uniden ®

User Operation Specification
Cordless Phone for PBX
DTZ-8R-1

Ver   0.02

APRVD	CHECKED(E)	CHECKED(S)	CHECKED(M)	ISSUED

Table of Contents

Revision History

Ver	Issue Date	Originator	Description
0.01	April 30, 2014	Shitara	1st Edition for NEC. This document is referred EXP10000 operation specification Rev. 1.1.
0.02	June 06, 2014	Shitara	<Change Key assignment> menu à menu/mute mute à speaker speaker à end <Add> Base key option ,Speed Dial option

1. Overview

1.1 Introduction

DTL-8R-1 is the cordless phone that is adapted for digital PBX (Private Branch Exchange). It is usually used in the office environment. When this phone is connected to the digital PBX, it must have a digital PBX Expansion board inside the Base Station.
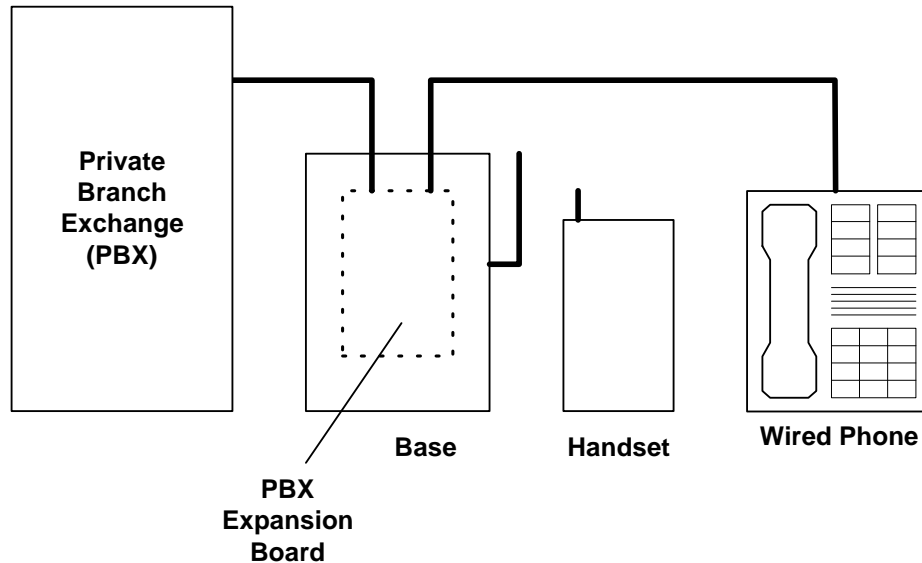
<Notes>
1) Handset and wired phone cannot be used at the same time.
2) Some digital PBX Expansion boards require the wired phone to make a call.
3) Handset and Base Station must have original ID that is written on each unit at factory.

1.2 Digital interface mode

When digital PBX Expansion board is attached to the Base Station, DTL-8R-1 works as digital mode. Each digital PBX maker will provide the digital PBX Expansion board.
In this mode, the Handset will transmit key press information, which will be sent to PBX by the Base Station via serial interface.
The Base Station receives PBX command from the digital PBX Expansion board such as LED state, LCD message, Ringer state, and Talk path condition and transmit them to the Handset.

2. Features

Feature		DTZ-8R-1
General	Frequency	1.9G (1920 - 1930MHz)
	Audio Process	Digital (ADPCM)
	Transmission	TDMA/TDD
	Number of Channels	5
	ID No.	About 130K combinations or more
	WiFi Friendly	Yes
	Number of RF Slot	12(6)
	Handset Expandability	No/Yes (Option)
	Compatibility w/ other models	No
	Multi Base	No
	Multi Repeater	Yes, up to 6
	Conference at same expansion number	No/Yes(Option)
	HS-HS Intercom/Room Monitor at same expansion number	No
	HS-HS Transfer Call at same extension number	No
	Direct Link (Walkie Talkie)	No
	Talk Time	16 hours
	Standby Time	7 days
	Remote Base & Separate Charger	Yes Wall Mountable
	RoHS	Yes
	Analog Mode	No (We will develop new analog interface board next stage)
PBX Interface	Analog PBX Expansion Board	No
Repeater	Base connection	the Base can handle 2 repeaters with each 2 simultanious calls.
	Handset connection	Each repeater can handle 2 simultanious calls.
	Daisy Chain	3
Base	Page	No
	Base Switch	Yes(Left, Right)

	LED	3
		  Power LED
		  Base Left LED
		  Base Right LED

Feature		DTL-8R-1
Handset	Key	29
	Programmable Key (API)	12
	LCD Display	2 x 24 (10&16 digit mode adjustable)
	Standby Display	Depend on Interface Board. There are no Display timeout and LED timeout on the Handset
	Line Status Display	No
	Display Language	Only English
	Icon	Talk Icon Battery Status Icon (3level) Ringer Off Icon Message Icon Hands Free Icon Mute Icon
	LCD Back Light LED	Yes (White)
	Key Back Light LED	Yes (Orange)
	New Message LED	No
	LED	Function key LED×8 (Red)
	Hands Free	Yes
	Power Off Key	No
	Keypad Lock	No
	Phonebook	No
	One Touch Dial	Yes, up to 4 (option) (Number 24digits/No Name)
	Redial	Yes (Depend on I/F Board) (Local mode, 32digits) F8 key is redial if Interface board does not have this function.
	CID	No
	Bell in AutoTalk (charge off)	Yes(Always On)
	Any Key Answer	Yes((Always On, Dial 0-9, *, #)
	Ear Volume Control	6 steps (default: 4) hearing aid compatible
	Handsfree Volume Control	6 steps (default: 4)
	Headset Volume Control	6 steps (default: 4)
	Ringer Volume	High/Low/Off(Vibrate) (default:High) changed in Standby & Bell Mode
	Ringer Tone	6Kinds (default:Tone A) Tone A, Tone B, Tone C, Tone D, Tone E, Tone F
	Vibrating Ringer	Yes
	Out of Range Detection	Yes
	Out of Range Alarm Tone	Yes (On/Off) (default:On)
	Mute	Yes
	Auto Standby (Charge On)	Yes
	Channel Change	Auto
	Ringer Mute	Yes changed in Standby & Bell Mode
	On Hook Menu	Change Ringer Type End of Range Alarm Register(Option) Deregister(Option) Base Registration PIN (Option) One Touch Dial Settings (Option) Exit
	Off Hook Menu	-
	Headset Jack	Yes

Display Elements

<Notes>
1) This image differs from the actual design.

2.1 Handset

2.2 Base Station

2.3 Charge unit

2.4 Key & SW

2.4.1 Handset
   talk key
   speaker key
   menu/mute key
   end key
   up key
   down key
   right key
   left key
   select key(center of navigation keys)
   dial (*0~9*、*Ú*、*#*) key
   Softkey (*1~4*)key

\<Notes>
1) If redial option is enable, *Softkey4* key is used for *redial* key in Talk state.
2) If base key option enable, *Softkey1* key is used for *Base Left* key in Function key state.
3) If base key option enable, *Softkey2* key is used for *Base Right* key in Function key state

2.4.2 Base
   Left key
   Right key

2.4.3 Charger
   Charger doesn't have any key.

2.5 Tone Type and Volume

2.5.1 Frequency definition

A	3142Hz	G	2000Hz	M	1046Hz	S	494Hz
B	2637Hz	H	1900Hz	N	1000Hz	T	490Hz
C	2400Hz	I	1800Hz	O	831Hz	U	480Hz
D	2346Hz	J	1600Hz	P	800Hz	V	430Hz
E	2200Hz	K	1566Hz	Q	700Hz	W	400Hz
F	2095Hz	L	1100Hz	R	500Hz		

2.5.2 Handset tone types

| Bell Tone A | K (48ms) | D (48ms) | Repeated Infinitely |

| Bell Tone B | O (24ms) | M (24ms) | (24ms) | Repeated Infinitely |

| Bell Tone C | F (48ms) | B (48ms) | A (48ms) | Repeated Infinitely |

| Bell Tone D | N (36ms) | J (36ms) | G (36ms) | Repeated Infinitely |

| Bell Tone E | Q (54ms) | J (54ms) | P (54ms) | Repeated Infinitely |

| Bell Tone F | L (36ms) | J (36ms) | Repeated Infinitely |

| Key Touch Tone | G (50ms) |

| Beep Tone | S (150ms) |

| Range Alarm Tone | N (50ms) | (50ms) | N (50ms) | (50ms) | N (50ms) |

| Low Battery Alert Tone | N (100ms) |

| Error Tone | R (50ms) | T (50ms) | U (50ms) | V (50ms) | W (50ms) |

| Confirmation Tone | I (50ms) | H (50ms) | G (50ms) | E (50ms) | C (50ms) |

<Notes>
1) Bell Tone A-F depends on ring cadence from PBX Expansion board.

2.5.3 Handset volume

Volumes for each tone are shown below.

Tone Type	Level	Comment
Key Touch Tone	LOW	-
Error Tone	HIGH	-
Confirmation Tone	HIGH	-
Battery Low Alert Tone	LOW	Used to warning for battery low
Range Alarm Tone	LOW	Used to warning for out of RF link range
Beep Tone	LOW	The PBX Expansion board requires this tone
Bell Tone A-F	HIGH/MID/LOW/OFF	It depends on Ringer Volume Setting.

2.5.4 Ring cadence

When the PBX Expansion board send ring state command to the Base Station, it will be transmitted to the Handset and the Handset generates bell tone according to the cadence, which is given by PBX Expansion board.

Cadence 1
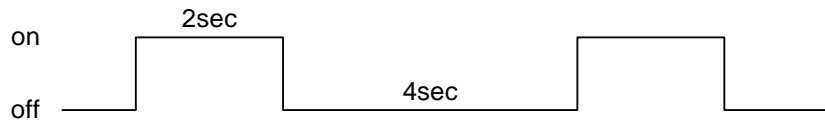
Cadence 2
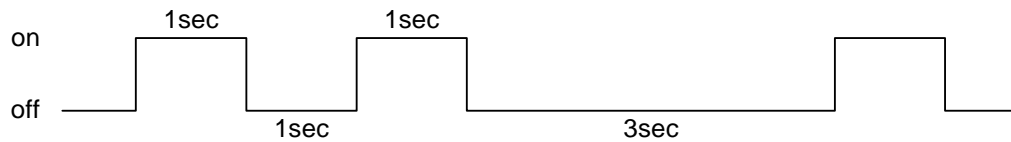
Cadence 3

Cadence 4

Cadence 5

<Notes>
1) When ringer volume is Off(Vibrate), Handset vibrates according to this timing（1.5s on/1s off） in all the cadences.

2.5.5 Base Station tone

The Base Station doesn't have any tone features

2.5.6 Charger

The charger doesn't have any tone features

2.6 Display

2.6.1 Handset LCD display

240 x 320 QVGA LCD
Character code set:ISO/IEC 8859-1(Latin-1)

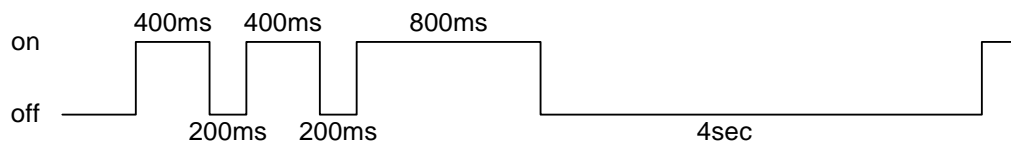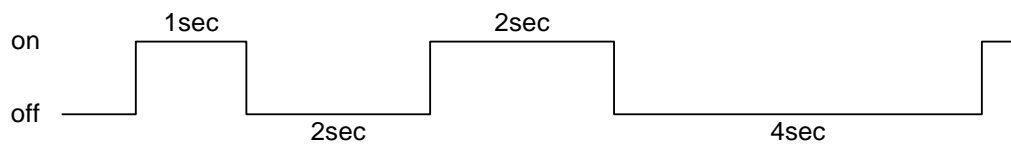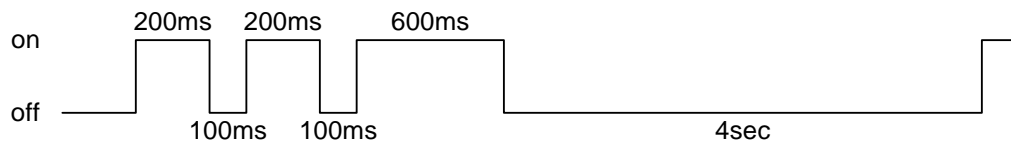| ISO/IEC 8859-1															
	x0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x																
1x																
2x	SP	!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
3x	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4x	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5x	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
6x	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
7x	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	
8x																
9x																
Ax	NBSP	¡	¢	£	¤	¥	¦	§	¨	©	ª	«	¬	SHY	®	¯
Bx	°	±	²	³	´	µ	¶	·	¸	¹	º	»	¼	½	¾	¿
Cx	À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï
Dx	Ð	Ñ	Ò	Ó	Ô	Õ	Ö	×	Ø	Ù	Ú	Û	Ü	Ý	Þ	ß
Ex	à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï
Fx	ð	ñ	ò	ó	ô	õ	ö	÷	ø	ù	ú	û	ü	ý	þ	ÿ

2.6.1.1 Message from PBX Expansion board

When the Handset receives message from PBX Expansion board. Message is shown according to the followings.
1. LCD is selectable 24x2line(48digits), 16x2line(32digits) or 10x2line(20digits), which is, determined when ID is written at factory.
2. Message shall be shown with word wrapping (48digits, 32digits or 20digits).
3. If Handset can not show word wrapping digits on one page because of word wrapping, then message shall be divided into 2 pages
4. If message is shown on 2 pages, each page shall be automatically swap 2.5seconds periodically.

e.g. Show "a=Smith, j, 20592 to Fritzgerrald 300 f"
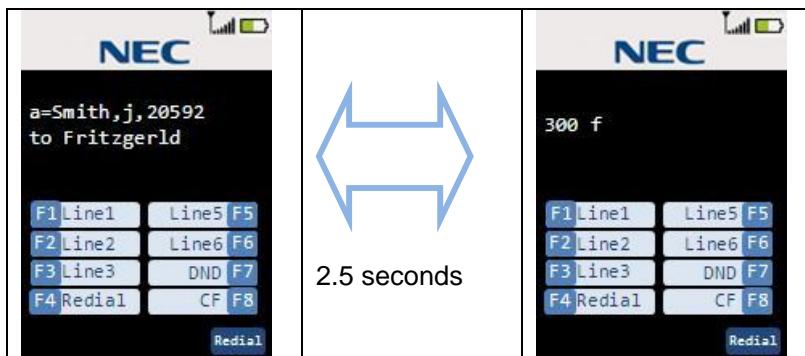
Message shall be erased when:
1. New message is arrived
2. The user presses valid key
3. PBX Expansion board send Clear LCD command.

<Notes>
1) LCD is no timeout to clear the display. It is depend on the PBX Expansion board.

2.6.2 Handset LCD Icons

<u>Talk icon</u>

l   Handset Talk mode

l   Other situation   off

<u>Battery Status Icon</u>

l   Battery Level

    (full)   (Level2) (Level1) (Low)   (Warning)

l   Charge On

<Notes>
1) When you get on the charger with battery full, battery status icon shows battery full.

<u>Antenna Level Icon</u>

l   Antenna Level

               Level   0   1   2   3   4   5   6

<u>Ringer mute icon</u>

l   Ringer mute is on
l   Ringer mute is off   off

<u>Message icon</u>

l   Message exists
l   Message doesn't exist   off

<u>Hands Free Icon</u>
l   Hands Free Talk
l   Ear Speaker Talk   off

<u>Mute Icon</u>

l   Mute On
l   Mute Off   off

<u>Vibrate Icon</u>

l   Vibrate On
l   Vibrate Off   off

2.6.3 Handset LED

1. Charge LED

   ON: On Cradle (charging)

   OFF: Off Cradle (not charging)

2. Virtual Function LEDs

All Function LEDs are controlled by PBX according to the PBX command the Base Station will set each LED to one of cadences bellow.

OFF
        Always off

ON
        Always on

Blinking 1
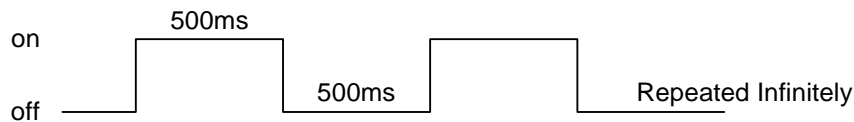
Blinking 2
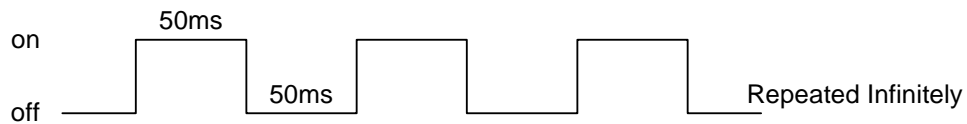
Blinking 3
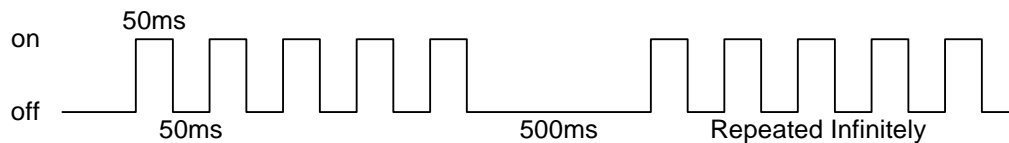
Blinking 4
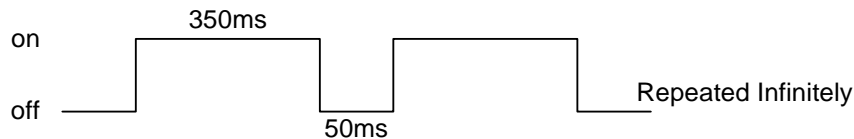
<Notes>
1) All Function LEDs will be turned off if the Handset Keeps Standby mode and doesn't receive PBX command for about 5 minutes.

2) When the Handset is on charge, all Function LEDs will keep status even if it matches above condition.
3) If the user presses any key (include no valid key) or the user pick up the Handset from cradle or the user puts the Handset on cradle, LCD/Key Back Light is turned on.
   LCD/Key Back Light will be turned off after 10 seconds When no operation.
4) LCD/Key Back Light is turned on during incoming call mode.

2.6.4 Base LED

<u>Power LED</u>

l	Base is powered on	on
l	Base is powered off	off
l	Registration mode	blink

<u>Base Left LED</u>

Controlled by the PBX Expansion board.

<u>Base Right LED</u>

Controlled by the PBX Expansion board.

2.6.5 Charger LED
There is no LED on charger.

3. Operation & Setup

In the following description, the key touch-tone will be emitted when a valid key is pressed.

3.1 Power Up

3.1.1 Handset

When the battery is put into the Handset, it will start operation.
At the very beginning, the Handset reads some setting from EEPROM and the Handset starts operation.
Also the Handset reads ID from EEPROM and will use it for RF communication between it and the Base Station.

3.1.2 Base Station

It will start operation after Install the AC adapter into rear of the Base Station.
At the very beginning, the Base Station reads ID from EEPROM and will use it for RF communication between it and the Handset.

3.2 Power Down

3.2.1 Handset

If the Handset loses battery or the battery level decreases more than a threshold that is in EEPROM, it goes to power down mode.
Even if the Handset power is reinstated immediately after it is lost during Talk mode, the Handset will not return to Talk mode.
 (DTL-8R-1 does not support talk back function.)

3.2.2 Base

Even if the Base power is reinstated immediately after it is lost during Talk mode, the Handset will go Standby mode. (Not supports talk back function.)

3.3 Communication to the PBX

3.3.1 Serial interface
Serial communication between PBX Expansion board and the Base Station is performed by UART (Universal Asynchronous Receive and Transmit) with 2400bps speed.

3.3.2 Local operation
These operations are independent from the PBX Expansion board control.
It is performed by the DTL-8R-1 itself.

1. Key press detection and emit key touch tone
2. RF link establishment
3. Show "ACQUIRING LINK"
4. Ringer volume setting
5. Switching Ear speaker and Hands free speaker
6. Ear speaker volume, Hands free volume and Headset volume change
7. Dial echo back on LCD
8. Mute
9. Redial (option)
10. Battery Status Icon change (Battery low detection)
11. Menu operation
12. Ring mute operation
13. One Touch Dial (option)
14. Headset operation
15. Contact List operation

3.3.3 PBX command from the Base Station to PBX Expansion board

Value (Hex)	Additional Data	Command Name	Explanation
81	Button ID (1byte)	Button press	Function (F1-F12) or dial (0-9, *, #) button is pressed
82	Button ID (1byte)	Button release	Function (F1-F12) or dial (0-9, *, #) button is released
83	--	Talk button press	Talk button is pressed
84	--	Training mode on	Notification for entry to training mode (Press and hold */# button then press Talk button)
85	--	Training mode off	Notification for exit from training mode (Press talk button during training mode)
86	EEPROM data (32bytes)	Contents of Base Station EEPROM	The Data from EEPROM when PBX requests to read.
87	--	Base sw1 press	Base Left key is pressed
88	--	Base sw2 press	Base Right key is pressed
89	--	Skip forward	Skip forward request in training mode (up key is pressed)
8A	--	Skip backward	Skip backward request in training mode (down key is pressed)
8B	--	Clr/Dflt entry	Clear/Default request in training mode (Dial 0 key is pressed)

Button ID
0	0x00
1	0x01
2	0x02
3	0x03
4	0x04
5	0x05
6	0x06
7	0x07
8	0x08
9	0x09
*	0x0A
#	0x0B
F1	0x0C
F2	0x0D
F3	0x0E
F4	0x0F
F5	0x10
F6	0x11
F7	0x12
F8	0x13
F9	0x14
F10	0x15
F11	0x16
F12	0x17

3.3.4 PBX command from PBX Expansion board to the Base Station

Value (Hex)	Additional Data	Command Name	Explanation
81	--	Enable DTMF	If the Base Station receives this command send DTMF signal while dial button is pressed.
82	LED ID (1byte) LED State (1byte)	Change LED state	When the Base Station receives this command change LED state according to LED ID and LED State.
83 or 84	--	Clear LCD	When the Base Station receives this command clear current message on the LCD
85 or 86	Number of characters (1byte) Char1-CharN	LCD Character	The Handset shows this LCD character N = 96
87	Ring state (1byte)	Change ring state	The Handset change ring state
88	--	Read EEPROM	Read EEPROM request from PBX Expansion board
89	Data (32bytes)	Write EEPROM	Write EEPROM request from PBX Expansion board
8A	--	Clear all state	Clear all current status in the Handset and Base Station and goes back to standby mode
8B	--	Talk path enable	Open audio path
8C	--	Talk path disable	Close audio path
8D or 8E	Tx Gain (1byte) Rx Gain (1byte)	Offset Audio Level	Control the AFE Tx/Rx Gain

LED ID
F1 LED   0x0C
F2 LED   0x0D
F3 LED   0x0E
F4 LED   0x0F
Transfer   0x10
Message   0x11
Base Right LED   0x12
Base Left LED   0x13
F9 LED   0x14
F10 LED   0x15
F11 LED   0x16
F12 LED   0x17

<Notes>
1) Transfer and Message ID can be controlled Icon on LCD, not LED. Transfer ID is for Talk Icon. Message ID for Message Icon
2) Talk Icon can be controlled during only Talk Mode

3.4 NEC PBX operation

This operation is one of examples for the DTL-8R-1 with NEC PBX. So it might be different from actual operation in detail. Operation of DTL-8R-1 in digital mode depends on each PBX specification.

3.4.1 Change wired phone and cordless phone (DTZ-8R-1 Handset)

Press Base Left key to change to cordless phone (DTZ-8R-1 Handset) and press Base Right key to change to wired phone. The LCD shows this messages.

Base Left key   Base Right Key
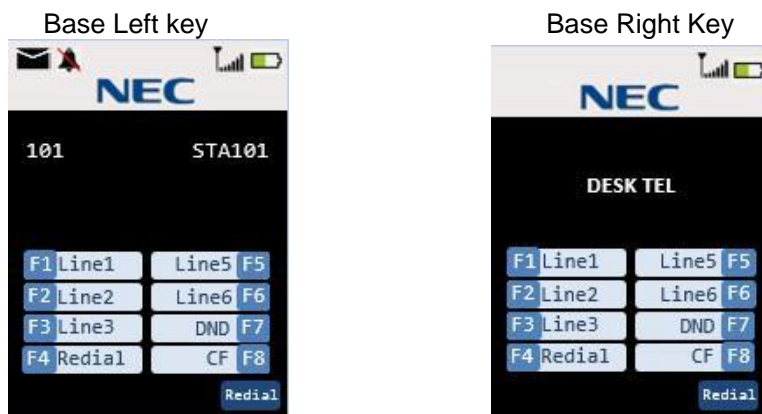
3.4.2 Making call to other Expansion

Step 1   Press the *talk* key on the Handset. The Handset will try to connect to the Base Station while "ACQUIRING LINK" message appeared.

Step 2   When connected, The Handset goes to Talk mode and Talk icon is turned on and shows current volume.
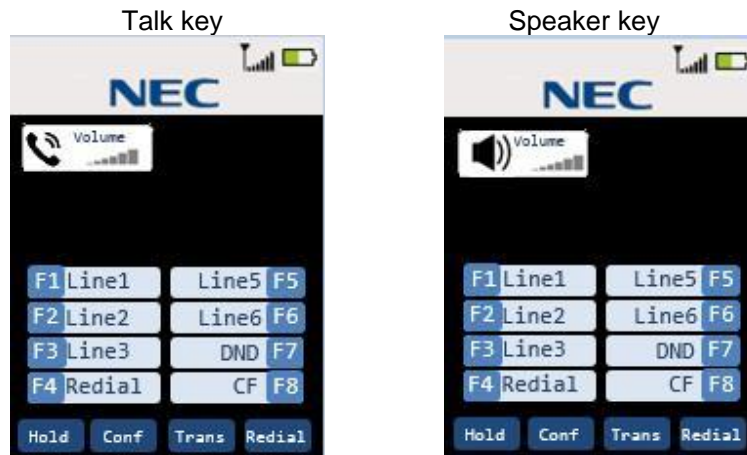
Talk key   Speaker key

Step 3   If the user enters dial 1,2, 3 then LCD shows the dial number pressed as dial echo.

Talk   Speaker
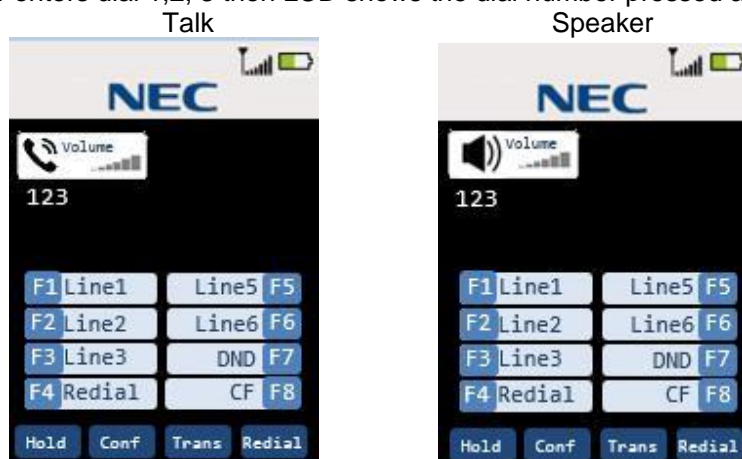
Step 4   The LCD shows this message to indicate call is taking place.

Talk   Speaker
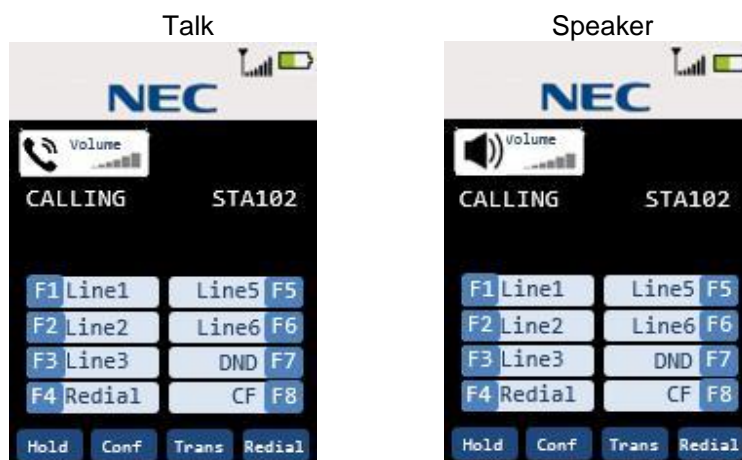
Step 5   When call partner answers call. The LCD shows this message to indicate phone is in Talk mode.

Talk   Speaker
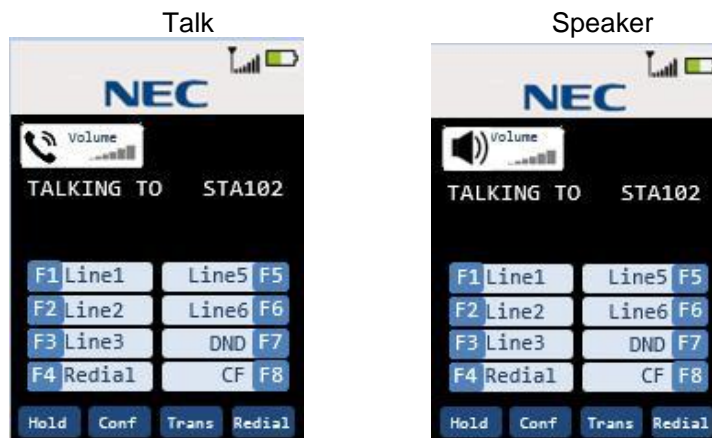
<Notes>
1) When Base Station is not connected to PBX, Handset shows message "DISCONNECT".
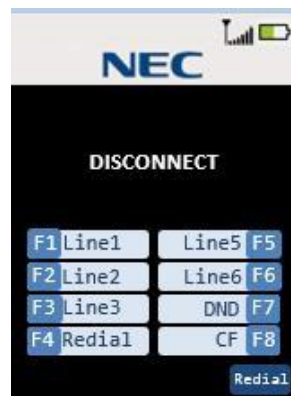
2) When Handset cannot connect to Base Station, error tone will be emitted and "Out of Range" message is shown for 5 seconds on the LCD. Then Handset goes to standby mode.

3) When wired phone is selected, Handset cannot go Talk mode.

3.4.3 Receiving a Call from other Expansion

Step 1   When incoming call is coming from the Expansion, The Handset goes to Incoming call Mode and shows this message to indicate Expansion call is coming.

Step 2   If the user presses **talk** key or **dial** key (0-9, *, #) or the user picks up the Handset from cradle, Handset tries to connect Base Station and shows "ACQUIRING LINK" message appeared. If RF connection is established quickly this message might not be shown.

Step 3   When connected, Talk icon is turned on and shows current volume.
After the Handset answers Expansion call, it shows this message to indicate phone is in Talk mode.

Talk   Speaker
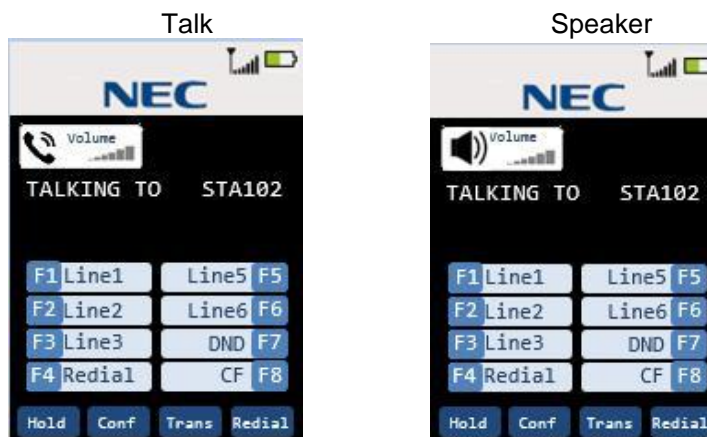
3.4.4 Making call to outside line

Step 1   Press the *select* key on the Handset and select F1. The Handset starts to establish RF connection with the Base Station. LCD is not changed.
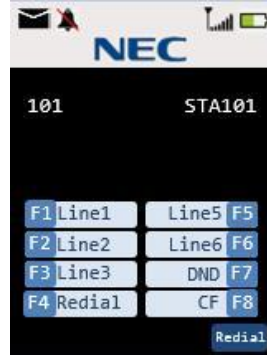
Step 2   When RF connection is established, the Handset goes to Talk Mode and Talk icon is turned on and current volume is shown on the LCD. And F1 LED is turned on.

<Notes>
1) When the outside line is not connected with PBX, Handset shows message "HANG UP" and emits busy tone.

Step 3   If the user enters dial 1, 2, 3 then LCD shows the dial number pressed as dial echo.

Talk   Speaker
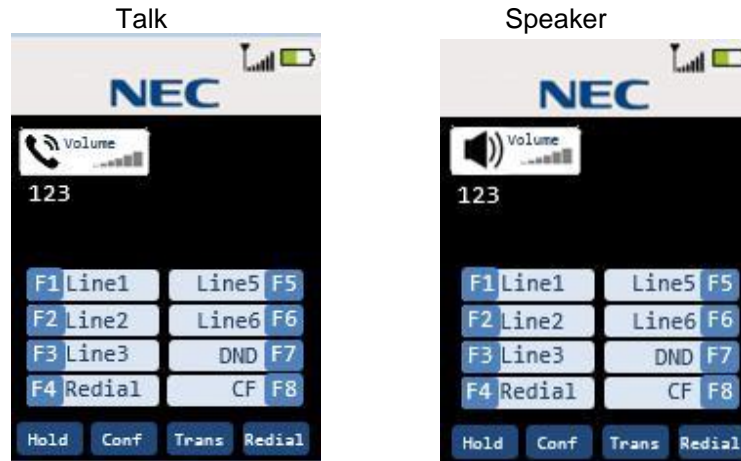
3.4.5 Receiving a Call from outside line (Depend on PBX line)

Step 1   When incoming call from outside is coming, F1 LED is blinking.

Step 2   If the user presses *talk* key or *dial* key (0-9, *, #) or the user picks up the Handset from cradle, Handset tries to connect Base Station and shows "Acquiring Link" message appeared. If RF connection is established quickly this message might not be shown.


<Notes>
1) If *F1* key(select key à up/down à select key) is pressed, Handset tries to connect Base Station. But "Acquiring Link" message is not shown on the LCD.

Step 3   When RF connection is established. The Handset goes to Talk mode and turns on talk icon and shows current volume.
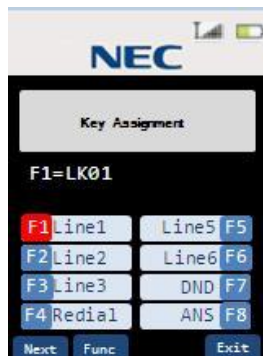

3.4.6 Finish Talk Mode
The Handset keeps RF link for about 1 second after finish Talk mode.

3.4.7 Training mode (entry)

Press * and # at the same time then press *talk* key. The Handset emits confirmation tone and enters to training mode. This message is shown on the LCD and F1 LED is blinking.

3.4.8 Training mode (Next (Softkey 1)key: select item)
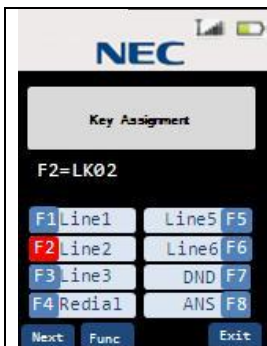
	To select item, press Next key Item changes as followings. F1àF1(TALK)àF2àF2(TALK)àF3àF3(TALK)àF4à àF4(TALK)àF5àF5(TALK)àF6àF6(TALK)àF7à àF7(TALK)àF8àF8(TALK)àOFF HOOK RINGàF1…

3.4.9 Training mode (Func(Softkey2) key: change each item setting)
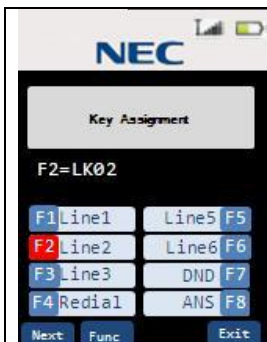
	To change item setting, press Func key Item setting changes as followings. LK01àLK02àLK03àLK04àLK05àLK06àLK07àLK08à àLK09àLK10àLK11àLK12àLK13àLK14àLK15àLK16à àLNR/SPDàRecallàFNCàANSàLK01…

3.4.10 Training mode (0 key: no function)

When 0 button is pressed during training mode, key touch tone will be emitted but any function doesn't work in case of the NEC PBX.

3.4.11 Training mode (Exit(softkey 4) key: exit from the Training mode)

When **Exit** key is pressed anytime during training mode, key touch-tone will be emitted and "Training off" command is sent to the PBX Expansion board. The Handset will exit from the Training mode.

3.5 REDIAL (Option)

When the RF link is established between the Handset and the Base Station and no dial key operation is performed. If the user presses **redial** key, the last number dialed will be shown and these dials will be sent to the Base Station.

<Notes>
1) Error tone will be emitted when redial is empty.
2) Dial limit is 32 digits, so redial will store up to 32 digits in memory.
3) Redial data is stored in Handset memory (EEPROM).
4) If **F1-F12** key is pressed the number dialed before Function key is pressed will be stored in redial memory.
5) **redial** key is invalid when the Handset outputted dial. This means **redial** key is valid as 1st dial.

<Example>
(1) [talk][1][2][3][talk]   redial: 123
(2) [talk][1][2][3]..........[1][2][talk] (over 32digits) redial: 123......12 (up to 32digits)
(3) [talk][1][2][3][F1][4][5][6][talk]   redial: 123

3.6 Channel change

It changes channel automatically.

3.7 Auto Stand-by

When the Handset is in these modes, which is shown below placing the Handset on the Charger will change it to Stand-by mode. At this time, confirmation tone is emitted.
- Ringer volume setting
- Menu setting
- Talk mode
- Trying to connect to the Base Station

3.8 PBX No Service

Talk or *speaker* key is pressed when the Base Station is using wired phone or there is not acknowledgment from PBX.
The Handset goes to standby mode after the LCD shows below.

<Notes>
1) Handset does not emit tone, when it goes to standby mode.

3.9 Out Of Range

The Handset shows message "Searching" when the Handset cannot find the Base Station (Out of Range) in Standby Mode.

When establish RF link
If the *talk*, *speaker* key is pressed but the Handset cannot establish RF Link with the Base Station, Handset will sound error tone and shows message "Out of Range".
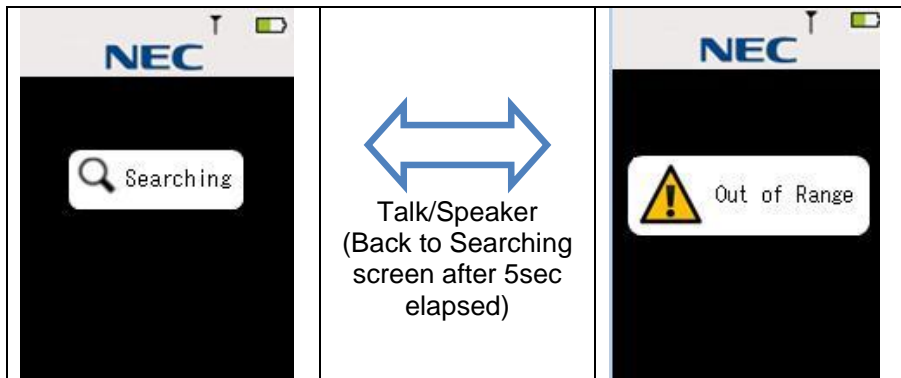
While Talking
If the Handset cannot receive a signal from the base in about 5 seconds, it goes to Standby mode with an error tone. In this case, the LCD shows message below. If the base cannot receive a signal from the Handset in about 5 seconds, it goes to Standby mode.

3.10 Low Battery

The Handset has visual and audible indicators to warn of low battery condition.

<u>In Standby mode</u>
Battery status Icon in the LCD will change to battery low.
"Charge Battery" message blinks on the LCD (ON: 600msec, OFF: 600msec).

<u>In Talk mode</u>
Battery status Icon in the LCD will change to battery low.
The Handset keeps Talk mode and battery low alert tone will be emitted every 30 seconds.

<u>In Other mode (Excluding Standby mode and Talk Mode)</u>
Battery status Icon in the LCD will change to battery low.

3.10.1 Battery status
The LCD shows it the battery according to the remainder capacity of the battery.

(Warning) Non Rechargeble Battery	(Full) 100-67%	(Level 3) 66-34%	(Level 2) 33-10%	(Low) 9-0%

3.11 Mute

Press **menu/mute** key during Talk mode. Mute icon will be turned on and voice sound from Microphone will be muted (partner can not hear voice from the user).
Pressing **menu/mute** key again will cancel mute condition and Mute icon will be turned off.
Finishing Talk mode can also cancel mute condition.

3.12 Hands Free

Press **speaker** key in standby mode or during Talk mode. Then the Handset goes to Hands Free Talk mode and Hands Free Icon will be turned on.
Press **talk** key in Hands Free Talk mode. Then Hands Free icon will be turned off and goes to Talk Mode. Press **speaker** key in Hands Free Talk mode. Then The Handset cancels Talk mode and goes to Standby mode.

3.13 Headset

Insert Headset plug in Headset Jack in Talk mode or Hands Free Talk mode, the Handset goes to Headset condition.
Pull Headset plug in Headset Jack in Headset condition. Then the Handset goes to original Mode (Hands Free Talk Mode or Talk mode)

<Notes>
1) In headset condition, the user can change Hands-Free mode to the talk mode. But the Handset keeps Headset condition.

2) Insert Headset plug in Headset Jack when Hands Free condition. Hands Free icon will be not turned off.
3) Tone is output from speaker when Headset is connected.

3.14 Volume setting

There are 3 volume settings. Talk mode, Hands Free Talk Mode and Headset condition have each volume.
During each mode if the user presses *up* or *down* key, the LCD shows current volume.
During show volume if the user presses *up* or *down* key, the volume setting will be changed from Level 1 to Level 6.

3.15 Ring Volume Setting

3.15.1 Ringer volume selection

Step 1   When **up** key is pressed in Standby mode, the Handset goes to Ringer volume setting mode and shows current setting.
The Ring volume will be changed as following.

à Up
ß Down

<Notes>
1) The Handset keeps ringer volume setting mode for 2 seconds without key operation.
2) Handset can change ringer volume in Incoming call mode. In this case the Handset changes ringer volume.

3.16 Menu setting mode

<Notes>
1) Press *Exit* key or *end* key in each menu setting mode. Then the Handset goes to standby mode.
2) The Handset keeps each menu setting mode for a while(depends on Menu timeout setting) without key operation. The Handset cancel menu setting and goes to Standby mode with Error tone.
3) Press *menu/mute* key in each menu setting mode, menu returns upper list.

3.16.1 Menu Top

Step 1 Press the *menu/mute* key in standby mode. Then the LCD shows menu list mode.
Step 2 Select item by *up* or *down /Right /Left* key and press *select* key.

Contact List	Settings	Sounds
Language	Administrator Setting	Function Key Label
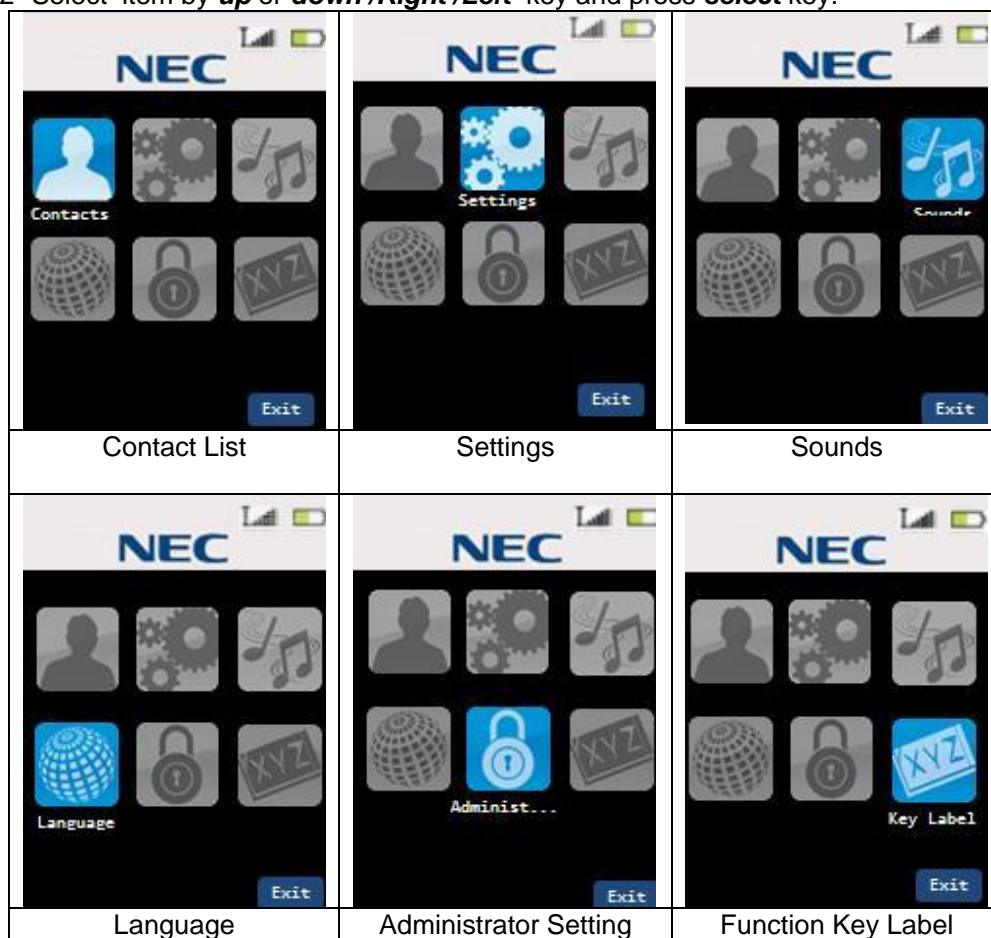
3.16.2 Contacts(List)

Step 1 Press the *menu/mute* key in standby mode. Then the LCD shows menu list mode.
Step 2 Select "Contacts" and press *select* key.

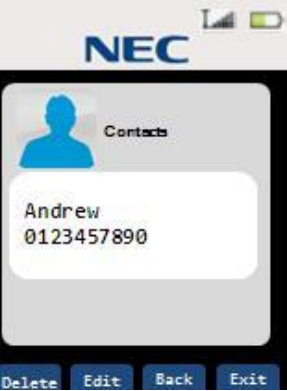|	In this screen, following keys are available.

	<To Select Contact List>
	up/down key:
	  Increment or Decrement Contact List Number.
	Left/Right key:
	  Contact List number +5 or -5. (show next/previous screen)
	select key:
	  Show Detail.(Contact list shows one by one.)
	
	<To Edit Contact List>
	Delete key(softkey 1) :
	  To Delete contents of pointed Contact List Number.
	Edit key / *Add* key (softkey 2) :
	  To Edit contents of pointed Contact List Number.
	  If the contents of pointed Contact List is empty,
	  Softkey indicates "Add".
	
	<To Dial from Contact List>
	Talk/Speaker key:
	  To Dial Contact List.

3.16.3 Contacts(show one by one)

	In this screen, following keys are available.

	<To Select Contact List>
	up/down key:
	  Increment or Decrement Contact List Number.
	Back key:
	  Back To List screen.
	
	<To Edit Contact List>
	Delete key(softkey 1) :
	  To Delete contents of pointed Contact List Number.
	Edit key / *Add* key (softkey 2) :
	  To Edit contents of pointed Contact List Number.
	  If the contents of pointed Contact List is empty,
	  Softkey indicates "Add".
	
	<To Dial from Contact List>
	Talk/Speaker key:
	  To Dial Contact List.

3.16.4 Contacts(Delete Contact)

	In this screen, following keys are available.

	Yes key:
	    Delete Contact with confirmation tone.
	    After Delete contents, Back to Previous screen.
	
	No key:
	    Back To previous screen.

3.16.5 Contacts(Edit/Add)

Step 1   Enter Name for contact.

	Maximum 8 characters can be stored in each contact.
 <Add: Edit New> <Edit:Rename>	In this screen, following keys are available. **Back** Key: Back to previous screen **Next** Key: Go to Number edit screen **123/abc** key(toggle) "123" : To numeric input "abc" : To alphabetical input **Delete** Key Delete character of cursor position [Alphabetical input] **Dial** Keys Dial 1 : @.-_&'^?!(),\V:;~=+1 Dial 2 : abcABC2 Dial 3 : defDEF3 Dial 4 : ghiGHI4 Dial 5 : jklJKL5 Dial 6 : mnoMNO6 Dial 7 : pqrsPQRS7 Dial 8 : tuvTUV8 Dial 9 : wxyzWXYZ9 Dial 0 : 0 Dial * : * Dial # : # **Right/Left** Key(alphabetical Input only) Cursor moves

Step 2   Enter Number for contact.

42

<Add: Edit New>
 	
NEC
 	
Number
 	
_
 	
Delete   Back   Save
 	
<Edit:change number>
 	
NEC
 	
Number
 	
1234567890_
 	
Delete   Back   Save
	Maximum 24 digits number can be stored in each contact.
	16digits can be displayed in 1st line.
	Over 16digits, number displayed in 2nd line.
	
	In this screen, following keys are available.
	
	Back Key: Back to previous screen
	Next Key: Go to Number edit screen
	
	Delete Key
	  Delete number of cursor position
	
	Save Key
	  To store contact with confirmation tone.

Step 3 Saved screen

NEC Saved...	After 2seconds elapsed, return to Contact list or View(one by one).

3.16.6 Settings(List)

Step 1   Press the *menu/mute* key in standby mode.   Then the LCD shows menu list mode.
Step 2   Select "Settings" and press *select* key.

	In this screen, following keys are available.
	up/down key:
	Pointer moves
	select key:
	Select menu item and enter each menu setting

3.16.7 Settings(Menu Timeout)

Step 1   Select "Menu Timeout" and press *select* key. Then the LCD shows menu timeout
      setting screen.

	Pointer is pointed to the current timeout value.
	(Default value is 30seconds.)
	In this screen, following keys are available.
	up/down key:
	Pointer moves
	select key:
	Store each value with confirmation tone.
	And return to previous(setting list) screen.

3.16.8 Settings(Brightness)

Step 1   Select "Brightness" and press *select* key. Then the LCD shows Brightness setting
      screen.

	Pointer is pointed to the current brightness value.
	(Default value is MAX.)
	MAX=100% HIGH=80% MID=60% LOW=20%
	In this screen, following keys are available.
	up/down key:
	Pointer moves with change LCD backlight brightness.
	select key:
	Store each value with confirmation tone.
	And return to previous (setting list) screen.

3.16.9 Settings(Power Save)

Step 1 Select "Power save" and press *select* key. Then the LCD shows Power Save setting
screen.

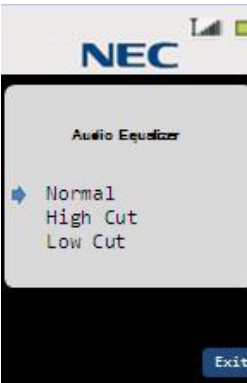|	Pointer is pointed to the current power save value.
	(Default value is On.)
	
	On: LCD goes to sleep mode with LCD backlight turn off.
	Off: LCD backlight dimly.
	
	<Condition of enter to Power save>
	1.1minute elapsed without key operation in Standby or Talk.
	
	<Confition of Exit from Power save>
	1. Press any key
	2. Receive command from Base Station.
	3. Handset charge on / off.
	
	In this screen, following keys are available.
	
	 up/down key:
	     Pointer moves.
	
	select key:
	     Select each value with confirmation tone.
	     And return to previous (setting list) screen.

3.16.10 Settings(Audio Equalizer)

Step 1 Select "Audio Equalizer" and press *select* key. Then the LCD shows Audio Equalizer
setting screen.

	Pointer is pointed to the current Audio Equalizer value.
	(Default value is Normal.)
	
	Normal: Natural Audio
	High Cut: Cut High Frequency
	Low Cut: Cut Low Frequency
	
	In this screen, following keys are available.
	
	 up/down key:
	     Pointer moves.
	
	select key:
	     Select each value with confirmation tone.
	     And return to previous (setting list) screen.

3.16.11 Settings(Key Lock)

Step 1 Select "Key Lock" and press *select* key. Then the LCD shows Key Lock setting screen.

NEC
 	
Key Lock
 	
→ On
Off
 	
Exit
	Pointer is pointed to the current Key Lock value.
	(Default value is Off.)
	
	On: Enable Key Lock Function
	Off: Disable Key Lock Function
	
	In this screen, following keys are available.
	
	up/down key:
	    Pointer moves.
	
	select key:
	    Select each value with confirmation tone.
	    And return to previous (setting list) screen.

3.16.12 Sounds(List)

Step 1 Press the *menu/mute* key in standby mode. Then the LCD shows menu list mode.
Step 2 Select "Sounds" and press *select* key.

NEC
 	
Sounds
 	
→ Ring Tones
Vibrate
Outof Range Alart
Key Tone
 	
Exit
	In this screen, following keys are available.
	
	up/down key:
	    Pointer moves
	
	select key:
	    Select menu item and enter each menu setting

3.16.13 Sounds(Ring Tones)

Step 1 Select "Ring Tones" and press **select** key. Then the LCD shows Ring Tones setting screen.

	Pointer is pointed to the current Ring Tone. (Default value is Type A.) There are 6 types Ring tones(Type A – Type F) available. In this screen, following keys are available. **up/down** key: 　　Pointer moves. **play** key: 　　Play sample ringer tone for 2 seconds. **select** key: 　　Select each value with confirmation tone. 　　And return to previous (setting list) screen.

3.16.14 Sounds(Vibrate)

Step 1 Select "Vibrate" and press **select** key. Then the LCD shows Vibrate setting screen.

	Pointer is pointed to the current Vibrate setting. (Default value is On.) On: Vibrate turns on while Incoming Call Off: Viberate turns off In this screen, following keys are available. **up/down** key: 　　Pointer moves. **select** key: 　　Select each value with confirmation tone. 　　And return to previous (setting list) screen.

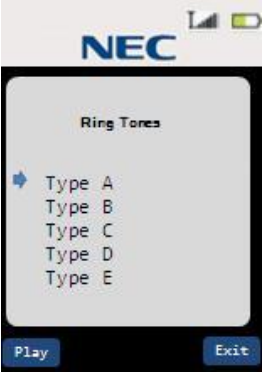### 3.16.15 Sounds(Out Of Range Alert)

Step 1 Select "Out Of Range Alert" and press *select* key. Then the LCD shows Out Of Range Alert setting screen.

	Pointer is pointed to the current Out Of Range Alert setting. (Default value is On.)
	
	On: Out Of Range Alert turns on
	Off: Out Of Range Alert turns off
	
	In this screen, following keys are available.
	
	 up/down key:
	     Pointer moves.
	
	select key:
	     Select each value with confirmation tone.
	     And return to previous (setting list) screen.

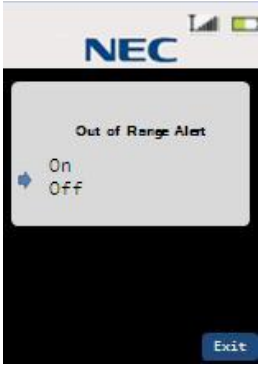### 3.16.16 Sounds(Key Tone)

Step 1 Select "Key Tone" and press *select* key. Then the LCD shows Key Tone setting screen.

	Pointer is pointed to the current Key Tone setting. (Default value is On.)
	
	On: Enable Key Tone function
	Off: Disable Key Tone function
	
	In this screen, following keys are available.
	
	 up/down key:
	     Pointer moves.
	
	select key:
	     Select each value with confirmation tone(Key tone is On).
	     And return to previous (setting list) screen.

3.16.17 Language
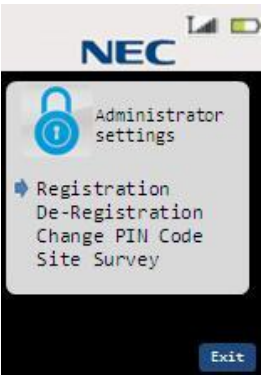
Step 1 Press the *menu/mute* key in standby mode. Then the LCD shows menu list mode.
Step 2 Select "Language" and press *select* key.

NEC
 	
Language
 	
➡ English
Français
Español
 	
Exit
	Pointer is pointed to the current Language setting.
	(Default value is English.)
	
	There are 3 languages (English, French, Spanish) available.
	
	In this screen, following keys are available.
	
	  up/down key:
	    Pointer moves
	
	select key:
	    Select new display language and returns to Menu Top.

3.16.18 Administrator Setting (List)

Step 3 Press the *menu/mute* key in standby mode. Then the LCD shows menu list mode.
Step 4 Select "Administ…" and press *select* key.

NEC
 	
Administrator
settings
 	
➡ Registration
De-Registration
Change PIN Code
Site Survey
 	
Exit
	In this screen, following keys are available.
	
	  up/down key:
	    Pointer moves
	
	select key:
	    Select menu item and enter each menu setting
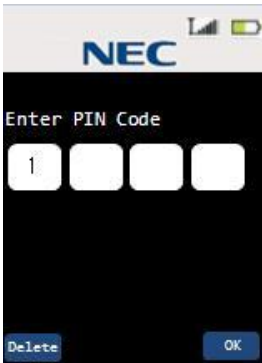
3.16.19 Administrator Setting (Registration)

Step 1 Press and Hold Base Station Left Key until Blue LED start blinking. (for 3seconds)
Step 2 Select "Registration" and press *select* key. Then the LCD shows Registration
        screen.

	Start finding Base Station. In this screen, following keys are available. *cancel* key: Exit from registration mode

Step 3 Handset find Base Station.

	Enter Registration PIN.
	
	In this screen, following keys are available.
	(Default Value is "1234")
	
	delete key:
	    Delete 1 digit.
	
	Dial(0-9) key:
	    Enter 1 digit.
	
	OK key:
	    Send Registration PIN to the Base Station.

Step 4 Finish Registration.

	After 5 seconds elapsed, The Handset goes to each state.
	
	Registration completed:
	    goes to Standby state
	
	Registration Failed:
	    goes to De-register state
	    or Standby state.

3.16.20 Administrator Setting (De-Registration)

Step 1 Select "De-Registration" and press *select* key. Then the LCD shows De-Registration screen.

	Display Available Handset number(Handset #1 only)
	As for Operating Handset, display "[Using]" next of Handset #.
	
	In this screen, following keys are available.
	
	up/down key:
	    Pointer moves (If the other handset registered)
	
	select key:
	    Select pointed handset and goes to confirmation display.

Step 2 To start De-Registration, press *Yes* Key.
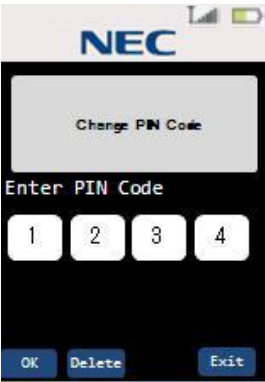
	In this screen, following keys are available.
	
	Yes key:
	    Start De-Registration
	
	No key:
	    Return to Standby state.

Step 3 Finish De-Registration.

		If the De-Registration failed, The Handset goes to Standby state after 5 seconds elapsed. In De-Register screen, following keys are available. **Regist** key: 　　Start Registration

3.16.21 Administrator Setting (Change PIN code)

Step 1 Select "Change PIN Code" and press **select** key. Then the LCD shows Change PIN Code screen.

	When enter this setting, the handset start communicating with Base Station and get current PIN number. Then, Show current PIN number in this screen. In this screen, following keys are available. **delete** key: 　　Delete 1 digit. **Dial(0-9)** key: 　　Enter 1 digit. **OK** key: 　　Send New Registration PIN to the Base Station with confirmation tone sounds.

3.16.22 Administrator Setting (Site Survey)

Step 1 Select "Site Survey" and press *select* key. Then the LCD shows Site Survey screen.

	In this screen, includes following contents. Band: Carrier Band of this Handset. (North America) Condition: good / Fair / Poor Clear Slot: number of Clear slot (total number of slot is 12) Number of Base: Number of Base that handset found. In this screen, following keys are available. **Scan** key: 　　Start scanning clear slot and number of Base Station. **Sync** key: 　　Start Sync Display mode.

Step 2 To Start scanning RF condition, press *Scan* key.
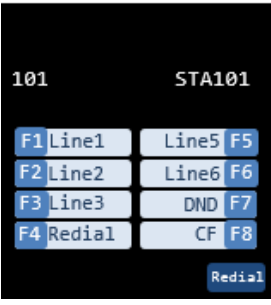
	Start scanning and collect information (for about 30 seconds)

Step 3 Finish Scanning

	In this screen, includes following contents. Scanning result is reflected in this screen. Band: Carrier Band of this Handset. (North America) Condition: good / Fair / Poor Clear Slot: number of Clear slot (total number of slot is 12) Number of Base: Number of Base that handset found. In this screen, following keys are available. **Scan** key: 　　Restart scanning clear slot and number of Base Station. 　　(back to step2) **Sync** key: 　　Start Sync Display mode.

3.16.23 Administrator Setting (Site Survey:Sync Display mode)
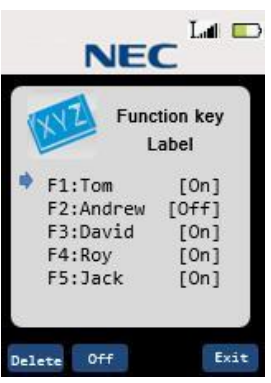
Step 1 To Start Sync Display mode, press **Sync** key..

Ch 3 / Slot 2: RSSI:38 BER : 00 RFPI:01223524A0 H/O:On Lost: 01 [L] 101　　　　　STA101 F1 Line1　　Line5 F5 F2 Line2　　Line6 F6 F3 Line3　　　DND F7 F4 Redial　　　CF F8 　　　　　　　Redial	Sync Display mode is activated Sync information display in each state. Sync display includes following contents. 　Ch: Current channel number. 　Slot: Current Slot number. 　RSSI: Current RSSI value. 　BER: Bit Error Rate 　RFPI: Base RF ID 　H/O: Hand Over Enable/Disable 　Lost: Lost counter 　[L]: status (Locked , Unlock)

3.16.24 Function Key Label
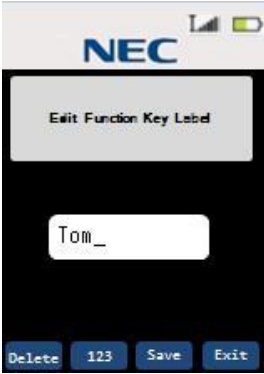
Step 1 Press the **menu/mute** key in standby mode. Then the LCD shows menu list mode.
Step 2 Select "Key Label" and press **select** key.

NEC XYZ Function key 　　　Label ➡ F1:Tom　　[On] 　F2:Andrew [Off] 　F3:David　[On] 　F4:Roy　　[On] 　F5:Jack　[On] Delete　Off　　　Exit	Pointer is pointed to the F1(fixed). There are 8 function key labels setting available. In this screen, following keys are available. **up/down** key: 　　Pointer moves **select** key: 　　Enter Label name edit screen. **Delete** key: 　　Delete Label name. **On/Off** key: 　　Toggle switch of Function Key Enable/Disable.

3.16.25 Function Key Label(Name Edit)

Step 1 Press the **select** key in Function Key Label list screen. Then the LCD shows Name
Edit screen.

	In this screen, following keys are available. Maximum 8 characters can be stored in each label. **123/abc** key(toggle) 　"123" : To numeric input 　"abc" : To alphabetical input **Delete** Key 　Delete character of cursor position **Save** Key 　Store new function key label [Alphabetical input] **Dial** Keys (Refer in Edit Contact list name) **Right/Left** Key(alphabetical Input only) Cursor moves

3.16.26 Function Key Label(Delete Label)

Step 1 Press the **Delete** key in Function Key Label list screen. Then the LCD shows
confirmation screen.

	In this screen, following keys are available. **Yes** key: 　　Delete Function key label **No** key: 　　Return to previous screen.

3.17 Key Lock

In standby state, If Key lock function is enabled, 15 seconds elapsed from last key operation, Key lock is activated.
If Key is pressed while activating key lock, following screen appears.

| | In this screen, following keys are available.

*key(Press and hold 2 seconds):
  Key is unlocked for a while.

1. If receive incoming call, Key lock function is disabled while incoming calling. |
|---|---|

3.18 Virtual Function Key

In standby or Incoming call,Talk, Enter Virtual Function key mode by pressing the *select* key.

| | In this screen, following keys are available.

up/down/Right/Left key:
  Select Function key

select key / *talk* key / *speaker* key:
  Send Function key code to the base station.
  And, Exit from Virtual function key mode. |
|---|---|

3.19 Base Key Option (Option)

| | If Base key option is On, In Virtual Function key screen, following keys are available.

Desk key: Same as base left key
H/S key: Same as base right key

Other keys:Same as Virtual Function key mode |
|---|---|

3.20 Speed Dial Settings (Option)

	If Speed Dial setting option is On, In Virtual Function key screen, following keys are available.

	Dial1-0 key: Dialing from Contact list if it registered.
	    Dial 1:Contact List 01
	    Dial 2:Contact List 02
	     :
	    Dial 0:Contact List 10
	
	    Other keys:Same as Virtual Function key mode

4. Appendix

4.1 Data Table

4.1.1 Factory Setting

ITEM	HANDSET	BASE STATION
Security Code	N/A	1234
Redial	None	N/A
One Touch Dial Number	None	N/A
Ringer Tone	Tone A	N/A
Ringer Volume	High	N/A
Ringer Mute	Off	N/A
Ear Speaker Volume	4	N/A
Hands Free Volume	4	N/A
Headset Volume	4	N/A
Brightness	MAX	N/A
Power Save	ON	N/A
Contact List	None	N/A
Function Key Label	None (ON)	N/A
Language	English	N/A
Key Tone	ON	N/A
Vibrate	ON	N/A
Audio Equalizer	Normal	N/A
Menu Timeout	30seconds	N/A
Key Lock	OFF	N/A
Out Of Range Alert	ON	N/A
Redial Option	Enable	N/A
Speed Dial Option	Disable	N/A
Base Key Option	Disable	N/A
Word Wrapping	24×2line (48digits)	N/A
Handset Expandability	Disable	N/A

4.1.2 Timings

ITEM	VALUE	UNIT
Handset Key detect (Chattering processing) Time	30	msec
Handset Charge detect (Chattering processing) Time	500	msec
Handset Low battery (Chattering processing) Time	10	sec
Handset Headset detect Cycle	500	msec
Handset LCD refresh Cycle	1	sec
Base Key detect（Chattering processing）Time	30	msec
Base DTMF dial output time	100 (*1)	msec

*1:There is no continuous DTMF signaling.

Important Safety Instructions

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

This unit is NOT waterproof. DO NOT expose it to rain or moisture.

Do not use this product near water, for example, near a bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement or near a swimming pool.

Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.

Do not use the telephone to report a gas leak in the vicinity of the leak.

Use only the power cord and batteries indicated in the manual. Do not dispose of batteries in a fire. They may explode. Check with local codes for possible special disposal instructions.

Do not place the handset in any charging cradle without the battery installed and the battery cover securely in place.

SAVE THESE INSTRUCTIONS!
CAUTION! Risk of explosion if battery is replaced by an incorrect type! Dispose of used batteries according to the instructions. Do not open or mutilate the battery. Disconnect the battery before shipping this product.

Rechargeable Battery Warning

If your equipment contains a rechargeable Nickel-Metal-Hydride (Ni-MH) battery:
Nickel is a chemical known to the state of California to cause cancer.
Do not short-circuit the battery.
The batteries in this equipment may explode if disposed of in a fire.
Do not charge the batteries in any charger other than the one specified in the owner's manual. Using another charger may damage the battery or cause it to explode.
As part of our commitment to protecting our environment and conserving natural resources, Uniden voluntarily participates in an RBRC® industry program to collect and recycle used Ni-MH batteries within the United States. Please call 1-800-8-BATTERY for information on Ni-MH battery recycling in your area. (RBRC® is a registered trademark of the Rechargeable Battery Recycling Corporation.)

Rechargeable batteries must be recycled or disposed of properly.

COMPLIANCE INFORMATION

FCC Part 15 Information

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.

FCC PART 15.105(b): 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.

FCC RF Exposure Information

This product complies with FCC radiation exposure limits under the following conditions:

The base must be placed to allow a minimum of 20 cm (8 inches) between the antenna and all persons during normal operation.

The base must not be collocated or operated in conjunction with any other antenna or transmitter.

The handset is designed for body-worn operation and meets FCC RF exposure guidelines when used with any belt clip, carrying case, or other accessory supplied with this product. (All necessary accessories are included in the package; any additional or optional accessories are not required for compliance with the guidelines.) Third party accessories (unless approved by the manufacturer) should be avoided as these might not comply with FCC RF exposure guidelines.

Industry Canada (I.C.) Notice

Terminal equipment
NOTICE: This equipment meets the applicable Industry Canada Terminal Equipment Technical Specifications. This is confirmed by the registration number. The abbreviation IC before the registration number signifies that registration was performed based on a Declaration of Conformity indicating that Industry Canada technical specifications were met. It does not imply that Industry Canada approved the equipment.

Radio equipment
The term IC before the radio certification number only signifies that Industry Canada technical specifications were met. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device. "Privacy of communications may not be ensured when using this telephone".

Environmental Requirements

- Only use the cordless telephone in temperatures between -10 ºC to +50 ºC (+14 ºF to +122 ºF).
- Avoid exposing the cordless telephone to direct sunlight or close to other heat sources.
- Do not expose the cordless telephone to open flame.
- Keep the cordless telephone away from excessive heat and moisture.
- Avoid sudden temperature changes to prevent condensation in the cordless telephone. It is recommended to put the cordless telephone into an air tight plastic bag until the temperature is adjusted, for example, when entering or leaving a cold/heated building on a warm/cold day.
- Protect your cordless telephone from aggressive liquids and vapors.
- If the cordless telephone has been exposed to water or condensation, remove the battery immediately and let it dry completely before re-inserting the battery.
- Keep the cordless telephone away from strong electromagnetic fields.
- Do not place a cold cordless telephone in a charger.