

**Invalidity of U.S. Patent No. 6,430,498 by  
Garmin NavTalk (“NavTalk”)**

I have provided below a claim chart comparing the disclosures of NavTalk to the '498 Asserted Claims, as well the combination of NavTalk and either JPH10-197277 to Maruyama et al. (“Maruyama”) or U.S. Patent No. 6,067,502 to Hayashida et al. (“Hayashida”).

NavTalk was made publicly available in January of 1999 as discussed in my Report. The features and functionalities of the NavTalk product are described in the NavTalk Owner’s Manual and Reference Guide (Rev. A). Because the NavTalk product itself was known and used by others prior to the '498 Patent’s priority date, it constitutes prior art under 35 U.S.C. § 102(a) (pre-AIA).

Maruyama was published on July 31, 1998 and therefore qualifies as prior art with regard to the '498 Patent under 35 U.S.C. § 102(a) (pre-AIA).

Hayashida was filed August 21, 1997 and issued May 23, 2000. Hayashida therefore qualifies as prior art with regard to the '317 patent under 35 U.S.C. § 102(e) (pre-AIA).

<b>U.S. Patent No. 6,430,498</b>	<b>NavTalk</b>
<i>Claim 1 [Not Asserted]</i>	
1[P]. A portable terminal with the function of walking navigation, comprising:	The NavTalk is a portable terminal with the function of walking navigation. NavTalk is a portable cellular phone with GPS and navigation capabilities.

	<div data-bbox="1071 97 1417 592" data-label="Image"> </div> <p><i>NavTalk Manual</i> at Cover (describing the system as a “Cellular Phone/GPS Receiver”).</p> <p><i>Exposure to Radio Frequency Signals- Your <u>wireless hand-held portable telephone</u> is a low power radio transmitter and receiver. When it is ON, it receives and also sends out radio frequency (RF) signals.</i></p> <p><i>Id.</i> at ii.</p> <p>Broddle Rough Dep. at 21:22-22:23, 44:2-6 (Mr. Broddle confirming use for hiking and other walking navigation applications)</p>
<p>[1(a)] a device for getting location information denoting a present place of said portable terminal;<sup>1</sup> and</p>	<p>Under the Court’s construction of this limitation, NavTalk discloses the function of getting location information denoting a present place of said portable terminal using a structure of a wireless or cellular antenna, a GPS, a PHS, or the like; a data receiver; and a CPU for analyzing received data; or equivalents thereof. NavTalk included a cellular antenna and antenna for GPS signals. It also</p>

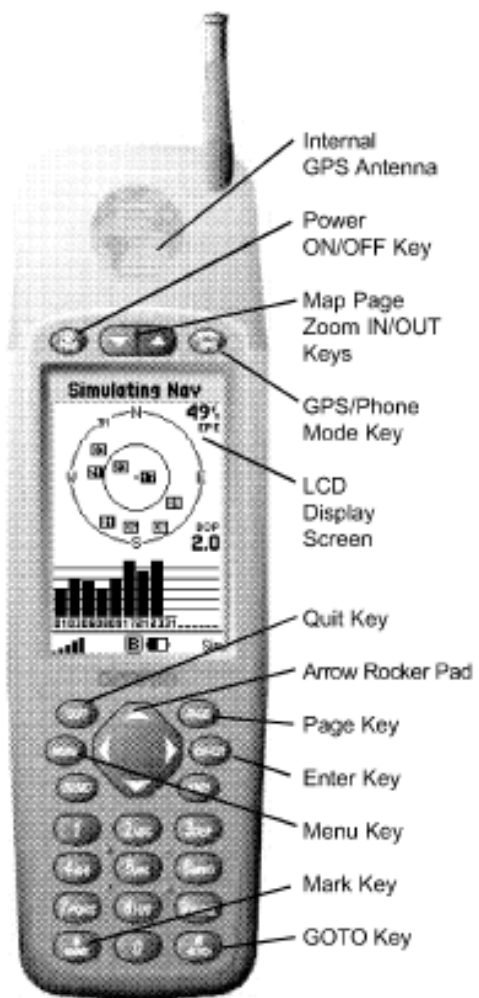
<sup>1</sup> The Court construed this element as:

	included a receiver and CPU processor for analyzing received signals, such as GPS signals, and performing calculations to determine the NavTalk device's location, orientation, speed, and other information.
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**“Function:** getting location information denoting a present place of said portable terminal

**Structure:** a wireless or cellular antenna, a GPS, a PHS, or the like; a data receiver; and a CPU for analyzing received data; or equivalents thereof”



*NavTalk Manual* at 28; see also *id.* at 30 (“To initialize the NavTalk, take the unit outside and find an open area where the antenna has a clear view of the sky. Hold the unit at a comfortable height with the GPS patch antenna parallel to the ground. Since basic operation involves getting

acquainted with the GPS receiver, switch to the Satellite Status Page if the Cellular Status Page appears by pressing the GPS/PHONE key.”); *see also id.* at 31 (showing an “acquiring stats” display including “autolocate” and “initialize position” options); *see also id.* at 40, 64-65, 104.

#### NavTalk GPS Receiver Features

##### **Moving Map Features**

Built-In International or Americas Basemap to 20 Miles; Including Lakes, Rivers, Railroads, Coastlines, Interstates, National and State Highways

Map Scale: 800 feet to 500 miles

MapSource® Compatible

##### **Navigation Features**

250 Total Waypoints, Each with Name, Symbol and Map Display Option

Nine Continuous, Automatically Updated Nearest Waypoints

Twenty Reversible Routes with up to 30 Waypoints Each. Plus MOB and TracBack Modes

Cities Listings with Database Information

Interstate Exits with Services Information

106 Map Datums

Coordinates Include, Lat/Lon, UTM/UPS, and Maidenhead.

NavTalk Manual at 3.

#### 1.3 GPS Navigation Overview

The Global Positioning System (GPS) is a system of 24 satellites which circle the earth twice a day in a very precise orbit and transmit information to earth.

The NavTalk must continuously “see” at least three of these satellites to calculate your position and track your movement. At times, additional satellites may be needed to determine a position.

*Id.* at 5.

	<p>Once the NavTalk has calculated a position fix, you'll usually have anywhere from five to twelve satellites in view. The receiver will then continuously select satellites in view to update your position. If some of the satellites in view get blocked or "shaded," the receiver can simply use an alternate satellite to maintain the position fix.</p> <p>Although a GPS receiver needs four satellites to provide a three-dimensional (3D) fix, it can maintain a two-dimensional (2D) fix with only three satellites. A three-dimensional fix means the unit knows its latitude, longitude, and altitude, while a two-dimensional fix means the unit knows only its latitude and longitude.</p> <p><i>Id.</i> at 6; <i>see also id.</i> at 18-19 (including discussions of Satellite Status Page, Position Page, and Map Page).</p> <p><b><u>6.14.4 Units Settings</u></b></p> <p><b>Position Format -</b> is used to change the coordinate system in which a given position reading is displayed. The default format is latitude and longitude in degrees and minutes (hddd°mm.mmm'). The following additional formats are available:</p> <ul style="list-style-type: none"><li>• hddd.ddddd°—latitude/longitude in decimal degrees only</li><li>• hddd°mm'ss.s"—latitude/longitude in degrees, minutes, seconds</li><li>• UTM/UPS — Universal Transverse Mercator / Universal Polar Stereographic grids</li><li>• British Grid • German Grid</li><li>• Irish Grid</li><li>• Swedish Grid</li></ul> <p><i>Id.</i> at p. 98.</p>
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## APPENDIX B

### Specifications

<b>Phone:</b>	Customized AMPS Cellular RF Transceiver
Frequency Range:	824.04-848.97 MHz Transmit, 869.04-893.07 Receive
Channel Spacing:	30 kHz
Frequency Stability:	+/- 2.5 ppm
Mobile Station Power Class:	III
<b>Display:</b>	2.2in.H X 1.5in.W (5.6 x 3.8 cm) high contrast LED backlit FTN
<b>GPS Receiver:</b>	Differential Ready, 12 Parallel Channel
Acquisition Time:	Approx. 15 seconds (warm start) Approx. 45 seconds (Ezini/cold start) Approx. 5 minutes (AutoLocate)
<b>Update Rate:</b>	1/second continuous
<b>Position Accuracy:</b>	1-5 meters (3-15 ft) with DGPS corrections* 15 meters (+9ft) RMS**
<b>Velocity Accuracy:</b>	0.1 Knot RMS Steady Rate
<b>Dynamics:</b>	Performs to Specifications to 6 g's
<b>Interfaces:</b>	NMEA 183, RTCM (for DGPS corrections) and RS-232- for PC interface
<b>Memory Backup:</b>	Internal Lithium Battery, Functional Life=10 years
<b>Antenna:</b>	Built-in. Remote external antenna optional
<b>Case Materials:</b>	Fully-gasketed, high impact plastic alloy.
<b>Size:</b>	Height: 7.1in. Width: 2.25in. Depth: 1.35in.
<b>Weight:</b>	13.3 oz.
<b>Battery Life:</b>	Rechargeable NiMH Battery Pack Talk time:160 minutes Standby (GPS and Cellular Mode):12/14*** hours Standby (Cellular Mode ): 26 hours
<b>Water Resistance:</b>	Immersion for 30 minutes at depth of 1 meter
<b>Operating Temperature:</b>	-30 to +60 degrees C (-22 to +140° F)
<b>Storage Temperature:</b>	-40 to +85 degrees C (-40 to +185° F)
<b>Nickel Metal Hydride Battery Pack</b>	
<b>Storage Range:</b>	-20 to +50 degrees C (-4 to +122° F)

Specifications subject to change without notice.

\* With optional GARMIN GBR21 Beacon Receiver Input.

\*\* Subject to accuracy degradation to 100 m 2DRMS under the U.S.DOD-imposed Selective Availability Program

\*\*\* With GPS Power Saver feature enabled.

*Id.* at 104.

The Bill of Materials (Exhibit 6 to March 24, 2020 Ayres Declaration) for NavTalk also lists several entries for GPS IC components at rows 350, 834, CPU-related components at rows 1788-89, 2258-

	<p>59, 2266, an Intel IC 386EX microprocessor at row 1820, and a Texas Instruments Cellular Baseband Processor at row 1824.</p> <p>Broddle Rough Dep. at 46:20-48:6, 56:20-58:7, 80:5-81:20 (Mr. Broddle confirming that NavTalk included a GPS antenna and receiver, calculated direction and orientation based on changes in GPS position, and included an Intel CPU and cellular baseband processor).</p>
<p>[1(b)] a device for getting direction information denoting an orientation of said portable terminal,<sup>2</sup> wherein</p>	<p>Under the Court’s construction of this limitation, NavTalk either alone or modified pursuant to the teachings of Maruyama or Hayashida discloses the function of getting direction information denoting an orientation of said portable terminal using a structure of a compass, gyroscope, and/or sensor such as a clinometer in conjunction with a CPU, or equivalents thereof. NavTalk discloses displaying the user’s orientation or direction information using various “Page” views including the Position Page, Compass Page, and Highway Page. According to Mr. Kent Broddle, this direction information was derived from GPS position data and calculations of the user’s direction of travel based on changes in position. The GPS position data is derived from GPS sensors or equivalents thereof and the orientation/direction information is computed using a CPU inside the NavTalk device.</p>

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<sup>2</sup> The Court construed this element as:

**“Function:** getting direction information denoting an orientation of said portable terminal

**Structure:** a compass, gyroscope, and/or sensor such as a clinometer in conjunction with a CPU, or equivalents thereof.”



## 6.2 Position Page

The Position Page shows your location, what direction you're heading, and how fast you're going, and it's most useful when you are traveling without an active destination waypoint. The graphic heading display at the top of the page indicates the direction you're heading, or track (only while you're moving).

Directly below this display are the speed, average speed, trip timer, trip odometer and sunrise/sunset fields (default). The sunrise/sunset times indicated are for your present position. These times, and the current time display at the bottom of the page, can be displayed in local or UTC (universal) time. The lower left-hand corner of the page shows your current latitude and longitude in degrees and minutes (default).



Position Page

NavTalk Manual at 65.

## 6.4 Compass Page

Whenever a destination waypoint has been selected, the NavTalk's Compass Page will guide you to your destination using a graphic compass display and digital readouts.

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Use the Compass Page instead of the Highway Page when travelling at slower speeds, when making frequent directional changes, or where straight line navigation is not possible due to obstructions or terrain.

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The rotating 'compass ring' shows the direction of your movement and the pointer arrow shows the direction to your destination (track and bearing, respectively).

*Id.* at 71.

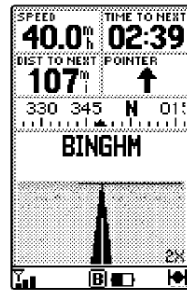


*Compass Page*

*Id.* at 71.

## SECTION 6

### GPS Receiver Reference



Highway Page  
Selectable Data Fields

### 6.5 Highway Page

In addition to the Compass Page, the NavTalk's Highway Page also provides graphic steering guidance to your destination, by using a graphic highway display.

At the top of the Highway Page are four user-selectable data fields that display current speed, distance and time to next waypoint, and an arrow pointer (these are the default data fields, each data field may be configured to display any one of twenty-three data option.)

The arrow pointer will always point to the destination waypoint (or the next waypoint if you are using a route to navigate) relative to the direction you are moving (your track). If the bearing pointer points straight ahead, you are heading directly towards your destination. If the bearing pointer points in any other direction, as you travel, turn toward the arrow until it points up—then continue moving in that direction.

The graphic heading compass at the top of the page

*Id.* at 72.

Broddle Rough Dep. at 46:20-48:6, 56:20-58:7, 80:5-81:20 (Mr. Broddle confirming that NavTalk included a GPS antenna and receiver, calculated direction and orientation based on changes in GPS position, and included an Intel CPU and cellular baseband processor).

The Bill of Materials (Exhibit 6 to March 24, 2020 Ayres Declaration) for NavTalk also lists several entries for GPS IC components at rows 350, 834, CPU-related components at rows 1788-89, 2258-59, 2266, an Intel IC 386EX microprocessor at row 1820, and a Texas Instruments Cellular Baseband Processor at row 1824.

To the extent it is argued that NavTalk did not have a compass or gyroscope, NavTalk modified pursuant to the teachings of Maruyama or Hayashida includes a compass and/or gyroscope and CPU that performs the claimed function of getting a direction information denoting an orientation of said portable terminal. *See* corresponding claim limitation of Exhibits D1, D2.

	<p>A PHOSITA would have been motivated to modify the NavTalk for the reasons discussed in Section VI.B of my Report. For example, a PHOSITA would have been motivated to include a compass as taught by the above-cited references to increase the accuracy of determination of the position of the user and to determine a user's orientation. Additionally, a PHOSITA would have been motivated to also include a gyroscope, compass, or other direction sensors, as taught by Maruyama or Hayashida, to increase the accuracy of the direction-getting device. Such a modification is the application of a known orientation determination technique used by a known navigation device to improve a similar navigation device in the same way and therefore would not have required undue experimentation and would have yielded predictable results.</p>
<p>[1(c)(i)] a direction and a distance of a destination from said present place are denoted with an orientation and a length of a line that is distinguished between starting and ending points</p>	<p>NavTalk discloses a display that displays positions of said destination and said present place, and a relation of said direction and a direction from said present place to said destination. For example, NavTalk discloses a Map Page that displays: (1) the device's present location and orientation using a triangle/arrow symbol; (2) the next waypoint destination(s) using symbols; and (3) a route line on a map to the destination. In addition, NavTalk discloses Compass and Highway Pages that display the user's current orientation and using an arrow to point to the next waypoint destination and an indicator of the distance to the next waypoint. The user of NavTalk can toggle between these different Map, Compass, and Highway Pages.</p> <p>The NavTalk displays a course line.</p> <p><i>The NavTalk features two different navigation pages, the Compass Page and the Highway Page. ... <b><u>[T]he Highway Page ... provides graphic steering guidance to a destination waypoint.</u></b> You can use the Highway Page instead of the Compass Page as your primary navigation page when your main concern is following a defined course.</i></p> <p><i>Your present position is at the bottom center of the highway display.</i></p> <p><b><u>The line down the middle of the highway represents your desired course. As you navigate toward a waypoint, the highway will actually move-</u></b>indicating</p>

the direction you're off course. To stay on course, simply move toward the center of the highway.

The fields at the top left of the page show speed and distance to your destination (or the next waypoint in a route), along with a track compass showing current direction of travel.

Across from the speed field is the time required to reach your destination (or the next waypoint in a route), in hours/minutes or minutes/seconds. The pointer shows the bearing to your destination, relative to your current track. If the pointer points straight ahead, you're heading directly to your destination!



Highway Page

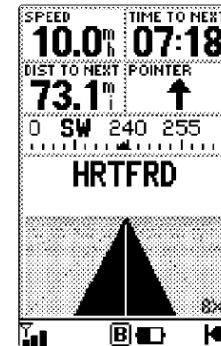
NavTalk Manual at 19-20; see also *id.* at 72 (“Your course is represented by a center line down

	<p>the middle of the graphic highway. As you head toward your destination, the highway perspective will move to indicate your progress to the waypoint and which direction you should steer to stay on course.”).</p> <p style="text-align: center;"><b>4.7 To select the GOTO destination:</b></p> <ol style="list-style-type: none"><li>1. Press the <b>#GOTO</b> key.</li><li>2. The GOTO directory will appear displaying tabs for the different categories: "Recent", "All", "Nearest", and "Spell 'n Find". Use the cursor to select "All". This will display a list of all waypoints currently stored in memory.</li><li>3. Use the cursor to highlight the "SIMUL8" way point, and press <b>ENTER</b>.</li></ol> <p>You should notice that a course line now appears on the map showing the way to your destination. If you want to return to your present position after attaining that destination you have two options:</p> <p style="padding-left: 40px;">You can mark your present position now and save it as a waypoint, or..</p> <p style="padding-left: 40px;">You can use the TracBack feature at the end of this exercise to retrace your path by observing all waypoints on the route in reverse order.</p> <p style="padding-left: 40px;">For now just mark your position as a waypoint.</p> <p>NavTalk Manual at p. 36.</p>
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#### 4.10 To view the Highway Page:

1. Press the **PAGE** key repeatedly until the Highway Page is displayed.

The line down the middle of the highway represents your desired course. As you navigate to your destination, the highway will actually move and indicate the direction you are off course. To stay on course, steer toward the center of the highway. As you approach the waypoint, the highway will end at the final destination. When the waypoint marker is at the bottom of the highway display, you have arrived at your destination. A track compass also shows your current track directly above the highway display making easy to determine the direction you're headed.



Highway Page

*Id.* at p. 38.

Additionally, the NavTalk indicates active segments of a route.

### 6.5 Highway Page

In addition to the Compass Page, the NavTalk's Highway Page also provides graphic steering guidance to your destination, by using a graphic highway display.

At the top of the Highway Page are four user-selectable data fields that display current speed, distance and time to next waypoint, and an arrow pointer (these are the default data fields, each data field may be configured to display any one of twenty-three data option.)

The arrow pointer will always point to the destination waypoint (or the next waypoint if you are using a route to navigate) relative to the direction you are moving (your track). If the bearing pointer points straight ahead, you are heading directly towards your destination. If the bearing pointer points in any other direction, as you travel, turn toward the arrow until it points up—then continue moving in that direction.

The graphic heading compass at the top of the page indicates the direction you are moving (your track). The highway display which is located directly below the heading compass, provides visual guidance to the destination waypoint and keeps you on your intended course line.

NavTalk Manual at p. 72.

A solid route line will appear on the map to indicate each leg, and a dotted line will appear to indicate the distance and bearing from the last route waypoint to the cursor position.

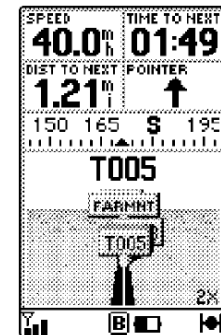
The NavTalk's Route List displays all the routes currently stored in memory, along with a descriptive name for each route. Once a route has been created, it can be activated and used for navigation from the Route List.

*Id.* at p. 83.

Your course is represented by a center line down the middle of the graphic highway. As you head toward your destination, the highway perspective will move to indicate your progress to the waypoint and which direction you should steer to stay on course.

If you are navigating a route, the highway display will show each route waypoint in sequence, with the active leg indicated by the black portion of the highway. Nearby waypoints not in the route will also be displayed. You can zoom in or out on the highway display for a smaller or larger view (1/4 to 4 miles, with a default setting of 1 mile.)

In addition to the default settings just discussed, options are available through the options menu allowing you to customize the highway page display:



*Highway Page  
with Sign Posts "On"*

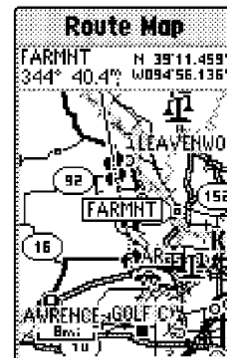


## 6.12 Active Route Page

The last page appearing in the main sequence is the Active Route Page. Whenever you have activated a route, GOTO, MOB or TracBack, the Active Route Page will show each waypoint (by name) of the active route, along with the desired course, distance to waypoint, time to each waypoint, fuel requirements or sunrise/sunset times at each route waypoint.

As you navigate the route, the information on the Active Route Page will automatically update to indicate the destination waypoint and any remaining interim waypoints—with the next point along the route denoted by an arrow on the left-hand side of the screen.

*Id.* at p. 86.




*Route Map Display*

*Id.* at p. 84.

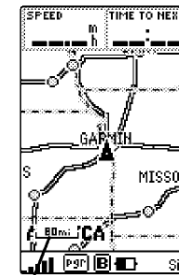
Further, a route displayed in track up mode is an orientation of a line.

	<p><u>4.6 Selecting the Map Page.</u></p> <p>Press the <b>PAGE</b> key repeatedly until the Map Page appears. The Map Page combines digital charting with a number of selectable features. The map display shows your present position using a pointer icon in the center of the display. Map features such as lakes, rivers, towns, railways, background roads and highways are shown as well as your present position and nearby waypoints. The map can be oriented with the top of the map always pointing north ('North Up') or it can automatically rotate to keep your current direction of travel at the top of the screen ('Track Up'). You can use the <b>ZOOM IN/OUT</b> keys to adjust the map to the desired scale. The current scale is shown in the lower left-hand corner of the display.</p> <p>NavTalk Manual at p. 33.</p> <p>Broddle Rough Dep. at 74:4-75:19, 92:11-24, 106:6-112:8 (Mr. Broddle explaining that the Map Page displayed the user's present position and route lines to reach waypoints along an entire route).</p> <p>Broddle Rough Dep. at 77:21-80:4 (Mr. Broddle explaining the operation of the Compass Page and the information depicted on the page, including the user's current direction, the direction to the destination, and distance to the destination).</p>
[1(c)(ii)] to supply route guidance information as said walking navigation information.	<p>The NavTalk supplies route guidance information as said walking navigation information.</p> <p>As described in the preceding cells, NavTalk is a handheld device operable to guide a user to designated waypoints/destinations. A PHOSITA would have understood that the NavTalk is suitable for walking navigation. Indeed, there are no restrictions inherent in the device that would prevent one from utilizing the NavTalk for walking navigation.</p>

	<p><b>6.3 Map Page</b></p> <p>The NavTalk features a powerful real-time moving map that does more than plotting course and route. The Map Page also displays background detail, including geographic names, lakes, rivers, coastlines and highways. An on-screen cursor lets you pan ahead to nearby waypoints, determine the distance and bearing to any map position, and mark new waypoints as you navigate.</p> <p>The NavTalk also features dedicated zoom keys for instant zooming (see page 9). The map portion of the page displays your present position as a pointer icon, with your track and/or route displayed as small points on the screen (an electronic bread crumb trail, if you will). Nearby waypoints are represented with names and symbols. You may select which features are shown via the Map Page Options (see page 68).</p> <p>The data window above the map displays the time and distance to next waypoint, plus your current speed (all defaults). A bearing pointer lets you know if you're heading toward your destination. (If the pointer points straight up, you're heading directly to it.) Each data field may be configured to display any one of twenty-four data options.</p>  <p style="text-align: center;"><i>Map Page</i></p> <p><i>Id.</i> at p. 67.</p>
<b>Claim 3</b>	
<p>3. A portable terminal with the function of walking navigation according to claim 1, wherein said device for getting direction information gets orientation information of a display of said portable terminal.</p>	<p>The NavTalk as modified according to claim limitation [1(b)] teaches this limitation. Because the display device of the NavTalk is fixed, the NavTalk as modified according to claim limitation [1(b)] would necessarily obtain the orientation of its display when it obtains the orientation of its device. <i>See</i> limitation [1(b)]. In addition, NavTalk provided for both “north up” and “track up” displays.</p>

#### 4.6 Selecting the Map Page.

Press the **PAGE** key repeatedly until the Map Page appears. The Map Page combines digital charting with a number of selectable features. The map display shows your present position using a pointer icon in the center of the display. Map features such as lakes, rivers, towns, railways, background roads and highways are shown as well as your present position and nearby waypoints. The map can be oriented with the top of the map always pointing north ('North Up') or it can automatically rotate to keep your current direction of travel at the top of the screen ('Track Up'). You can use the **ZOOM IN/OUT** keys to adjust the map to the desired scale. The current scale is shown in the lower left-hand corner of the display.



*Map Page with  
"North Up" orientation  
and  
Current Scale Display.*

NavTalk Manual at p. 33.

#### 6.4 Compass Page

Whenever a destination waypoint has been selected, the NavTalk's Compass Page will guide you to your destination using a graphic compass display and digital readouts.

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Use the Compass Page instead of the Highway Page when travelling at slower speeds, when making frequent directional changes, or where straight line navigation is not possible due to obstructions or terrain.

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The rotating 'compass ring' shows the direction of your movement and the pointer arrow shows the direction to your destination (track and bearing, respectively).

In actual use, when the arrow points up, you are heading directly to the waypoint. When the arrow points in any other direction, turn toward the arrow until it points up, then continue moving in that direction. You must be moving for the arrow to point in the correct direction.

	<p>NavTalk Manual at p. 71.</p> <p>The arrow pointer will always point to the destination waypoint (or the next waypoint if you are using a route to navigate) relative to the direction you are moving (your track). If the bearing pointer points straight ahead, you are heading directly towards your destination. If the bearing pointer points in any other direction, as you travel, turn toward the arrow until it points up—then continue moving in that direction.</p> <p><i>See NavTalk Manual at 72; see also id. at 19-20.</i></p> <p>Broddle Rough Dep. at 46:20-48:6, 56:20-58:7, 80:5-81:20 (Mr. Broddle confirming that NavTalk included a GPS antenna and receiver, calculated direction and orientation based on changes in GPS position, and included an Intel CPU and cellular baseband processor).</p> <p>Broddle Rough Dep. at 65:5-66:2, 96:20-98:7 (Mr. Broddle describing the “north up” and “track up” display options in NavTalk).</p> <p>Alternatively, would have been obvious to a PHOSITA to modify NavTalk to get orientation information of a display of said portable terminal as taught by Maruyama or Hayashida. <i>See</i> corresponding claim limitation of Exhibits D1, D2. A PHOSITA would have been motivated to modify the NavTalk with Maruyama or Hayashida for the reasons discussed in Section VI.B of my Report, which include to provide accurate guidance reflective of the direction that a user has oriented the device and its display. Such a combination is the application of a known technique to improve a similar device in the same way and would not have required undue experimentation and would have yielded predictable results.</p>
Claim 10 [Not Asserted]	

10. A portable terminal with the function of walking navigation, comprising:	See Claim 1[P].
[10(a)] a device for getting location information denoting a present place of said portable terminal; <sup>3</sup> and	See claim limitation [1(a)].
[10(b)] a device for getting direction information denoting an orientation of said portable terminal, <sup>4</sup>	See claim limitation [1(b)].
[10(c)] wherein location of a user is of said portable terminal is determined according to said location information and said direction information,	<p>NavTalk determines location of a user (e.g., latitude and longitude) is of said portable terminal is according to said location information and said direction information. According to Mr. Kent Broddle, this direction information was derived from GPS position data and calculations of the user's direction of travel based on changes in position. The GPS position data is derived from GPS sensors or equivalents thereof and the orientation/direction information is computed using a CPU inside the NavTalk device.</p> <p><i>The Position Page shows you where you are, what direction you're heading, and how fast you're going. A graphic compass at the top of the page shows your direction of travel while your [sic] moving (your track), and six user-selectable</i></p>

<sup>3</sup> The Court construed this element as:

**“Function:** getting location information denoting a present place of said portable terminal

**Structure:** a wireless or cellular antenna, a GPS, a PHS, or the like; a data receiver; and a CPU for analyzing received data; or equivalents thereof.”

<sup>4</sup> The Court construed this element as:

**“Function:** getting direction information denoting an orientation of said portable terminal

**Structure:** a compass, gyroscope, and/or sensor such as a clinometer in conjunction with a CPU, or equivalents thereof.”

	<p><i>data fields below show your current speed, average speed, trip odometer, trip timer, and sunrise/sunset times at your current position.</i></p> <p><i>NavTalk</i> at 18.</p> <p>Broddle Rough Dep. at 46:20-48:6, 56:20-58:7, 80:5-81:20 (Mr. Broddle confirming that NavTalk included a GPS antenna and receiver, calculated direction and orientation based on changes in GPS position, and included an Intel CPU and cellular baseband processor).</p>
<p>[10(d)] wherein location of a partner of the user is determined according to a location information from the partner's portable terminal, and</p>	<p>NavTalk discloses that the location of a partner (i.e., another NavTalk user) of the user is determined according to a location information from the partner's portable terminal (i.e., the other user's NavTalk device). Specifically, NavTalk devices could query other NavTalk devices for their GPS-determined locations.</p> <p>Now it's time to learn the basics of operating the cell phone. Let's begin with a brief overview of the cellular telephone system. Your NavTalk cell phone uses FM radio waves instead of conventional telephone lines to place and receive calls. A cellular telephone network consists of individual coverage areas (small sections of a city, typically several miles in diameter) called "cells".</p> <p>Each cell site has its own antenna located on a tower which is linked to a Mobile Telephone Switching Office (MTSO), which connects your call to the public switched telephone network or transfers it to another cellular phone.</p> <p>NavTalk Manual at p. 4.</p>

	<p><b>To “Query” for a GPS location:</b></p> <ol style="list-style-type: none"><li>1. Dial the number of a NavTalk unit or similarly programmed cellular device. When the called number answer press <b>MENU</b> and cursor to ‘Query Location’ and press <b>ENTER</b>. You will hear the DTMF tones and the “Transferring Location” message will appear.</li><li>2. When the DTMF tone has been recognized the other unit will transmit the GPS location to your unit, but only if it has the Remote Command feature enabled. If it is not, the tones will stop and the new position will not be acknowledged. If the call is disconnected before the transfer is complete, the new position will not be acknowledged.</li><li>3. The new position is acknowledged by a confirmation message and the location marked as a “Phone” waypoint on the Map Page. Refer to Page 59 for more information.</li></ol> <p><i>Id.</i> at p. 54.</p> <p style="text-align: center;"><b><u>5.17 DTMF GPS Location Reporting</u></b></p> <p>The NavTalk can transmit information about your geographic location to another NavTalk or other type device that can interpret DTMF tones to plot your GPS position. You can also record a GPS position from another NavTalk unit and store that location in the GPS receiver data storage. Refer to page 53 for Remote Command feature programming for querying a position report using an active call.</p> <p><i>Id.</i> at p. 59.</p>
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**To Receive a GPS Position Report:**

1. Connect to the reporting caller using the Phone portion of the NavTalk.
2. Press **MENU** and select "Query Location" from the Dialing Page... or use the "Q" code in your dialing string.
3. When the new position is received, a "Pop-Up" message, "Do you want to save the PHONE waypoint?" will appear. Press **ENTER** to confirm and the new PHONE waypoint will be displayed.

—When you press **ENTER** to confirm the PHONE waypoint it will be centered on the Map Page. If you want to navigate to the **PHONE** waypoint press the **GOTO** key, cursor to the **PHONE** waypoint and press **ENTER**.

The phone number will appear just behind the **PHONE** waypoint.

*Id.* at p. 59.

**Remote Command** - allows your location to be remotely queried by another NavTalk unit or another DTMF capable device (i.e. PC modem). You can "Enabled" or "Disable" this feature depending on the level of privacy you desire. Refer to Section 5, Page 53 for more information.

*Id.* at p. 97.

	<p> <b>Phone:</b> Customized AMPS Cellular RF Transceiver  Frequency Range: 824.04-848.97 MHz Transmit, 869.04-893.07 Receive  Channel Spacing: 30 kHz  Frequency Stability: +/- 2.5 ppm  Mobile Station Power Class: III  <b>Display:</b> 2.2in.H X 1.5in.W (5.6 x 3.8 cm) high contrast LED backlit FTN  <b>GPS Receiver:</b> Differential Ready, 12 Parallel Channel  Acquisition Time: Approx. 15 seconds (warm start)  Approx. 45 seconds (Ezinit/cold start)  Approx. 5 minutes ( AutoLocate)  <b>Update Rate:</b> 1/second continuous  <b>Position Accuracy:</b> 1-5 meters (3-15 ft) with DGPS corrections*  15 meters (49ft) RMS**  <b>Velocity Accuracy:</b> 0.1 Knot RMS Steady Rate  <b>Dynamics:</b> Performs to Specifications to 6 g's  <b>Interfaces:</b> NMEA 183, RTCM (for DGPS corrections)  and RS-232- for PC interface  <b>Memory Backup:</b> Internal Lithium Battery, Functional Life=10 years  <b>Antenna:</b> Built-in. Remote external antenna optional </p> <p><i>Id.</i> at 104.</p> <p>Broddle Rough Dep. at 100:24-103:11 (Mr. Broddle confirming that NavTalk devices could share GPS locations with each other, where shared locations could be used as waypoints and displayed on the Map Page).</p>
[10(e)(i)] wherein a full route from said starting point to said destination is shown with a bent line that is distinguished between starting and ending points and said present place is shown with a symbol on said line	<p>The NavTalk, either alone or in combination with Hayashida, renders obvious showing a full route from said starting point to said destination with a bent line that is distinguished between starting and ending points and said present place is shown with a symbol on said line. For example, NavTalk displays a route line, which has bends corresponding to turns, and includes a triangle/pointer arrow denoting the present location and starting point and symbols marking waypoint destinations (i.e., ending points). NavTalk also discloses logging or tracking past waypoints and locations along a traveled route.</p> <p>The NavTalk shows routes:</p>

### 6.3 Map Page

The NavTalk features a powerful real-time moving map that does more than plotting course and route. The Map Page also displays background detail, including geographic names, lakes, rivers, coastlines and highways. An on-screen cursor lets you pan ahead to nearby waypoints, determine the distance and bearing to any map position, and mark new waypoints as you navigate.

The NavTalk also features dedicated zoom keys for instant zooming (see page 9). The map portion of the page displays your present position as a pointer icon, with your track and/or route displayed as small points on the screen (an electronic bread crumb trail, if you will). Nearby waypoints are represented with names and symbols. You may select which features are shown via the Map Page Options (see page 68).

The data window above the map displays the time and distance to next waypoint, plus your current speed (all defaults). A bearing pointer lets you know if you're heading toward your destination. (If the pointer points straight up, you're heading directly to it.) Each data field may be configured to display any one of twenty-four data options.



*Map Page*

#### 6.3.1 Zooming and Panning

There are three main functions you can perform from the Map Page: zooming, panning, and pointing. The map has 24 map scales (from 120 feet to 500 miles, or 30 meters to 800 km) which are selected by pressing the **ZOOM** keys. The current map scale is indicated in the bottom left corner of the map display.

You can also pan on the map which allows you to move the map with the keypad in order to view areas beyond the current map.

*Id.* at p. 67.

**Points** - allows you to control text size and zoom levels at which the following map features will display.

All Waypoints: Text - Zoom control

Active Route: Text - Zoom control

Common Exits: Text - Zoom control

Special Exits: Text -Zoom control

*Id.* at 69.

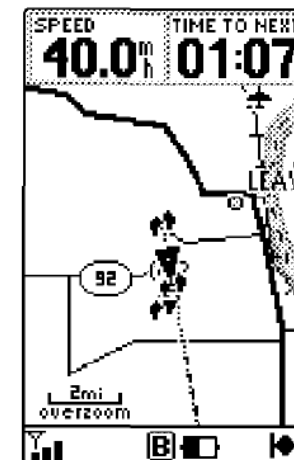
#### 6.10.4 TracBack

TracBack allows you to retrace your path without the need to manually store waypoints along the way. The NavTalk can be set to automatically record track log points any time the receiver is on and locked onto satellites (see page 91).

TracBack routes are created by reducing your track log into a route of up to 30 waypoints and activating the new route in reverse order along those waypoints.

Once activated, a TracBack route will lead you back to the oldest track log point stored in memory, so it's a good idea to clear the active track log at the beginning of your current trip (e.g., at the dock or trailhead), before you get started.

NavTalk Manual at p. 80.



*Setting Up TracBack*

### 6.11 Route Navigation

Route navigation allows you to manually create a sequence of intermediate waypoints which lead you to your final destination.

The NavTalk will store up to 20 reversible routes, with up to 30 waypoints in each route. Routes can be created and modified by text entry (using the **ARROW** Rocker pad to enter waypoint names) or directly from the map display.

Using the map display allows you to see each route graphically on-screen as you create, review, modify or navigate the route. All of the route functions are accessed through the Main Menu.

NavTalk Manual at p. 82.

The NavTalk uses symbols to display waypoints, including starting and ending positions.



*Choose from a list of symbols to help you recognize a waypoint feature*

p. 35

	<p><b>4.7 To select the GOTO destination:</b></p> <ol style="list-style-type: none"> <li>1. Press the <b>#/GOTO</b> key.</li> <li>2. The GOTO directory will appear displaying tabs for the different categories; "Recent", "All", "Nearest", and "Spell 'n Find". Use the cursor to select "All". This will display a list of all waypoints currently stored in memory.</li> <li>3. Use the cursor to highlight the 'SIMUL8' waypoint, and press <b>ENTER</b>.</li> </ol> <p>You should notice that a course line now appears on the map showing the way to your destination. If you want to return to your present position after attaining that destination you have two options:</p> <p>You can mark your present position now and save it as a waypoint, or..</p> <p>You can use the TracBack feature at the end of this exercise to retrace your path by observing all waypoints on the route in reverse order.</p> <p>For now just mark your position as a waypoint.</p> <p><i>Id.</i> at p. 36.</p>
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	<div data-bbox="932 370 1276 394" data-label="Section-Header"><p><b>To Receive a GPS Position Report:</b></p></div> <div data-bbox="968 402 1367 656" data-label="List-Group"><ol style="list-style-type: none"><li>1. Connect to the reporting caller using the Phone portion of the NavTalk.</li><li>2. Press <b>MENU</b> and select "Query Location" from the Dialing Page... or use the "Q" code in your dialing string.</li><li>3. When the new position is received, a "Pop-Up" message, "Do you want to save the PHONE waypoint?" will appear. Press <b>ENTER</b> to confirm and the new PHONE waypoint will be displayed.</li></ol></div> <div data-bbox="653 678 963 711" data-label="Text"><p>NavTalk Manual at p. 59.</p></div> <div data-bbox="1402 110 1562 363" data-label="Image">A small map titled "Waypoint Map" showing a geographical area. At the top, it displays coordinates: "PHONE 000° 04' N 38° 51' 333" and "4034 47.941". The map includes labels for "GARDEN HILLS", "SPRING HILL", and "CHILES". A "PHONE" waypoint is marked with a cursor pointing to it. Other labels include "913 PHONE 034" and "HF3".</div> <div data-bbox="1392 375 1596 662" data-label="Text"><p>When you press <b>ENTER</b> to confirm the PHONE waypoint it will be centered on the Map Page. If you want to navigate to the <b>PHONE</b> waypoint press the <b>GOTO</b> key, cursor to the <b>PHONE</b> waypoint and press <b>ENTER</b>. The phone number will appear just behind the <b>PHONE</b> waypoint.</p></div>
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	<p><b>To “Query” for a GPS location:</b></p> <ol style="list-style-type: none"> <li>1. Dial the number of a NavTalk unit or similarly programmed cellular device. When the called number answer press <b>MENU</b> and cursor to ‘Query Location’ and press <b>ENTER</b>. You will hear the DTMF tones and the “Transferring Location” message will appear.</li> <li>2. When the DTMF tone has been recognized the other unit will transmit the GPS location to your unit, but only if it has the Remote Command feature enabled. If it is not, the tones will stop and the new position will not be acknowledged. If the call is disconnected before the transfer is complete, the new position will not be acknowledged.</li> <li>3. The new position is acknowledged by a confirmation message and the location marked as a “Phone” waypoint on the Map Page. Refer to Page 59 for more information.</li> </ol> <p><i>Id.</i> at p. 54.</p> <p>The NavTalk displays a user’s present position on said line.</p>
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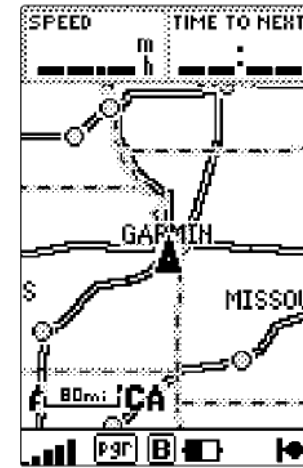
### Map Page

The Map Page shows your movement and surrounding detail (lakes, rivers, highways and towns). Your present position is identified by a pointer icon in the center of the map. You can use the **Zoom/Volume** keys to adjust the map scale (800 feet to 500 miles).

#### **To change the map scale:**

1. Press the **IN Zoom** key (down arrow) to select a smaller scale and more detail for a smaller area.
2. Press the **OUT Zoom** key (up arrow) to select a larger scale and display a larger area.

Nearby waypoints are depicted on the map with any one of over 40 different symbols, with the waypoint name shown directly above the symbol. We'll cover more about the NavTalk's waypoint features and the Map Page in the reference section, including how to change the map orientation if you desire.



*Map Page*

p. 19; *see also* p. 33



Map Page Zoomed in to 5 mile scale with "Present Position" centered on map.

*Id.* at p. 34.

Broddle Rough Dep. at 100:24-103:11 (Mr. Broddle confirming that NavTalk devices could share GPS locations with each other, where shared locations could be used as waypoints and displayed on the Map Page).

Broddle Rough Dep. at 74:4-75:19, 92:11-24, 106:6-112:8 (Mr. Broddle explaining that the Map Page displayed the user's present position and route lines to reach waypoints along an entire route).

Alternatively, would have been obvious to a PHOSITA to modify NavTalk to display a route using a "bent line" taught by Hayashida. *See* corresponding claim limitation of Exhibit D1. A PHOSITA

	would have been motivated to modify the NavTalk with Hayashida for the reasons discussed in Section VI.B of my Report, which include to provide a more accurate and usable depiction of route information. Such a combination is the application of a known technique to improve a similar device in the same way and would not have required undue experimentation and would have yielded predictable results.
[10(e)(ii)] to supply said route guidance information as said walking navigation information.	See claim limitation [1(c)(ii)].
<i>Claim 13</i>	
13. The portable terminal with said function of walking navigation according to claim 10, wherein said device for getting direction information gets orientation information of a display of said portable terminal.	See Claim 3.