearby Explorer provides helps the blind traveler to stay oriented. It shows surrounding and approaching streets, businesses, institutions, and public facilities and offers a continually updating distance and direction to the nearest or to another selected point.

It provides a sense of surrounding streets and their relationship to the current position.

It enables the blind passenger in a vehicle to aid the driver with directions and suggestions.

The following list shows some of the possibilities Nearby Explorer offers:

1. Increases awareness of exact position by announcing the street and address number of the current position and keeping it updated with movement. For even finer detail, latitude and longitude announcements pinpoint positions to within a few yards. All items to announce are optional.
2. Increases the sense of distance by updating distances to selected places as the user walks.
3. Improves spatial awareness by looking ahead and announcing the distance and direction of upcoming streets.
4. Improves knowledge of the surroundings by showing the distance, direction, name, and address of the nearest place either in the built-in maps or in places the user sets.
5. Increases flexibility by discovering the surrounding streets with the compass that engages when the user orients the device vertically and announces the next street and its distance and direction where the compass is pointed.
6. Guides the user to a selected destination
7. Shows directions to a selected destination.
8. Searches for places, streets, and addresses and shows them immediately.
9. Explores the map by intersections, all streets, or all streets from 1 or 10 miles away.
10. Shows heading and speed.
11. Watches a selected place and provides the distance and direction.
12. Accepts direct input of latitude and longitude points, names the point, and saves it for later use in activities such as geocaching.
13. Intelligently announces latitude and longitude of the current position.
14. Reviews traveled routes.

## Limitations

While it is tempting to assume that location based software, such as Nearby Explorer, solves all the navigation and orientation barriers faced by blind travelers, there are a number of conditions that must be considered. To better appreciate these benefits and limitations, it is useful to obtain a basic understanding of how the technology works.

There are several components in play.

### GPS

First, the device uses a global positioning system (GPS) receiver to read signals sent from an array of satellites designed for this purpose. The receiver uses these signals to pinpoint a position on earth and assign lateral and longitudinal coordinates to that position. In general, a good consumer-grade receiver can render accuracy to within a few yards of a person's actual position under optimal conditions. More realistically, one can expect to get accuracy, most of the time, good enough to determine the side of the street on which he travels.

Some of the conditions that adversely affect accuracy reading satellite signals include the following:

1. Low cloud cover
2. Unusual atmospheric conditions
3. Large buildings that prevent a clear view of the sky
4. Inside buildings or underground where there is no clear view of the sky

### Maps

The latitude and longitude coordinates do not mean much to most users, so they must be combined with maps that contain more familiar landmarks such as streets and places. Nearby Explorer comes with maps that cover the United States and Canada.

There are several factors about the map data that are useful to understand to make the most effective use of the software.

The map data all resides on your device, so it is not necessary to have a Wi-Fi or cell data connection to use the software. If you do have a network connection, Nearby Explorer uses it to request information about places with the Google Places service. This information tends to be much more dynamic than that on the maps on the device. Plus, you can label places and benefit from others' labels.

The map data may be inaccurate. There are millions of points of interest and other locations in the data. It is possible there are errors introduced during the collection process.

Points of interest are marked at a point in the road where the road passes the point, not at the front door of the establishment.

Street addresses are approximate. They are calculated using a relative distance from the beginning to the end of the block. You may notice, therefore, that an address is consistently off by a house number or two. This is normal and cannot be corrected. While the house number may not always be exact, it stays constant, so once you find that Explorer reports an address at a certain point in the block, it consistently reports that same address at the same point.

The compressed map data does not provide addresses to places. The places addresses are approximated, just like the street numbers.

Changing conditions are not reflected in the maps. It is not unusual to see restaurants that no longer exist and not see new establishments. The maps reflect the conditions at the time of the data collection. The maps are updated periodically, so these conditions can be eventually corrected. Other conditions may be more immediate. Road construction, traffic, and weather all represent conditions that cannot be reflected in the data nor detected by the satellite signal.

Places and Favorites do not take altitude as part of their location.

Pay attention to the environment. Take Nearby Explorer's information as suggestions not absolute facts. The present conditions and immediate environment must always take precedence over Explorer's suggestions.

There is a TV commercial where the driver of an automobile crashes into a wall after his GPS says, "Turn Right" only to be followed by "in one hundred yards." While the commercial might seem comical, paying attention to your environment is serious.

## Requirements

Nearby Explorer requires the GPS chip to be turned on. Turn the GPS chip off only if you never or rarely use any GPS services. When not in use, its power consumption is minimal.

To turn the chip on or off, follow these steps:

1. Press Home to get to the Home screen.
2. Press Menu to open the Home screen menu.
3. Pick Settings from the menu.
4. Pick Location and Security.
5. Check the GPS option.
6. For faster acquisition of a position, also check the Network option.

When the GPS chip is in use, such as when using Nearby Explorer, battery consumption is significantly increased. It is necessary, in fact, to plug in the device if using it on a long trip where the GPS is in use for more than several hours at a time.

It is recommended that you purchase a charger adapter that plugs into the aux power in an automobile. These chargers have a slot into which to plug the USB host end of the charging cable. If aux power is not available and you use the GPS for more than 6 hours, you may use an aux charger that contains its own batteries.

To pause the GPS power consumption, press the Back key until Nearby Explorer closes, or select one of the other main areas of the program where the GPS chip is not used. Pause, Map Search, Explore, and Favorite Places are all areas where Nearby Explorer shuts down the GPS chip.

## External GPS Receivers

Using an external GPS receiver can improve accuracy and reduce battery consumption. The

disadvantage, of course, is having to keep up with, carry, and charge another device. Often, though, it is worth it.

To use an external GPS receiver on Android devices, you must "trick" Android into using something other than the device's internal receiver. This is accomplished with the use of a program to read a receiver and put its values in a mach location for the operating system.

There are two steps to set up the use of an external receiver.

First go to

Settings / Applications / Development

and turn on the "Allow Mach Locations" checkbox.

Next, turn on Bluetooth and pair with the GPS receiver.

Go to Settings / Wireless and Networks / Bluetooth and check the Bluetooth checkbox to turn on the Bluetooth radio.

Once Bluetooth is on, pair the receiver to your device as follows:

1. Turn on the Bluetooth receiver.
2. Go to Settings / Wireless and Networks / Bluetooth / Bluetooth Settings and select Scan for Devices.
3. Use the arrows to find the name of the Bluetooth receiver.
4. Press Select to pair with the receiver. The Bluetooth Manager asks you to type a pairing code. Usually, this code is 0000 or 1234 for GPS receivers, but check your receiver's documentation for confirmation.
5. Type the pairing code and press Enter.

Once you complete this initial setup, use an app to read the GPS receiver and put its location readings in the mach locations area. One such program that comes installed on the Braille Plus is BlueGPS. If you are not using the Braille Plus, go to the Android market and search for External GPS Provider.

Setting up the app for use with your receiver depends on the app you use. In BlueGPS, let it know which receiver to use by starting the program and selecting Choose Bluetooth Device. Pick your receiver from this list of paired devices. You need to do this only once until you wish to use another receiver.

To actually start using the GPS receiver after it is set up, follow these steps:

1. Turn on the receiver.
2. Start BlueGPS or whatever other Bluetooth GPS provider software you use and select the option to start/stop using the receiver. You will select this option again to turn off the receiver.

## First Time Use

When you start Nearby Explorer the first time, it displays licensing information that you should carefully read. If you understand and agree with the terms, click the OK button to continue.

If the app discovers it has no map data, it checks to ensure there is a Wi-Fi connection and downloads the maps. You may use the app while maps download, but only limited functionality is available until the download completes.

## Starting

When you start the application, Explorer displays the nearby screen and waits for positioning information from the GPS. If this is the first time you use the GPS chip in your device since the last reset, the time to acquire a valid signal can take several minutes. The process to obtain a signal is called a "fix" as in fixing your position. This initial fix time is aided by using cell network information to obtain a general location. While the network method to fix your position is fast, it is not as accurate as the fix obtained from satellites. The Provider item in the Nearby screen shows where positioning information is obtained.

If your device does not obtain a satellite fix, there are some steps you may perform to improve the chances of acquiring a good signal.

1. Ensure the GPS chip is turned on.
2. Move to a position outside buildings where there is a clear view of the sky.
3. Hold the device away from your body or other possible signal obstructions.

Once the GPS obtains a fix, subsequent starts occur much more quickly.

The Nearby screen provides information about the current position. You use it in one of two ways:

1. Use the arrow keys to move up and down the list and note the value of each item in the list. Explorer keeps the list updated with realtime positioning information. It reads the GPS chip location information every few seconds and updates the Nearby screen whenever it changes.
2. Check the appropriate item. Once it is checked, Explorer speaks that item whenever it changes as you move without having to use the arrows to move from item to item. Once an item is checked, you can put the device to sleep and updates continue to notify you about the changing position.

The items you check depend on how you wish to use the program.

Explorer remembers the checked items, so after you close the app and run it again, your previously checked items are still checked.

While walking in an unfamiliar area, it is useful to check the street address, street name, and possibly the nearest point and the distance to the nearest point. If you are riding in a car, it may be too much to have street numbers announced, and it is almost certainly too much to have distances to points announced.

You almost always want information that changes very infrequently to be checked. Items such as the City, County, State, and Provider are all examples of items that change so infrequently that you may wish to leave them checked at all times.

It is important to keep chatter to a minimum. Since most of the information from the Nearby screen is time sensitive, it is not useful to have so much speaking that by the time you hear it, it is no longer relevant.

The available items on the Nearby screen include the following:

- City
- County
- State
- Heading
- Street Address
- Street Name
- Approaching streets
- Guidance
- Nearest point of interest
- Distance and direction to nearest POI
- Speed
- Accuracy
- Altitude
- Number of satellites
- Provider (GPS, Compass, Virtual, or Network)
- Latitude
- Longitude
- Distance and direction to a watch point

In addition to checking the items to monitor by pressing Select, you may hold Select to show a menu of options related to the Nearby screen. These options let you bookmark positions, start guidance, and perform other actions on the current position. These options are discussed shortly.

As the program starts, it attempts to obtain good satellite reception to accurately fix your position. During the acquisition process, you may notice what seems like your position changing. This is especially apparent if you check the Heading, Street Address, and Street Name boxes. As the fix becomes more accurate, the program announces the changing addresses. This process usually takes only a moment or two. If the process is bothersome, use Up Arrow or Down Arrow to silence the speech until the speech settles down and the position stabilizes.

The following sections explain each of the options in the Nearby screen.

## **Heading**

When the Heading item on the Nearby screen is checked, Explorer announces the heading as you move and it changes. This heading is derived by comparing the location of the last reading with the position of the current reading. This means that in order to get a heading from GPS, you must be moving.

The heading tells you in which direction you are moving. Nearby Explorer uses that information to determine which streets you approach. When you stop moving, the heading is undefined, and Nearby Explorer uses "None" to describe this condition.

## **Compass**

In addition to obtaining heading information from the GPS, it is possible to use the compass to obtain a heading.

To use the compass to obtain a heading, hold the device vertically, as if you were using the phone and pointing the camera to take a picture in the desired direction. Nearby Explorer responds by playing a

confirmation tone and announcing the direction as obtained from the device's compass.

In addition to the direction, the compass can also announce a list of streets that intersect a line in the direction you point. To enable this feature, check the Street checkbox on the Nearby screen.

As you point in another direction, the compass silences speech, vibrates, and announces the new information about direction and streets.

To stop using the compass for heading information, move the device so it is no longer oriented vertically. Nearby Explorer responds with another confirmation tone and again begins to obtain its heading information from the GPS.

Note: The compass works only while Explorer is the current program. This lets you use the phone or other software without having to be concerned about the device's orientation.

Note: All the other functions of Explorer remain active, even if you start another program.

The heading is expressed as one of eight possibilities as follows:

- North
- North East
- East
- South East
- South
- South West
- West
- North West

## Address and Street

The Street Number option on the Nearby screen provides the house number of the current position. As you move, the number changes to reflect the new, current position.

The Street Name option shows the current street. If this item is checked, the street's name is announced when you turn onto another street or when you enter a cross street.

When approaching a cross street, depending on the accuracy of the signal, Explorer announces the cross street's name as you enter the street. Inaccurate signals can make it announce the cross street either before or after you enter and leave the street crossing.

To constantly know about your address while walking, check both the Address and Street checkboxes. As you walk, Explorer announces the street address but not the street name because the street name is not changing. When you approach a cross street and then cross it, the app announces the name of that street and, if you have the Street Number item checked, the closest house number on that street. Often, Explorer announces an address on each side of the cross street as you cross it. One is the closest house number on the close side of the street, then as you cross, the closest house number on the far side of the street.

As you turn on to another street, Explorer announces the name of that street as soon as it realizes the fact. This usually occurs within a few seconds of the turn.

The street number and name announcements are some of the best ways to obtain the most detailed information about your location. When combined with the nearby places address, which is also approximated, you can easily determine on which side of the street you are and on which side the place lies.

Note that poor reception can return addresses located on the wrong side of the street. If this happens, avoid setting any Favorites until you obtain a better signal.

## **Parking Lots and Other "Off-Road" Locations**

If you are not near a street, Explorer appends a distance and direction to the nearest address. If, for example, you turn south into a parking lot at 100 Main St., and move away from the street, the program starts appending a message such as "29 yards north" to the street name announcement; so as you move south away from Main St., the program announces the address as "Main St. 29 yards north." This additional information about the distance and direction is useful to determine the way back to the road network in a park, parking lot, or other open area.

Occasionally, even though you are walking or in a vehicle on a street, the program may announce the street name as if you were away from the street. This usually occurs from a poor satellite signal and usually corrects itself unless atmospheric conditions are extremely poor.

## **How Addresses Work**

In many US cities, the city is divided into quadrants with a street separating the north from the south and another street separating the east from the west quadrant. A street that is west of the north/south line often contains "W" in the name to indicate that it is west of the dividing line between east and west. The addresses begin at this line and increase as they move away from it. So, if the north/south street were Main, and Maple intersects Main, the addresses west of Main would start with 100 and increase as you move west. 400 W. Maple Street is west of 300 W. Maple Street. Similarly, the addresses east of Main increase as you move east, so 200 E. Maple is east of 100 E. Maple.

Often a block starts with an address such as 100 or 200 and increases to 99 before the next block begins, so addresses on a typical block range from numbers such as 200 to 299. Of course, if a street is particularly long, the street number can be a five digit number such as 26800 to 26899.

Even-numbered addresses are on one side of the street, and odd numbers are on the other side. Usually, 200 is straight across the street from 201. In most cases, the even-numbered addresses fall on the south and west sides of a street, and the odd-numbered addresses fall on the north and east sides.

Interstates and highways indicate their prevailing direction by their route number. All the even-numbered interstates and highways generally go from east to west, and odd-numbered interstates and highways go from north to south.

Even (east/west) interstates are numbered with the smallest numbered ones to the south and increase up to 100 as you move north. Interstate 10 is the southernmost interstate. It runs from New Orleans to Los Angeles. I-20 is north of it.

North/south running interstates start with the lowest numbers at the west coast and increase in number as you move east. I-5 is on the west coast, and I-95 is on the east coast.

When a city features a "loop" that routes interstate traffic around the heart of a city, the loop name is in the 200, 400, or 600 range and derives its number from the interstate that it branches from. In Dallas, for example, the LBJ Freeway is numbered I-635 because it loops around I-35.

Interstates are marked with mile markers, one every mile. Mile markers on an interstate begin at the border of each new state. They start at the southern border and increase as you move north for odd numbered interstates. They start at the western border of the state and increase as you move east for the east/west routes.

If an interstate does not start at the state's border, the mile markers begin at the beginning of the interstate.

Normally, you would expect that the street address of a location on an interstate should be the mile marker number. Nearby Explorer currently contains a bug that returns a street number for interstates that are close to the street numbers of nearby streets.

The exits on an interstate are indicated by the mile marker. Exit 5 is always located between mile marker 5 and 6. If there are two or more exits within a mile, their designation includes both the mile marker and a suffix letter. If there were three exits at marker 5, they would be labeled 5A, 5B, and 5C.

When you see exits in the map data, they are treated like streets, but the street name is the exit number. Therefore, it is not uncommon to see streets entering and exiting the interstate with names such as 8 or 8A.

Interstates are named with I- followed by the interstate number. I-40 E refers to the eastbound lanes of interstate 40.

US highways are labeled with the prefix "US-" followed by the route number. US-67 refers to US highway route 67.

State highways are named with the state abbreviation followed by the highway number as in IN-62 for Indiana highway 62.

County roads are labeled with "County Road" or some abbreviation such as "CR" followed by the number of the road as in CR 1429.

## Approaching

If the Approaching item on Nearby Explorer's Nearby screen is checked, the program alerts you about nearby streets as you approach them.

If the street appears to be a cross street, it says the street name and "ahead." If it sees the street only to the right or left, it adds "Right Side" or "Left Side" to its announcement of the street name.

## Distance Updates

In addition to the side of the street, the announcement also estimates the distance to that intersection. As you approach the street, the distance updates to reflect your new position.

If you do not want to hear the progressive updates about the distance to the next intersection, follow

these steps:

1. Highlight the Approaching option in the Nearby screen.
2. Hold the Select key until the menu appears.
3. Uncheck the Continuous Distance Update item.

## **Nearby Places and Places Distance**

The Nearby Places item on the Nearby screen indicates the nearest place to your current location. If you check the Nearby Places Distance checkbox, Explorer also announces the distance and direction to that point and continues to update that information as you approach and then leave that point.

Places include both points of interest included in the maps and favorites you mark yourself.

### **Nearby Places Addresses**

In addition to the name of the item, Explorer can provide the address of the nearest place. The address can be a useful tool to determine which side of the street a place resides or the fact that a place resides on a different street than the one on which you are located, but it also adds lots of chattering, especially in a moving vehicle. Explorer tries to minimize the chatter by providing the address in a shorthand form. If the place is on the same street on which you are traveling, Explorer announces only the number on that street. If the place resides on another street, Explorer announces only that street name.

To set whether or not to announce the address along with the name of the place, follow these steps:

1. Press Menu to open the Nearby Explorer menu.
2. Select Settings.
3. To hear the address, check the option Include Street Address in Nearby Place. To not hear the address, make sure this is not checked.

### **A Note About Addresses**

Remember that the addresses to places are approximate. You cannot count on the reported address to be exact. The maps do not contain the actual address.

### **Adjust Nearest Place Behavior**

If you do not have a network connection, Nearby Explorer uses the points of interest in its database to identify nearby places. If you have a data connection, it uses the Google Places service instead. This service can provide places in interesting and useful ways.

The Google Places service provides as many as 20 place results and up to two political results for each search request. It can, therefore, provide different, more general or prominent results by increasing the radius of the search. Google allows a radius of up to approximately 30 miles.

By default, Nearby Explorer uses a radius of 172 yards to help identify the nearest place. This radius usually provides information about nearly any small business, government facility, or other place in relatively close proximity. If you are located where there are few businesses or institutions, or if you reduce the radius, the results of places can be reduced until the political results are all that remain. These

political results include names of streets, street intersections, neighborhoods, townships, states, and even whole continents if there are no other places nearby.

To change the radius that Nearby Explorer uses to identify the nearest place, follow these steps:

- Highlight the Nearby Distance item on the Nearby screen.
- To decrease the radius, press Left Arrow.
- To increase the radius, press Right Arrow.

Each time you change the radius, Nearby Explorer announces the new radius and asks for another set of results from Google Places. If the results of the new search are different from those of the previous search and you have the Nearby Places item on the Nearby screen checked, the app announces the new place that it considers closest based on your new radius. In addition, if you have the Nearby Distance item checked, the app announces the distance and direction to that place.

If you are traveling in a vehicle, it makes little sense to use a small radius, especially in a tightly populated area. As you travel, increase the radius based on the environment and your personal preferences.

## About Distance and Direction

If Nearby Explorer detects that the direction you are heading coincides with the direction to a nearby place, it tries to simplify the directions by using "ahead" or "behind" instead of a compass direction. So, if you were moving north along Main St. and there were a library 100 yards north, Explorer might say, "Library Branch 100 yards ahead" instead of "Library Branch 100 yards North."

## Guidance

The Guidance setting shows the next maneuver when you set a place as a destination. It may say something such as "In 30 yards north, turn left on Main St."

To set a place as a destination, follow these steps:

1. Open the Map Search or Favorites option in the program menu. Explorer responds by displaying a list of places.
2. Highlight the place of interest.
3. Press Select. Explorer responds by showing a menu of actions.
4. Pick "Set as Destination"

When using guidance, keep in mind that streets are marked at their center line; so when Nearby Explorer says, "Turn left on Maple in 30 yards," you must take into consideration the width of the street.

## Latitude and Longitude

The Latitude and Longitude items in the Nearby screen show the current values of these positions. Latitudes and longitudes are lines drawn on a map to precisely pinpoint any location on earth. Together, these values are commonly called a lat/long value.

You do not need to know about latitudes and longitudes to effectively use the software, but they can be

useful in some situations. Once you leave the road network, these values still provide positioning information.

Latitudes are equally distant horizontal lines that circle the earth with the 0 numbered "parallel" at the equator and the 90 parallel at the North and South poles. (Much of the U.S. and Canadian border lies on the N 49th latitude line.) As you move north or south from the equator, the numbers increase, and the position is expressed with N or S prefixed to the number that represents the value. Some commonly known latitudes are as follows:

1. 49 US/Canada border
2. 30 US/Mexican border at Arizona and New Mexico
3. 24 Key West
4. 25 Miami
5. 29 Houston
6. 32 Dallas
7. 38 Louisville
8. 39 Denver
9. 42 Boston
10. 44 Bangor
11. 45 Portland

Longitudes are vertical lines expressed as east or west of the prime meridian, which is located close to London at Greenwich, England. The vertical lines start with 0 at the prime and go to 180 on the opposite side of the earth. The lines all meet at the North Pole and South Pole, so as the lines get closer to the equator, the farther apart they are. As you move east or west, the numbers increase from the 0 prime. Boston's longitude is W 70. Some longitude references use a negative sign (-) rather than a W notation to denote longitudes west of the prime. This software uses the W.

Following is a list of common longitudes in the United States; all are west of the prime meridian.

1. W 70 Boston
2. W 81 Key West
3. W 85 Louisville
4. W 96 Wichita
5. W 104 Denver
6. W 110 Tucson
7. W 118 Los Angeles
8. W 122 San Francisco

The latitudes and longitudes are expressed as degrees, but they are more precisely denoted with minutes and seconds as well. This notation method is called Degree-Minute-Second (DMS).

There are a number of ways to represent latitudes and longitudes. The combination method this software uses expresses degrees and minutes separated by a colon, then followed with a period and a fraction of a minute with three digit precision. This amount of precision works out so that each change in the fractional part equates to a few yards.

If the Latitude or Longitude item is checked in the Nearby screen, Explorer minimizes the amount of speech by speaking only the parts of the number that change. So, for instance, if you were at longitude W 85:42.815 and you moved a little farther west into W 85:42.816, Explorer announces only "W 816." The W lets you know the number is a longitude, and the "816" lets you know the finer detail. As you

continue to travel westerly, the longitude eventually gets to 999 and then to W 85:43.000. At that change, Explorer announces the whole number.

Use latitude and longitude change announcements in places away from the road network where you may want finer detail than street addresses or where you want to find a point in open spaces.

## Adjust Precision of Reports

Depending on how you want to use the program, Nearby Explorer offers some flexibility about how it announces lat/long values and how it lets you move around the map using these precision settings.

By default, the program uses three digits of precision after the decimal to announce changes and permit movement on the map. Three decimal places of precision equates to a few yards movement, depending on exactly how far you are from the equator. To get notifications about finer movement, increase the precision to four digits after the decimal. This amount of precision amounts to just a few inches. Unfortunately, today's satellite receivers are not accurate enough to use that amount of precision. If you set four digits of precision, and you have the Latitude or Longitude items checked, you will likely experience constantly changing numbers and constant chatter.

To increase the amount of movement or decrease the frequency of notifications, decrease the precision.

To alter the precision of lat/long tools, follow these steps:

- Highlight either the Latitude or the Longitude item on the Nearby screen.
- Hold Select until the context menu appears.
- Pick Precision from the menu.
- Pick the desired precision.

## Explore the Map

While Nearby Explorer keeps track of your location as you move, it can also provide information about other places while you remain stationary.

The program provides several methods for map exploration, such as the following:

- Using the Go To option from the result of the Explore, Search Maps, or Favorites tools explained shortly.
- Using the movement tools provided on the Nearby screen.

When you explore the map, Nearby Explorer stops using the GPS signal to indicate your position on the map. Instead, it uses what you tell it as its location. It indicates that it is using this virtual location by using "Virtual" in the "Provider" item on the main screen.

To resume using the GPS signal as the provider of your location, select Resume from the program's main menu.

To explore the map using latitude or longitude movements, do the following:

- Check the appropriate items that you wish announced on the Nearby screen.
- Highlight either Latitude or Longitude on the Nearby screen.

- Press Left Arrow to move south on the latitude or west on the Longitude.
- Press Right Arrow to move north or east.

## **Navigation Mode**

Using the left and right arrow keys on the Latitude and Longitude items on the main screen is a quick way to make a few movements, but if you want to explore in more depth, use Navigation Mode. To turn on Navigation Mode, do the following:

- Highlight either Latitude or Longitude on the main screen.
- Hold Select until the context menu appears.
- Check the Navigation Mode option.

In Navigation Mode, the four arrow keys move as follows:

- North - Up Arrow
- East - Right Arrow
- South - Down Arrow
- West - Left Arrow

To exit Navigation Mode, press Select.

## **Speed**

The Speed item on the Nearby screen indicates the approximate speed you are moving.

## **Accuracy**

The Accuracy setting provides a number to be considered as a range. If Explorer shows, for instance, "2 Yards," the program is fairly confident that it knows your position within 2 yards. The smaller the number, the more accurate you should consider Explorer's information.

## **Satellites**

The number of satellites affects the accuracy. The more satellites, the better the accuracy. You need at least four satellites to get an accurate position. It is not unusual to get 11 or 12.

## **Provider**

The Provider option provides information about where Explorer gets its positioning information. GPS is the most accurate, but sometimes, a GPS signal is not available. In such cases, the source is the network, either Wi-Fi or cell data.

When Explorer first starts, it obtains its initial fix from the network. Once the GPS chip is turned on and acquires satellite readings, the Provider switches to GPS.

When you hold the device in position to use the compass, Nearby Explorer shows the provider as Compass.

## Watch

The Watch is a place you wish to monitor. When you monitor a place, Nearby Explorer always shows the distance and direction to the Watch from your current position. To set a place as a Watch, follow these steps:

1. Select a search result or a Favorite.
2. Press select to open the menu of options for that place.
3. Select Set as Watch.

If you check the Watch check box on the Nearby screen, Explorer monitors and announces the distance and direction to the place you are watching.

## Mark and Label Locations

In addition to the points of interest in the maps, you can add your own places. Nearby Explorer calls these Favorites.

Favorites get treated as a nearby place, so as you approach one, the Nearby screen announces its name and location, too.

Favorites have one distinct advantage over points of interest in the map data. That advantage is that you can mark a position more precisely than the ones provided in the maps. You may, for example, wish to mark the exact position of the front door to a restaurant or business. Remember the map data puts addresses just on either side of the street's center line.

Another advantage of Favorites is that you may mark points that may not be of interest to anyone else, so they will probably never appear on official map data. For example, think of all the times you wanted to find a mailbox, trashcan, or park bench. Once you pinpoint one, save it as a favorite, and you cannot miss it again. Finally, you may publish Favorites. When you publish a favorite, other people using Nearby Explorer see that favorite as part of the online map data from the Google Places service. (Note: A data connection is required to use this feature.)

To set your current location as a favorite, follow these steps:

1. Move to the location to mark. Note that you should not stop in a street, on a railroad, or in any other area where it is not safe to stop and mark your position. Instead, mark the entrance, for example, to the railroad track.
2. Check the Accuracy setting to make sure you are getting a good signal. You may even wish to check the latitude and longitude for consistency before you decide to mark the position. Approach the position for several days and ensure the lat/long values are consistent.
3. Press and hold Select to display Explorer's context menu.
4. Select Save as Favorite. Explorer responds by adding your current position to the Favorites list. The program then returns to the Nearby screen where your favorite should now be listed as the nearest point.

When you save your current position as a favorite, Nearby Explorer gives that point a convenient name so you may continue walking. That convenient name is the address nearest to the point you marked. Later, you may wish to rename the favorite with a name that means more to you.

It is useful to give favorite places meaningful names that more precisely describe the marked position. When marking the door to a restaurant, for example, use exact wording to distinguish that favorite from the more general point of interest in the maps. "Side Door to Wendy's" distinguishes the entrance from the map data's more general "Wendy's."

To list your favorites, follow these steps:

1. Press the Menu key to open Nearby Explorer's menu.
2. Select Favorite Places.

The Favorite Places list organizes your favorites by their distance from your current position, so the closest places get listed first.

Each item in the list shows the name of the place, its distance and direction from your current position, and the address nearest to the point. Since the name and the nearest address are the same, renaming the point is usually a good idea.

To rename a favorite, follow these steps:

1. Press Menu to open the Nearby Explorer program menu.
2. Select Favorite Places. Explorer responds by showing the Favorite Places list.
3. Use Up Arrow or Down Arrow to select the point to rename.
4. Press the Select key. Explorer responds by showing the context menu.
5. Select Rename from the context menu. Explorer displays a dialog with the current name in an edit box.
6. Edit the current name or type a new one.
7. Press the OK button.

To delete a Favorite, follow these steps:

1. Press Menu. Explorer responds by displaying the program menu.
2. Select Favorite Places from the menu.
3. Use Up Arrow or Down Arrow to highlight the Favorite with which you wish to work.
4. Press Select to open a menu of options relevant to Favorites.
5. Select Delete from the menu.

## **Publish**

To share any favorites you mark, follow these steps:

- Ensure that you have a network connection.
- Select Favorites from the Explorer main menu.
- Highlight the favorite to share. Make sure you have named the favorite so it is meaningful to others.
- Press Select to open the menu.
- Select Publish. Nearby Explorer shows a list of categories.
- Select the category that most accurately describes the favorite.
- Press Select.

## **Transit**

Nearby Explorer uses [Google Transit](#) to provide public transportation information for several metropolitan areas.

To use the transit feature, press Transit from the program's menu. Nearby Explorer's Transit screen shows a list of all the transit stops within 350 yards of your position with the closest stop listed first. To broaden the search radius, press Right Arrow.

Each list item contains the following information:

- Street corner or address where the stop is located
- Direction the bus travels from that stop
- Distance and direction to that location from your current position
- Time of the next bus serving that stop

To see a list of all the buses, select one of the stops. Nearby Explorer responds with a screen showing all the trips that service that stop.

The buses are represented by a list of trips with the next trip listed first. Each trip item contains the following information:

- Time the trip reaches that stop location. For a list of all times, press Select.
- Name of the route
- Name of the bus
- Number of the bus route

To follow a trip, press Right Arrow. Nearby Explorer responds by moving to the next stop on the trip, displaying the distance and direction in the title, and refreshing the list with times relevant to that new location.

Notice that the number of items in the list changes as the trip passes locations where other buses run. As you move toward the center of town, more buses serve a given area.

To discover buses at other corners, press Back to get back to the Nearby Bus Stops screen and select another stop.

## Updating Transit Schedules

Nearby Explorer uses an automated system to keep its transit information up-to-date. Whenever one of the participating transit authorities changes the schedule, Nearby Explorer downloads the schedule the next time your device has a network connection.

See [Google's Transit Page](#) for information about convincing the transit authority in your area to participate.

## Search

To search the map for streets or points of interest, pick Search from the Explorer menu or press the Search key. Explorer responds by showing a dialog that includes a list of points of interest around you.

These points are arranged so that the closest one appears at the top of the list. Each point shows the

name of the point of interest, its distance and direction from your current position, and its address. Initially, the list shows all points in all categories, but you may restrict the list to more manageable subsets.

To select categories of search results, follow these steps:

- From the Search results screen, press Menu.
- Pick Select Categories from the menu. Nearby Explorer responds with a list of categories. Each item is a selectable checkbox, and they are all checked by default.
- To clear all categories, press the Clear All button.
- Check the categories of interest.
- Press Back to return to the search results list that now matches the categories you selected.

To limit the items in the list to a word or a term you type, follow these steps:

1. Press Up Arrow until you get to the edit box.
2. Type a word that is in the name or address of the desired place.
3. Press Down Arrow to the Search Nearby Places button.
4. Press Select. Explorer responds by displaying a list that is restricted to items matching the term you typed.

Search results are limited to an area with a radius of approximately 30 miles with the current position at the center.

To search from another area, use one of the techniques to move the virtual map position to the vicinity where you wish to search, and then search from there.

If you have a network connection, Nearby Explorer provides search results from the Google Places service. The search results screen indicates the presence of a network connection by putting "Online" in the search results title. It also puts the default radius for the search in the title. You may increase and decrease the radius in the search results screen by pressing the right or left arrow keys.

## Guidance and Directions

When you get a list of favorites or search results, you may obtain a list of directions to that location or receive guidance as you travel to that point. These directions are optimized for either pedestrian or vehicle travel. To select pedestrian directions, select Pedestrian from the Settings menu.

To get a list of directions, highlight the point of interest, then press Select. From the menu that appears, pick Get Directions. Explorer responds with a list of directions. Each step provides a direction and distance to the next maneuver in the route. As you move toward the destination, the distance and direction of the first maneuver is updated, so it stays current. When you reach that point, the first maneuver is removed from the list, and the second one becomes the now current next maneuver.

To be guided while you travel to the point, pick Set as Destination from the menu. Explorer responds by putting the first step in the directions in the Nearby screen's Guidance field. It also checks the Guidance field, so the next maneuver gets announced as you move. The information contains the current distance and direction to the next maneuver. This information updates as you move.

You may change from pedestrian to vehicle at any time during the trip. To do so, go to Settings in the

menu and check or uncheck the Pedestrian box.

If you set a destination to a location that is not on the road network, Explorer guides you only to the nearest address in the network. From that point on, it can only provide a distance and direction to the point; but since there are no roads and paths are not included, it can only give you a "crows flight" estimate of where the point resides in space. In other words, if you set a destination that may be in the middle of a large field or parking lot, guidance can only direct you to the nearest street address. From then on, Explorer provides only a distance and direction to pinpoint.

## Geocache

Geocaching is a popular game much like a treasure hunt. Clues to "caches" come to you in the form of lat/lon values provided by a Web site such as [www.geocaching.com](http://www.geocaching.com).

The cache usually consists of a container containing a log and some kind of trinket. As you discover the cache, you register the log and replace one of the trinkets with one of similar or greater value.

To enter a location by its latitude and longitude, follow these steps.

1. From the Nearby screen, press and hold Select until the context menu appears.
2. Select Enter Location as Favorite.
3. Type the latitude and longitude in the area provided. Explorer recognizes lat/long values in either decimal or combination format.
4. Press Down Arrow to get to the Name field.
5. Type a name for the new point.
6. Press OK.

Explorer adds this new point as a Favorite.

When you want to find one of the points, you can get directions close to it; but in most cases, you must set the point as a Watch, and then let the app show the distance and direction to that point once you leave the road network.

## Explore

While Nearby Explorer does not yet have a good way to explore the road network, it does provide some interesting ways to explore the map from several perspectives.

To see the Explore screen, press Menu and pick Explore.

The app responds by showing a list of intersections on the current street. It also displays a "Streets" button and a "Go To" button.

Each intersection in the list shows the name of the intersecting street, the distance and direction to that intersection, and the direction the street runs.

If you were on Maple Street between 1st and 2nd Street and open the Explore view, you might see a list like the following:

1. 1st Street 100 yards north heading east
2. 2nd Street 50 yards north heading east and west
3. 3rd Street 20 yards south heading east and west
4. 4th Street 70 yards south heading east and west

Explorer highlights the closest intersection to your current location, so when you open this view, the cursor would be on the 2nd Street or 3rd Street item depending on which is closest.

To turn onto one of the streets listed in the intersection list, highlight the street and press Select. Explorer responds with a new list that contains all the intersections on the new street. Of course, one of those intersections is the street you were on when you pressed Select, so the list might look like the following:

- Ash 3 miles west heading north and south
- Cherry 2 miles west heading north and south
- Dogwood 1 mile west heading north and south
- Elm .5 miles west heading north
- Lilac .1 miles west heading south
- Maple heading north and south
- Peach 200 yards east heading south

Of course, since the intersection of 2nd and Maple is closest, Explorer highlights the Maple item in the list.

When you get to the desired location, press the Go To button to return to the Nearby screen with your location set to the selected intersection.

The Streets button lets you examine the map by looking at nearby streets without regard for intersections. When you press the Streets button, Explorer shows a list of eight nearby streets, one for each of the following directions:

1. North
2. Northeast
3. East
4. Southeast
5. South
6. Southwest
7. West
8. Northwest

Each list item contains the street name, its distance, and its direction from the current position.

To go to one of the streets in the list, highlight the street name, and then press Select. Explorer responds by moving to the selected street and making it the current location, placing the approximate address in the title of the screen, and populating the list with each of the eight closest streets to the new location. Explorer also maintains the list item number, so if you were on the third item down when you press Select, the new list shows with the third item highlighted. It is possible, therefore, to move continuously in an easterly direction by scrolling down to the street east of the current location, then continuing to press Select to consecutively pick the next street east.

If Explorer does not see another street in the indicated direction in the allotted distance, it lets you move in that direction by the indicated distance.

While moving to nearby streets can be useful, making larger movements on the map can be tedious using this method. The "1 Mile" button changes the street list from streets that are near the current position to streets that are 1 mile from the current position. When you press the 1 Mile button, Explorer changes the list of streets to reflect the new distance selection and changes the 1 Mile button to a 10 Mile button. Pressing the 10 Mile button changes the street list to streets that are 10 miles away. When using 10 miles, the button changes back to Intersections. Use the 10 Mile button to make large movements; use the Streets or 1 Mile button to make finer moves.

## **Other Information**

If you make or receive a phone call while Explorer is working, the program mutes the announcements until the phone call is complete.

## **NAVTEQ END-USER LICENSE TERMS**

The data ("Data") is provided for your personal, internal use only and not for resale. It is protected by copyright, and is subject to the following terms and conditions which are agreed to by you, on the one hand, and American Printing House for the Blind, Inc. and its licensors (including their licensors and suppliers) on the other hand.

The Data for areas of Canada includes information taken with permission from Canadian authorities, including: © Her Majesty the Queen in Right of Canada, © Queen's Printer for Ontario, © Canada Post Corporation, GeoBase®, © Department of Natural Resources Canada. All rights reserved.

NAVTEQ holds a non-exclusive license from the United States Postal Service® to publish and sell ZIP+4® information.

© United States Postal Service ® 2011. Prices are not established, controlled or approved by the United States Postal Service®. The following trademarks and registrations are owned by the USPS: United States Postal Service, USPS, and ZIP+4.

### **Terms and Conditions**

#### **Personal Use Only**

You agree to use this Data together with the Nearby Explorer app for the solely personal, non-commercial purposes for which you were licensed, and not for service bureau, time-sharing or other similar purposes. Accordingly, but subject to the restrictions set forth in the following paragraphs, you may copy this Data only as necessary for your personal use to (i) view it, and (ii) save it, provided that you do not remove any copyright notices that appear and do not modify the Data in any way. You agree not to otherwise reproduce, copy, modify, decompile, disassemble, create any derivative works of, or reverse engineer any portion of this Data, and may not transfer or distribute it in any form, for any purpose, except to the extent permitted by mandatory laws.

#### **Restrictions**

Except where you have been specifically licensed to do so by the American Printing House for the Blind, Inc., and without limiting the preceding paragraph, you may not (a) use this Data with any products, systems, or applications installed or otherwise connected to or in communication with vehicles, capable of vehicle navigation, positioning, dispatch, real time route guidance, fleet management or similar applications; or (b) with or in communication with any positioning devices or any mobile or wireless-connected electronic or computer devices, including without limitation cellular phones, palmtop and handheld computers, pagers, and personal digital assistants or PDAs.

## **Warning**

The Data may contain inaccurate or incomplete information due to the passage of time, changing circumstances, sources used and the nature of collecting comprehensive geographic data, any of which may lead to incorrect results.

## **No Warranty**

This Data is provided to you "as is," and you agree to use it at your own risk. American Printing House for the Blind, Inc. and its licensors (and their licensors and suppliers) make no guarantees, representations or warranties of any kind, express or implied, arising by law or otherwise, including but not limited to, content, quality, accuracy, completeness, effectiveness, reliability, fitness for a particular purpose, usefulness, use or results to be obtained from this Data, or that the Data or server will be uninterrupted or error-free.

**Disclaimer of Warranty:** American Printing House for the Blind, Inc. AND ITS LICENSORS (INCLUDING THEIR LICENSORS AND SUPPLIERS) DISCLAIM ANY WARRANTIES, EXPRESS OR IMPLIED, OF QUALITY, PERFORMANCE, MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT. Some States, Territories and Countries do not allow certain warranty exclusions, so to that extent the above exclusion may not apply to you.

**Disclaimer of Liability:** American Printing House for the Blind, Inc. AND ITS LICENSORS (INCLUDING THEIR LICENSORS AND SUPPLIERS) SHALL NOT BE LIABLE TO YOU: IN RESPECT OF ANY CLAIM, DEMAND OR ACTION, IRRESPECTIVE OF THE NATURE OF THE CAUSE OF THE CLAIM, DEMAND OR ACTION ALLEGING ANY LOSS, INJURY OR DAMAGES, DIRECT OR INDIRECT, WHICH MAY RESULT FROM THE USE OR POSSESSION OF THE INFORMATION; OR FOR ANY LOSS OF PROFIT, REVENUE, CONTRACTS OR SAVINGS, OR ANY OTHER DIRECT, INDIRECT, INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF YOUR USE OF OR INABILITY TO USE THIS INFORMATION, ANY DEFECT IN THE INFORMATION, OR THE BREACH OF THESE TERMS OR CONDITIONS, WHETHER IN AN ACTION IN CONTRACT OR TORT OR BASED ON A WARRANTY, EVEN IF American Printing House for the Blind, Inc. OR ITS LICENSORS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. Some States, Territories and Countries do not allow certain liability exclusions or damages limitations, so to that extent the above may not apply to you.

## **Export Control**

You agree not to export from anywhere any part of the Data provided to you or any direct product thereof except in compliance with, and with all licenses and approvals required under, applicable export laws, rules and regulations.

## **Entire Agreement**

These terms and conditions constitute the entire agreement between American Printing House for the Blind, Inc. (and its licensors, including their licensors and suppliers) and you pertaining to the subject matter hereof, and supersedes in their entirety any and all written or oral agreements previously existing between us with respect to such subject matter.

## **Governing Law**

The above terms and conditions shall be governed by the laws of the State of Illinois, without giving effect to (i) its conflict of laws provisions, or (ii) the United Nations Convention for Contracts for the International Sale of Goods, which is explicitly excluded. You agree to submit to the jurisdiction of the State of Illinois for any and all disputes, claims and actions arising from or in connection with the Data provided to you hereunder.

## **Government End Users**

If the Data is being acquired by or on behalf of the United States government or any other entity seeking or applying rights similar to those customarily claimed by the United States government, this Data is a "commercial item" as that term is defined at 48 C.F.R. ("FAR") 2.101, is licensed in accordance with these End-User Terms, and each copy of Data delivered or otherwise furnished shall be marked and embedded as appropriate with the following "Notice of Use," and shall be treated in accordance with such Notice:

### **NOTICE OF USE**

CONTRACTOR (MANUFACTURER/ SUPPLIER) NAME: NAVTEQ

CONTRACTOR (MANUFACTURER/SUPPLIER) ADDRESS: 425 WEST RANDOLPH STREET,  
CHICAGO, ILLINOIS 60606

**THIS DATA IS A COMMERCIAL ITEM AS DEFINED IN FAR 2.101 AND IS SUBJECT TO  
THESE END-USER TERMS UNDER WHICH THIS DATA WAS PROVIDED.**

If the Contracting Officer, federal government agency, or any federal official refuses to use the legend provided herein, the Contracting Officer, federal government agency, or any federal official must notify NAVTEQ prior to seeking additional or alternative rights in the Data.

## **Email**

The Email program lets you read, send, and receive email with either the POP3 or IMAP protocol.

Before you may use the Email app to read and write messages, you must have an online account established. There are several places that offer free email accounts. Google.com is probably one of the most popular.

When you start Email for the first time, you need to provide information about your email account. In most cases, the email address and your name are enough information to set up an account.

Once you provide account information, the Email program starts with a list of messages in your Inbox.

Use the Up Arrow and Down Arrow to move through the list of messages.

p>

To read a message, press Select. Email responds by opening the Message screen.

To reply to the message, select Reply from the menu.

To delete the message, select Delete from the menu.

## Recorder

The Recorder app records and plays audio. To start Recorder, select it from the All Applications menu or press the Recorder key.

When Recorder starts, it shows a list of previous recordings, each given by a number. To record a new title, hold Select or pick New from the menu. Recorder responds by starting the recording process and presenting a Pause button. To pause the recording, press Select. To end the recording, press the Back key. Recorder responds by closing the recording and showing the list of recordings.

To delete a recording, highlight the recording, then pick Delete from the menu.

## Browser

h1>

The Browser app lets you conveniently and easily browse the web with speech and braille feedback. To start the browser, either select Browser from the Home screen, select a link in an email, or type a search term at the Home screen.

To navigate through a web page, use the arrows or any of the following commands:

Press Space+Dots 2, 3, 5, 6 (low G) to decide how to move through the page. The first time you press the command, the Browser responds with an announcement of the current movement type. It might say, "Links." Each subsequent press moves through the list of possible ways you may move through the page.

Once you select your movement method, press Space+> (dots 3, 4, 5) or Space+< (dots 1, 2, 6) to move to the next or previous item of the selected type.

## Edit Controls

When a page contains places to type text, it indicates the condition by announcing, "Edit." To work with an Edit control, just type the text you wish to enter. Use the arrows to move through the text and continue with the rest of the elements on the page.

## Search

To search the web, simply type text to find and hit Enter or Select.

## Go to Another Page

As with searching, the Browser lets you move to another page just by typing the address to which you wish to move, then press Enter or Select.

## Multiple Windows

h2>

To create a new window, select New Window from the menu. Browser responds by opening a new page. To move between pages, select Windows from the menu, then select the window of choice.

## Bookmarks

h2>

To save the current page for later reference, follow these steps:

1. Open the program menu.
2. Select More from the menu.
3. Select Ad Bookmark.

To return to a bookmark you previously added, pick Bookmarks from the menu, then find the bookmark you desire and press Select.

## Settings

The Settings application contains a variety of settings to let you customize aspects of the system.

To use the Settings app, pick Settings from All Applications on the Home screen, or go to Home and pick Settings from the menu.

As you traverse the menus in the Settings app, notice the menu often tells about its function. The Airplane Mode option in the Wireless and Network Settings menu, for example, offers the tip that this turns off all the wireless connections.

## Wireless and Networks

The Wireless and Networks setting configures Wi-Fi, Bluetooth, and other network related settings.

### Airplane Mode

Check this checkbox to turn off all the wireless radios that transmit voice or data. This may be necessary in areas where wireless radios are not permitted.

## Wi-Fi

The Wi-Fi checkbox turns on and off the Wi-Fi radio. You may wish to turn off this radio to help conserve battery power. It is recommended, however, to leave the radio on for the most convenience.

The Wi-Fi menu option may contain additional information such as the name of the network to which you are connected or the status of the connection such as "Obtaining IP Address" or "Connected to Starbucks."

### Wi-Fi Settings (Setup and Manage Wireless Access Points)

Selecting this option opens another menu with several options that set up and manage wireless access points.

## Wi-Fi

Check or uncheck this checkbox to turn on and off the Wi-Fi radio.

In most circumstances, this checkbox should be checked. If you wish to conserve power and you are not using the Internet, you may wish to uncheck this checkbox.

### Network Notifications (Notify Me When an Open Network is Available)

When checked, this option posts a notification each time a new open wireless network is available. Many people consider this annoying. If you decide that these notifications are not desirable, uncheck this checkbox.

## List of Networks

When the Wi-Fi radio is on, this screen contains a list of nearby and remembered networks. It may be desirable to use this screen to forget networks you have previously used but do not plan to use again such as one in a hotel.

The list of access points starts with those currently in range. If you are already connected to an access point, it will appear at the top of the list.

Each item in the list contains the name of the access point and its status. If the access point is the one currently connected, its status is "Connected."

After the currently connected access point, there is a list of other access points in range. Each of them shows the name and the security type of the access point.

After the current connection and a list of others in range, there is a list of access points that are out of range. The status on these networks is "Out of Range." These are access points to which you previously connected and remembered.

## Forget an Access Point

To remove a previously used but no longer needed access point, follow these steps:

1. Highlight the access point to forget in the access points list.
2. Press Select to open its information. The Settings application responds by displaying information about the access point along with two buttons--Forget and Cancel.
3. Use the arrow keys to find and highlight the Forget button.
4. Press Select to click the Forget button. The Settings app forgets the access point and removes it from the list.

## **Add Wireless Network**

To add a network that does not broadcast its name, select this option. Enter the name of the network and its security type. Once the application has this information, it presents the normal screen where you may enter your password, if needed, and where you click the Connect button.

## **Advanced Settings**

The Advanced Settings screen lets you set options for using advanced network settings and when to switch from Wi-Fi to mobile data.

## **Bluetooth**

Bluetooth is a wireless protocol designed to connect peripherals in fairly close proximity. Bluetooth is not the Internet--instead, think of it as a mechanism for connecting keyboards, headsets, and other peripherals to the device.

To turn on the Bluetooth radio, check the Bluetooth checkbox.

### **Bluetooth Settings: Manage Connections, Set Device Name and Discoverability**

Bluetooth works by pairing a peripheral with your device. The pairing process allows the device to work with a peripheral while ignoring other Bluetooth capable devices in the vicinity.

## **Braille Keyboard Commands**

The following chart shows the chords supported by the braille keyboard. Note that numbers refer to dot numbers.

<b>Operation</b>	<b>Chorded Dots QWERTY Keyboard Equivalent</b>	
Move to previous line	1	Up Arrow
Move to next line	4	Down Arrow
Move to previous word	2	Ctrl+Left Arrow
Move to next word	5	Ctrl+Right Arrow
Move to previous letter	3	Left Arrow
Move to next letter	6	Right Arrow
Move to previous paragraph	2-3	Ctrl+Up Arrow
Move to next paragraph	5-6	Ctrl+Down Arrow

Move to beginning of line	1-2-3-4	Alt+Left Arrow
Move to end of line	1-4-5-6	Alt+Right Arrow
Move to previous page	1-2-3-4-5	Shift+Space
Move to next page	1-2-4-5-6	Space
Move to top of file	1-2-3	Alt+Up Arrow
Move to end of file	4-5-6	Alt+Down Arrow
Read current line	1-4	Ctrl+9
Read current word	2-5	Ctrl+8
Spell current word	2-5 twice	Ctrl+8 twice
Read current character	3-6	Ctrl+7
Cancel current operation	1-3-5-6 (Z)	Back
New line	4-6	Enter
Select a menu option	1-5 (E)	Select
Backspace	1-2 (B)	Backspace
Delete character	1-4-5 (D)	Delete
Open Program menu	1-3-4 (M)	Menu
Home	1-2-5 (H)	Home
Read Status	2-4 (I)	Info
Tab	4-5	Tab

## Computer Braille Chart

### ASCII Code Character Dot Combination

33	!	2-3-4-6
34	"	5
35	#	3-4-5-6
36	\$	1-2-4-6
37	%	1-4-6
38	&	1-2-3-4-6
39	'	3
40	(	1-2-3-5-6
41	)	2-3-4-5-6
42	*	1-6
43	+	3-4-6
44	,	6
45	-	3-6
46	.	4-6
47	/	3-4
48	0	3-5-6
49	1	2
50	2	2-3

51	3	2-5
52	4	2-5-6
53	5	2-6
54	6	2-3-5
55	7	2-3-5-6
56	8	2-3-6
57	9	3-5
58	:	1-5-6
59	;	5-6
60	<	1-2-6
61	=	1-2-3-4-5-6
62	>	3-4-5
63	?	1-4-5-6
64	@	4
65	A	1-7
66	B	1-2-7
67	C	1-4-7
68	D	1-4-5-7
69	E	1-5-7
70	F	1-2-4-7
71	G	1-2-4-5-7
72	H	1-2-5-7
73	I	2-4-7
74	J	2-4-5-7
75	K	1-3-7
76	L	1-2-3-7
77	M	1-3-4-7
78	N	1-3-4-5-7
79	O	1-3-5-7
80	P	1-2-3-4-7
81	Q	1-2-3-4-5-7
82	R	1-2-3-5-7
83	S	2-3-4-7
84	T	2-3-4-5-7
85	U	-1-3-6-7
86	V	1-2-3-6-7
87	W	2-4-5-6-7
88	X	1-3-4-6-7
89	Y	1-3-4-5-6-7
90	Z	1-3-5-6-7
91	[	2-4-6

	\	1-2-5-6
93	l	1-2-4-5-6
94	^	4-5
95	-	4-5-6
96	`	4-7
97	a	1
98	b	1-2
99	c	1-4
100	d	1-4-5
101	e	1-5
102	f	1-2-4
103	g	1-2-4-5
104	h	1-2-5
105	i	2-4
106	j	2-4-5
107	k	1-3
108	l	1-2-3
109	m	1-3-4
110	n	1-3-4-5
111	o	1-3-5
112	p	1-2-3-4
113	q	1-2-3-4-5
114	r	1-2-3-5
115	s	2-3-4
116	t	2-3-4-5
117	u	1-3-6
118	v	1-2-3-6
119	w	2-4-5-6
120	x	1-3-4-6
121	y	1-3-4-5-6
122	z	1-3-5-6
123	{	2-4-6-7
124		1-2-5-6-7
125	}	1-2-4-5-6-7
126	~	4-5-7

## FCC Compliance

### FCC Compliance Statement

NOTE: This equipment has been tested and found to comply with the limits of a Class B digital device,

pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. 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 equipment and receiver.
- Connect the equipment into an outlet or circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications to this unit not expressly approved by LevelStar, LLC could void the user's authority to operate this equipment

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

## **Certification Information (SAR)**

Your wireless phone is a radio transmitter and receiver. It is designed and manufactured not to exceed the exposure limits for radio frequency (RF) energy set by the Federal Communications Commission (FCC) of the U.S. government. These FCC exposure limits are derived from the recommendations of two expert organizations, the National Council on Radiation Protection and Measurement (NCRP) and the Institute of Electrical and Electronics Engineers (IEEE). In both cases, the recommendations were developed by scientific and engineering experts drawn from industry, government, and academia after extensive reviews of the scientific literature related to the biological effects of RF energy. The exposure limit set by the FCC for wireless mobile phones employs a unit of measurement known as the Specific Absorption Rate (SAR). The SAR is a measure of the rate of absorption of RF energy by the human body expressed in units of watts per kilogram (W/kg). The FCC requires wireless phones to comply with a safety limit of 1.6 watts per kilogram (1.6 W/kg). The FCC exposure limit incorporates a substantial margin of safety to give additional protection to the public and to account for any variations in measurements.

SAR tests are conducted using standard operating positions accepted by the FCC with the phone transmitting at its highest certified power level in all tested frequency bands. Although the SAR is determined at the highest certified power level, the actual SAR level of the phone while operating can be well below the maximum value. This is because the phone is designed to operate at multiple power levels so as to use only the power required to reach the network. In general, the closer you are to a wireless base station antenna, the lower the power output.

Before a new model phone is available for sale to the public, it must be tested and certified to the FCC that it does not exceed the exposure limit established by the FCC. Tests for each model phone are performed in positions and locations (e.g. at the ear and worn on the body) as required by the FCC. For

body worn operation, this model phone has been tested and meets the FCC RF exposure guidelines

# Product Specifications

## Software

- Operating System: Android 2.3
- Synthetic Speech: Ivona 2 -- Kendra (US), Joey (US), Amy (UK)
- Cellular Phone: integrated -- Supports GSM/CDMA
- Optical character recognition: ABBYY FineReader software
- GPS Navigation: GPS software developed by APH
- Electronic book reader with Internet search and download, developed by APH: Supports Bookshare and NLS BARD digital talking books
- Web Browser, developed by APH
- Word Processor, developed by APH: supports DOCX, DOC, RTF, BRF, and TXT
- Email client: supports IMAP and POP3
- Integrated access to Android desktop and accessible 3rd party apps

## Hardware User Interface

- 6 Braille dot keys
- Spacebar
- Shift and Alt keys
- Menu and Application keys
- Search and Back keys
- 5-way navigation diamond
- 5-Way Braille navigation Joystick
- Braille Back and Advance navigation keys
- 18-Cell 8 dot Braille display
- 18 Braille Cursor routing buttons
- Camera shutter button
- Quick record button
- Volume up/down rocker
- Power On/Off button
- Key lock switch
- System reset button
- Battery release buttons

## Camera and Audio

- 5 megapixel document camera, with autofocus and dual LED lamps
- 2 front facing Stereo speakers
- Earphone speaker
- Internal microphone
- 3.5 mm headphone jack with video out/microphone in
- 3.5 mm microphone/line in

## Processor and Storage

- Processor: ARM-type
- Internal solid-state storage: 32 GB
- System flash memory: 1 GB
- Application memory: 512 MB RAM
- External storage socket: Full size SD/HC compatible (supports up to 32 GB of user-supplied cards)

## Communications

- Cellular receiver: internal CDMA/GSM 3G voice and data -- 800, 900, 1800, 1900, 2100 MHz
- GPS receiver: internal
- Wi-Fi: B/G/N
- Bluetooth: 2.1
- USB: 2.0 high speed, with USB Micro OTG and USB A host connectors
- SIM card reader

## Miscellaneous

- Vibration motor
- Accelerometer
- Lithium Ion battery
- AC adapter / battery charger (connects to Micro USB port)

## Physical

- Width: 6.54 inches (approx.)
- Depth: 4.2 inches (approx.)
- Thickness: 1.1 inches (approximate, including keys)
- Weight: 1 Lbs. (approx.)