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UNITED STATES DISTRICT COURT

DISTRICT OF NEVADA

XCELIS LLC, a Nevada limited liability company, Plaintiff, v. PANASONIC CORPORATION OF NORTH AMERICA, a Delaware corporation, Defendant.	Case No.: 2:17-cv-02463 **COMPLAINT FOR PATENT INFRINGEMENT** **JURY DEMAND**

Xcelis LLC ("Xcelis") files this complaint against Panasonic Corporation of North America ("Panasonic") for infringement of U.S. Patent. No. 7,565,115 ("the '115 Patent"), and hereby alleges as follows:

Nature of the Suit

1. This is a claim for patent infringement arising under the patent laws of the United States, Title 35 of the United States Code. This is a civil action for the infringement of the '115 Patent (attached hereto as **Exhibit A**) against Panasonic under the Patent Laws of the United States 35 U.S.C. § 1 *et seq*.

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The Parties

2. Xcelis is Nevada limited liability company.

3. Xcelis owns the '115 Patent, which involves technology relating to communication systems for landline and wireless calls.

4. On information and belief, Panasonic is a corporation organized and existing under the laws of the State of Delaware, with its principal place of business at Two Riverfront Plaza, 828 McCarter Highway, Newark, NJ 07102. Upon information and belief, Panasonic is licensed to conduct business in the State of Nevada and may be served with process via its registered agent in this judicial district, The Corporation Trust Company of Nevada, at 701 S. Carson Street, Suite 200, Carson City, NV 89701.

5. Panasonic makes, uses, sells, offers for sale, and/or imports products and services that infringe the '115 Patent, including without limitation, Panasonic Link2Cell phones, either directly or indirectly through its subsidiaries or affiliates, to customers throughout the United States, including in this District.

Jurisdiction and Venue

6. This Court has jurisdiction over the subject matter of this action pursuant to 28 U.S.C. §§ 1331 and 1338(a) because this action arises under the patent laws of the United States, including 35 U.S.C. § 271 *et seq.*, and the Lanham Act, 15 U.S.C. § 1125 *et seq.*

7. Panasonic has availed itself of the privilege of doing business in Nevada, including in this judicial District. Panasonic is registered to do business in the State of Nevada, and actively directs its activities to customers located in the State of Nevada.

8. This Court has personal jurisdiction over Panasonic in this action because Panasonic has committed acts within the District of Nevada giving rise to this action and has established minimum contacts with this forum such that the exercise of jurisdiction over Panasonic would not offend traditional notions of fair play and substantial justice. Panasonic, directly and/or through subsidiaries or intermediaries (including distributors, retailers, and others), has committed and continues to commit acts of infringement in this judicial District by offering

for sale and selling Link2Cell Phones, a patent infringing product which is described in greater detail below.

9. Panasonic conducts business in Nevada, including having an established facility in the State of Nevada, including upon information belief, warehouse space at 2777 USA Parkway in the Tahoe Reno Industrial Center. As a result of its activities in this District, Panasonic also employs people and maintains inventory and equipment in this District.

10. Upon information and belief, venue is proper pursuant to 28 U.S.C. §§ 1391 and 1400(b) because Panasonic has committed acts of infringement of the '115 Patent in this District by offering for sale and selling the Link2Cell Phone through the interactive Panasonic web site and through the aforesaid intermediaries located in this District to residents of this District and Panasonic derives significant benefits from its presence in the District, both physical and online through its interactive web site, including but not limited to sales revenue which Panasonic receives due to sales activity in this District.

11. Upon information and belief, venue is also proper pursuant to 28 U.S.C. §§ 1391 and 1400(b) because Panasonic has a regular and established place of business in the District. First, as stated in Paragraph 9 above, Panasonic operates a physical, geographical location in the District from which Panasonic's business is carried out. Second, upon information and belief, such physical place is a regular and established place of business. Third, Panasonic established and ratified such physical place as its regular place of business (and not merely the address of an individual employee).

12. Panasonic is subject to this Court's specific and general personal jurisdiction under due process and/or the Nevada Long Arm Statute due at least to Panasonic's substantial business in this forum, including: (i) at least a portion of the infringements alleged herein; and (ii) regularly doing or soliciting business, engaging in other persistent courses of conduct, and/or (iii) deriving substantial revenue from goods and services provided to individuals in Nevada.

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The '115 Patent and its Infringement

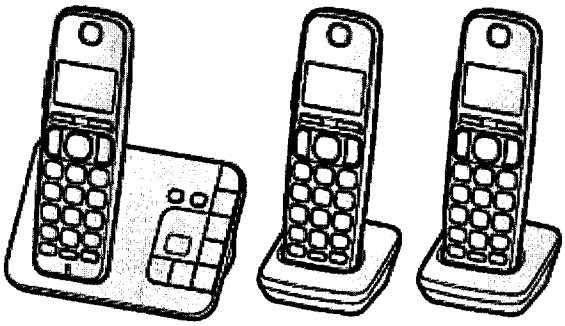
13. The '115 Patent, titled "Communication System for Landline and Wireless Calls," was duly and legally issued by the United States Patent and Trademark Office on July 21, 2009. (Ex. A.) Glenroy J. Alexis is the inventor of the '115 Patent.

14. Xcelis is the exclusive owner of all rights, title, and interest in the '115 Patent, and has the right to sue and recover for any current or past infringement of the '115 Patent.

15. Xcelis alleges infringement by Panasonic's Link2Cell Phone products.

16. Publicly available documents, including text and illustrations, show infringement of at least claim 4 of the '115 Patent. One such document is titled "Operating Instructions: Cordless Telephone with Bluetooth and Digital Answering Machine, Model Nos. KX-TGE463, KX-TG654SK, KX-TG684SK, KX-TGE474, KX-TGE475" and was created by or on behalf of Panasonic. (A true and correct copy of the document is attached as **Exhibit B**.) Its contents are true and accurate in terms of the components and functionality of the Link2Cell Phones. Regarding each of the limitations of claim 4 of the '115 Patent:

a. The Link2Cell Phone is a "communication system." For example, Exhibit B describes Link2Cell Phone Model Nos. KX-TGE463, KX-TG654SK, KX-TG684SK, KX-TGE474, KX-TGE475 as "Cordless Telephone with Bluetooth and Digital Answering Machine":



- Model shown is KX-TGE463.

The foregoing description is accurate as it pertains to all of the Link2Cell Phones.

b. The Link2Cell Phone comprises "a landline communication device comprising circuitry adapted to place and receive calls over a landline communication network." Each of the Link2Cell Phones comprises a base station with circuitry supporting landline calling activities (making and answering landline calls), and also having a telephone line cord located on the back of the base station. By way of further illustration, Exhibit B provides instructions for "Making landline calls" and "Answering calls".

c. The Link2Cell Phone comprises "interface circuitry connected to a single ring-tip line pair of a landline communication network and to a wireless communication device for a wireless communication network, wherein the interface circuitry selectively connects the landline communication device to the ring-tip line pair so that calls are placed and received by the landline communication device over the landline communication network and to the wireless communication device so that calls are placed and received by the landline communication device over the wireless communication network via the wireless communication device." Upon information and belief, this element is present in the Link2Cell Phones. To illustrate this element, Exhibit B instructs set up of the base unit as including: "Connect the telephone line cord to the unit, then to the single-line telephone jack (RJ11C) until you hear a click." Exhibit B further describes the Link2Cell Phone being configured to "connect your base unit and cellular phone using Bluetooth wireless technology, so that you can make or answer cellular calls using your phone system":

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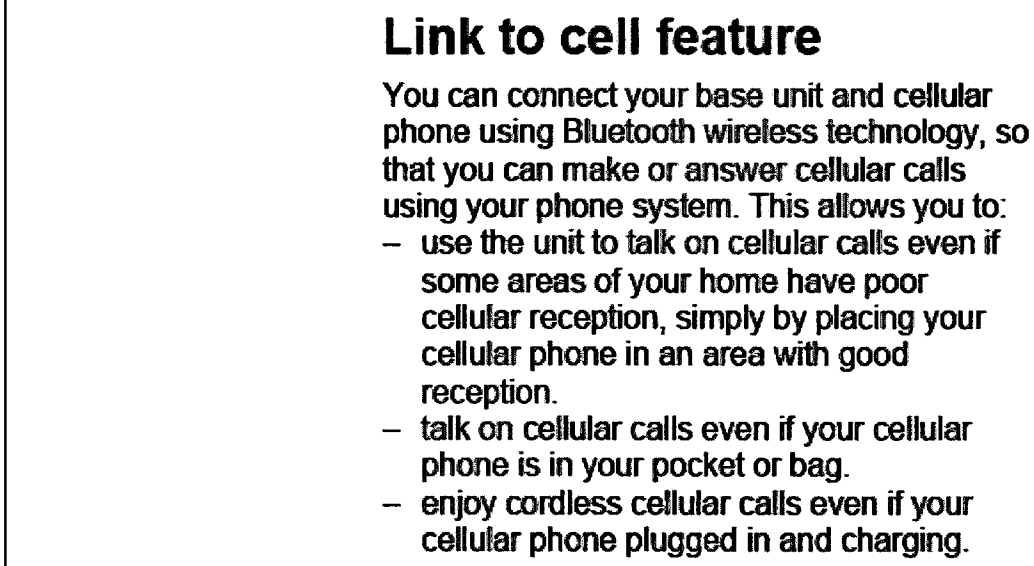

Link to cell feature

You can connect your base unit and cellular phone using Bluetooth wireless technology, so that you can make or answer cellular calls using your phone system. This allows you to:

- use the unit to talk on cellular calls even if some areas of your home have poor cellular reception, simply by placing your cellular phone in an area with good reception.
- talk on cellular calls even if your cellular phone is in your pocket or bag.
- enjoy cordless cellular calls even if your cellular phone plugged in and charging.

Exhibit B explains that "The unit can be used to talk on 2 lines at the same time (for example, 2 cellular lines, or the landline and 1 cellular line)." To make cellular calls using the accused Link2Cell Phones, Exhibit B further instructs to "confirm that the corresponding ✱1/2 on the handset is displayed" and utilize the **[CELL]** button. (Ex. B, at 21.) To make landline calls using the accused Link2Cell Phones, Exhibit B instructs to "press [↷] to make the call." *Id.*

d. In the Link2Cell Phone "the interface circuitry determines whether to place a landline or wireless call in response to a user input." Upon information and belief, this element is present in the accused Link2Cell Phones. In the Link2Cell phones, the user inputs a particular button, and the interface circuitry determines based upon this input whether to place a landline or a wireless call. To illustrate the reason for this, Exhibit B explains that the Link2Cell Phone has a **[CELL]** button to make cell calls and a ↷ button to make home calls:

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Making cellular calls

Important:

- The unit can be used to talk on 2 lines at the same time (for example, 2 cellular lines, or the landline and 1 cellular line).
- Only 2 Bluetooth devices can be used with the unit at the same time (for example, 2 cellular lines, or the headset and 1 cellular line).
- Before making calls, confirm that the corresponding $\ast_2^1$ on the handset is displayed (page 14).

1 Lift the handset and then dial the phone number.
- To correct a digit, press **[CLEAR]**.

2 **[CELL]**
- The unit starts dialing immediately in the following situations.
  - Only 1 cellular phone is paired.
  - A specific line is set to make cellular calls (page 20).

Go to step 4.

3 **[▲▼]**: Select the desired cellular phone. → **[SELECT]**

4 When you finish talking, press **[OFF]** or place the handset on the base unit or charger.

Making landline calls

1 Lift the handset and then dial the phone number.
- To correct a digit, press **[CLEAR]**.

2 Press **[ ]** to make the call.
- To make the call using the speakerphone, press **[ ]**.

3 When you finish talking, press **[OFF]** or place the handset on the base unit or charger.

COUNT I

(*Direct Infringement by Panasonic*)

17. Paragraphs 1-16 are incorporated by reference as if fully restated herein.

18. The '115 Patent is valid and enforceable.

19. Panasonic has infringed, and continues to infringe, one or more claims of the '115 Patent under 35 U.S.C. § 271(a), either literally and/or under the doctrine of equivalents, by making, using, selling, and/or offering for sale in the United States, and/or importing into the United States, products and/or services encompassed by those claims, including for example, by making, using, selling, offering for sale, and/or importing the Link2Cell Phones. This includes making and using Link2Cell Phones in product testing, in creating marketing materials for the Link2Cell Phones, and in the training of Panasonic employees providing customer support for the Link2Cell Phones.

20. Third parties, including Panasonic's customers, have infringed, and continue to infringe, one or more claims of the '115 Patent under 35 U.S.C. § 271(a), either literally and/or under the doctrine of equivalents, by making, using, selling, and/or offering for sale in the United States, and/or importing into the United States, the Link2Cell Phones.

21. Panasonic has knowledge and notice of the '115 Patent and its infringement at least through the filing and service of the Complaint in this action.

22. Panasonic has induced infringement, and continues to induce infringement, of one or more claims of the '115 Patent under 35 U.S.C. § 271(b). Panasonic actively, knowingly, and intentionally induced, and continues to actively, knowingly, and intentionally induce, infringement of the '115 Patent by selling or otherwise supplying the Link2Cell Phones with the knowledge and intent that third parties will use, sell, and/or offer for sale in the United States, and/or import into the United States the Link2Cell Phones for their intended purpose to infringe the '115 Patent; and with the knowledge and intent to encourage and facilitate the infringement through the dissemination of the Link2Cell Phones and/or the creation and dissemination of documentation and technical information related to the Link2Cell Phones.

23. Panasonic has contributed to the infringement by third parties, including Panasonic's customers, and continues to contribute to infringement by third parties, including Panasonic's customers, of one or more claims of the '115 Patent under 35 U.S.C. § 271(c), by selling and/or offering for sale in the United States and/or importing into the United States the Link2Cell Phones knowing that those products constitute a material part of the inventions of the

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'115 Patent, knowing that those products are especially made or adapted to infringe the '115 Patent, and knowing that those products are not staple articles of commerce suitable for substantial noninfringing use.

24. Xcelis has been and continues to be damaged by Panasonic's infringement of the '115 Patent. As such, Xcelis is entitled to an award of money damages from Panasonic. This includes, but is not limited to a reasonable royalty.

25. Since having knowledge of the '115 Patent, Panasonic knew or should have known that, without taking a license to the '115 Patent, its actions continue to infringe one or more claims of the '115 Patent. Therefore, Panasonic's infringement has and will continue to be willful.

26. Panasonic's conduct in infringing the '115 Patent renders this case exceptional within the meaning of 35 U.S.C. § 285.

Prayer for Relief

Wherefore, Plaintiff Xcelis respectfully requests that this Court enter judgment against Panasonic as follows:

a) adjudging that the claims of the '115 Patent are valid;

b) adjudging that Panasonic has infringed the '115 Patent;

c) adjudging that the infringement was willful and that such damages be trebled;

d) awarding Xcelis the damages to which it is entitled under 35 U.S.C. § 284, including but not limited to a reasonable royalty, for Panasonic's past infringement and any continuing or future infringement up until the date Panasonic is finally and permanently enjoined from further infringement, and ordering a full accounting of the same;

e) awarding Xcelis pre-judgment and post-judgment interest on its damages;

f) declaring this to be an exceptional case, and awarding Xcelis attorneys' fees against Panasonic pursuant to 35 U.S.C. § 285;

g) awarding Xcelis such other and further relief in law or equity that the Court deems just and proper.

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Demand for Jury Trial

Xcelis hereby demands a trial by jury on all claims and issues so triable.

Respectfully submitted this 21st day of September, 2017.

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EXHIBIT A

US007565115B2

(12) **United States Patent**
Alexis

(10) **Patent No.: US 7,565,115 B2**
(45) **Date of Patent: Jul. 21, 2009**

(54) **COMMUNICATION SYSTEM FOR LANDLINE AND WIRELESS CALLS**

(75) Inventor: **Glenroy J. Alexis**, Ellicott City, MD (US)

(73) Assignee: **Xcelis Communications, LLC**, Chalfont, PA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 939 days.

(21) Appl. No.: **10/359,277**

(22) Filed: **Feb. 6, 2003**

(65) **Prior Publication Data**

US 2004/0008636 A1 Jan. 15, 2004

Related U.S. Application Data

(60) Provisional application No. 60/394,283, filed on Jul. 9, 2002.

(51) **Int. Cl.**

H04Q 7/38	(2006.01)
H04Q 7/20	(2006.01)
H04M 11/00	(2006.01)
H04B 1/38	(2006.01)
H04B 1/40	(2006.01)

(52) **U.S. Cl.** **455/74.1**; 455/426.1; 455/462; 455/552.1; 455/572

(58) **Field of Classification Search** 455/552.1, 455/552, 572, 462.1, 462, 74.1, 426.1
See application file for complete search history.

(56) **References Cited**

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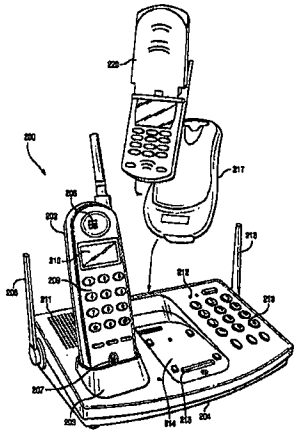
(Continued)

Primary Examiner—William D. Cumming
(74) *Attorney, Agent, or Firm*—Nixon & Vanderhye, PC

(57) **ABSTRACT**

Users can make landline, wireless and/or internet calls from a conventional landline communication device. If the communication device is on a wireless call, that call may be placed on hold to answer an incoming call on the landline. Likewise, if the communication device is on a landline call, that call may be placed on hold to answer an incoming call on the wireless telephone. Wireless and landline calls may also be conferenced together.

23 Claims, 23 Drawing Sheets



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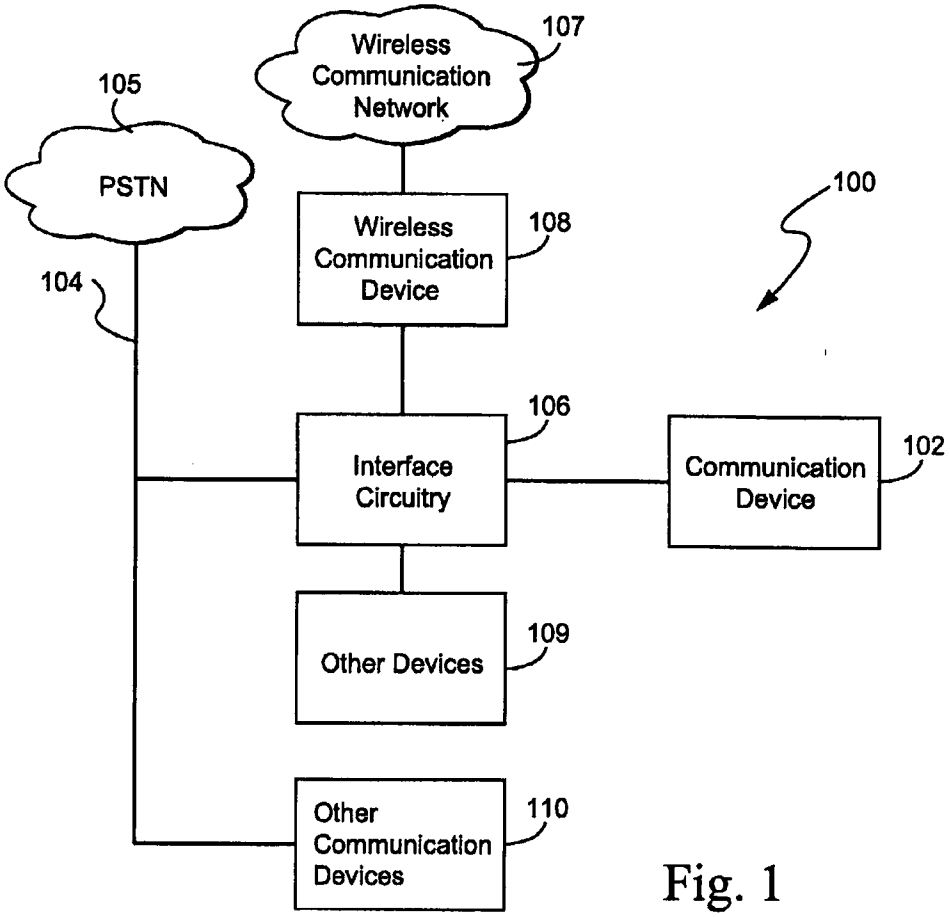

Fig. 1

Communication Device Status	Switch 30	Switch 32	Switch 34	AudioSwitch 38	Hold Switch 12
Placing/Received Landline Call	On	On	Off	Off	Off
Receiving Cell Call	Off	On	On	On	Off
Making Cell Call	Off	On	On	On	Off
Ringing Phone on Incoming Landline Call	Off	On	On	Off	Off
Ringing Phone on Incoming Cellular Call	Off	On	On	Off	Off
During Call Waiting Signal (300ms) to Phone while on Landline Call.	Off	Off	On	Off	On
Default Connections when Phone is off Hook	Off	On	On	On	Off

Fig. 3

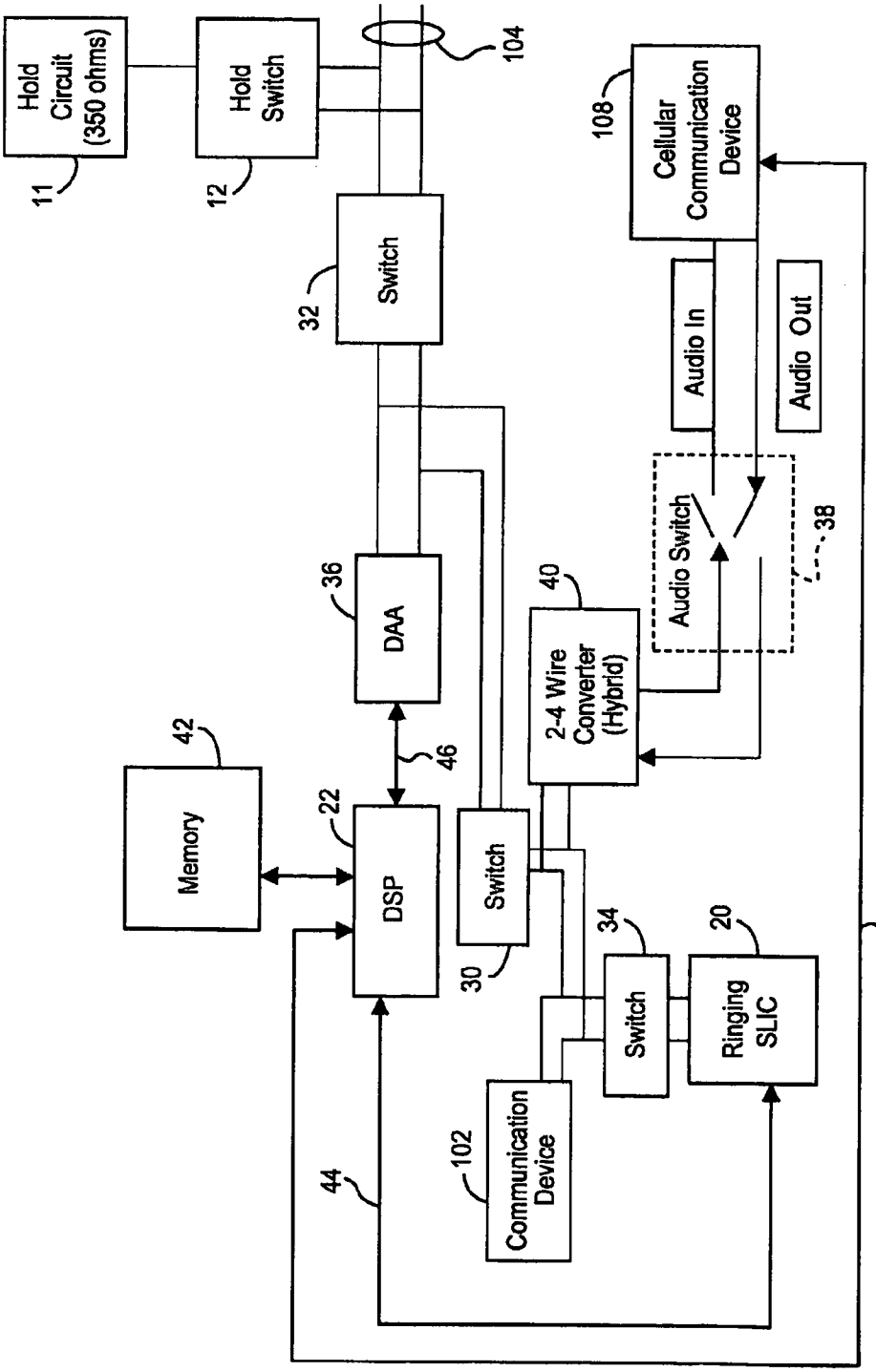
Hold Circuit (350 ohms)
11
Hold Switch
12
104
Switch
32
108
Cellular Communication Device
Audio In
Audio Out
Audio Switch
38
36
DAA
40
2-4 Wire Converter (Hybrid)
42
Memory
46
22
DSP
Switch
30
34
Switch
20
Ringing SLIC
48
44
102
Communication Device

Fig. 2A

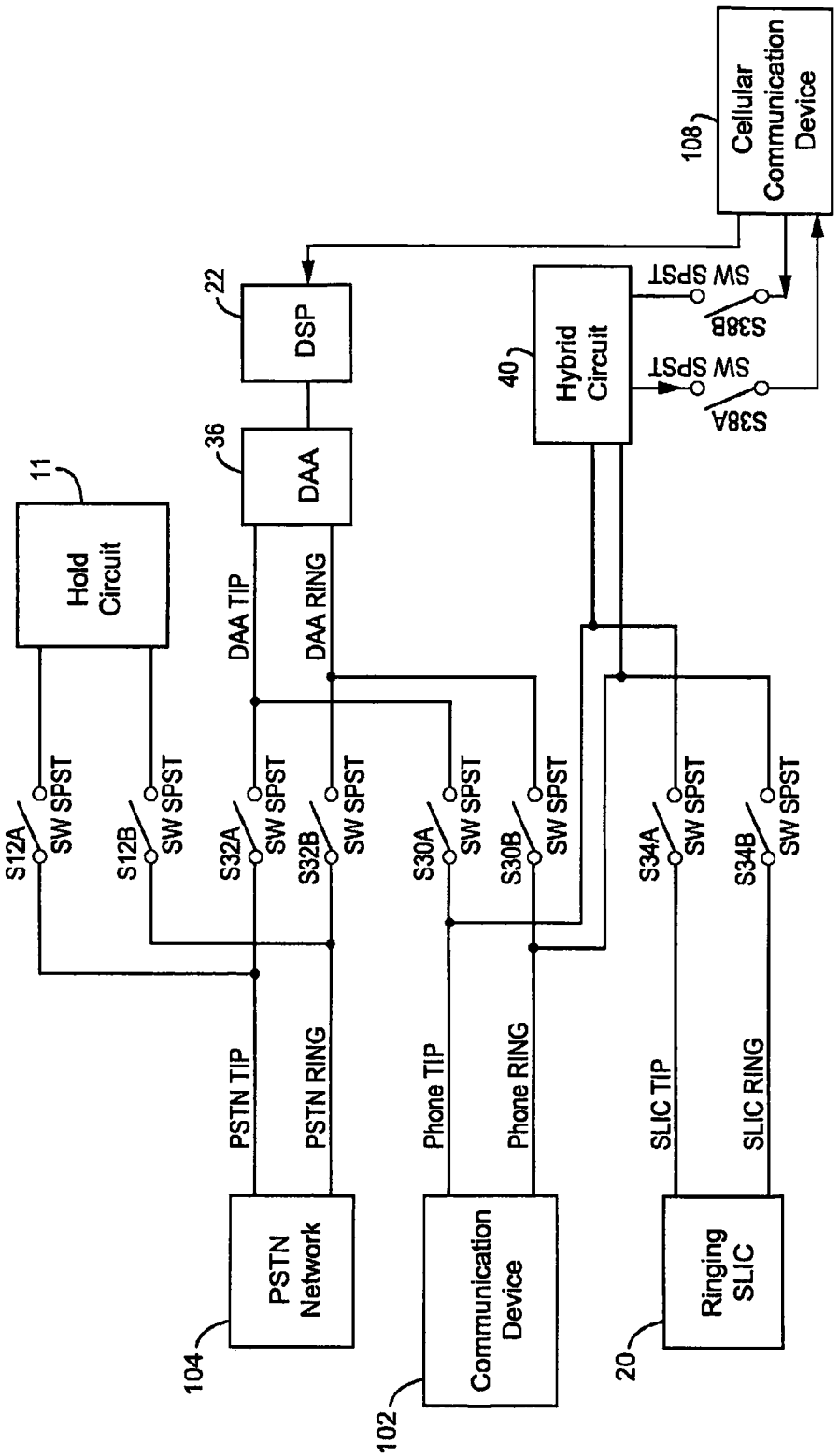
Cellular Communication Device
108
DSP
22
Hybrid Circuit
40
SW SPST
S38B
SW SPST
S38A
DAA
36
Hold Circuit
11
DAA TIP
DAA RING
S12A
S12B
S32A
S32B
S30A
S30B
S34A
S34B
SW SPST
PSTN TIP
PSTN RING
Phone TIP
Phone RING
SLIC TIP
SLIC RING
PSTN Network
104
Communication Device
102
Ringing SLIC
20

Fig. 2B

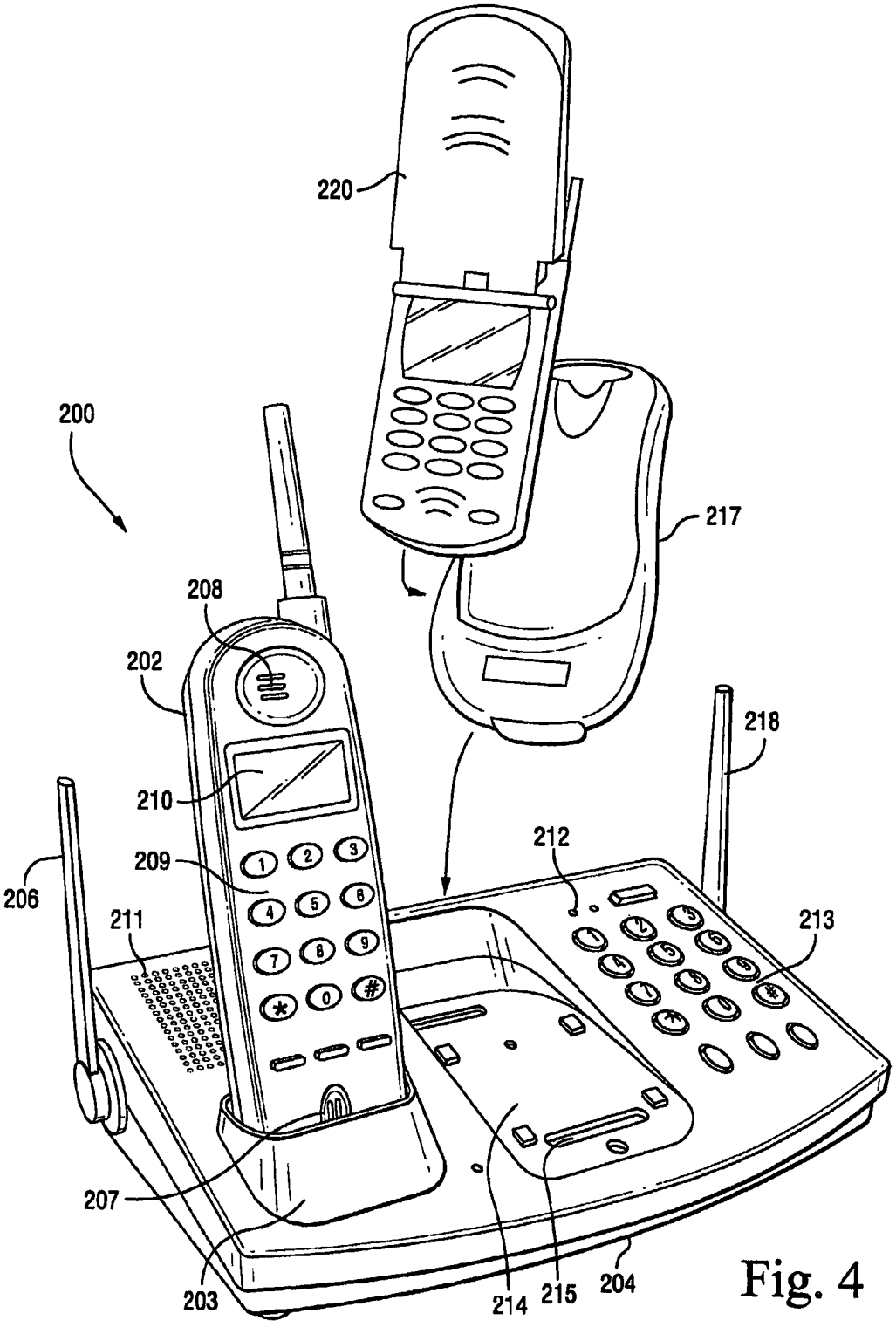
220
200
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Fig. 4

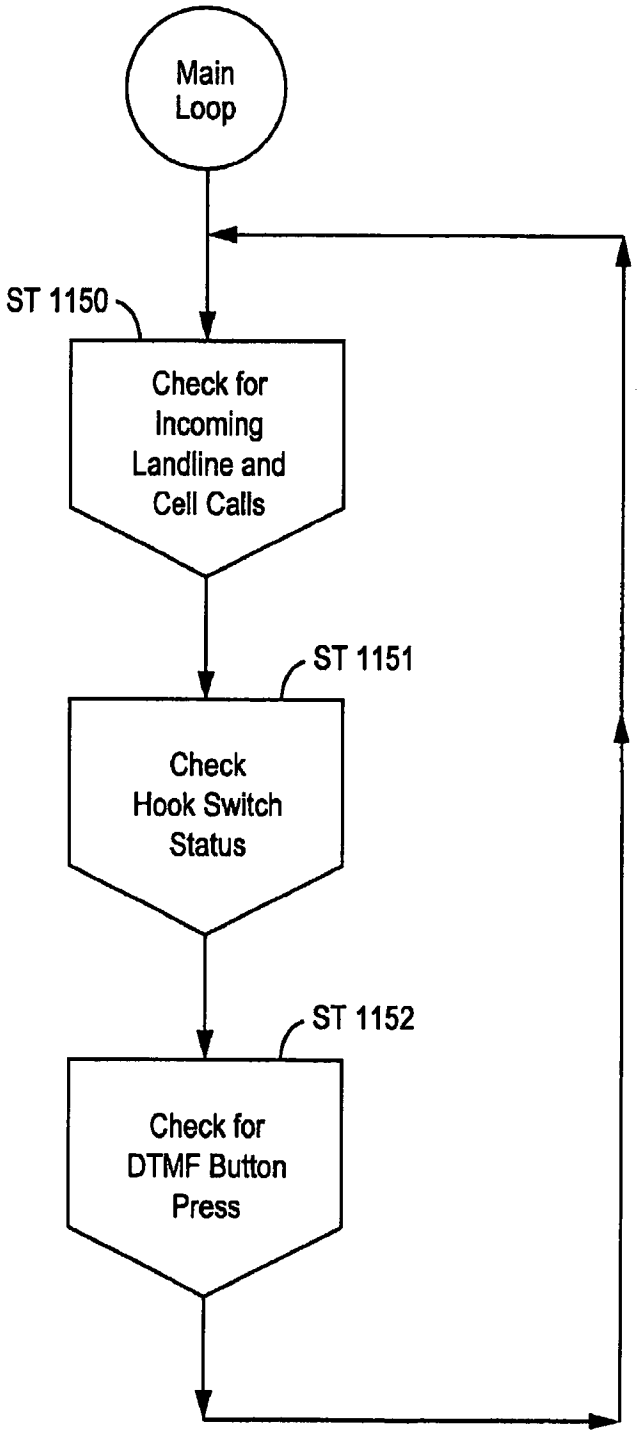

Main Loop
ST 1150
Check for Incoming Landline and Cell Calls
ST 1151
Check Hook Switch Status
ST 1152
Check for DTMF Button Press

Fig. 5A

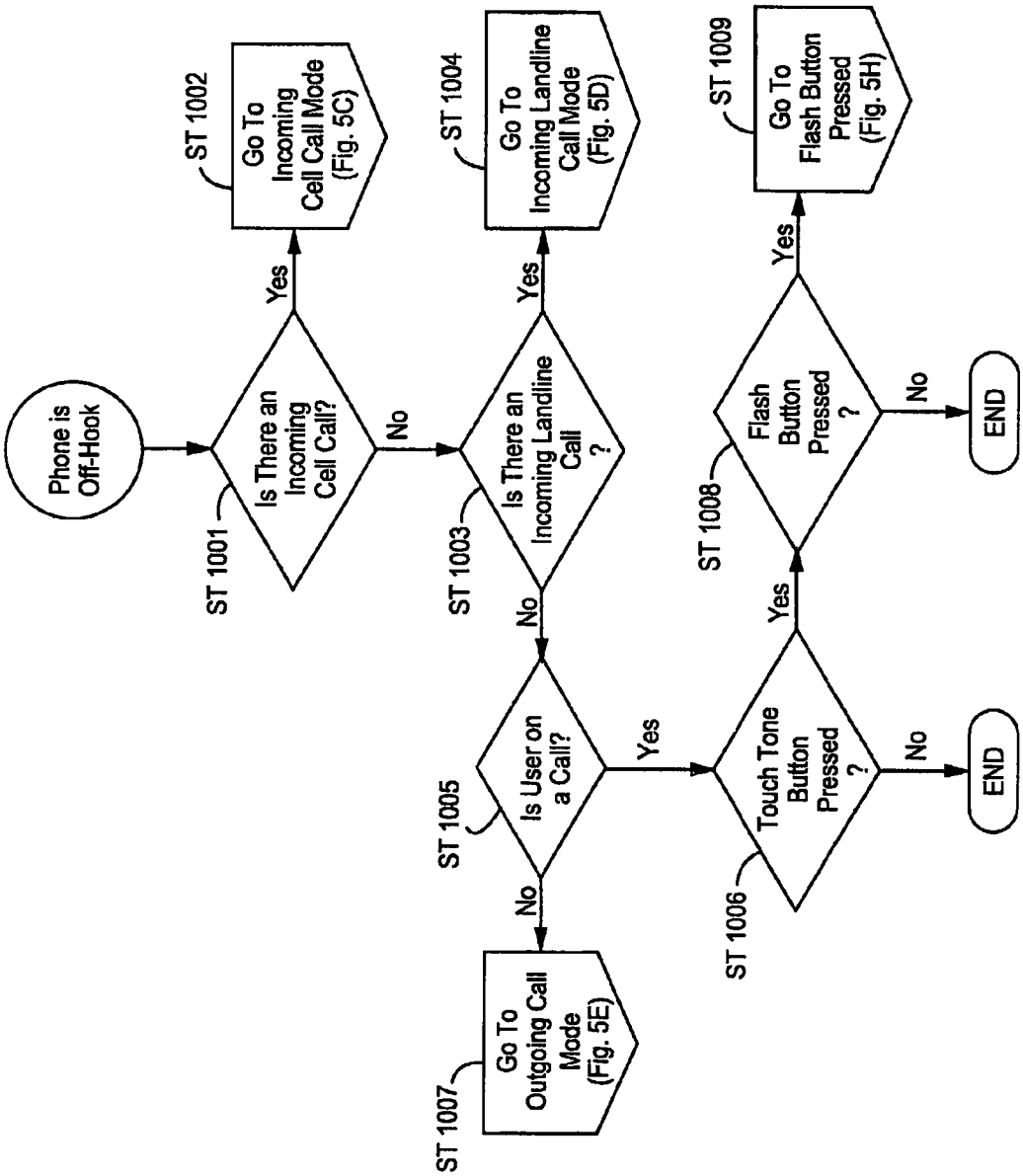

Phone is Off-Hook
Is There an Incoming Cell Call?
ST 1001
Yes
No
Go To Incoming Cell Call Mode (Fig. 5C)
ST 1002
Is There an Incoming Landline Call ?
ST 1003
Yes
No
Go To Incoming Landline Call Mode (Fig. 5D)
ST 1004
Is User on a Call?
ST 1005
Yes
No
Go To Outgoing Call Mode (Fig. 5E)
ST 1007
Touch Tone Button Pressed ?
ST 1006
Yes
No
END
Flash Button Pressed ?
ST 1008
Yes
No
END
Go To Flash Button Pressed (Fig. 5H)
ST 1009

Fig. 5B

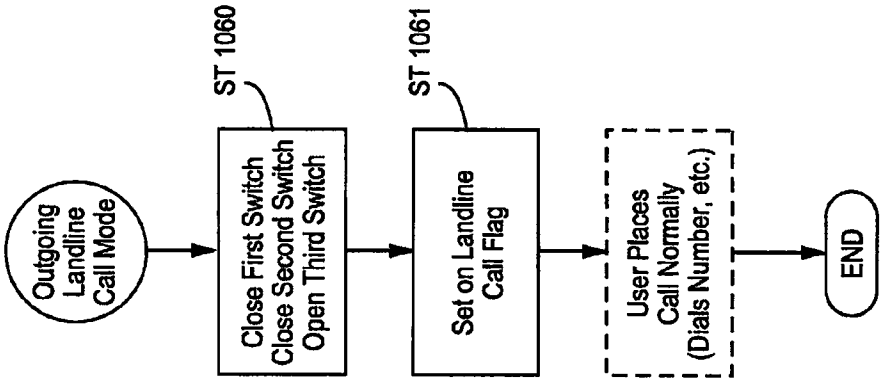


Fig. 5G

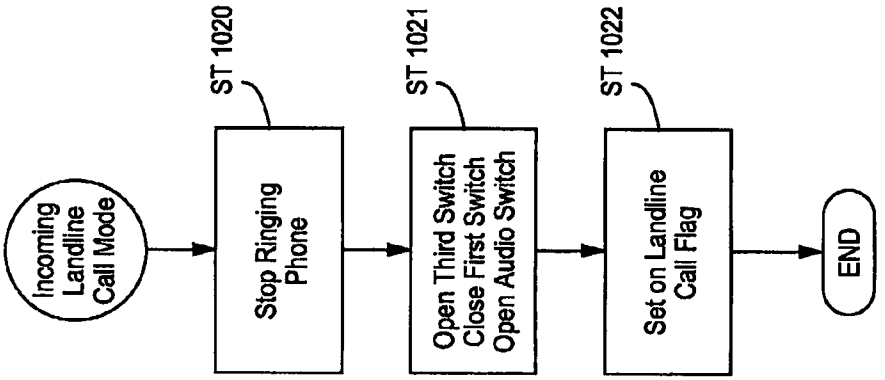


Fig. 5D

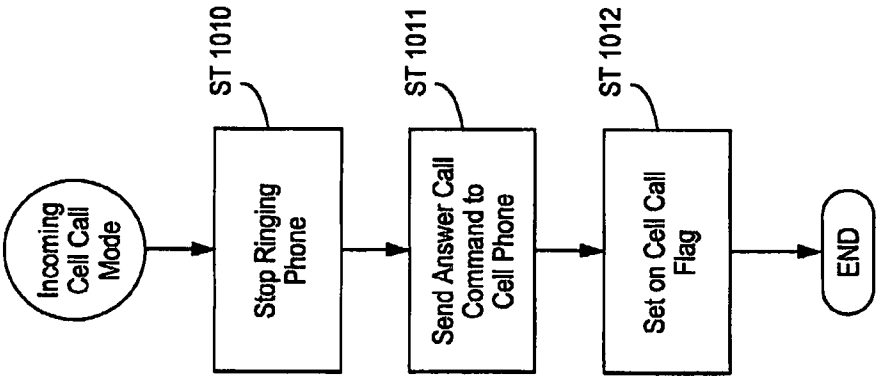


Fig. 5C

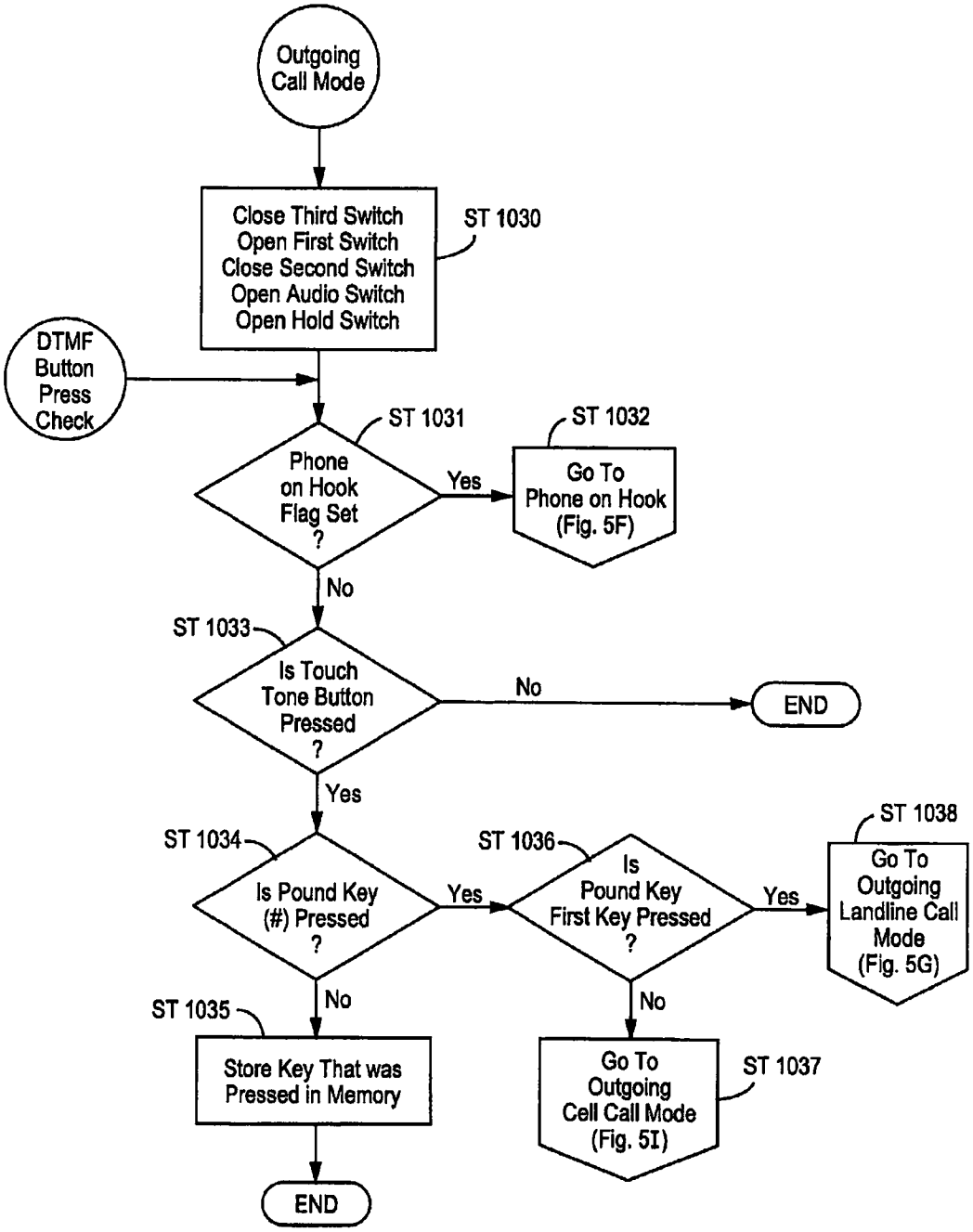

Outgoing Call Mode
Close Third Switch
Open First Switch
Close Second Switch
Open Audio Switch
Open Hold Switch
ST 1030
DTMF Button Press Check
ST 1031
Phone on Hook Flag Set ?
Yes
ST 1032
Go To Phone on Hook (Fig. 5F)
No
ST 1033
Is Touch Tone Button Pressed ?
No
END
Yes
ST 1034
Is Pound Key (#) Pressed ?
Yes
ST 1036
Is Pound Key First Key Pressed ?
Yes
ST 1038
Go To Outgoing Landline Call Mode (Fig. 5G)
No
ST 1035
Store Key That was Pressed in Memory
No
Go To Outgoing Cell Call Mode (Fig. 5I)
ST 1037
END

Fig. 5E

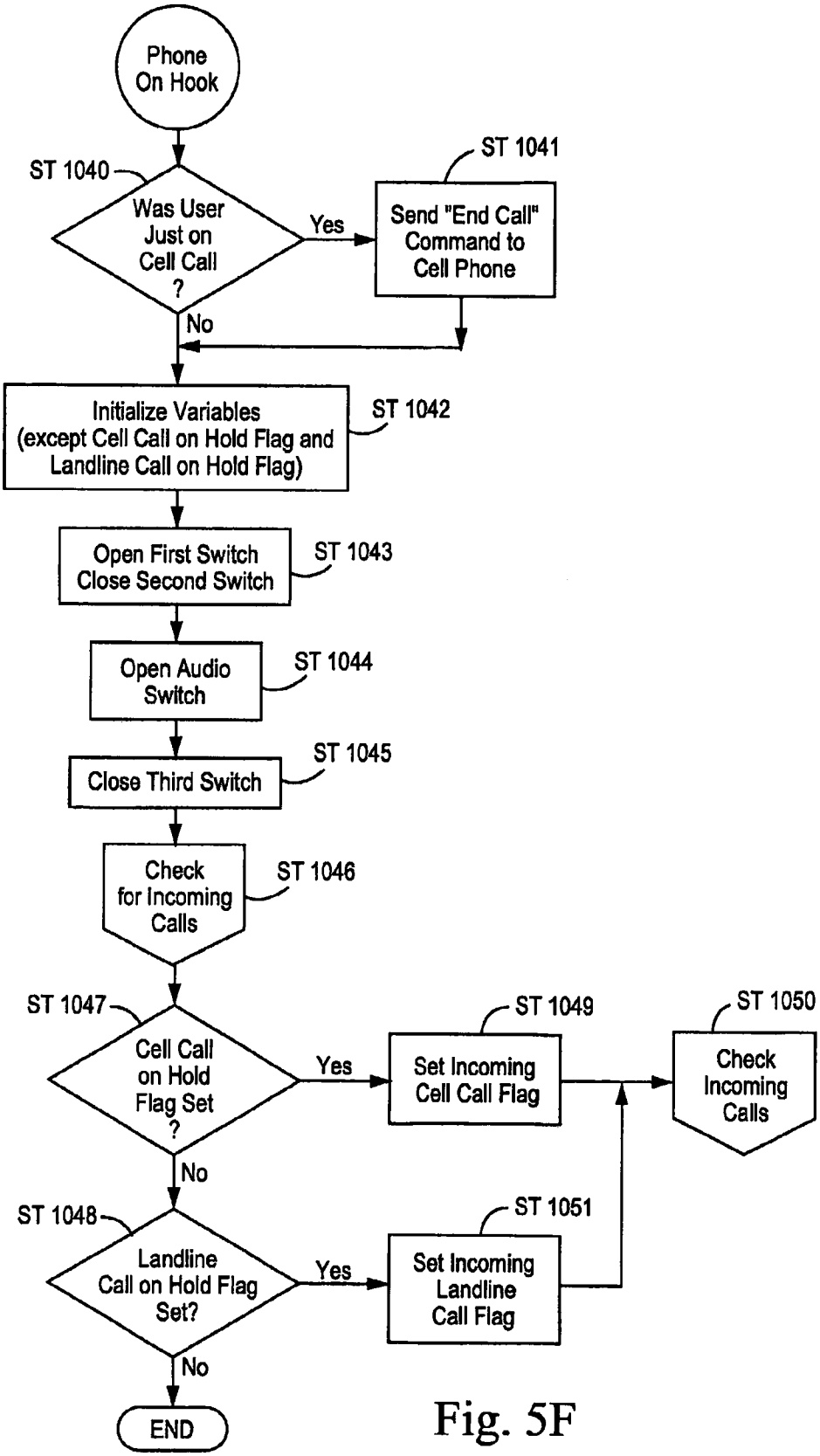

Phone On Hook
ST 1040
Was User Just on Cell Call ?
Yes
ST 1041
Send "End Call" Command to Cell Phone
No
Initialize Variables (except Cell Call on Hold Flag and Landline Call on Hold Flag)
ST 1042
Open First Switch Close Second Switch
ST 1043
Open Audio Switch
ST 1044
Close Third Switch
ST 1045
Check for Incoming Calls
ST 1046
ST 1047
Cell Call on Hold Flag Set ?
Yes
ST 1049
Set Incoming Cell Call Flag
ST 1050
Check Incoming Calls
No
ST 1048
Landline Call on Hold Flag Set?
Yes
ST 1051
Set Incoming Landline Call Flag
No
END

Fig. 5F

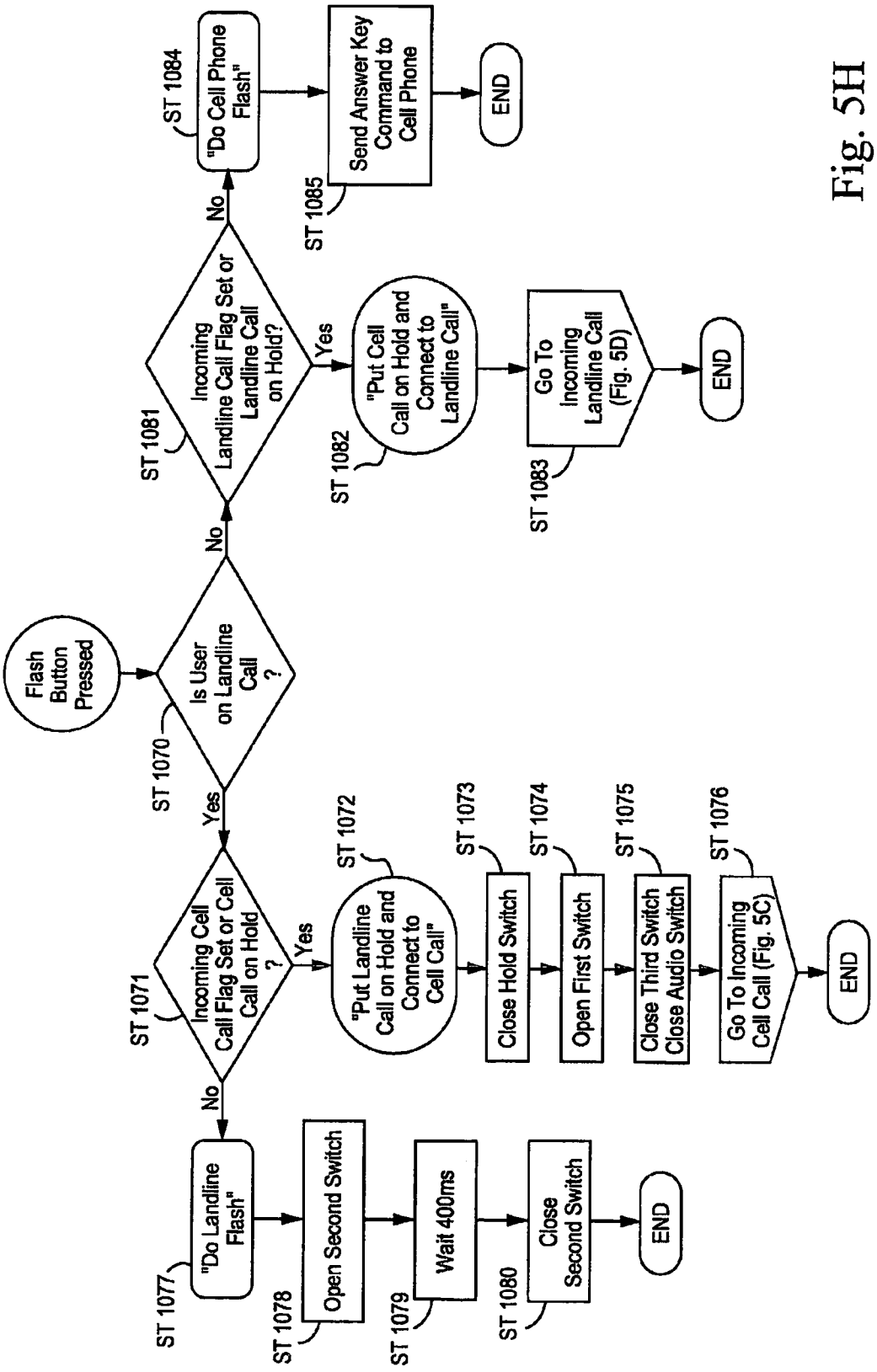

Flash Button Pressed
ST 1070
Is User on Landline Call ?
No
Yes
ST 1071
Incoming Cell Call Flag Set or Cell Call on Hold ?
No
Yes
ST 1072
"Put Landline Call on Hold and Connect to Cell Call"
ST 1073
Close Hold Switch
ST 1074
Open First Switch
ST 1075
Close Third Switch Close Audio Switch
ST 1076
Go To Incoming Cell Call (Fig. 5C)
END
ST 1077
"Do Landline Flash"
ST 1078
Open Second Switch
ST 1079
Wait 400ms
ST 1080
Close Second Switch
END
ST 1081
Incoming Landline Call Flag Set or Landline Call on Hold?
No
Yes
ST 1082
"Put Cell Call on Hold and Connect to Landline Call"
ST 1083
Go To Incoming Landline Call (Fig. 5D)
END
ST 1084
"Do Cell Phone Flash"
ST 1085
Send Answer Key Command to Cell Phone
END

Fig. 5H

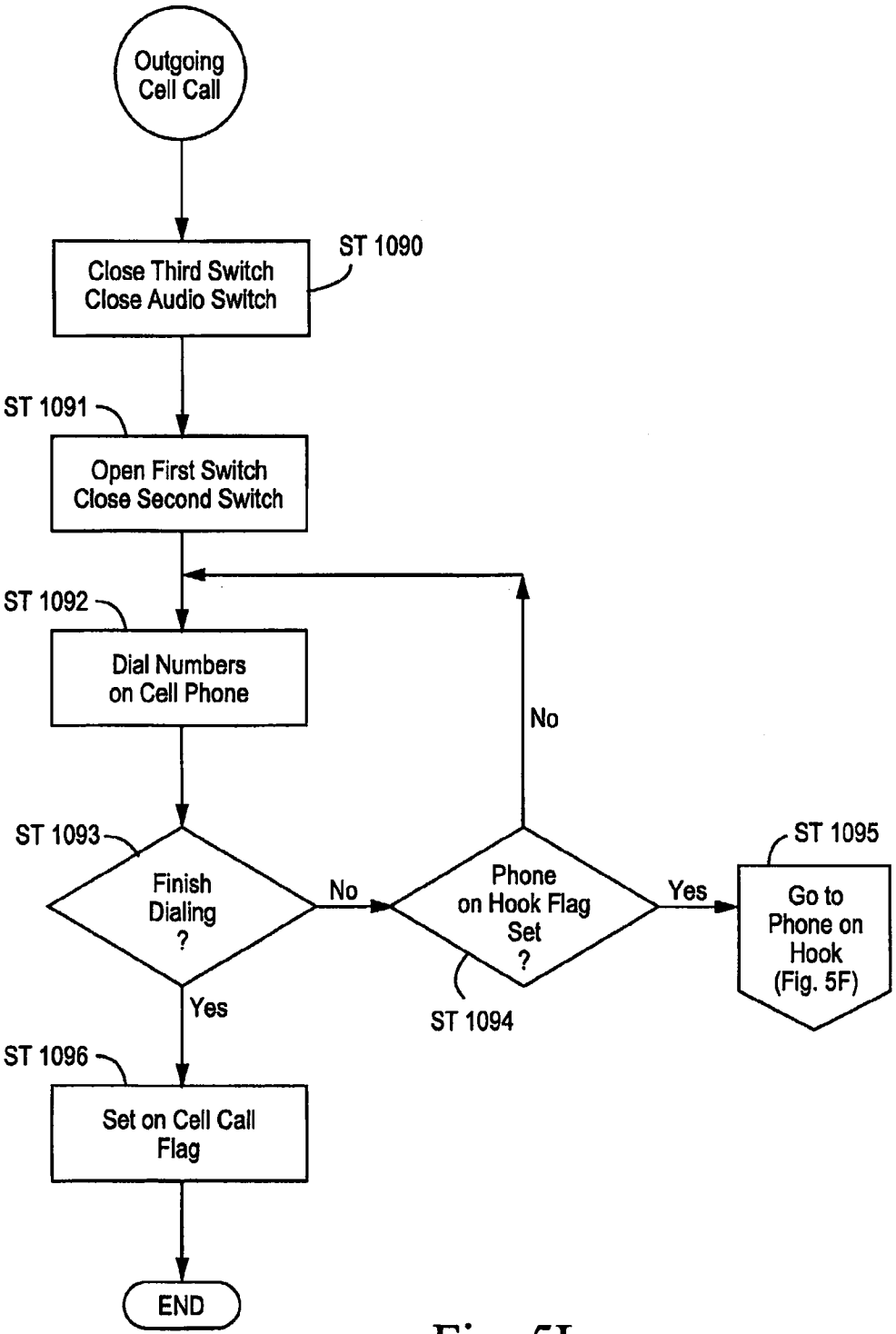

Outgoing Cell Call
Close Third Switch Close Audio Switch
ST 1090
ST 1091
Open First Switch Close Second Switch
ST 1092
Dial Numbers on Cell Phone
ST 1093
Finish Dialing ?
No
Phone on Hook Flag Set ?
Yes
ST 1095
Go to Phone on Hook (Fig. 5F)
No
ST 1094
Yes
ST 1096
Set on Cell Call Flag
END

Fig. 5I

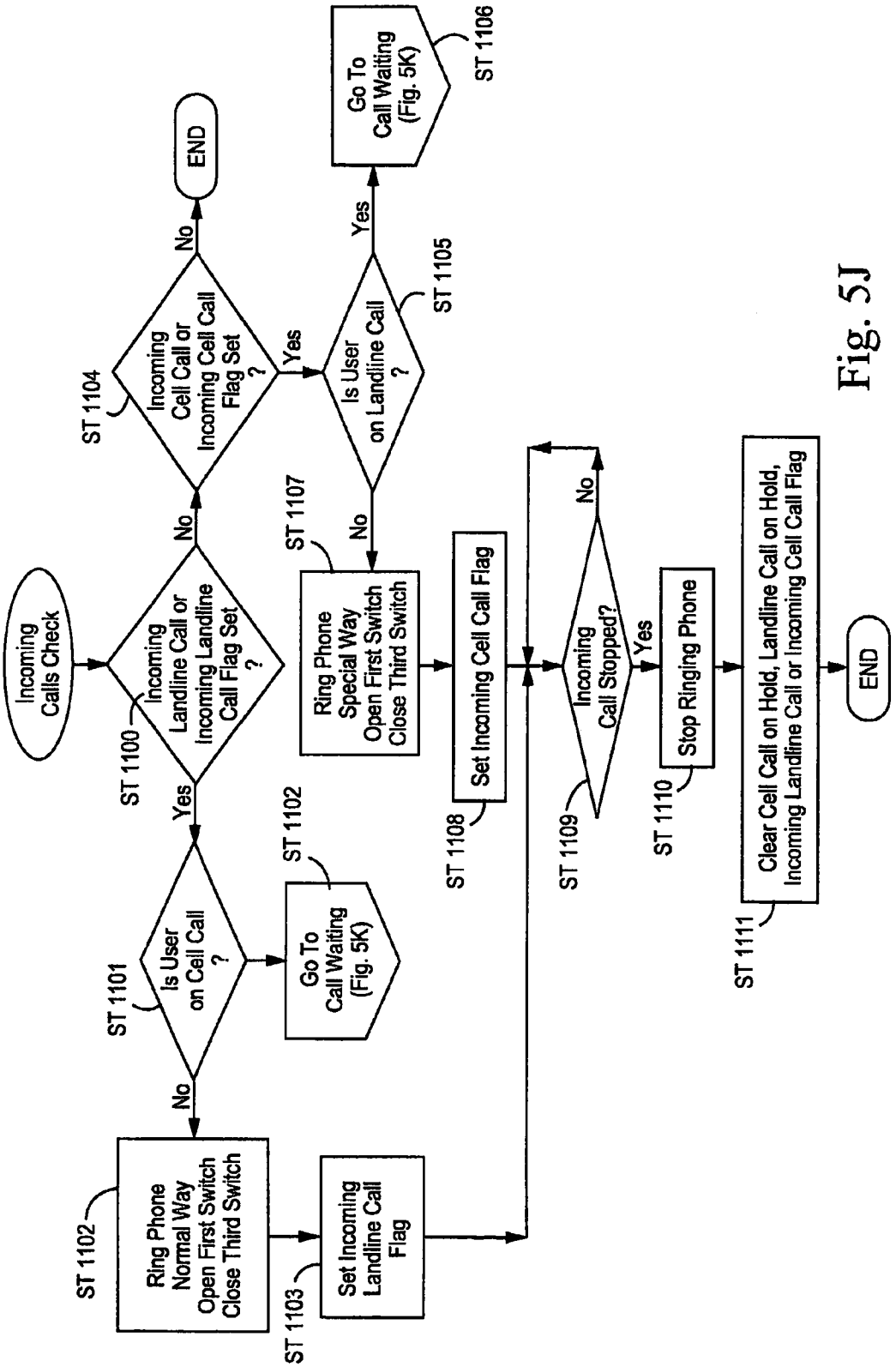

Incoming Calls Check
ST 1100
Incoming Landline Call or Incoming Landline Call Flag Set ?
No
Yes
ST 1101
Is User on Cell Call ?
No
Yes
ST 1102
Go To Call Waiting (Fig. 5K)
ST 1102
Ring Phone Normal Way Open First Switch Close Third Switch
ST 1103
Set Incoming Landline Call Flag
ST 1104
Incoming Cell Call or Incoming Cell Call Flag Set ?
No
Yes
END
ST 1105
Is User on Landline Call ?
No
Yes
ST 1106
Go To Call Waiting (Fig. 5K)
ST 1107
Ring Phone Special Way Open First Switch Close Third Switch
ST 1108
Set Incoming Cell Call Flag
ST 1109
Incoming Call Stopped?
No
Yes
ST 1110
Stop Ringing Phone
ST 1111
Clear Cell Call on Hold, Landline Call on Hold, Incoming Landline Call or Incoming Cell Call Flag
END

Fig. 5J

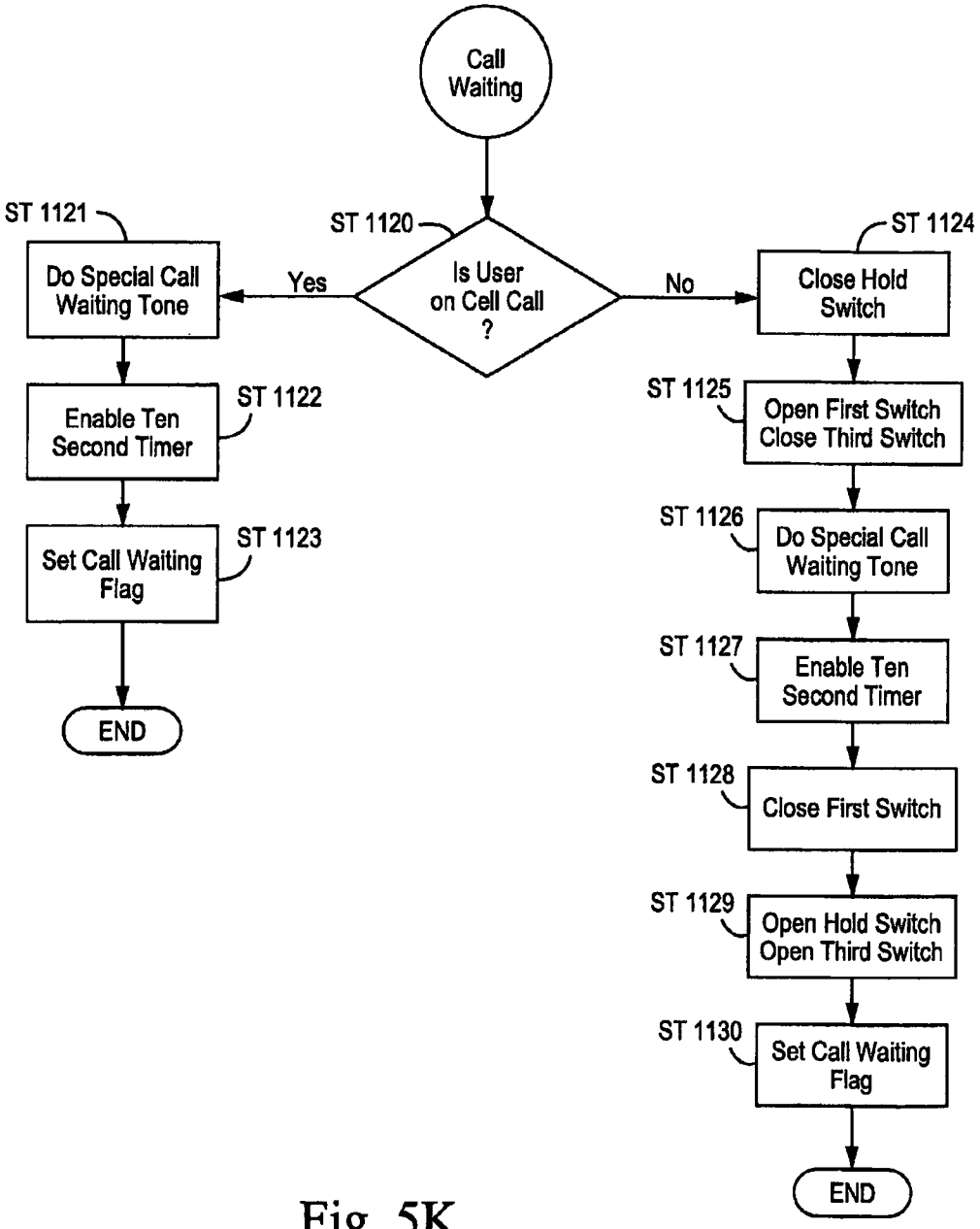

Call Waiting
ST 1120
Is User on Cell Call ?
Yes
No
ST 1121
Do Special Call Waiting Tone
ST 1122
Enable Ten Second Timer
ST 1123
Set Call Waiting Flag
END
ST 1124
Close Hold Switch
ST 1125
Open First Switch Close Third Switch
ST 1126
Do Special Call Waiting Tone
ST 1127
Enable Ten Second Timer
ST 1128
Close First Switch
ST 1129
Open Hold Switch Open Third Switch
ST 1130
Set Call Waiting Flag
END

Fig. 5K

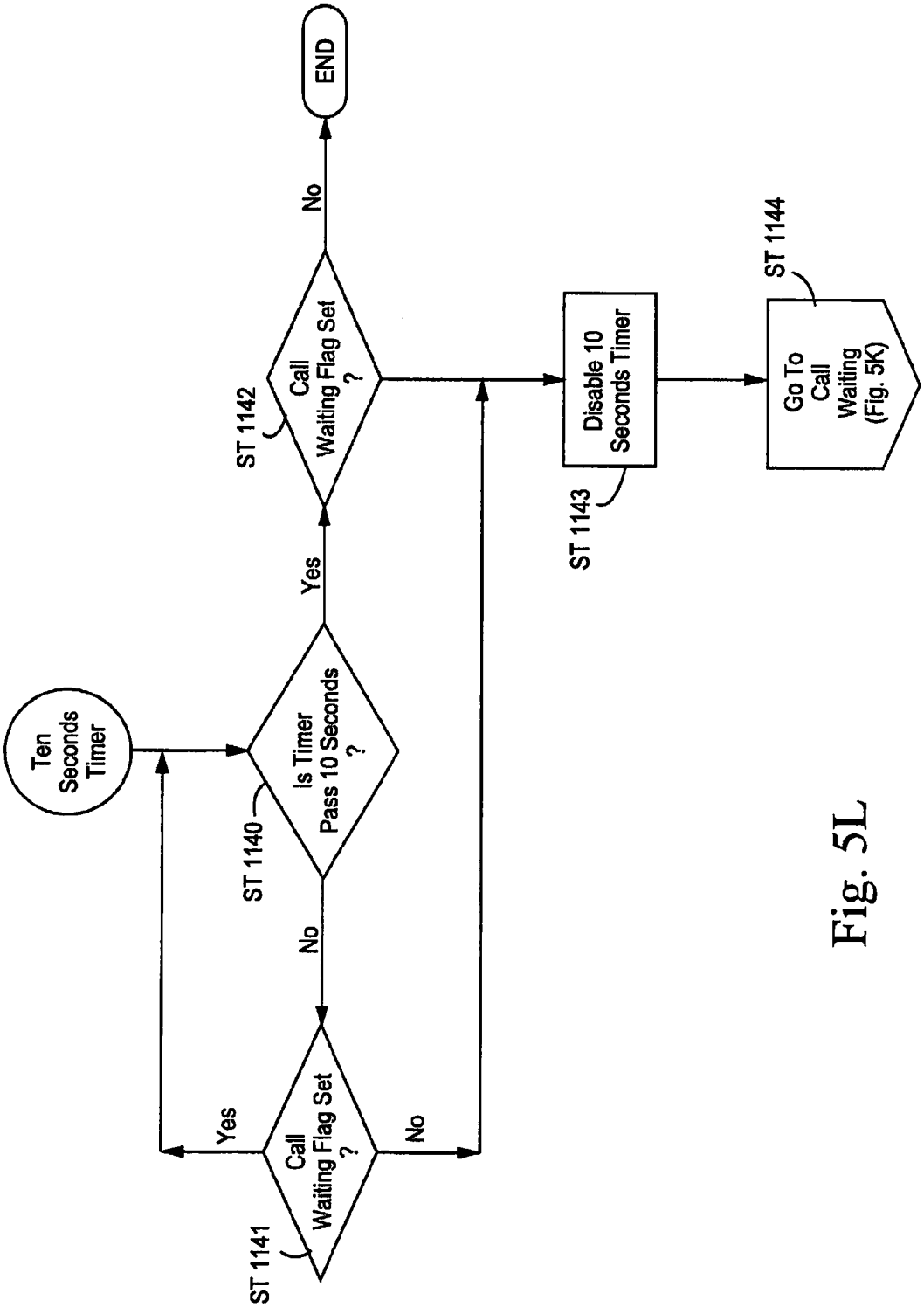

Ten Seconds Timer
Is Timer Pass 10 Seconds ?
ST 1140
No
Yes
Call Waiting Flag Set ?
ST 1141
Yes
No
Call Waiting Flag Set ?
ST 1142
No
END
Yes
Disable 10 Seconds Timer
ST 1143
Go To Call Waiting (Fig. 5K)
ST 1144

Fig. 5L

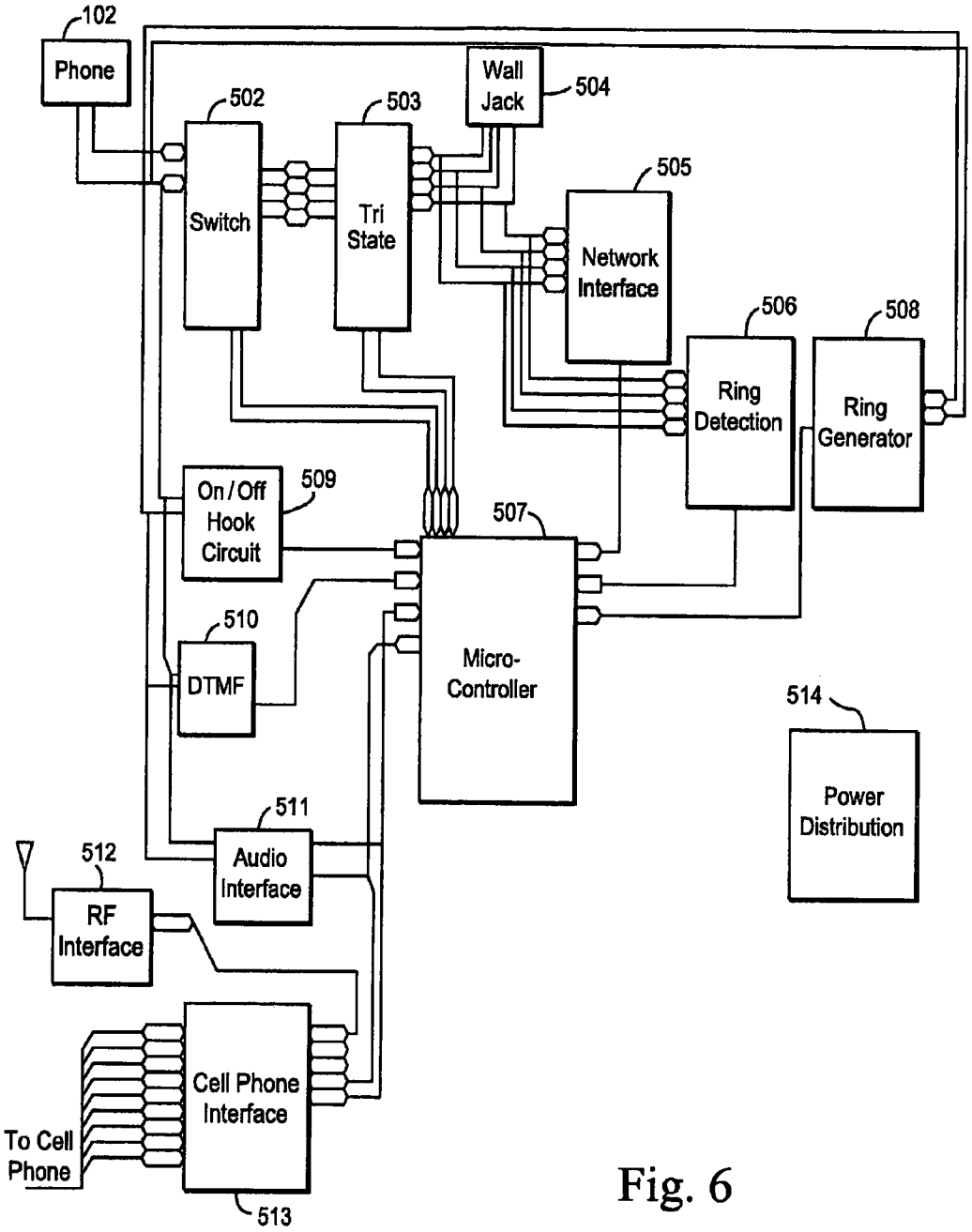

102
Phone
502
Switch
503
Tri State
Wall Jack
504
505
Network Interface
506
Ring Detection
508
Ring Generator
On / Off Hook Circuit
509
507
Micro-Controller
510
DTMF
514
Power Distribution
511
Audio Interface
512
RF Interface
Cell Phone Interface
To Cell Phone
513

Fig. 6

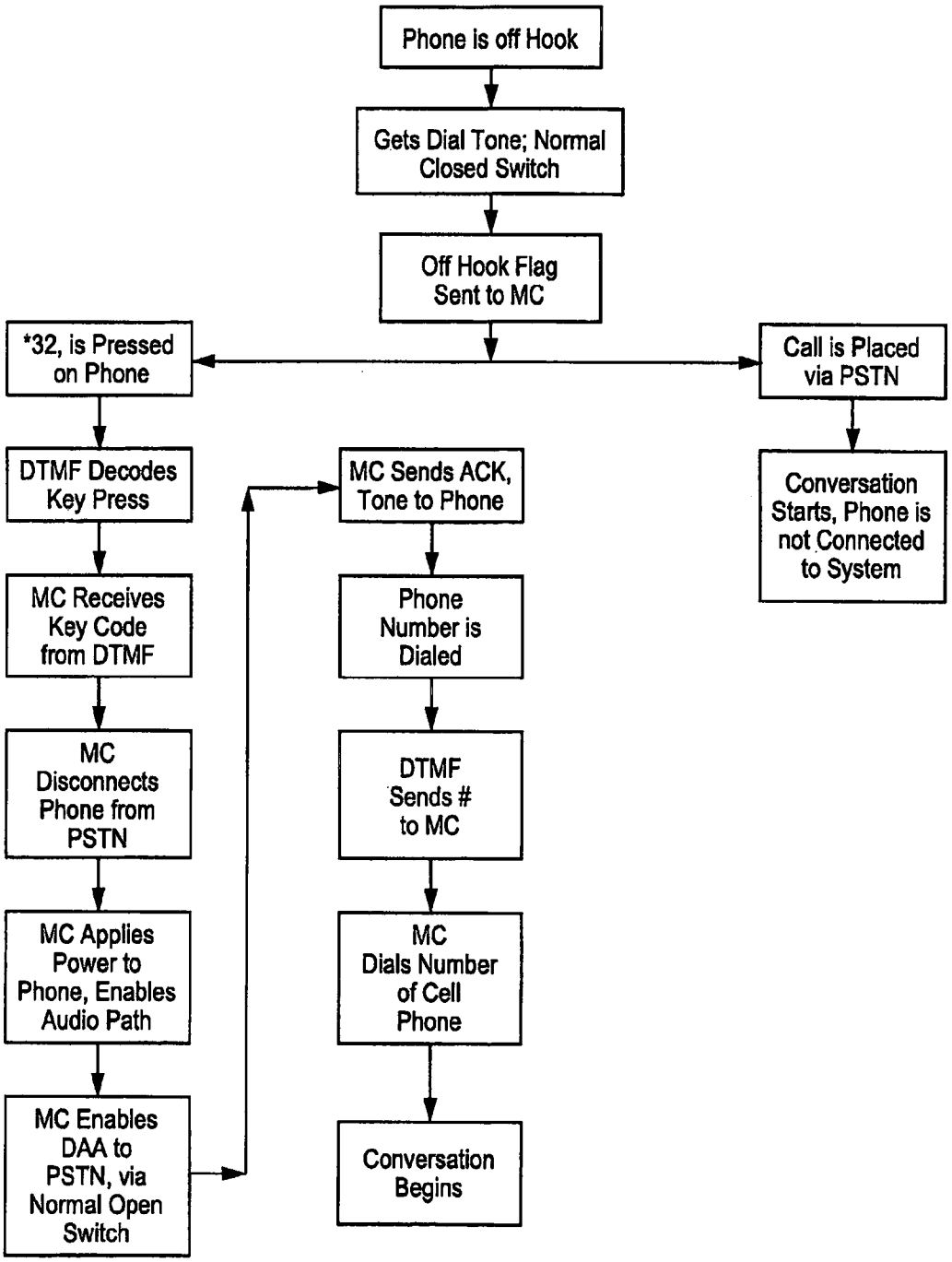

Phone is off Hook
Gets Dial Tone; Normal Closed Switch
Off Hook Flag Sent to MC
*32, is Pressed on Phone
Call is Placed via PSTN
DTMF Decodes Key Press
MC Receives Key Code from DTMF
MC Disconnects Phone from PSTN
MC Applies Power to Phone, Enables Audio Path
MC Enables DAA to PSTN, via Normal Open Switch
MC Sends ACK, Tone to Phone
Phone Number is Dialed
DTMF Sends # to MC
MC Dials Number of Cell Phone
Conversation Begins
Conversation Starts, Phone is not Connected to System

Fig. 7A

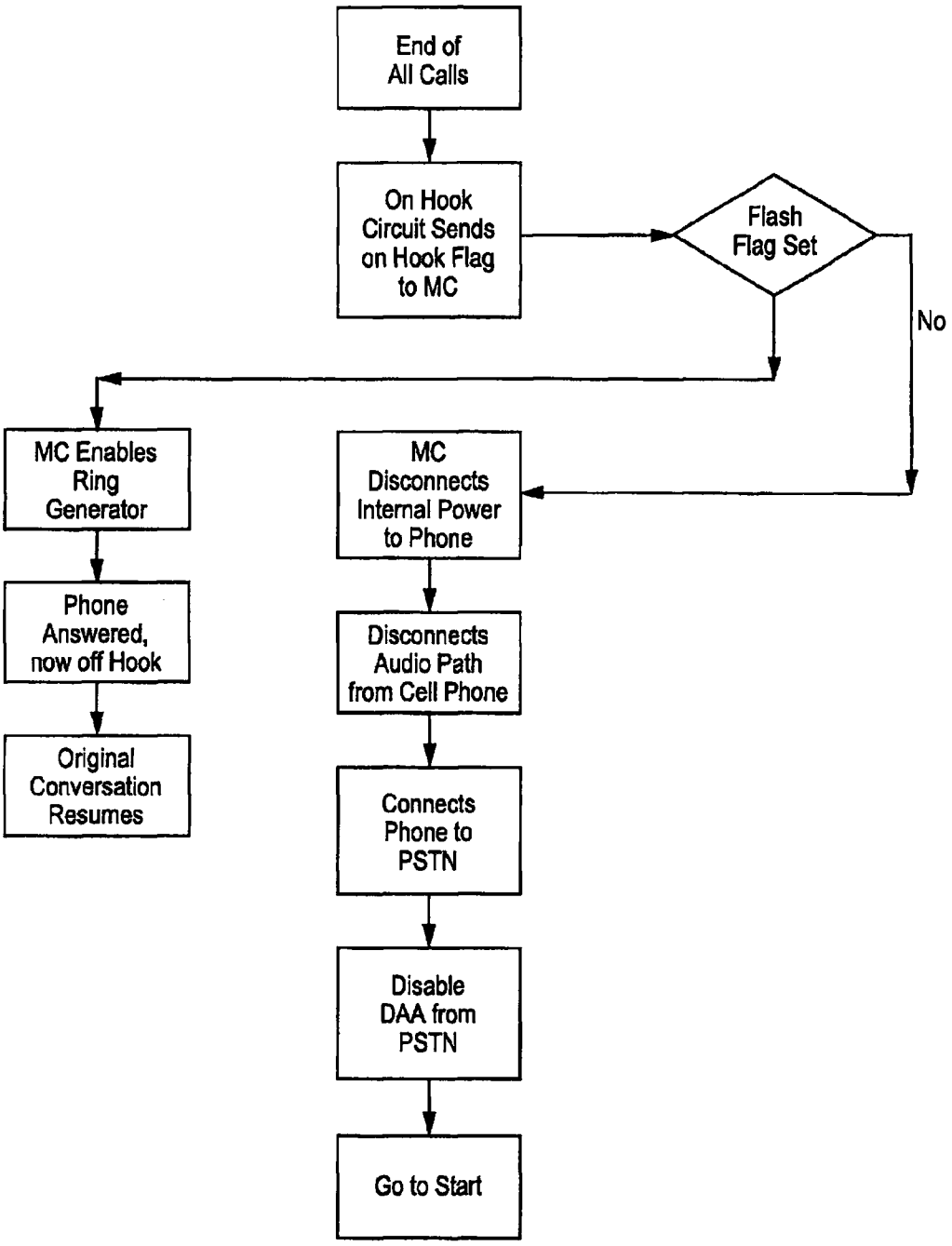

End of All Calls
On Hook Circuit Sends on Hook Flag to MC
Flash Flag Set
No
MC Enables Ring Generator
Phone Answered, now off Hook
Original Conversation Resumes
MC Disconnects Internal Power to Phone
Disconnects Audio Path from Cell Phone
Connects Phone to PSTN
Disable DAA from PSTN
Go to Start

Fig. 7B

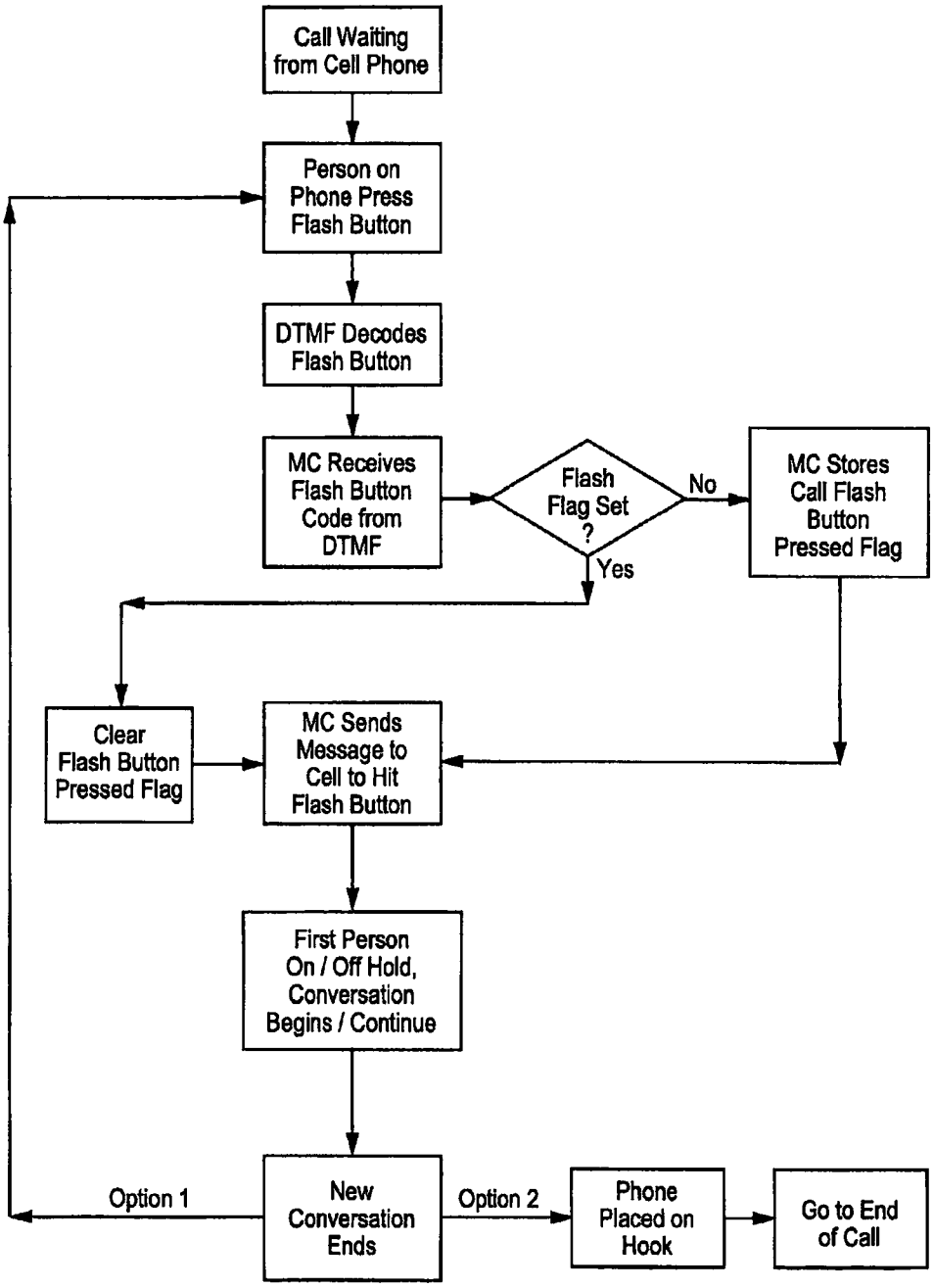

Call Waiting from Cell Phone
Person on Phone Press Flash Button
DTMF Decodes Flash Button
MC Receives Flash Button Code from DTMF
Flash Flag Set ?
No
Yes
MC Stores Call Flash Button Pressed Flag
Clear Flash Button Pressed Flag
MC Sends Message to Cell to Hit Flash Button
First Person On / Off Hold, Conversation Begins / Continue
Option 1
New Conversation Ends
Option 2
Phone Placed on Hook
Go to End of Call

Fig. 7C

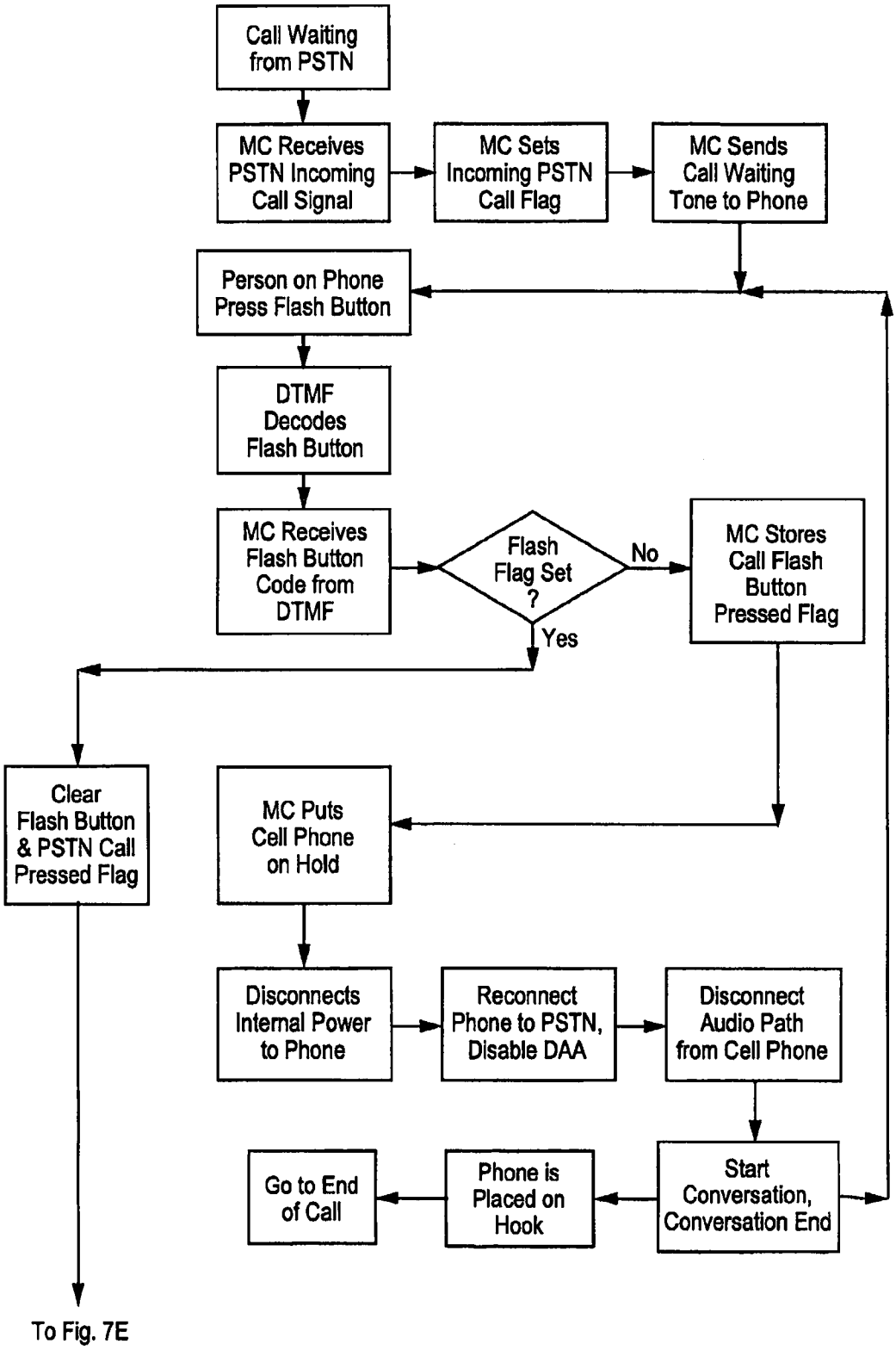

Call Waiting from PSTN
MC Receives PSTN Incoming Call Signal
MC Sets Incoming PSTN Call Flag
MC Sends Call Waiting Tone to Phone
Person on Phone Press Flash Button
DTMF Decodes Flash Button
MC Receives Flash Button Code from DTMF
Flash Flag Set ?
No
Yes
MC Stores Call Flash Button Pressed Flag
Clear Flash Button & PSTN Call Pressed Flag
MC Puts Cell Phone on Hold
Disconnects Internal Power to Phone
Reconnect Phone to PSTN, Disable DAA
Disconnect Audio Path from Cell Phone
Start Conversation, Conversation End
Phone is Placed on Hook
Go to End of Call
To Fig. 7E

Fig. 7D

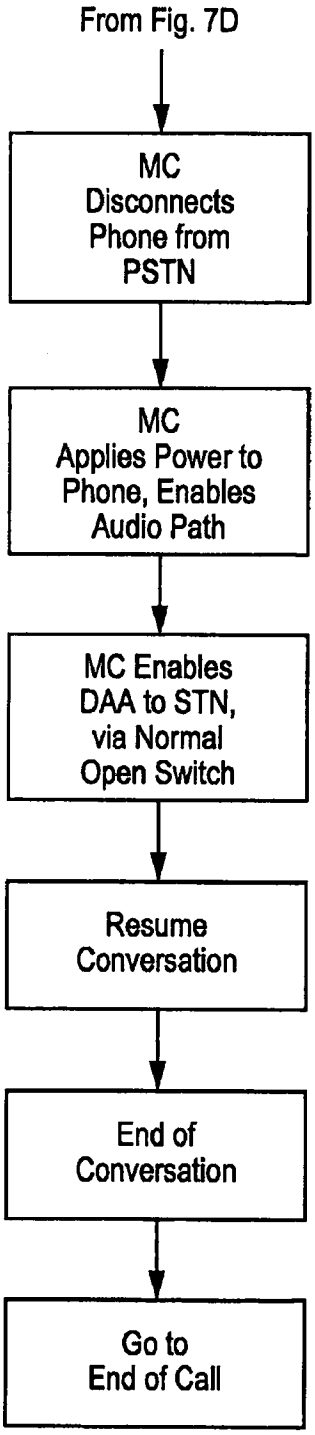

From Fig. 7D
MC Disconnects Phone from PSTN
MC Applies Power to Phone, Enables Audio Path
MC Enables DAA to STN, via Normal Open Switch
Resume Conversation
End of Conversation
Go to End of Call

Fig. 7E

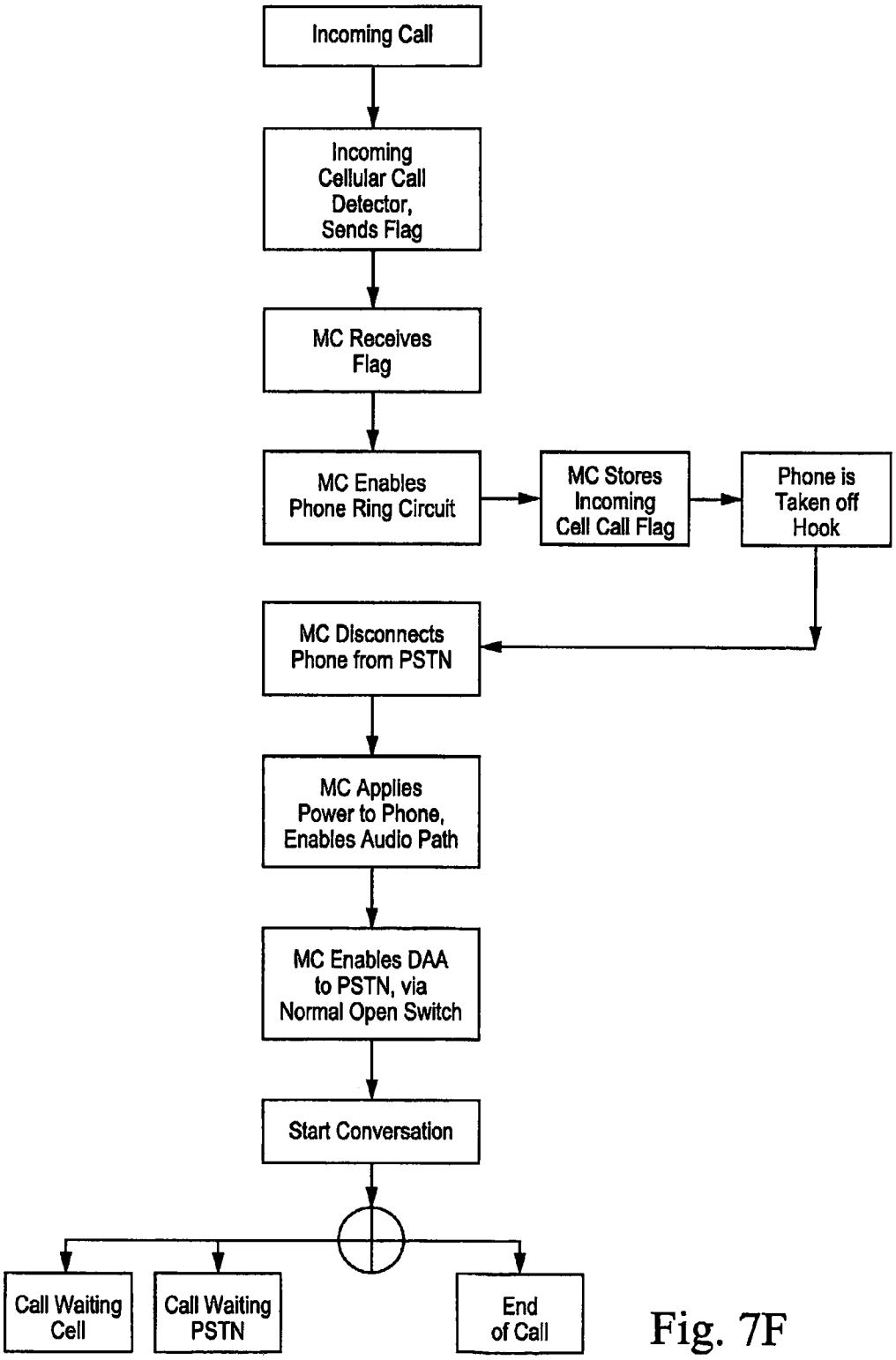

Incoming Call
Incoming Cellular Call Detector, Sends Flag
MC Receives Flag
MC Enables Phone Ring Circuit
MC Stores Incoming Cell Call Flag
Phone is Taken off Hook
MC Disconnects Phone from PSTN
MC Applies Power to Phone, Enables Audio Path
MC Enables DAA to PSTN, via Normal Open Switch
Start Conversation
Call Waiting Cell
Call Waiting PSTN
End of Call

Fig. 7F

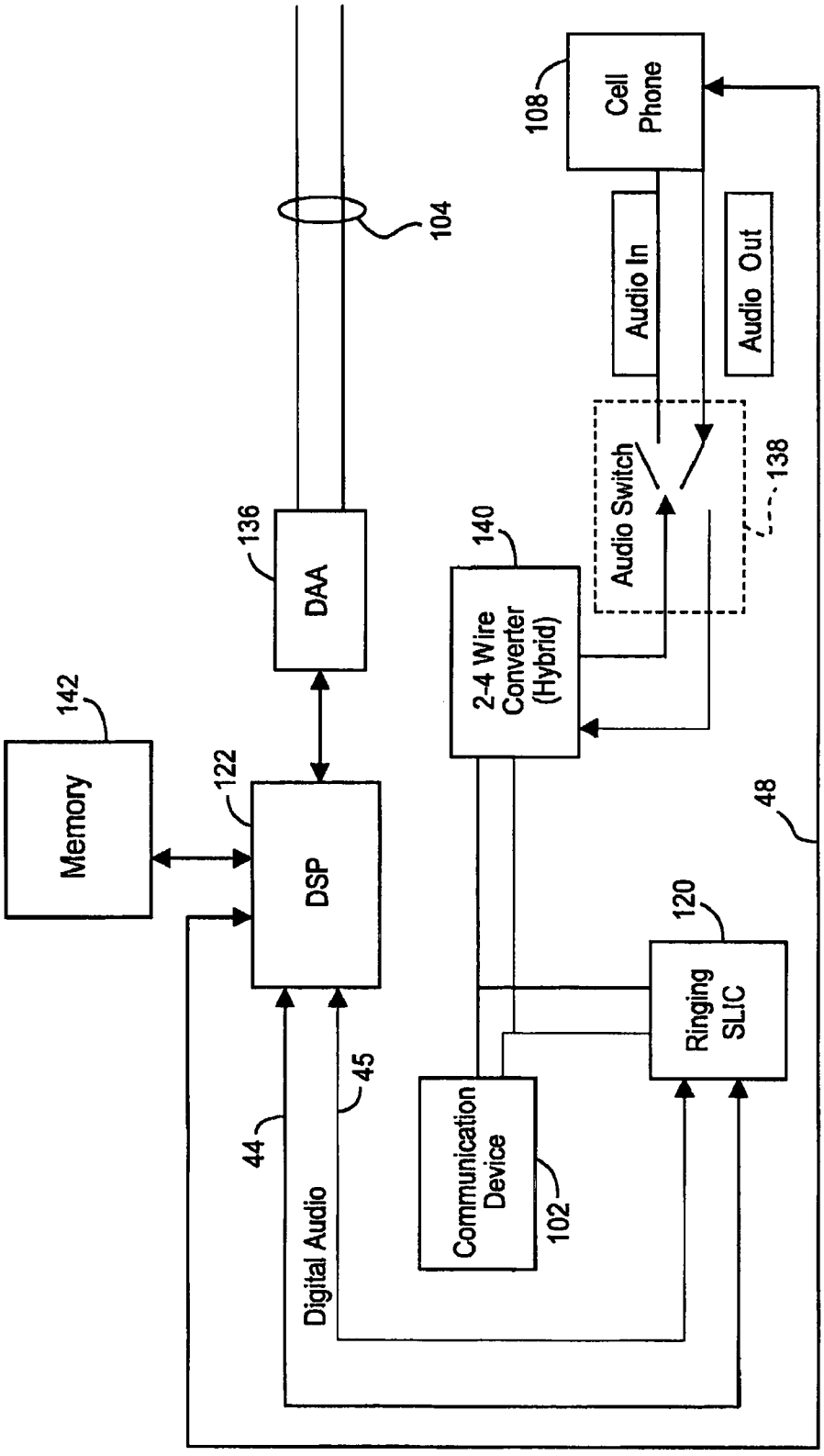

Cell Phone
108
Audio In
Audio Out
104
Audio Switch
138
DAA
136
2-4 Wire Converter (Hybrid)
140
Memory
142
DSP
122
48
120
Ringing SLIC
45
44
Digital Audio
Communication Device
102

Fig. 8

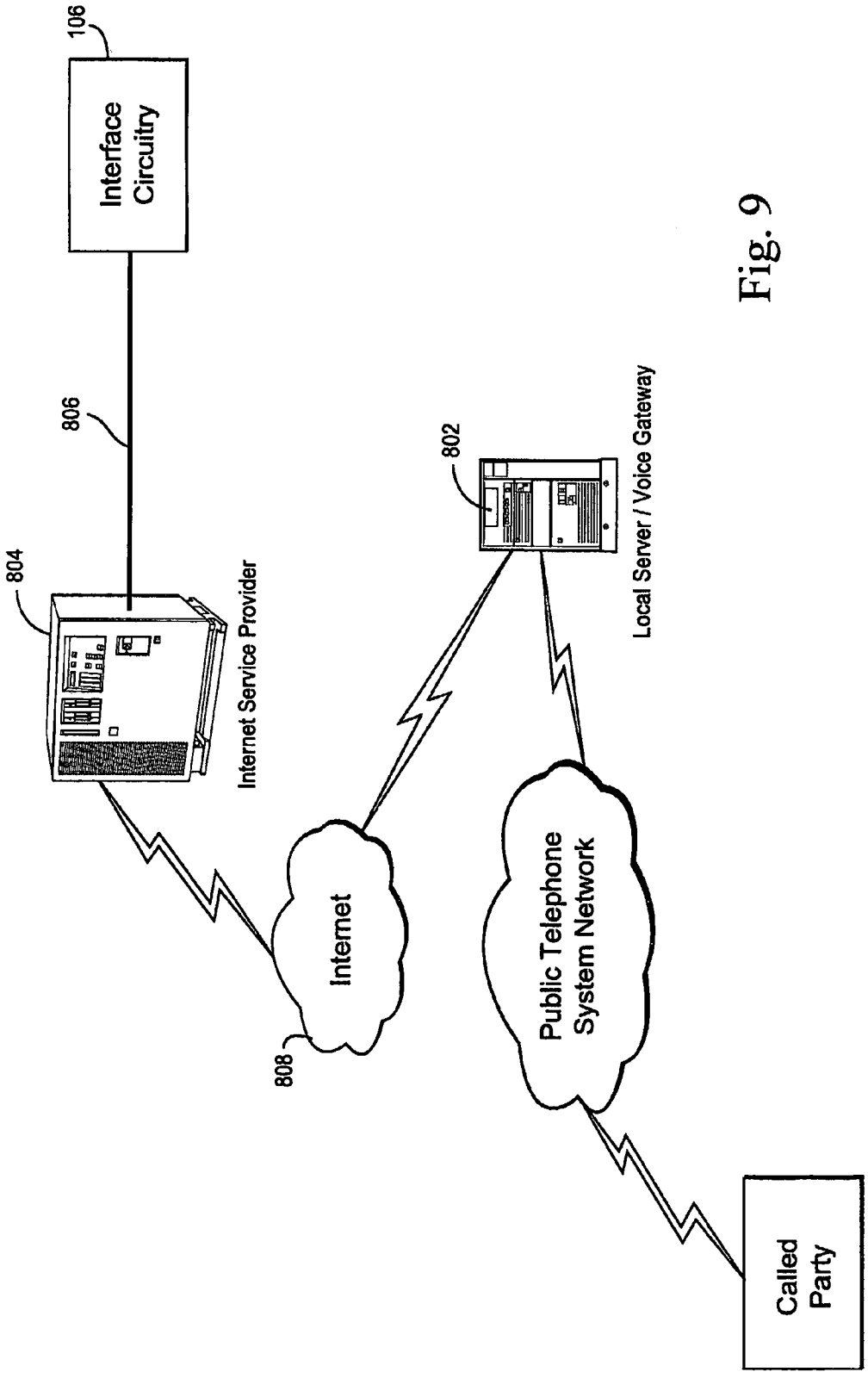

106
Interface Circuitry
806
804
Internet Service Provider
802
Local Server / Voice Gateway
Internet
808
Public Telephone System Network
Called Party

Fig. 9

COMMUNICATION SYSTEM FOR LANDLINE AND WIRELESS CALLS

CROSS-REFERENCE TO RELATED APPLICATION

This application claims priority from provisional Application No. 60/394,283, filed Jul. 9, 2002, the contents of which are incorporated herein in their entirety.

BACKGROUND AND SUMMARY OF THE INVENTION

This application generally relates to communication systems and methods and, more particularly, to such systems and methods in which communication devices for the conventional Public Switched Telephone Network (PSTN) may be interfaced with other communication networks such as wireless communication networks and the Internet.

The use of cellular telephones has dramatically increased, resulting in many individuals having at least two different telephones: a conventional landline telephone for home use and a cellular telephone for use away from home or for business. Cellular service providers (CSPs) now offer low-cost calling plans to attract new customers and retain current customers. Eventually, CSPs are likely to offer calling plans (e.g., unlimited nationwide calling) at rates that cause users to consider whether they have any need to subscribe to local telephone companies for telephone services.

Despite the fact that many cellular phone users can make unlimited long distance calls on nights and weekends, it is still an underused feature. In some cases, the under-usage is because many cellular phone users are unable to receive a signal strong enough to make cellular phone calls from their homes. In addition, cellular phones are not designed to maintain long conversations (e.g., greater than 30-minutes) due to over-heating. The ergonomic design and limited battery life of cellular phones further discourages their prolonged use.

In one example embodiment of the communication systems and methods described herein, users can make wireless telephone calls from a conventional landline communication device connected via interface circuitry to a single ring tip line pair. The communication device may be any communication device that is ordinarily configured for communication over a landline such as a telephone, a computer system, a set-top box, a personal video recording device, etc. The interface circuitry is also connected to a wireless communication device. Among other things, the interface circuitry permits both landline calls and wireless calls to be placed and received using the landline communication device. Other communication devices connected to the same landline may be used to place and receive landline calls even if the landline communication device is being used to place or receive a wireless call. The interface circuitry is configured so that if the landline communication device is on a wireless call, that call may be placed on hold to answer an incoming landline call. Likewise, if the landline communication device is on a landline call, that call may be placed on hold to answer an incoming wireless call. Landline and wireless calls may also be conference together. In one example embodiment, the system may be provided with a very sensitive and powerful wireless transceiver that permits the capture and transmission of wireless signals. Although such a transceiver is not required, such a feature if provided extends the communication range of the wireless communication device that is connected thereto.

In an illustrative implementation, upon receipt of an incoming wireless call, the interface circuitry automatically and distinctively rings the landline communication device connected thereto. If the landline communication device is answered, the interface circuitry establishes an audio path between the wireless communication device and the landline communication device. If the user wishes to place a wireless call using the landline communication device, the user picks up the telephone, dials the number of the called party, and then enters a predetermined wireless call code. The interface circuitry provides the number to the wireless communication device, which then dials the number (bypassing the local telephone company). To place a landline call, the user enters a predetermined landline call code that is recognized by the interface circuitry. The communication device is connected to the PSTN and the call may then be placed through the PSTN.

The system can provide wireless connectivity to personal computers, facsimile machines, printers and other computer and electronic devices. Such wireless connectivity allows the system to take advantage of third generation (3G) cellular networks and systems. For example, if the system received video information or text data, the information can be sent to a television screen, computer monitor, printer, facsimile machine and the like.

In accordance with another example embodiment of the communication systems and methods described herein, a communication system includes a caller ID (CID)-enabled landline communication device and interface circuitry connected to a ring-tip line pair and to a wireless communication device. The interface circuitry includes a memory and a processing circuit for transferring data from the wireless communication device to the memory, selectively reading out the contents of the memory in response to inputs from a user requesting display of the contents, and transferring the read-out memory contents to the communication device using a CID protocol. In one illustrative implementation, the read-out data comprises names and telephone numbers. In this case, the inputs from the user may be used to dial a displayed number and/or read out a next or previous name and telephone number. The inputs from the user may also be used to access names beginning with certain letters.

These and other features and advantages provided by the invention will be better and more completely understood by referring to the following detailed description of presently preferred embodiments in conjunction with the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a generalized block diagram of an example communication system **100**;

FIG. **2A** is a circuit block diagram of one example of interface circuitry **106**;

FIG. **2B** is a detailed schematic showing the interconnections of the various switches in the example interface circuitry **106** shown in FIG. **2A**;

FIG. **3** is a table summarizing the states of the switches in the example interface circuitry **106** shown in FIG. **2A** for various functions and operations;

FIG. **4** is a perspective view of a example arrangement for practically implementing the system discussed with respect to FIG. **1**;

FIGS. **5A-5L** are flowcharts showing various example routines for the interface circuitry **106**; FIG. **5A** is a flowchart showing an illustrative Main Loop; FIG. **5B** is a flowchart showing an illustrative Off-Hook routine; FIG. **5C** is a flowchart showing an illustrative Incoming Cell Call routine; FIG. **5D** is a flowchart showing an illustrative Incoming Landline

Call routine; FIG. **5**E is a flowchart showing an illustrative Outgoing Call routine; FIG. **5**F is a flowchart showing an illustrative Phone On-Hook Routine; FIG. **5**G is a flowchart showing an illustrative Outgoing Landline Call routine; FIG. **5**H is a flowchart showing an illustrative Flash Button Pressed routine; FIG. **5**I is a flowchart showing an illustrative Outgoing Cell Call routine; FIG. **5**J is a flowchart showing an illustrative Incoming Calls Check routine; FIG. **5**K is a flowchart showing an illustrative Call Waiting routine; and FIG. **5**L is a flowchart showing an illustrative Ten Second Timer routine;

FIG. **6** is a functional block diagram of an example implementation of interface circuitry;

FIGS. **7**A-**7**F are flowcharts illustrating example operations involving the interface circuitry shown in FIG. **6**; FIG. **7**A shows example operations that occur when the telephone goes into the off-hook state; FIG. **7**B shows example operations that occur at the end of all calls; FIG. **7**C shows example operations that occur when a cell call is received while the user is on a landline call; FIGS. **7**D and **7**E show example operations that occur when a landline call is received while the user is on a cell call; and FIG. **7**F shows example operations that occur when there is an incoming call;

FIG. **8** is a circuit block diagram of another example of interface circuitry **106**; and

FIG. **9** shows components involved in making an internet call.

DETAILED DESCRIPTION

FIG. **1** is a generalized block diagram of an example communication system **100**. Communication system **100** includes a communication device **102** connected via interface circuitry **106** to a ring-tip line pair **104** for landline calls over the PSTN **105**. As is well-known, PSTN **105** includes a hierarchy of telephony switching offices. For example, individual subscribers are connected to a nearby telephone exchange, sometimes referred to as an end office or switching office; the switching office is connected to a local central office; the local central office is connected to a toll office; the toll office is connected to a primary telephony center; and the primary telephony center is connected to a sectional telephony center. Sectional telephony centers are connected to regional telephony centers, which typically are the highest level in the PSTN **105** switching hierarchy. Other communication devices **110** may also be connected to line pair **104**. The communication devices **102**, **110** may be any communication devices that are configured for communication over PSTN **105** such as telephones, computer systems, facsimile machines, set-top boxes, personal video recording devices, etc.

Interface circuitry **106** is also connected to a wireless communication device **108** for a wireless communication network **107**. Wireless communication network **107** may be for any conventional wireless service such as analog advanced mobile phone service (AMPS), digital advanced mobile phone service (D-AMPS), global system for mobile communications (GSM), personal communication service (PCS), satellite service (including low earth-orbiting satellites), specialized mobile radio (SMR), and cellular digital packet data (CDPD). A cellular communication network, for example, is made up of cells, each of which includes at least radio transmitter/receiver with which a cellular communication device can communicate. Under the control of a switching office, the radio transmitter/receiver with which the cellular communication device communicates changes as the cellular communication device moves from one cell to another. Example cellular communication devices include cellular telephones and cellular personal digital assistants (PDAs). In the following description, communication devices **102** and **108** are sometimes referred to as telephones. However, use of the term "telephone" in a particular instance is not intended to exclude the possibility of using other communication devices.

Among other things, interface circuitry **106** permits both landline calls via PSTN **105** and wireless calls via wireless communication network **107** to be placed and received using communication device **102**. The other communication devices **110** connected to the same landline **104** as communication device **102** may be used for landline calls even if communication device **102** is being used to place or receive a wireless call because, during a wireless call, communication device **102** is physically disconnected from landline **104** and is connected to the wireless communication device **108** via interface circuitry **106**. As will be discussed in greater detail below, the interface circuitry is configured so that if communication device **102** is engaged in a wireless call, that wireless call may be placed on hold to answer an incoming landline call via PSTN **105**. Likewise, if the communication device **102** is engaged in a landline call, that landline call may be placed on hold to answer an incoming wireless call via wireless communication network **107**. Wireless and landline calls can also be conferenced together.

Communication system **100** may also include other devices **109** connected to interface circuitry **106**. For example, such devices may be output devices for outputting information received via the wireless communication system. These devices may include a television, a monitor, a facsimile machine, a printer and the like.

To make a call over PSTN **105** from communication device **102**, a user first inputs a predetermined code (e.g., "#") to the communication device. For example, if the communication device is a telephone, the user may press certain buttons on the keypad of the telephone. Among other things, this code results in interface circuitry **106** connecting communication device **102** to line pair **104**. Thereafter, the user can simply dial the number of the called party. To make a call over the wireless communication network from communication device **102**, the user simply dials the number of the called party and enters a predetermined code (e.g., "#") when dialing is finished. When the predetermined code is entered at the end of the called party's number, interface circuitry **106** provides the dialed number to the wireless communication device which then dials the number to place the call.

As an alternative or in addition to determining how to place a call based on the inputting of predetermined codes, the interface circuitry may automatically determine whether to place a call from communication device **102** via PSTN **105** or wireless communication network **107**. For example, if one of the other communication devices **110** is already on a landline call, interface circuitry **106** may detect this condition and automatically place any call from communication device **102** over wireless communication network **107** using wireless communication device **108**. Interface circuitry **106** may also determine whether to place a particular call from communication device **102** over PSTN **105** or over wireless communication network **107**. This determination may, by way of illustration, be based on cost. For example, some monthly cellular telephone plans provide for low cost long-distance calls at certain times such as evenings and weekends. If wireless communication device **108** is a cellular telephone connected to a cellular telephone network, interface circuitry **106** may therefore be configured with intelligence (e.g., real time clock to determine time that a call is placed, a memory storing calling rates, etc.) to place long distance calls from commu-

nication device **102** over the cellular communication network via the cellular telephone at these times.

FIG. **2A** is a circuit block diagram of one example of interface circuitry **106**. In FIG. **2A**, wireless communication device **108** is a cellular device and wireless network **107** is a cellular network. It will of course be appreciated that the following description is applicable to any of the wireless devices and services mentioned above. Line pair **104** provides DC current (e.g., to power electronics of the communication device **102**), AC current to ring the telephone bell, and a full duplex communication path. A hold circuit **11** is selectively connected via a hold switch **12** across the tip-ring pair to place a call on hold without disconnecting the call. Hold circuit **11** may, for example, comprise a 350-ohm resistor. Communication device **102** is connected to line pair **104** via first and second switches **30, 32**.

The interface circuitry also includes a ringing Subscriber Line Interface Circuit (SLIC) **20** that performs a variety of functions. Ringing SLIC **20** detects and decodes Dual Tone Multi-Frequency (DTMF) codes generated by communication device **102** and communicates these codes to Digital Signal Processor (DSP) **22**. Ringing SLIC **20** creates and generates standard and custom telephone signals and tones such as busy signals, dial tones, and the like, and also rings the communication device **102** when there is an incoming call from PSTN **105** or cellular communication network **107**. Specifically, DAA **36** detects incoming calls via line pair **104** and provides an incoming landline call signal to DSP **22**. In response to this signal, DSP **22** causes ringing SLIC **20** to ring communication device **102**. Similarly, DSP **22** detects incoming calls to cellular communication device **108** via its connection thereto over bus **48**. In response to this detection, DSP **22** causes ringing SLIC **20** to ring communication device **102**. Ringing SLIC **20** may provide different rings to distinguish between incoming cellular and landline calls. Ringing SLIC **20** also generates analog signals used, for example, to send information such as CID (Caller ID) data to communication device **102**. In addition, because communication device **102** is only selectively connected to line pair **104**, an integrated DC-DC converter of ringing SLIC **20** is used to power the communication device. Thus, for example, if the communication device is a telephone, a user is able to press buttons on the telephone even though the telephone is not connected to the landline **104**. This is desirable because during a cellular call, the telephone needs an external power supply. As noted above, such power is provided by line pair **104** during a landline call. Ringing SLIC **20** also performs on-hook and off-hook detection and generates on-hook and off-hook detection signals that are provided to DSP **22** in response to these detections. On-hook refers to the state in which the communication device is not being used such as when a telephone handset is placed on the cradle. Off-hook is the state when the communication device is in use such as when a telephone handset is removed from the cradle, releasing the hook switch. Ringing SLIC **20** performs serial communication by sending data over a bus **44** to DSP **22** using a standard communication protocol such as 4-wire Serial Peripheral Interface (SPI) protocol. Bus **44** is used to send status information (on-hook, off-hook, ringing, etc) to DSP **22**, and DSP **22** uses bus **44** to send commands and retrieve information from ringing SLIC **20**.

DSP **22** is the central processor of interface circuitry **106** and controls all the functions thereof. For example, DSP **22** is connected via bus **48** to the external data connector of the cellular communication device **108**. DSP **22** can control the functions of the cellular telephone (e.g., dialing, answering incoming calls, ending calls, power on/off, etc.) via commands sent over bus **48**. Software is programmed into DSP **22** and/or is accessible from memory **42** to implement the various functions described herein. While a DSP is used as a control circuit in the example embodiment, it will be appreciated that various other types of control circuits including microprocessors, microcontrollers, logic circuits, application specific integrated circuits (ASICs), programmable array logic, etc. and combinations thereof may be used to implement some or all of the functions described herein.

DAA **36** is an analog interface to line pair **104** whose primary function is to monitor the voltage/current of line pair **104** and to detect incoming landline calls. DAA **36** is connected to DSP **22** via a bidirectional serial communication line **46** and communicates with DSP **22** when certain events occur such as an incoming landline call. DAA **36** detects incoming CID information, functions as a data modem, and may be provided with protocol stacks for applications such as internet access (e.g., dial-up) and voice-over-IP. The DAA has analog-to-digital converters for converting the analog audio signal from line pair **104** to a digital stream that is sent to DSP **22** and digital-to-analog converters for converting digital audio from DSP **22** to analog audio signals that are output to line pair **104**. DAA **36** complies with the telephone standard of many countries. 2-to-4-wire (hybrid) converter **40** is a line interface provided between communication device **102** and cellular communication device **108** for, among other things, providing line impedance matching and 2-to-4 wire conversion. Converter **40** permits communication device **102** to send/receive audio to/from cellular communication device **108**.

The example interface circuitry shown in FIG. **2A** includes various switches to connect/disconnect elements from each other. These switches are controlled by DSP **22**. For ease of illustration, the connections between DSP **22** and the swtiches are not shown in FIG. **2A**. Although these switches are shown in FIG. **2A** as hardware switches, the switching may in fact be implemented in software as discussed in detail below with reference to FIG. **8**. First switch **30** is used to disconnect communication device **102** from line pair **104** to reduce the possibility of the user hearing noise if the user is on a cellular call and there is an incoming landline call, or if someone is on another extension in the home or office. First switch **30** is used in conjunction with third switch **34** to allow calls to be placed from communication device **102** either via PSTN **105** or cellular communication network **107**. Second switch **32** is used to selectively connect/disconnect DAA **36** to line pair **104**. This arrangement allows DAA **36** to monitor all activity of line pair **104** (i.e., incoming calls, line voltages, etc). Second switch **32** is used in conjunction with hold switch **12** to place a landline call on hold without disconnecting it. Third switch **34** is used to disconnect communication device **102** from ringing SLIC **20** during a landline call. This avoids damage to ringing SLIC **20** when the communication device **102** is being used in landline mode (e.g., placing or receiving a landline call). Hold switch **12** selectively connects a 350-ohm resister of hold circuit **11** across the line pair **104** and permits a call to be placed on hold without the call being disconnected by the local phone company. Finally, audio switch **38** switches the audio path between cellular communication device **108** and communication device **102** on and off. Audio switch **38** allows the system to place a cellular call on hold, while the user answers a landline call during a call-waiting situation. If desired, audio switch **38** may be omitted and a mute function of converter **40** may be used to perform functions similar to those of audio switch **38**.

To make a call over PSTN **105**, the user first places communication device **102** in the off-hook state. Ringing SLIC **20**

detects this off-hook state and sends an off-hook signal to DSP **22**. In response to the off-hook signal, DSP **22** closes second switch **32** and third switch **34**, and opens first switch **30**, audio switch **38** and hold switch **12**. The user then presses the # button. Ringing SLIC **20** detects this button press and sends the # button press code to DSP **22**. In response to the # button press code, DSP **22** connects communication device **102** to line pair **104** by controlling the various switches so that first and second switches **30**, **32** are closed and third switch **34**, hold switch **1-2** and audio switch **38** are open. The user then dials a telephone number to place a call over PSTN **105**. If the called party answers, communication such as conversation may begin. If the called party does not answer, the calling party hangs up and communication device **102** is then in an on-hook state.

To make a call over cellular communication network **107** via cellular communication device **108**, the user again places communication device **102** in the off-hook state. Ringing SLIC **20** detects this off-hook state and sends an off-hook signal to DSP **22**. In response to the off-hook signal, DSP **22** closes second and third switches **32**, **34** and opens first switch **30**, audio switch **38** and hold switch **12**. The user then dials the desired telephone number, which is detected and decoded by ringing SLIC **20** and forwarded to DSP **22**. When the user presses "#" after entering the telephone number, DSP **22** closes audio switch **38** and then communicates the telephone number over bus **48** to cellular communication device **108**, which thereafter dials the number. DSP **22** may, for example, use RS232 protocol at 9600 baud to communicate over bus **48** with the cellular telephone, although other protocols may readily be utilized. Because audio switch **38** is closed, an audio path is provided between cellular communication device **108** and communication device **102**. If the called party answers, communication such as conversation may begin. If the called party does not answer, the calling party hangs up and communication device **102** is then in an on-hook state. Ringing SLIC **20** detects the on-hook state and sends an on-hook signal to DSP **22**. DSP **22** thereafter ends the cellular call and disconnects communication device **102** from cellular communication device **108** by opening audio switch **38**.

In the above-described implementation, the interface circuitry connects the communication device **102** for a PSTN call in response to the input of a predetermined code before the user enters a telephone number and connects the communication device for a wireless network call in response to the input of a predetermined code after the user enters a telephone number. Of course, it will be readily appreciated that the interface circuitry may be configured to connect the communication device for a wireless call in response to the input of a predetermined code before the user enters a telephone number and to connect the communication device for a PSTN call in response to the input of a predetermined code after the user enters a telephone number.

FIG. **2B** is a detailed schematic showing the interconnections of the various switches in the example interface circuitry **106** shown in FIG. **2A**. As discussed above, DSP **22** controls the switches in order to perform various functions and operations. A first switch configuration is used when placing or receiving a call via PSTN **105**. In this configuration, first and second switches **30A**, **30B**, **32A**, **32B** are closed and third switch **34A**, **34B**; hold switch **12A**, **12B**; and audio switch **38A**, **38B** are open. In this first switch configuration, communication device **102** is connected via closed first and second switches **30**, **32** to line pair **104**. Audio switch **38** is open to disconnect communication device **102** from the cellular communication device **108**. Because communication device **102** receives power from line pair **104**, third switch **34** is also open. A second switch configuration is used when placing or receiving a call via cellular communication network **107**. In this second configuration, first switch **30A**, **30B** and hold switch **12A**, **12B** are open. Second and third switches **32A**, **32B**, **34A**, **34B** and the audio switch **38A**, **38B** are closed. Closing switch **32A**, **32B** allows DAA **36** to detect incoming calls via PSTN **105** when the communication device **102** is being used for a cellular call. A third switch configuration is for the on-hook state (i.e., when communication device **102** is not being used to place or receive a landline or a cellular call). In this third configuration, first switch **30A**, **30B**; hold switch **12A**, **12B**; and audio switch **38A**, **38B** are open. Second and third switches **32A**, **32B**, **34A**, **34B** are closed.

To place a landline call on hold and connect to a cellular call, switch **12A**, **12B** is closed and the second switch configuration is then utilized. To place a cellular call on hold and connect to an incoming landline call, the first switch configuration is utilized. Thus, the user has call waiting between landline and cellular calls and the user can press the flash button on their phone to activate this feature (i.e., place the landline call on hold, and answer incoming cellular call or vice versa) when they hear the special call waiting tone. If the user does not subscribe to call waiting, there is a possibility that during a call waiting event (e.g., the user is on a landline call, and there is an incoming cellular call), when the user presses the flash button, the local telephone company will see this flash event and disconnect the landline call. This is because when the flash button is pressed the telephone goes in the on-hook state for 300-700 ms and then goes back into the off-hook state. In short, if the user does not subscribe to a call waiting service, the phone company may disconnect the landline call when the flash button is pressed. To circumvent this problem, the flash button is re-mapped to another button on the telephone such as the "*' button. In this case, during a call waiting event (as described above) the user presses the "*" button instead of the flash button on his/her telephone. The telephone company will know that the "*" button is pressed, but this press will be ignored. On the other hand, because the interface circuitry can detect an incoming call, when it detects that the "*" button is pressed during a call waiting event, the system places the landline call on hold, and connects the user to the cellular call. This flash functionality can also be provided using a dedicated flash button. Call conferencing between cellular and landline calls may be accomplished in response to an appropriate user input by closing audio switch **38** and placing the other switches in the same configuration as for a landline call (i.e., the first switch configuration described above).

FIG. **3** is a table summarizing the states of the switches in the example interface circuitry **106** shown in FIG. **2A** for various representative functions and operations.

FIG. **4** is a perspective view of an example arrangement for practically implementing the system discussed with respect to FIG. **1**. While this example arrangement shows the system components provided in an integrated manner, the invention is not limited in this respect. For example, the interface circuitry may be physically separate from the communication device and connected between the line pair and the communication device. The arrangement shown in FIG. **4** includes a telephone handset **202** received in a cradle **203** of a base unit **204**. Base unit **204** is—connected (not shown) to line pair **104** (see FIG. **2A**) and to a power outlet (not shown). Handset **202** and base unit **204** are configured for cordless communication using antennas **205** and **206** as is well known in the art. The handset includes a microphone **207**, a speaker **208**, and a keypad **209** that can be used, for example, to place and receive calls. Keypad **209** includes numeric keys 1-9, a "*" key, a "#"

key and three function keys. The function keys may include a flash button, a mute button, a hold button, an answering machine button, and the like. Handset **202** may also include a display **210** such as a liquid crystal display. Various arrangements of keypad **209** and display **210** may be used and the invention is not limited in this respect.

Base unit **204** includes a speaker **211**, a microphone **212** and a keypad **213** that can be used, for example, to place and receive calls without using the handset. Base unit **204** also includes a cradle **214** with connector **215**, which includes electrical contacts for electrically connecting the base unit to the data connector of a cellular telephone **220**. Because the electrical connectors of cellular telephones typically differ from manufacturer to manufacturer (and even within models from the same manufacturer), FIG. **4** shows cellular telephone **220** connected to base unit **204** via an adapter **217** that "adapts" the electrical connector configuration of the cellular phone to the electrical connector configuration of base unit **204**. Of course, it will be readily apparent that the systems and methods described herein are not in any way limited to an arrangement in which an adapter is required to connect the cellular telephone to the base unit. For example, different base units may be provided with electrical connectors that are specific to a particular manufacturer or even a particular model. In this case, the cellular telephone may be directly inserted into cradle **214**. Of course, the advantage of an adapter is that a single base unit with a universal electrical connector may be used, provided adapters are used that "adapt" the particular electrical connector configuration of different cellular telephones to the universal connector configuration of the base unit.

Interface circuitry **106** is incorporated within base unit **204**. The interface circuitry may include RF circuitry (not shown) for improving the range of the cellular telephone **220**, for example, by boosting the power of the transmitted cellular signals and by improving the cellular signal levels that can be detected using an antenna **218**. This RF circuitry may be connected to the cellular telephone via the cellular telephone's external antenna connector (not shown).

As explained above, interface circuitry **106**, among other things, permits both landline calls and cellular calls to be placed and received using the handset **202**. To place a wireless call, the user takes the handset **202** off-hook, enters the telephone number of the called party, and enters "#" (or some other code) after entering the telephone number. If desired, the cellular signals are communicated via the aforementioned RF circuitry. If the called party answers, audio is communicated between the user and the called party via an audio path within the interface circuitry. To place a PSTN call, the user first enters "#" (or some other code). The interface circuitry recognizes this code as indicating that the user wishes to place a PSTN call. The switches within the interface circuitry are then controlled so that handset **202** is connected to line pair **104** and the user can then dial the number of a called party and place the call over the PSTN.

Because DSP **22** is typically configured (or may be easily configured) with the appropriate protocol stacks for Internet access, the user of the systems and methods described herein has the ability of making three types of calls when communication device **102** goes off-hook: landline, wireless and internet (IP). The called party does not have to have the system described herein to receive such calls. In what follows, the user is assumed to have a dialup connection, although other connections such as broadband connections can also be used.

With reference to FIG. **9**, ISP's typically have local servers/voice gateways **802** located in major cities throughout the United States and other countries. Interface circuitry **106** connects to an ISP **804** over a landline **806** of the PSTN. The user's voice is digitized by the ringing SLIC **20**, packetized by DSP **22**, and communication is established over the Internet **808** with a local server/voice gateway **802** that corresponds to the area code and local exchange of the called party. The local server then places a local call to the called party's number over the PSTN and, if the called party answers, a communication link is thereby established between the interface circuitry **106** and the called party. The voice gateway converts digital audio from the server and injects it onto the telephone line to the called party. The voice gateway converts analog audio from the called party to digital data, encapsulates it and communicates it to the server, which in turn, forwards the data to the interface circuitry over the internet. Interface circuitry **106** converts the digital data to an analog signal, which can be heard by the calling party.

More specifically, to place a voice-over-Ip (VOIP) call, the user lifts handset, and presses a predetermined internet call code, which places the interface circuitry into an IP call mode. Under the control of DSP **22**, DAA **36** dials and connects to the user's ISP. When this connection is established, the user is provided with a confirmation tone, which indicates that a call may now be placed. The user then dials the number he/she wishes to call (e.g., 410-555-5555). When interface circuitry **106** detects the DTMF button presses, it decodes the area code (in this case, the area code for Maryland) and decodes the local exchange "555" which will be assumed to be for Columbia, Md. Then, interface circuitry **106** sends signal via ISP **804** to a local server/voice gateway that is located in that local exchange (i.e., Columbia, Md.). When communication is established with the local server/voice gateway, an instruction is sent which instructs the local server to dial the following number of the called party (i.e., 410-555-5555). The voice (PSTN) gateway of the local server places the call to called party's number. When the call is answered, the gateway acts as the interface between the PSTN call and the IP call. Incoming internet calls to interface circuitry **106** would be the same as receiving a normal landline call because the call would be placed by a local server/voice gateway.

DSP **22** of interface circuitry **106** executes software stored in internal memory and/or in an external memory accessible thereto (such as memory **42**). This memory may be read-only memory, read/write memory or some combination thereof and may be volatile and/or non-volatile. Generally speaking, the operations described below may be implemented in hardware, firmware and/or software. In the example embodiment of interface circuitry **106** shown in FIG. **2A**, the operations are implemented using software. The data and instructions for this software are stored in a storage medium such as memory **42** that is accessible to DSP **22**. DSP **22** executes these instructions in response to various signals supplied thereto such as on-hook signals, off-signals, and the like. For purposes of the FIG. **5** discussion below, communication device **102** is a telephone. However, as noted above, the invention is not limited in this respect.

FIGS. **5A-5L** are flowcharts showing various example routines for the interface circuitry **106**. The program including these routines may be implemented, for example, using an event-driven state machine. After an event is handled, the state machine enters a "do-nothing" state until another event occurs. At the end of a routine, control generally returns to the calling routine. For example, if routine A calls routine B, control returns to routine A when routine B ends.

FIG. **5A** is a flowchart showing an illustrative Main Loop. At ST, **1150**, a check is made for incoming landline and cell calls. At ST **1151**, a check of hook switch status is made and

at ST **1152** a check is made for DTMF keypresses. The routine then returns to ST **1150**.

FIG. **5**B is a flowchart showing an illustrative Off-Hook routine. This routine is initiated when communication device **102** goes into the off-hook state. For example, the off-hook state may precede the placing or answering of a call or going to a call on hold. The off-hook state is detected by ringing SLIC **20**, which provides an off-hook signal to DSP **22**. In response to the off-hook signal, DSP **22** executes the Off-Hook routine. At ST **1001**, the routine determines whether there is an incoming cell call. If so, the Incoming Cell Call routine (see FIG. **5**C) is entered at ST **1002**. If not, the routine proceeds to ST **1003** where a determination is made as to whether there is an incoming landline call. If there is an incoming landline call, the Incoming Landline Call routine (see FIG. **5**D) is entered at ST **1004**. If there is no incoming landline call, the routine continues to ST **1005** where a determination is made as to whether the user is on a call. If the user is not on a call, the Outgoing Call routine (see FIG. **5**E) is entered at ST **1007**. If the user is on a call, the routine determines at ST **1006** whether a touchtone button is pressed. If no touchtone button is pressed, the Off-Hook routine ends. If a determination is made at ST **1006** that a touchtone button has been pressed, the routine determines at ST **1008** whether the flash button is pressed. If the flash button has been pressed, the Flash Button Pressed routine (see FIG. **5**H) is entered at ST **1009**. If not, the Off-Hook routine ends.

FIG. **5**C is a flowchart showing an illustrative Incoming Cell Call routine. This routine is accessed, for example, from the Off-Hook routine of FIG. **5**B (i.e., the user has picked up the telephone) when a determination is made that there is an incoming cell call. At ST **1010**, the ringing of telephone **102** generated in response to the incoming cell call is stopped. An answer call command is sent to cellular telephone **108** (ST **1011**) and an on cell-call flag is set (ST **1012**). Thereafter, the routine ends.

FIG. **5**D is a flowchart showing an illustrative Incoming Landline Call routine. This routine is accessed, for example, from the Off-Hook routine of FIG. **5**B (i.e., the user has picked up the telephone) when a determination is made that there is an incoming landline call. At ST **1020**, the ringing of telephone **102** generated in response to the incoming landline call is stopped. Next, at ST **1021**, third switch **34** and the audio switch **38** are opened, and first switch **30** is closed. An on landline call flag is then set at ST **1022**. Thereafter, the routine ends.

FIG. **5**E is a flowchart showing an illustrative Outgoing Call routine. This routine is accessed, for example, from the Off-Hook routine of FIG. **5**B (i.e., the user has picked up the telephone) when determinations are made that there is no incoming landline or cellular call and that the user is not currently on a call. At ST **1030**, second and third switches **32**, **34** are closed and first switch **30**, audio switch **38** and hold switch **12** are opened. A determination is made at ST **1031** (which is also the entry point of the DTMF button press check routine) as to whether the phone on-hook flag is set. If so, the routine proceeds to ST **1032** where the Phone On-Hook (see FIG. **5**F) routine is carried out. If not, a determination is made at ST **1033** as to whether a touchtone button has been pressed. If no touchtone button has been pressed, the routine ends. If a touchtone button has been pressed, the routine proceeds to ST **1034** where a determination is made as to whether a predetermined key has been pressed. For purposes of the discussion herein, the predetermined key will be the "#" key, although the invention is not limited in this respect. If the "#" key has not been pressed, the routine continues to ST **1035** where the key that was pressed is stored in memory. The routine then ends. If the "#" key has been pressed, the routine continues to ST **1036** where a determination is made as to whether the "#" key is the first key pressed. If the "#" key is not the first key pressed, the Outgoing Cell Call routine (see FIG. **5**I) is entered at ST **1037**. If the "#" key is the first key pressed, the Outgoing Landline routine is entered at ST **1038**. In short, if the "#" key is pressed before the user enters a telephone number, the communication device is connected to line pair **104** and the user can thereafter enter a telephone number to make a landline call. If the "#" key is pressed after the user enters a telephone number, an outgoing cell call is initiated via cellular communication device **108** using the entered telephone number.

FIG. **5**F is a flowchart showing an illustrative Phone On-Hook routine. At ST **1040**, a determination is made as to whether the user was just on a cell call. If not, the routine continues to ST **1042**. If so, an "End Call" command is sent to the cellular telephone at ST **1041** and the routine thereafter proceeds to ST **1042**. At ST **1042**, all flags except the "cell call on hold" and "landline call on hold" flags are cleared and then first switch **30** is opened and second switch **32** is closed at ST **1043**. The routine then continues to ST **1044** and ST **1045** at which audio switch **38** is opened and third switch **34** is closed, respectively. The routine then checks for incoming calls at ST **1046**. A determination is made at ST **1047** as to whether the cell call on hold flag is set and, if not, a determination is made at ST **1048** as to whether the landline call on hold flag is set. If the cell call on hold flag is set, the incoming cell call flag is set at ST **1049** and incoming calls are checked at ST **1050**. If the landline call on hold flag is set at ST **1048**, the incoming landline call flag is set at ST **1051** and incoming calls are checked at ST **1050**. If the landline call on hold flag is determined not to be set at ST **1048**, the routine ends.

FIG. **5**G is a flowchart showing an illustrative Outgoing Landline Call routine. This routine is accessed, for example, from the Outgoing Call routine of FIG. **5**E if a determination is made that a landline call is to be made. At ST **1060**, the routine closes first and second switches **30**, **32** and opens third switch **34**. The routine then continues to ST **1061** at which the landline call flag is set. At this point, the communication device is connected to line pair **104** and the user places a landline call in the normal way. Thereafter, the routine ends. While on a landline call, keypresses by the user are ignored.

FIG. **5**H is a flowchart showing an illustrative Flash Button Pressed routine. At ST **1070**, the routine determines whether the user is on a landline call. If so, the routine proceeds to ST **1071** where a determination is made as to whether the incoming cell call flag or the cell call on hold flag is set. If so, the routine proceeds to put the landline call on hold and connect to the cell call (ST **1072**) by closing hold switch **12** (ST **1073**), opening first switch **30** (ST **1074**) and closing third switch **34** and audio switch **38** (ST **1075**). The routine then proceeds to the Incoming Cell Call (see FIG. **5**C) at ST **1076**. If the incoming cell call flag and the cell call on hold flags are not set at ST **1071**, the routine then performs a landline flash (ST **1077**) by opening second switch **32** (ST **1078**), waiting 400 milliseconds (ST **1079**) and then closing second switch **32** (ST **1080**). If the routine determines at ST **1070** that the user is not on a landline call, the routine proceeds to ST **1081** where a determination is made as to whether the incoming landline call flag or the landline call on hold flag is set. If so, the routine proceeds to put the cell call on hold and connect to the landline call (ST **1082**) and then goes to the—Incoming Landline Call routine (see FIG. **5**D) at ST **1083**. If the incoming landline call flag and the landline call on hold flags are not

set at ST **1081**, the routine does a cell phone flash (ST **1084**) by sending an answer key command to the cellular telephone (ST **1085**).

FIG. **5I** is a flowchart showing an illustrative Outgoing Cell Call routine. This routine is accessed, for example, from the Outgoing Call routine of FIG. **5E** if a determination is made that a cell call is to be made. At ST **1090**, the routine closes third switch **34** and audio switch **38**. First switch **30** is opened and second switch **32** is closed at ST **1091**. The routine then dials the numbers stored at ST **1035** in FIG. **5E** on the cell phone at ST **1092**. If dialing is not finished at ST **1093**, a determination is made at ST **1094** as to whether the phone on-hook flag is set. If not, the routine returns to ST **1092** to continue dialing the numbers on the cell phone. If the on-hook flag is set, the Phone On-Hook routine (see FIG. **5F**) is entered at ST **1095**. If the dialing is finished at ST **1093**, the on cell call flag is set (ST **1096**) and the routine ends.

FIG. **5J** is a flowchart showing an illustrative Incoming Calls Check routine. At ST **1100**, the routine determines whether there is an incoming landline call or whether the incoming landline call flag is set. The determination of whether there is an incoming landline call is made by checking the hardware (e.g., the voltages on line pair **104**). If either condition is satisfied at ST **1100**, the routine proceeds to ST **1101** where a determination is made as to whether the user is on a cell call. If so, the Call Waiting routine (see FIG. **5K**) is entered (ST **1102**). If the user is not on a cell call, the routine rings the telephone normally, opens first switch **30** and closes third switch **34** (ST **1102**). The incoming landline call flag is then set at ST **1103** and the routine proceeds to ST **1109**. If neither condition is satisfied at ST **1100**, the routine determines whether there is an incoming cell call or whether the incoming cell call flag is set at ST **1104**. To determine whether there is an incoming cell call, the signal level on the audio pin of the cellular telephone's data connector may be compared to a predetermined level. If the signal level exceeds this predetermined level, an incoming cell call is determined to be present. In an alternative implementation, DSP **22** may be responsive to an incoming cell call signal provided via telephone's data connector over bus **48**. If the determination at ST **1104** is "NO", the routine ends. If the determination at ST **1104** is "YES", the routine proceeds to ST **1105** where a determination is made as to whether the user is on a landline call. If so, the Call Waiting routine (see FIG. **5K**) is entered at ST **1106**. If not, the routine rings the telephone, opens first switch **30** and closes third switch **34** (ST **1107**). Preferably, the ring at ST **1107** is different than the ring for an incoming landline call. This enables the user to know before answering that the incoming call is a cell call. At ST **1108**, the incoming cell call flag is set and the routine then proceeds to ST **1109**. At ST **1109**, the routine continuously checks whether the incoming call is stopped. If so, the ringing of the telephone is stopped at ST **1110** and the cell call on hold flag, the landline on hold flag, the incoming landline call flag or the incoming cell call flag is cleared at ST **1111**.

FIG. **5K** is a flowchart showing an illustrative Call Waiting routine. At ST **1120**, the routine checks whether the user is on a cell call. If so, the routine generates a special call waiting tone (ST **1121**), enables the Ten Second Timer routine (ST **1122**), and sets a call waiting flag (ST **1123**). Thereafter, the routine ends. The normal call waiting tone is 440 Hz. In order to allow the user to determine the type of call waiting while he/she is on the telephone, the user will hear a 1500 Hz tone. Hearing this tone, which is significantly different than the normal call waiting tone, will tell the user that another type of call is waiting. If the user is not on a cell call, the routine closes the hold switch **12** at ST **1124** and then opens first switch **30** and closes third switch **34** at ST **1125**. A special call waiting tone is generated at ST **1126** and the Ten Second Timer routine is enabled at ST **1127**. First switch **30** is then closed at ST **1128** and hold switch **12** and third switch **34** are opened at ST **1129**. The call waiting flag is set at ST **1130** and thereafter the routine ends.

FIG. **5L** is a flowchart showing an illustrative Ten Second Timer routine. The routine first checks whether ten seconds have passed at ST **1140**. If not, the routine determines whether the call waiting flag is set at ST **1141**. If so, the routine returns to ST **1140** to determine whether ten seconds have passed. If not, the routine proceeds to ST **1143**. If the routine determines at ST **1140** that ten seconds have passed, a check is made as to whether the call waiting flag is set at ST **1142**. If not, the routine ends. If so, the routine proceeds to ST **1143** where the timer is disabled and to ST **1144** where the Call Waiting routine is entered.

FIG. **6** is a functional block diagram of an example implementation of interface circuitry. In this example, the interface circuitry is configured to connect the communication device for a wireless call in response to the input of a predetermined code (e.g., *32) and otherwise connect the communication device for a PSTN call. Communication device **102** is an ordinary cord or cordless telephone that may be located in a home or office. Switch **502** is an electronic switch for connecting and disconnecting the telephone from the PSTN. Tri-state **503** is an electronic switch that places the phone line in a high impedance state. Wall jack **504** is a standard RJ11 wall jack found in homes and offices. Network interface **505** is circuitry that interfaces the system to the PSTN. This interface complies with all FCC regulations for attaching electronic equipment to the PSTN. When the communication device **102** is in use by the user, the network interface **505** places the proper voltages, resistances and impedances on the telephone line of the PSTN. This keeps the telephone available for incoming and outgoing calls. Ring detector **506** detects incoming calls from the PSTN and provides an incoming call detection signal to the microcontroller **507**. Ring generator **508** rings the communication device **102** when an incoming cellular call is detected. Microcontroller **507** provides the overall control of the interface circuitry. On/off-hook circuit **509** detects when the communication device **102** is on-hook (i.e., not in use) and off-hook (i.e., in use). This circuit sends on-hook and off-hook signals to microcontroller **507** as appropriate. DTMF circuit **510** detects and decodes the buttons pressed by the user on communication device **102** and provides this information to microcontroller **507**. Audio interface **511** selectively provides an audio path between the cellular phone and communication device **102**. RF interface **512** contains a very sensitive RF antenna that is capable of detecting and capturing very weak cellular signals. RF interface **512** increases the sensitivity/signal range of the cellular telephone that is connected to the system. Cell phone interface **513** connects the cellular telephone to the interface circuitry so that calls, data, audio, etc. can be sent to and received from the cellular telephone. Power distribution system **514** connects to all the elements shown in FIG. **6**. The power distribution system controls, regulates and distributes power to these elements.

FIGS. **7A-7F** are flowcharts illustrating example operations involving the interface circuitry shown in FIG. **6**. FIG. **7A** shows example operations that occur when the telephone goes into the off-hook state. FIG. **7B** shows example operations that occur at the end of all calls. FIG. **7C** shows example operations that occur when a cell call is received while the user is on a landline call. FIGS. **7D** and **7E** show example operations that occur when a landline call is received while

the user is on a cell call. FIG. **7F** shows example operations that occur when there is an incoming call. Additional description of these flowcharts is provided in Application No. 60/394,283, filed Jul. 9, 2002, the contents of which are incorporated herein in their entirety.

FIG. **8** is a circuit block diagram of another example of interface circuitry **106**. In this example, interface circuitry **106** does not use hardware switches and the switching is done in software by compressed digital audio as opposed to the raw analog audio signal. The functionality of the FIG. **8** interface circuitry is the same as that of the FIG. **2** interface circuitry; however, the FIG. **8** interface circuitry provides more robustness. For example, the FIG. **8** interface circuitry converts all audio to a digital format, which allows the audio signals to be enhanced using conventional digital signal processing techniques. For example, if the audio to/from line pair **104**, communication device **102**, and/or the cellular phone **108** is unclear or noisy, DSP **122** can remove this unwanted noise from the audio signal. The audio from line pair **104** can be digitized by DAA **136**, and the audio from communication device **102** and cellular telephone **108** can be digitized by ringing SLIC **120**. In the following description, communication device **102** is assumed to be a telephone, although, as noted above, the invention is not limited in this respect.

The user makes a landline call as follows. First, the user picks up the telephone (i.e., places the telephone in an off-hook state) and enters a predetermined code for a landline call. The user then dials the telephone number of the called party. Ringing SLIC **120** detects the numbers being dialed and sends this information to DSP **122**. DSP **122** instructs DAA **136** to go off hook, and DAA **136** dials the telephone number of the called party. If the called party answers, DAA **136** captures, digitizes and compresses the audio from the called party that is communicated over landline **104**. This compressed digital data is communicated DSP **122**. DSP **122** can optionally process the compressed digital data using digital audio techniques such as audio quality enhancement. DSP **122** sends the digital audio to ringing SLIC **120** via a digital audio data bus **45** (e.g., a PCM serial bus). Although busses **44** and **45** are shown separately, they may be provided as a single bus in another implementation. Ringing SLIC **120** decompresses the audio and converts the digital signal back into analog audio signals, which are then supplied to the telephone so that the user can hear them.

Analog audio from the calling party is supplied to ringing SLIC **120**, which digitizes and compresses the audio and communicates the digital audio signal to DSP **122** over the digital audio path. DSP **122** can optionally utilize digital audio processing techniques on the digital audio to, for example, provide audio enhancement. The digital audio signal output from DSP **122** is supplied to DAA **136**, which decompresses the audio and converts the digital signal to an analog signal that is then transmitted to the called party via line pair **104**.

To make a cellular call from the telephone, the user follows the steps discussed above with respect to the interface circuitry of FIG. **2A**. Call conferencing between cellular and landline calls may be accomplished by connecting both DAA **136** and cellular phone **108** to ringing SLIC **120** simultaneously.

The above-described arrangements also advantageously permit data other than audio data to be sent from wireless communication device **108** to communication device **102**. For example, the names and associated telephone numbers that are stored in a cellular telephone phonebook may be stored into memory (such as memory **42**) each time a cellular telephone is connected to the interface circuitry (e.g., by being placed in cradle **214** in FIG. **4**). These names and telephone numbers may be stored using the Caller ID (CID) protocol and forwarded to a CID-enabled communication device **102** for viewing. This protocol is described in documents such as Calling Identity Delivery On Call-Waiting, TR-NWT-000575; Caller Identification With Call Waiting: Request for Information From Customer Premises Equipment Suppliers, RFI 91-03; SPCS Customer Premises Equipment Data Interface, TR-TSY-000030, Bellcore, Issue 1, November 1988; Call Waiting LSSGR, Feature Specific Document (FSD) 01-02-1201, TR-TSY-000522, Issue 2, July 1987, CLASS Calling Name Delivery and Related Features Generic Requirements, TA-NWT-001188, Issue 1, Bellcore, March 1991; and CLASS Feature: Calling Number Delivery, TR-TSY-000031, Bellcore, Issue 3, January 1990; and Caller Identification With Call Waiting: Request for Information From Customer Premises Equipment Suppliers, RFI-91-03, April 1991. Each of these documents is incorporated herein by reference. Briefly, caller ID uses the time interval between the first two rings of the called-party telephone to transmit information to that telephone. The information is FSK-modulated and includes a preamble followed by data including a message type, a data count, and data such as month, day, hour, minute, phone number, name, etc. Many new home and office telephones have built-in CID receivers and LCD screens. As described below, by using the CID transmission protocol, the systems and methods described herein provide for sending information such as e-mail, text, messages, cellular telephone directories and the like to communication device **102**. Thus, by using the CID type 1 and/or CID type 2 (CIDCW) protocols, the communication systems and methods described herein can send information to the communication device **102**.

By way of illustration, stored telephone numbers in a cellular telephone's phonebook may be displayed on communication devices such as telephones that have built-in caller-ID LCD screens. This is advantageous because it enables users of standard landline telephones to retrieve names and telephone numbers stored within their cellular telephones and then place a cellular or landline call from the standard landline telephone using these names and telephone numbers. This feature may be implemented as follows.

Each time a cellular telephone is connected to the interface circuitry, the names and telephone numbers stored in the memory of the cellular telephone are synchronized with the names and telephone numbers stored in memory **42**. Specifically, DSP **22** (**122**) detects the presence of a connection to a cellular telephone and sends a command to the cellular telephone to transfer the contents of its phonebook. DSP **22** (**122**) updates the phonebook contents in memory **42** (**142**) based on the contents transferred from the cellular telephone. These steps are performed each time the cellular telephone is connected to the interface circuitry.

To view names and/or telephone numbers that are stored in the cellular telephone's phonebook, the user picks up the standard landline telephone. At this point, the user can do one of four things: (1) make a landline telephone call as described above; (2) make a cellular telephone call as described above; (3) make a voice-over-IP call as described above, or (4) enter a predetermined code to view the contents (names and telephone numbers) of the cellular telephone's phonebook. By way of example, the predetermined code for view the phonebook contents may be "*7", although it will be appreciated that the invention is not limited in this respect.

Ringing SLIC **20** (**12**) detects the user's inputs and forwards the inputs to DSP **22** (**122**). If the DSP determines that the user has input the predetermined code for accessing the

phonebook, the DSP retrieves the first name and telephone number from the phonebook stored in memory **42** (**142**) and encodes the name and telephone number using the CID protocol. DSP **22** (**122**) then instructs ringing SLIC **20** (**120**) to send an alert tone to the CID receiver within the user's communication device **102**. Upon receiving an acknowledge tone from the CID receiver via ringing SLIC **20** (**120**), DSP **22** (**122**) forwards the CID packet (name and telephone number) to ringing SLIC **20** (**120**). Ringing SLIC **20** (**120**) then transmits the CID information to the CID-enabled communication device **102**, which then displays the name and telephone number on display **210**. At this point, the user has a number of options. First, the user can press a predetermined code to dial the telephone number that is displayed. While in the cellular phonebook mode, the user can press one predetermined code (e.g., "*") to place the call via cellular phone **108** or another predetermined code (e.g., "#") to place the call using the landline. Second, the user can press a predetermined code to end the phonebook mode. Third, the user can press a predetermined code to go to the next name in the phonebook. Fourth, the user can press a predetermined code to go to the previous name in the phonebook. Fifth, the user can press one of the numbers 2 through 9 to jump to the first name that begins with the first letter corresponding to the number. For example, pressing "6" would jump to the first name beginning with "M" in the phonebook. Pressing "6" again would result in the display of the first name beginning with "N", while pressing "6" yet again would result in the display of the first name beginning with "O".

By utilizing the CID protocol, text messages from any source can be transmitted to a CID enabled home telephone. An example of this is as follows. Because the system has the capability to retrieve data from the internet, a user may retrieve stock quotes via the internet to their CID enabled telephone. To enable the stock quote system, the user presses a predetermined code (e.g., "*78") and the corresponding key which represents the ticket symbol for the stock they are interested in. DSP **22** and DAA **36** are configured to access a web site having the desired information. For example if the user wants to get a quote for America Online (AOL). The user will press the "2" button once (which represents the letter A), and the "6" button three times (which represents **0**), and finally the "5" button 3 times (which represents L). The user then presses the # button. Although the user will see the letters "AOL" on the screen, internally DSP **22** (**122**) will recognize the following number sequence (i.e., 2666777#). The system will retrieve the stock quote from the internet and transmit the quote to the telephone using the CID protocol.

While a user is on a call, communication device **102** may display indicia indicating the call type (e.g., whether the user is currently on a landline call or on a wireless call). In one example implementation, DSP **22** may forward text to the communication device using the CID protocol. If the user is on a landline call, the text may be "landline" or "PSTN" or some other text for informing a user that he or she is currently on a landline call. If the user is on a wireless call, the text may be "cell" or "wireless" or some other text for informing the user that he or she is currently on a wireless call. In addition, communication device **102** may display indicia indicating call status (e.g., dialing, connecting, busy, etc.). Like the call type indicia, the call status indicia may be provided to communication device **102** as text from DSP **22** using the CID protocol. Still further, user instructions may be provided on the display of communication device **102**. For example, when the communication device goes off-hook, instructions like "press # to make a landline call" and/or "enter number followed by # to make wireless call" may be displayed to guide the user. When the user is on a call and there is an incoming call, an instruction like "press flash to connect to incoming call" may be displayed. It will be readily apparent that more sophisticated indicia such as images or graphics are possible. For example, communication device **102** (e.g., handset **202**) may be provided with on-board memory for storing images, graphics and even audio and video for displaying call type data, call status data and/or user instructions. The appropriate data may be read out from the memory in response to instructions from DSP **22**.

In another example embodiment, base unit **204** of FIG. **4** may be provided with its own display (not shown). The display may be used to provide the call type data, call status data and/or user instructions discussed above (in textual, graphic, image, and/or video form, for example). These displays may be based on data stored in memory **42**. In addition, the display may be used to display any other data (including video, images, and graphics) stored in memory **42** or obtained from the landline or the wireless communication network. Audio corresponding to the video may be output via the base unit's speaker.

In still further arrangements, DSP **22** (**122**) may be programmed to recognize the wireless communication device that is placed in the cradle using, for example, an identifier associated with the device. Alternatively, the owner of the device may input a predetermined code using a keypad of the device to identify the device. In this case, DSP **22** (**122**) may maintain data for that device in an area of memory **42** (**142**). Thus, for each of a plurality of different devices, memory **42** (**142**) may contain, for example, a telephone directory (names and numbers) for that device. Thus, a user of the communication device **102** may be provided a display of telephone numbers that correspond to the device currently in the cradle. In addition, the user may input names and telephone numbers for the directory using communication device **102**. Memory **42** (**142**) may also maintain preferences for each different wireless device connected to the cradle. For example, each wireless communication device may have a list of do not accept call numbers or restricted calling times.

The above-described example embodiments enable cellular phone-users to receive and place cellular phone calls using their standard home and/or office telephones and bypass the local telephone company. In addition, a high-gain (e.g., 6 dB) directional wireless antenna may be provided that allows users to place and make their wireless calls in areas where the wireless reception is very weak such as homes and offices. This high-gain cellular antenna permits is particularly advantageous to those wireless users who are not able to use their wireless devices at home during the times when long distance calls are promised to be free or at reduced rates (i.e., nights and weekends).

The above-described embodiments do not require users to have multiple line telephones installed in their homes and/or offices and communication devices that are connected to the interface circuitry can still be used to place and receive regular landline calls. These embodiments also provide built-in call waiting for both wireless and regular landline calls. While users are on a regular landline call, any incoming wireless call will produce a call waiting tone and the reverse is true when a user is on a wireless call. The embodiments allow users to receive and/or place all calls through both wireless and landline telephones that are connected to the interface circuitry. The wireless telephone charges while in the cradle.

The above example embodiments show a landline communication device connected via interface circuitry to a single cellular telephone. However, the invention is not limited in this respect and the landline communication device may be

connected to two or more devices that provide access to different communication networks. For example, the arrangement shown in FIG. 4 may be modified to provide cradles for both a cellular telephone and a satellite telephone. In this case the interface circuitry may be configured to permit cellular calls to be made by entering one predetermined code into the landline communication device and to permit satellite calls to be made by entering another different predetermined code into the landline communication device. The FIG. 4 arrangement may also be modified to provide cradles for two or more cellular telephones and/or two or more satellite telephones. This may be useful for households or offices having two or more persons each of whom has his/her own cellular or satellite telephone. Each person may be assigned a different predetermined code so that the interface circuitry can access his/her cellular telephone to place calls.

The systems and methods described herein can even be used in the event that the interface circuitry is not connected to a line pair for the PSTN. This might be the case, for example, in areas or regions where there is no access to the PSTN. In such areas and regions, wireless communication over a cellular network, for example, may be the primary method for telecommunication. If the interface circuitry described herein is used in this situation, users may still place and receive cellular calls using a conventional landline telephone, even though the interface circuitry is not connected to a line pair for the PSTN. Because of the limited talking time on wireless telephones due to limited battery life, heating up of the device, or poor ergonomics, the systems and methods described herein allow the user to extend his/her talking time.

While the invention has been described in connection with certain embodiments, it is to be understood that the invention is not to be limited to the disclosed embodiment, but on the contrary, is intended to cover various modifications and equivalent arrangements included within the spirit and scope of the appended claims.

I claim:

1. A communication system comprising:

a landline communication device comprising circuitry adapted to place and receive calls over a landline communication network; and

interface circuitry connected to a single ring-tip line pair of a landline communication network and to a wireless communication device for a wireless communication network, wherein the interface circuitry selectively connects the landline communication device to the ring-tip line pair so that calls are placed and received by the landline communication device over the landline communication network and to the wireless communication device so that calls are placed and received by the landline communication device over the wireless communication network via the wireless communication device,

wherein the interface circuitry detects if the ring-tip line pair is in use and, if so, automatically places calls from the landline communication device using the wireless communication device.

2. A communication system comprising:

a landline communication device comprising circuitry adapted to place and receive calls over a landline communication network; and interface circuitry connected to a single ring-tip line pair of a landline communication network and to a wireless communication device for a wireless communication network, wherein the interface circuitry selectively connects the landline communication device to the ring-tip line pair so that calls are placed and received by the landline communication device over the landline communication network and to the wireless communication device so that calls are placed and received by the landline communication device over the wireless communication network via the wireless communication device,

wherein the interface circuitry comprises signal-boosting circuitry for boosting a signal of the wireless communication device.

3. A communication system comprising:

a landline communication device comprising circuitry adapted to place and receive calls over a landline communication network; and

interface circuitry connected to a single ring-tip line pair of a landline communication network and to a wireless communication device for a wireless communication network, wherein the interface circuitry selectively connects the landline communication device to the ring-tip line pair so that calls are placed and received by the landline communication device over the landline communication network and to the wireless communication device so that calls are placed and received by the landline communication device over the wireless communication network via the wireless communication device,

wherein the interface circuitry comprises:

a first switch connected between the landline communication device and the ring-tip line pair;

a second switch connected between the landline communication device and the wireless communication device; and

a processing circuit for controlling the first and second switches.

4. A communication system comprising:

a landline communication device comprising circuitry adapted to place and receive calls over a landline communication network; and

interface circuitry connected to a single ring-tip line pair of a landline communication network and to a wireless communication device for a wireless communication network, wherein the interface circuitry selectively connects the landline communication device to the ring-tip line pair so that calls are placed and received by the landline communication device over the landline communication network and to the wireless communication device so that calls are placed and received by the landline communication device over the wireless communication network via the wireless communication device,

wherein the interface circuitry determines whether to place a landline or wireless call in response to a user input.

5. The communication system according to claim 4, wherein the landline communication device comprises a cordless telephone.

6. The communication system according to claim 4, wherein the interface circuitry permits other landline communication devices to use the ring-tip line pair if the landline communication device is used to place or receive a wireless call.

7. The communication system according to claim 4, wherein the wireless communication network comprises a cellular network.

8. The communication system according to claim 4, wherein the landline communication network comprises the public switched telephone network.

9. The communication system according to claim 4, wherein the landline communication device comprises a landline telephone.

10. The communication system according to claim 4, wherein the wireless communication device comprises a cellular telephone.

11. The communication system according to claim 4, wherein the wireless communication device comprises a personal digital assistant (PDA).

12. The communication system according to claim 3, wherein the processing circuit controls the first and second switches so as to conference together a landline call and a wireless call.

13. The communication system according to claim 3, wherein the processing circuit controls the first and second switches so as to place one of a landline call and a wireless call involving the landline communication device on hold and to connect the landline communication device to the other of a landline call and a wireless call.

14. The communication system according to claim 1, wherein the interface circuitry comprises a switching arrangement and a processing circuit for controlling the switching arrangement so as to selectively conference together a landline call and a wireless call.

15. The communication system according to claim 1, wherein the interface circuitry comprises a switching arrangement and a processing circuit for controlling the switching arrangement so as to selectively place one of a landline call and a wireless call involving the landline communication device on hold and to connect the landline communication device to the other of a landline call and a wireless call.

16. The communication system according to claim 1, wherein the landline communication device comprises a cordless telephone.

17. The communication system according to claim 2, wherein the interface circuitry comprises a switching arrangement and a processing circuit for controlling the switching arrangement so as to selectively conference together a landline call and a wireless call.

18. The communication system according to claim 2, wherein the interface circuitry comprises a switching arrangement and a processing circuit for controlling the switching arrangement so as to selectively place one of a landline call and a wireless call involving the landline communication device on hold and to connect the landline communication device to the other of a landline call and a wireless call.

19. The communication system according to claim 2, wherein the interface circuitry detects if the ring-tip line pair is in use and, if so, automatically places calls from the landline communication device using the wireless communication device.

20. The communication system according to claim 2, wherein the landline communication device comprises a cordless telephone.

21. The communication system according to claim 4, wherein the interface circuitry comprises a switching arrangement and a processing circuit for controlling the switching arrangement so as to selectively conference together a landline call and a wireless call.

22. The communication system according to claim 4, wherein the interface circuitry comprises a switching arrangement and a processing circuit for controlling the switching arrangement so as to selectively place one of a landline call and a wireless call involving the landline communication device on hold and to connect the landline communication device to the other of a landline call and a wireless call.

23. The communication system according to claim 4, wherein the interface circuitry detects if the ring-tip line pair is in use and, if so, automatically places calls from the landline communication device using the wireless communication device.

* * * * *

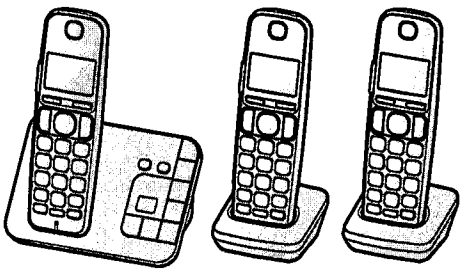
EXHIBIT B

Panasonic

Operating Instructions

Cordless Telephone with Bluetooth and Digital Answering Machine

Model No. **KX-TGE463**
KX-TG654SK
KX-TG684SK
KX-TGE474
KX-TGE475



Bluetooth®

Model shown is KX-TGE463.

Before initial use, see "Getting Started" on page 11.

Thank you for purchasing a Panasonic product.
Please read these operating instructions before using the unit and save them for future reference.

Consulte "Guía Rápida Española", página 81.

For assistance, visit our Web site: **http://shop.panasonic.com/support** for customers in the U.S.A.

Please register your product: http://shop.panasonic.com/support

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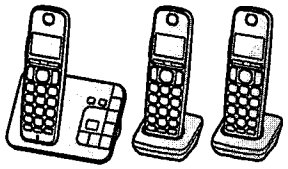
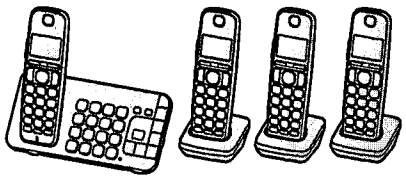
Model composition

■ **KX-TGE460 series**



● Model shown is KX-TGE463.

■ **KX-TGE470 series**



● Model shown is KX-TGE474.

Series	Model No.	Base unit	Handset	
		Part No.	Part No.	Quantity
KX-TGE460 series	KX-TGE463	KX-TGE460	KX-TGEA40	3
	KX-TG654SK	KX-TGE460	KX-TGEA40	4
	KX-TG684SK	KX-TGE460	KX-TGEA40	4
KX-TGE470 series	KX-TGE474	KX-TGE470	KX-TGEA40	4
	KX-TGE475	KX-TGE470	KX-TGEA40	5

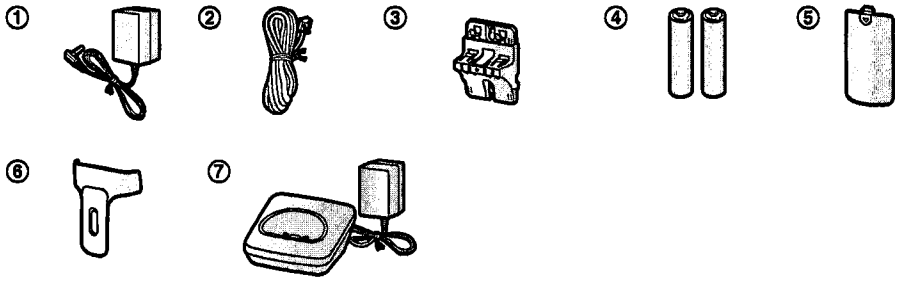
Accessory information

Supplied accessories

No.	Accessory item/Part number	Quantity		
		KX-TGE463	KX-TG654SK KX-TG684SK KX-TGE474	KX-TGE475
①	AC adaptor/PNLV226-0X	1	1	1
②	Telephone line cord*1	1	1	1
③	Wall mounting adaptor*2	1	1	1
④	Rechargeable batteries*3	6	8	10
⑤	Handset cover*4, *5	3	4	5
⑥	Belt clip*6	3	4	5
⑦	Charger*7	2	3	4

*1 PQJA10075Y (Black cord), PQJA10075Z (Transparent cord)
*2 PNKL1044Y2 (Black), PNKL1044Y1 (White)
*3 See page 5 for replacement battery information.
*4 The handset cover comes attached to the handset.

*5 PNYNTGEA20BR (Black), PNYNTGEA20SR (White)
*6 PNKE1312Z2 (Black), PNKE1312Z1 (White)
*7 PNLC1050ZB (Black), PNLC1050ZS (Silver)



Additional/replacement accessories

Please contact your nearest Panasonic dealer for sales information (page 91).

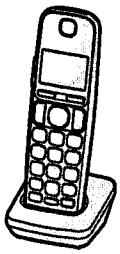
Accessory item	Model number/Specifications
Rechargeable batteries	HHR-4DPA*1 • To order, please visit http://shop.panasonic.com/support
	Battery type: – Nickel metal hydride (Ni-MH) – 2 x AAA (R03) size for each handset
Headset	KX-TCA60, KX-TCA93, KX-TCA400, KX-TCA430
Range extender	KX-TGA405*2
Key detector	KX-TGA20*3

*1 Replacement batteries may have a different capacity from that of the supplied batteries.
*2 By installing this unit, you can extend the range of your phone system to include areas where reception was previously not available. This product can be purchased online. Please visit our Web site: http://shop.panasonic.com/support
*3 By registering the key detector (4 max.) to a Panasonic Digital Cordless Phone and attaching it to an easy-to-lose item in advance, you can locate and find the mislaid item to which the key detector is attached. Please visit our Web site: http://www.panasonic.com/tga20

Other information

- Design and specifications are subject to change without notice.
- The illustrations in these instructions may vary slightly from the actual product.

Expanding your phone system

Handset (optional): KX-TGEA40	
You can expand your phone system by registering optional handsets (6 max.) to a single base unit. • Optional handsets may be a different color from that of the supplied handsets.	

Bluetooth® devices

You can expand your phone system by pairing the following units to a single base unit.

Your Bluetooth cellular phone*1: 2 max. (for cellular calls: page 17)	
Your Bluetooth headset*1: 1 max. (for a wireless hands-free conversation: page 56)	

*1 Your cellular phone and headset must be Bluetooth wireless technology compatible. For more details and the list of compatible cellular phones, please visit our Web site: http://shop.panasonic.com/bluetooth-phone

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- Android is a trademark of Google Inc.
- Gmail, Google Calendar are trademarks of Google Inc.
- Facebook is trademark of Facebook, Inc.
- Twitter is trademark of Twitter Inc.
- Instagram is trademark of Instagram, Inc.
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- All other trademarks identified herein are the property of their respective owners.

For your safety

To prevent severe injury and loss of life/ property, read this section carefully before using the product to ensure proper and safe operation of your product.

⚠WARNING

Power connection

- Use only the power source marked on the product.
- Do not overload power outlets and extension cords. This can result in the risk of fire or electric shock.
- Completely insert the AC adaptor/power plug into the power outlet. Failure to do so may cause electric shock and/or excessive heat resulting in a fire.
- Regularly remove any dust, etc. from the AC adaptor/power plug by pulling it from the power outlet, then wiping with a dry cloth. Accumulated dust may cause an insulation defect from moisture, etc. resulting in a fire.
- Unplug the product from power outlets if it emits smoke, an abnormal smell, or makes an unusual noise. These conditions can cause fire or electric shock. Confirm that smoke has stopped emitting and contact us at http://shop.panasonic.com/support
- Unplug from power outlets and never touch the inside of the product if its casing has been broken open.
- Never touch the plug with wet hands. Danger of electric shock exists.

Installation

- To prevent the risk of fire or electrical shock, do not expose the product to rain or any type of moisture.
- Do not place or use this product near automatically controlled devices such as automatic doors and fire alarms. Radio waves emitted from this product may cause such devices to malfunction resulting in an accident.
- Do not allow the AC adaptor or telephone line cord to be excessively pulled, bent or placed under heavy objects.

Operating safeguards

- Unplug the product from power outlets before cleaning. Do not use liquid or aerosol cleaners.
- Do not disassemble the product.
- Do not spill liquids (detergents, cleansers, etc.) onto the telephone line cord plug, or allow it to become wet at all. This may cause a fire. If the telephone line cord plug becomes wet, immediately pull it from the telephone wall jack, and do not use.

Medical

- Consult the manufacturer of any personal medical devices, such as pacemakers or hearing aids, to determine if they are adequately shielded from external RF (radio frequency) energy. (The product operates in the frequency range of 1.92 GHz to 1.93 GHz, and the RF transmission power is 115 mW (max.).)
- Do not use the product in health care facilities if any regulations posted in the area instruct you not to do so. Hospitals or health care facilities may be using equipment that could be sensitive to external RF energy.

⚠CAUTION

Installation and location

- Never install telephone wiring during an electrical storm.
- Never install telephone line jacks in wet locations unless the jack is specifically designed for wet locations.
- Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- Use caution when installing or modifying telephone lines.
- The AC adaptor is used as the main disconnect device. Ensure that the AC outlet is installed near the product and is easily accessible.

- This product is unable to make calls when:
  - the handset batteries need recharging or have failed.
  - there is a power failure.

Battery

- We recommend using the batteries noted on page 5. **USE ONLY rechargeable Ni-MH batteries AAA (R03) size.**
- Do not mix old and new batteries.
- Do not open or mutilate the batteries. Released electrolyte from the batteries is corrosive and may cause burns or injury to the eyes or skin. The electrolyte is toxic and may be harmful if swallowed.
- Exercise care when handling the batteries. Do not allow conductive materials such as rings, bracelets, or keys to touch the batteries, otherwise a short circuit may cause the batteries and/or the conductive material to overheat and cause burns.
- Charge the batteries provided with or identified for use with this product only, in accordance with the instructions and limitations specified in this manual.
- Only use a compatible base unit (or charger) to charge the batteries. Do not tamper with the base unit (or charger). Failure to follow these instructions may cause the batteries to swell or explode.

Attention:

A nickel metal hydride battery that is recyclable powers the product you have purchased.
Please call 1-800-8-BATTERY (1-800-822-8837) for information on how to recycle this battery.

Important safety instructions

When using your product, basic safety precautions should always be followed to reduce the risk of fire, electric shock, and injury to persons, including the following:

1. Do not use this product near water for example, near a bathtub, washbowl, kitchen sink, or laundry tub, in a wet basement or near a swimming pool.
2. Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.
3. Do not use the telephone to report a gas leak in the vicinity of the leak.
4. Use only the power cord and batteries indicated in this manual. Do not dispose of batteries in a fire. They may explode. Check with local codes for possible special disposal instructions.

SAVE THESE INSTRUCTIONS

For best performance

Base unit location/avoiding noise

The base unit and other compatible Panasonic units use radio waves to communicate with each other.

- For maximum coverage and noise-free communications, place your base unit:
  - at a convenient, high, and central location with no obstructions between the handset and base unit in an indoor environment.
  - away from electronic appliances such as TVs, radios, personal computers, wireless devices, or other phones.
  - facing away from radio frequency transmitters, such as external antennas of mobile phone cell stations. (Avoid putting the base unit on a bay window or near a window.)
- Coverage and voice quality depends on the local environmental conditions.

- If the reception for a base unit location is not satisfactory, move the base unit to another location for better reception.

Environment

- Keep the product away from electrical noise generating devices, such as fluorescent lamps and motors.
- The product should be kept free from excessive smoke, dust, high temperature, and vibration.
- The product should not be exposed to direct sunlight.
- Do not place heavy objects on top of the product.
- When you leave the product unused for a long period of time, unplug the product from the power outlet.
- The product should be kept away from heat sources such as heaters, kitchen stoves, etc. It should not be placed in rooms where the temperature is less than 0 °C (32 °F) or greater than 40 °C (104 °F). Damp basements should also be avoided.
- The maximum calling distance may be shortened when the product is used in the following places: Near obstacles such as hills, tunnels, underground, near metal objects such as wire fences, etc.
- Operating the product near electrical appliances may cause interference. Move away from the electrical appliances.

Routine care

- **Wipe the outer surface of the product with a soft moist cloth.**
- Do not use benzine, thinner, or any abrasive powder.

Other information

CAUTION: Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

Notice for product disposal, transfer, or return

- This product can store your private/ confidential information. To protect your privacy/confidentiality, we recommend that you erase information such as phonebook or caller list entries from the memory before you dispose of, transfer, or return the product.

Notice

- This product is designed for use in the United States of America. Sale or use of this product in other countries may violate local laws.
- Cet appareil est conçu pour être utilisé aux États-Unis d'Amérique. La vente ou l'emploi de cet appareil dans certains autres pays peut constituer une infraction à la législation locale.
- Este producto está diseñado para usarse en los Estados Unidos de América. La venta o el empleo de este producto en ciertos países puede constituir violación de la legislación local.
- 本產品專為美國使用而設。若在其他國家銷售或使用，可能會違反當地法例。
- この製品は、日本国外での使用を目的として設計されており、日本国内での使用は法律違反となります。従って、当社では日本国内においては 原則として修理などのサービスは致しかねます。

ENERGY STAR

As an ENERGY STAR® Partner, Panasonic has determined that this product meets the ENERGY STAR guidelines for energy efficiency. ENERGY STAR is a U.S. registered mark.

Specifications

- **Standard:**
  DECT 6.0 (Digital Enhanced Cordless Telecommunications 6.0)
  Bluetooth wireless technology 2.1
- **Frequency range:**
  1.92 GHz to 1.93 GHz (DECT)
  2.402 GHz to 2.48 GHz (Bluetooth)
- **RF transmission power:**
  115 mW (max.)
- **Power source:**
  120 V AC, 60 Hz
- **Power consumption:**
  Base unit:
  Standby: Approx. 1.2 W
  Maximum: Approx. 4.5 W
  Charger:
  Standby: Approx. 0.1 W
  Maximum: Approx. 1.8 W
- **Operating conditions:**
  0 °C – 40 °C (32 °F – 104 °F), 20 % – 80 % relative air humidity (dry)

Setting up

Connections

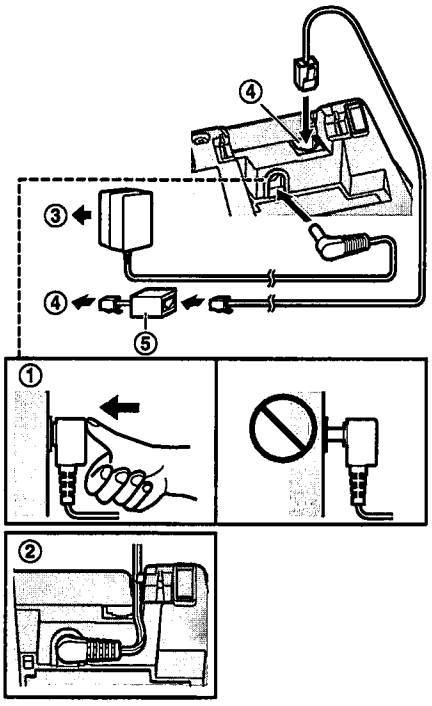
- If you do not connect the telephone line cord and use only cellular lines, set the cellular line only mode to use this unit more conveniently (page 19).

■ **Base unit**

① Connect the AC adaptor to the unit by pressing the plug firmly.
② Fasten the cord by hooking it.
③ Connect the AC adaptor to the power outlet.
④ Connect the telephone line cord to the unit, then to the single-line telephone jack (RJ11C) until you hear a click.
⑤ A DSL/ADSL filter (not supplied) is required if you have a DSL/ADSL service.

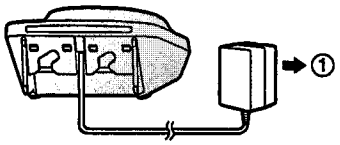
Note:

- Use only the supplied Panasonic AC adaptor PNLV226.



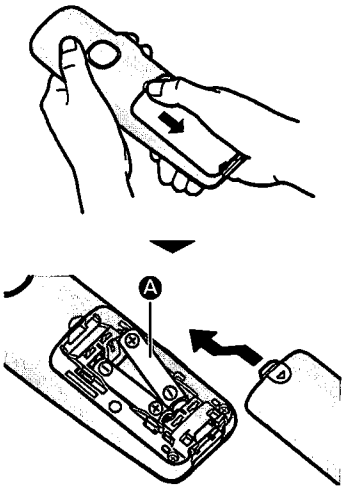
■ **Charger**

① Connect the AC adaptor to the power outlet.



Battery installation

- USE ONLY rechargeable Ni-MH batteries AAA (R03) size (Ⓐ).
- Do NOT use alkaline/manganese/Ni-Cd batteries.
- Confirm correct polarities (⊕, ⊖).

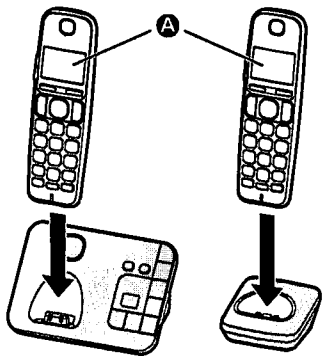


- Follow the directions on the display to set up the unit.

Battery charging

Charge for about 7 hours.

- Confirm "Charging" is displayed (Ⓐ).
- When the batteries are fully charged, "Fully charged" is displayed.



Note when setting up

Note for connections

- The AC adaptor must remain connected at all times. (It is normal for the adaptor to feel warm during use.)
- The AC adaptor should be connected to a vertically oriented or floor-mounted AC outlet. Do not connect the AC adaptor to a ceiling-mounted AC outlet, as the weight of the adaptor may cause it to become disconnected.

Note for battery installation

- Use the supplied rechargeable batteries. For replacement, we recommend using the Panasonic rechargeable batteries noted on page 5, 8.

Note for battery charging

- It is normal for the handset to feel warm during charging.
- Clean the charge contacts of the handset, base unit, and charger with a soft and dry cloth once a month. Before cleaning the unit, disconnect from power outlets and any telephone line cords. Clean more often if the unit is exposed to grease, dust, or high humidity.

Battery level

Icon	Battery level
	High
	Medium
	Low
	Needs charging.
	Empty

Panasonic Ni-MH battery performance (supplied batteries)

Operation	Operating time
In continuous use	12 hours max.*1
Not in use (standby)	8 days max.*1

*1 If eco mode is on.

Note:

- Actual battery performance depends on usage and ambient environment.

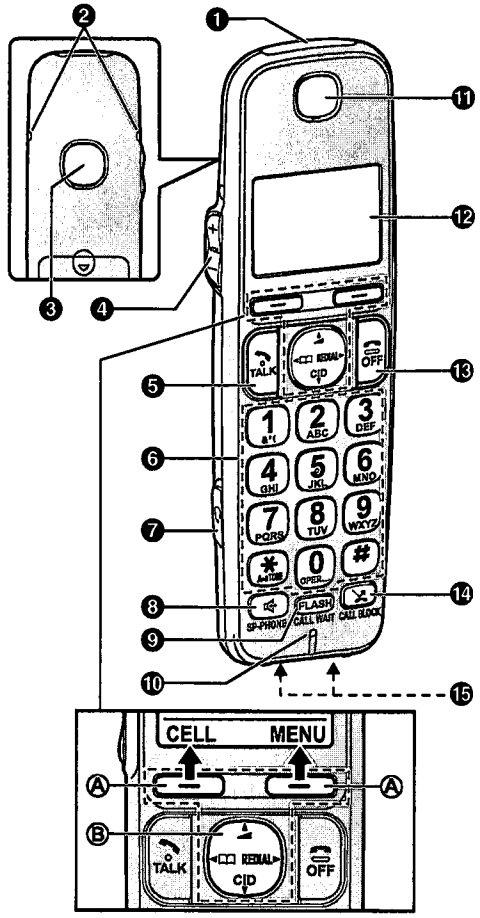
Intelligent eco mode

This feature automatically reduces handset power consumption by suppressing handset transmission power when the handset is close to the base unit.

- When this feature is activated, ECO is displayed. However, during a cellular call, ECO is not displayed even though this feature is activated.
- Eco mode is turned off when the clarity booster is activated (page 23).

Controls

Handset



❶ Ringer indicator
Message indicator
❷ Belt clip holes
❸ Speaker
❹ [+]/[−] (VOL.: Volume up/down)
❺ [ ] (TALK)
❻ Dial keypad ([*]: TONE)
❼ Headset jack
❽ [ ] (SP-PHONE: Speakerphone)
❾ [FLASH] [CALL WAIT]
❿ Microphone
⓫ Receiver
⓬ Display
⓭ [OFF] ( )
⓮ [CALL BLOCK] ( )
⓯ Charge contacts

■ Control type

Ⓐ Soft keys

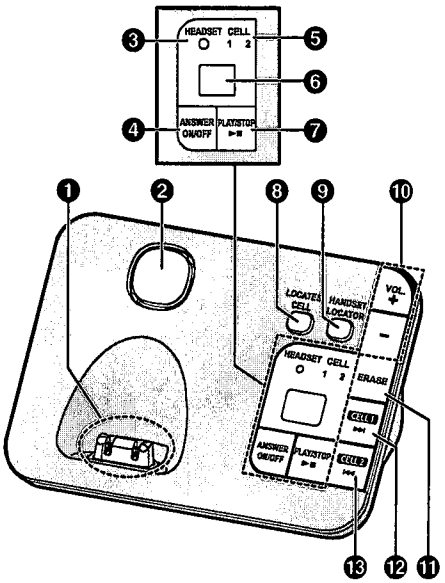
By pressing a soft key, you can select the feature shown directly above it on the display. After a cellular phone is paired, [CELL] is displayed.

Ⓑ Navigator key

– [▲], [▼], [◄], or [►]: Scroll through various lists and items.
– (Volume: [▲] or [▼]): Adjust the receiver or speaker volume while talking.
– [◄] : View the phonebook entry.
– [►] REDIAL: View the redial list.
– [▼] CID (Caller ID): View the caller list.

Base unit

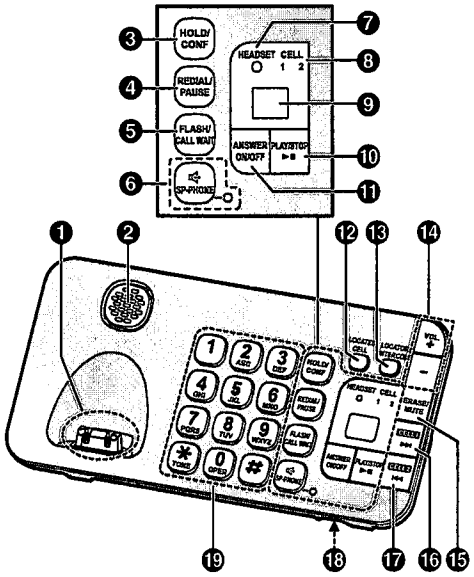
■ KX-TGE460 series: page 4



❶ Charge contacts
❷ Speaker
❸ HEADSET indicator
❹ [ANSWER ON/OFF]
❺ CELL 1 indicator
CELL 2 indicator
❻ Message counter

❼ [►■] (PLAY/STOP)
Message indicator
❽ [LOCATES CELL]
❾ [HANDSET LOCATOR]
❿ [+]/[−] (VOL.: Volume up/down)
⓫ [ERASE]
⓬ [CELL 1] (For pairing)
[▶▶|] (Skip)
⓭ [CELL 2] (For pairing)
[|◀◀] (Repeat)

■ KX-TGE470 series: page 4



❶ Charge contacts
❷ Speaker
❸ [HOLD] [CONF]
❹ [REDIAL] [PAUSE]
❺ [FLASH] [CALL WAIT]
❻ [🔊] (SP-PHONE: Speakerphone)
SP-PHONE indicator
❼ HEADSET indicator
❽ CELL 1 indicator
CELL 2 indicator
❾ Message counter
❿ [►■] (PLAY/STOP)
Message indicator
⓫ [ANSWER ON/OFF]
⓬ [LOCATES CELL]
⓭ [LOCATOR] [INTERCOM]
⓮ [+]/[−] (VOL.: Volume up/down)
⓯ [ERASE] [MUTE]
⓰ [CELL 1]
[▶▶|] (Skip)
⓱ [CELL 2]
[|◀◀] (Repeat)
⓲ Microphone
⓳ Dial keypad ([✱]: TONE)

Display icons/Indicators

Handset display items

Item	Meaning
	Within base unit range
	Out of base unit range
	The landline is in use. • When flashing: The call is put on hold. • When flashing rapidly: An incoming call is now being received.
	A cellular line is in use.*1 • When flashing: The cellular call is put on hold. • When flashing rapidly: A cellular call is being received.
ECO	Eco mode is on.*2 (page 12)
	A cellular phone is connected.*1 Ready to make/receive cellular calls. • When turned off: A cellular phone is not connected to the base unit. (page 19)
C1 C2	– A cellular call is in progress on that line. – The cellular line is selected for the setting.
NR	Noise reduction is set. (page 23)
EQ	Equalizer is set. (page 23)
	Speakerphone is on. (page 21)

Item	Meaning
🔕1	Ringer volume is off.*3 (page 22, 40, 42)
Zzz	Silent mode is on. (page 47)
PRIV.	Call sharing mode is off. (page 44)
⏲	Alarm is on. (page 46)
1	Handset number
🔋	Battery level
↘	Blocked call (page 32)
BOOST	Clarity booster is on.*2 (page 23)
↳	Baby monitor is activated. The name/number displayed next to the icon indicates the monitoring unit. (page 47)
In use	Answering system is being used by another handset or the base unit.
Cell1 in use	Someone is using the corresponding line.
Cell2 in use	
C1&C2 in use	
Line in use	

*1 Corresponding lines (1, 2: cellular line) are indicated next to the item.
*2 During a cellular call, the item is not displayed even though the feature is activated.
*3 Corresponding lines (1, 2: cellular line, L: landline) are indicated next to the item. If all lines are turned off, no line is indicated.

Base unit display item

Item	Meaning
go	"Greeting only" is selected. Caller messages are not recorded. (page 63)

CELL indicators on the base unit

The CELL indicators show each cellular line status.

Status	Meaning
On	A cellular phone is connected. Ready to make/receive cellular calls.
Flashing	– The cellular line is in use. – Phonebook entries are being copied from a cellular phone (page 53). – The base unit is searching for the paired cellular phone. – The base unit is pairing a cellular phone. – A cellular call is put on hold.
Flashing rapidly	A cellular call is being received.
Light off	– A cellular phone is not paired to the base unit. – A cellular phone is not connected to the base unit (page 19).

Bluetooth HEADSET indicator on the base unit

The HEADSET indicator shows the Bluetooth headset status.

Status	Meaning
On	A Bluetooth headset is connected to the base unit. Ready to use it.
Flashing	– A Bluetooth headset is in use. – The base unit is searching for the paired Bluetooth headset. – The base unit is pairing a headset.
Flashing rapidly	A landline call is being received.

Status	Meaning
Light off	– A Bluetooth headset is not paired to the base unit. – The Bluetooth headset is not connected to the base unit.

Language settings

Display language

1 [MENU]#110

2 [▲▼]: Select the desired setting. → [SAVE] → [OFF]

Voice announcement language

You can select the language used for the following features.
– Answering system guidance
– Talking Caller ID
– Application (App) alert announcement
– Text message (SMS) alert announcement

1 [MENU]#112

2 [▲▼]: Select the desired setting. → [SAVE] → [OFF]

Date and time

1 [MENU]#101

2 Enter the current month, date, and year by selecting 2 digits for each.
Example: July 12, 2016
07 12 16

3 [OK]

4 Enter the current hour and minute (12-hour clock format) by selecting 2 digits for each.
Example: 9:30
09 30

5 *: Select "AM" or "PM".

6 [SAVE] → [OFF]

Note:

- When English is selected as the display language, 12-hour clock format is used. When Spanish is selected, 24-hour clock format is used.

Recording your greeting message

You can record your own greeting message instead of using a pre-recorded greeting message. See page 58 for details.

1 [MENU]#302

2 [▲▼]: "Yes" → [SELECT]

3 Record a greeting message. → [STOP] → [OFF]

Other settings

Dialing mode

If you cannot make calls, change this setting according to your telephone line service. The default setting is "Tone".
"Tone": For tone dial service.
"Pulse": For rotary/pulse dial service.

1 [MENU]#120

2 [▲▼]: Select the desired setting. → [SAVE] → [OFF]

Link to cell feature

You can connect your base unit and cellular phone using Bluetooth wireless technology, so that you can make or answer cellular calls using your phone system. This allows you to:

– use the unit to talk on cellular calls even if some areas of your home have poor cellular reception, simply by placing your cellular phone in an area with good reception.
– talk on cellular calls even if your cellular phone is in your pocket or bag.
– enjoy cordless cellular calls even if your cellular phone plugged in and charging.

Important:

- Your cellular phone must support the Hands Free Profile (HFP) specification.
- You may pair 2 cellular phones and 1 headset.
- The unit can be used to talk on 2 lines at the same time (for example, 2 cellular lines, or the landline and 1 cellular line).
- Only 2 Bluetooth devices can be used with the unit at the same time (for example, 2 cellular lines, or the headset and 1 cellular line).
- Locate your cellular phone near the base unit. If the cellular phone is too close to the base unit during a cellular call, you may hear noise. For best performance, we recommend placing the cellular phone between 0.6 m to 3 m (2 feet to 10 feet) away from the base unit.

Pairing a cellular phone

Important:

- For more details and the list of compatible cellular phones, please visit our Web site: http://shop.panasonic.com/bluetooth-phone
- Before pairing a Bluetooth enabled cellular phone to the base unit, make sure that no other Bluetooth device such as a Bluetooth headset is connected to your cellular phone.

1 **Base unit:**
Press and hold **[CELL 1]** or **[CELL 2]** for about 5 seconds.
- After the corresponding CELL indicator on the base unit starts flashing, the rest of the procedure must be completed within 5 minutes.

2 **Your cellular phone:**
While the corresponding CELL indicator is flashing, follow the instructions of your cellular phone to enter the pairing mode.
- Depending on your cellular phone, it may ask you to enter the Bluetooth PIN (default: "0000").
- If your cellular phone prompts you to confirm the passkey, tap **[OK]** or otherwise to accept the pairing request.

3 **Base unit:**
Wait until a long beep sounds.
- It may take more than 10 seconds to complete pairing.
- When the corresponding CELL indicator lights up, the cellular phone is connected to the base unit. You are ready to make cellular calls.

Note:

- If the cellular phone has already paired to the base unit, it is overwritten.
- Make sure that your cellular phone is set to connect to this product automatically. Refer to your cellular phone's operating instructions.
- Make sure you cancel your cellular phone's current pairing if you want to pair it to the other line (page 17).
- The default setting for the alert feature is "On", so when you pair your cellular phone to the base unit, this feature may be activated (page 55). (This depends on the version and type of cellular phone you are using.)

Unpairing a cellular phone

You can cancel the pairing of a cellular phone that is stored in the base unit.

1 For CELL 1: **[MENU]**#611
For CELL 2: **[MENU]**#612

2 [▲▼]: "Yes" → [SELECT]
- When the cellular phone is unpaired, the CELL indicator is turned off.

3 [OFF]

Link to cell settings

Selecting which unit receives cellular calls

You can select which unit rings and receives calls for a cellular line. When "All" is selected, all handsets and the base unit ring.

1 For CELL 1: [MENU]#6271
For CELL 2: [MENU]#6272

2 [▲▼]: Select the desired handset or "All". → [SAVE] → [OFF]

Note:

- When you select a specific handset to receive calls for a cellular line:
  - other handsets cannot answer the calls.
  - the base unit can answer the calls even though it does not ring. However, you can make the base unit ring by adjusting the base unit ringer volume (page 40). (KX-TGE470 series: page 4)
- When you change to "All" from another setting, the base unit ringer volume also returns to the lowest level even if the ringer volume was changed.
- The units selected with this setting have the alert feature (page 55) applied to them.

Ring as cell mode

Once this feature is turned on, the handset and base unit ring using the same ringer tone as your cellular phone.
The following settings are available:
- "Off": Turn this feature off to use the ringer tones of the handset and base unit. Caller information is announced depending on the Talking Caller ID setting (page 43).
- "On (with Talking CID)" (default): The handset and base unit use your cellular phone's ringer tone. Caller information is announced even if the Talking Caller ID is turned off.
- "On (without Talking CID)": The handset and base unit use your cellular phone's ringer tone. Caller information is not announced even if the Talking Caller ID is turned on.

Important:

- To use this feature, your cellular phone must support Bluetooth in-band ringtone. Refer to your cellular phone's operating instructions.

1 For CELL 1: [MENU]#6141
For CELL 2: [MENU]#6142

2 [▲▼]: Select the desired setting. → [SAVE] → [OFF]

Note:

- The units use the preset ringer tones instead of your cellular phone's ringer tone when a cellular call is being received if:
  - your cellular phone is in silent mode (depending on your cellular phone).
  - the base unit is in use.
  - 2 handsets are sharing a landline call.
- If your cellular phone is in silent mode with "On (with Talking CID)" set, the unit announces caller information even when Talking Caller ID is turned off (page 43).

To use the handset ringer tone instead of your cellular phone's ringer tone

Select "Off" in step 2, "Ring as cell mode", page 18.
To change the handset ringer tone for a cellular line, see page 40.

Auto connection to the Bluetooth devices (cellular phones)

After pairing, your Bluetooth devices are connected to the base unit. If you move the Bluetooth devices out of base unit range, the Bluetooth devices are disconnected from the base unit. This feature allows the base unit to try to reconnect the Bluetooth devices at regular intervals when it returns within base

unit range. You can set the interval. The default setting is "1 min".

Important:

- When 3 Bluetooth devices (2 cellular phones and 1 headset) are paired to the base unit, only 2 Bluetooth devices can be used with the unit at the same time, and the base unit loses its connection from other Bluetooth devices. To automatically resume the connection to Bluetooth devices, leave the auto connection on.
- Some cellular phones lose connection after usage, please check the specifications of your cellular phone for more details.

1 **[MENU]**#632

2 [▲▼]: Select the desired setting. → **[SAVE]** → **[OFF]**

Note:

- Some cellular phones may ask you if you accept the connection requirement from the base unit. In that case, select "Off" in step 2. Check the specifications of your cellular phone.

Connecting/disconnecting the cellular phone manually

If you will not be using the paired cellular phone's link to cell feature temporarily (for example, you do not want the unit to ring when your cellular line receives a call), you can disconnect your cellular phone from the base unit. If you want to use it again, reconnect the cellular phone to the base unit.

Note:

- After you disconnect a paired cellular phone from the base unit manually, it will automatically be connected to the base unit in 30 minutes. If you do not use the link to cell feature anymore, unpair the cellular phone (page 18).
- A disconnected cellular phone is not unpaired from the base unit, so pairing it to the base unit again is unnecessary.

1 **To connect/disconnect:**
For CELL 1: **[MENU]**#6251
For CELL 2: **[MENU]**#6252
- A long beep sounds.

2 **[OFF]**

Cellular line only mode (If you do not use the landline)

If you do not use the landline, we recommend setting the unit to the cellular line only mode. The default setting is "Off".

Important:

- If you turn on the "Cell line only mode", disconnect the telephone line cord from the base unit. Otherwise the "Cell line only mode" cannot be activated.

1 **[MENU]**#157

2 **To turn on:**
[▲▼]: "On" → **[SELECT]** → [▲▼]: "Yes" → **[SELECT]**
To turn off:
[▲▼]: "Off" → **[SELECT]**

Note:

- Once you set this mode, you can use the following buttons to make cellular calls:
  - for the handset, press **[ ]** or **[ ]** instead of **[CELL]** (page 21).
  - for the base unit, press **[ ]** without pressing **[CELL 1]** or **[CELL 2]** set for the cellular line selection (page 20, 27). (KX-TGE470 series: page 4)
- Once you set this mode, the following features cannot be used:
  - Landline features (page 45)
  - Answering system (page 58) Messages cannot be received.
  - Voicemail features (page 65)
- After this mode is turned on or off, the base unit reboots.
  - Bluetooth connections from cellular phones or headset are disconnected. If the auto connection is turned on (page 18), the cellular phones are reconnected.
  - ▼ will be displayed on the handset momentarily. The handset can be used once ▼ is displayed.

When you use the landline again

Before connecting the telephone line to the base unit, select "Off" in step 2, "Cellular line only mode (If you do not use the landline)", page 19.

Cellular line selection

This feature determines which cellular line is selected to make cellular calls when:
– you press [CELL] on the handset.
– you press [ ] or [ ] on the handset while the cellular line only mode is turned on.
– you press [ ] on the base unit while the cellular line only mode is turned on. (KX-TGE470 series: page 4)

The following settings are available:
– "Manual" (handset only: default): You can select the desired cellular line when making a call.
– "Cellphone 1"*1 (base unit default): CELL 1 is selected.
– "Cellphone 2"*1: CELL 2 is selected.

1 For handset: [MENU]#631
For base unit*2: [MENU]#*631

2 [▲▼]: Select the desired setting. → [SAVE] → [OFF]

*1 After the Bluetooth device is paired, the device name is displayed.
*2 KX-TGE470 series: page 4

Storing your area code (for dialing only a 7-digit phone number to make a local call)

You need to add your area code when making cellular calls to a phone number in your area. Once you store your area code, it is automatically added to the beginning of the 7-digit phone number when making cellular calls.

1 [MENU]#633

2 Enter the 3-digit area code.
- To correct a digit, press [CLEAR].

3 [SAVE] → [OFF]

Changing the Bluetooth PIN (Personal Identification Number)

The PIN is used to pair cellular phones to the base unit. The default PIN is "0000". To prevent unauthorized access to this product, we recommend that you change the PIN, and keep it confidential.

Important:

- Please make note of your new PIN. The unit does not reveal the PIN to you. If you forget your PIN, see page 77.

1 [MENU]#619
- If the unit prompts you to enter the old PIN (when the default has been changed), enter the current 4-digit PIN.

2 Enter the new 4-digit PIN. → [OK]

3 Enter the new 4-digit PIN again. → [SAVE] → [OFF]

Making cellular calls

Important:

- The unit can be used to talk on 2 lines at the same time (for example, 2 cellular lines, or the landline and 1 cellular line).
- Only 2 Bluetooth devices can be used with the unit at the same time (for example, 2 cellular lines, or the headset and 1 cellular line).
- Before making calls, confirm that the corresponding $\ast_2^1$ on the handset is displayed (page 14).

1 Lift the handset and then dial the phone number.
- To correct a digit, press **[CLEAR]**.

2 **[CELL]**
- The unit starts dialing immediately in the following situations.
  - Only 1 cellular phone is paired.
  - A specific line is set to make cellular calls (page 20).

Go to step 4.

3 [▲▼]: Select the desired cellular phone. → **[SELECT]**

4 When you finish talking, press **[OFF]** or place the handset on the base unit or charger.

Note:

- To switch to the speaker, press [🔊]. To switch back to the receiver, press [🔊]/[📞].
- In step 1, you can store the dialed phone number to the phonebook by pressing and holding [◄] 📖 for a few seconds.

Adjusting the receiver or speaker volume

Press **[+]** or **[−]** repeatedly while talking.

Note:

- The receiver or speaker volume you set is kept for each line (landline and cellular lines).

Making a cellular call using the redial list

The last 5 phone numbers dialed are stored in the redial list (each 48 digits max.).

1 [►] REDIAL

2 [▲▼]: Select the desired entry.

3 **[CELL]**
- The unit starts dialing immediately in the following situations.
  - Only 1 cellular phone is paired.
  - A specific line is set to make cellular calls (page 20).

4 [▲▼]: Select the desired cellular phone. → **[SELECT]**

Erasing a number in the redial list

■ **When a cellular phone is paired:**

1 [►] REDIAL

2 [▲▼]: Select the desired entry. → **[MENU]**

3 [▲▼]: "Erase" → **[SELECT]**

4 [▲▼]: "Yes" → **[SELECT]**

5 **[OFF]**

■ **When a cellular phone is not paired:**

1 [►] REDIAL

2 [▲▼]: Select the desired entry. → **[ERASE]**

3 [▲▼]: "Yes" → **[SELECT]** → **[OFF]**

Making landline calls

1 Lift the handset and then dial the phone number.
- To correct a digit, press **[CLEAR]**.

2 Press [📞] to make the call.
- To make the call using the speakerphone, press [🔊].

3 When you finish talking, press **[OFF]** or place the handset on the base unit or charger.

Note:

- To switch to the speaker, press [🔊].

To switch back to the receiver, press [🔊]/[📞].

- In step 1, you can store the dialed phone number to the phonebook by pressing and holding [◄] 📖 for a few seconds.

Making a call using the redial list

The last 5 phone numbers dialed are stored in the redial list (each 48 digits max.).

1 [►] REDIAL
2 [▲▼]: Select the desired entry.
3 [📞]

Pause (for PBX/long distance service users)

A pause is sometimes required when making calls using a PBX or long distance service. When storing a calling card access number and/or PIN in the phonebook, a pause is also needed (page 36).
Example: If you need to dial the line access number "9" when making outside calls with a PBX:

1 9 → [▲] (Pause)
2 Dial the phone number. → [📞]

Note:

- A 3.5 second pause is inserted each time [▲] (Pause) is pressed.

Answering calls

When a call is being received, the ringer indicator flashes rapidly.

1 Lift the handset and then press [📞] or [🔊] when the unit rings.
   - To answer a cellular call, you can also press [CELL].
2 When you finish talking, press [OFF] or place the handset on the base unit or charger.

Any key answer: You can answer the call by pressing any dial key.
Auto talk: You can answer calls simply by lifting the handset (page 44).

Temporary handset ringer off: You can turn the ringer off temporarily by pressing [🔕].

Adjusting the handset ringer volume

■ **While the handset is ringing for an incoming call:**
Press [+] or [−] repeatedly to select the desired volume.

■ **While the handset is in standby mode:**
Press [+] or [−] repeatedly to select the desired volume for landline call.

- To turn the ringer off, press [−] repeatedly.

Note:

- You can adjust the ringer volume for cellular call and landline call by programming (page 40, 42).
- The ringer volume you set is kept for each line (landline and cellular lines).

Useful features during a call

Hold

1 Press [MENU] during an outside call.
2 [▲▼]: "Hold" → [SELECT]
3 **To release hold on the cellular line:**
Press [CELL].*1
   - Another handset user can take the call by pressing [CELL].*1
     *1 If you press [CELL] and the selection list is displayed, select the desired cellular line and press [SELECT].
   - The base unit user can take the call by pressing [CELL 1] or [CELL 2]. (KX-TGE470 series: page 4)

To release hold on the landline:
Press [📞].

- Another handset user can take the call by pressing [📞].
- The base unit user can take the call by pressing [🔊]. (KX-TGE470 series: page 4)

Note:

- After holding for 10 minutes, the call is disconnected.

Mute

1 Press **[MUTE]** during a call.

2 To return to the call, press **[MUTE]**.

Note:

- **[MUTE]** is a soft key visible on the display during a call.

Flash for landline calls

[FLASH] allows you to use the special features of your host PBX such as transferring an extension call, or accessing optional telephone services.

Note:

- To change the flash time, see page 44.

For call waiting or Call Waiting Caller ID service users

To use call waiting or Call Waiting Caller ID, you must first subscribe with your phone service provider.
This feature allows you to receive calls while you are already talking on the phone. If you receive a call while on the phone, you will hear a call waiting tone.
If you subscribe to both Caller ID and Call Waiting with Caller ID services, the 2nd caller's information is displayed on the unit that is in use after you hear the call waiting tone.

1 Press **[CALL WAIT]** to answer the 2nd call.

2 To switch between calls, press **[CALL WAIT]**.

Note:

- Please contact your phone service provider for details and availability of this service in your area.

Temporary tone dialing for landline calls (for rotary/pulse service users)

Press ✱ (TONE) before entering access numbers which require tone dialing.

Handset clarity booster

This feature can improve sound clarity when the handset is used in an area where there may be interference. During an outside call, this feature is turned on automatically when necessary.

- When this feature is turned on, BOOST is displayed. However, during a cellular call, BOOST is not displayed even though the feature is activated.

Handset noise reduction

This feature allows you to hear the voice of the person you are talking to more clearly, by reducing the surrounding noise coming from the other party's telephone.

1 Press **[MENU]** while talking.

2 **[▲▼]**: "`Noise reduction on`" or "`Noise reduction off`" → **[SELECT]**

Note:

- The setting you made is kept for each line (landline and cellular lines).
  The default settings are as follows:
  - for landline: "`Noise reduction off`"
  - for cellular lines: "`Noise reduction on`"
- Depending on the environment where this handset is being used, this feature may not be effective.
- This feature is not available while using the speakerphone.

Handset equalizer

This feature clarifies the voice of the person you are talking to, producing a more natural-sounding voice that is easier to hear and understand.

1 Press **[MENU]** while talking.
2 **[▲▼]**: "Equalizer" → **[SELECT]**
3 **[▲▼]**: Select the desired setting.
4 Press **[OK]** to exit.

Note:

- The setting you made is kept for each line (landline and cellular lines).
- Depending on the condition and quality of your telephone line, this feature may emphasize existing line noise. If it becomes difficult to hear, turn this feature off.
- This feature is not available while using the speakerphone.
- When both the "Equalizer" setting and noise reduction are activated, NR is shown on the display.

Call share

You can join an existing outside call.

■ **While another unit is on a cellular call:**

1 To join the conversation, press **[CELL]**.
   - You can join the conversation in the following situations.
     – Only 1 cellular phone is paired.
     – A specific line is set to make cellular calls (page 20).

2 **[▲▼]**: Select the corresponding cellular phone. → **[SELECT]**

■ **While another unit is on a landline call:**
To join the conversation, press **[ ]**.

Note:

- A maximum of 3 parties (including 1 outside party) can join a conversation using 2 extensions. **(3-way conference)**
- To prevent other users from joining your conversations with outside callers, turn call sharing mode off (page 44).

Transferring calls, conference calls

Outside calls can be transferred or a conference call with an outside party can be made:
– between 2 handsets
– between a handset and the base unit*1

*1 KX-TGE470 series: page 4

1 During an outside call, press **[MENU]**.
2 **[▲▼]**: "Intercom" → **[SELECT]**
3 **[▲▼]**: Select the desired unit. → **[SELECT]**
   - If you select "Voice paging", the call will be switched from the ear-receiver mode to the speakerphone mode.
4 Wait for the paged party to answer.
   - If the paged party does not answer, press **[BACK]** to return to the outside call.
5 **To complete the transfer:**
Press **[OFF]**.
To establish a conference call:
[MENU] → **[▲▼]**: "Conference" → **[SELECT]**
   - To leave the conference, press **[OFF]**. The other 2 parties can continue the conversation.
   - To put the outside call on hold: **[MENU]** → **[▲▼]**: "Hold" → **[SELECT]**
     To resume the conference: **[MENU]** → **[▲▼]**: "Conference" → **[SELECT]**
   - To cancel the conference: **[MENU]** → **[▲▼]**: "Stop conference" → **[SELECT]**
     You can continue the conversation with the outside caller.

Transferring a cellular call between the handset and a cellular phone

Transferring a cellular call from the handset to a cellular phone

1 Press **[MENU]** during a cellular call.
2 **[▲▼]**: "Transfer to cell" → **[SELECT]**
   - The cellular call is transferred to the cellular phone.

Note:

- Depending on your cellular phone type, you may need to set the cellular phone to be

ready to talk before transferring. For example, if your cellular phone has a top cover, open it beforehand.

Transferring a cellular call from a cellular phone to the handset

During a conversation using a cellular phone, the call cannot be transferred to the handset by the cellular phone. Perform the following with the handset.

1 During a conversation using a cellular phone, press **[CELL]**.
- The call is transferred to the handset in the following situations.
  - Only 1 cellular phone is paired.
  - A specific line is set to make cellular calls (page 20).

2 **[▲▼]**: Select the corresponding cellular phone. → **[SELECT]**
- The call is transferred to the handset.

Answering a 2nd call

If you receive a call while talking on the phone, the interrupt tone sounds (page 42) and the 2nd caller's information is displayed if you subscribe to Caller ID service (page 51).

Answering a 2nd call during a landline call

1 Press **[MENU]** during a landline call.

2 **[▲▼]**: "Hold" → **[SELECT]**

3 **To answer the 2nd call:**
Press **[CELL]** while the 2nd call is being received.

4 To hang up the 2nd call and return to the 1st call (landline call), press **[OFF]**, then press **[ ]**.

Answering a 2nd call during a cellular call

1 Press **[MENU]** during a cellular call.

2 **[▲▼]**: "Hold" → **[SELECT]**

3 **To answer the 2nd call:**
Press **[ ]** or **[CELL]** while the 2nd call is being received.

4 To hang up the 2nd call and return to the 1st call (cellular call), press **[OFF]**, then press **[CELL]**.*1

*1 If you press **[CELL]** and the selection list is displayed, select the desired cellular line and press **[SELECT]**.

Power backup operation for landline

When a power failure occurs, the charged handset temporarily supplies power to the base unit (power backup mode). This allows you to make and receive landline calls using a handset during a power failure. The base unit will not perform any other functions. However, some functions such as Caller ID and phonebook are available only when using a handset other than the handset supplying power to the base unit. You can program "Power failure" and the default setting is "Auto" (page 44).

Important:

- If a handset is not placed on the base unit when a power failure occurs, "Base no power Press OFF" is displayed. After pressing **[OFF]** on the handset, place it on the base unit to start power backup mode.
- Power backup mode will not work if the battery level of the power supplying handset is or .
- Do not lift the power supplying handset from the base unit during power backup mode.

Panasonic Ni-MH battery performance (supplied batteries) during power backup mode

When the batteries are fully charged, operating time of the handset in power backup mode varies depending on usage.

– Continuous use of the handset in power backup mode: 1.5 hours max.

– Continuous use of the handset other than a handset in power backup mode: 2 hours max.
– Not in use in power backup mode: 2 hours max.

Making calls during a power failure

■ **When only 1 handset is registered:**

1 Lift the handset and dial the phone number.
2 Within 1 minute, place the handset on the base unit.
- Wait until speakerphone is turned on automatically and the call is made.

3 When the other party answers the call, keep the handset on the base unit and talk using the speakerphone.
4 When you finish talking, press **[OFF]**.

■ **When 2 or more handsets are registered:**
You should leave one handset on the base unit for supplying the power, and use another handset for making calls.

Note:

- The range of the base unit is limited during a power failure. Please use the handset close to the base unit.

Making a call using the redial list

■ **When only 1 handset is registered:**

1 Lift the handset.
2 **[►]** REDIAL
3 **[▲▼]**: Select the desired entry.
4 Within 1 minute, place the handset on the base unit.
- Wait until speakerphone is turned on automatically and the call is made.

■ **When 2 or more handsets are registered:**
You should leave one handset on the base unit for supplying the power, and use another handset for making calls.

Making a call using the phonebook

There must be at least 2 handsets registered to the base unit in order for the phonebook feature to be used during a power failure.
You should leave one handset on the base unit for supplying the power, and use another handset for making calls.

Answering calls during a power failure

■ **When only 1 handset is registered:**

1 When the unit rings, keep the handset on the base unit and press **[ ]** or **[ ]**.
- Speakerphone is turned on.

2 When you finish talking, press **[OFF]**.

■ **When 2 or more handsets are registered:**
When the unit rings, use a handset which is not supplying power to the base unit.
- Do not use or lift the handset which is placed on the base unit during power backup mode.

Note:

- The range of the base unit is limited during a power failure. Please use the handset close to the base unit.

Making cellular calls

Available for:
KX-TGE470 series (page 4)

Important:

- The unit can be used to talk on 2 lines at the same time (for example, 2 cellular lines, or the landline and 1 cellular line).
- Only 2 Bluetooth devices can be used with the unit at the same time (for example, 2 cellular lines, or the headset and 1 cellular line).
- Before making calls, confirm that the corresponding CELL indicator on the base unit lights up (page 15).

1 Press **[CELL 1]** or **[CELL 2]**.
2 Dial the phone number.
3 When the other party answers, speak into the microphone.
4 When you finish talking, press **[☎]**.

Note:

- While on a call, you can switch from the base unit to the handset:
  - With the call sharing mode on (page 44), press **[CELL]***1 on the handset. → **[▲▼]**: Select the desired cellular phone. → **[SELECT]** → Press **[☎]** on the base unit.
  - If the handset is on the base unit, simply lift it.

*1 The call is taken when:
- only 1 cellular phone is paired.
- a specific line is set to make cellular calls (page 20).

Adjusting the speaker volume

Press **[+]** or **[−]** repeatedly while talking.

Note:

- The speaker volume you set is kept for each line (landline and cellular lines).

Redialing the last number dialed

1 Press **[CELL 1]** or **[CELL 2]**.
2 **[REDIAL]**

Making landline calls

1 **[☎]**
2 Dial the phone number.
3 When the other party answers, speak into the microphone.
4 When you finish talking, press **[☎]**.

Note:

- While on a call, you can switch from the base unit to the handset:
  - Press **[📞]** on the handset, then press **[☎]** on the base unit with the call sharing mode on (page 44).
  - If the handset is on the base unit, simply lift it.

Redialing the last number dialed

[☎] → **[REDIAL]**

Pause (for PBX/long distance service users)

A pause is sometimes required when making calls using a PBX or long distance service. When storing a calling card access number and/or PIN in the phonebook, a pause is also needed (page 36).

Example: If you need to dial the line access number "9" when making outside calls with a PBX:

1 **[☎]**
2 **9** → **[PAUSE]**
3 Dial the phone number.

Note:

- A 3.5 second pause is inserted each time **[PAUSE]** is pressed.

Answering calls

When a landline call is being received, the SP-PHONE indicator flashes rapidly.

When a cellular call is being received, the CELL indicator and SP-PHONE indicator flash rapidly.

1 Press [📞] when the unit rings.
- You can also answer the cellular call by pressing **[CELL 1]** or **[CELL 2]**.

2 Speak into the microphone.

3 When you finish talking, press [📞].

Adjusting the base unit ringer volume

■ **While the base unit is ringing for an incoming call:**
Press **[+]** or **[−]** repeatedly to select the desired volume.

■ **While the base unit is in standby mode:**
Press **[+]** or **[−]** repeatedly to select the desired volume for landline call.

- To turn the ringer off, press and hold **[−]** until the unit beeps.

Note:

- You can adjust the ringer volume for cellular call and landline call by programming (page 40, 42).
- The ringer volume you set is kept for each line (landline and cellular lines).

Useful features during a call

Hold

1 Press **[HOLD]** during an outside call.

2 **To release hold on the cellular line:**
Press **[CELL 1]** or **[CELL 2]**.
- A handset user can take the call: **[CELL]***1 → **[▲▼]**: Select the corresponding cellular phone. → **[SELECT]**

*1 The call is taken in the following situations.
- Only 1 cellular phone is paired.
- A specific line is set to make cellular calls (page 20).

To release hold on the landline:
Press [📞].
- A handset user can take the call by pressing [📞].

Note:

- While a landline call is on hold, the SP-PHONE indicator flashes.
- After holding for 10 minutes, the call is disconnected.

Mute

1 Press **[MUTE]** during a call.
- The SP-PHONE indicator flashes.

2 To return to the call, press **[MUTE]**.

Flash for landline calls

[FLASH] allows you to use the special features of your host PBX such as transferring an extension call, or accessing optional telephone services.

Note:

- To change the flash time, see page 44.

For call waiting service users

To use call waiting, you must first subscribe with your phone service provider.
This feature allows you to receive calls while you are already talking on the phone. If you receive a call while on the phone, you will hear a call waiting tone.

1 Press **[CALL WAIT]** to answer the 2nd call.

2 To switch between calls, press **[CALL WAIT]**.

Note:

- Please contact your phone service provider for details and availability of this service in your area.

Temporary tone dialing for landline calls (for rotary/pulse service users)

Press [*] (TONE) before entering access numbers which require tone dialing.

Call share

You can join an existing outside call.
To select the line that is being used for the call:
– for a cellular line press **[CELL 1]** or **[CELL 2]**.
– for the landline press **[↪]**.

Note:

- A maximum of 3 parties (including 1 outside party) can join a conversation using 2 extensions. **(3-way conference)**
- To prevent other users from joining your conversations with outside callers, turn call sharing mode off (page 44).

Transferring calls, conference calls

Outside calls can be transferred or a conference call with an outside party can be made between a handset and the base unit.

1 During an outside call, press **[INTERCOM]**.
When 2 or more handsets are registered:
– To page a specific handset, enter the handset number.
– To page all handsets, press [0] or wait for a few seconds.

2 Wait for the paged party to answer.
- If paged party does not answer, press **[INTERCOM]** to return to the outside call.

3 **To complete the transfer:**
Press **[↪]**.
- The outside call is being routed to the handset.

To establish a conference call:
Press **[CONF]**.
- To leave the conference, press **[↪]**. The other 2 parties can continue the conversation.
- To put the outside call on hold, press **[HOLD]**. To resume the conference, press **[CONF]**.

Transferring a cellular call between the base unit and a cellular phone

Transferring a cellular call from the base unit to a cellular phone

During a cellular call, press and hold **[CELL 1]** or **[CELL 2]** until the SP-PHONE indicator goes out.
- The cellular call is transferred to the cellular phone.

Transferring a cellular call from a cellular phone to the base unit

During a conversation using a cellular phone, press **[CELL 1]** or **[CELL 2]**.
- The cellular call is transferred to the base unit.

Answering a 2nd call

If you receive a call while talking on the phone, the interrupt tone sounds (page 42).

Answering a 2nd call during a landline call

1 Press **[HOLD]** during a landline call.

2 **To answer the 2nd call:**
Press **[CELL 1]** or **[CELL 2]**.

3 To hang up the 2nd call and return to the 1st call (landline call), press **[↪]** 2 times.

Answering a 2nd call during a cellular call

1 Press **[HOLD]** during a cellular call.

2 **To answer the 2nd call:**
[↪], **[CELL 1]**, or **[CELL 2]**

3 To hang up the 2nd call and return to the 1st call (cellular call), press **[↪]**, then press **[CELL 1]** or **[CELL 2]**.

Handset locator

You can locate a misplaced handset by paging it.

1 **Base unit:** Press **[LOCATOR]** or **[HANDSET LOCATOR]**.
- All registered handsets beep for 1 minute.

2 To stop paging:
Base unit:
Press **[LOCATOR]** or **[HANDSET LOCATOR]**.
Handset:
- **KX-TGE460 series: page 4**
  Press **[OFF]**.
- **KX-TGE470 series: page 4**
  Press **[ ]**, then press **[OFF]**.

Cell locator

This feature allows you to locate a misplaced cellular phone by pressing the **[LOCATES CELL]** button on the base unit and calling your cellular phone. You must assign your cellular phone's phone number to the button beforehand. Only 1 cellular phone number (24 digits max.) can be assigned.

Adding a phone number

1 **[MENU]**#248
- If you have already stored a cellular phone number, the current number is displayed.

2 Enter your cellular phone number. → **[SAVE]** → **[OFF]**

Erasing the number

1 **[MENU]**#248

2 Press and hold **[CLEAR]** until all digits are erased. → **[SAVE]** → **[OFF]**

Calling the misplaced cellular phone

Base unit: [LOCATES CELL]

- To stop calling:
  - KX-TGE460 series: press **[LOCATES CELL]** again.
  - KX-TGE470 series: press **[ ]**.

Important:

- While the base unit is calling the cellular phone, the outside line is used.
  - KX-TGE460 series: Even if the cellular phone answers, you cannot talk with the cellular phone and the base unit beeps for 1 minute. To end the call, press **[LOCATES CELL]** on the base unit.
  - KX-TGE470 series: When the cellular phone answers, you can talk with the cellular phone. To end the call, press **[ ]** on the base unit.

  Charges may be incurred if the cellular phone answers the call.

Intercom

Intercom calls can be made:
- between handsets
- between a handset and the base unit*1

*1 KX-TGE470 series: page 4

Note:

- When paging unit(s), the paged unit(s) beeps for 1 minute.
- If you receive an outside call while talking on the intercom, the interrupt tone sounds (page 42).
  - **Handset:** To finish intercom, press **[OFF]**. To answer the call, press **[ ]** or **[CELL]**.
  - **Base unit:** To finish intercom, press **[ ]**. To answer the call, press **[ ]** again or the corresponding cellular line key (**[CELL 1]** or **[CELL 2]**).

Making an intercom call

Handset

1 **[MENU]** → **[▲▼]**: "Intercom" → **[SELECT]**

2 **[▲▼]**: Select the desired unit or "Voice paging". → **[SELECT]**
- If you select "Voice paging", speak into the microphone after the beep.

Your voice will be heard using the speakers of the base unit*1 and all handsets, until a paged party answers your page or until you press [OFF]. After the other party answers, the speakerphone mode is turned on.

3 When you finish talking, press [OFF].

*1 KX-TGE470 series: page 4

Note:

- You can also use the [INTERCOM] soft key, if displayed, to make intercom calls.
- You cannot use voice paging if other units are in use.
- Voice paging is not available when a range extender (KX-TGA405) is registered to the base unit.

Base unit*1

*1 KX-TGE470 series: page 4

1 Press [INTERCOM].
When 2 or more handsets are registered:
– To page a specific handset, enter the handset number.
– To page all handsets, press 0 or wait for a few seconds.

2 When you finish talking, press [🔊].

Answering an intercom call

Handset

1 Press [📞] to answer the page.

2 When you finish talking, press [OFF].

Base unit*1

*1 KX-TGE470 series: page 4

1 Press [🔊] to answer the page.

2 When you finish talking, press [🔊].

Turning auto intercom on/off

This feature allows the handset or base unit to answer intercom calls automatically when it is called. You do not need to press [📞] or [🔊]. When this feature is set to "On", the monitoring handset or base unit for the baby monitor feature (page 49) will also answer baby monitor calls automatically. The default setting is "Off".

1 **For handset setting: [MENU]#273**
For base unit setting (using a handset)*1: [MENU]#*273

2 [▲▼]: Select the desired setting. → [SAVE] → [OFF]

*1 KX-TGE470 series: page 4

Note:

- This feature is not available for all handsets paging and voice paging even if it is turned on.

Call block

You can press the **[CALL BLOCK]** button in the following situations to disconnect the current call and add a phone number to the call block list:
– when an incoming call is being received
– when an incoming call is being recorded by the answering system
– when talking on an outside call

Once a phone number has been added to the call block list, the unit will block calls from that phone number in the future.

1 Press **[CALL BLOCK]** under the situations shown above.

2 Confirm the call block number and press **[YES]**.
- The call block number is stored in the call block list, "`Caller blocked`" is displayed, and then the call is disconnected.

Note:
- If the call has no phone number, the call is blocked but it is not stored in the call block list.
- The call block feature is not available:
  – for intercom calls or calls received by call waiting.
  – when a landline call (or cellular call) is being received during a cellular call (or landline call).
- Blocked calls are logged in the caller list.

Storing unwanted callers

The unit can block calls by storing the desired items in the call block list beforehand (Caller ID subscribers only).
– "`Block a single number`": The unit blocks calls from specific phone numbers stored in the call block list.
– "`Block range of numbers`": The unit blocks calls that begin with a number stored in the call block list, such as a toll-free phone number prefix or certain area codes.
– "`Block unknown CID`": The unit blocks calls that have no phone number.

Single phone numbers and ranges of numbers can be stored in the call block list up to 250 items in total.

Blocking unwanted callers:
When a call is received, the unit rings once*1 while caller information is being received.
If the caller's phone number matches an entry in the call block list, the unit emits no sound to the caller, and disconnects the call.

*1 If you do not want this one ring to sound, select "`No`" in "Turning the first ring on and off" (page 33).

Storing a single phone number

Important:
- We recommend storing 10 digits (including the area code). If only 7 digits are stored, all numbers that have the same last 7 digits will be blocked.

Adding call blocked numbers from the caller list

■ **When a cellular phone is paired:**

1 **[▼]** CID

2 **[▲▼]**: Select the desired entry to be blocked.
- To edit the number: **[SELECT]** → Press ✱ (Edit) repeatedly until the phone number is shown in the 10-digit format. → **[SAVE]** → **[▲▼]**: "`Call block`" → **[SELECT]** → Go to step 4.

3 **[CALL BLOCK]**

4 **[▲▼]**: "`Yes`" → **[SELECT]**

5 Edit the phone number if necessary (24 digits max.). → **[SAVE]** → **[OFF]**

■ **When a cellular phone is not paired:**

1 **[▼]** CID

2 **[▲▼]**: Select the desired entry to be blocked.
- To edit the number: **[MENU]** → **[▲▼]**: "`Edit`" → **[SELECT]** Press **[EDIT]** repeatedly until the phone number is shown in the 10-digit format. → **[SAVE]** → **[▲▼]**:

"Call block" → [SELECT] → Go to step 4.

3 [CALL BLOCK]

4 [▲▼]: "Yes" → [SELECT]

5 Edit the phone number if necessary (24 digits max.). → [SAVE] → [OFF]

Adding call blocked numbers manually

1 [CALL BLOCK]

2 [▲▼]: "Block a single number" → [SELECT]

3 [MENU] → [▲▼]: "Add" → [SELECT]

4 Enter the phone number (24 digits max.). → [SAVE] → [OFF]

Storing a range of number

1 [CALL BLOCK]

2 [▲▼]: "Block range of numbers" → [SELECT]

3 [MENU] → [▲▼]: "Add" → [SELECT]

4 Enter the desired number (2-8 digits). → [SAVE] → [OFF]

Blocking incoming calls that have no phone number

You can block calls when no phone number is provided, such as private callers or out of area calls.

1 [CALL BLOCK]

2 [▲▼]: "Block unknown CID" → [SELECT]

3 [▲▼]: Select the desired setting. → [SAVE] → [OFF]

Turning the first ring on and off

You can choose whether the first ring sounds when a call is received.
"Yes" (default): The first ring for all calls will be heard, including calls from blocked phone numbers.
"No": The first ring is muted for all calls. If this setting is selected, the unit will never ring for calls from blocked phone numbers.

1 [CALL BLOCK]

2 [▲▼]: "One ring for blocked call" → [SELECT]

3 [▲▼]: Select the desired setting. → [SAVE] → [OFF]

Viewing/editing/erasing call block numbers

1 [CALL BLOCK]

2 [▲▼]: "Block a single number" or "Block range of numbers" → [SELECT]

3 [▲▼]: Select the desired entry.
- After viewing, press [OFF] to exit.

4 **To edit a number:**
[EDIT] → Edit the number. → [SAVE] → [OFF]
To erase a number:
[ERASE] → [▲▼]: "Yes" → [SELECT] → [OFF]

Note:

- When editing, press the desired dial key to add digits and press [CLEAR] to erase digits.

Erasing all call block numbers

1 [CALL BLOCK]

2 [▲▼]: "Block a single number" or "Block range of numbers" → [SELECT]

3 [MENU] → [▲▼]: "Erase all" → [SELECT]

4 [▲▼]: "Yes" → [SELECT]

5 [▲▼]: "Yes" → [SELECT] → [OFF]

Phonebook

You can add 3,000 names (16 characters max.) and phone numbers (24 digits max.) to the phonebook, and assign each phonebook entry to the desired group (page 35). The following groups are available:

– Group 1: "Home"*1 (default)
– Group 2: "Cell 1"*1
– Group 3: "Cell 2"*1
– Group 4-9: You can change the group name for each group.

*1 For groups 1-3, the group names cannot be changed.

Important:

- All entries can be shared by any registered handset.
- You can copy phonebook entries from a Bluetooth cellular phone to the unit's phonebook (page 53).

Adding phonebook entries

1 [◄] 🕮 → [MENU]
2 [▲▼]: "Add new entry" → [SELECT]
3 Enter the party's name. → [OK]
4 Enter the party's phone number. → [OK]
5 [▲▼]: Select the desired group. → [SELECT] 2 times → [OFF]

Note:

- In step 3, you can switch the language for entering characters.
  [#] → [▲▼]: Select the desired language. → [OK]

Entering characters

Press the dial key that corresponds to the desired character. Press repeatedly to scroll through the available characters.
The following operations are also available.

Key	Operation
[*]	Switch between the uppercase and lowercase (A ↔ a)
[◄] [►]	Move the cursor
[CLEAR]	Erase the character or number • To erase all, press and hold it.

- To enter another character that is located on the same dial key, first press [►] to move the cursor to the next space.
- If you do not press any dial key within 2 seconds after entering a character, the character is fixed and the cursor moves to the next space.

Storing a redial list number to the phonebook

Phone numbers of up to 24 digits can be stored in the phonebook.

■ **When a cellular phone is paired:**

1 [►] REDIAL
2 [▲▼]: Select the desired entry. → [MENU]
3 [▲▼]: "Save" → [SELECT]
4 To store the name, continue from step 3, "Editing entries", page 36.

■ **When a cellular phone is not paired:**

1 [►] REDIAL
2 [▲▼]: Select the desired entry. → [SAVE]
3 To store the name, continue from step 3, "Editing entries", page 36.

Note:

- The name stored in the phonebook will be reflected in the redial list after you make a call using that phonebook entry.

Storing caller information to the phonebook

■ **When a cellular phone is paired:**

1 [▼] CID
2 [▲▼]: Select the desired entry. → [SELECT]
  - To edit the number, press [*] (Edit) repeatedly until the phone number is shown in the desired format.

3 [SAVE]

4 [▲▼]: "Phonebook" → [SELECT]

5 Continue from step 3, "Editing entries", page 36.

■ **When a cellular phone is not paired:**

1 [▼] CID

2 [▲▼]: Select the desired entry. → [MENU]
- To edit the number:
  [▲▼]: "Edit" → [SELECT]
  Press [EDIT] repeatedly until the phone number is shown in the desired format. → [SAVE] → [▲▼]: "Phonebook" → [SELECT] → Go to step 4.

3 [▲▼]: "Save phonebook" → [SELECT]

4 Continue from step 3, "Editing entries", page 36.

Groups

Groups can help you find entries in the phonebook quickly and easily. You can change the group name for groups 4-9 ("Friends", "Family", etc.). By assigning different ringer tones for different groups of callers, you can identify who is calling (ringer ID), if you have subscribed to Caller ID service.

Changing group names/setting ringer ID

1 [◄] 📖 → [MENU]

2 [▲▼]: "Group" → [SELECT]

3 [▲▼]: Select the desired group. → [SELECT]
- If you selected "Home", "Cell 1", or "Cell 2", go to step 5.

4 **To change group names**
[▲▼]: "Group name" → [SELECT] → Edit the name (10 characters max.). → [SAVE]

5 **To set group ringer tone**
[▲▼]: Select the current setting of the group ringer tone. → [SELECT] → [▲▼]: Select the desired ringer tone. → [SAVE]

6 [OFF]

Finding and calling from a phonebook entry

1 [◄] 📖

2 **To scroll through all entries**
[▲▼]: Select the desired entry.
To search by first character
① Press the dial key ([0] to [9], or [#]) which contains the character you are searching for.
② [▲▼]: Scroll through the phonebook if necessary.
To search by group
① [GROUP]
② [▲▼]: Select the desired group. → [SELECT]
③ [▲▼]: Scroll through the phonebook if necessary.
To search by query
You can narrow down the search to enter the first characters of a name.
① [✱]
② To search for the name, enter the first characters (up to 4) in uppercase (page 34). → [OK]
③ [▲▼]: Scroll through the phonebook if necessary.

3 ■ **Using a cellular line:**
① [CELL]
- The unit starts dialing immediately in the following situations.
  – Only 1 cellular phone is paired.
  – A specific line is set to make cellular calls (page 20).

② [▲▼]: Select the desired cellular phone. → [SELECT]

■ **Using a landline:**
[📞]

Editing entries

1 Find the desired entry (page 35).
2 [MENU] → [▲▼]: "Edit" → [SELECT]
3 Edit the name if necessary. → [OK]
4 Edit the phone number if necessary. → [OK]
5 [▲▼]: Select the desired group (page 35). → [SELECT] 2 times → [OFF]

Erasing entries

Erasing an entry

1 Find the desired entry (page 35).
2 [MENU] → [▲▼]: "Erase" → [SELECT]
3 [▲▼]: "Yes" → [SELECT] → [OFF]

Erasing all entries

1 [◄] 📖 → [MENU]
2 [▲▼]: "Erase all" → [SELECT]
3 [▲▼]: Select the desired group. → [SELECT]
4 [▲▼]: "Yes" → [SELECT]
5 [▲▼]: "Yes" → [SELECT] → [OFF]

Chain dial

This feature allows you to dial phone numbers in the phonebook while you are on a call. This feature can be used, for example, to dial a calling card access number or bank account PIN that you have stored in the phonebook, without having to dial manually.

1 During an outside call, press [◄] 📖.
2 [▲▼]: Select the desired entry.
3 Press [CALL] to dial the number.

Note:

- When storing a calling card access number and your PIN in the phonebook as one phonebook entry, press [▲] (Pause) to add pauses after the number and PIN as necessary (page 22).
- If you have rotary/pulse service, you need to press ✱ (TONE) before pressing [◄] 📖 in step 1 to change the dialing mode temporarily to tone. When adding entries to the phonebook, we recommend adding ✱ (TONE) to the beginning of phone numbers you wish to chain dial (page 34).

Speed dial

You can assign 1 phone number to each of the dial keys (1 to 9) on the handset.

Adding phone numbers to speed dial keys

■ **By entering phone numbers:**

1 Press and hold the desired speed dial key (1 to 9). → [ADD]
2 [▲▼]: "Manual" → [SELECT]
3 Enter the party's name (16 characters max.). → [OK]
4 Enter the party's phone number (24 digits max.). → [OK] → [SELECT] → [OFF]

■ **From the phonebook:**

1 Press and hold the desired speed dial key (1 to 9). → [ADD]
2 [▲▼]: "Phonebook" → [SELECT]
3 [▲▼]: Select the desired entry. → [SAVE] → [OFF]

Note:

- If you edit a phonebook entry which is assigned to a speed dial key, the edited entry does not transfer to the speed dial key.

Editing an entry

1 Press and hold the desired speed dial key (1 to 9). → [MENU]
2 [▲▼]: "Edit" → [SELECT]
3 Edit the name if necessary. → [OK]
4 Edit the phone number if necessary. → [OK] → [SELECT] → [OFF]

Erasing an entry

1 Press and hold the desired speed dial key ([1] to [9]). → **[MENU]**

2 **[▲▼]**: "Erase" → **[SELECT]**

3 **[▲▼]**: "Yes" → **[SELECT]** → **[OFF]**

Viewing an entry/Making a call

■ **Using a cellular line:**

1 Press and hold the desired speed dial key ([1] to [9]).

2 **[CELL]**
- The unit starts dialing immediately in the following situations.
  - Only 1 cellular phone is paired.
  - A specific line is set to make cellular calls (page 20).

3 **[▲▼]**: Select the desired cellular phone. → **[SELECT]**

■ **Using a landline:**

1 Press and hold the desired speed dial key ([1] to [9]).

2 To make a call, press **[ ]**.

Menu list

To access the features, there are 2 methods.

■ **Scrolling through the display menus**

1 **[MENU]**
2 Press **[▼]** or **[▲]** to select the desired main menu. → **[SELECT]**
3 Press **[▼]** or **[▲]** to select the desired item from the next sub-menus. → **[SELECT]**
4 Press **[▼]** or **[▲]** to select the desired setting. → **[SAVE]**

■ **Using the direct command code**

1 **[MENU]** → Enter the desired code.
Example: Press **[MENU]**#10 1.
2 Select the desired setting. → **[SAVE]**

Note:

- To exit the operation, press **[OFF]**.
- In the following table, < > indicates the default settings.
- In the following table, ☞ indicates the reference page number.
- Display menu order and sub-menu may vary depending on your model.

Display menu tree and direct command code table

Main menu: 📖 **"Phonebook"**

Operation	Code	☞
Viewing the phonebook entry.	#280	35

Main menu: 📞 **"Caller list"**

Operation	Code	☞
Viewing the caller list.	#213	51

Main menu: 📼 **"Answering device"**

Sub-menu 1	Sub-menu 2	Settings	Code	☞
Play new message	–	–	#323	59
Play all message	–	–	#324	59
Erase all message*1	–	–	#325	60
Greeting	Record greeting*1	–	#302	58
	Check greeting	–	#303	59
	Pre-recorded*1 (Reset to pre-recorded greeting)	–	#304	59

Sub-menu 1	Sub-menu 2	Settings	Code	☞
New message alert*1	Outgoing call – On/Off	On <Off>	#338	60
	Outgoing call – Notification to	–		
	Outgoing call – Remote code	Activate <Inactivate>		
	Base unit beep	On <Off>	#339	60
Settings	Ring count*1	Toll saver 2-7 rings <4 rings>	#211	63
	Recording time*1	<3 min> 1 min Greeting only*2	#305	63
	Remote code*1	<111>	#306	62
	Screen call – Handset	<On> Off	#310	63
	Screen call – Base unit*1, *3	<On> Off	#✱310	
Answer on*1	–	–	#327	58
Answer off*1	–	–	#328	58

Main menu: ✉ "Voicemail access"*4

Operation	Code	☞
Listening to voicemail messages.	#330	66

Main menu: 📞 "Intercom"

Operation	Code	☞
Paging the desired unit.	#274	30

Programming

Main menu: "Bluetooth"

Sub-menu 1	Sub-menu 2	Settings	Code	☞
Link to cell – 1:Add new device*5 (for CELL 1) – 2:Add new device*5 (for CELL 2)	Connect*1/ Disconnect*1	–	#6251*6	19
			#6252*7	
	Ringer volume – Handset	Off–6 <6>	#6281*6	22
			#6282*7	
	Ringer volume – Base unit*1	Off–6 <1>	#✱6281*6	28
			#✱6282*7	
	Ringer tone*8	<Tone 2>*6 <Tone 4>*7	#6291*6	–
			#6292*7	
	Select unit to ring*1	<All> Handset 1-6	#6271*6	18
			#6272*7	
	Ring as cell (limited)*1	<On (with Talking CID)> On (without Talking CID) Off	#6141*6	18
			#6142*7	
	Alert settings*1 – Alert On/Off	<On> Off	#6101*6	55
			#6102*7	
	Alert settings*1 – Voice alert	<On> Off	#6031*6	55
			#6032*7	
	Alert settings*9 – Alert tone	<Tone 1>*6 <Tone 2>*7	#6041*6	55
			#6042*7	
	Pair	–	#6241*6	17
			#6242*7	
	Unpair	–	#6111*6	17
			#6112*7	
Phonebook transfer	–	–	#618	53
Headset	Add new device*5	–	#621	56
	Connect*1/ Disconnect*1	–	#622	56
	Pair	–	#621	56
	Unpair	–	#612	56

Sub-menu 1	Sub-menu 2	Settings	Code	☞
Settings	Auto connect*1	Off <1 min> 3 min 5 min 10 min	#632	18
	Cell area code*1	–	#633	20
	Cell line only mode*1	On <Off>	#157	19
	Cell line select – Handset	<Manual> Cellphone 1*5 Cellphone 2*5	#634	20
	Cell line select – Base unit*1, *3	<Cellphone 1>*5 Cellphone 2*5	#✱634	
	Set PIN*1	<0000>	#619	20
	International code*1	–	#117	53
	Country code*1	–	#118	
	Trunk prefix*1	–	#119	

Main menu: ◴ "Set date & time"

Sub-menu 1	Sub-menu 2	Settings	Code	☞
Date and time*1	–	–	#101	16
Memo alarm	Alarm1–3	<Off> Once Daily Weekly	#720	46
Time adjustment*1, *10	–	<Caller ID auto> Manual	#226	–

Main menu: ▪▫▪ "Speed dial"

Operation	Code	☞
Viewing the speed dial entry.	#261	36

Programming

Main menu: "Settings"

Sub-menu 1	Sub-menu 2	Settings	Code	☞
Ring adjustments	Ringer volume – Handset*4	Off–6 <6>	#160	–
	Ringer volume – Base unit*1, *4	Off–6 <1>	#✱160	–
	Ringer tone*4, *8, *11 (Handset)	<Tone 1>	#161	–
	Interrupt tone – Handset*12	<On> Off	#201	25
	Interrupt tone – Base unit*1, *3, *12	<On> Off	#✱201	29
	Silent mode – Handset	On/Off – On – <Off>	#238	47
		Start/End – <11:00 PM/ 06:00 AM>	#237	47
		Select group Home Cell 1 Cell 2 Group 4-9	#241	47
	Silent mode – Base unit*1, *3	On/Off – On – <Off>	#✱238	47
		Start/End – <11:00 PM/ 06:00 AM>	#✱237	47
		Select group Home Cell 1 Cell 2 Group 4-9	#✱241	47
Set date & time	Date and time*1	–	#101	16
	Memo alarm – Alarm1–3	<Off> Once Daily Weekly	#720	46
	Time adjustment*1, *10	<Caller ID auto> Manual	#226	–

Sub-menu 1	Sub-menu 2	Settings	Code	☞
Talking caller ID	Handset	<On> Off	#162	51
	Base unit*1	On <Off>	#✳162	
Key detector setting*13 – 1:Add new device (for Detector1)*14 – 2:Add new device (for Detector2) – 3:Add new device (for Detector3) – 4:Add new device (for Detector4)	Change name*1	Detector1	#6561	–
		Detector2*15	#6562*15	
		Detector3*15	#6563*15	
		Detector4*15	#6564*15	
	Registration	–	#6571	–
			#6572*15	
			#6573*15	
			#6574*15	
	Deregistration	–	#6581	–
			#6582*15	
			#6583*15	
			#6584*15	
Call block*1	Block a single number	–	#217	32
	Block range of numbers	–		33
	Block unknown CID (CID: Caller ID)	Block <Unblock>	#240	33
	One ring for blocked call	<Yes> No	#173	33
Speed dial	–	–	#261	36
Cell locator	–	–	#248	30
Record greeting*1	–	–	#302	58
Voicemail*4	Save VM access#*1 (VM: Voicemail)	–	#331	65
	VM tone detect*1	<On> Off	#332	65
Message indicator	–	<On> Off	#340	64
LCD contrast (Display contrast)	–	Level 1–4 <2>	#145	–
Handset name	–	–	#104	49
Display name	–	On <Off>	#105	49

Programming

Sub-menu 1	Sub-menu 2	Settings	Code	☞
Auto intercom	Handset	On <Off>	#273	31
	Base unit*1, *3	On <Off>	#✱273	
Key tone	–	<On> Off	#165	–
Caller ID edit (Caller ID number auto edit)	–	<On> Off	#214	52
Auto talk*16	–	On <Off>	#200	22
Set tel line*4	Set dial mode*1	<Tone> Pulse	#120	16
	Set flash time*1, *17	80 ms 90 ms 100 ms 110 ms 160 ms 200 ms 250 ms 300 ms 400 ms 600 ms <700 ms> 900 ms	#121	23
	Set line mode*1, *18	A <B>	#122	–
Call sharing*1	–	<On> Off	#194	24, 29
Registration	Register handset	–	#130	49
	Deregistration*2	–	#131	50
Power failure	–	<Auto> Off	#152	25
Change language	Display	<English> Español	#110	16
	Announcement*1	<English> Español	#112	16

Main menu: ? "Customer support"

Operation	Code	☞
Displaying customer support Web address.	#680	–

Main menu: "Baby monitor"

Sub-menu 1	Sub-menu 2	Settings	Code	☞
On/Off	–	On <Off>	#268	47
Sensitivity level	–	Low <Middle> High	#269	48

Main menu: "Key detector"*13

Sub-menu 1	Sub-menu 2	Settings	Code	☞
Search	–	–	#655	–
Battery check	–	–		

*1 If you program these settings using one of the units, you do not need to program the same item using another unit.
*2 This menu is not displayed when scrolling through the display menus. It is only available in direct command code.
*3 KX-TGE470 series: page 4
*4 When the cellular line only mode is turned on, these menus are not displayed (page 19).
*5 After the Bluetooth device is paired, the device name is displayed.
*6 For CELL 1
*7 For CELL 2
*8 The preset melodies in this product ("Tone 3" - "Melody 10") are used with permission of © 2004 - 2013 Copyrights Vision Inc.
*9 The preset melodies in this product ("Tone 1" and "Tone 2") are used with permission of © 2013 Copyrights Vision Inc.
*10 This feature allows the unit to automatically adjust the date and time each time caller information including date and time is received.
To turn this feature on, select "Caller ID auto". To turn this feature off, select "Manual". (Caller ID subscribers only)
To use this feature, set the date and time first (page 16).
*11 If you subscribe to a distinctive ring service (such as IDENTA-RING), select a tone (tone 1 or 2). If you select a melody, you cannot distinguish lines by their ringers.
*12 This tone lets you know when you receive an outside call while you are on another line or an intercom call. If you select "On", the tone sounds 2 times.
*13 This setting is available when you have the key detector (KX-TGA20). Read the installation manual for more information on the key detector.
*14 For models with supplied key detectors, the display shows "1: Detector1".
*15 If you register 2 or more key detectors.
*16 If you subscribe to a Caller ID service and want to view the caller's information after lifting up the handset to answer a call, turn off this feature.
*17 The flash time depends on your telephone exchange or host PBX. Contact your PBX supplier if necessary. The setting should stay at "700 ms" unless pressing **[FLASH]** fails to pick up the waiting call.

*18 Generally, the line mode setting should not be changed. This setting automatically maintains receiver volume at the proper level depending on the current telephone line condition. Set the line mode to "A" if telephone line condition is not good.

Alarm

An alarm sounds at the set time for 1 minute and is repeated 5 times at 5 minute intervals (snooze function). A text memo can also be displayed for the alarm. A total of 3 separate alarm times can be programmed for each handset. You can set one of 3 different alarm options (once, daily, or weekly) for each alarm time.

Important:

- Make sure the unit's date and time setting is correct (page 16).

1 [MENU]#720

2 [▲▼]: Select the desired alarm. → [SELECT]

3 [▲▼]: Select the desired alarm option. → [SELECT]

"Off" Turns alarm off. Go to step 10.
"Once" An alarm sounds once at the set time.
"Daily" An alarm sounds daily at the set time. Go to step 5.
"Weekly" Alarm sounds weekly at the set time(s).

4 Proceed with the operation according to your selection in step 3.

- **Once:**
  Enter the desired month and date. → [OK]
- **Weekly:**
  [▲▼]: Select the desired day of the week and press [SELECT]. → [OK]

5 Set the desired time.

6 ✱: Select "AM" or "PM". → [OK]

7 Enter a text memo (10 characters max.). → [OK]

8 [▲▼]: Select the desired alarm tone. → [SELECT]
- We recommend selecting a different ringer tone from the one used for outside calls.

9 [▲▼]: Select the desired snooze setting. → [SAVE]

10 [SELECT] → [OFF]

Note:

- Press [STOP] to stop the alarm completely.
- When the handset is in use, the alarm will not sound until the handset is in standby mode.
- Press any dial key or [SNOOZE] to stop the sound but keep the snooze function activated.
- If you want to make an outside call when the snooze function is activated, please stop the snooze function before making the call.

Silent mode

Silent mode allows you to select a period of time during which the handset and/or base unit will not ring for outside calls. This feature is useful for time periods when you do not want to be disturbed, for example, while sleeping. Silent mode can be set for each unit. Using the phonebook's group feature (page 35), you can also select groups of callers whose calls override silent mode and ring the unit (Caller ID subscribers only).

Important:

- Make sure the unit's date and time setting is correct (page 16).
- We recommend turning the base unit ringer off (page 40, 42) in addition to turning the silent mode on. (KX-TGE460 series: page 4)

- If you have set the alarm, the alarm sounds even if the silent mode is turned on.

Turning silent mode on/off

1 **For handset setting: [MENU]#238**
For base unit setting (using a handset)*1: [MENU]#*238

2 [▲▼]: Select the desired setting. → **[SAVE]**
- If you select "Off", press **[OFF]** to exit.

3 Enter the desired hour and minute you wish to start this feature.

4 *: Select "AM" or "PM". → **[OK]**

5 Enter the desired hour and minute you wish to end this feature.

6 *: Select "AM" or "PM".

7 **[SAVE]** → **[OFF]**

*1 KX-TGE470 series: page 4

Changing the start and end time

1 **For handset setting: [MENU]#237**
For base unit setting (using a handset)*1: [MENU]#*237

2 Continue from step 3, "Turning silent mode on/off", page 47.

*1 KX-TGE470 series: page 4

Selecting groups to bypass silent mode

1 **For handset setting: [MENU]#241**
For base unit setting (using a handset)*1: [MENU]#*241

2 [▲▼]: Select the desired groups. → **[SELECT]**
- "✓" is displayed next to the selected group numbers.
- To cancel the selected group: [▲▼]: Select the group. → Press **[SELECT]** again. "✓" disappears.

3 **[SAVE]** → **[OFF]**

*1 KX-TGE470 series: page 4

Baby monitor

This feature allows you to listen in on a room where another handset is located, allowing you to easily monitor from different areas of the house or even while away from home. The monitored handset (placed in a baby's room, for example) will automatically call the monitoring handset, base unit, or the phone number stored when it detects sound.

Important:

- Before using this feature, we recommend that you test this feature and adjust the baby monitor sensitivity as needed, especially if you plan to monitor from outside.
- This feature should not be used as a substitute for a medical or caregiver's supervision. It is the caregiver's responsibility to stay close enough to handle any eventuality.

Note:

- If the unit is connected to a PBX system, you cannot set the baby monitor.
- During the monitoring mode, battery consumption is faster than usual. We recommend leaving the monitored handset on the base unit or charger.
- The monitored handset never rings while it is being monitored. If the base unit is placed near the monitored handset, we recommend turning off the base unit ringer volume (page 40, 42).

Setting the baby monitor

Perform the setting operation with the handset to be monitored (for example, the handset placed in a baby's room).

To monitor with a unit

The internal baby monitor feature is available:
– between handsets
– between a handset and the base unit*1

*1 KX-TGE470 series: page 4

1 **[MENU]#268**

2 [▲▼]: "On" → **[SELECT]**

3 [▲▼]: Select the desired unit's number to monitor with. → [SAVE]
- "Baby monitor" will be displayed.
- The registered unit's name/number is displayed.

Note:
- When this feature is on, another handset or the base unit can hear the monitored handset by making an intercom call.

To monitor from outside

If you enable this feature, the unit will call a pre-programmed phone number when the handset detects sound. After you answer the call, you can listen in on the room where the handset is located.
This feature is only available for landline.

■ **From the phonebook:**

1 [MENU][#][2][6][8]
2 [▲▼]: "On" → [SELECT]
3 [▲▼]: Select "Outgoing call" to monitor from outside. → [ADD]
4 [▲▼]: "Phonebook" → [SELECT]
5 [▲▼]: Select the phonebook entry. → [SAVE]
- "Baby monitor" will be displayed.

Note:
- If you edit a phonebook entry which is assigned for monitoring, the edited entry does not transfer to the monitor.

■ **By entering phone numbers:**

1 [MENU][#][2][6][8]
2 [▲▼]: "On" → [SELECT]
3 [▲▼]: Select "Outgoing call" to monitor from outside. → [ADD]
4 [▲▼]: "Manual" → [SELECT]
5 Enter the desired name. → [OK]
6 Enter the desired number. → [OK] → [SELECT]
- "Baby monitor" will be displayed.

Note:
- The registered name/number is displayed.

Turning off the baby monitor

The monitored handset cannot be used while baby monitor is set to "On".

1 Press [MENU] on the handset being monitored.
2 [▲▼]: "On/Off" → [SELECT]
3 [▲▼]: "Off" → [SELECT] → [OFF]

Editing an outside monitoring number

1 Press [MENU] on the handset being monitored.
2 [▲▼]: "On/Off" → [SELECT]
3 [▲▼]: "On" → [SELECT]
4 [▲▼]: Select the outside line.
5 [MENU] → [▲▼]: "Edit" → [SELECT]
6 Edit the name if necessary. → [OK]
7 Edit the phone number if necessary. → [OK] → [SELECT]

Erasing an outside monitoring number

1 Press [MENU] on the handset being monitored.
2 [▲▼]: "On/Off" → [SELECT]
3 [▲▼]: "On" → [SELECT]
4 [▲▼]: Select the outside line.
5 [MENU] → [▲▼]: "Erase" → [SELECT]
6 [▲▼]: "Yes" → [SELECT] → [OFF]

Baby monitor sensitivity

You can adjust the sensitivity of the baby monitor. Increase or decrease the sensitivity to adjust the sound level needed to trigger the baby monitor feature.
- This feature cannot be set during a monitoring call.

1 Press [MENU] on the handset being monitored.
2 [▲▼]: "Sensitivity level" → [SELECT]

3 [▲▼]: Select the desired setting. → [SAVE] → [OFF]

Answering the baby monitor

■ **When monitoring with a unit:**
Handset: Press [📞] to answer a call.
Base unit: Press [🔊] to answer a call.*1
*1 KX-TGE470 series: page 4

If you want to respond from the monitoring unit, press [MUTE].
- The monitoring unit will answer calls automatically when the auto intercom feature is set to "On" (page 31).

Note:
- If you receive an outside call when communicating with the monitored handset, the interrupt tone sounds.
  - To answer the call with the handset, press [OFF], then press [📞].
  - To answer the call with the base unit, press [🔊] 3 times.*1

*1 If [MUTE] is pressed, press [🔊] 2 times.

■ **When monitoring from outside:**
Answer the call.
If you want to respond from your monitoring phone, press #1 using tone dialing.
You can turn off the baby monitor feature by pressing #0.

Note:
- The unit disconnects the call automatically after 2 minutes.

Other programming

Changing the handset name

The default handset name is "Handset 1" to "Handset 6". You can customize the name of each handset ("Bob", "Kitchen", etc.). This is useful when you make intercom calls between handsets. To display the handset name in standby mode, turn on the handset name display feature (page 49).

1 [MENU]#104

2 Enter the desired name (10 characters max.). → [SAVE] → [OFF]

Displaying the handset name

You can select whether or not the handset name is displayed in standby mode. The default setting is "Off".

1 [MENU]#105

2 [▲▼]: Select the desired setting. → [SAVE] → [OFF]

Registering a unit

Operating additional units

Additional handsets

Up to 6 handsets can be registered to the base unit.

Important:
- See page 6 for information on the available model.

Registering a handset to the base unit

The supplied handset and base unit are pre-registered. If for some reason the handset is not registered to the base unit, re-register the handset.

1 **Handset:**
[MENU]#130

2 **Base unit:**
Press and hold [LOCATOR] or [HANDSET LOCATOR] for about 5 seconds.
- If all registered handsets start ringing, press [LOCATOR] or [HANDSET LOCATOR] again to stop, then repeat this step.

3 **Handset:**
Press [OK], then wait until a long beep sounds.

Deregistering a handset

A handset can cancel its own registration to the base unit, or other handsets registered to the same base unit. This allows the handset to end its wireless connection with the system.

1 **[MENU]**#13**1**
- All handsets registered to the base unit are displayed.

2 **[▲▼]**: Select the handset you want to cancel. → **[SELECT]**

3 **[▲▼]**: "Yes" → **[SELECT]** → **[OFF]**

Using Caller ID service

Important:

- This unit is Caller ID compatible. To use Caller ID features, you must subscribe to a Caller ID service. Contact your phone service provider for details.

Caller ID features

When an outside call is being received, the caller information is displayed.
Caller information for the last 50 callers is logged in the caller list from the most recent call to the oldest.

- If the unit cannot receive caller information, the following is displayed:
  - "`Out of area`": The caller dials from an area which does not provide a Caller ID service.
  - "`Private caller`": The caller requests not to send caller information.
  - "`Long distance`": The caller makes a long distance call.
- If the unit is connected to a PBX system, caller information may not be properly received. Contact your PBX supplier.

Missed calls

If a call is not answered, the unit treats it as a missed call. The display shows "`Missed call`".

Note:

- Even when there are unviewed missed calls, "`Missed call`" disappears from the standby display if the following operation is performed by one of the units:
  - A handset is replaced on the base unit or charger.
  - Pressing **[OFF]** on a handset.

Phonebook name display

When caller information is received and it matches a phone number stored in the phonebook, the stored name in the phonebook is displayed and logged in the caller list.

Talking Caller ID

Handset / Base unit

This feature lets you know who is calling without looking at the display.
To use this feature, you must:

- subscribe to a Caller ID service of your phone service provider.
- turn this feature on (page 43).

When caller information is received, the handsets and/or base unit announce the caller's name or phone number received from your phone service provider following every ring.

- Name pronunciation may vary. This feature may not pronounce all names correctly.
- Caller ID service has a limit of how many characters can be displayed. If the caller's name is too long, the unit may not be able to display or announce the entire name.

Phonebook name announcement

When caller information is received and it matches a phone number stored in the phonebook, the stored name in the phonebook is announced.

Caller list

Important:

- Make sure the unit's date and time setting is correct (page 16).

Viewing the caller list and calling back

■ Using a cellular line

1 **[▼]** CID

2 Press **[▼]** to search from the most recent call, or **[▲]** to search from the oldest call.

3 To call back, press **[SELECT]**.
To exit, press **[OFF]**.

4 **[CELL]**
- The unit starts dialing immediately in the following situations.
  - Only 1 cellular phone is paired.

– A specific line is set to make cellular calls (page 20).

5 [▲▼]: Select the desired cellular phone. → [SELECT]

■ **Using a landline**

1 [▼] CID

2 Press [▼] to search from the most recent call, or [▲] to search from the oldest call.

3 To call back, press [📞].
To exit, press [OFF].

Note:

- If the entry has already been viewed or answered, "✓" is displayed.
- C1 or C2 indicates the caller information was received from the cellular line.

Editing a caller's phone number

You can edit a phone number in the caller list by removing its area code and/or the long distance code "1".

■ **When a cellular phone is paired:**

1 [▼] CID

2 [▲▼]: Select the desired entry. → [SELECT]

3 Press [✱] (Edit) repeatedly until the phone number is shown in the desired format.

4 **Using a cellular line:**
To make a cellular call, continue from step 4, "Viewing the caller list and calling back", page 51.
Using a landline:
[📞]

■ **When a cellular phone is not paired:**

1 [▼] CID

2 [▲▼]: Select the desired entry. → [MENU]

3 [▲▼]: "Edit" → [SELECT]

4 Press [EDIT] repeatedly until the phone number is shown in the desired format.

5 [📞]

Caller ID number auto edit feature

Once you call back an edited number, the unit which was used to call back remembers the area code and format of the edited number. The next time someone calls from the same area code, caller information is customized by the unit as follows:

– When the call is being received, the Caller ID number is displayed in the same format as the edited number.
– After the call has ended, the caller's phone number is displayed in the same format as the edited number, when reviewed from the caller list.

For example, you can use this feature to set the unit to ignore the area code of callers in your area, so that you can call these local numbers using caller information without dialing the area code.
To activate this feature, you must edit an entry in the caller list, then call that number. After that, phone numbers from that caller's area code are edited automatically.
This feature can be set for each unit (page 44). The default setting is "On".

Note:

- Phone numbers from the 4 most recently edited area codes are automatically edited.

Erasing selected caller information

1 [▼] CID

2 [▲▼]: Select the desired entry.

3 [ERASE] → [▲▼]: "Yes" → [SELECT] → [OFF]

Erasing all caller information

1 [▼] CID

2 [ERASE] → [▲▼]: "Yes" → [SELECT] → [OFF]

Copying phonebook from a cellular phone (phonebook transfer)

You can copy phonebook entries from the paired cellular phones or other cellular phones (not paired) to the unit's phonebook. A cellular phone must be compatible with Bluetooth wireless technology.

Important:

- Your cellular phone must support Phone Book Access Profile (PBAP) or Object Push Profile (OPP) specification.
- If a copied entry has 2 or more phone numbers, each phone number (6 max.) is stored as a separate entry with the same name.
- If a phonebook entry includes additional data such as a picture, that entry may fail to copy to the base unit.
- If your cellular phone includes international call entries, set the conversion codes before copying (page 53).

1 **Handset:**
[MENU]#618

2 **Handset:**
To copy from paired cellular phones:
[▲▼]: Select the desired cellular phone. → **[SELECT]**
- Copied items are stored to the group ("Cell 1" or "Cell 2") which the cellular phone is paired to.

To copy from other cellular phones (not paired):
[▲▼]: "Other cell" → **[SELECT]** → [▲▼]: Select the group you want to copy to. → **[SELECT]**

3 **Handset:**
When "Use the cell to transfer phone book" is displayed:
Go to step 4.
When "Select mode" menu is displayed:
[▲▼]: Select "Auto" or "Manual". → **[SELECT]**
"Auto": Download all entries from the cellular phone automatically. Go to step 5.
"Manual": Copy entries you selected.
- "Select mode" menu is displayed only when the cellular phone supports PBAP (Phone Book Access Profile) for Bluetooth connection.
- Some cellular phones may require you to perform an operation on the cellular phone even if you select "Auto".

4 **Cellular phone:**
Follow the instructions of your cellular phone to copy phonebook entries.
- For other cellular phones (not paired), you need to search for and select the base unit. The Bluetooth PIN (default: "0000") may be required.
- If your cellular phone prompts you to confirm the passkey, tap **[OK]** or otherwise to accept the pairing request.
- The entries being copied are displayed on the handset.

5 **Handset:**
Wait until "Completed" is displayed.
- You can continue copying other entries if necessary.

6 **Handset: [OFF]**

Note:

- Some copied entries may have characters which do not exist in the character table (page 34). These characters can be displayed but cannot be entered when editing an entry.
- The unit does not support some characters. If a copied entry includes those characters, they are replaced with other available characters or "*".
- If you receive a call while copying phonebook entries, the copying procedure stops. Try again after finishing the call.

Setting conversion codes

You must first set the following 3 dialing codes before transferring the phonebook from your cellular phone (each 4 digits max.).

– "International code": An international prefix used when you make an international call.
– "Country code": Your country code for international calls.

– "Trunk prefix": A trunk prefix; the initial digit(s) to be dialed in a domestic call, prior to the area code.

1 [MENU]

2 To store "International code": #117
To store "Country code": #118
To store "Trunk prefix": #119

3 Enter the desired number. → [SAVE] → [OFF]

Note:

- After you copy the entries, confirm that the numbers were transferred correctly.

Link to Cell app

For Android™ users

The free Link to Cell app helps you integrate your Android phone with your DECT phone for convenient use.

Important:

- Your cellular phone must support SPP (Serial Port Profile) specification.

■ **Application (App) Alerts On/Off**
This feature alerts your DECT phone when your paired Android phone receives the following alert information:
– **[Google Calendar]**™
– **[Email]**
– **[Gmail]**™
– **[Text messages]**
– **[Facebook]**
– **[Twitter]**
– **[Instagram]**
– **[Low Battery]** information

You can turn each type of alert on or off using the Link to Cell app. If you turn the alerting app on, your DECT phone alerts you with the corresponding information.

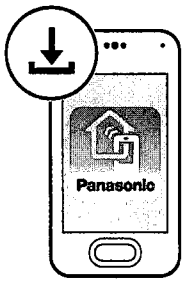
■ **Phone Settings**
Using your paired Android phone, you can program your Phone Settings for the following features:
– **[Time adjustment]***1
– **[Cell line only mode]** (page 19)
– **[International code]**, **[Country code]**, and **[Trunk prefix]** (page 53)

*1 When your paired Android phone is within the base unit's range, the date and time information is updated on the handset's display, if time adjustment feature is activated on your Android phone.

Installing the Link to Cell app

Download links are also available at the web page below.

www.panasonic.net/pcc/support/tel/appalerts



Starting the app for the first time

1 Make sure that your Android device's Bluetooth feature is turned on and that your Android device is paired to the base unit.

2 Start the Link to Cell app by tapping its icon.

3 Follow the on-screen instructions.

Important:

- For further information, refer to the instructions on web page listed above.
- To use this feature, the following settings are required.
  – **Android phone:** Bluetooth must be turned on.
  – **Android phone: [Application Alerts manager]***1 must be turned on.

– **Handset: "Alert On/Off"** must be turned on (page 55).
- If this feature does not work, turn on your device's Bluetooth feature, unplug the base unit's AC adaptor, and then reconnect it.

*1 **Turning on [Application Alerts manager]**
Use the following procedure after installing the Link to Cell app.
Android 2.x: Open your device's **[Settings]** app. → Tap **[Accessibility]**. → Turn on the **[Accessibility]** and **[Application Alerts manager]** checkboxes.
Android 4.x: Open your device's **[Settings]** app. → Tap **[Accessibility]**. → Turn on **[Application Alerts manager]**.

Requirements

- An Android device (Android 2.1 or later)

Text message (SMS) alert

For iPhone® and BlackBerry® users

This feature alerts you on your DECT phone when your paired cellular phone receives SMS messages. The Link to Cell app is not required for **iPhone and BlackBerry users**.

Important:

- Your cellular phone must support MAP (Message Access Profile) specification.
- For further information, refer to the instructions on web page listed below:
  www.panasonic.net/pcc/support/tel/sms/
- To use this feature, the following settings are required:
  – **iPhone and BlackBerry Phone:** Bluetooth must be turned on.
  – **Handset: "Alert On/Off"** must be turned on (page 55).
- If this feature does not work, turn on your device's Bluetooth feature, unplug the base unit's AC adaptor, and then reconnect it.

Alert settings for your DECT phone

If your cellular phone is paired to the base unit and receives notifications, the handset can alert you:
– by briefly displaying a message
– by announcement
– by sounding alert tones

Important:

- For Android users: Use the Link to Cell app to enable the desired alerts (page 54).

Turning alert on/off

Once this feature is turned on, it will alert you on the handset when your cellular phone receives notifications.
– **"On"** (default): The handset alerts you.
– **"Off"**: The handset does not alert you.

1 For CELL 1: **[MENU]**#610**1**
For CELL 2: **[MENU]**#610**2**

2 [▲▼]: Select the desired setting. → **[SAVE]** → **[OFF]**

Setting the voice alert

You can turn on/off the voice alert.
– **"On"** (default): The handset notifies you by voice announcement.
– **"Off"**: Voice announcement is not available as alert.

1 For CELL 1: **[MENU]**#603**1**
For CELL 2: **[MENU]**#603**2**

2 [▲▼]: Select the desired setting. → **[SAVE]** → **[OFF]**

Selecting the alert tone

1 For CELL 1: **[MENU]**#604**1**
For CELL 2: **[MENU]**#604**2**

2 [▲▼]: Select the desired setting. → **[SAVE]** → **[OFF]**

Using a Bluetooth wireless headset (optional) for landline calls

By pairing a Bluetooth headset to the base unit, you can have a hands-free conversation wirelessly for landline calls.

Important:

- Your Bluetooth wireless headset must support the HeadSet Profile (HSP) specification.
- 1 headset can be paired to the base unit.
- Only 2 Bluetooth devices can be used with the unit at the same time (for example, 2 cellular lines, or the headset and 1 cellular line).
- For best performance, we recommend using a Bluetooth headset within 1 m (3.3 feet) of the base unit. A headset can communicate with the base unit within a range of approximately 10 m (33 feet).

Pairing a headset to the base unit

Important:

- Make sure that the Bluetooth headset is not connected to any other Bluetooth device.

1 **Your headset:**
Set your headset to pairing mode.
- Refer to the headset operating instructions.

2 **Handset:**
[MENU]#62**[1]**

3 **If your headset PIN is "0000", go to step 4.**
If your headset PIN is other than "0000", press [CLEAR], then enter your headset PIN.
- Typically, default PIN is "0000". Refer to the headset operating instructions.

4 Press **[OK]**, then wait until a long beep sounds.

5 **[OFF]**
- When the HEADSET indicator on the base unit lights up, you are ready to use the headset.

Connecting/disconnecting a headset

If you cannot connect the headset and base unit using the headset, you can connect using the handset.
To use your headset with another Bluetooth device such as a cellular phone, you may need to disconnect it from the base unit.

Important:

- Make sure that the headset is turned on.

1 **To connect/disconnect:**
[MENU]#622

- A long beep sounds.

2 **[OFF]**

Unpairing a headset

You can cancel a pairing of the headset that is stored to the base unit.

1 **[MENU]**#61**[2]**

2 **[▲▼]: "Yes" → [SELECT]**
- When the headset is unpaired, the HEADSET indicator is turned off.

3 **[OFF]**

Operating a Bluetooth wireless headset using a landline

Important:

- Refer to your headset operating instructions for headset operations.

Making landline calls with your headset

Base unit*1

*1 KX-TGE470 series: page 4

1 Press your headset's button referring to your headset operating instructions.

2 Dial the phone number using the base unit after hearing the dial tone on your headset.

3 When you finish talking, press your headset's button referring to your headset operating instructions.

Answering landline calls with your headset

To answer a landline call, press your headset's button referring to your headset operating instructions.
When you finish talking, press your headset's button referring to your headset operating instructions.

Note:

- If you cannot hang up the call using your headset:
  - press [►■] (STOP) on the base unit. (KX-TGE460 series: page 4)
  - press [↩] on the base unit 2 times. (KX-TGE470 series: page 4)

Switching between the base unit and your headset

You can switch between the base unit and your headset:
- during a landline call with the base unit speakerphone. (KX-TGE470 series: page 4)
- during an intercom call between the base unit and handset. (KX-TGE470 series: page 4)
- while listening to messages recorded on the base unit answering system.

■ **To switch to your headset:**
Turn on the headset referring to your headset operating instructions.

■ **To switch to the base unit (KX-TGE470 series: page 4):**
Press [↩] on the base unit.

Call sharing between your headset and the handset

Important:

- To activate this feature, you should set call sharing mode to on beforehand (page 44).

■ **While the handset is on a landline call:**
To join the conversation with your headset, press your headset's button referring to your headset operating instructions.

■ **While your headset is on a landline call:**
To join the conversation with the handset, press [📞].

Adjusting your headset receiver volume

Base unit

Press [+] or [−] repeatedly while using your headset.

Note:

- Depending on your headset, the receiver volume may not be adjustable.

Answering system for landline

The answering system can answer and record calls for you when you are unavailable to answer the phone.
You can also set the unit to play a greeting message but not to record caller messages by selecting "`Greeting only`" as the recording time setting (page 63).

Important:

- Make sure the unit's date and time setting is correct (page 16).

Memory capacity (including your greeting message)

The total recording capacity is about 18 minutes. A maximum of 64 messages can be recorded.

Note:

- When message memory becomes full:
  - "`Messages full`" is shown on the handset display.
  - The message counter on the base unit flashes if the answering system is turned on.
  - If you use the pre-recorded greeting message, the unit automatically switches to another pre-recorded greeting message asking callers to call again later.
  - If you recorded your own greeting message, the same message is still announced to callers even though their messages are not recorded.

Turning the answering system on/off

Base unit

Press **[ANSWER ON/OFF]** to turn on/off the answering system.

Handset

1 **To turn on:**
[MENU]#32**7**
To turn off:
[MENU]#32**8**

2 **[OFF]**

Note for base unit and handset:

- When the answering system is turned on, the message counter on the base unit displays the total number of messages (old and new).

Greeting message

When the unit answers a call, a greeting message is played to callers.
You can use either:
– your own greeting message
– a pre-recorded greeting message

Recording your greeting message

1 **[MENU]**#302
2 **[▲/▼]**: "`Yes`" → **[SELECT]**
3 After a beep sounds, hold the handset about 20 cm (8 inches) away and speak clearly into the microphone (2 minutes max.).
4 Press **[STOP]** to stop recording. → **[OFF]**

Using a pre-recorded greeting message

The unit provides 2 pre-recorded greeting messages:
– If you reset to pre-recorded greeting or do not record your own greeting message, the unit plays a pre-recorded greeting asking callers to leave a message.
– If the message recording time (page 63) is set to "`Greeting only`", callers' messages are not recorded and the unit plays a different pre-recorded greeting message asking callers to call again.

Resetting to a pre-recorded greeting message

Use this procedure to erase your greeting message and use a pre-recorded one.

1 [MENU]#304

2 [YES] → [OFF]

Playing back the greeting message

1 [MENU]#303

2 To exit, press [OFF].

Listening to messages

Important:

- When using the base unit or handset to listen to messages, the noise reduction feature (page 23) is activated automatically in spite of the setting (NR is not displayed).

Using the base unit

When new messages have been recorded, [▶■] on the base unit flashes.
Press [▶■] (PLAY).

- During playback, [▶■] on the base unit lights.
- If new messages have been recorded, the base unit plays back new messages.
- If there are no new messages, the base unit plays back all messages.

Operating the answering system during playback

Key	Operation
[+] or [−]	Adjust the speaker volume
[⏮]	Repeat message*1
[⏭]	Skip message
[▶■] (STOP)	Stop playback
[ERASE]	Erase currently playing message

*1 If pressed within the first 5 seconds of a message, the previous message is played.

Erasing all messages

Press [ERASE] 2 times while the unit is not in use.

Using the handset

When new messages have been recorded:
– "New message" is displayed.
– The message indicator on the handset flashes slowly if the message indicator is turned on (page 64)

1 **To listen to new messages:**
[MENU]#323
To listen to all messages:
[MENU]#324

2 When finished, press [OFF].

Note:

- To switch to the receiver, press [📞].
- You can also use the [PLAY] soft key, if displayed, to play new messages.

Operating the answering system

[MENU] → [▲▼]: "Answering device" → [SELECT]

Key	Operation
[+] or [−]	Adjust the receiver/speaker volume (during playback)
1 or [◄]	Repeat message (during playback)*1
2 or [►]	Skip message (during playback)
3	Enter the "Settings" menu
4	Play new messages
5	Play all messages
6	Play greeting message

Key	Operation
7 6	Record greeting message
8	Turn answering system on
[PAUSE]	Pause message*2
9 or [STOP]	Stop recording Stop playback
0	Turn answering system off
* 4 *3	Erase currently playing message
* 5	Erase all messages
* 6	Reset to a pre-recorded greeting message

*1 If pressed within the first 5 seconds of a message, the previous message is played.
*2 To resume playback:
[▲▼]: "Playback" → [SELECT]
*3 You can also erase as follows:
[PAUSE] → [▲▼]: "Erase" → [SELECT] → [▲▼]: "Yes" → [SELECT]

Calling back (Caller ID subscribers only)

■ **Using a landline:**

1 Press [PAUSE] during playback.
2 [▲▼]: "Call back" → [SELECT]

■ **Using a cellular line:**

1 Press [PAUSE] during playback.
2 [▲▼]: "Call back (Cell)" → [SELECT]
- The unit starts dialing immediately in the following situations.
  - Only 1 cellular phone is paired.
  - A specific line is set to make cellular calls (page 20).

3 [▲▼]: Select the desired cellular phone. → [SELECT]

Editing the number before calling back

■ **Using a landline:**

1 Press [PAUSE] during playback.
2 [▲▼]: "Edit & Call" → [SELECT]
3 Press [EDIT] repeatedly until the phone number is shown in the desired format (page 52).
4 [☎]

■ **Using a cellular line:**

1 Press [PAUSE] during playback.
2 [▲▼]: "Edit & Call" → [SELECT]
3 Press [EDIT] repeatedly until the phone number is shown in the desired format (page 52).
4 [CELL]
- The unit starts dialing immediately in the following situations.
  - Only 1 cellular phone is paired.
  - A specific line is set to make cellular calls (page 20).

5 [▲▼]: Select the desired cellular phone. → [SELECT]

Erasing all messages

1 [MENU]#325
2 [▲▼]: "Yes" → [SELECT] → [OFF]

Advanced new message alerting features

Audible message alert

This feature allows the base unit to beep to inform you of a new message arrival when new messages are recorded. The base unit beeps 2 times every minute until you listen to the messages, if the "Base unit beep" setting is turned on. The default setting is "Off".

1 [MENU]#339
2 [▲▼]: Select the desired setting. → [SAVE] → [OFF]

New message alert by a call

This feature allows you to receive a notification by phone when new messages are recorded. The base unit calls a phone number

you specify. You can then operate the answering system remotely to listen to the new message.
To use this feature, you must:
– store a phone number to which the unit makes the call to.
– turn on the new message alert setting.
After you answer the new message alert call, you can listen to messages from that call (page 61).
This feature is only available for landline.

Important:

- A new message alert is stopped 1 minute after the unit starts to call. The unit will not retry the call even if the call is not answered.

Storing a phone number to which the unit makes an alert call

■ **From the phonebook:**

1 [MENU]#338
2 [▲▼]: "Notification to" → [SELECT] → [ADD]
3 [▲▼]: "Phonebook" → [SELECT]
4 [▲▼]: Select the desired phonebook entry. → [SAVE] → [OFF]

■ **By entering a phone number:**

1 [MENU]#338
2 [▲▼]: "Notification to" → [SELECT] → [ADD]
3 [▲▼]: "Manual" → [SELECT]
4 Enter the desired name (16 characters max.). → [OK]
5 Enter the desired number (24 digits max.). → [OK] → [SELECT] → [OFF]

Turning on/off the new message alert setting

1 [MENU]#338
2 [▲▼]: "On/Off" → [SELECT]
3 [▲▼]: Select the desired setting. → [SAVE] → [OFF]

Editing the set phone number

1 [MENU]#338
2 [▲▼]: "Notification to" → [SELECT]
3 [MENU] → [▲▼]: "Edit" → [SELECT]
4 Edit the name if necessary (16 characters max.). → [OK]
5 Edit the phone number if necessary (24 digits max.). → [OK] → [SELECT] → [OFF]

Erasing the set phone number

1 [MENU]#338
2 [▲▼]: "Notification to" → [SELECT]
3 [MENU] → [▲▼]: "Erase" → [SELECT]
4 [▲▼]: "Yes" → [SELECT] → [OFF]
- The new message alert setting is turned off.

Activating/inactivating the remote access code to play messages

If you activate this feature, you must enter the remote access code (page 62) to play the new message from the new message alert call. This is so that unauthorized parties cannot listen to your messages. The default setting is "Inactivate".
– "Inactivate": You can listen to the message by pressing 4 to play new messages (without entering the remote access code).
– "Activate": You must enter your remote access code and then press 4 to play new message.

1 [MENU]#338
2 [▲▼]: "Remote code" → [SELECT]
3 [▲▼]: Select the desired setting. → [SAVE] → [OFF]

Listening to messages

After you answer the new message alert, you can listen to the messages as follows.

■ **When the remote access code is set to "Inactivate":**
Press 4 to play the new message during the announcement.

■ **When the remote access code is set to "Activate":**

1 Enter the remote access code (page 62) during the announcement.

2 Press 4 to play the new message.

Note:

- Within 10 seconds after listening to new messages, you can press #9 during the call to turn off the new message alert by a call feature.
- Even if the unit makes a new message alert call, the handset redial list does not show the record.

Remote operation

Using a touch-tone phone, you can call your phone number from outside and access the unit to listen to messages or change answering system settings. The unit's voice guidance prompts you to press certain dial keys to perform different operations.

Remote access code

A 3-digit remote access code must be entered when operating the answering system remotely. This code prevents unauthorized parties from listening to your messages remotely. The default setting is "111".

Important:

- To prevent unauthorized access to this product, we recommend that you regularly change the remote code.

1 **[MENU]**#306

2 Enter the desired 3-digit remote access code. → **[SAVE]** → **[OFF]**

Deactivating remote operation

Press * in step 2 on "Remote access code", page 62.

- The entered remote access code is deleted.

Using the answering system remotely

1 Dial your landline phone number from a touch-tone phone.

2 After the greeting message starts, enter your remote access code.

3 Follow the voice guidance prompts as necessary or control the unit using remote commands (page 62).

4 When finished, hang up.

Voice guidance

■ **When the English voice guidance is selected**
During remote operation, the unit's voice guidance starts and prompts you to press 1 to perform a specific operation, or press 2 to listen to more available operations.

■ **When the Spanish voice guidance is selected**
To start the voice guidance, press 9. The voice guidance announces the available remote commands (page 62).

Note:

- If you do not press any dial keys within 10 seconds after a voice guidance prompt, the unit disconnects your call.

Remote commands

You can press dial keys to access certain answering system functions without waiting for the voice guidance to prompt you.

Key	Operation
1	Repeat message (during playback)*1
2	Skip message (during playback)
4	Play new messages
5	Play all messages
9	Stop playback*2 Start voice guidance*3
0	Turn answering system off
*4	Erase currently playing message

Key	Operation
✱5	Erase all messages
✱#	End remote operation (or hang up)

*1 If pressed within the first 5 seconds of a message, the previous message is played.
*2 For English voice guidance only
*3 For Spanish voice guidance only

Turning on the answering system remotely

1 Dial your phone number from a touch-tone phone.
2 Let the phone ring 15 times.
- A long beep is heard.

3 Enter your remote access code within 10 seconds after the long beep.
- The greeting message is played back.
- You can either hang up, or enter your remote access code again and begin remote operation (page 62).

Answering system settings

Call screening

Handset / Base unit

While a caller is leaving a message, you can listen to the call through the unit's speaker.
To adjust the speaker volume, press [+] or [−] repeatedly.
You can answer the call by pressing [ ] on the handset or [ ] on the base unit*1.
Call screening can be set for each unit. The default setting is "On".

1 **For handset setting: [MENU]#310**
For base unit setting (using a handset)*1: [MENU]✱310
2 [▲▼]: Select the desired setting. → [SAVE] → [OFF]

*1 KX-TGE470 series: page 4

Number of rings before the unit answers a call

You can change the number of times the phone rings "Ring count" before the unit answers calls. You can select 2 to 7 rings, or "Toll saver".
The default setting is "4 rings".
"Toll saver": The unit's answering system answers at the end of the 2nd ring when new messages have been recorded, or at the end of the 5th ring when there are no new messages. If you call your phone from outside to listen to new messages (page 62), you know that there are no new messages when the phone rings for the 3rd time. You can then hang up without being charged for the call.

1 [MENU]#211
2 [▲▼]: Select the desired setting. → [SAVE] → [OFF]

Caller's recording time

You can change the maximum message recording time allowed for each caller. The default setting is "3 min".

1 [MENU]#305
2 [▲▼]: Select the desired setting. → [SAVE] → [OFF]

Selecting "Greeting only"

You can select "Greeting only" which sets the unit to announce a greeting message to callers but not record messages.
Select "Greeting only" in step 2 on "Caller's recording time", page 63.

Note:

- When you select "Greeting only":
  - If you do not record your own message, the unit will play the pre-recorded greeting-only message asking callers to call again later.
  - If you use your own message, record the greeting-only message asking callers to call again later (page 58).

Handset message indicator

You can select whether or not the message indicator on the handset flashes slowly when new messages are recorded. The default setting is "On".

Important:

- If you stored the voicemail access number (page 65), the message indicator also flashes for newly recorded voicemail messages (page 66).

1 [MENU]#340

2 [▲▼]: Select the desired setting. → [SAVE] → [OFF]

Note:

- While message indicator is on, battery operating time is shortened (page 12).

Voicemail service for landline

In addition to your unit's answering system you may also have voicemail service from your phone service provider. Voicemail is an answering service that may be offered by your phone service provider. This service can also record calls when you are unavailable to answer the phone or when your line is busy. Messages are recorded on the phone company system and not on the unit's answering system.

- To use the voicemail service rather than the unit's answering system, turn off the answering system (page 58).

If you have unit's answering system set to on and also the voicemail enabled, the system with least amount of rings will record the message first.

Example:

If the unit's answering system is set to 4 rings (page 63) and the voicemail answering system provided by your phone company is set to 6 rings (call your service provider), the unit's answering system will record the incoming call first.

Important:

- You need to store the voicemail access number to activate the message indicator (page 64) for voicemail service.

Storing the voicemail (VM) access number

In order to listen to your voicemail messages, you must dial your phone service provider's voicemail access number. Once you have stored your voicemail access number, you can dial it automatically (page 66).

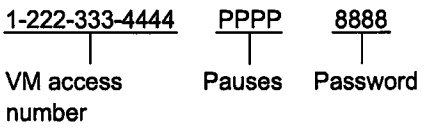
1 **[MENU]**#331

2 Enter your access number (24 digits max.). → **[SAVE]** → **[OFF]**

Note:

- When storing your voicemail access number and your mailbox password, press **[▲]** (Pause) to add pauses (page 22) between the access number and the password as necessary. Contact your phone service provider for the required pause time.

Example:



To erase the voicemail access number

1 **[MENU]**#331

2 Press and hold **[CLEAR]** until all digits are erased. → **[SAVE]** → **[OFF]**

Voicemail (VM) tone detection

Handset / Base unit[*1]

*1 KX-TGE470 series: page 4

Your phone service provider sends special signals (sometimes called "voicemail tones" or "stutter tones") to the unit to let you know you have new voicemail messages. If you hear a series of dial tones followed by a continuous dial tone after you press **[📞]** on the handset or press **[🔊]** on the base unit, you have new voicemail messages. Soon after you hang up a call or after the phone stops ringing, your unit checks the phone line to see if new voicemail messages have been recorded.

Turn this feature off when:

- You do not subscribe to voicemail service.
- Your phone service provider does not send voicemail tones.
- Your phone is connected to a PBX.

If you are not sure which setting is required, contact your phone service provider.

Turning VM tone detection on/off

The default setting is "On".

1 **[MENU]**#332

2 **[▲▼]**: Select the desired setting. → **[SAVE]** → **[OFF]**

Listening to voicemail messages

When new messages have been recorded:
– "Voicemail msg. via phone co." is displayed if message indication service is available.
– The message indicator on the handset flashes slowly if the message indicator is turned on (page 64).

Handset

1 [MENU]#330
- The speakerphone turns on.

2 Follow the pre-recorded instructions.

3 When finished, hang up.

Note:

- You can also use the [ACCESS] soft key, if displayed, to play new voicemail messages.
- If the handset still indicates there are new messages even after you have listened to all new messages, turn it off by pressing and holding # until the handset beeps.

Base unit*1

*1 KX-TGE470 series: page 4

To listen to voicemail messages, you have to dial your voicemail access number manually.

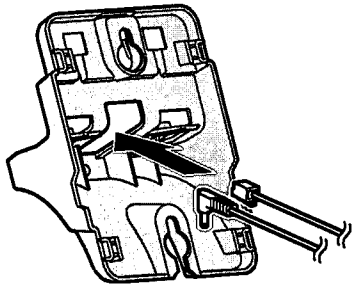
Wall mounting

Note:

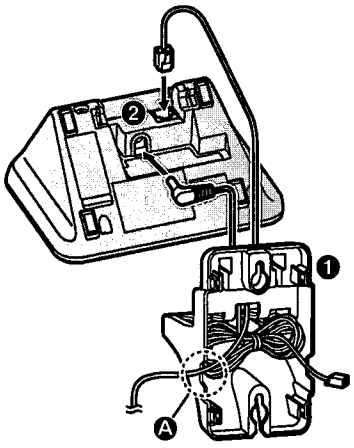
- Make sure that the wall and the fixing method are strong enough to support the weight of the unit.

Base unit

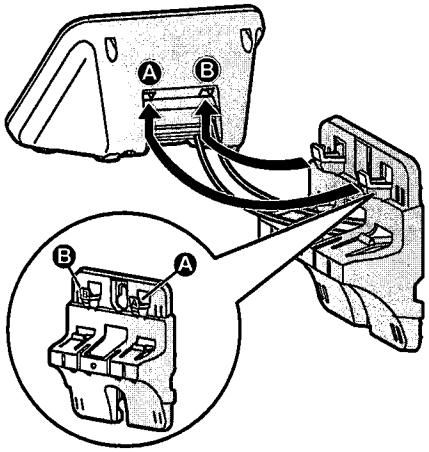
1 Lead the AC adaptor cord and telephone line cord through the hole in the wall mounting adaptor in the direction of the arrow.



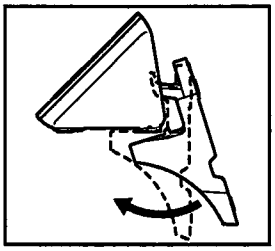
2 Tuck the telephone line cord inside the wall mounting adaptor (❶). Connect the AC adaptor cord and telephone line cord (❷).
Ⓐ AC adaptor cord

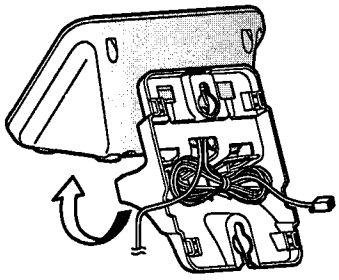


3 Insert the hooks on the wall mounting adaptor into holes (Ⓐ) and (Ⓑ) on the base unit.



4 Adjust the adaptor to hold the base unit, then push it in the direction of the arrow until it clicks into place.

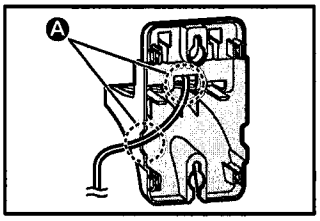


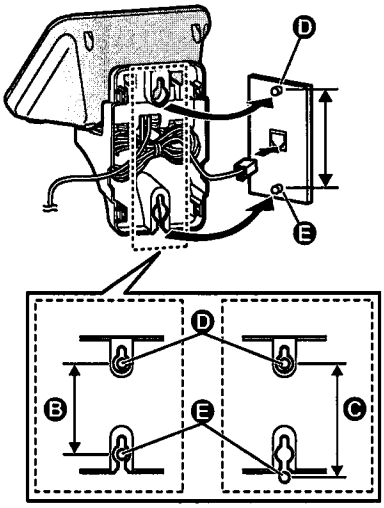


5 Mount the unit on a wall then slide down to secure in place.

Ⓐ AC adaptor cord

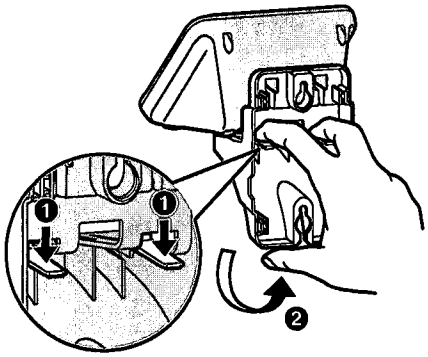
- This product is compliant with the following wall phone plate sizes (2 types).
  Ⓑ 83 mm (3 1/4 inches)
  Ⓒ 102 mm (4 inches)
  Fit the slots of the unit onto the corresponding wall phone plate tabs for (Ⓓ) and (Ⓔ) respectively.





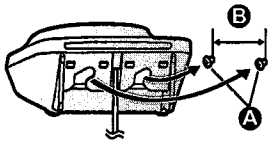
To remove the wall mounting adaptor

While pushing down the release levers (❶), remove the adaptor (❷).



Charger

Drive the screws (Ⓐ) (not supplied) into the wall.
Ⓑ 27.2 mm (1 1/16 inches)



Error messages

Display message	Cause/solution
`Ask phone company for VM access #`	• You have not stored the voicemail access number. Store the number (page 65).
`Base no power` or `No link. Re-connect base AC adaptor.` or `No link.`	• Confirm the base unit's AC adaptor is connected to the unit and the power outlet correctly. • The handset has lost communication with the base unit. Move closer to the base unit and try again. • Unplug the base unit's AC adaptor to reset the unit. Reconnect the adaptor and try again. • The handset's registration may have been canceled. Re-register the handset (page 49). • When "`No link.`" is displayed during a power failure, place a handset on the base unit to supply power to the base unit.
`Busy`	• No cellular phone is paired to the base unit. Pair a cellular phone (page 17). • The called unit is in use. • Other units are in use and the system is busy. Try again later. • The handset you are using is too far from the base unit. Move closer and try again. • Only 2 Bluetooth devices can be used with the unit at the same time (for example, 2 cellular lines, or the headset and 1 cellular line).
`Check tel line`	• The supplied telephone line cord has not been connected yet or not connected properly. Check the connections (page 11). • If you do not connect the telephone line cord and use only cellular lines, set the cellular line only mode (page 19).
`Error!!`	• Recording was too short. Try again. • Someone is using a cellular line or headset. Try again later. • The phonebook copy is incomplete (page 53). The cellular phone is disconnected from the base unit. Make sure that other Bluetooth devices are not connected to the cellular phone, and try again.
`Failed`	• Although the unit tried to connect to the cellular phone or headset, the connection has been failed. – Someone is using a cellular line or headset. Try again later. – Make sure that the cellular phone or headset is not connected to other Bluetooth devices.

Useful Information

Display message	Cause/solution
`Invalid`	• There is no handset registered to the base unit matching the handset number you entered. • The handset is not registered to the base unit. Register the handset (page 49).
`Requires subscription to Caller ID.`	• You must subscribe to a Caller ID service. Once you receive caller information after subscribing to a Caller ID service, this message will not be displayed.
`Use rechargeable battery.`	• A wrong type of battery such as alkaline or manganese was inserted. Use only the rechargeable Ni-MH batteries noted on page 5, 8.

Troubleshooting

If you still have difficulties after following the instructions in this section, disconnect the base unit's AC adaptor, then reconnect the base unit's AC adaptor. Remove the batteries from the handset, and then insert them into the handset again.

General use

Problem	Cause/solution
The handset does not turn on even after installing charged batteries.	• Place the handset on the base unit or charger to turn on the handset.
The unit does not work.	• Make sure the batteries are installed correctly (page 11). • Fully charge the batteries (page 12). • Check the connections (page 11). • Unplug the base unit's AC adaptor to reset the unit. Reconnect the adaptor and try again. • The handset has not been registered to the base unit. Register the handset (page 49).
I cannot pair a cellular phone to the base unit.	• Depending on the compatibility of the cellular phone, you may not be able to pair it to the base unit. Confirm that your cellular phone supports the hands-free profile (HFP) specification. • Confirm that the Bluetooth feature of your cellular phone is turned on. You may need to turn this feature on depending on your cellular phone. • The Bluetooth technology on your cellular phone may not be functioning normally. Turn off and on your cellular phone. • If your cellular phone is already connected to another Bluetooth device such as a Bluetooth headset, turn it off or disconnect it from your cellular phone. • Some cellular phones may require you to enter the Bluetooth PIN to pairing. Confirm that you entered the correct PIN.

Problem	Cause/solution
I cannot connect a cellular phone to the base unit.	• Confirm that your cellular phone is turned on. • Confirm that your cellular phone is within base unit range (page 14). • Your cellular phone's Bluetooth feature is turned off. Turn it on. • Depending on the state of the wireless environment, such as the presence of any electrical interference, there may be a delay even if the auto connection feature is turned on. You can connect to the base unit manually (page 19). • The cellular phone has not been paired to the base unit. Pair the cellular phone (page 17). • If your cellular phone is already connected to another Bluetooth device such as a Bluetooth headset or other Panasonic DECT phone, disconnect the device, then perform the connecting procedure to the base unit. • If your cellular phone is already registered on another Panasonic DECT phone, this function will not work properly. We strongly recommend that you remove the registration of this phone on both your cellular phone and on the other Panasonic DECT phone.
I cannot hear a dial tone.	• Make sure that the CELL indicator lights up (page 15). • The base unit's AC adaptor or telephone line cord is not connected. Check the connections. • Disconnect the base unit from the telephone line and connect the line to a known working telephone. If the working telephone operates properly, contact our service personnel to have the unit repaired. If the working telephone does not operate properly, contact your phone service provider.
The indicator on the handset flashes slowly.	• New messages have been recorded. Listen to the new messages (page 59). • New voicemail messages have been recorded. Listen to the new voicemail messages (page 66).
The base unit beeps.	• New messages have been recorded. Listen to the new messages (page 59).

Menu list

Problem	Cause/solution
The display is in a language I cannot read.	• Change the display language (page 16).
I cannot register a handset to a base unit.	• The maximum number of handsets (6) is already registered to the base unit. Cancel unused handset registrations from the base unit (page 50).

Useful Information

Battery recharge

Problem	Cause/solution
The handset beeps and/or [battery] flashes.	• Battery charge is low. Fully charge the batteries (page 12).
I fully charged the batteries, but – [battery] still flashes, – [battery] is displayed, or – the operating time seems to be shorter.	• Clean the battery ends (⊕, ⊖) and the charge contacts with a dry cloth and charge again. • It is time to replace the batteries (page 11).

Making/answering calls, intercom

Problem	Cause/solution
[signal] is displayed.	• The handset is too far from the base unit. Move closer. • The base unit's AC adaptor is not properly connected. Reconnect AC adaptor to the base unit. • The handset is not registered to the base unit. Register it (page 49).
Noise is heard, sound cuts in and out.	• You are using the handset or base unit in an area with high electrical interference. Re-position the base unit and use the handset away from sources of interference. • Move closer to the base unit. • If you use a DSL/ADSL service, we recommend connecting a DSL/ADSL filter between the base unit and the telephone line jack. Contact your DSL/ADSL provider for details.
The handset or base unit does not ring.	• The ringer volume for landline is turned off. Adjust the ringer volume (page 22, 28, 42). • The ringer volume for cellular line is turned off. Adjust the ringer volume (page 22, 28, 40). • The unit which is not selected to ring for cellular calls does not ring. To change the selection, see page 18. • Silent mode is turned on. Turn it off (page 47).
I cannot make local calls with the handset or base unit using a cellular line.	• You need to add your area code when making cellular calls. Store your area code in order to automatically add it to the beginning of the 7-digit phone number when making cellular calls (page 20).
I cannot make or answer cellular calls with the handset or base unit.	• Depending on the cellular phone's compatibility (page 6), you may not be able to make or answer cellular calls even if the cellular phone is connected to the base unit. • Make sure that the CELL indicator lights up and the cellular phone is connected to the base unit (page 19). • Only 2 Bluetooth devices can be used with the unit at the same time (for example, 2 cellular lines, or the headset and 1 cellular line). • The cellular phone is being used separately from your system.

Problem	Cause/solution
I can make and answer cellular calls but cannot hear a sound.	• The Bluetooth technology on your cellular phone may not be functioning normally. Turn off and on your cellular phone. • Disconnect and reconnect the base unit AC adaptor and try again.
I cannot switch cellular calls from the unit to the cellular phone.	• Your cellular phone may not support this feature. Refer to the operating instructions of your cellular phone.
I cannot make a call using a landline.	• The dialing mode may be set incorrectly. Change the setting (page 16).
I cannot make or answer a call.	• An outside line is being used after a cell locator feature is used. – KX-TGE460 series: To end the call, press **[LOCATES CELL]** on the base unit. – KX-TGE470 series: To end the call if someone answers using the cellular phone, press [↩] on the base unit.
I cannot use a cellular line or a landline.	• The unit can be used to talk on 2 lines at the same time (for example, 2 cellular lines, or the landline and 1 cellular line).
I cannot make long distance calls.	• Make sure that you have long distance service.
I cannot use voice paging.	• You cannot use voice paging if other units are in use. • Voice paging is not available when a range extender (KX-TGA405) is registered to the base unit.

Caller ID/Talking Caller ID

Problem	Cause/solution
Caller information is not displayed.	• You must subscribe to Caller ID service. Contact your phone service provider for details. • If your unit is connected to any additional telephone equipment such as a Caller ID box or cordless telephone line jack, plug the unit directly into the wall jack. • If you use a DSL/ADSL service, we recommend connecting a DSL/ADSL filter between the base unit and the telephone line jack. Contact your DSL/ADSL provider for details. • The name display service for landline calls may not be available in some areas. Contact your phone service provider for details. • Other telephone equipment may be interfering with this unit. Disconnect the other equipment and try again.

Useful Information

Problem	Cause/solution
Caller information is displayed or announced late.	• Depending on your phone service provider, the unit may display or announce the caller's information at the 2nd ring or later. • Move closer to the base unit.
Caller information is not announced.	• The ringer volume for landline is turned off. Adjust the ringer volume (page 42). • The ringer volume for cellular line is turned off. Adjust the ringer volume (page 40). • The unit which is not selected to ring for cellular calls does not announce caller information. To change the selection, see page 18. • The Talking Caller ID feature is turned off. Turn it on (page 43). • The ring as cell mode is set to "`On (without Talking CID)`". To change the mode, see page 18. • The number of rings for the answering system is set to "`2 rings`" or "`Toll saver`". Select a different setting (page 63). • Your unit does not announce caller information while the other devices such as headset or handsets are engaged in a call.
The caller list/incoming phone numbers are not edited automatically.	• The Caller ID number auto edit feature is turned off. Turn it on and try again (page 44). • You need to call back the edited number to activate Caller ID number auto edit.
I cannot dial the phone number edited in the caller list.	• The phone number you dialed might have been edited incorrectly (for example, the long distance "1" or the area code is missing). Edit the phone number with another pattern (page 52).
Time on the unit has shifted.	• Incorrect time information from incoming Caller ID changes the time. Set the time adjustment to "`Manual`" (off) (page 42).
The 2nd caller's information is not displayed during an outside call.	• In order to use Caller ID, call waiting, or Call Waiting Caller ID (CWID), you must first contact your phone service provider and subscribe to the desired service. After subscribing, you may need to contact your phone service provider again to activate this specific service, even if you already subscribed to both Caller ID and Call Waiting with Caller ID services (CWID).

Using Bluetooth devices

Problem	Cause/solution
I cannot copy phonebook entries from a cellular phone.	• Confirm that the cellular phone supports Bluetooth wireless technology. • Confirm that the cellular phone supports the Phone Book Access Profile (PBAP) or Object Push Profile (OPP) specification. • If the cellular phone is already connected to another Bluetooth device such as a Bluetooth headset, turn it off or disconnect it from the cellular phone. • Someone is using a cellular line or headset. Try again later. • Turn the cellular phone off, then turn it on and try again. • If an entry is already stored in the unit's phonebook, the entry cannot be copied even by selecting another group. • iPhone does not support individual phonebook copy.
I cannot have a conversation using the headset. or I cannot connect my headset to the base unit.	• Confirm that the Bluetooth wireless headset supports the HeadSet Profile (HSP) specification. • Your Bluetooth headset is not paired. Pair it (page 56). • Turn your headset off, then turn it on and try again. • If your headset is already connected to another Bluetooth device such as your cellular phone, disconnect the headset from your cellular phone, then perform the connecting procedure from the base unit. • Only 2 Bluetooth devices can be used with the unit at the same time (for example, 2 cellular lines, or the headset and 1 cellular line).
Noise is heard during a call on the headset.	• A Bluetooth headset can communicate with the base unit within a range of approximately 10 m (33 feet). The connection may be subject to interference from obstructions such as walls or electronic devices. Move closer to the base unit.
Some headset enhanced features are not available.	• The base unit does not support enhanced features such as Last number redial or Call reject.
An error tone is heard when I try to program the Bluetooth feature.	• The Bluetooth feature cannot be accessed immediately after connecting the AC adaptor to the base unit. Wait a few seconds and try again. • The headset has not connected to the base unit yet, even though you performed the connecting procedure setting. Wait a few seconds and try again.

Problem	Cause/solution
App alert is not displayed or announced. or Text message alert is not displayed or announced.	• Confirm that the cellular phone supports the Message Access Profile (MAP) specification to use text message alert feature. • Confirm that the cellular phone supports the Serial Port Profile (SPP) specification to use App alert feature. • Confirm that the **[Application Alerts manager]** setting of your Android phone is turned on. • "`Alert On/Off`" is set to "`Off`". Set it to "`On`" (page 55). • "`Voice alert`" is set to "`Off`". Set it to "`On`" (page 55). • The Bluetooth device's Bluetooth notifications setting is turned off. • The handset selected to display and/or announce alerts is in use. • The Bluetooth device or its corresponding cellular line is in use. • Your cellular phone's Bluetooth feature is turned off. Turn it on. • The unit which is not selected to ring for cellular calls does not ring. To change the selection, see page 18.

Answering system

Problem	Cause/solution
The unit does not record new messages.	• The answering system is turned off. Turn it on (page 58). • The answering system does not answer or record calls from cellular lines. • The message memory is full. Erase unnecessary messages (page 59, 60). • The recording time is set to "`Greeting only`". Change the setting (page 63). • Your phone service provider's voicemail service may be answering your calls before the unit's answering system can answer your calls. Change the unit's number of rings setting (page 63) to a lower value, or contact your phone service provider. • The answering system will not answer incoming calls while the other devices such as headset or handsets are engaged in a call.
I cannot operate the answering system remotely.	• The remote access code is not set. Set the remote access code (page 62). • You are entering the wrong remote access code. If you have forgotten your remote access code, enter the remote access code setting to check your current code (page 62). • The answering system is turned off. Turn it on (page 63). • You cannot operate the answering system when calling a cellular phone paired to the base unit.

Problem	Cause/solution
The unit does not emit the specified number of rings.	• If the first ring is turned off ("No") (page 33), the number of rings decreases by 1 from the specified number of rings.

Bluetooth PIN

Problem	Cause/solution
I cannot remember the PIN.	• Change the PIN using the following method. 1 [MENU]#619 2 *7000 3 Enter the new 4-digit PIN. → [OK] 4 Enter the new 4-digit PIN again. → [SAVE] → [OFF]

Voicemail

Problem	Cause/solution
"Voicemail msg. via phone co." is shown on the handset display. How do I remove this message from the display?	• This notification is displayed when your phone service provider's voicemail service (not the unit's answering system) has recorded a message for you. Typically you can remove this notification from the display by listening to the message. To listen to the message, dial the voicemail number provided by your phone service provider (for most cases, this will be your own phone number), and follow the voice instructions. Depending on your phone service provider, you may need to remove all messages from your voice mailbox to remove the notification. You can also remove this notification by pressing and holding # until the unit beeps.

Liquid damage

Problem	Cause/solution
Liquid or other form of moisture has entered the handset/base unit.	• Disconnect the AC adaptor and telephone line cord from the base unit. Remove the batteries from the handset and leave to dry for at least 3 days. After the handset/base unit are completely dry, reconnect the AC adaptor and telephone line cord. Insert the batteries and charge fully before use. If the unit does not work properly, contact an authorized service center.

Caution:

- To avoid permanent damage, do not use a microwave oven to speed up the drying process.

FCC and other information

This equipment complies with Part 68 of the FCC rules and the requirements adopted by the ACTA. On the bottom of this equipment is a label that contains, among other information, a product identifier in the format US:ACJ--------.
If requested, this number must be provided to the telephone company.

- Registration No.....(found on the bottom of the unit)
- Ringer Equivalence No. (REN).....0.1B

A plug and jack used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ACTA. A compliant telephone cord and modular plug is provided with the product. It is designed to be connected to a compatible modular jack that is also compliant.

The REN is used to determine the number of devices that may be connected to a telephone line. Excessive RENs on a telephone line may result in the devices not ringing in response to an incoming call. In most but not all areas, the sum of RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to a line, as determined by the total RENs, contact the local telephone company. For products approved after July 23, 2001, the REN for the product is part of the product identifier that has the format US:AAAEQ##TXXXX. The digits represented by ## are the REN without a decimal point (e.g., 03 is a REN of 0.3).

If this equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the operation of the equipment. If this happens the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.

If trouble is experienced with this equipment, for repair or warranty information, please contact a Factory Service Center or other Authorized Servicer. If the equipment is causing harm to the telephone network, the telephone company may request that you disconnect the equipment until the problem is resolved.

Connection to party line service is subject to state tariffs. Contact the state public utility commission, public service commission or corporation commission for information.

If your home has specially wired alarm equipment connected to the telephone line, ensure the installation of this equipment does not disable your alarm equipment. If you have questions about what will disable alarm equipment, consult your telephone company or a qualified installer.

This equipment is hearing aid compatible as defined by the FCC in 47 CFR Section 68.316.

When you hold the phone to your ear, noise might be heard in your Hearing Aid. Some Hearing Aids are not adequately shielded from external RF (radio frequency) energy. If noise occurs, use an optional headset accessory or the speakerphone option (if applicable) when using this phone. Consult with your audiologist or Hearing Aid

manufacturer about the availability of Hearing Aids which provide adequate shielding to RF energy commonly emitted by digital devices.

WHEN PROGRAMMING EMERGENCY NUMBERS AND(OR) MAKING TEST CALLS TO EMERGENCY NUMBERS:
1) Remain on the line and briefly explain to the dispatcher the reason for the call.
2) Perform such activities in the off-peak hours, such as early morning or late evenings.

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.
Privacy of communications may not be ensured when using this phone.

CAUTION:
Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this device.

NOTE:
This equipment has been tested and found to comply with the limits for 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 on a circuit different from that to which the receiver is connected.
– Consult the dealer or an experienced radio/TV technician for help.

Some cordless telephones operate at frequencies that may cause interference to nearby TVs and VCRs. To minimize or prevent such interference, the base of the cordless telephone should not be placed near or on top of a TV or VCR. If interference is experienced, move the cordless telephone further away from the TV or VCR. This will often reduce or eliminate interference.

FCC RF Exposure Warning:
- This product complies with FCC radiation exposure limits set forth for an uncontrolled environment.
- To comply with FCC RF exposure requirements, the base unit must be installed and operated 20 cm (8 inches) or more between the product and all person's body.
- This product may not be collocated or operated in conjunction with any other antenna or transmitter.
- For body-worn operation, the handset must be used only with a non-metallic accessory. Use of other accessories may not ensure compliance with FCC RF exposure requirements.

Notice:
- FCC ID can be found inside the battery compartment or on the bottom of the units.

Useful Information

Compliance with TIA-1083 standard:
Telephone handsets identified with this logo have reduced noise and interference when used with T-Coil equipped hearing aids and cochlear implants.

Guía Rápida Española

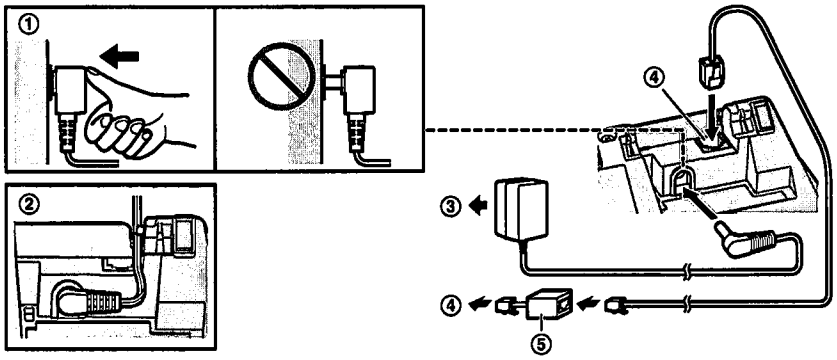
Conexiones

Unidad base

① Conecte el adaptador de corriente alterna a la unidad presionándolo firmemente.
② Enganche el cable para fijarlo.
③ Conecte el adaptador de corriente alterna a la toma de corriente.
④ Conecte el cable de la línea telefónica a la unidad, y después a la toma telefónica de una sola línea (RJ11C) hasta que escuche un clic.
⑤ Se requiere un filtro DSL/ADSL (no incluido) si tiene este tipo de servicio.

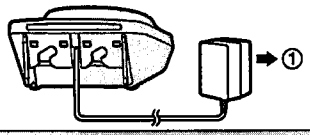
Nota:

- Use solo el adaptador de corriente alterna Panasonic PNLV226 que se suministra.



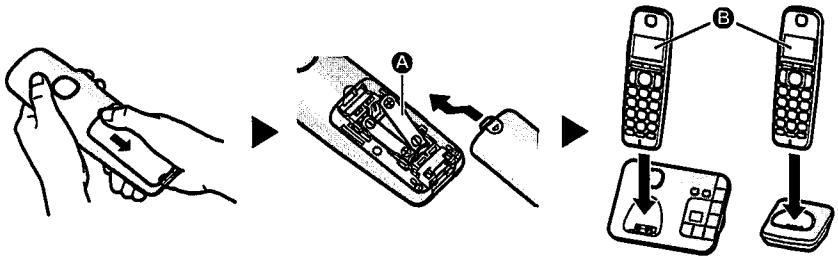
Cargador

① Conecte el adaptador de corriente alterna a la toma de corriente.



Instalación y carga de la batería

Cargue aproximadamente durante 7 horas.



Nota:

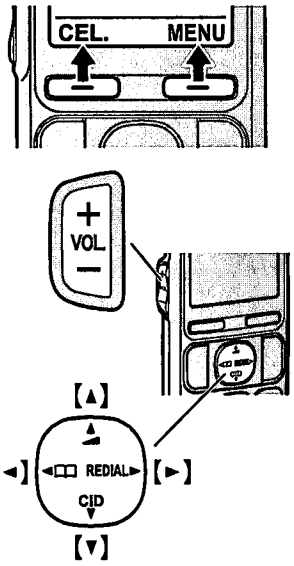
- UTILICE SOLO baterías recargables de Ni-MH tamaño AAA (R03) (Ⓐ).
- NO utilice baterías alcalinas, de manganeso ni de Ni-Cd.
- Confirme que las polaridades estén correctas (⊕, ⊖).
- Cambie el idioma de la pantalla.
- Confirme que aparezca "Cargando" (Ⓑ).

Sugerencias de operación

Teclas de función
Al oprimir una tecla de función, puede seleccionar la función que aparece directamente encima de ella en la pantalla. Preste atención a la pantalla para ver qué funciones están asignadas a las teclas de función durante la operación.

Tecla de volumen
Oprima [+] o [−] repetidamente:
- ajustar el volumen del timbre.
- ajustar el volumen del receptor o del altavoz mientras habla.

Tecla navegadora
- [▲], [▼], [◄] o [►]: Navegue por diversas listas y elementos.
- ◢ (Volumen: [▲] o [▼]): Ajuste el volumen del receptor o el altavoz mientras habla.
- [◄] 🕮: Vea la entrada del directorio telefónico.
- [►] REDIAL (Remarcación): Vea la lista de remarcación.
- [▼] CID (Identificador de llamadas): Vea la lista de personas que llamaron.



Cambio de idiomas (Auricular) (predeterminado: "English")

Cuando instale las baterías por primera vez, es posible que aparezca "**Set date/time Press SELECT**". Oprima **[OFF]** para salir.

Idioma de la pantalla
[MENU]#110 → [▲▼]: "Español" → [GUARDAR] → [OFF]

Idioma de anuncio de voz
[MENU]#112 → [▲▼]: "Español" → [GUARDAR] → [OFF]

Fecha y hora (Auricular)

1 **[MENU]**#101
2 Introduzca el día, mes y año actuales. → **[OK]**
3 Introduzca la hora y minuto actuales (formato de reloj de 24 horas).
4 **[GUARDAR]** → **[OFF]**

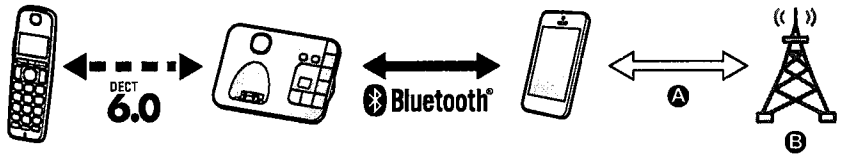
Cómo grabar el mensaje de saludo del contestador de llamadas para la línea terrestre (Auricular)

Puede grabar su propio mensaje de saludo en lugar de usar uno pregrabado.
1 **[MENU]**#302 → **[▲▼]**: "sí" → **[SELEC.]**
2 Después de que se emita un pitido, sostenga el auricular a una distancia aproximada de 20 cm (8 pulgadas) y hable con claridad en el micrófono (máx. de 2 minutos).
3 Oprima **[PARAR]** para dejar de grabar. → **[OFF]**

Enlace a celular

Puede conectar su unidad base y teléfono celular usando la tecnología inalámbrica Bluetooth®, para poder hacer o responder llamadas a su teléfono celular usando su sistema telefónico. Para obtener más detalles, visite nuestro sitio web: http://shop.panasonic.com/bluetooth-phone

- Coloque su teléfono celular cerca de la unidad base. Si su teléfono celular está demasiado cerca de la unidad base durante la llamada celular, es posible que escuche ruido. Para un mejor funcionamiento, le recomendamos que coloque su teléfono celular de 0.6 m a 3 m (2 pies a 10 pies) de la unidad base.



Ⓐ Línea celular
Ⓑ Proveedores de servicios de telefonía celular

Marcas registradas

- La marca denominativa y los logotipos de Bluetooth® son marcas registradas de Bluetooth SIG, Inc., y cualquier uso de dichas marcas por parte de Panasonic Corporation se hace bajo licencia.
- Todas las demás marcas comerciales que se identifican en el presente pertenecen a sus respectivos propietarios.

Enlace a celular

Cómo emparejar un teléfono celular con Bluetooth

1 Unidad base:
Oprima y mantenga oprimido **[CELL 1]** o **[CELL 2]** durante aproximadamente 5 segundos.
- Después de que el indicador de CELL correspondiente comienza a parpadear en la unidad base, el resto del procedimiento debe completarse en menos de 5 minutos.

2 Su teléfono celular:
Mientras el indicador de CELL correspondiente esté parpadeando, siga las instrucciones de su teléfono celular para entrar al modo de emparejamiento.
- Dependiendo de su teléfono celular, es posible que le pida que introduzca el NIP de Bluetooth (predeterminado: "0000").
- Si el teléfono celular le solicita que confirme la clave, oprima **[OK]** o acepte la solicitud de enlace.

3 Unidad base:
Espere a que se emita un pitido largo.
- Es posible que tarde más de 10 segundos en completar el emparejamiento.
- Cuando el indicador de CELL correspondiente se ilumina, esto significa que el teléfono celular está conectado a la unidad base. Ya está listo para hacer llamadas regulares de celular.

Nota:
- Asegúrese de que su teléfono celular está configurado para conectarse a este producto automáticamente. Consulte las instrucciones de operación de su teléfono celular.

Unidad base: Indicadores de CELL

Estado	Significado
Encendido	Un teléfono celular está conectado. Listo para hacer o recibir llamadas celulares.
Parpadeando	– La línea del celular se está usando. – Las entradas del directorio telefónico se están copiando desde un teléfono celular. – La unidad base está buscando el teléfono celular emparejado. – La unidad base está emparejando un teléfono celular. – Una llamada de celular se pone en espera.
Parpadea rápidamente	Se está recibiendo una llamada de celular.
Luz apagada	– No hay un teléfono celular emparejado con la unidad base. – No hay un teléfono celular conectado a la unidad base.

Auricular: enlace a elementos de la pantalla del celular

1/2	Se está usando una línea de celular.*1 ● Cuando parpadea: la llamada celular se pone en espera. ● Cuando parpadea rápidamente: se está recibiendo una llamada celular. *1 Las líneas correspondientes se indican enseguida del elemento (1, 2: línea celular).
1/2	Un teléfono celular está conectado.*1 Listo para hacer o recibir llamadas celulares. ● Cuando está apagado: no hay un teléfono celular conectado a la unidad base. *1 Las líneas correspondientes se indican enseguida del elemento (1, 2: línea celular).
C1 C2	– Se está haciendo una llamada de celular en esa línea. – La línea celular está seleccionada para la configuración.

Enlace a celular

Cómo conectar o desconectar el teléfono celular (Auricular)

Conexión automática a los dispositivos con Bluetooth (teléfonos celulares)
La unidad se conecta a los dispositivos Bluetooth a intervalos regulares si se pierde la conexión. Consulte las instrucciones de operación para cambiar el intervalo (predeterminado: "1 min").

- Cuando se sincronizan 3 dispositivos con capacidad Bluetooth (2 teléfonos celulares y 1 auricular) a la unidad base, sólo 2 dispositivos Bluetooth pueden usarse con la unidad a la vez, y la unidad base pierde su conexión con otros dispositivos Bluetooth. Para restablecer la conexión a los dispositivos Bluetooth automáticamente, deje encendida la conexión automática.

Cómo conectar o desconectar manualmente el teléfono celular
Si no va a utilizar el vínculo del teléfono celular emparejado a la función del celular temporalmente (por ejemplo, si no quiere que la unidad timbre cuando su línea celular reciba una llamada), puede desconectar su teléfono celular de la unidad base. Si desea usarlo de nuevo, reconecte el teléfono celular a la unidad base.

- Después de desconectar un teléfono celular emparejado de la unidad base manualmente, se conectará automáticamente a la misma en 30 minutos. Si ya no usa la función de enlace al celular, deshaga el emparejamiento del celular.
- Los teléfonos celulares desconectados no se desemparejan de la unidad base, así que no es necesario emparejarlos de nuevo con ella.

1 **Para conectarlo o desconectarlo:**
Para CELL 1: **[MENU]**#62551
Para CELL 2: **[MENU]**#62552
- Se emite un pitido largo.

2 **[OFF]**

Modo exclusivo para la línea celular (si no utiliza la línea terrestre) (Auricular)

Si no utiliza la línea terrestre, recomendamos configurar la unidad en el modo exclusivo para la línea celular. La configuración predeterminada es "Apagado".

- Si enciende el "Modo Lín. Cel.", desconecte el cable de la línea telefónica de la unidad base. De lo contrario, no es posible activar el "Modo Lín. Cel.".

1 **[MENU]**#157

2 **Para encenderlo:**
[▲▼]: "Encendido" → **[SELEC.]** → **[▲▼]**: "Sí" → **[SELEC.]**
Para apagarlo:
[▲▼]: "Apagado" → **[SELEC.]**

Operaciones básicas

Cómo hacer y contestar llamadas (Auricular)	
Para hacer llamadas de celular	**1** Marque el número telefónico. → **[CEL.]** • Cuando el modo exclusivo para la línea celular está configurado, también puede oprimir [↷]/[🔊] en lugar de **[CEL.]**. • Cuando solo hay 1 teléfono celular emparejado, la unidad comienza a marcar. **2** Cuando hay 2 teléfonos celulares emparejados: [▲▼]: Seleccione el teléfono celular deseado. → **[SELEC.]**
Para hacer llamadas por la línea terrestre	Marque el número telefónico. → [↷]/[🔊]
Para contestar llamadas	[↷]/[🔊]
Para colgar	**[OFF]**
Para ajustar el volumen del receptor o del altavoz	Oprima **[+]** o **[−]** repetidamente mientras habla.
Cómo hacer una llamada usando la lista de remarcación	**1** [▶] REDIAL → [▲▼]: Seleccione la entrada deseada. **2** **Para hacer una llamada celular:** Cuando solo 1 teléfono celular está emparejado: **[CEL.]** o Cuando 2 teléfonos celulares están emparejados: **[CEL.]** → [▲▼]: Seleccione el teléfono celular deseado. → **[SELEC.]** **Para hacer una llamada terrestre:** [↷]
Para ajustar el volumen del timbre (línea de celular/línea terrestre)	Oprima **[+]** o **[−]** repetidamente para seleccionar el volumen deseado mientras timbra.
Cómo hacer y contestar llamadas (Unidad base: serie KX-TGE470)	
Para hacer llamadas de celular	**[CELL 1]**/**[CELL 2]** → Marque el número telefónico. • Cuando el modo exclusivo para la línea celular está configurado, también puede oprimir [🔊] sin oprimir **[CELL 1]**/**[CELL 2]**.
Para hacer llamadas por la línea terrestre	[🔊] → Marque el número telefónico.
Para contestar llamadas	[🔊]
Para colgar	[🔊]
Para ajustar el volumen del altavoz	Oprima **[+]** o **[−]** repetidamente mientras habla.
Remarcación del último número marcado	**1** **Para hacer una llamada celular: [CELL 1]/[CELL 2]** **Para hacer una llamada terrestre: [🔊]** **2** **[REDIAL]**
Para ajustar el volumen del timbre (línea de celular/línea terrestre)	Oprima **[+]** o **[−]** repetidamente para seleccionar el volumen deseado mientras timbra.

Operaciones básicas

Directorio telefónico (Auricular)	
Para añadir entradas	**1** [◄] 🕮 → [MENU] **2** [▲▼]: "Agregar Ent. Nueva" → [SELEC.] **3** Introduzca el nombre de la persona (máx. 16 caracteres). → [OK] **4** Introduzca el número telefónico de la persona (máx. 24 dígitos). → [OK] **5** [▲▼]: Seleccione el grupo deseado. → [SELEC.] 2 veces → [OFF] • En el paso 3, puede cambiar el idioma de introducción de caracteres. # → [▲▼]: Seleccione el idioma deseado. → [OK]
Para hacer llamadas	**1** [◄] 🕮 → [▲▼]: Seleccione la entrada deseada. **2** **Para hacer una llamada celular:** Cuando solo 1 teléfono celular está emparejado: [CEL.] o Cuando 2 teléfonos celulares están emparejados: [CEL.] → [▲▼]: Seleccione el teléfono celular deseado. → [SELEC.] **Para hacer una llamada terrestre:** [↷]
Contestador de llamadas de la línea terrestre (Unidad base)	
Contestador encendido/ apagado	Oprima [ANSWER ON/OFF] para encender y apagar el contestador de llamadas.
Para escuchar mensajes	[▶■] (PLAY)
Contestador de llamadas de la línea terrestre (Auricular)	
Para escuchar mensajes	**Para escuchar mensajes nuevos:** [REPROD.] o [MENU]#323 **Para escuchar todos los mensajes:** [MENU]#324

Cómo usar dispositivos Bluetooth

Copiado de entradas del directorio telefónico desde un teléfono celular con Bluetooth (transferencia del directorio telefónico)

Puede copiar entradas del directorio telefónico desde los teléfonos celulares emparejados o desde otros teléfonos celulares (no emparejados) al directorio telefónico de la unidad.

1 **Auricular: [MENU]#618**

2 **Auricular:**

Para copiar desde teléfonos celulares emparejados:

[▲▼]: Seleccione el teléfono celular deseado. → **[SELEC.]**

- Los elementos copiados se almacenan en el grupo (**"Cel. 1"** o **"Cel. 2"**) en el que está emparejado el teléfono celular.

Para copiar desde otros teléfonos celulares (no emparejados):

[▲▼]: **"Otro celular"** → **[SELEC.]** → **[▲▼]**: Seleccione el grupo al que desea copiar. → **[SELEC.]**

3 **Auricular:**

Cuando aparezca "Transf. datos del directorio del celular" : Vaya al paso 4.

Cuando aparezca el menú "Selec. modo" :

[▲▼]: Seleccione **"Auto"** o **"Manual"**. → **[SELEC.]**

"Auto": Descargue todas las entradas del teléfono celular automáticamente. Vaya al paso 5.

"Manual": Copie las entradas que seleccionó.

- El menú **"Selec. modo"** aparece solo cuando el teléfono celular soporta PBAP (Perfil de Acceso a Directorio Telefónico) para la conexión Bluetooth.

4 **Teléfono celular:**

Siga las instrucciones de su teléfono celular para copiar las entradas del directorio telefónico.

- Para otros teléfonos celulares (no emparejados), necesita buscar y seleccionar la unidad base. Quizás requiera el NIP de Bluetooth (predeterminado: **"0000"**).
- Si el teléfono celular le solicita que confirme la clave, oprima **[OK]** o acepte la solicitud de enlace.
- Las entradas que se están copiando aparecen en el auricular.

5 **Auricular:**

Espere a que aparezca **"Completo"**. → **[OFF]**

Cómo usar dispositivos Bluetooth

Cómo usar un audífono Bluetooth (opcional) para llamadas por la línea terrestre

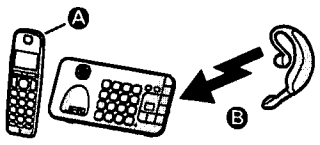
Al emparejar un audífono Bluetooth con la unidad base, podrá tener conversaciones inalámbricas a manos libres para llamadas terrestres.

- Solo se pueden usar 2 dispositivos Bluetooth con la unidad al mismo tiempo (por ejemplo, 2 líneas celulares o el audífono y 1 línea celular).

Cómo emparejar un audífono con la unidad base

1 **Su audífono:**
Configure su audífono en modo de emparejamiento.
- Consulte las instrucciones de operación de su audífono.

2 **Auricular:**
[MENU]#621



Ⓐ Empareje usando el auricular.
Ⓑ Emparejamiento

3 **Si el NIP de su audífono es "0000",** vaya al paso 4.
Si el NIP de su audífono es diferente a "0000", oprima **[BORRAR]** y después introduzca el NIP de su audífono.
- Por lo general, el NIP predeterminado es **"0000"**. Consulte las instrucciones de operación del audífono.

4 Oprima **[OK]**, y después espere a que se emita un pitido largo. → **[OFF]**
- Cuando el indicador HEADSET de la unidad base se ilumina, usted está listo para usar el audífono.

Cómo operar un audífono inalámbrico con Bluetooth usando una línea terrestre

Consulte las instrucciones de operación de su audífono para ver cómo funciona.

■ **Cómo realizar llamadas de la línea terrestre con su audífono (Unidad base: serie KX-TGE470)**

1 Oprima el botón del audífono que le permite ver las instrucciones operativas del audífono.
2 Después de escuchar el tono de llamada en el audífono, marque el número de teléfono con la unidad base.
3 Cuando termine de hablar, oprima el botón del audífono (consulte las instrucciones de operación de su audífono).

■ **Cómo contestar llamadas de la línea terrestre con su audífono**

Para contestar una llamada de línea terrestre, oprima el botón del audífono (consulte las instrucciones de operación de su audífono).
Cuando termine de hablar, oprima el botón del audífono (consulte las instrucciones de operación de su audífono).
- Si no puede colgar la llamada usando su audífono:
  - oprima **[▶■]** (STOP) en la unidad base. (Serie KX-TGE460)
  - oprima **[🔇]** en la unidad base 2 veces. (Serie KX-TGE470)

■ **Cómo cambiar entre la unidad base y su audífono**

Puede cambiar entre la unidad base y su audífono:
- durante una llamada por una línea terrestre con el altavoz de la unidad base. (Serie KX-TGE470)
- durante una llamada de intercomunicador entre la unidad base y el auricular. (Serie KX-TGE470)
- mientras escucha los mensajes grabados en el contestador de llamadas de la unidad base.

Para cambiar a su audífono:
Encienda el audífono. Para ello, consulte las instrucciones de operación de su audífono.
Para cambiar a la unidad base (serie KX-TGE470):
Oprima **[🔇]** en la unidad base.

Preguntas frecuentes

Pregunta	Causa y solución
¿Por qué aparece ⧩?	• El auricular está demasiado lejos de la unidad base. Acérquelo. • El adaptador para corriente de la unidad base no está conectado correctamente. Conecte de nuevo el adaptador para corriente a la unidad base. • El auricular no está registrado en la unidad base. Regístrelo. **1** **Auricular:** **[MENU]**#130 **2** **Unidad base:** Oprima y mantenga oprimido **[LOCATOR]** o **[HANDSET LOCATOR]** durante aproximadamente 5 segundos. **3** **Auricular:** Oprima **[OK]**, y después espere hasta que suene un pitido largo.
¿Por qué no es posible emparejar un teléfono celular con la unidad base?	• Dependiendo de la compatibilidad del teléfono celular, es posible que no pueda emparejarlo con la unidad base. Para obtener más información, visite: http://shop.panasonic.com/bluetooth-phone • Confirme que la función de Bluetooth de su teléfono celular esté encendida. Es posible que necesite encender esta función dependiendo de su teléfono celular.
¿Por qué no se escucha el tono de marcación? (línea celular)	• Asegúrese de que el indicador de CELL se ilumine y de que el teléfono celular esté conectado a la unidad base. • El teléfono celular no se ha emparejado con la unidad base. Empareje el teléfono celular.
¿Cómo se incrementa el nivel de volumen del auricular?	• Oprima la tecla de volumen **[+]** repetidamente mientras habla.
¿Por qué hay ruido o se corta la conversación?	• Trate de reubicar la unidad base de forma que se minimice la distancia al auricular. • Si ocurre el mismo problema aunque el auricular se encuentre enseguida de la unidad base, visite: http://shop.panasonic.com/support
¿Es posible añadir otro auricular accesorio a mi unidad base?	• Sí, puede añadir hasta 6 auriculares (incluyendo los que se venden con su unidad base) a una sola unidad base. • Para adquirir auriculares accesorios adicionales (KX-TGEA40), visite: http://shop.panasonic.com/support Los usuarios TTY (usuarios con impedimentos auditivos o del habla) pueden llamar al 1-877-833-8855.
¿Es posible mantener cargando las baterías todo el tiempo?	• Puede dejar el auricular en la unidad base o el cargador en cualquier momento. Esto no daña las baterías.
¿Cómo se contestan las llamadas en espera (2a llamada)?	• Oprima **[CALL WAIT]** cuando escuche el tono de llamada en espera.

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For the hearing or speech impaired TTY: 1- 877-833-8855

As of June 2015

Limited Warranty (ONLY FOR U.S.A.)

Panasonic Products Limited Warranty

Limited Warranty Coverage (For USA Only)

If your product does not work properly because of a defect in materials or workmanship, Panasonic Corporation of North America (referred to as "the warrantor") will, for the length of the period indicated on the chart below, which starts with the date of original purchase ("warranty period"), at its option either (a) repair your product with new or refurbished parts, (b) replace it with a new or a refurbished equivalent value product, or (c) refund your purchase price. The decision to repair, replace or refund will be made by the warrantor.

Product or Part Name	Parts	Labor
Telephone	One (1) Year	One (1) Year

During the "Labor" warranty period there will be no charge for labor. During the "Parts" warranty period, there will be no charge for parts. This Limited Warranty excludes both parts and labor for non-rechargeable batteries, antennas, and cosmetic parts (cabinet). This warranty only applies to products purchased and serviced in the United States. This warranty is extended only to the original purchaser of a new product which was not sold "as is".

Mail-In Service--Online Repair Request

Online Repair Request

To submit a new repair request and for quick repair status visit our Web Site at http://shop.panasonic.com/support

When shipping the unit, carefully pack, include all supplied accessories listed in the Owner's Manual, and send it prepaid, adequately insured and packed well in a carton box. When shipping Lithium Ion batteries please visit our Web Site at http://shop.panasonic.com/support as Panasonic is committed to providing the most up to date information. Include a letter detailing the complaint, a return address and provide a daytime phone number where you can be reached. A valid registered receipt is required under the Limited Warranty.

IF REPAIR IS NEEDED DURING THE WARRANTY PERIOD, THE PURCHASER WILL BE REQUIRED TO FURNISH A SALES RECEIPT/PROOF OF PURCHASE INDICATING DATE OF PURCHASE, AMOUNT PAID AND PLACE OF PURCHASE. CUSTOMER WILL BE CHARGED FOR THE REPAIR OF ANY UNIT RECEIVED WITHOUT SUCH PROOF OF PURCHASE.

Limited Warranty Limits and Exclusions

This warranty ONLY COVERS failures due to defects in materials or workmanship, and DOES NOT COVER normal wear and tear or cosmetic damage. The warranty ALSO DOES NOT COVER damages which occurred in shipment, or failures which are caused by products not supplied by the warrantor, or failures which result from accidents, misuse, abuse, neglect, mishandling, misapplication, alteration, faulty installation, set-up adjustments, misadjustment of consumer controls, improper maintenance, power line surge, lightning damage, modification, introduction of sand, humidity or liquids, commercial use such as hotel, office, restaurant, or other business or rental use of the product, or service by anyone other than a Factory Service Center or other Authorized Servicer, or damage that is attributable to acts of God.

THERE ARE NO EXPRESS WARRANTIES EXCEPT AS LISTED UNDER "LIMITED WARRANTY COVERAGE".

THE WARRANTOR IS NOT LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF THIS PRODUCT, OR ARISING OUT OF ANY BREACH OF THIS WARRANTY.

(As examples, this excludes damages for lost time, travel to and from the servicer, loss of or damage to media or images, data or other memory or recorded content. The items listed are not exclusive, but for illustration only.)

ALL EXPRESS AND IMPLIED WARRANTIES, INCLUDING THE WARRANTY OF MERCHANTABILITY, ARE LIMITED TO THE PERIOD OF THE LIMITED WARRANTY.

Some states do not allow the exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the exclusions may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state. If a problem with this product develops during or after the warranty period, you may contact your dealer or Service Center. If the problem is not handled to your satisfaction, then write to:

Consumer Affairs Department
Panasonic Corporation of North America
661 Independence Pkwy
Chesapeake, VA 23320

PARTS AND SERVICE, WHICH ARE NOT COVERED BY THIS LIMITED WARRANTY, ARE YOUR RESPONSIBILITY.

As of June 2015

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IMPORTANT!

If your product is not working properly. . .

① **Reconnect AC adaptor to the base unit.**
② **Check if telephone line cord is connected.**
③ **Use rechargeable Ni-MH batteries.**
(Alkaline/Manganese/Ni-Cd batteries CANNOT be used.)
④ Read **troubleshooting** page in the **Operating Instructions**.

Visit our Web site: http://shop.panasonic.com/support
• **FAQ and troubleshooting hints are available.**

For your future reference
We recommend keeping a record of the following information to assist with any repair under warranty.

Serial No.	Date of purchase
(found on the bottom of the base unit)	
Name and address of dealer	

Attach your purchase receipt here.

Panasonic Corporation of North America
Two Riverfront Plaza, Newark, NJ 07102-5490

Printed in Malaysia

PNQX7788ZA

PNQX7788ZA TT1115KT0