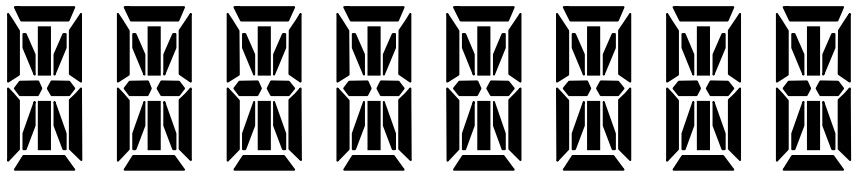


**** LCD Description**

TX	RX	VOX	MON	TOT	WX	TA
						
					H	AUX
					L	SCAN
						BEEP

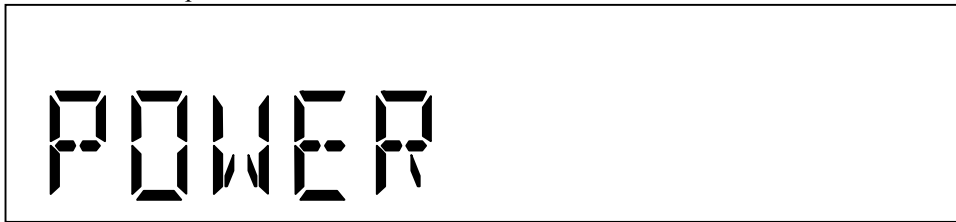
- TX** Icon : Transmit status display
- RX** Icon : RF Signal receive status display
- VOX** Icon : VOX option status display
- MON** Icon : Monitor status display
- TOT** Icon : Time-Out-Timer option status display
- WX** Icon : Weather mode status display
- TA** Icon : Talk Around option status display
- H** Icon : TX Output Power High display
- L** Icon : TX Output Power Low display
- AUX** Icon : Auxiliary status display
- SCAN** Icon : SCAN status display
- BEEP** Icon : Beep Tone option status display



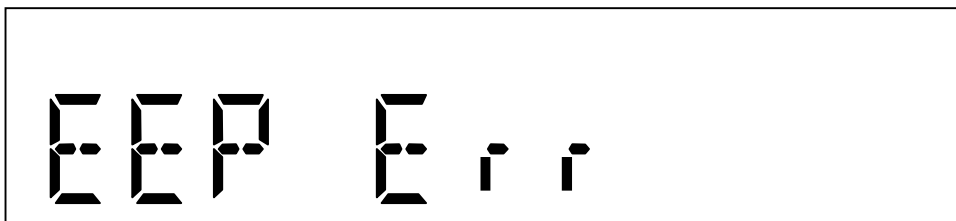
Channel Name or Setting Menu character display segment

** Power On

- Power on the radio by turning the power / volume knob clockwise out of detent. The “POWER” appears in the display and two beeps are sounded when the radio is ready to enter the normal operation mode.



- * When power is on, the last stored memory is checked if the data is abnormal and the “EEP Err” display will appear with an error tone, then two beeps sound and enter normal operation mode after the memory is rewrote to the initial value.



** Channel change

- Press the Up/Down Key to select the desired channel.

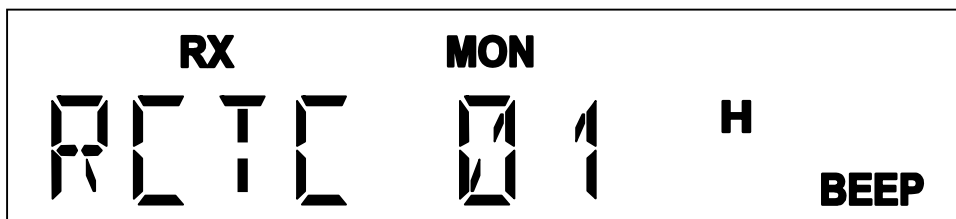
** Transmit

- Press the PTT button to transmit and Release to receive.
- When the VOX option is enabled ; the radio transmits if voice input enters and the radio maintains TX for around 2 seconds if voice input stops, then returns to receive mode.

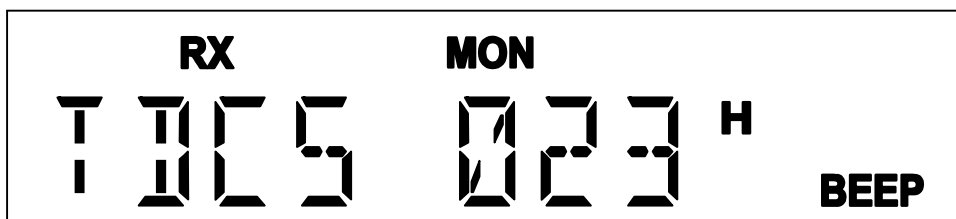
** Channel Option view

- In receiving mode, if the monitor button is pressed for more than 1 second, the RX tone option and the TX tone option of the current channel will display.

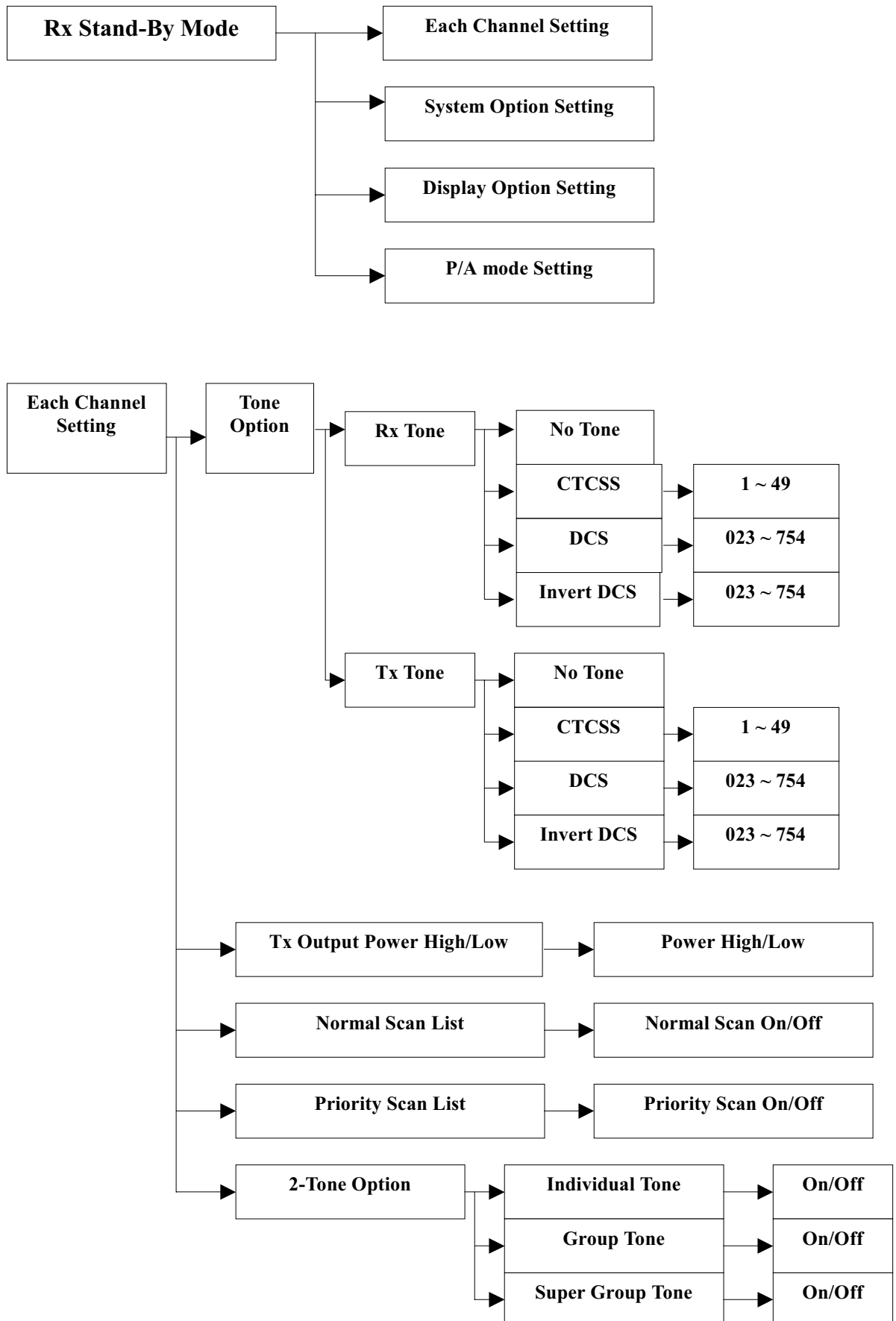
** Rx Option display (ex : CTCSS 67 Hz [Tone No 1])

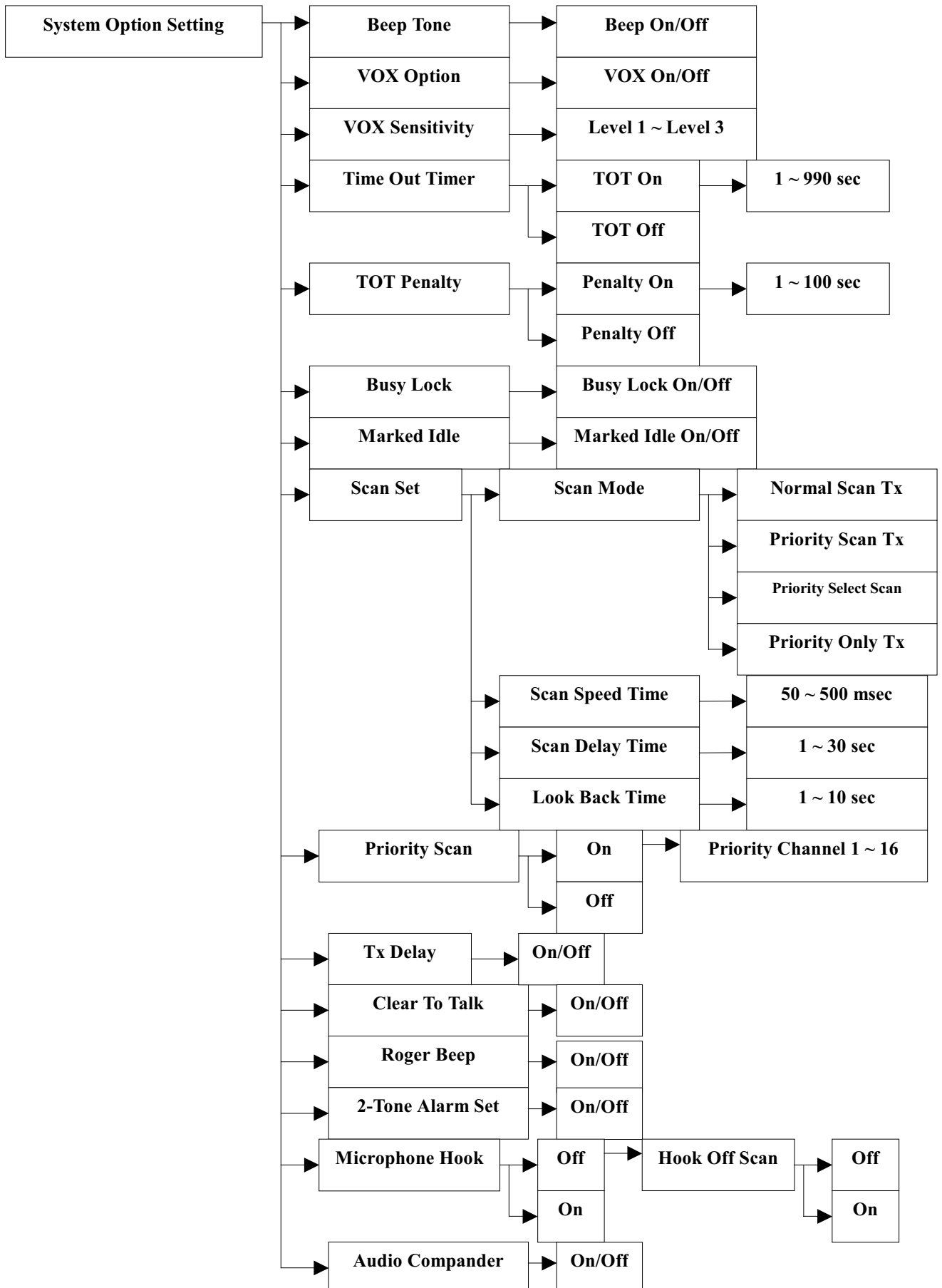


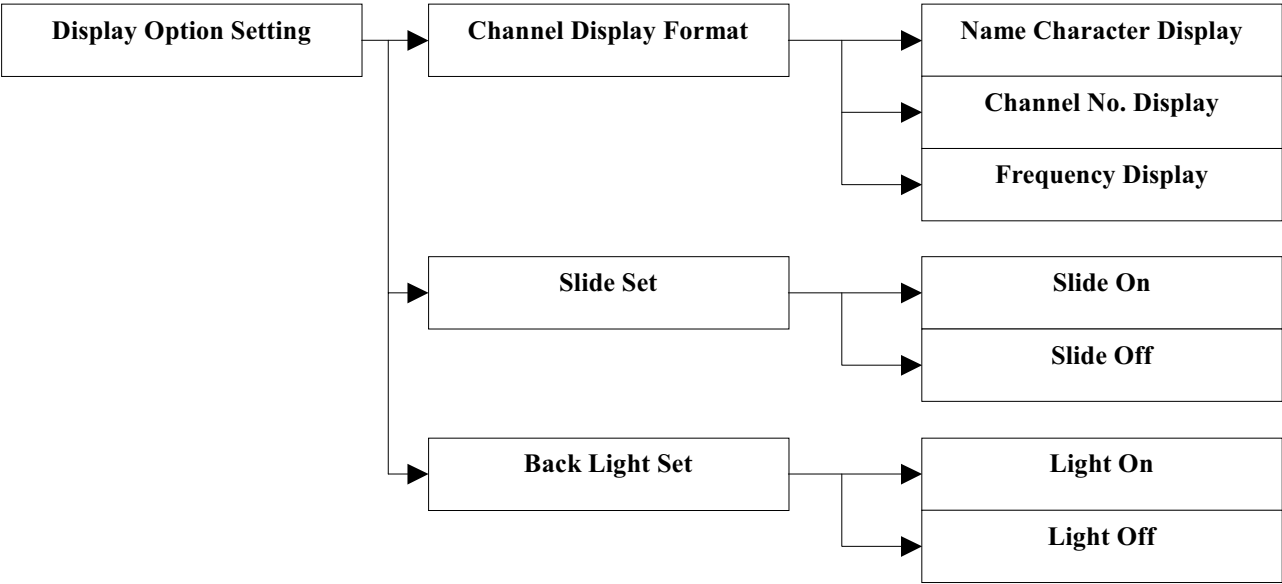
** TX Option display (ex : DCS 023)



● Menu Tree





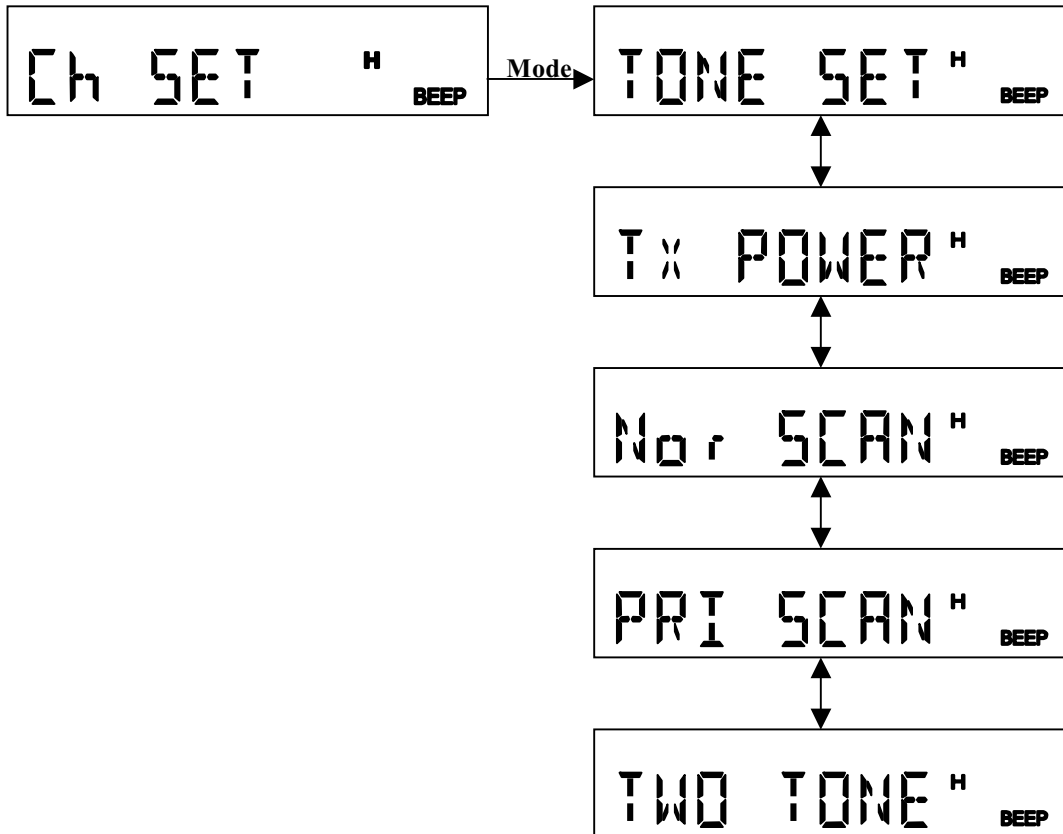


*** Channel option & System Option & display Option Setting.**

- To enter the Menu Setting, press and release shortly the MODE button during the receive or stand-by mode .
- In the Menu Setting, press the Up/Down key to scroll the sub-Menu Setting upward or downward. To enter a sub-Menu Setting, press the MODE button. (In case of the last sub-menu, it saves to exit.)
If the PTT button is pressed, the radio returns to standby mode. If the Monitor button is pressed, the radio will return to the previously displayed Menu Setting.

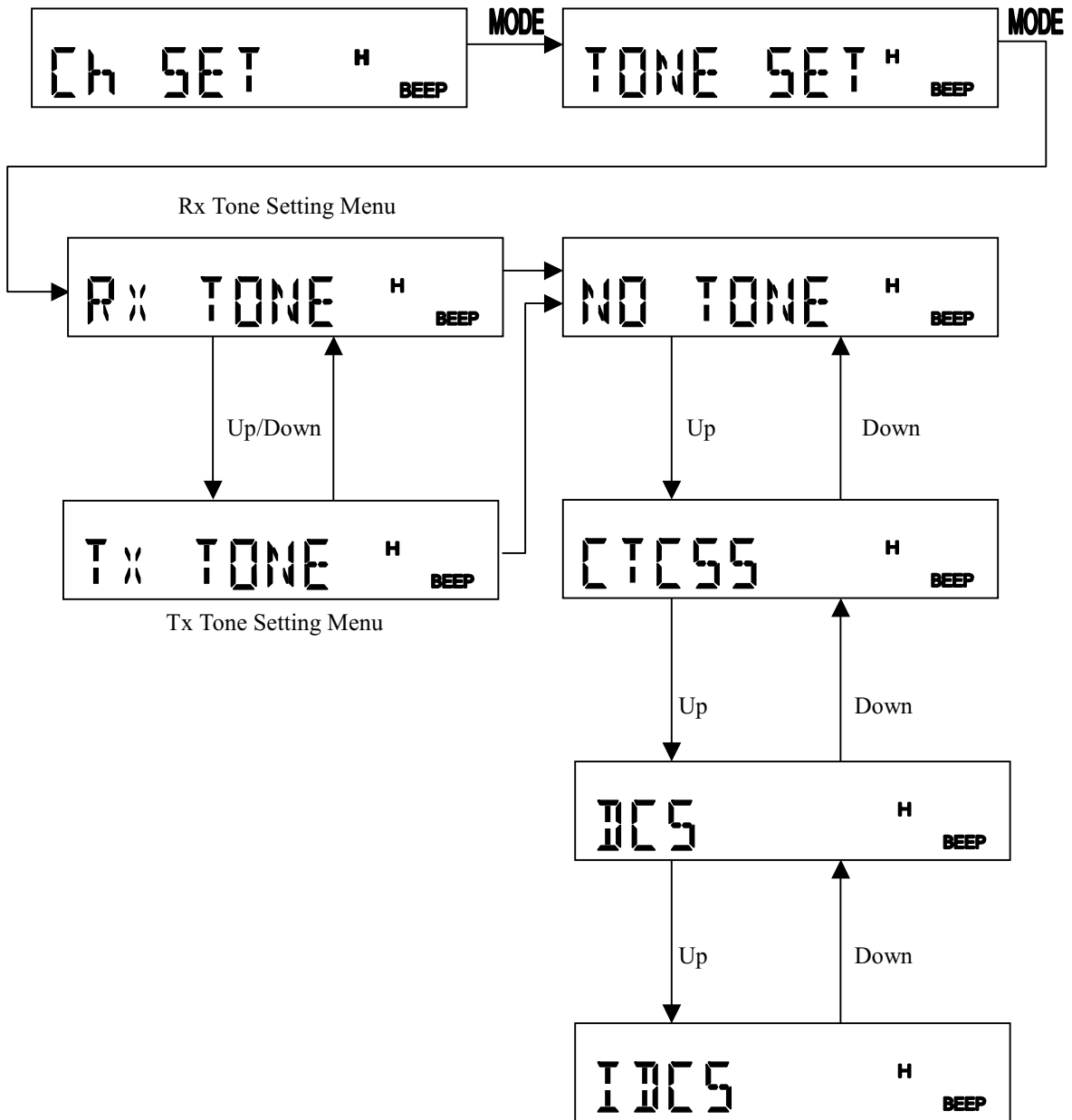
***. Channel Option Setting**

**** Each Channel Menu display format**



** Rx/Tx Tone Option Setting

Each Channel Option Setting Menu

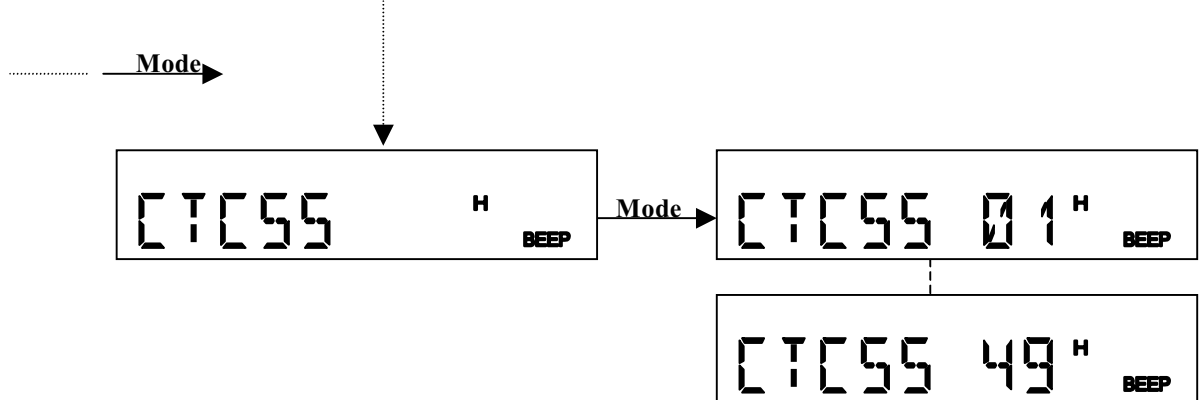


** No Tone Select



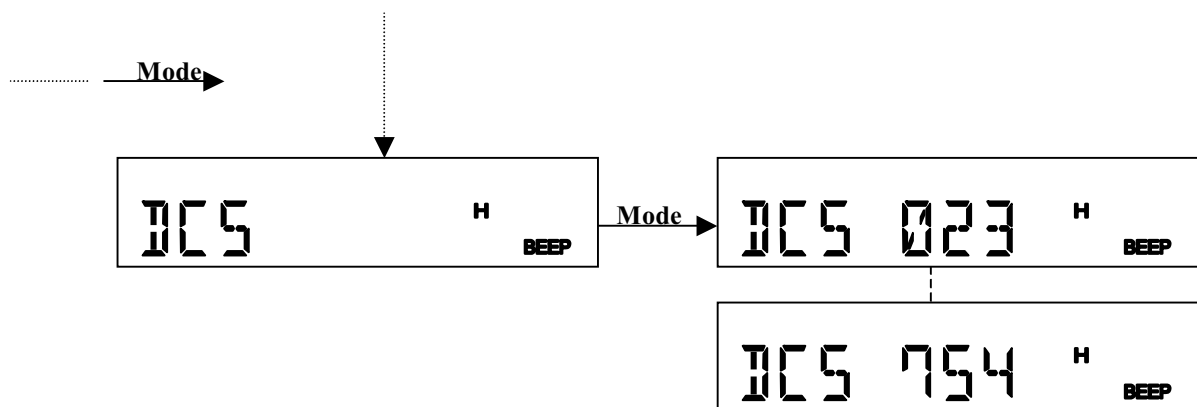
- In the above condition, if the MODE key or PTT button is pressed, the RX or TX tone option of the current channel will set "NO TONE" and return to standby mode.

** CTCSS Tone Select



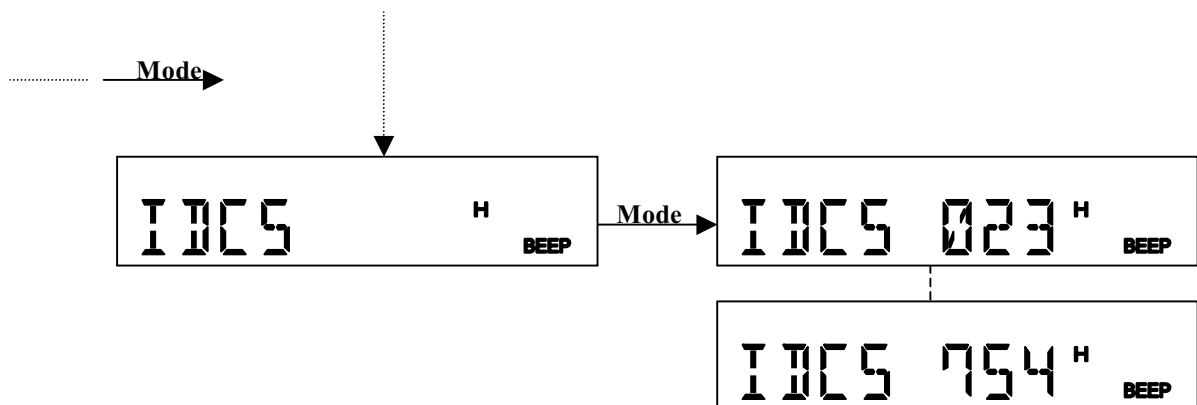
In the above condition, Select the desired CTCSS tone by pressing the Up/Down key. If the MODE key or PTT button is pressed, the radio will save your selected CTCSS tone for the current channel and return to standby mode.

** DCS Tone Select



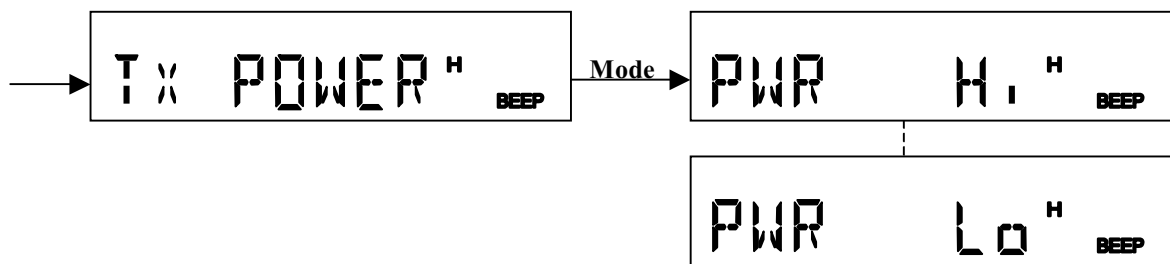
In the above condition, Select the desired DCS tone by pressing the Up/Down key. If the MODE key or PTT button is pressed, the radio will save your selected DCS tone for the current channel and return to standby mode.

** Invert DCS Tone Select



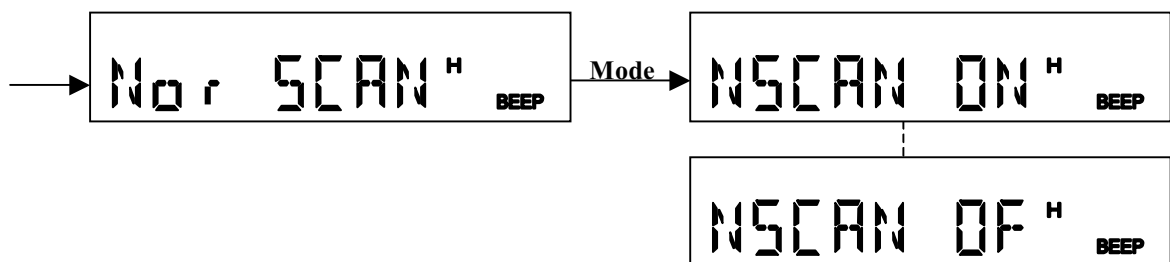
In the above condition, Select the desired Invert DCS tone by pressing the Up/Down key. If the MODE key or PTT button is pressed, the radio will save your selected Invert DCS tone for the current channel and return to standby mode.

** Tx Output Power High/Low Setting



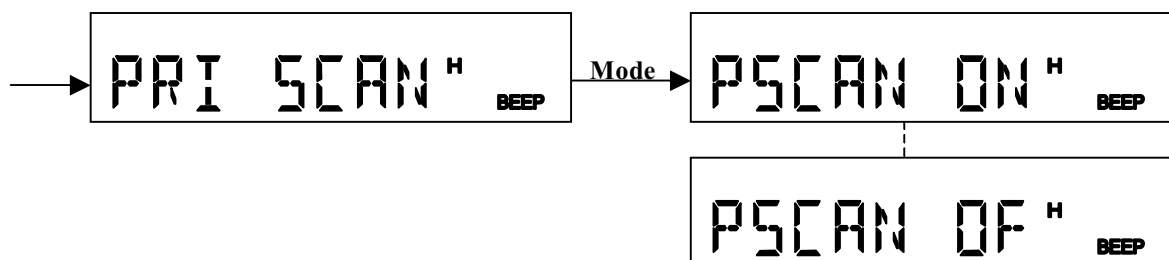
In the above condition, Select the desired output power by pressing the Up/Down key. If the MODE key or PTT button is pressed, the radio will save your selected output power (High 45Watt or Low 2Watt) for the current channel and return to standby mode.

** Normal Scan List On/Off Setting



In the above condition, Select On or Off by pressing the Up/Down key. If the MODE key or PTT button is pressed, the radio will save your selected scan option On or Off for the current channel and return to standby mode. When Scanning by pressing the Scan key, the radio will scan channels with the scan setting “On” only.

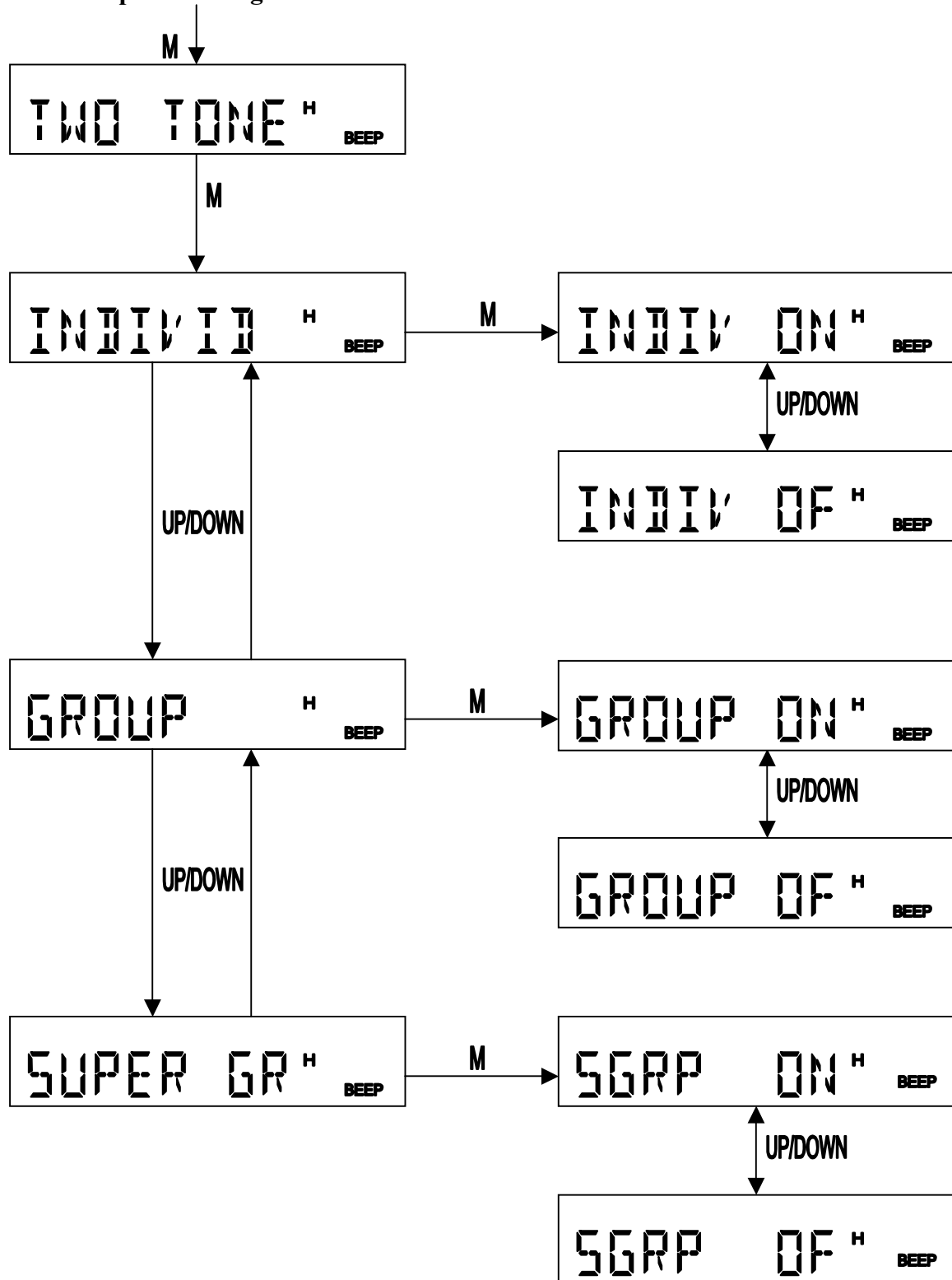
** Priority Scan List On/Off Setting



In the above condition, Select On or Off by pressing the Up/Down key. If the MODE key or PTT button is pressed, the radio will save your Priority Scan Option On or Off selection for the current channel and return to standby mode.

** If Priority Scan Option of “System Option” Menu is on, Priority scan works only when the channel is positioned to the channel with “PSCAN ON” displayed.

**** 2-Tone Option Setting**

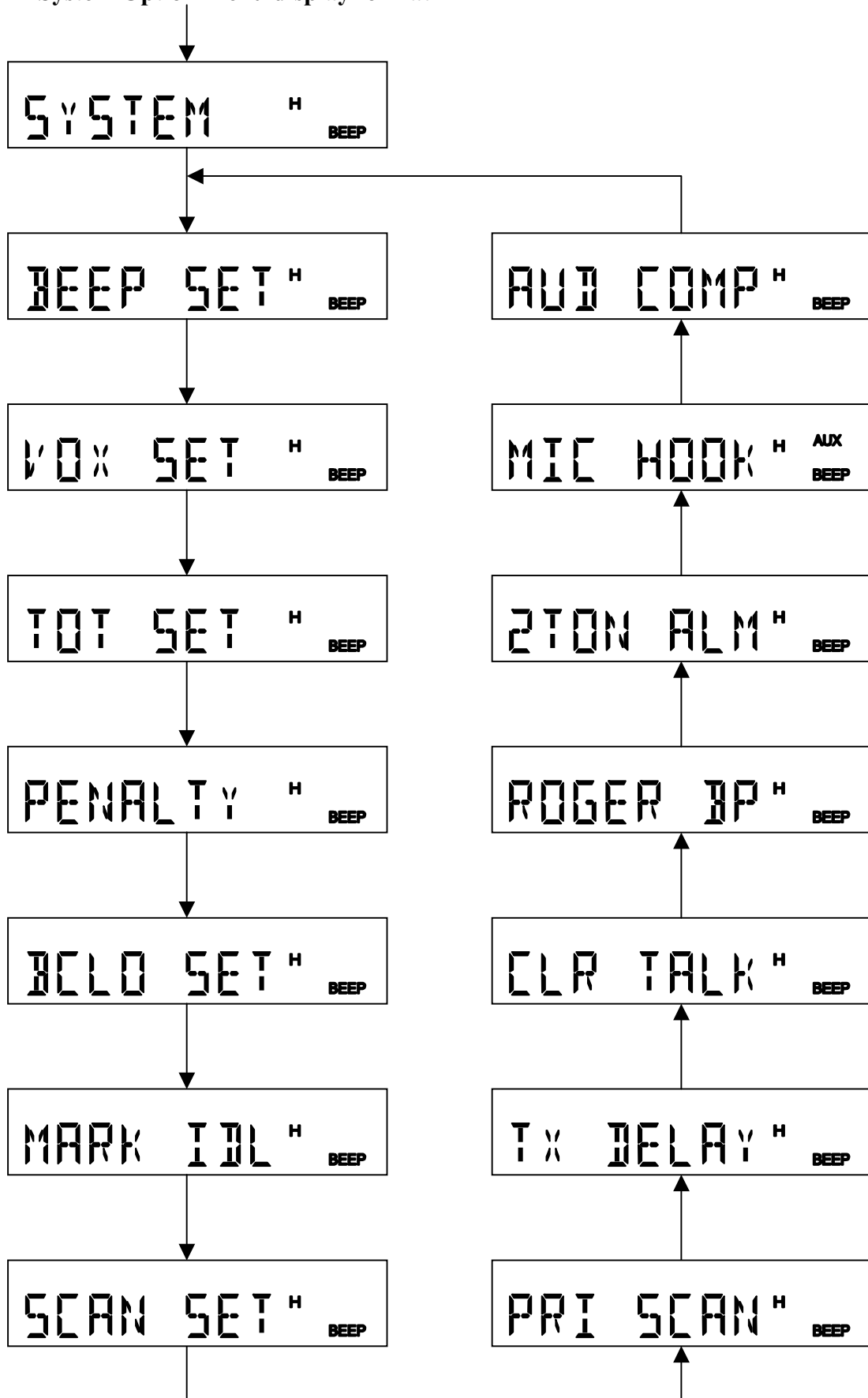


- In the above condition, Select On or Off by pressing the Up/Down key. If the MODE key or PTT button is pressed, the radio will save your On or Off selection for the current channel of 2-Tone Option (Individual, Group, Super-Group) and return to standby mode.

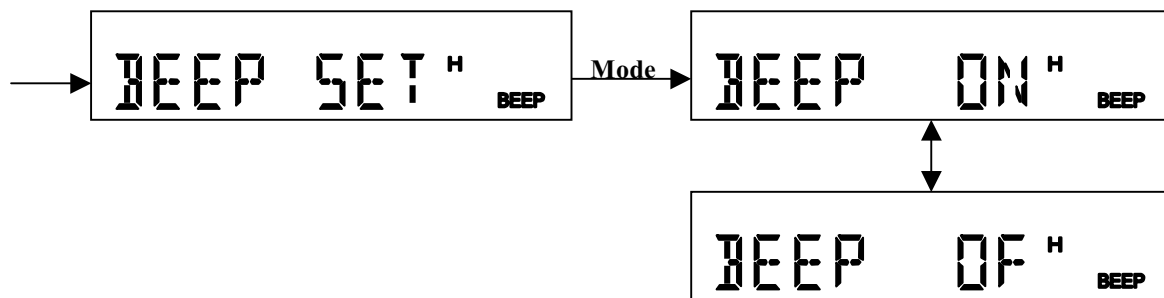
** Tone A and Tone B frequencies and timing for each Individual, Group and Super-Group can be programmed by PC programmer.

*. System Option Setting

** System Option Menu display format

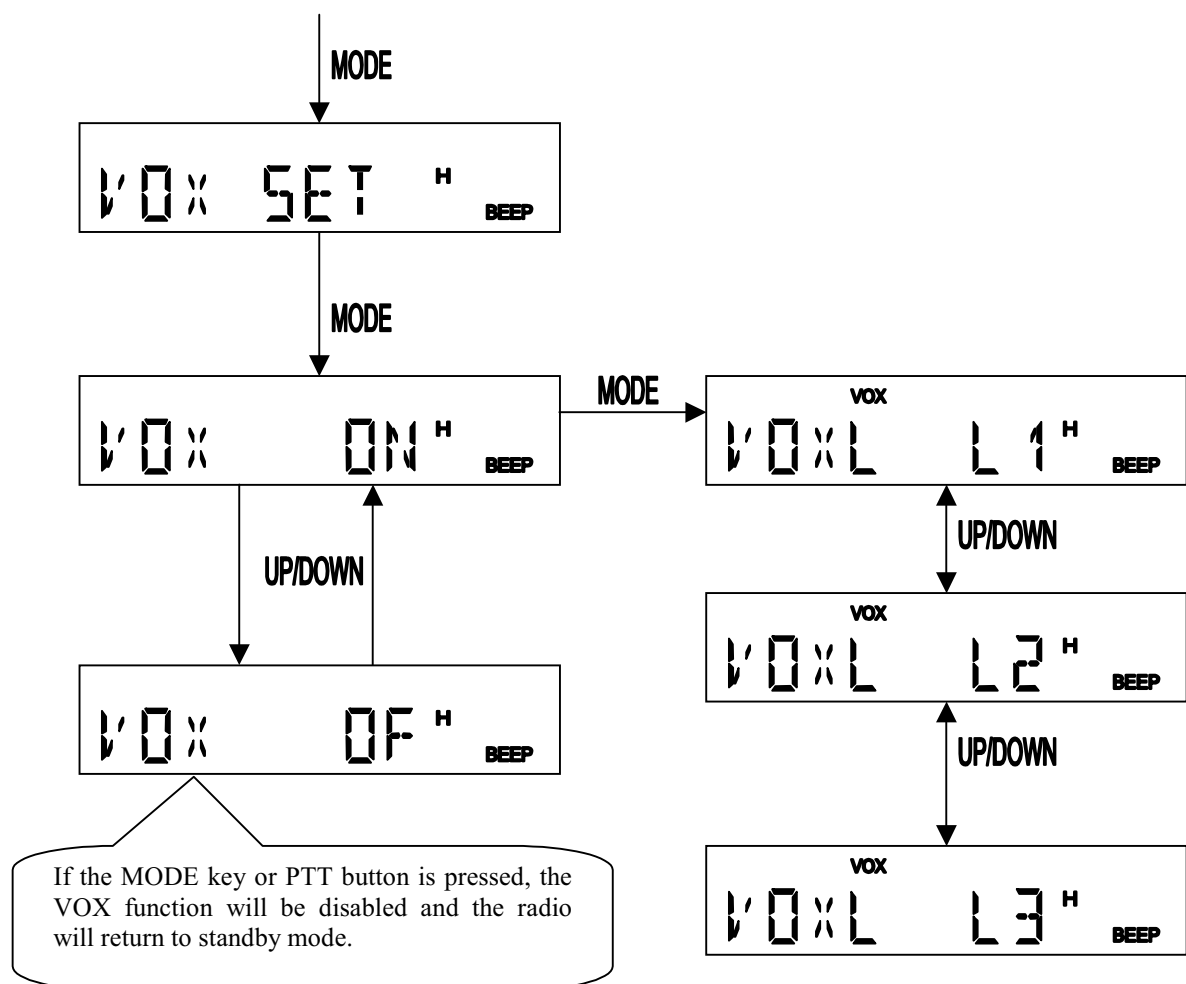


** Beep Tone On/Off Setting



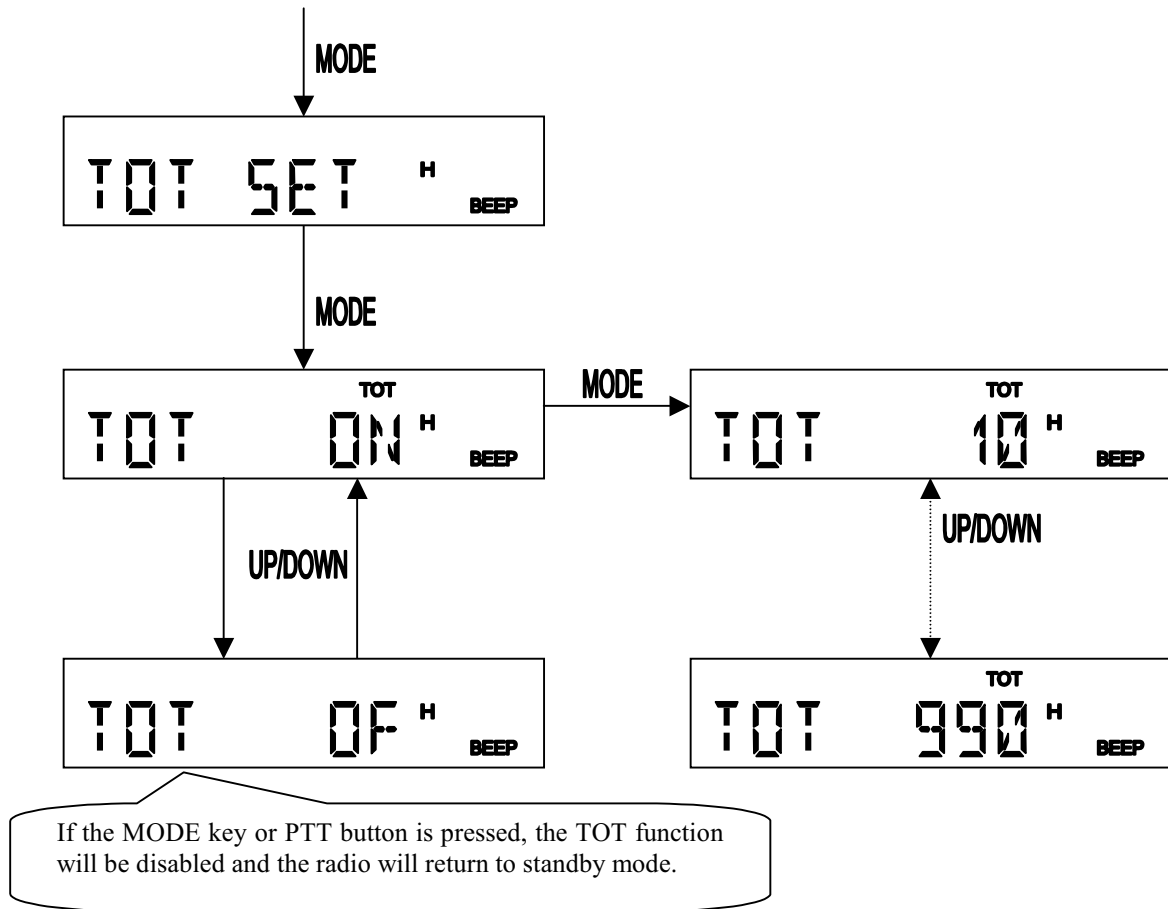
In the above condition, Select On or Off by pressing the Up/Down key. If the MODE key or PTT button is pressed the radio will save your On or Off selection and return to standby mode.

** VOX Option On/Off & VOX Sensitivity Setting



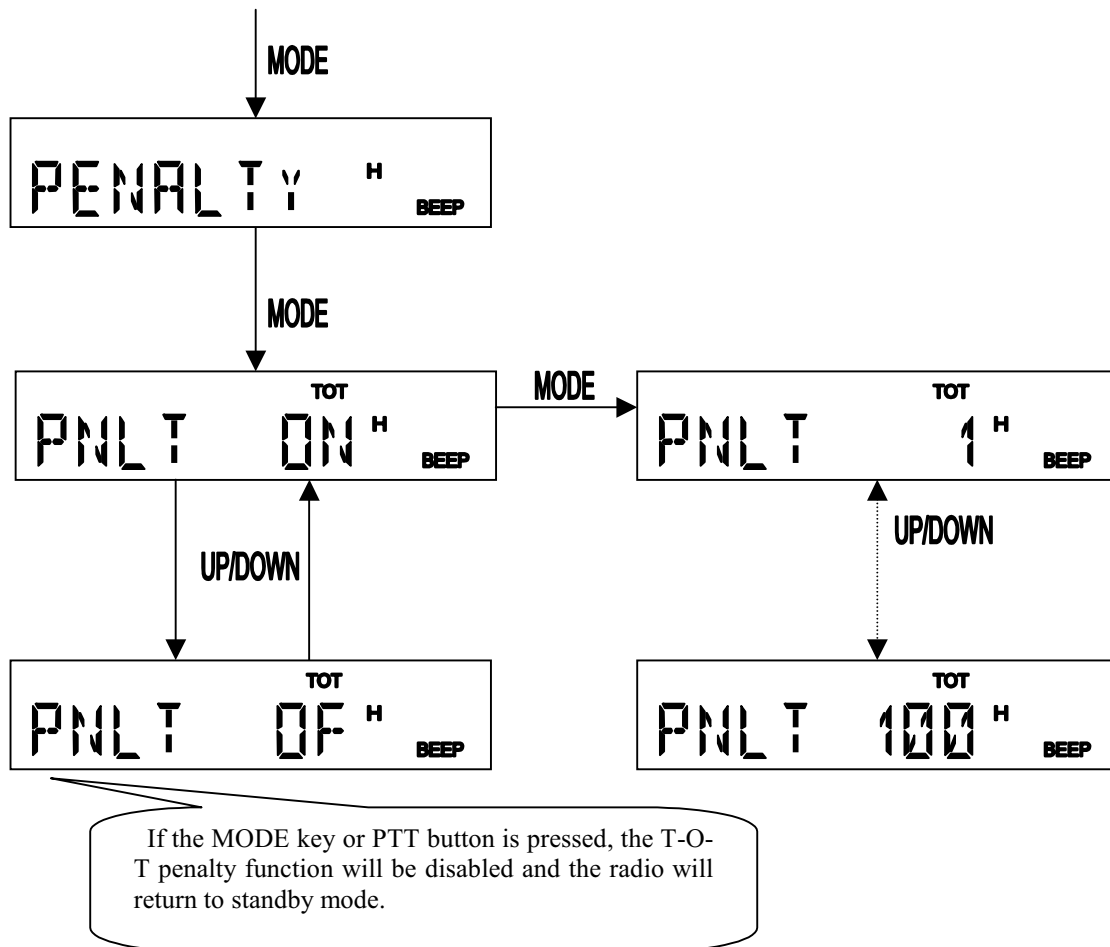
- In the above condition, select On or Off by pressing the Up/Down key. In the VOX OFF mode, if the MODE key or PTT button is pressed, the radio will save the current Setting and return to standby mode. In VOX ON mode, press the MODE key to enter the VOX Sensitivity Setting mode . In the VOX Sensitivity Setting mode, select the desired level by pressing the Up/Down key. If the MODE key or PTT button is pressed, the radio will save the current Setting and return to standby mode.

** Time-Out-Timer Setting



- In the above condition, select the desired time by pressing the Up/Down key. If the MODE key or PTT button is pressed, the radio will save your selected time and return to standby mode.
- ** T-O-T (Time-Out-Timer) : When TOT is enabled, transmission will be inhibited after the TOT time expires.

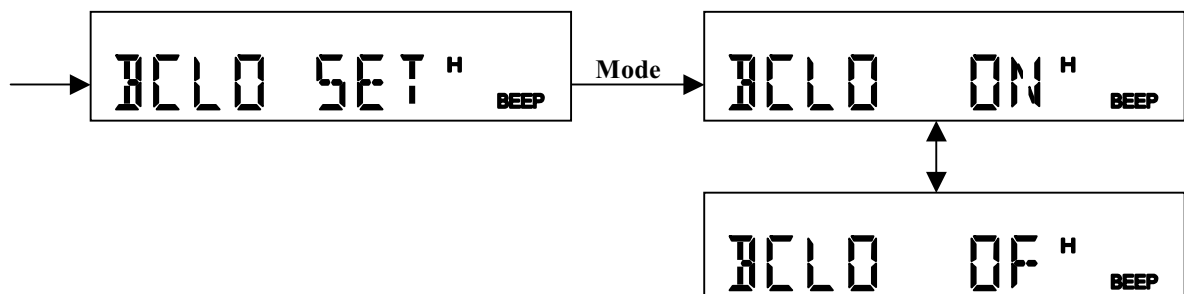
** TOT Penalty Setting



- In the above condition, select the desired time by pressing the Up/Down key. If the MODE key or PTT button is pressed, the radio will save your selected T-O-T Penalty Time and return to standby mode.

** TOT Penalty : If you continuously transmit after the TOT time expires, the radio will stop transmitting for TOT penalty Time but receive.

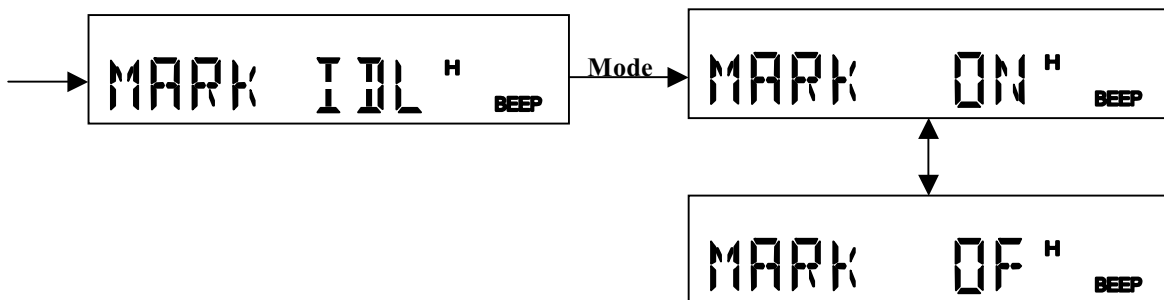
** Busy Channel Lock Out On/Off Setting



- In the above condition, select On or Off by pressing the Up/Down key. If the MODE key or PTT button is pressed, the radio will save your On or Off selection and return to standby mode.

** Busy Channel Lockout : When the signal is being received, the radio's transmitter is disabled.

** Marked Idle Out On/Off Setting

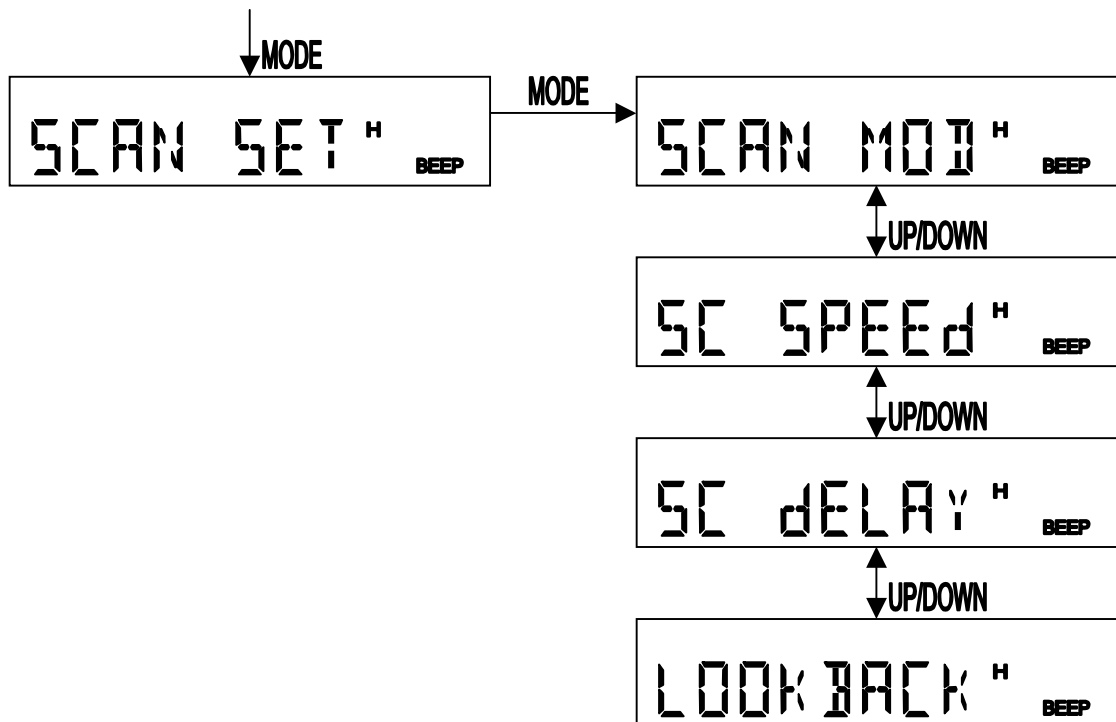


- In the above condition, select On or Off by pressing the Up/Down key. If the MODE key or PTT button is pressed, the radio will save your On or Off selection and return to standby mode

** Marked Idle : When used in conjunction with Busy Channel Lockout, the radio will allow a transmission if the CTCSS or DCS correct tone is present with the received signal.

** SCAN Setting

** Scan Setting Menu



** Scan Mode Setting



Select the desired Scan operation mode by pressing the Up/Down key. If the MODE key or PTT button is pressed, the radio will save your selection and return to standby mode.

** Normal Scan TX:

When the PTT button is pressed to transmit during the scanning ;

- if in Busy or Scan Delay time now, the radio will transmit on the received channel
- if Scanning continuously, the radio will stop transmitting.

** Priority Scan TX :

When the PTT button is pressed to transmit during the scanning ;

- If in Busy or Scan Delay Time now, the radio will transmit on the received channel.
- if scanning continuously, the radio will transmit on the priority channel.

** Priority Select Scan :

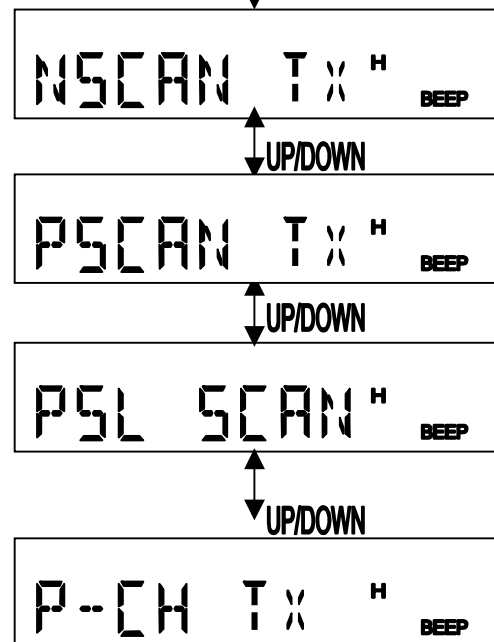
When the PTT button is pressed to transmit during the scanning ;

- if in Busy or Scan Delay Time now, the radio will transmit the received channel.
- if scanning continuously, the radio will transmit the Priority channel.

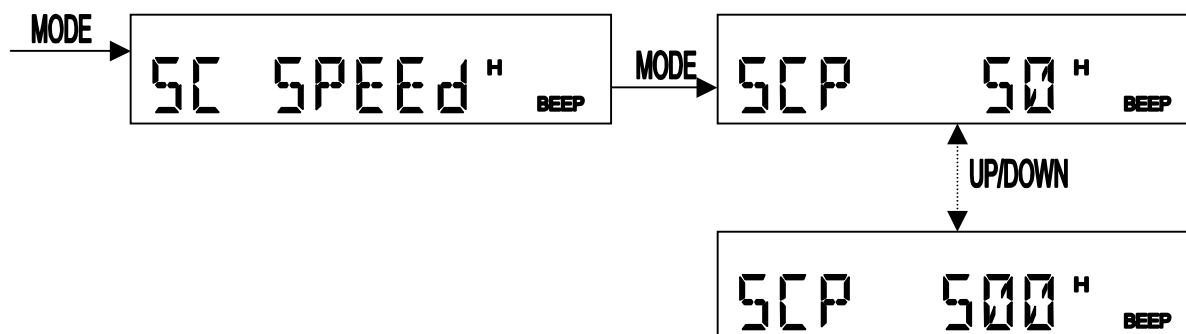
(In PSL Scan mode, the Priority channel is the scan start channel when pressed the Scan key.)

** Priority Channel TX :

When the PTT button is pressed to transmit during the scanning, It transmits on the Priority Channel regardless of Busy or Scan Delay.



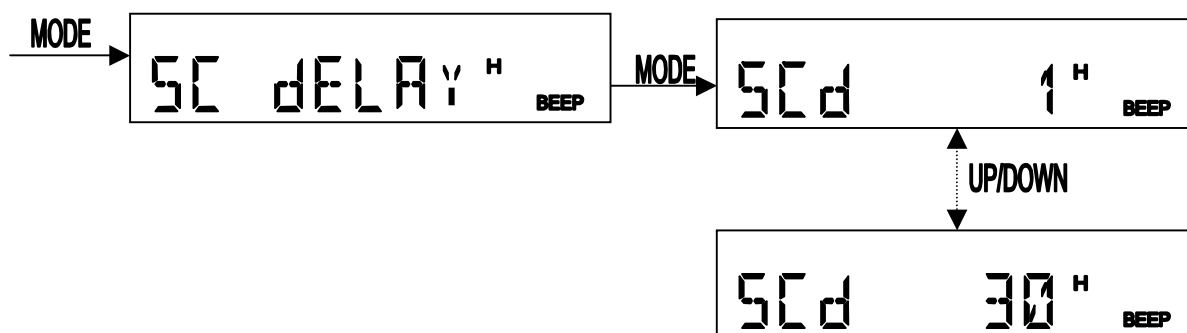
** Scan Speed Time Setting



In the above condition, select the desired time by pressing the Up/Down key. If the MODE or PTT button is pressed, the radio will save the selected time and return to standby mode.

**** Scan Speed Time :** In Scan, Scan Speed Time is the amount of time that scan stays on a channel (when there is no signal) before moving to the next channel on the scan list..

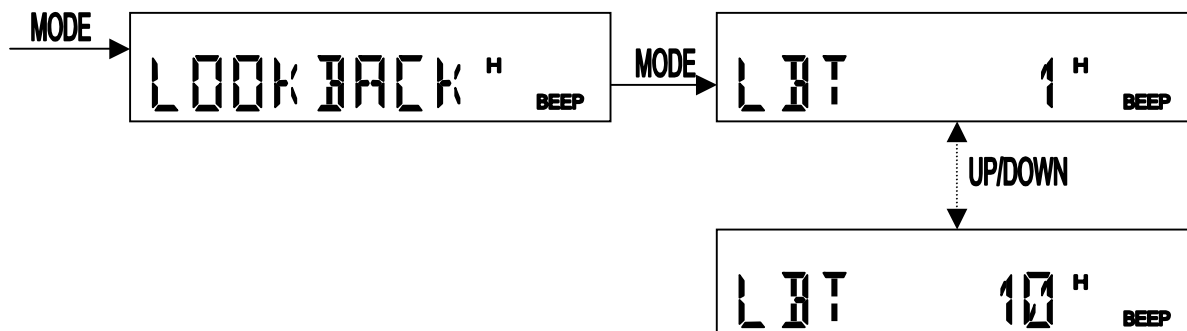
** Scan Delay Time Setting



In the above condition, select the desired time by pressing the Up/Down key. If the MODE or PTT button is pressed, the radio will save the selected time and return to standby mode.

**** Scan Delay Time :** In Scan, Scan Delay Time is the standby time to remain on the channel after the receiving signal stops or after transmitting.

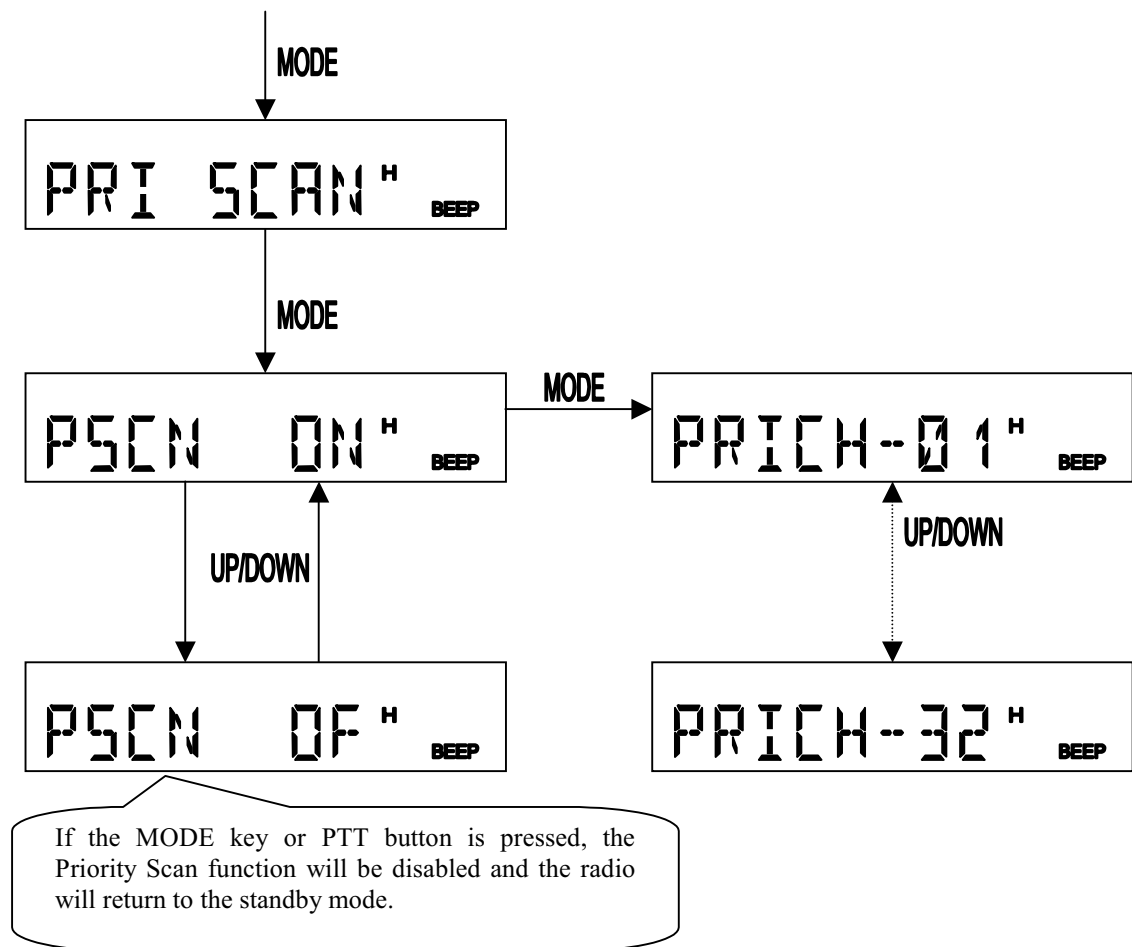
** Look Back Time Setting



In the above condition, select the desired time by pressing the Up/Down key. If the MODE or PTT button is pressed, the radio will save the selected time and return to standby mode.

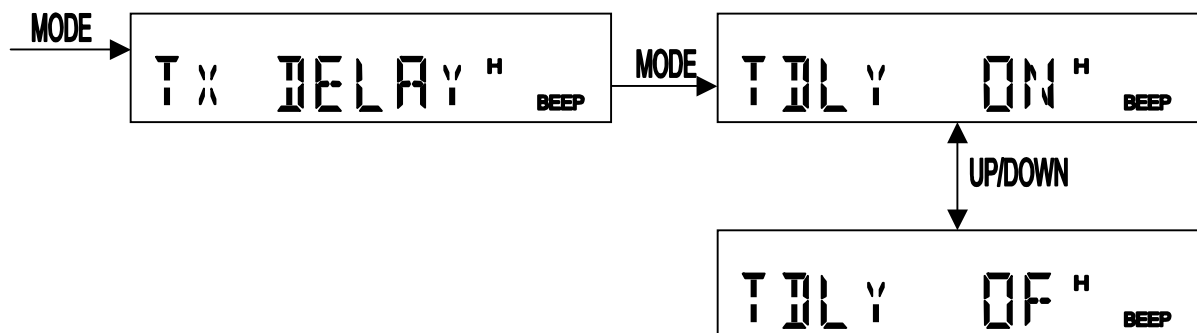
**** Look Back Time :** In Priority Scan mode, Look Back Time is the interval time to check the Priority Channel when the radio receives a signal on a non-priority channel.

** Priority Scan Setting



In the above condition, select the desired Priority Channel by pressing the Up/Down key. If the MODE or PTT button is pressed, the radio will save the selected channel as a Priority Channel and return to standby mode.

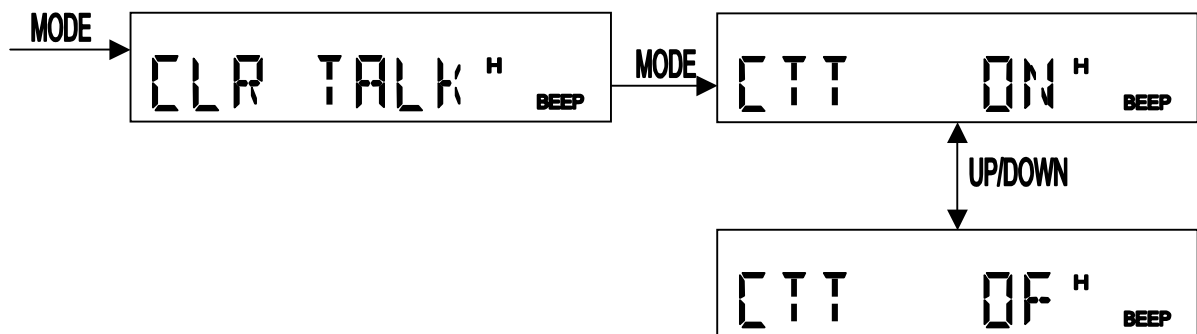
** Tx Delay On/Off Setting



. In the above condition, select On or Off by pressing the Up/Down key. If the MODE or PTT button is pressed, the radio will save your On or Off selection and return to standby mode.

** TX Delay : The TX delay setting is used to remove the squelch tail from the receiving radio by creating a CTCSS turn-off (no tone) for 180 milliseconds after TX is completed.

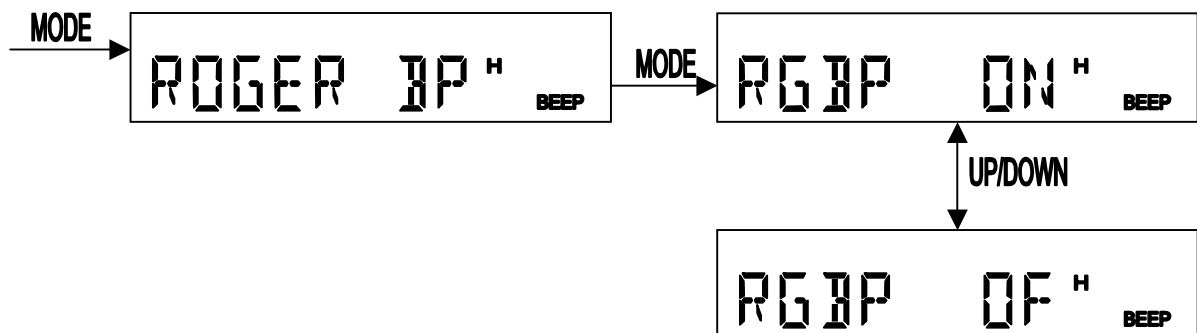
** Clear To Talk On/Off Setting



In the above condition, select On or Off by pressing the Up/Down key. If the MODE or PTT button is pressed, the radio will save your On or Off selection and return to standby mode.

** Clear To Talk : If you select On, the radio issues a beep tone when pressing the PTT button, letting you know that speaking may begin.

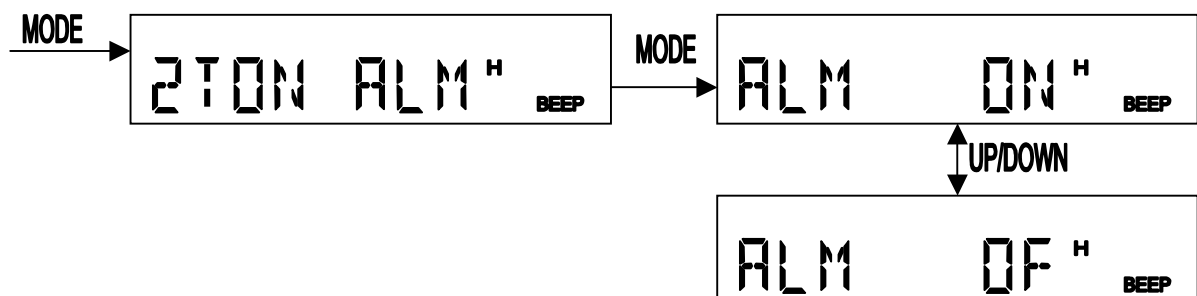
** Roger Beep On/Off Setting



In the above condition, select On or Off by pressing the Up/Down key. If the MODE or PTT button is pressed, the radio will save your On or Off selection and return to standby mode.

** Roger Beep : If you select On, the radio issues a beep tone after TX is completed to confirm the transmission has finished.

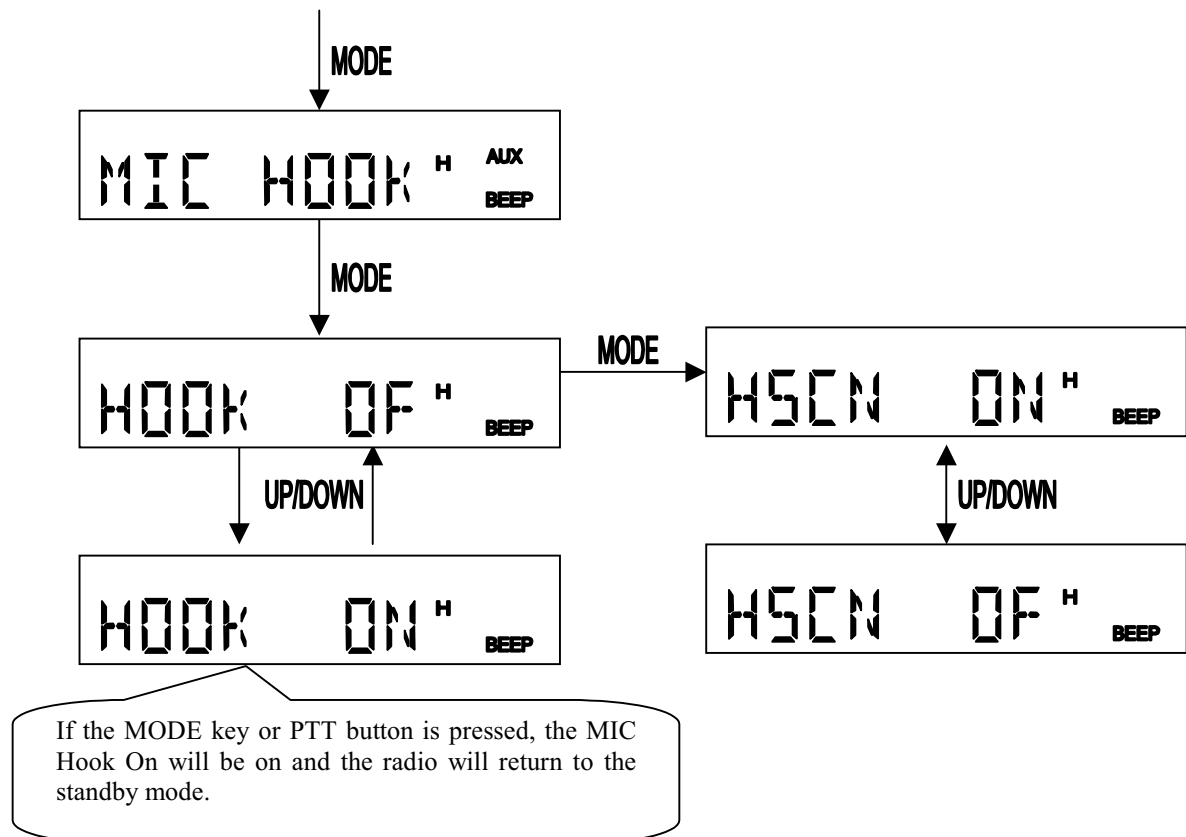
** 2-Tone Detect Alarm Setting



In the above condition, select On or Off by pressing the Up/Down key. If the MODE or PTT button is pressed, the radio will save your On or Off selection and return to standby mode.

** When the Alarm function is enabled, if detected 2-Tone, the radio will sound the alarm.

** MIC Hook option & Hook Off Scan Setting



In the above condition, select the desired Hook Off Scan On or Off by pressing the Up/Down key. If the MODE or PTT button is pressed, the radio will save the current Setting and return to standby mode.

** In MIC Hook On mode : All decode & scan work regardless of the hanger condition.

** In MIC Hook Off mode : - In Hanger On, All decode & scan work.

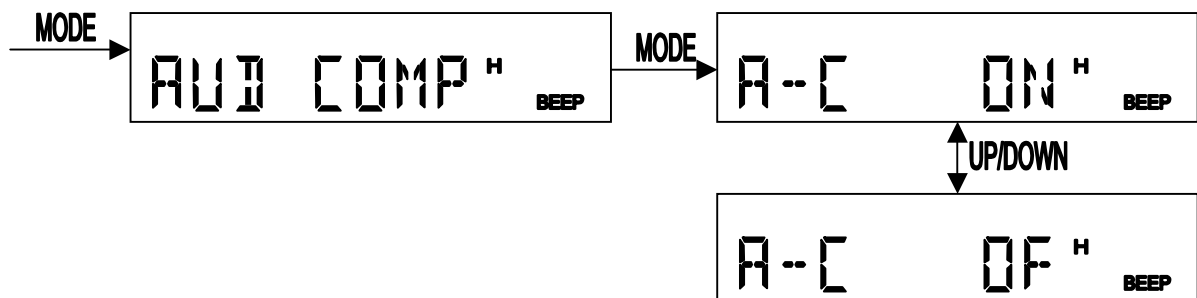
- In Hanger On, the TX is inhibited.

- In Hanger Off, (remove from ground) All Tone decode functions are disabled.

- In Hook Off Scan On, if the Hanger lifts up, the Scan will start.

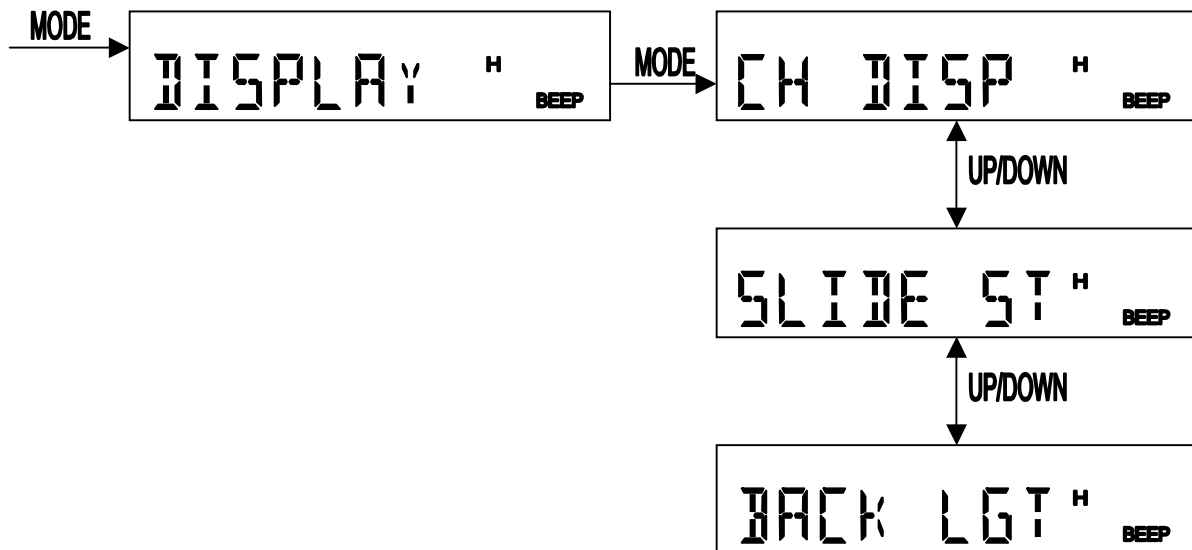
** In Scan, if the hanger is hanged, the Scan will stop.

** Audio Compaender Setting

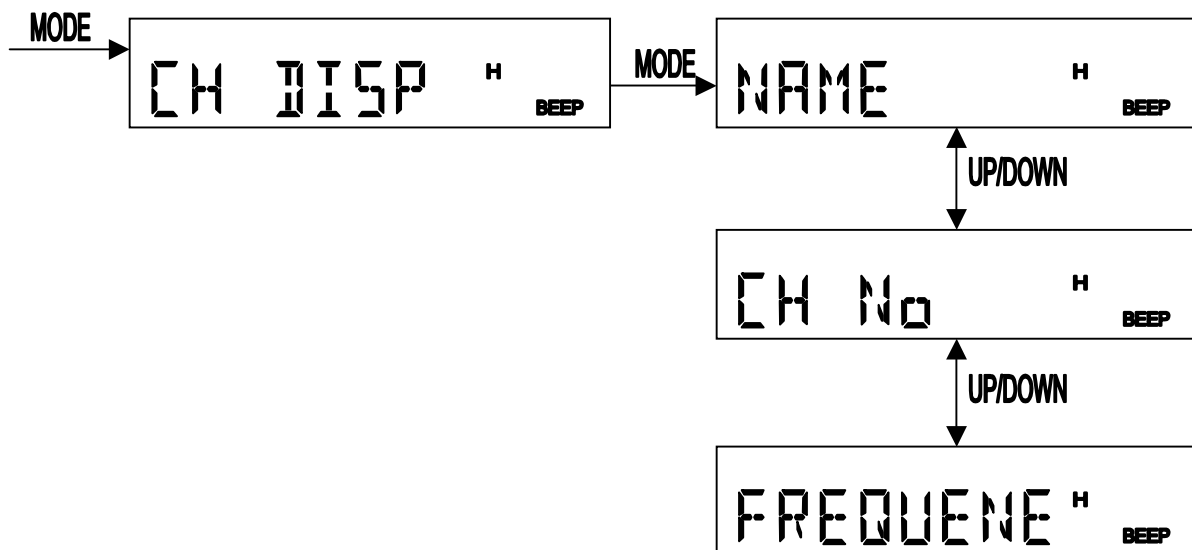


In the above condition, select On or Off by pressing the Up/Down key. If the MODE or PTT button is pressed, the radio will save your On or Off selection and return to standby mode.

***. Display Option Setting**



***. Channel Display Format Setting**



In the above condition, Select display format by pressing the Up/Down key. If the MODE or PTT button is pressed, the radio will save the selected display format and return to standby mode.

**** Name display**

TOPAZ3 H BEEP

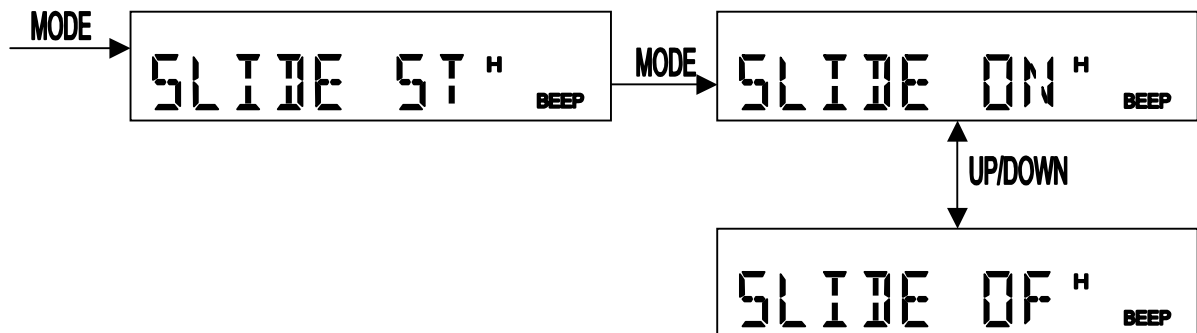
**** Channel No. display**

01-250,3 H BEEP

**** Frequency Display**

460,0125 H BEEP

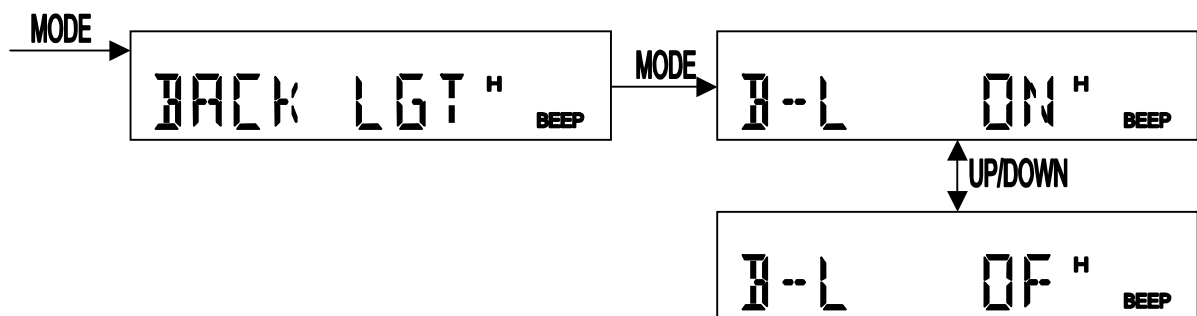
** Display Slide On/Off Setting



In the above condition, select On or Off by pressing the Up/Down key. If the MODE or PTT button is pressed, the radio will save your On or Off selection and return to standby mode.

** Display Slide : If No TX or No RX or any key is not pressed for more than 20 seconds, the assigned Slide Message by PC programmer will be scrolled and displayed.

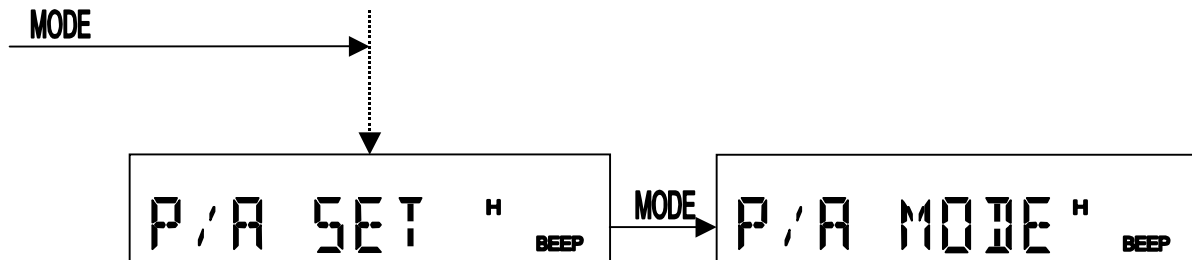
** Back Light On/Off Setting



In the above condition, select On or Off by pressing the Up/Down key. If the MODE key or PTT button is pressed, the radio will save your On or Off selection and return to standby mode.

**** Public Address mode**

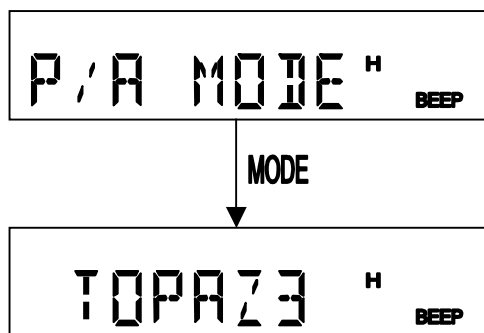
*** Converting Normal mode to P/A mode.**



If the MODE key or PTT button is pressed, the normal mode will be converted to the P/A mode.

In the P/A mode, if the PTT button is pressed, the only audio signal inputted through MIC will transmit through the external speaker.

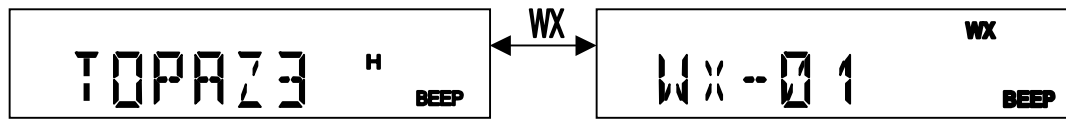
*** Converting P/A mode to Normal mode.**



In the P/A mode, if the MODE key is pressed, the P/A mode will be converted to the normal mode.

** Weather mode

If the WX Key is pressed, the WX mode will be converted to LMR mode.



The WX mode is receive-only, you cannot transmit on the channel frequencies dedicated to weather. In WX mode, if the PTT button is pressed to transmit, the “REC ONLY” display will appear and an error beep will sound.



** Scan operation

In the WX mode, if the Scan key is pressed, the radio will scan weather channels (WX01 ~ WX07).

In the LMR mode, if the Scan key is pressed, the radio will only scan channels enabled scan per channel option.

- If there is no signal during scanning, channel moving time will be the same as the current Scan Speed Time setting.
 - If one channel receives or transmit during scanning, the signal will stay on the channel for the current Scan Delay Time setting after the signal disappears.
 - If the Scan or MODE or WX key is pressed during scanning, the radio will stop scanning.
 - If the monitor key is pressed during scanning ; When scanning continuously, the key will be ignored.
- When in receiving or Scan Delay Time, the current channel will be deleted from Scan Enable list and the radio will scan the next channel. (the deleted channels can be restored by Power On or Off.)
- If the PTT button is pressed to transmit during scanning, the radio will transmit following Scan Operation mode.

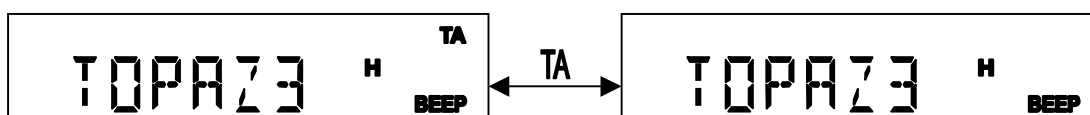
** If the Scan Enable channel is less than one channel, the radio will not scan. The following display will appear and an error beep will sound.



** Priority Scan operation

The Priority Scan works on the channel that Priority option of System option is on and Priority option of Channel option is on, In the standby mode, the radio checks the current channel and Priority channel by turns. When received a channel which is not the Priority channel, the radio will check the assigned Priority channel per Look Back Time assigned.

** Talk Around Operation



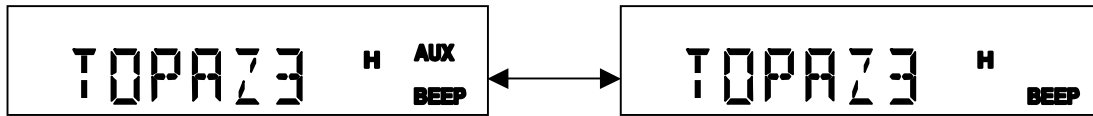
Press the TA key to enable or disable the TA function.

** When the TA is on, TX frequency & Tone option is converted to RX frequency & Tone option.

(If the TA is off, , RX frequency & Tone option will be converted to TX frequency & Tone option.)

** When programmed by the Programmer, the TA is enabled for a channel programmed the different TX / RX frequency only.

**** AUX Control**



Press the AUX key to enable or disable the AUX function.

**** Programmer**

To enter the Program standby mode, press and hold the Monitor key and power on.

After the following display appears, use the programming cable to connect PC to the radio.

In PC Programmer, click on READ or WRITE button to upload or download.

A rectangular box containing the word 'PROGRAM' in a large, bold, monospaced font.

**** Down Load display (PC → Radio)**

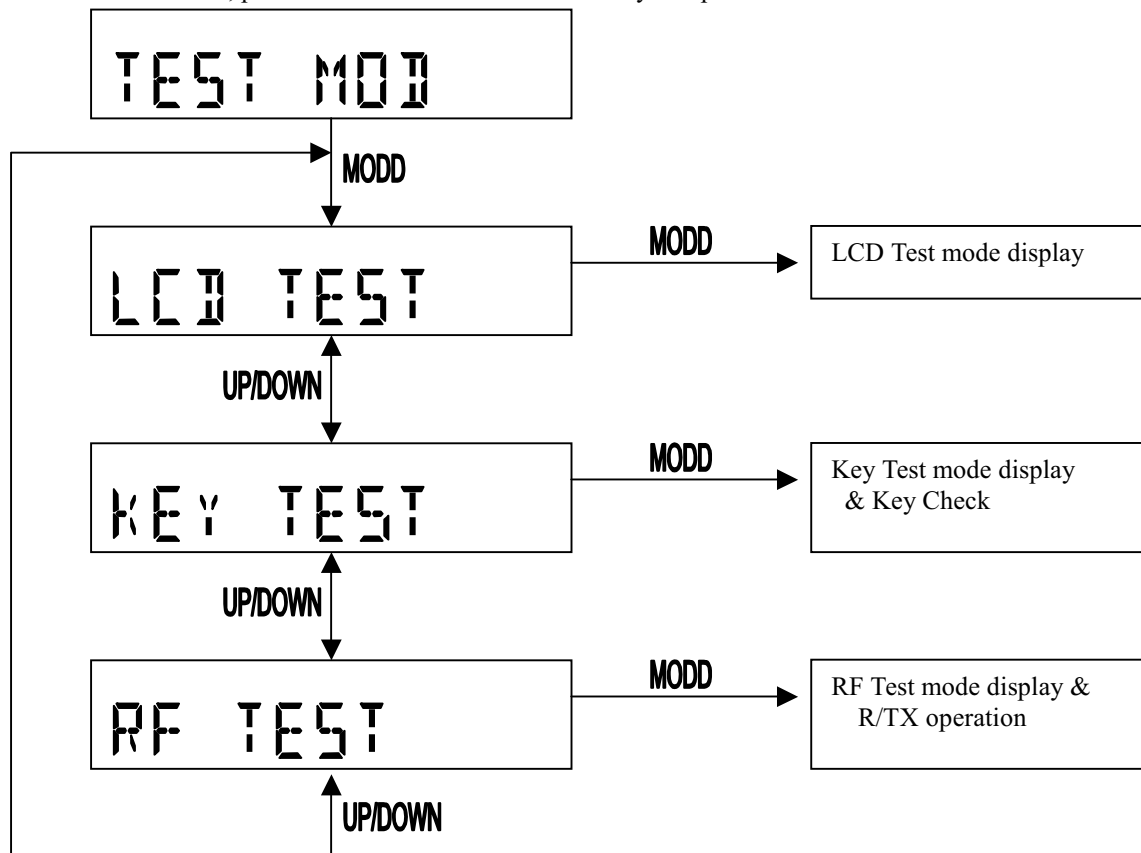
A rectangular box containing the text 'WRT NOW' in a large, bold, monospaced font.

**** Up Load display (Radio → PC)**

A rectangular box containing the text 'READ NOW' in a large, bold, monospaced font.

** Test Mode

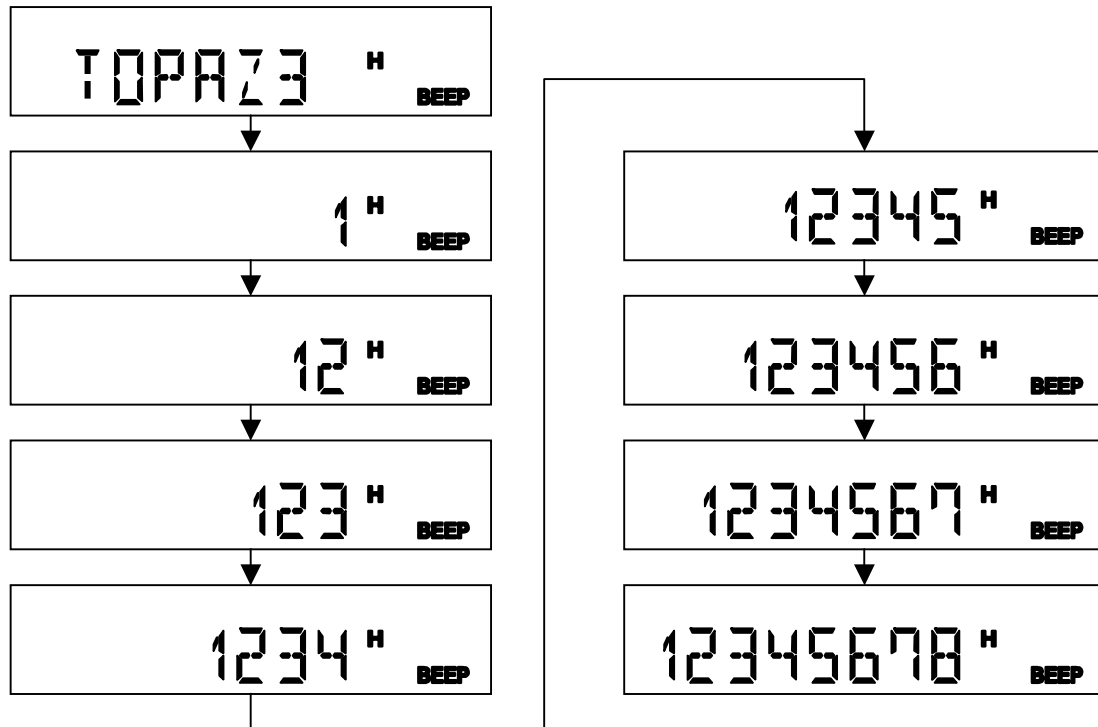
To enter the Test mode, press and hold the MODE & Scan key and power on the radio.



** DTMF MIC Interface

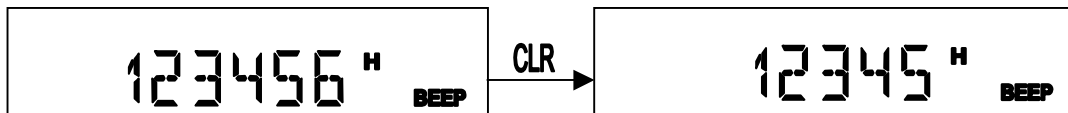
After the DTMF MIC is connected to the radio, press the MIC Keypad key and the following display will appear.

Ex) 12345678 push

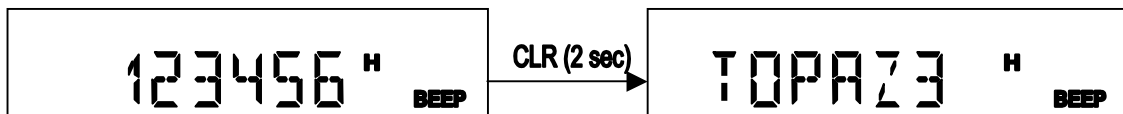


If 0 to 9 , * and # keys are pressed, the maximum 16 digits can be displayed.

. When DTMF digit is displayed, the last digit is deleted if the CLR key is pressed.



. When DTMF digit is displayed, all the digits displayed are deleted if the CLR key is pressed for more than 2 seconds.



- When DTMF digit is displayed, if the SND key is pressed, the current displayed digits will be scrolled left in turn and DTMF tone will occur then the radio will enter the Name display mode.
- When DTMF digit is displayed, if 0 to 9 keys are pressed after pressing the STR key, the radio will save the current displayed digits for assigned Number.
- In the Name display, if 0 ~ 9 keys are pressed after pressing the RCL key, the saved DTMF digits for assigned Number will display.
- During transmission, if 0 ~ 9 , * and # keys are pressed, assigned digits will be displayed and DTMF tone will occur continuously until releasing the keys.