CS3000 AND CS3001 PROGRAMMING REFERENCE MANUAL

FM HANDHELD TRANCEIVER

Connect Systems Incorporated
1802 Eastman Ave., Suite 116
Ventura CA 93003

Version 1.00

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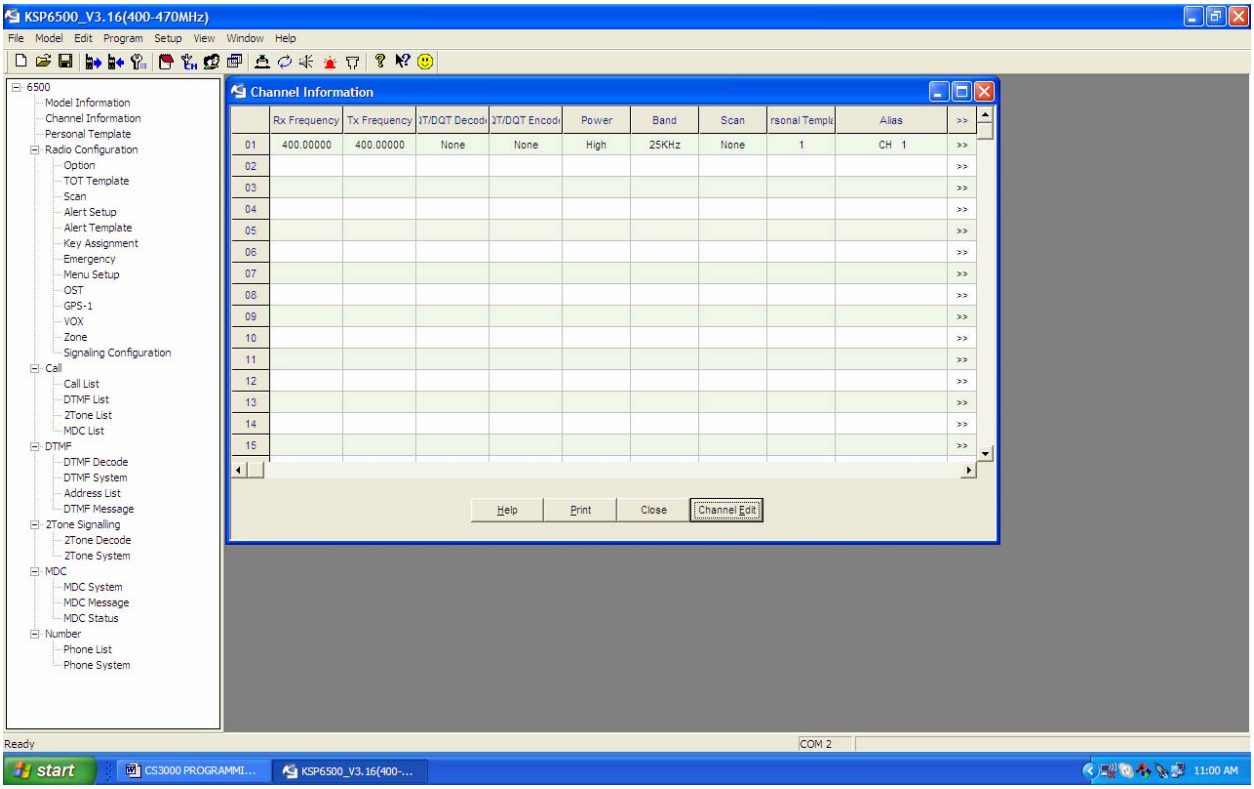
Opening Screen



When you first double click the CS3000 shortcut on your desktop, the following screen appears. The following things should be noted:

1. At the bottom of the screen it shows COM 2. This is the serial port you use for programming. This could be changed by the set menu to any Communication Port between 1 and 16. Only the active Communications Ports can be used. The active ports will be indicated by the Communication Port numbers black and the inactive Communication Port numbers grey.
2. At the top of the screen on the left side you will see a version number of this software. At the time this page was written the version was 3.16.
3. At the top of the screen on the left side you will see the frequency of the radio. This version is set for 400-470 MHz (UHF). There is also a version set for 136-174 MHz (VHF)
4. You can edit the various parameters by clicking on a screen in the edit pull-down menu or the summary of edit screens on the left.
5. Towards the top of the screen you will see a set of 18 Icons. The functions of the Icons from left to right are as follows:
    a. New
    b. Open
    c. Save
    d. Read From Radio
    e. Write To Radio
    f. Tuning

g. Model Information
h. Channel Information
i. Personal Template
j. Option
k. Key Assignment
l. Scan
m. Alert Template
n. Emergency
o. Communication Port
p. About
q. Help
r. Tune Data

If the radio is not attached to the programming cable at the time this screen is accessed, then the Tuning Icon and the Tune Data Icon is missing.

CS3000 Pull-Down Menus

File Pull-Down Menu

New

This function clears all data currently shown in the window and restores the program's default values.

Open

The open function reads a data file that is saved on a hard disk drive, then transfers the data to your computer memory. You can edit the transferred data file, write it to the transceiver, or print it out.

Save

The Save function stores the created or revised data file to the drive, path, and file name previously selected. Data files have ".dat" as their file extension.

Save As

The Save As function saves the current file to the drive, path, and file name that you specify, allowing you to rename or redirect the file to a new location. Data files have ".dat" as their file extension.

Print

The Print function redirects and prints the programming data. The data may have been created, loaded from a disk, or read from the transceiver.

Print View

When you choose this command, the main window will be replaced with a "Print view" window. One or two pages will be displayed in the format in which they will be printed. The Print Preview tool bar offers options to view either one or two pages at a time, move back and forth through the document, and zoom in and out of pages.

Print Set…

Brings up the print setup screen for the active printer in your computer.

Exit

This function allows you to exit from the program without storing any files that have not been stored already.

Model Pull-Down Menu

Model Information

Allows you to determine which model you are using and also the characteristics of the radio. The first parameter is the model type and it is always CS3000. The subtype is always 2-tone. The frequency range determines which radio you are using. For VHF it is 136-174 MHz and for UHF it is 400-470 MHz. The other frequency ranges are currently not supported. The other parameters are currently not used.

Edit Pull-Down Menu

Radio Information

This screen gives basic information about the PC program, The embedded and secret embedded information, and pass word protection.

Channel Information

This screen sets the per channel information such as receive and transmit frequency, receive and transmit CTCSS tones or DCS codes, etc.

Personal Template

This screen sets the various parameters to customize each of the different channels.

Radio Configuration: Option

This screen allows the setting of various miscellaneous parameters such as home channel, Power on channel, and lend.

Radio Configuration: TOT Template

This screen sets the timing for the timeout timers.

Radio Configuration: Scan List

This screen sets the matrix to determine the scanning sequence.

Radio Configuration: Alert Set

Determines which functions gets an alert

Radio Configuration: Alert Template

This screen allows you to generate custom alert messages for certain functions.

Radio Configuration: Key Assignment

This screen sets the definition for the three software defined switches. Each switch can be used for two different functions depending on the length of time the switch is depressed.

Radio Configuration: Emergency

This screen has the various types of parameters used for the different emergency conditions such as lone worker, etc.

Radio Configuration: Menu Setup

This screen determines which parameters can be programmed from the keypad by the user.

Radio Configuration: OST

This screen sets up a matrix of CTCSS and DCS codes to allow these codes to be dynamically used on any channel.

Radio Configuration: GPS

This screen allows the external GPS microphone to be used.

Radio Configuration: VOX

This screen sets the VOX parameters.

Radio Configuration: Zone

This screen defines which channels are associated with which zones.

Encode: Call List

It allows you to view-only the Alias associated with the current Call List Member.

Encode: 2Tone List

Sets up the two tone sequence and related parameters for encoding.

Encode: DTMF List

Sets up the DTMF sequence and related parameters for encoding.

Encode: MDC List

Sets up the MDC sequence and related parameters for encoding.

Encode: Address List

Allows the ability to add a phone number entry to the Phone List for speed dialing.

Decode: 2Tone Decode

Sets up two tone decode for call alert or selective calling

Decode: DTMF Decode

Sets up DTMF decode for call alert or selective calling

Decode: DTMF Message

Sets up the alias for different DTMF decodes

Decode: MDC Message

Sets up the alias for receiving a MDC message

Decode: MDC Status

Sets up the alias for sending a MDC message

System: 2Tone System

This screen sets the timing for the various two tone generators

System: MDC System

This screen sets the timing and other parameters for the MDC generators

System: Signaling Configuration

Sets up various signaling parameters.

System: DTMF System

This screen sets the timing for the various DTMF generators.

Phone: Phone List

Sets up the speed dial list for generating telephone calls.

Phone: Phone System

Sets up the various parameters for making telephone calls.

LTR Repeater

This screen sets up the repeater definition for an LTR system.

Program Pull-Down Menu

Read Data

This allows the transfers of data from the PC program to the radio. This function does not read the data in a PC file. To use this function the radio must be operational and the programming cable must be connected between the PC and the radio.

Write Data

This allows the transfers of data from the radio to the PC program. This function does not store the data in a PC file. To use this function the radio must be operational and the programming cable must be connected between the PC and the radio.

Set Pull-Down Menu

Communication Port

Sets up the communication port that connects the PC to the radio. This program allows you to select COM 1 through COM 16. Only the active ports in the PC can be enabled. Active ports will be shown by being highlighted compared to non active ports.

Change to former

Allows older versions of the microprocessor software to work with this program. Only affects radios sold before 2008.

View Pull-Down Menu

Tool Bar

Hides or displays the 18 icons used as short cuts on the top of the screen.

State Bar

Hides or displays the status bar at the bottom of the screen.

Tree Bar

Hides or Displays the Tree Bar to the left of the screen.

Window Pull-Down Menu

Cascade

Shows the open screens in a cascade fashion. That means all the open screens are overlapping each other.

Horz

Shows the open screens as horizontal tiles.

Arrange

Arranges all the minimized screens at the bottom of the display

Help Pull-Down Menu

Help Contents

Contains various copyright notices and the help screens.

About

Shows the version number of the program and copyright information.

Programming The CS3000

Introduction To Programming the CS3000

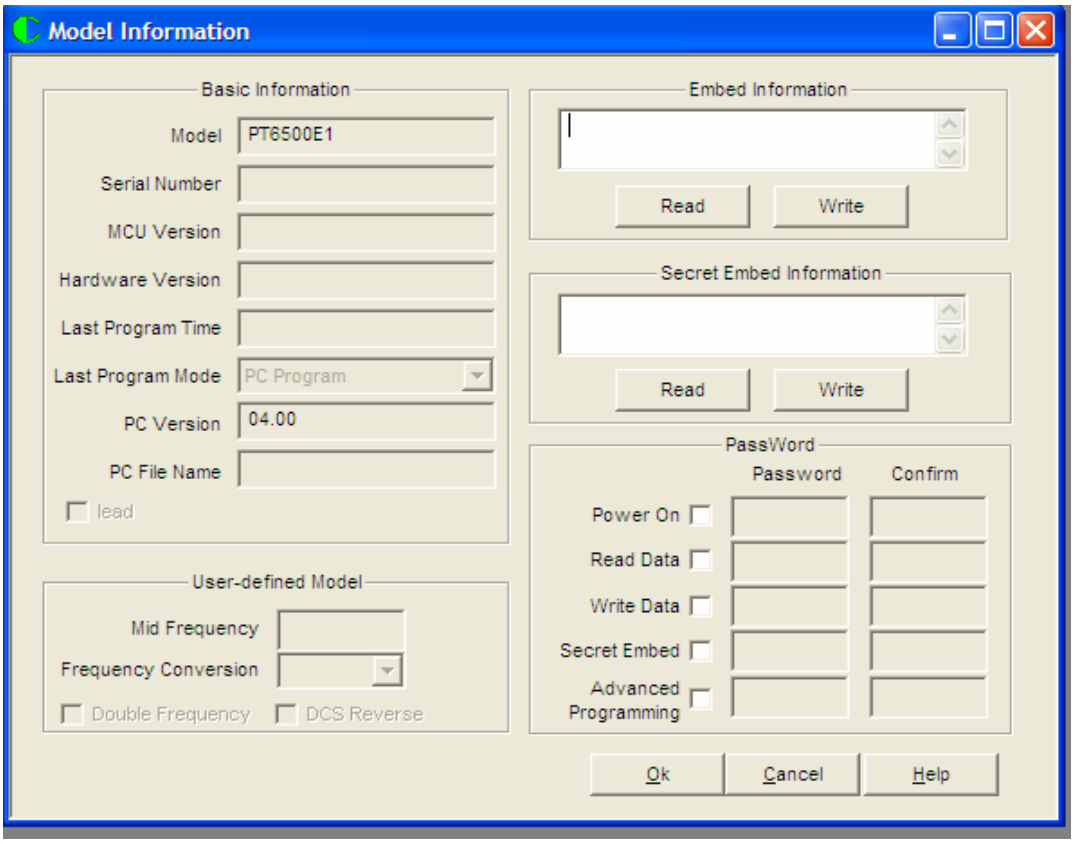
This manual gives a comprehensive description of all the parameters in the radio. However this is a reference manual and to make your life easier we provide examples and sample data files as a short-cut to programming the radio. This manual should only be used under the following circumstances:

1. You are bored have nothing better to read.
2. You are anal and have to know exactly how everything works.
3. You have a sleep disorder and need something to put you to sleep.

Changing the parameters on the various screens does not save the parameters just programmed. The data will only be saved if you write the data to the radio using the “Write Data” from the program pull down menu or you use the “Save” or “Save As” from the file pull-down menu.

Radio Information Screen

When the Radio Information Tab from the Edit pull down menu is accessed, the following screen appears:



Basic Information

Model

This will have a generic number of CS3000 and corresponds to the version having CTCSS, DCS or LTR.

Serial Number

This parameter is not currently shown on this screen. The Serial number is on a label inside the radio and can be found by taking the battery out of the radio.

MCU Version

This is the software version of the microprocessor inside the radio.

Hardware Version

This parameter is not currently shown on this screen. The hardware version is on a label inside the radio and can be found by taking the battery out of the radio.

Last Program Time

This is the time the PC software was last used to program a radio.

Last Program Mode

Indicates the radio was last programmed by a PC program.

PC Version

Current software version of this PC program.

PC File Name

The active data file name for the radio that is being programmed.

User-Defined Mode

Not applicable to this product

Mid Frequency

Not applicable to this product.

Frequency Conversion

Not applicable to this product.

Double Frequency

Not applicable to this product.

DCS Reverse

Not applicable to this product.

Embed Information

Up to 32 characters can be put in the embed information field. When the user presses the write button, the information will be stored in the radio. When the user presses the read button, the information will be read from the radio. This field can be used for things such as storing the name of the user.

Secret Embed Information

Up to 32 characters can be put in the secret embed information field. When the user presses the write button, the information will be stored in the radio. When the user presses the read button, the information will be read from the radio. This field can be used for things such as storing the name of the user. This field can be password protected so to read or write this field requires the user to enter a password.

Password Protection

Power On

Requires the user to enter a password into the radio from the keypad when the power is first turned on.

Read Data

Cannot read back the data from the radio without a password. This is useful for protecting sensitive information such as frequencies and CTCSS/DCS codes of public safety organizations.

Write Data

Cannot write data from the PC to the radio without a password. This is useful to prevent customers from modifying the radio if they get a copy of the programming software.

Secret Embed

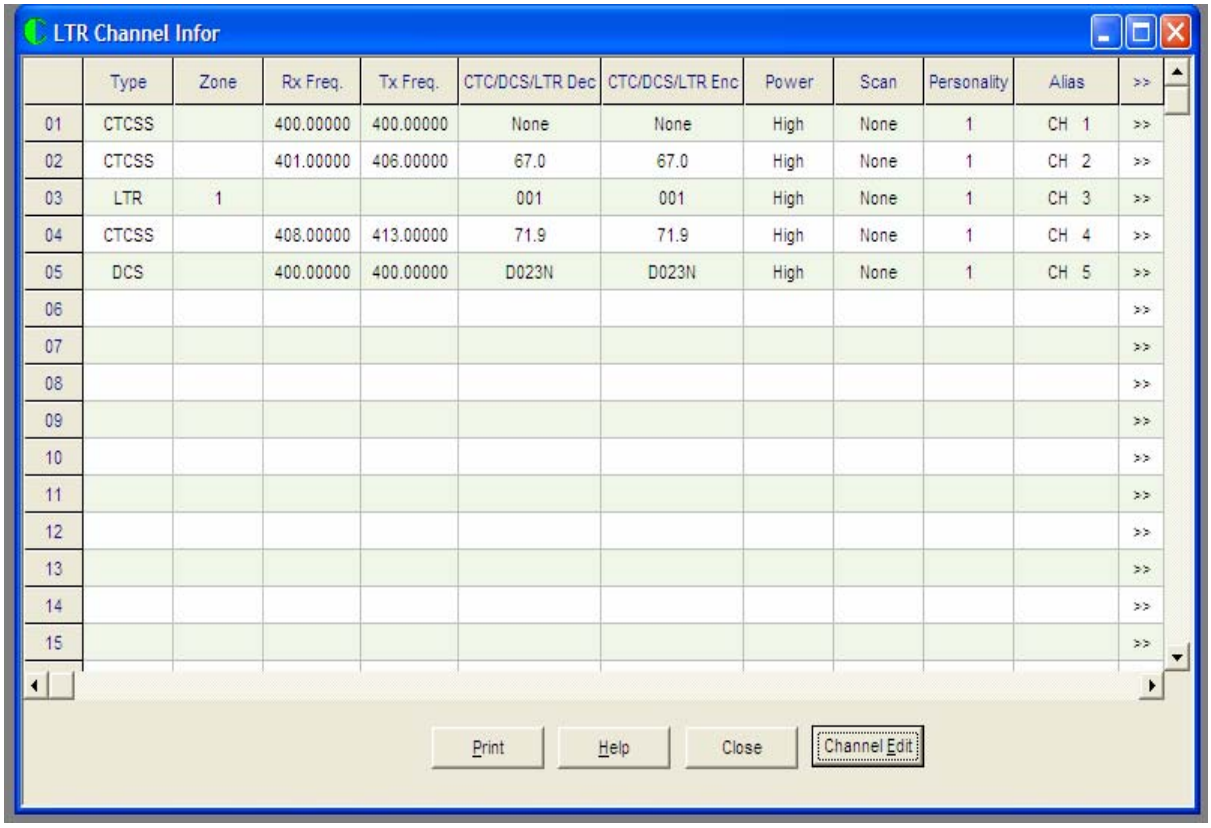
Protects the secret message stored in the radio unless a password is provided.

Advanced Programming

Requires the user to enter the password to program by using the keypad the advanced features of the radio such as changing the frequency of the channels.

Channel Information Screen

When the Channel Information entry from the tree bar is accessed, the following screen appears:

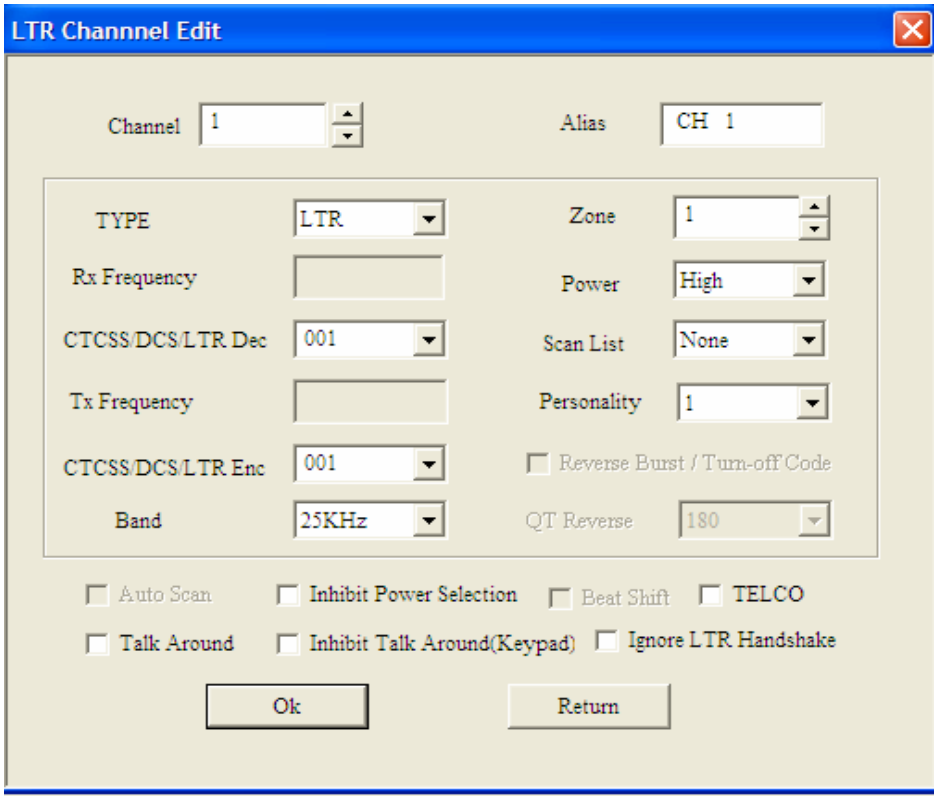


	Type	Zone	Rx Freq.	Tx Freq.	CTC/DCS/LTR Dec	CTC/DCS/LTR Enc	Power	Scan	Personality	Alias	>>
01	CTCSS		400.00000	400.00000	None	None	High	None	1	CH 1	>>
02	CTCSS		401.00000	406.00000	67.0	67.0	High	None	1	CH 2	>>
03	LTR	1			001	001	High	None	1	CH 3	>>
04	CTCSS		408.00000	413.00000	71.9	71.9	High	None	1	CH 4	>>
05	DCS		400.00000	400.00000	D023N	D023N	High	None	1	CH 5	>>
06											>>
07											>>
08											>>
09											>>
10											>>
11											>>
12											>>
13											>>
14											>>
15											>>

This screen is a summary of the Channel Information. To set the parameters for the channel press the Channel Edit key and access the screen shown on the next page.

LTR Channel Edit Screen

When the Channel Edit button from the Channel Information Screen is pressed, the following screen appears:



Channel

There are 128 channels in this radio. This parameter selects which channel you want to program.

Alias

This parameter just provides a way of giving the channel a name that makes sense to the dealer who is programming the radio. This parameter can be shown on the LCD.

Type

This selects the type of coding for the channel. The choice is CTCSS, DCS and LTR.

RX Frequency

This is the receiver frequency. It must be a valid frequency for the radio selected. For the CS3000 VHF the allowable frequency range is 136.00000 MHz to 174.00000 MHz and for the CS3000 UHF the allowable frequency range is 400.00000 MHz to 470.00000 MHz. If you are using LTR, then the receive and transmit frequencies are entered in another screen.

CTCSS/DCS/LTR Dec

This specifies the allowable CTCSS, DCS, or LTR codes the unit will be using for receiving. The allowable codes are shown below for CTCSS and DCS. LTR can be any number between 1 and 250.

CTCSS CODES

62.5	94.8	136.5	186.2	233.6
67.0	97.4	141.3	189.9	241.8
69.3	100.0	146.2	192.8	250.3
71.9	103.5	151.4	196.6	254.1
74.4	107.2	156.7	199.9	
77.0	110.9	162.2	203.5	
79.7	114.8	165.5	206.5	
82.5	118.8	167.9	210.7	
85.4	123.0	173.8	218.1	
88.5	127.3	179.9	225.7	
91.5	131.8	183.5	229.1	

DCS CODES

023	071	134	223	306	411	503	631	734
025	072	143	226	311	412	506	632	743
026	073	152	243	315	413	516	654	754
031	074	155	244	331	423	532	662	
032	114	156	245	343	431	546	664	
043	115	162	251	346	432	565	703	
047	116	165	261	351	445	606	712	
051	125	172	263	364	464	612	723	
054	131	174	265	365	465	624	731	
065	132	205	271	371	466	627	732	

TX Frequency

This is the transmitter frequency. It must be a valid frequency for the radio selected. For the CS3000 VHF the allowable frequency range is 136.00000 MHz to 174.00000 MHz and for the CS3000 UHF the allowable frequency range is 400.00000 MHz to 470.00000 MHz. If you are using LTR, then the receive and transmit frequencies are entered in another screen.

CTCSS/DCS/LTR Enc

This specifies the allowable CTCSS, DCS, or LTR codes the unit will be using for transmitting. The allowable codes are shown below for CTCSS and DCS. LTR can be any number between 1 and 250.

CTCSS CODES

62.5	94.8	136.5	186.2	233.6
67.0	97.4	141.3	189.9	241.8
69.3	100.0	146.2	192.8	250.3
71.9	103.5	151.4	196.6	254.1
74.4	107.2	156.7	199.9	
77.0	110.9	162.2	203.5	
79.7	114.8	165.5	206.5	
82.5	118.8	167.9	210.7	
85.4	123.0	173.8	218.1	
88.5	127.3	179.9	225.7	
91.5	131.8	183.5	229.1	

DCS CODES

023	071	134	223	306	411	503	631	734
025	072	143	226	311	412	506	632	743
026	073	152	243	315	413	516	654	754
031	074	155	244	331	423	532	662	
032	114	156	245	343	431	546	664	
043	115	162	251	346	432	565	703	
047	116	165	261	351	445	606	712	
051	125	172	263	364	464	612	723	
054	131	174	265	365	465	624	731	
065	132	205	271	371	466	627	732	

Band

This parameter selects Wide Band, Medium Band, or Narrow Band. Wide Band is defined as 25 KHz spacing. Medium Band is defined and 20 KHz spacing, and Narrow Band is defined as 12.5 KHz spacing.

Zone

For an LTR system , the system is arranged in zones. Zones can be thought of as either entirely different radio systems, or multiple home channels in the same radio system. In this radio eight zones are allowed. This parameter is only used if the type selected is LTR.

Power

This parameter selects either High Power, Middle Power, or Low Power. High Power is about 5 watts VHF and 4 watts UHF, Middle Power is about 2 watts, and Low Power is 1 watt.

Scan List

This drop down combo box is used to select which preprogrammed scan list will be used for this channel. There are 16 possible scan lists with up to 16 entries in each list. When it is set to 'None', the scan feature will be disabled for this channel.

Personality Template

This drop down combo box displays the Personality selected for this channel's operation. There are 16 possible personalities. The personality setup and edit is on another screen.

Reverse Burst/Turn-off Tone

If this feature is enabled, then the radio will transmit a reverse burst of CTCSS for about 180 ms. If this feature is not enabled, then the reverse burst will not be sent.

QT Reverse (degrees)

This parameter determines the phase shift of the reverse burst tone. The choices are either 180 degrees or 120 degrees. Most radios use 180 degrees.

Auto Scan

This option box can be enabled or disabled by clicking the cursor on the checking box. If enabled, the radio will start to scan automatically when on this channel.

Inhibit Power Selection

If a button is programmed for high/low power toggling, selecting this option prevents that from happening when this channel is the active channel.

Beat Shift

When the Beat Shift is enabled, it shifts the microprocessor system clock frequency per channel to avoid interference when you receive a signal.

Note: If there is a beat noise in the modulation while transmitting, you may be able to remove the beat noise by turning the Beat Shift function ON.

TELCO

This puts the LTR channel in the special TELCO mode. The TELCO mode ignores any busy channel lockout and allows you to transmit at any time. This is necessary in an LTR system with a phone patch because in that mode the repeater is on as long as a telephone call has been established.

Talk Around

If this feature is enabled, the channel will be set for talk around and the transmitter frequency will be changed to the receiver frequency.

Inhibit Talk Around (keypad)

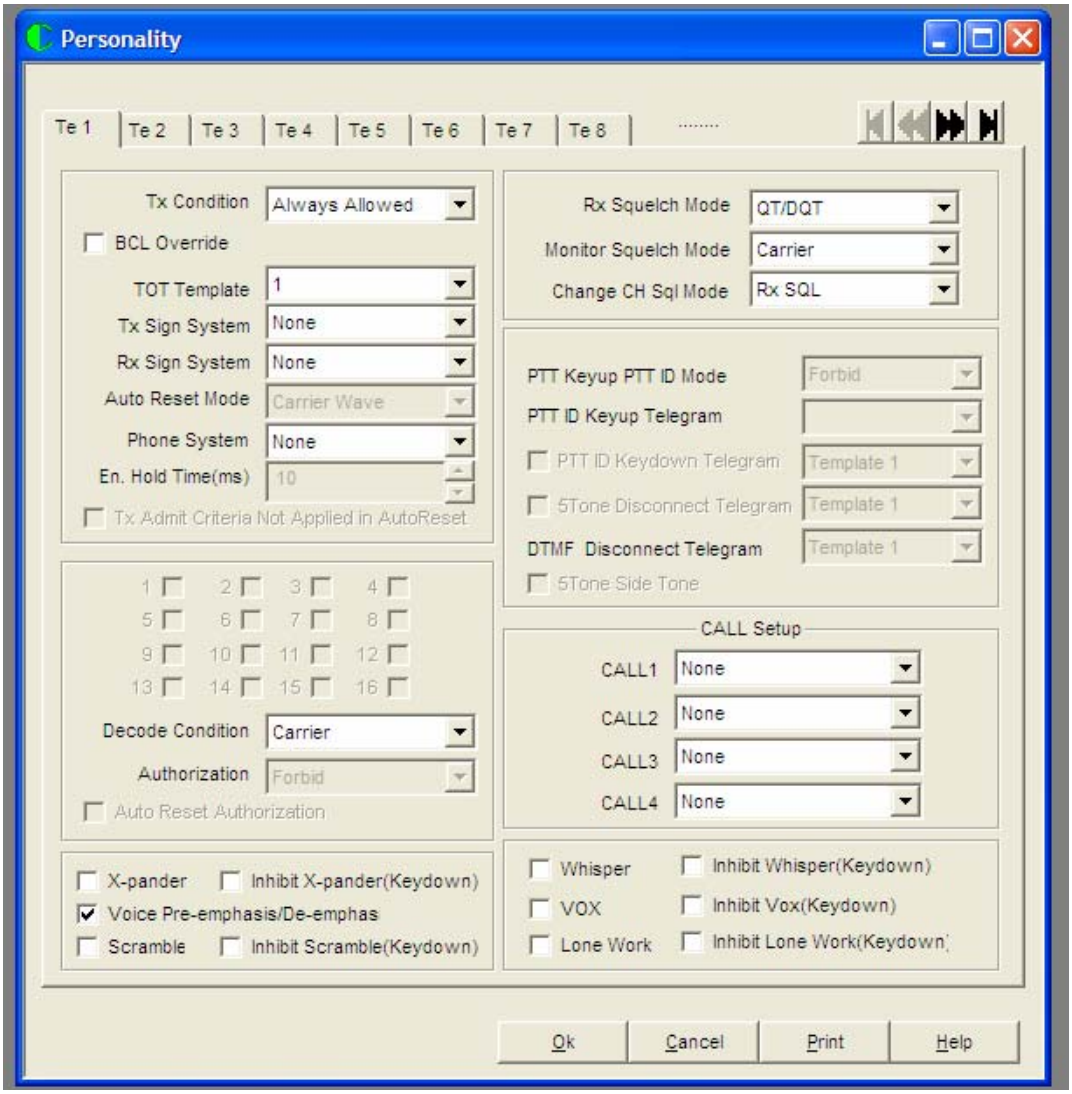
The Repeater Talk Around feature can be toggled by user with Talk Around button for each channel. When this option box is enabled, it will inhibit the user to toggle the Talk Around feature by the Talk Around button when this channel is the active channel.

Ignore LTR Handshake

This parameter allows you to set up a single repeater system for use with LTR. By eliminating handshaking the radio is more responsive like using CTCSS and DCS.

Personal Template Screen

When the Personality entry from the tree bar is accessed, the following screen appears:



The personal template is used in the Channel Edit menu to allow the dealer to set groups of channels with the same property. Up to 16 different personal templates can be set up.

5 TONE SYSTEM

The following parameters described below are only associated with the five tone system. Those parameters will be grey in the personal template screen when the system is set for two tone.

En Hold Time
Transmit Admit Criteria Not Applied in Auto Reset
Authorization
PTT Keyup PTT ID Mode
PTT ID Keyup Telegram
PTT ID Keydown Telegram
5Tone Disconnect Telegram

DTMF Disconnect Telegram
5Tone Sidetone
Authorization
Auto Reset Authorization

2 TONE SYSTEM

The following parameters described below are only associated with the two tone system. Those parameters will be grey in the personal template screen when the system is set for five tone.

Tx Signaling System
Rx Signaling System

TX Condition

When a channel is selected, the chosen option displayed in this option box defines the operation of the transmitter when the PTT button is pressed. Transmit admit option are used to prevent the operator from transmitting on channels that are already being used. If the radio has different transmit and receive frequencies, the receive frequency only is monitored for activity and if nothing is found, the radio will allow the user to transmit, on the transmit frequency, even if it is being used. The choices are shown below:

1. Never Allowed: This option prevents the user from ever transmitting on this channel. This channel is set for receive only.
2. Always Allowed: This option allows the user to unconditionally transmit on that channel.
3. Channel Free: The radio inhibits any attempted transmission if the carrier is currently being detected on the receive frequency.
4. Past QT/DQT Lockout: Unless the CTCSS/DCS code of the channel is being detected, the radio will inhibit any attempt at transmission if the carrier is detected on the receive channel. This option is required for the type of repeaters that hold up both carrier and CTCSS/DCS during repeater hang time. This feature is used to prevent other users with different CTCSS/DCS codes from gaining access and control of the repeater before a “called” radio with the same CTCSS/DCS code has had a chance to reply.
5. Audio: Unless the radio has been selectively called, the radio will be inhibited from transmitting if a carrier is detected.

BCL Override (Busy Channel Lockout Override)

If this option is selected the radio will be able to transmit if PTT is keyed down twice within very short time. This option could be used when the carrier only is currently detected on the channel if the TX Condition is set to "Channel Free" or " Past QT/DQT Lockout "

TOT Template

Selects one of the four possible TOT Templates.

TX Sign System (TX Signaling System)

This drop down combo box is used to select which signal type will be used when transmitting signal data, while operating on the current personality template. The selected options are

“None”, “2Tone”, “DTMF”, or “MDC”. For each signaling type, one of four possible sub-systems can be selected. This parameter is only used when the radio is set for two tone operation.

RX Sign System (RX Signaling System)

This drop down combo box is used to select which signal type will be used when receiving signal data, while operating on the current personality template. The selected options are “None”, “2Tone”, “DTMF”, or “MDC” For each signaling type, one of four possible sub-systems can be selected. This parameter is only used when the radio is set for two tone operation.

Auto Reset Mode

This drop down combo box will give a choice of “Forbid”, “Carrier Wave”, “None Carrier Wave”, or “Manual”.

This is a feature that is typically associated with signaling squelch operation but is also applied to coded squelch. On receipt of a selective call or upon de-keying, the radio will enter auto-reset mode in which certain squelch requirements are defeated. See appropriate section for more details on radio Squelch Mode Settings.

On entering into auto-reset mode the auto-reset timer will be started. The radio will reset to the previous Squelch Mode on expiration of the auto-reset timer.

The auto-reset mode will be entered for the following reasons:
a) On dekey of the radio.
b) If the radio is selectively called. The auto-reset timer will be started as soon as the selective call has been received.
c) If the radio detects the correct PL for coded squelch only channels. The auto-reset timer will be started as soon as the PL frequency is detected (detecting PL whilst in the auto-reset mode will not restart the timer unless carrier override is specified - see below).

The way in which the radio will reset from the auto-reset mode will depend on which of the auto-reset modes has been programmed for the channel.

Forbid: The auto-reset feature is disabled.

Carrier Wave: Detection of carrier within the auto-reset period will reset the timer, which will start again when the carrier is lost. Transmission by the radio will similarly reset the timer (e.g. PTT or Call Button operation). If the channel has PL decode enabled then auto-reset will count down when the PL is not being detected and will be reset when PL is detected.

Non Carrier Wave: This will differ from auto-reset carrier override in that the auto-reset timer will not be affected by the presence of carrier or PL. On expiration of the timer the radio will auto-reset.

Manual: The radio will remain in the auto-reset mode until the monitor button is tapped. Manual reset will only be available if monitor is enabled.

NOTE: Exit from monitor operation will auto-reset the radio even if the auto-reset timer has not expired. Hence the user will be able to cause auto-reset by 'tapping' the monitor button provided monitor operation is enabled.

Phone System

This parameters selects one of the four possible phone systems to be used with this personality template. The phone system is used when you want to use the radio to make phone calls through a phone patch.

En Hold Time (Encoder Hold Time)

This is the time the radio will keep transmitting after the completion of the data sent for PTT ID or Caller ID. The hold time can be programmed from 0 to 2550ms in 10msecond steps. This parameter is only used when the radio is set for five tone operation.

Transmit Admit Criteria Not Applied in Auto Reset

If this option is selected the radio will be able to transmit during the auto-reset period. This parameter is only used when the radio is set for five tone operation.

PTT Keyup PTT ID Mode

This drop down combo box is used to define when, if at all, a telegram will be sent when the PTT is pressed. The available options are “Forbid”, “Every Time”, and “One Time”. The definition of the four modes are described below. This parameter is only used when the radio is set for five tone operation.

Forbid: If disabled, no telegram will be sent when the PTT is pressed.
Every Time: If this option is selected, the defined telegram will be sent every time the PTT is pressed.

One Time: A telegram will be sent on the first activation of the PTT button when a call is instigated. This is dependent on the radio not being in auto-reset mode, or if it is in auto-reset mode, that a call has not yet been started (this caters for the situation whereby auto-reset mode is entered via the forced monitor feature). The intention is to allow telegrams to be sent by the radio starting the call and not by the radio responding to a call.

PTT ID Keyup Telegram

This drop down combo box is used to select which one of 32 telegram will be sent when the PTT is pressed. This parameter is only used when the radio is set for five tone operation.

PTT ID Keydown Telegram

This drop down combo box is used to select which one of 32 telegram will be sent when the PTT is released. This parameter is only used when the radio is set for five tone operation

5Tone Disconnect Telegram

This drop down combo box is used to select which one of 32 telegrams will be sent when the PTT is released. This parameter is only used when the radio is set for five tone operation.

DTMF Disconnect Telegram

This drop down combo box is used to select which one of the DTMF telegrams will be sent when the PTT is released. This parameter is only used when the radio is set for five tone operation

5Tone Side Tone

When this feature is enabled, the 5Tone signal will be heard on the speaker as it is being sent.

Call 1, 2, 3, 4

Any option button can be assigned as either call 1, 2, 3 or 4 and if pressed, the telegram assigned to the call, will be transmitted. If the transmit admit criteria is not met, then the button/keypad error alert will sounded until the button is released.

Note: The telegram can be shown in the drop down combo boxes which have enabled in DTMF call list or 2Tone call list for 2tone version or Encode Telegrams for 5tone version.

RX Squelch Mode

This mode cannot be entered if there is no 'Selective Calling' or PL enabled on the channel. During normal channel operation the receiver may unmute due to the different signaling requirements and the various user actions programmed into the radio for that channel.
The available options in the drop down combo box are PL/DPL & Tone squelch, Tone squelch and PL/DPL squelch.

PL/DPL & Tone squelch - in this case the radio requires an individual call with continuous modulation followed by carrier with continuous modulation. It may also be programmed for unmodulated individual call followed by modulated carrier.
Tone squelch - for this the radio needs to receive an individual call (Select 5Tone) followed by carrier to unmute.

PL/DPL squelch - the radio needs a carrier with the continuous modulation of PL/DPL to unmute.

Carrier squelch - the radio has only to receive a carrier to unmute.

PL/DPL or Audio squelch-the radio needs a carrier with the continuous modulation of PL/DPL or individual call to unmute.

Monitor Squelch Mode

This is used to defeat the signaling requirements of the receive squelch mode and if there are no decoders enabled on the channel, then this is the squelch mode the radio will employ.
This option box defines how the monitor button function will work. If a function button has been programmed as a monitor button, a user will have the ability to override the normal squelch operation of the channel and to listen to traffic on the channel if the received carrier complies with the criteria selected with the monitor button.
A quick press of the monitor button enables monitor 1 squelch override and a long press (greater than 2 seconds) will enable monitor 2 squelch override. If enabled, an alert will be given for successful entry into monitor 2 button operation.
In the auto-reset mode, 'tapping' the monitor button will cause auto-reset and put the radio

into receive squelch mode of operation. A long press will put the radio into monitor 2 mode and an alert will sound.
If a monitor mode had been selected prior to transmitting, the radio will return to that selected monitor mode after the transmission.
The options for monitor squelch operation are 'Open, Carrier and Carrier or PL/DPL'.
If the Selective Calling + PL/DPL decoders are enabled then Monitor 1 should be set for Carrier or Coded.
If the Selective Calling decoder is enabled then Monitor 1 should be set for Carrier.
If the PL/DPL decoders are enabled then the Monitor 1 should be set for carrier.
Open, this is a Monitor 2 feature only.

Channel Change Squelch Mode

On changing channel, the radio can be programmed to either receive squelch mode or monitor squelch mode.
Receive squelch mode-When changing to this channel, the radio will use receive squelch mode to work. To unmute, the radio needs to receive signal matching with the receive squelch conditions.
Monitor squelch mode-When changing to this channel, the radio will use monitor squelch mode to work. To unmute, the radio needs to receive signal matching with the monitor squelch conditions.

Decode Telegram 1 – 16

Clicking the cursor on a decoder check box will either enable this decoder for this personality, indicated by a 'tick' being displayed in the box, or disable it. Any number of decoders can be selected and, depending on the programming of the decoders, can be any of the 16. This box depending on the Rx Sign System drop down box, can be used for DTMF, 2 Tone or 5 Tone decoding.

Decode Condition

This drop down combo box is used to select the decode conditions when receive a call.(2Tone signaling, 5Tone signaling, MDC signaling). The selected options are carrier and PL/DPL.
If carrier is selected, then all the radio needs to decode is a correct decode sequence. If PL/DPL selected, then the radio needs to receive the correct PL/DPL at the same time as the correct decode sequence to decode.

Authorization

This option prevents the user from monitoring or transmitting until authorized. The radio will be authorized when it receives the individual call for the channel and be de-authorized if:
1) It subsequently receives and decodes the clear down sequence for the channel.
2) The user changes channel that is using a different personality option and authorization is disabled.
3) Optionally it is possible to specify that the radio is de-authorized when the auto-reset timer expires or the monitor button is tapped, providing the monitor button feature is enabled.
The radio may auto acknowledge the authorization sequence and may also be authorized by a group call. The auto-reset timer is started when the individual call sequence is decoded and

stopped when the clear down sequence is decoded
The available options are Disabled, Enable and Enabled with request.

Disabled: The radio has normal transmit capabilities.
Enabled: The radio will only have transmit capabilities when it is called and until the auto-reset timer expires, or it decodes a clear down sequence.
Enabled with Request: If programmed, this option will allow the user to request a call. Initially, the only call allowed by this option, is a call telegram, sent to the controller from a pre-programmed button. The telegram contains the address (ID) of the sender and the transmit request sequence.

If this is acknowledged and approved by the controller, the radio will decode the authorization sequence that enables transmission and all normal transmit timers will apply.

Note: This is only used for 5Tone version.

Auto-Reset Authorization

If enabled and the auto reset timer expires the radio will revert to its programmed operation and authorization will be revoked.

Note: This is only used for 5Tone version.

X-pander

If this feature is enabled, then the audio will be compressed for transmission and expanded for receive. Using this features increases the intelligibility of the voice especially during weak and noisy signals.

Inhibit X-pander (Keydown)

If this feature is enabled, then the programmable side keys or top key will not work for the purpose of overriding the default setting of the x-pander mode for this personality.

Voice Pre-emphasis/De-emphasis

If this feature is enabled, the voice will have a pre-emphasis on transmit and a de-emphasis on receive. This selection can enhance audio clarity.

Scramble

The scrambler makes the voice unintelligible to most people who do not have a compatible radio. This prevents a third party from listening in.

Inhibit Scramble (Keydown)

If this feature is enabled, then the programmable side keys or top key will not work for the purpose of overriding the default setting of the scrambler mode for this personality.

Whisper

This feature allows the user to whisper in the radio’s microphone instead of speaking normally.

Inhibit Whisper (Keydown)

If this feature is enabled, then the programmable side keys or top key will not work for the purpose of overriding the default setting of the whisper mode for this personality.

VOX

This feature allows hands free transmission of the radio when using the appropriate mic/headset.

Inhibit Vox (keydown)

If this feature is enabled, then the programmable side keys or top key will not work for the purpose of overriding the default setting of the VOX mode for this personality.

Lone Work

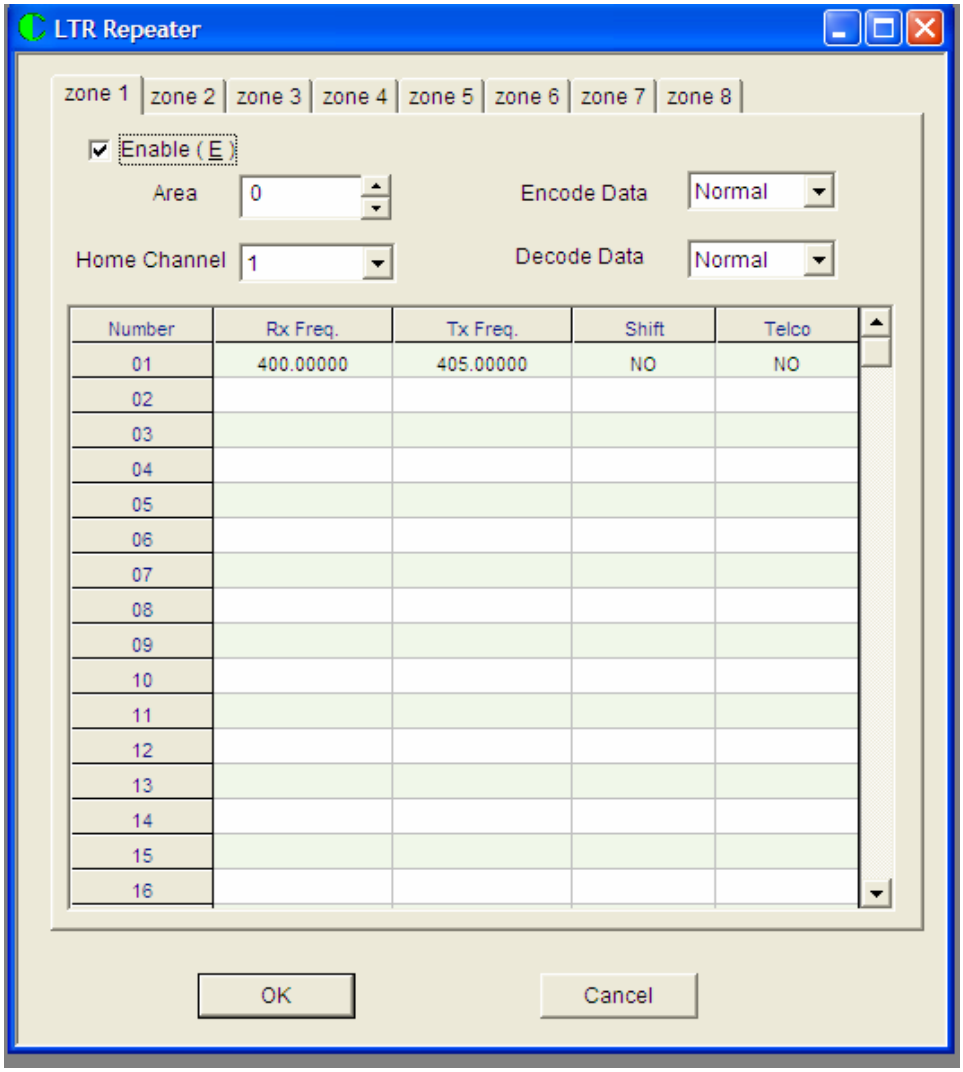
This feature calls for help if the person holding this radio does not press a key on the radio every so often. Once the radio is set for the Lone Worker mode, a timeout timer is started. At the end of this time an alarm on the radio will sound telling the user to press either the Lone Worker reset key or any key, depending how the unit is preprogrammed. If the user does not press the appropriate key soon after the radio starts to alarm, the radio will go into an emergency mode and depending on the programming, will either generate a local alarm or transmit an alarm to another radio or both.

Inhibit Lone Work (keydown)

If this feature is enabled, then the programmable side keys or top key will not work for the purpose of overriding the default setting of the Lone Worker mode for this personality.

LTR Repeater Screen

When the LTR Repeater entry from the tree bar is accessed, the following screen appears:



Enable (E)

You can select either Zones 1 through 8 for the LTR radios. This enables the parameters for the zone you have selected.

Area

An LTR system can have an Area with a value of 0 or 1. This applied to all the repeaters in a given system.

Home Channel

An LTR system can consist of up to 20 channels. This parameter defines the home channel for the zone selected. You can have a single system with multiple zones or multiple systems with a single home channel each.

Encode Data

An LTR system sends digital data using low frequencies below 300 Hz. You have a choice of using Inverted or Non-Inverted data.

Decode Data

An LTR system receives digital data using low frequencies below 300 Hz. You have a choice of using Inverted or Non-Inverted data.

RX Frequency

This is the receive frequency of the repeater in the LTR system. It can vary from 136 MHz-174 MHz in the VHF band and 400 MHz to 470 MHz in the UHF band.

TX Frequency

This is the transmit frequency of the repeater in the LTR system. It can vary from 136 MHz-174 MHz in the VHF band and 400 MHz to 470 MHz in the UHF band.

Shift

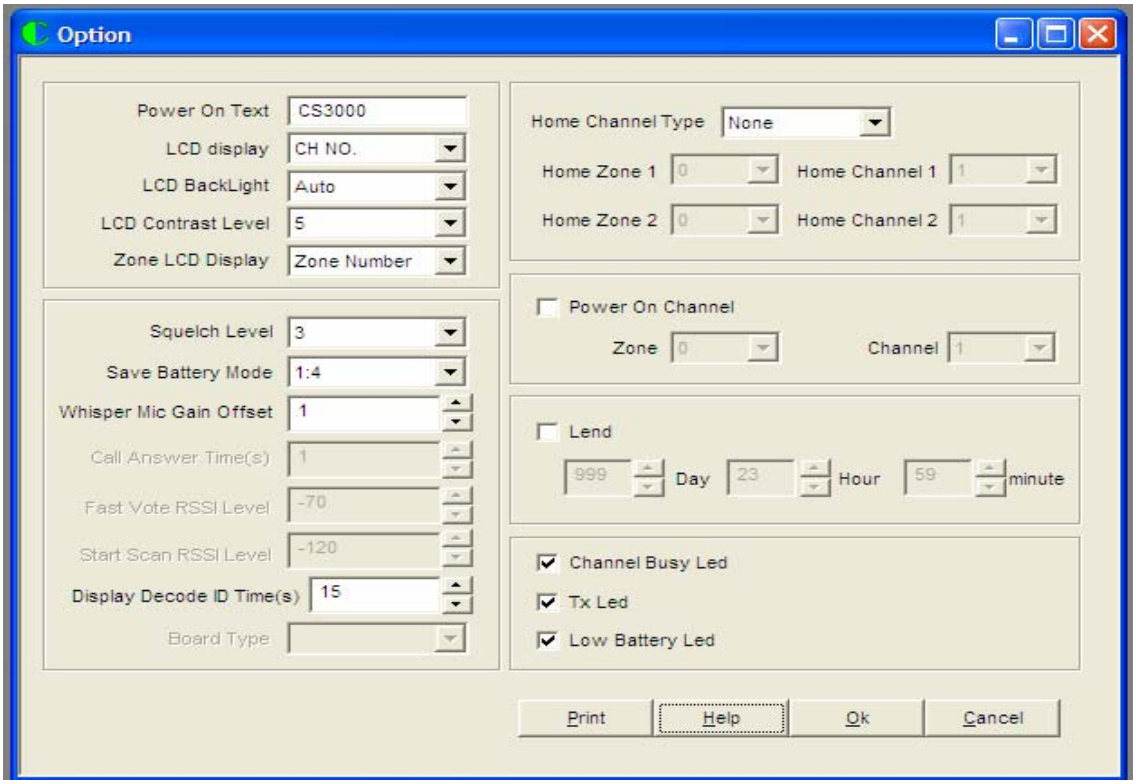
Enabling this feature moves the frequency of the microprocessor clock a little bit in case there is some interference from it in the receive channel or transmit channel.

Telco

Enabling this feature defines this channel as a Telephone Channel with the possibility of a phone patch or similar device attached to the repeater.

Option Screen

When the Option entry from the tree bar is accessed, the following screen appears:



Power on Text

When the power to the radio is first applied, this field will get displayed on the LCD.

LCD Display

Selects what the display will indicate for the channel. The choices are as follows:

Channel number

Displays the channel number from 1 – 128

Frequency

Displays the frequency of the channel selected.

Alias

Displays the name the programmer assigned for that channel.

LCD Backlight

This feature is used to select how the backlight of the display will behave. The choices are as follows:

Off: The backlight will always be off.

Auto: The backlight will be off until any key is pressed. Then the backlight will stay on for 10 seconds.

Always on: The backlight will always be on.

LCD Contrast level

This is used to control the contrast level of the LCD. Normally this parameter should be set for about a value of 5.

Zone LCD Display

This feature determines how the zone is going to be displayed on the LCD. The choices are as follows:

Zone number: The LCD will show Zone number.

Alias: The LCD will show the name the programmer assigned to the zone.

Squelch Level

Squelch Level is an analog reference level number that is used to set the internal squelch threshold. The squelch level can also be adjusted when you are in the user mode. The range is between 0(Open) to 9(Tight) in increments of 1.
Default: 3

Save Battery Mode

This radio has a power saving mode that is programmable depending on the needs of the user. This enables the radio to work longer with a single charge. The battery saving mode does not work when the radio is in scan mode because the radio has to be 100% active while scanning.

The choices are as follows:

Forbid: The radio is on 100% of the time and there is no battery saving.

1:1 When the option is selected the radio is mostly on.

1:2 When the option is selected the radio is on half the time.

1:4 When the option is selected the radio is off most of the time.

Whisper Mic Gain Offset

This feature is used to increase the gain of the microphone to allow the user to whisper into the radio instead of talking normally into the radio. This is useful when you do not want to alert people nearby you are using the radio. The gain can be set from 1 – 4 in increments of 1.

Call Answer Time

When using 5 tone decoding (Not available in the LTR version) the radio will start the call answer timer. The call answer timer specifies the time that the user has to answer an incoming call and will be reset by any user activity. This timer can be set from 1 to 255 Seconds in 1 Second increments.

Fast Vote RSSI level

During fast vote scan, the radio will look for a channel with an RSSI level equal to, or greater than the pre-programmed Fast Vote RSSI Level. The level can be set from -70dBm to -120dBm in 1dBm steps. This feature is not available in the LTR version.

Start Scan RSSI Level

This function defines the lowest RSSI level that allows the radio to 'Land on' a channel. The RSSI range setting for this option is -70dBm to -120dBm, 1dBm steps. This feature is not available in the LTR version.

Board Type

This feature is not used in the current software.

Display Decode ID time

This feature determines how long the decode ID stays on the display when a call is received. This is only applied to 2Tone, DTMF and MDC.

Home Channel Type

This feature is used as a shortcut to select a particular zone and channel number within that zone. This feature is used in conjunction with one of the programmable keys to allow the user to quickly access one or two commonly used channels. The choices are as follows:

None: If the user selects this option, then the feature is not used.

Home CH1: If the user selects this option, only home channel 1 can be selected.

Home CH2: If the user selects this option, only home channel 2 can be selected.

Two Home CH: If the user selects this option, then both home channels can be selected.

Home Zone1

This is the desired home zone for home channel 1.

Home Channel 1

This is the desired channel number within the selected zone for home channel 1.

Home Zone2

This is the desired home zone for home channel 2

Home Channel 2

This is the desired channel number within the selected zone for home channel 2.

Power on channel

If enabled, the next two parameters will determine the zone and channel number the radio starts with when power is first applied.

Zone

This is the desired zone number to apply when power is first applied.

Channel

This is the desired channel number to apply when power is first applied.

Lend

If this feature is enabled, then the radio can only be used by the intended user for the specified time defined below.

Day

This is the number of days the radio can be used before the dealer has to reset the lend function.

Hour

This is the number of hours the radio can be used before the dealer has to reset the lend function.

Minute

This is the number of minutes the radio can be used before the dealer has to reset the lend function.

Channel Busy Led

If this feature is enabled, the led will turn on whenever the channel is busy.

Tx Led

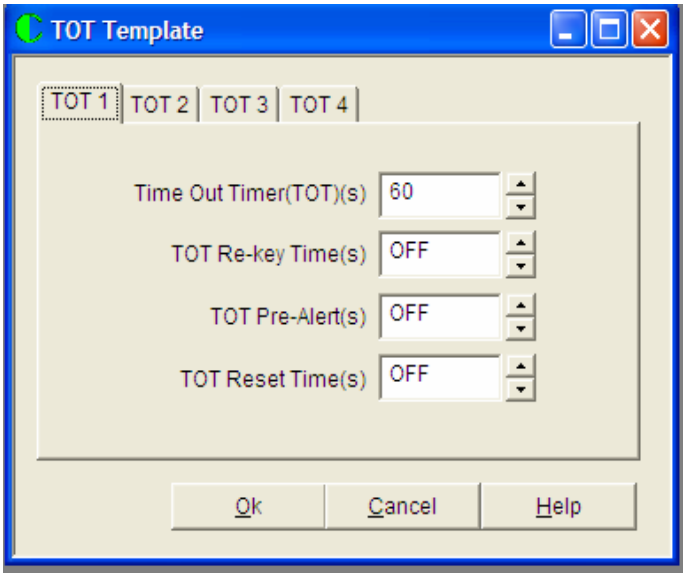
If this feature is enabled, the led will turn on whenever the radio is transmitting.

Low Battery Led

If enabled, the led will flash when battery falls below a certain level. This will remind user that it is time to recharge the radio before the radio will completely shut down.

TOT Template Screen

When the TOT Template entry from the tree bar is accessed, the following screen appears:



Time Out Timer(TOT)

This is the maximum period of time that the radio is allowed to transmit continuously in normal dispatch mode. When the programmed time expires, the radio generates a warning tone and stops transmitting. The range for the TOT Dispatch Time is off and 5 seconds to 600 seconds in increments of 5 seconds. The feature can also be disabled.

TOT Re-key Time

This is the minimum time the radio can transmit again after the Time Out Time has been exceeded. The range for the TOT Re-key Time is between and 1 to 15 seconds in increments of 1 second. The feature can also be disabled.

TOT Pre-Alert

The TOT Pre-Alert is the number of seconds the alert tone will sound before the Time Out Timer times out. The range for the TOT Pre-Alert is off and 1 to 10 seconds in increments of 1 second. The feature can also be disabled.

TOT Reset Time

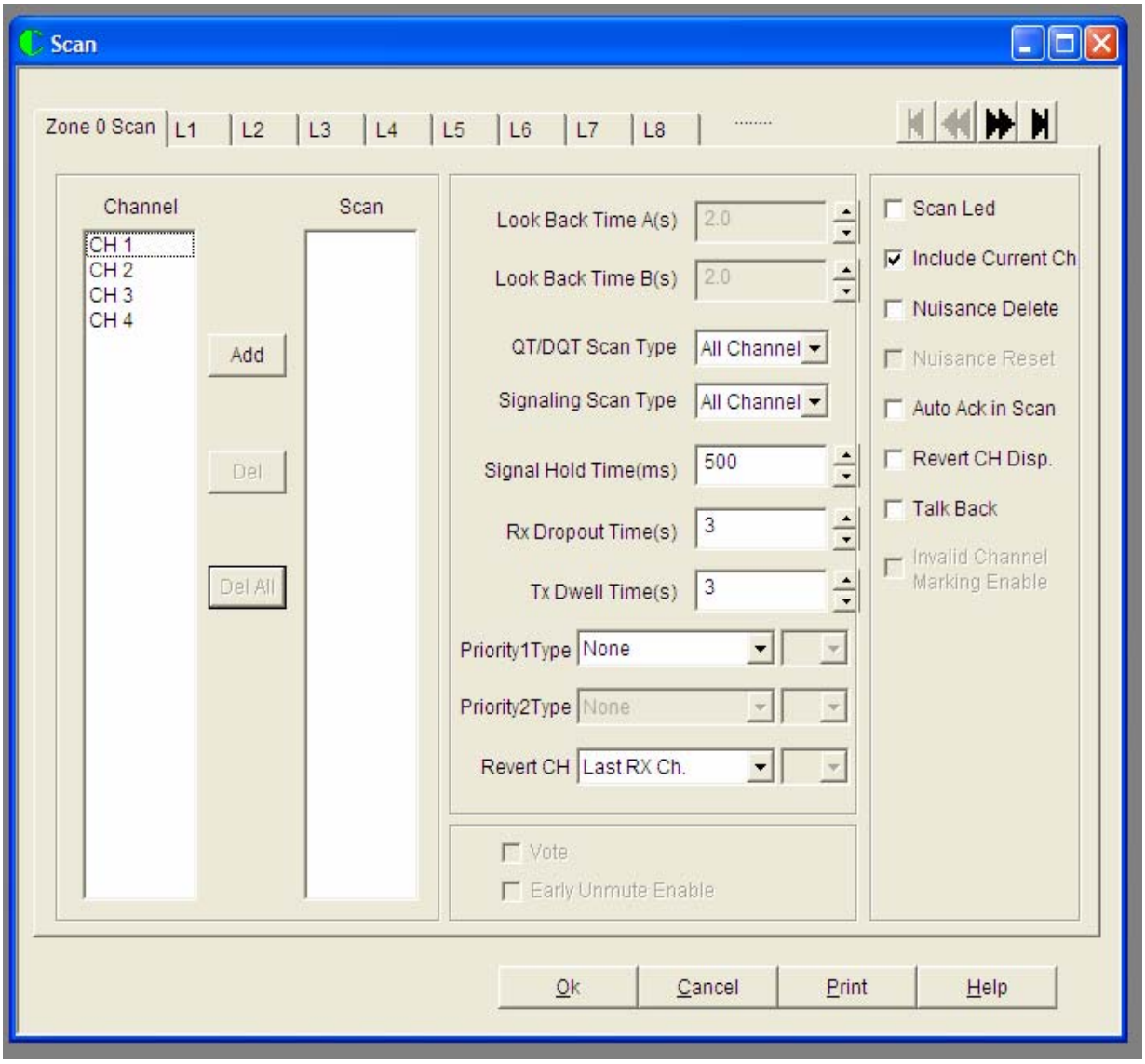
This is the minimum "wait" time required between transmissions that will reset the Time Out Timer. The range for the TOT Reset Time is off and 1 to 15 seconds in increments of 1 second. The feature can also be disabled.

TOT Interconnect Timer

The TOT Interconnect Time is the maximum period of time that the radio is allowed to transmit continuously in LTR Interconnect mode. When the programmed time expires, the radio generates a warning tone and stops transmitting. The range for the TOT Interconnect Timer is off and 30 seconds to 300 seconds in increments of 30 seconds.

Scan Screen

When the Scan entry from the tree bar is accessed, the following screen appears:



This menu is used to set the feature of scan. There 17 scan list available. Zone 0 Scan list can be used to scan all channels in the system. Zone 1 – Zone 16 Scan list can be used for scanning only 16 channels each.

Channel

The column shows the channel numbers that are available for scanning.

Scan

The column shows the channel numbers that will be scanned for the particular zone.

Look Back Time A/B

When a Priority channel is set, if the channel from which a call is received during scanning is not a Priority channel, the radio still checks for calls from the Priority channel at the pre-set intervals while scanning is paused. This operation is called Look Back.

Look Back Time A is the interval at which Look Back operates while no carrier is being received on the Priority channel. This can have a value between .5 seconds and 5.0 seconds in increments of .1 seconds.

Look Back Time B is the interval at which Look Back operates while a carrier is being received on the Priority channel but Signaling is unmatched. This can have a value between .5 seconds and 5.0 seconds in increments of .1 seconds.

QT/DQT Scan Type

This feature determines if QT/DQT will be required when scanning. The options are as follows:

Disabled: QT/DQT decoding is not required.

Non Priority Channel: QT/DQT decoding is required only on the non priority channels. The priority channels do not need QT/DQT.

All Channel: Requires QT/DQT decoding on both priority channels and non priority channels.

Signaling Scan Type

This feature determines if signaling is required for scanning. The options are as follows:

Disabled: Signaling not required for scanning.

Non Priority Channel: Signaling is required only on the non priority channels. The priority channels do not need signaling.

All Channels: Requires signaling on both priority channels and non priority channels.

Signal Hold Time

This parameter selects the amount of time that the radio waits in active scan, on a scan list member channel. The wait only applies when carrier squelch is detected on the channel. This pause allows the radio enough time to decode signaling system data. If signaling system data is not decoded and the time expires, the radio then scans the next scan list member channel. This feature applies to the current scan list. Time is in milliseconds.

The total hold time value must be set equal to, or greater than the amount of time that it takes the sending radio to transmit the signaling data packet, plus the transmitting personality's signaling system pre-time.

Rx Dropout Time

Rx Dropout Time is the time from the end of a received call to the time scanning automatically resumes. Its range is from 0 – 300 seconds in increments of 1 second.

Tx Dwell Time

TX Dwell Time is the time from the end of transmission to the time scanning automatically resumes. Its range is from 0 – 300 seconds in increments of 1 second.

Priority 1 Type

One Channel can be designated as a priority channel 1. Once activated, when the radio's speaker is unmuted to a non-priority call or is unmuted on the priority channel 2 if one exists, the radio continues to mute at a specific time interval. If the radio discovers a signal meeting squelch on the priority channel 1, the radio will drops on the current channel and unmutes. When the radio is landing on the priority channel 1, priority checking is not necessary. Priority Channel 1 has the following 3 options.

None: No Priority channel

Selected: The Start Scan channel becomes the Priority Channel.

Fixed: The channel selected in the drop down combo box becomes the priority channel 1. Any channel in the scanning list can be assigned as the Priority Channel.

Priority Channel 2

Priority Channel 2 is the second highest priority channel. When the radio is scanning a scan list, 25% of scans are targeted at the priority channel 2. When priority 2 is programmed, scan checks for the priority channel 1 are reduce from 50% to 25%.

When landing on the non-priority channel, the radio continues to mute at a specific time interval for the priority channel 1 and priority channel 2. If the radio discovers a valid priority channel 2 transmission, it drops the current transmission and unmutes to the priority channel 2 call. If the radio lands on priority channel 2, the radio continues to mute at a specific time interval for the priority channel 1. If discovering a valid signal on the priority channel 1, it unmutes on priority channel 1. Priority Channel 1 has the following 3 options.

None: No Priority channel

Selected: The Start Scan channel becomes the Priority Channel.

Fixed: The channel selected in the drop down combo box becomes the priority channel 1. Any channel in the scanning list can be assigned as the Priority Channel.

Revert Channel

This options offered by selecting the drop down combo box are scan start channel, designated TX channel, last RX channel and last TX channel. These options are used to define on which channel the radio will transmit after landing on a channel.

Scan Start Channel: Selecting this option will cause the radio transmit on the channel for which the scan list applies.

Designated TX Channel: This selection will cause the radio to transmit on a programmed designated channel, which does not have to be part of the scan list or the channel to which the scan list applies.

Last RX Ch: This selection will cause the radio to transmit on the last RX channel of the scan list.

Last TX Ch: This selection will cause the radio to transmit on the last TX channel of the scan list.

Scan LED

If selected, the red LED will flash to indicate active channel scan and will stop flashing when the radio “lands on” a channel.

Include Current Channel

When this option is enabled, the chosen operating channel is also scanned as part of the scan list. In effect this has increased the length of the scan list from 16 to 17 entries.

Nuisance Delete

This option is used to allow a channel to be temporarily deleted using the nuisance channel delete key option. Channels will automatically be re-instated when the radio power is cycled.

Nuisance Reset

This option is used to re-instate a channel, temporarily deleted using the nuisance channel delete key option. Channels will automatically be re-instated when the radio power is cycled.

Auto Acknowledge in Scan

If selected, this option will cause the radio to send an ACK when a decode sequence received needs an ACK during scan.

Revert Channel Disp

When selected, revert channel will display on the LCD during active scan mode, while disabled, text "scan" will display on the LCD during active scan mode.

Talkback

If this option is enabled, then when the radio “lands on” a channel, the user is able to PTT the radio and “talk back” on that channel.

Invalid Channel Marking Enable

This feature is used by the radio to 'Mark' channel that have wrong 'PL/DPL'. The radio will not 'Land on' the 'Marked' channels. Channels will become unmarked during the vote scan if carrier is no longer present on 'Marked' channel.

'Marked' refers to the automatic nuisance channel delete/re-instate feature of the radio when in 'Fast Vote Scan'.

Vote

If this option is enabled, then the scan will operate in scan vote mode.

The scan vote feature is used in multi-frequency simulcast system that provide wide area repeater coverage in applications where frequency spectrum is readily available.

The typical system has a set of scattered base sites that are transmitting the same information on different frequencies. The radio scans the frequencies of these base sites and perform a voting algorithm to select the closest base site. The radio transmit frequency will typically be the same on every channel, but the radio receive frequencies will be different.

The voting algorithm adopted is briefly described below:

1) Perform 'Fast Vote Scan'. In this scan operating, the radio will only check channels with a Fast Vote RSSI level equal to, or greater than that set in the 'Fast Vote RSSI Level' option box. During the Fast Vote, a record will be kept up to date of the three strongest channels.

2) Perform 'Vote Scan'. If no channel is found during 'Fast Vote' scan, the radio will land on the channel checked during the 'Fast Vote' which has the strongest RSSI. The radio will only land on a channel during 'Vote' scan if a channel exists with the correct signaling conditions and an RSSI greater than or equal to that set in the 'Start Scan RSSI level' option box.

3) The radio will continue to switch between 'Fast Vote' scan and 'vote' scan until it lands on a channel or scan is stopped.

During fast vote scan , the radio will look for a channel with an RSSI level equal to ,or greater than the pre-programmed Fast Vote RSSI level. The level can be set from -70 to -120dBm in 1dBm steps.

The radio will land on the first channel with the RSSI level equal to, or greater than the pre-programmed Fast Vote RSSI level that meets the squelch criteria. Once a radio lands on a channel, the Fast Vote Scan will stop.

When performing 'Fast Vote Scan', the radio scans each channel in the scan list order and records the RSSI level when carrier is detected.

If on carrier is detected on a channel and:

1) The channel is 'marked', it will cease to be 'marked' and the radio will move to the next channel in the scan list; Note 'Marked' refers to the automatic nuisance channel delete/re-instate feature of the radio when in 'Fast Vote Scan'.

2) If the channel is not marked, the radio will move to the next channel in the scan list.

If carrier is detected on the channel , the RSSI level is measured and stored.

1) If the channel was marked, it will remain marked and the radio will move to the next channel in the scan list.

2) If the RSSI level is equal to, or greater than the Fast Vote RSSI level , the squelch criteria is checked:

a) If the squelch is 'carrier squelch', the radio lands on that channel, unmutes the radio and exits Fast Scan.

b) If the squelch is 'PL/DPL squelch', the radio will unmute ,if the 'Early Unmute' option is enabled, otherwise it will remain muted.

i) If the PL is correct, the radio lands on that channel, unmutes the radio and exits the Fast Scan.

ii) If the PL is incorrect, the radio mutes if the 'Early unmute' option is enabled, the channel is 'Marked' and the radio will move to the next channel in the scan list.

3) If the RSSI level is less than the Fast Vote level, the radio will move to the next channel in the scan list.

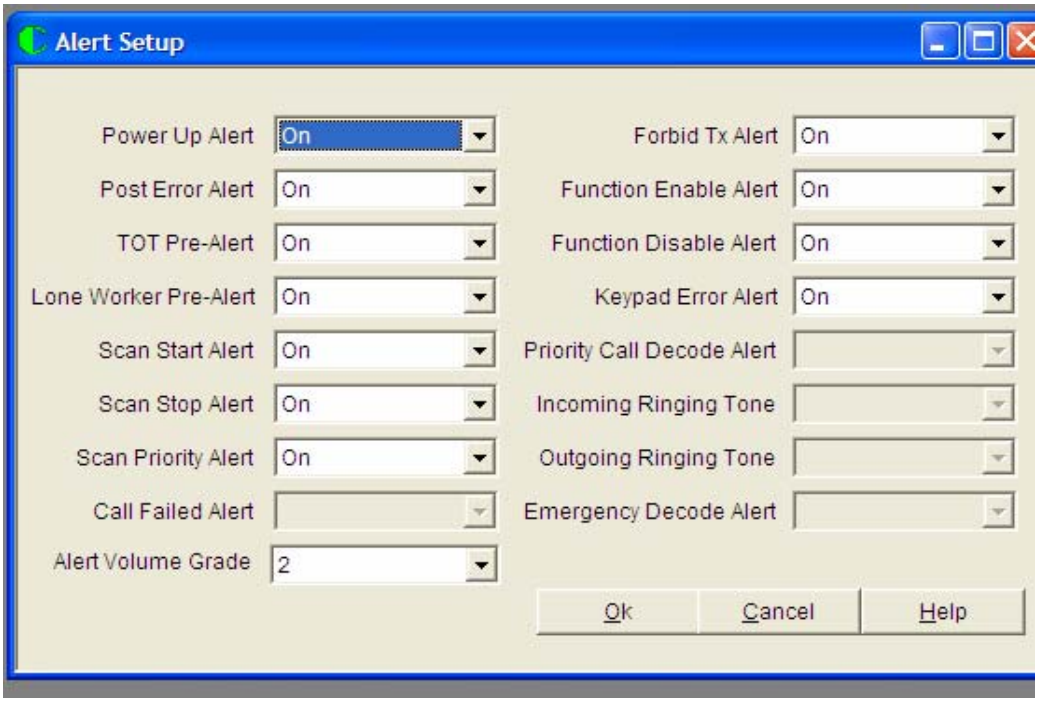
If the radio completes the 'Fast Vote' scan, without 'landing on', the radio will then go into the 'Vote' scan mode.

Early Unmute Enable

If enabled, the radio will unmute, in vote before confirmation of the correct PL.
If the PL is confirmed, the radio will 'land on', otherwise, the radio will mute and continue the scan sequence.

Alert Setup Screen

When the Alert Setup entry from the tree bar is accessed, the following screen appears:



Each alert can be individually programmed as ON or OFF. On mean the feature will be valid. OFF mean the feature will be invalid.

Power Up Alert

This is the power up self-test alert and will indicate either a successful power up or an unsuccessful power up when one or more self-checks have failed.

Post Error Alert

This is the eeprom self-test and will indicate whether or not the eeprom is good.

TOT Pre-Alert

This is sounds assigned seconds in the TOT Pre-Alert prior to the expiry of the time out timer.

Lone Work Pre-Alert

If enabled this alert is sounded at a pre-defined time before the user must 'call in'; failure to call would cause the radio to enter emergency modes.

Scan Start Alert

This is sounded when the scan option is invoked.

Scan Stop Alert

This is sounded when exiting the scan mode.

Scan Priority Alert

This is sounded when the radio 'land on' the priority channel during scanning.

Call Failed Alert

This is sounded after expiry of the "Acknowledge Expected Duration".

Alert Volume Grade

Determines how loud the alert will be.

Forbid Tx Alert

This is sounded when the PTT is pressed and the transmit admit criteria are not satisfied.

Function Enabled Alert

This is sounded when entering the key function. This sound indicates the function is valid.

Function Disabled Alert

This is sounded when exiting the key function.

Keypad Error Alert

This is sounded when any key is pressed in error.

Priority-Call Decode Alert

This alert indicates that a priority Decode is received and any further calls will not interrupt a priority call, either during the call or while the call is waiting to be answered.

Incoming Ringing Tone

Not supported in the current version of the software

Outgoing Ringing Tone

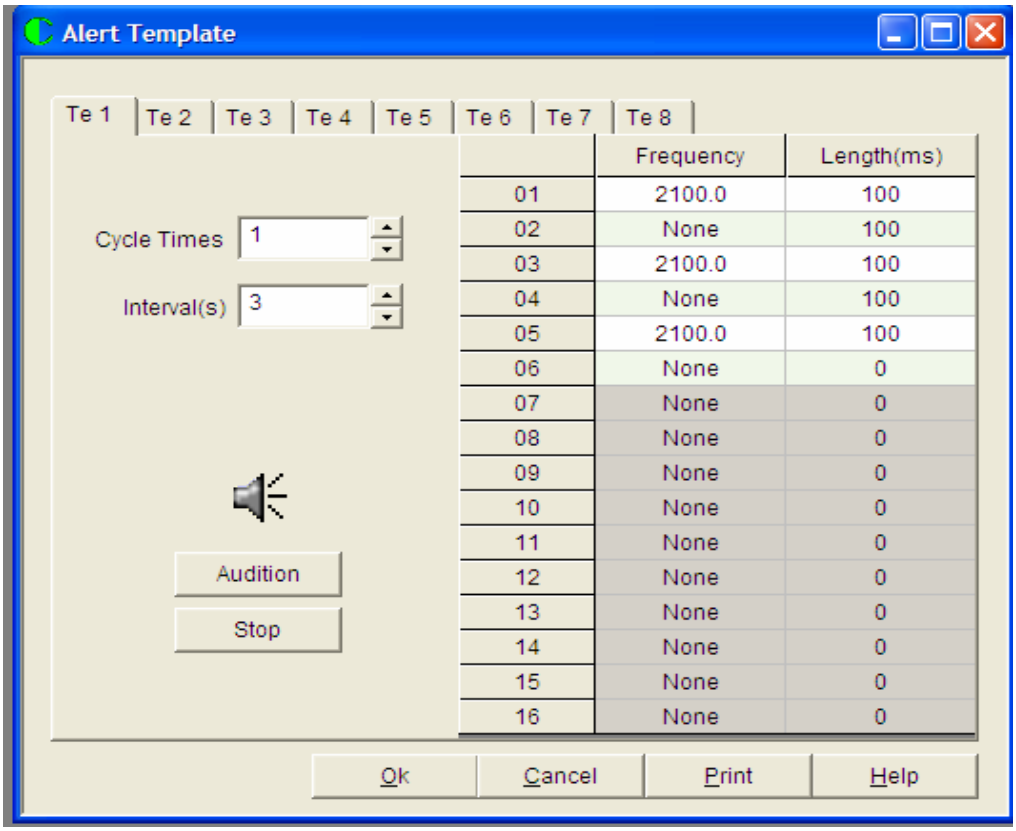
Indicates, if acknowledge is expected that the call is being connected. The alert stops when a connection to the called radio has been established.

Emergency Decode Alert

This alert indicate that Incoming Emergency Decode is received, any further calls will not interrupt a incoming emergency call, either during the call or whilst the call is waiting to answered. Please refer to incoming emergency for more information.

Alert Template Screen

When the Alert Template entry from the tree bar is accessed, the following screen appears:



Alerts are used for detecting incoming signaling. Up to 16 different alerts can be programmed in this system. Each alert can consist of up to 16 different tones. These alerts are used in the following screens:

- 2-Tone Decode
- MDC Signaling Setting
- MDC Call List
- MDC Message

Before these screens can be used, the alerts have to be programmed.

Te 1 – Te 8

Clicking on one of the eight tabs selects which alert you want to program.

Cycle Times

This parameter specifies how many times this alert should play back when it is used.

Interval

This parameter specifies the time in seconds, between playing back the alert if the cycle times was set to more than 1. It has a value between 1 and 120 seconds in 1 second increments

Audition

Pressing the audition button allows you to hear the alert tone from the speaker in your PC.

Stop

Pressing the stop button allows you to immediately stop the audition.

OK

Pressing the OK button saves whatever has been programmed.

Cancel

Pressing the cancel key will abort the changes made and return to the previous screen.

Print

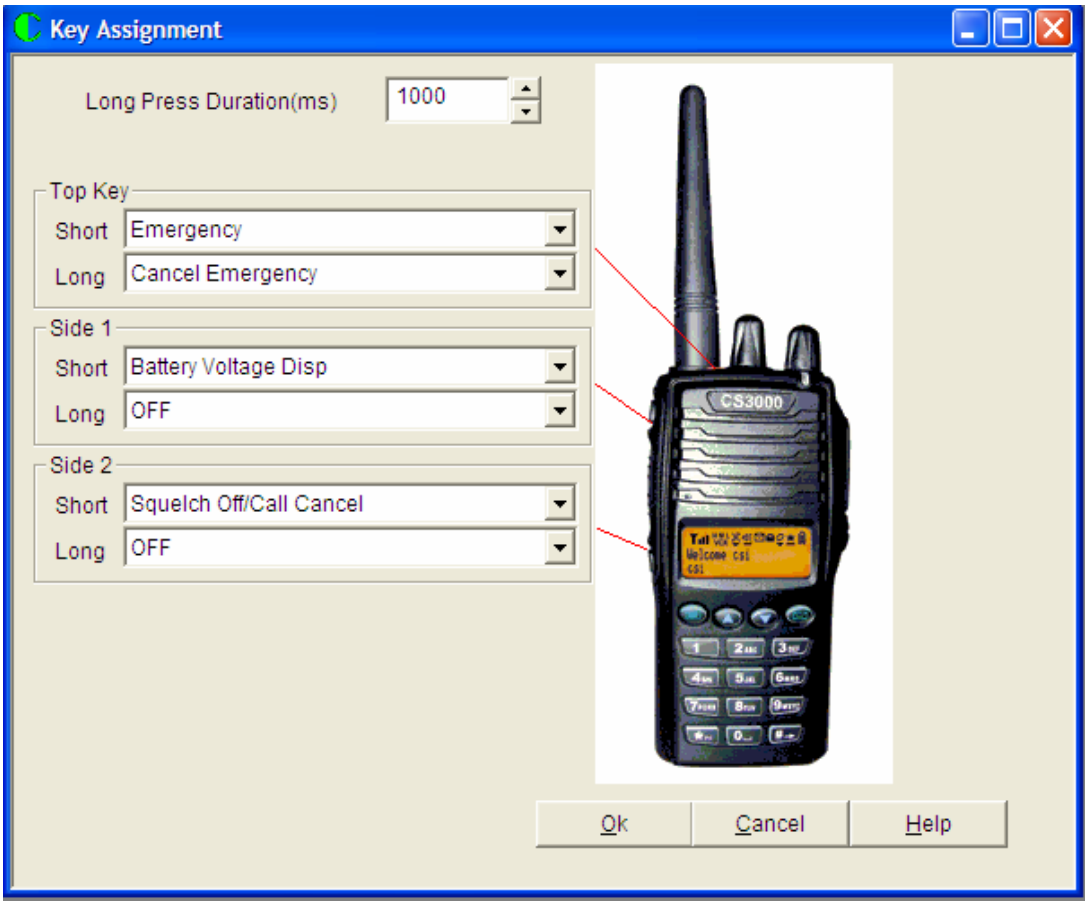
Pressing the print key will print out the parameters associated with this screen.

Help

Pressing the help key will bring up a help menu where the user can then try to determine what the different parameters mean.

Key Assignments Screen

When the Key Assignment entry from the tree bar is accessed, the following screen appears:



There are three buttons on the radio that are programmable for different functions. Each button has the capability of having two separate functions, determined by how long the button is pressed. The length of time the button has to be pressed for the second feature is determined by the dealer. The list below gives the possible features and the reasons for the features. The user must be informed by the dealer the function of each key.

Long Button Time(ms)

This function is for configuring the valid time to activate the programmed Long Button settings. When the time of pressing the key is more than the hold time, the Long Button key will be valid else the Short Button is valid. Normally you should set the hold time to more than one second otherwise it is hard to determine if it's a Long Button or a Short Button.

1. Zone Up

This key will allow the radio-user to navigate up thru the radio's zones while not in the Menu Mode. The purpose of zones is so different radio channels can be grouped together and then when you are using

the channel selector to pick a channel you are only looking at channels related to your zone. The Zone number or alias will be near the top left of the display in small characters and the channel number or alias will be below in much larger characters. Every time the key is pressed the next zone is accessed. Zone 0 allows all channels to be accessed. The other zones can access up to 16 channels.

2. Zone Down

This key will allow the radio-user to navigate down thru the radio's zones while not in the Menu Mode. The purpose of zones is so different radio channels can be grouped together and then when you are using the channel selector to pick a channel you are only looking at channels related to your zone. The Zone number or alias will be near the top left of the display in small characters and the channel number or alias will be below in much larger characters. Every time the key is pressed the previous zone is accessed. Zone 0 allows all channels to be accessed. The other zones can access up to 16 channels.

3. Display CH Frequency

This is an alternate action key that will change the mode of display between channel frequency and channel alias

4. Display CH Alias

When this key is pressed, it will change the mode of display to the channel alias.

5. Display Mode Switch

This is an alternate action key that switches the mode on the display between “Channel Number”, “Channel Alias”, and “Channel Frequency”.

6. Power

This is an alternate action key allows the user to select the power output of the radio from “High Power” to “Mid Power” to “Low Power”. This allows the radio-user to adjust the Transmit Power setting radio-wide unless a particular channel is set to ignore this key. When the radio is in the low power mode, the display on the top line will display “LO”. When the radio is in the mid power mode, the display on the top line will blink the “LO”. When the radio is in the high power mode, the display will be blank where in the other modes there was the “LO”.

By selecting “low power” you minimize the radio frequency energy and the magnetic energy from the radio. It also helps in battery life and it prevents people far away from hearing you.

7. Squelch Level

Pressing this key gets you into the squelch adjust mode. When this key is pressed the display will say "Squelch Level n" where n is a value between "0 and 9". Use the channel selector knob to change the squelch level and then use 

to save the results.

8. Key Lock

This is an alternate action key. When the key is first pressed the LCD display will show a picture of a lock near the top right of the display. When the key is pressed again the picture of the lock will disappear. When this feature is active, the programmable keys are locked out as well as the manual programming keys. The channel selector switch still works.

9. Scan

This allows the radio-user to enter or exit scan mode. The key is only available for Scan Lists where the User Programmable field has been enabled. When the scan mode is enabled the display will say "SCAN" in large characters in the bottom middle of the display

The purpose of the scan function is to allow the user to monitor multiple channels and stop at the channel that is active. This would be useful for a supervisor who needs to monitor the activity among different groups of users.

10. Nuisance Delete

When the radio lands on an unwanted channel during scanning, pressing this key will delete this channel temporarily from the scan list. It is possible to delete all the scanning channels except the priority channel. When the scan mode is exited and later entered again, the temporarily deleted channels will be restored.

The purpose of this key is to delete scan channels that have noise on them or other erroneous transmissions. This prevents the scanning from always stopping at a channel that has no meaning.

11. Voice X-Pander

This is an alternate action key that enables or disables the X-pander option. X-pander is a new standard feature in the cellular phone industry and is supported industry-wide. The purpose of X-pander is to reduce radio and airway noise, thus enhancing audio clarity. When the X-pander option is enabled, a small "p" will appear on the top of the display.

12. Scrambler

This is an alternate action key that enables or disables the Scrambler function. The scrambler makes the voice unintelligible to most people who do not have a compatible radio. This prevents a third party from listening in. When the radio is in the scrambler mode, the display will show a small box with a "T" inside in the top middle of the screen.

13. Home Channel

This function selects a channel the dealer has preprogrammed. The dealer can preprogram either one channel or two channels. If a single channel has been preprogrammed, then pressing the key will select the preprogrammed channel. If the dealer has preprogrammed two channels, then pressing the key will alternate between the two preprogrammed channels. The display will show the channel selected.

14. Talk Around

This is an alternate action key that selects between talkaround mode and repeater mode. In repeater mode, the radios talk directly to another radio. In repeater mode, the radios talk to the repeater and the repeater in turn talks to another radio. Repeater mode extends the range of the radios. Talkaround mode is useful when the repeater is out of range or the signal strength of the repeater is not sufficient to penetrate inside a building such as when you have a firefighting incident.

For this key to work, the transmit and receive frequencies must be different and the key must not be disabled for the channel you are using. When the key is pressed and it goes in the talk around mode, the display will show “Talkarnd Mode” for a few seconds. When the key is pressed and it goes in the repeater mode, the display will show “Repeater Mode” for a few seconds.

15. VOX

This is an alternative action key that enables or disables VOX. When VOX is enabled, the user only has to speak to transmit. The PTT switch in this mode does not have to be pressed. VOX is useful when the operator of the radio cannot free his hands to use the radio as what might happen if you are driving. When the VOX mode is enabled, the second line of the display will show “Vox”.

16. Monitor Momentary/Call Cancel

Pressing the Monitor Momentary/Call Cancel key allows monitoring the channel for any voice traffic. The incoming signal has to have the required squelch level before anything can be heard. Releasing the switch puts in back in the normal mode. While the key is pressed, the display will show MON on the second line of the display. This key will also cancel the current incoming call.

Normally the user will only hear messages with the proper CTCSS or DCS codes. This is to prevent the user from fatigue by hearing all messages sent to everybody. This switch bypasses that protection and allows the user to hear all traffic on that channel as long as the key is pressed.

17. Monitor/Call Cancel

This is an alternative action key that enables or disables the monitor mode. While in the monitor mode, any voice traffic which has the required squelch level will be heard. While in the monitor mode, the display will show “MON” on the second line of the display. This key will also cancel the current incoming call.

Normally the user will only hear messages with the proper CTCSS or DCS codes. This is to prevent the user from fatigue by hearing all messages sent to everybody. This switch bypasses that protection and allows the user to hear all traffic on that channel as long as the radio is in the monitor mode.

18. Squelch Off Momentary/Call Cancel

Pressing the "Squelch Off Momentary/Call Cancel" key allows monitoring the channel for any voice traffic. The incoming signal does not to have any signal before anything can be heard. That means if there is no signal you will hear squelch noise. Releasing the key puts it back in the normal mode. While the key is pressed, the display will show MON on the second line of the display. This key will also cancel the current incoming call.

By turning off the squelch, the user can hear a weaker signal than if the squelch was already enabled. This is both a diagnostic tool and a feature. If the transmitter from the originating user is weak and does not get past the squelch, then disabling the squelch will allow the user to hear weak signals.

19. Squelch Off/Call Cancel

This is an alternative action key that enables or disables the squelch mode. While in the squelch mode, any voice traffic will be heard no matter what the squelch level. That means if there is no signal you will hear squelch noise. While the key is pressed, the display will show "MON" on the second line of the display. This key will also cancel the current incoming call.

By turning off the squelch, the user can hear a weaker signal than if the squelch was already enabled. This is both a diagnostic tool and a feature. If the transmitter from the originating user is weak and does not get past the squelch, then disabling the squelch will allow the user to hear weak signals.

20. Emergency

Pressing the "Emergency" key will cause the radio to transmit an emergency message. The display will show in large letters "EMERGENCY".

Pressing the key designated as "emergency alarm" will cause the radio will go into an emergency mode and depending on the dealer programming, will either generate a local alarm or transmit an alarm to another radio or both.

This has a similar function as the Lone Worker mode. The biggest difference is the user must press a key to start this function verses the Lone Worker where not doing something starts the function. This could be used in situations where you want someone to know there is an emergency but talking over the radio might jeopardize the safety of the user.

21. Cancel Emergency

Pressing the "Cancel Emergency" key will cancel the emergency transmission, generate two beeps, and the cause the "EMERGENCY" on the display to disappear. This key would normally be pressed if the emergency alarm condition is resolved or the emergency alarm key has been pressed by accident.

22. Radio Call

The Radio Call key is a multifunction key that has the ability to generate Selective Calls, Call Alerts, Radio Check, Kill, and Active. The exact function(s) allowed is determined by the dealer. When the Radio Call key is pressed, the display will show “Selective Call”. The channel selector switch, 

, or 

can then be used to select the mode desired. When the mode desired is found, press 

to lock it in. Then use the channel selector switch, 

, or 

to select the transmission mode desired. The choices are “DTMF”, “Two Tone”, or “MDC”. After the transmission mode is selected, press the PTT switch to transmit the message. Radio Check, Kill, and Active only use the MDC transmission mode.

23. Call 1

When the “Call 1” key is pressed, a preprogrammed two tone or DTMF page will be sent. If the dealer programmed the radio for side tone, the two tone or DTMF page will be heard as it is being transmitted.

This is a paging feature that is used to contact individual radio or sometimes to set off certain types of alarming features. When you set it for a DTMF code or a two tone code the other radio has to be able to receive that DTMF code or two tone code. Not all radios have the ability to respond to paging.

24. Call 2

When the “Call 2” key is pressed, a preprogrammed two tone or DTMF page will be sent. If the dealer programmed the radio for side tone, the two tone or DTMF page will be heard as it is being transmitted.

This is a paging feature that is used to contact individual radio or sometimes to set off certain types of alarming features. When you set it for a DTMF code or a two tone code the other radio has to be able to receive that DTMF code or two tone code. Not all radios have the ability to respond to paging.

25. Call 3

When the “Call 3” key is pressed, a preprogrammed two tone or DTMF page will be sent. If the dealer programmed the radio for side tone, the two tone or DTMF page will be heard as it is being transmitted.

This is a paging feature that is used to contact individual radio or sometimes to set off certain types of alarming features. When you set it for a DTMF code or a two tone code the other radio has to be able to receive that DTMF code or two tone code. Not all radios have the ability to respond to paging.

26. Call 4

When the “Call 4” key is pressed, a preprogrammed two tone or DTMF page will be sent. If the dealer programmed the radio for side tone, the two tone or DTMF page will be heard as it is being transmitted.

This is a paging feature that is used to contact individual radio or sometimes to set off certain types of alarming features. When you set it for a DTMF code or a two tone code the other radio has to be able to receive that DTMF code or two tone code. Not all radios have the ability to respond to paging.

27. Lend Remain Time Display

When the “Lend Remaining Time Display” key is pressed, the remaining time the radio can be used will be displayed. The radio will show the number of days, the number of hours, and the number of minutes. Pressing any other key will erase the remaining time from the display.

28. Lone Worker

This is an alternative key that enables or disables the Lone Work mode. When the Lone Work mode is enabled, a single beep will be heard and the top line of the display will show “SVC”. When the lone work mode is disabled, a double beep will be heard and the “SVC” will be erased from the display. When the radio goes into the emergency mode, the display will show in large letters, “EMERGENCY”. The only way to get out of the emergency mode is to turn off the power.

The purpose of this function is to call for help if the person holding this radio does not press a key on the radio every so often. Once the radio is set for the Lone Worker mode, a timeout timer is started. At the end of this time an alarm on the radio will sound telling the user to press either the Lone Worker reset key or any key, depending how the unit is preprogrammed. If the user does not press the appropriate key soon after the radio starts to alarm, the radio will go into an emergency mode and depending on the dealer programming, will either generate a local alarm or transmit an alarm to another radio or both.

29. Scan List Edit

This key is used to enable or disable channels on the scan list. Press the “Scan List Edit” key and the display will show “View List”. The channel selector switch,  , or  can now be used to select “Add Entry”, “Delete Entry”, “Edit Priority”, or “View List”. When the appropriate function is selected, press the  key to lock in your function.

If “View List” is selected, the channel selector switch,  , or  can be used to view all the active channels in the scan list.

If “Add Entry” is selected, press the  key to lock in this function. The channel selector switch,  , or  can select the appropriate channel. Once the channel is selected, press  and the display will now show “Entry Saved”. Use the  to back out of the function when completed or turn off and on the radio.

If “Delete Entry” is selected, press the  key to lock in this function. The channel selector switch,  , or  can select the appropriate channel. Once the channel is selected, press  and the display will now show “Entry Deleted”. Use the  to back out of the function when completed or turn off and on the radio.

If “Edit Priority” is selected, press the  key to lock in this function. Then select either “Priority #1” or “Priority #2” and then press the  key to lock in this function. Then select “Disable”, “Designated”, or “Selected” and press the  key to enable or disable this channel for the priority channel. This display will show “Prio#1” Saved or “Prio#2” Saved.

30. Vox Level

This key is used to adjust the level of the VOX. Level 1 is the least sensitive and Level 10 is the most sensitive. When the display shows “VOX Level”, use the channel selector switch to select the desired VOX level and then use the  key to save it.

31. Battery Voltage Display

When the “Battery Voltage Display” key is pressed, the display will show Battery x.xxV where x.xx is the battery voltage. The display will disappear after a few seconds.

32. Lamp

This key, when pressed, is used to illuminate the LCD backlight for a few seconds.

33. Channel Lock

This is an alternative key that when first pressed will display “Ch Locked On” for a few seconds. When pressed again, will display “Ch Locked Off”. When this function is enabled, the channel switch is disabled. When a user tries to change channels while this function is enabled, the channel will stay the same and the display will display “Channel Locked” for a few seconds.

34. LCD Contrast

The “LCD Contrast” key is used to adjust the contrast of the LCD. When this key is pressed, the display will say “Contrast n” where “n” is between “0” and “9”. The contrast can now be adjusted by the channel switch and save by the  key.

35. Whisper

This is an alternative action key that enables or disables the Whisper mode. When first pressed, the display will show “Whisper On” and the radio will generate a single beep. When pressed again the display will show “Whisper Off” and the radio will generate a double beep. The purpose of this function is to allow the user to whisper in the radio’s microphone instead of speaking normally.

36. Channel Edit

When the Channel Edit key is pressed, the display will show User PGMING. The channel selector switch, P2, or P3 can then be used to select "User PGMING" or "AdvancedPGMING". Once the selection is made, the P4 key is pressed and a Channel Number is displayed. The channel selector switch, P2, or P3 can then be used to select the channel that needs to be edited. Once the selection is made, the P4 key is pressed and the following items can be edited for "User PGMING":

Channel Alias
Rx Ctcss/Dcsn/Dcsi
Tx Ctcss/Dcsn/Dcsi

For "AdvancedPGMING", the following additional parameters can he edited:

Rx FRQ
Tx FRQ
Channel Band

37. Phone Mode

When the "Phone Mode" key is pressed, a backwards "c" will appear on the second line of the display. The channel selector switch, P2, or P3 can then be used to select the DTMF code to be sent. After the code is selected, press the PTT switch and the preprogrammed DTMF will be generated and sent out over the air. If after the key is pressed and you decide you do not want to generate the DTMF, press the phone mode key again and it will return to the normal mode.

This function can be used for turning on or off phone patches or other devices that need DTMF signaling functions.

38. Auto Dial

When the "Auto Dial" key is pressed, a backwards "c" will appear on the second line of the display. The channel selector switch, P2, or P3 can then be used to select the DTMF code to be sent. After the code is selected, press the PTT switch and the preprogrammed DTMF will be generated and sent out over the air. If after the Auto Dial key is pressed and you decide you do not want to generate the DTMF, press the P1 key and it will return to the normal mode.

This function can be used for turning on or off phone patches or other devices that need DTMF signaling functions.

39. Zone 0 Scan Add/Del

This key is used to add or delete channels from the scan list for Zone 0. To use it set the channel selector key to the appropriate channel and then press the “Zone 0 Scan Add/Del” key. If the display for that channel shows “SCN” on the top line, then the channel is enabled for scanning purposes. If the display is blank in that location, then the channel is disabled for scanning purposes. To change it back press the same key again.

40. OST

This key could allow radio users to change the PL or DPL setting of current channel by a pre-programmed OST list. Press the “OST” key and then the designated PL/DPL can be selected by up and down key. Once the appropriate code is selected, press the “OST” key again and a “-“ appears on the second line of the display indicating the code was selected. Pressing the key again will deselect the code and the “-“ will be removed from the display.

41. Sel Call

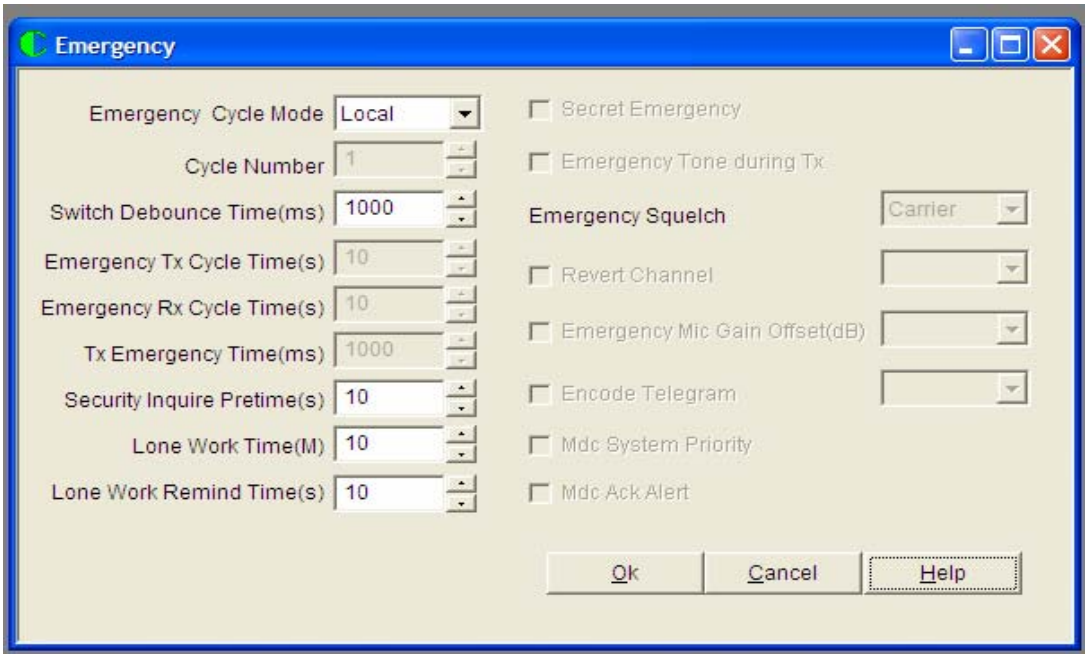
This allows the radio-user to enter the selective call mode directly. Press the “Sel Call” key and then use the channel selector switch, 

, or 

to select the selective call type. The choices are DTMF, Two Tone, or MDC. Then press PTT switch and the selected selective call type will be sent out over the air.

Emergency Screen

When the Emergency entry from the tree bar is accessed, the following screen appears:



Emergency Cycles Mode

This feature describes how the radio will respond to an emergency as follows:

Forbid: The emergency mode is not used.

Forever: The radio will continue to transmit emergency information until the radio is turned off.

Limited: The radio will transmit emergency information the number of times specified in the parameter below.

Local: The radio will not transmit any emergency information but will generate a very annoying local alert in the speaker.

Cycle Number

This parameter defines the number of times the radio will cycle between the transmit and receive modes before going permanently into the receive mode. Each time in transmit mode it will send the DTMF or MDC message.

Switch Debounce Time

This feature is used to prevent accidental operation of the Emergency button by setting a time for which the Emergency button must be held pressed before the radio will recognize it as a valid key press and enter the emergency mode of operation. The time can be set from 100ms to 6300 ms, in increments of 100 ms.

Emergency TX Cycle Times

In the emergency mode the radio switches between receive and transmit a specified number of times. This parameter defines how long the radio will stay in the transmit cycle and it can be between 1 and 255 seconds in 1 second increments.

Emergency RX Cycle Times

In the emergency mode the radio switches between receive and transmit a specified number of times. This parameter defines how long the radio will stay in the receive cycle and it can be between 1 and 255 seconds in 1 second increments.

Security Inquire Pretime

This timer is used to set the time period for which the Security Inquire alert will sound after receiving the Security Inquire decode. After this period the radio will go into the emergency mode of operation. During the period, the function will be disabled if any key is pressed. This timer can be set from 0 to 255 seconds in 1-second steps.

Lone Worker Time

This timer defines the time period after which the radio will go into its emergency mode and sound the Lone Worker alert. Before this happens the Lone Worker must respond to this alert, by pressing any button, within the time period set for the Lone Worker Reminder Time. This timer can be set from 1 to 255 minutes in 1-minute increments.

Lone Worker Reminder Time

This timer is used to set the time period for which the Lone Worker alert will sound and the user must press any button to prevent the radio from going into the emergency mode. This timer can be set from 0 to 255 seconds in 1-second increments. Any time the user presses a button, the Lone Worker Timer resets. The button can be pressed before the Lone Worker alert sounds.

Secret Emergency

If you are being attacked by some nut with a gun you do not want to draw attention to yourself that you have contacted the Calvary. Selecting this parameter will disable all audible and visible indications that will normally occur when the emergency button is pressed and the radio enters the emergency operating mode.

Emergency Tone During TX

This option box is used to select if the emergency tone will be sent or not during the emergency transmit duration. When enabled, the called radio will hear the emergency tone in the background.

Emergency Squelch

This drop down combo box is used to select the required signaling squelch mode needed to open up the receiver when the radio is in the emergency mode of operation. The options are as follows:

- Carrier: Radio will open whenever the receiver sees a carrier.

- QT/DQT: Radio will open whenever the receiver sees the matching CTCSS Tone, DCS Code, or LTR ID Code.
- Speaker Off: The radio will never open up to hear the traffic on the channel.

Revert Channel Enable

This parameter is used to define a specific channel to be used as an emergency channel. If the Emergency button is activated, the radio will revert to the emergency channel specified below and remain on that channel until the emergency is cancelled.

Revert Channel

This is the emergency channel specified if you invoke a special emergency channel.

Emergency Microphone Gain

If this parameter is checked, then the parameters below will determine the gain for the internal microphone. This is used to make the radio a little more sensitive to picking up weak voices in an emergency.

Gain Offset

This is the gain for the internal microphone. The gain can be set from 1 to 4 dB in steps of 1 dB.

Encode Telegram

If this parameter is checked, then the DTMF sequence defined in the DTMF Call List from another screen will be sent when the radio transmits in emergency mode.

Emergency DTMF Call List

This parameter specifies which DTMF sequence from another screen will be sent in an emergency.

MDC System Priority

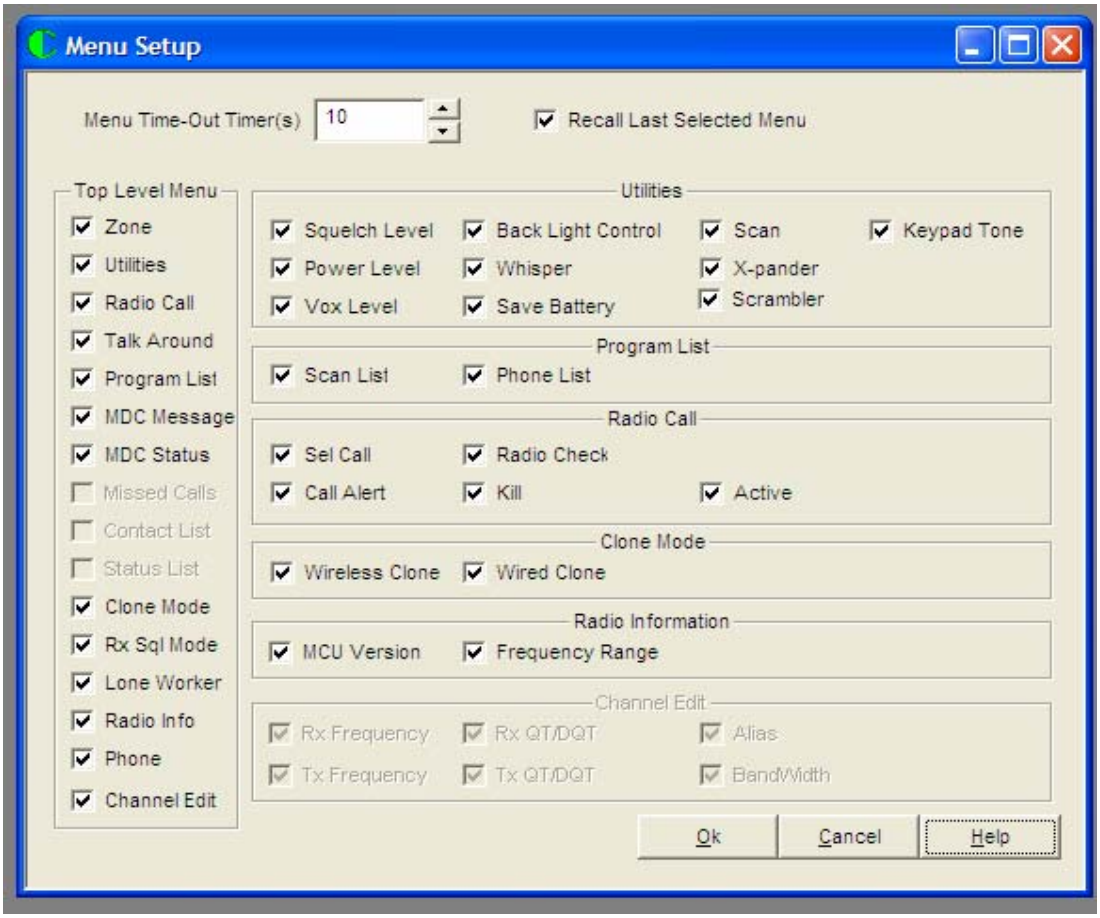
If this option box is checked and “TX Signal System” is set to MDC, the corresponding MDC system is used in the emergency mode. The Primary ID is transmitted with the Emergency Call.

MDC ACK Alert

If this option box is checked, the radio will sound an alert tone when an Emergency Transmission acknowledgment is received. The acknowledgement is sent back from the receiving radio, confirming a successful emergency transmission.

Menu Setup Screen

When the Menu Setup entry from the tree bar is accessed, the following screen appears:



TOP LEVEL MENU SUB MENU

Menu Time-Out Timer(s)

Selects the amount of time the radio waits in Menu Mode, without any radio-user key press activity, before automatically exiting out of Menu Mode. Time is in seconds.

Recall Last Selected Menu

Causes the last-used Top Level Menu option to automatically appear in the radio's display when the radio-user enters the Menu Mode. When disabled, the first available Top-Level Menu option appears in the radio's display when the radio-user enters the Menu Mode.

Zone

Enables 'Zone' as a radio-user Top Level Menu feature. This offers the radio-user the ability to select the appropriate Zone.

Utilities

Enables 'Utilities' as a radio-user Top Level Menu feature.

Radio Call

Enables 'Radio Call' as a radio-user Top Level Menu feature.

Talk Around

Enables 'Repeater/Talkaround' as a radio-user Top Level Menu feature. This allows the radio-user to select to operate radio-wide in Repeater Mode or Talkaround Mode. This feature applies only for Conventional Personalities.

Program List

Enables the Program List as a radio-user top level menu item. This allows the following radio-user features to be assigned to this menu: Scan List, Phone List.

MDC Message

Enables MDC Message as a radio-user Top Level Menu feature. This allows radio-users to select and transmit MDC Messages

MDC Status

Enables MDC Status as a radio-user Top Level Menu feature. This allows the radio-user to select and transmit a Status from a portable or mobile unit to a dispatcher.

Missed Calls

Enables 5Tone Missed Calls as a radio-user Top Level Menu feature. This allows the radio-user to see the missed calls. Not supported in the LTR version.

Contact List

Enables 5Tone Contact List as a radio-user Top Level Menu feature. This allows the radio-user to select and transmit a contact list from a radio. This feature is valid for 5Tone version. Not supported in the LTR version.

Status List

Enables 5Tone Status list as a radio-user Top Level Menu feature. This allows the radio-user to select and transmit a status list from a radio. This feature is valid for 5Tone version. Not supported in the LTR version.

Clone Mode

This allows the radio-user to enter and select clone mode by menu.

Rx Squelch Mode

This allows the radio-user to select the Rx Squelch Mode by menu. Carrier, QT/DQT, Signal, QT/DQT&Signal can be selected.

Lone Worker

This allows the radio-user to enable or disable lone work by menu.

Radio Info

This allows the radio-user to know the software version of the MCU and frequency range of the radio.

Phone

Enables 'Phone' as a radio-user Top Level Menu feature. This allows the radio-user to enter the Phone Mode, which is when the radio is capable of the transmitting phone calls.

Channel Edit

This allows the radio-user to enter the channel edit mode. In channel edit mode, QT/DQT, band, channel alias, Rx and Tx frequency can be edited.

THE UTILITIES SUB MENU

Squelch Level

Causes the Squelch feature to be included in the Utilities menu. This allows the radio-user the ability to temporarily adjust the Squelch Threshold setting to 'Normal' or 'Tight' for the current Channel Selector selected channel. Once the radio's channel is changed, or the radio is powered-off, this setting reverts back to the Squelch Setting for each Conventional Personality. This same functionality can be assigned to a (short or long) programmable button-press.

Power Level

Causes the Power Level feature to be included in the Utilities menu. This allows the radio-user to adjust the Transmit Power setting (radio-wide) to 'High' or 'Low'. Radio-wide Tx Power Level functionality can also be assigned to a (short or long) programmable button-press.

VOX Level

Causes the VOX Level feature to be included in the Utilities menu. This allows the radio-user to adjust the VOX Level.

Back Light Control

Causes the Light Disable feature to be included in the Utilities menu. This allows the radio-user the ability to disable a portable radio's keypad back light, the Display light, and the radio's LED.

Whisper

Causes the Whisper feature to be included in the Utilities menu. This allows the radio-user to enable whisper or disable it.

Save Battery

Causes the Save Battery to be included in the Utilities menu. This allows the radio-user to change the type of save battery by menu.

Scan

Causes the Scan feature to be included in the Utilities menu. This allows the radio-user to start or exit scan by menu.

X-pander

Causes the X-pander feature to be included in the Utilities menu. This allows the radio-user to enable X-pander or disable it.

Scrambler

Causes the Scrambler feature to be included in the Utilities menu. This allows the radio-user to enable Scrambler or disable it.

Keypad Tones

Causes the Keypad Tones feature to be included in the Audio/Tones menu. This allows the radio-user to toggle on or off the DTMF audio tones heard when using the keypad

PROGRAM LIST SUB MENU

Scan List

Causes the Scan List feature to be included in the Program Lists menu. This allows the radio-user the ability to define and use certain Scan List functionality.

Phone List

Causes the Phone List feature to be included in the Program Lists menu. This allows the radio-user the ability to define and use certain Phone List functionality.

RADIO CALL SUB MENU

Sel Cal

Causes the Select Call feature to be included in the Radio Call menu. This allows the radio-user the ability to transmit Select Call's.

Call Alert

Causes the Call Alert feature to be included in the Radio Call menu. This allows the radio-user the ability to transmit Call Alerts

Radio Check

Causes the Radio Check feature to be included in the Radio Call menu. This allows the radio-user the ability to transmit Radio Checks.

Kill

Causes the Kill feature to be included in the Radio Call menu. This allows the radio to be killed remotely.

Active

Causes the Active feature to be included in the Radio Call menu. This allows the radio to be activated if it was killed.

CLONE MODE SUB MENU

Wireless Clone

When enabled, allowed the radio to duplicate its program contents to another radio remotely.

Wired Clone

When enabled, allows the radio to duplicate its program contents to another radio by using the special cloning cable.

RADIO INFORMATION SUB MENU

MCU version

Causes the Software Version # feature to be included in the Utilities menu. This allows the radio-user the ability to display the Version Number of internal-radio Firmware Software stored in Read-Only Memory (ROM).

Frequency Range

This allows the radio-user to know the frequency range of the radio.

CHANNEL EDIT SUBMENU

Rx frequency

This allows the radio-user to edit the receive frequency by keypad.

Tx frequency

This allows the radio-user to edit the transmit frequency by keypad.

Rx QT/DQT

This allows the radio-user to edit the QT/DQT decode by keypad.

Tx QT/DQT

This allows the radio-user to edit the QT/DQT encode by keypad.

Alias

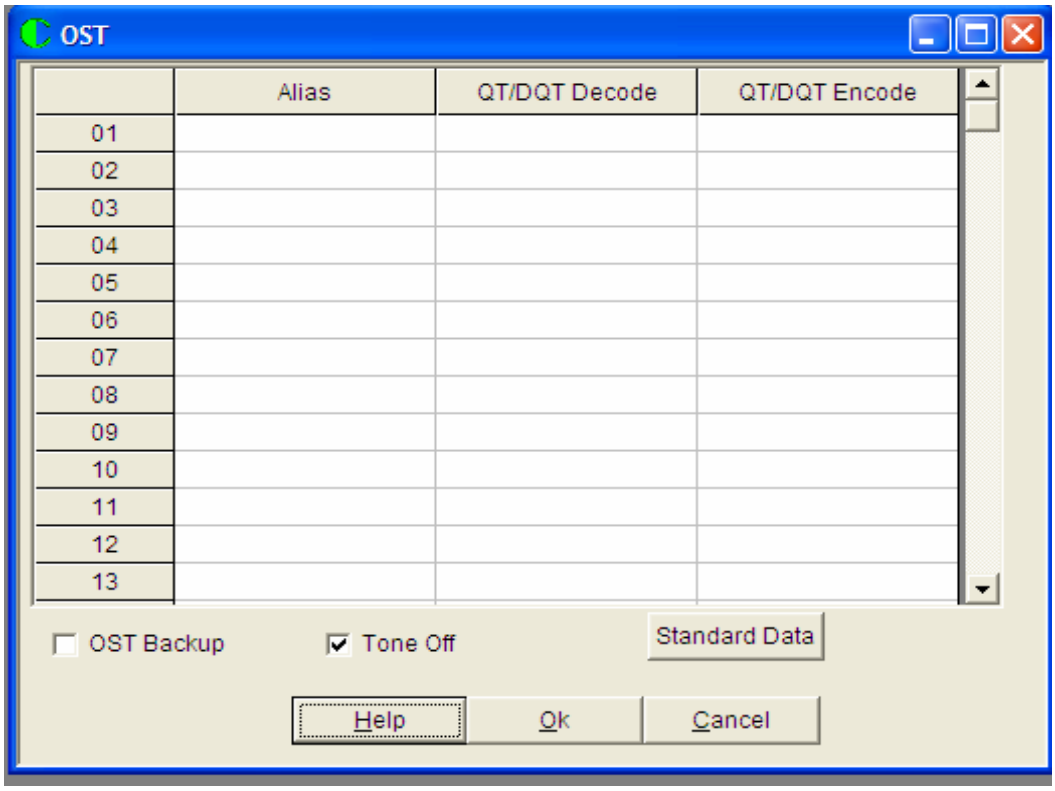
This allows the radio-user to edit the channel alias by keypad.

Bandwidth

This allows the radio-user to change the bandwidth of radio.

OST Screen

When the OST entry from the tree bar is accessed, the following screen appears:



The OST screen allows the radio user to dynamically assign the CTCSS and DCS decode and encode values on the selected channel by pre-programming the table.

Alias

Alias allows you to make unique names to a pair of Decode and Encode of QT/DQT Signaling. If this function is not configured, the Tone Number appears instead.

QT/DQT Decode

This allows the CTCSS/DCS tones to be assigned for the receive channel. If you wish to decode non-standard tone, enter the desired tone frequency directly in the box.

Example 1: Program CTCSS 151.4

Enter **[1]**, **[5]**, **[1]**, **[.]**, **[4]**, then press **[Enter]**.

Example 2: Program DCS 023 (normal)

Enter **[D]**, **[0]**, **[2]**, **[3]**, **[N]**, then press **[Enter]**.

Example 3: Program DCS 754 (inverted)

Enter **[D]**, **[7]**, **[5]**, **[4]**, **[I]**, then press **[Enter]**

QT/DQT Encode

This allows the CTCSS/DCS tones to be assigned for the transmit channel. If you wish to decode non-standard tone, enter the desired tone frequency directly in the box.

Example 1: Program CTCSS 151.4

Enter **[1]**, **[5]**, **[1]**, **[.]**, **[4]**, then press **[Enter]**.

Example 2: Program DCS 023 (normal)

Enter **[D]**, **[0]**, **[2]**, **[3]**, **[N]**, then press **[Enter]**.

Example 3: Program DCS 754 (inverted)

Enter **[D]**, **[7]**, **[5]**, **[4]**, **[I]**, then press **[Enter]**

OST Backup

This feature stores the table generated so the next time the power is applied to the radio the table data is still there and does not have to be reentered.

Tone Off

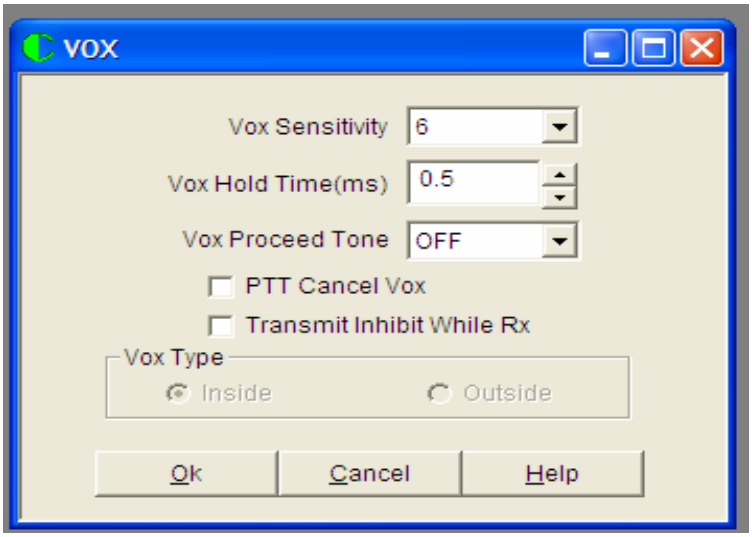
This feature not supported in the current software.

Standard Data

This allows the user to preprogram all the standard CTCSS tones into the OST table by means of a single button.

VOX Screen

When the VOX entry from the tree bar is accessed, the following screen appears:



VOX Sensitivity

This parameter determines the sensitivity of the VOX. A value of 1 is the lowest sensitivity and a value of 10 is the highest sensitivity.

VOX Hold Time

The VOX Hold Time is a programmable time period with a value between 0.1 and 25.5 seconds. This time period keeps the VOX active to allow for pauses in conversation thereby preventing the radio from dropping out of the TX mode and loosing the channel.

Vox Proceed Tone

The selectable option is either Enabled or Disabled. If enabled, the user will hear an alert tone in the headset while entering the VOX mode. This provides the user with a transmitting indication when the transmit LED is either disabled or not visible.

PTT Key Cancel VOX

When the PTT Key Cancel VOX box is checked, the VOX function is automatically disabled when pressing the PTT key. If the box is not checked, then pressing the PTT has no effect on VOX operation.

Transmit Inhibit While Rx

This function allows you to inhibit the VOX transmission when the radio is receiving. If this box is checked, then the radio will not transmit using VOX if it is receiving. If the box is unchecked, then the radio will transmit even if it is receiving a signal.

Inside VOX

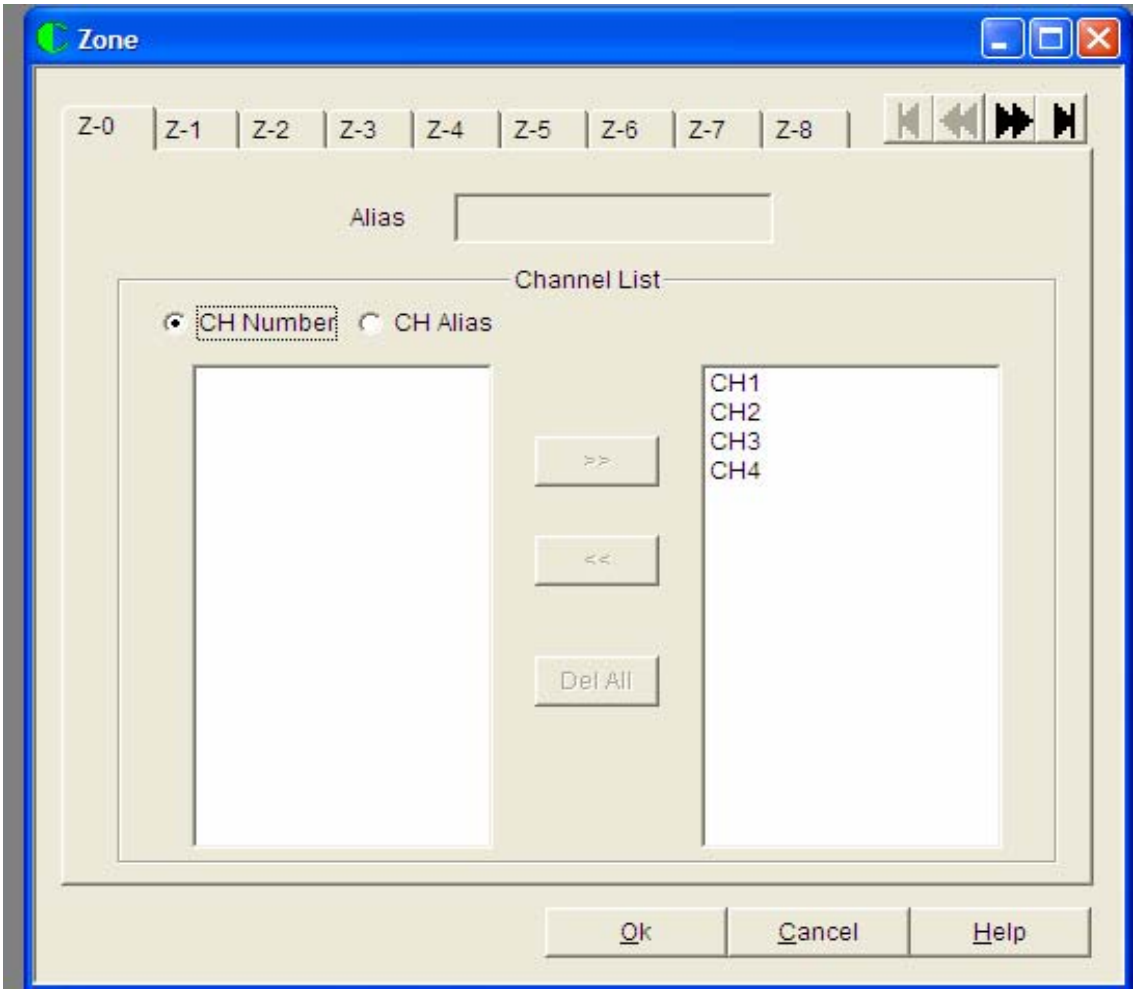
When the Inside VOX box is checked, the VOX function will work with the internal microphone and will not require an external microphone.

Outside VOX

When the outside box is checked, the VOX function will work with the external microphone and will ignore the internal microphone.

Zone Screen

When the Zone entry from the tree bar is accessed, the following screen appears:



This screen is used to define the channels for each zone. The Channels on the left is the available channels that could be used for each zone. The channels on the right are the channels assigned to that zone. The Alias is the name for the zone. Once you are satisfied with your results, press the OK button to store the results. Zone 0 contains all the channels in the system and does not have an alias. Zones 1 thorough Zone 8 contains a maximum of 16 channels each. It is recommended you edit the zones in order. For example, edit Zone 1 before you edit Zone 2.

Alias

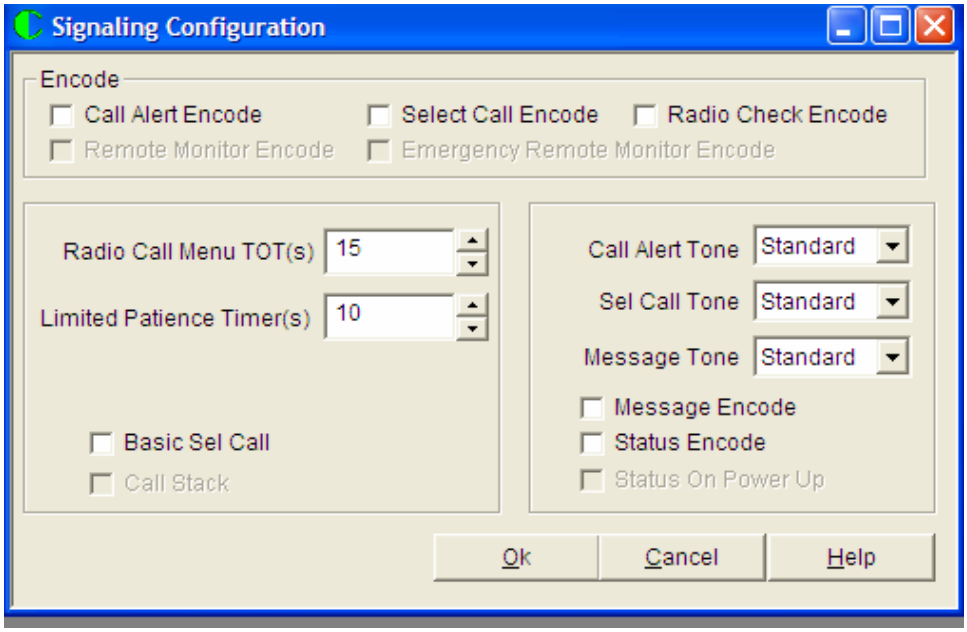
The Alias is a radio-user recognizable name for current Zone. Characters, Numbers, Spaces, and Special Characters can be used. If the alias is not specified, the system substitutes ZONE n where n is the zone number.

CH Number/CH Alias

This lets the channels selected and available be displayed by the Channel Number or Channel Alias. The Channel Alias is entered into the Channel Information screen.

Signaling Configuration Screen

When the Signaling Configuration entry from the tree bar is accessed, the following screen appears:



Radio Call Menu TOT

Selects the amount of time the radio remain in the radio call menu without any radio-user activity. Once the timer expires, the radio exits out of radio menu. Time is in seconds.

Limited Patience Time

Selects the amount of time that the radio politely waits for busy channel to become free to make a signaling system communication, known as a polite transmission. Once the time expires, the radio will impolitely transmit even when the channel is currently in use. Time is in seconds.

The time begins once the PTT button is pressed. and when the current is busy. A subsequent press of the PTT button while the timer is running causes the timer to be reset and begin again.

This applies to all polite transmissions that require an Acknowledge including Radio Checks, Call Alerts, and Emergency Transmissions.

Basic Sel Call

When selected, a Sel Call data pocket is transmitted only when a Sel Call radio call is initiated. That is, a Sel Call data pocket is transmitted once radio-user selects to send a Sel Call. Subsequent PTT presses will not send a Sel Cal data packet.

When disabled Auto Sel Cal mode is initiated. That is, once the radio-user selects to send a Sel Cal, then selects a call recipient, a Sel Cal is transmitted each time the radio's PTT button is pressed.

Call Stack

This feature not supported in the current software.

Call Alert Tone

Selects the alert type that sounds when a Call Alert is received. There 16 user-defined alert templates can be selected, which have been defined in Alert template.

Sel Call Tone

Selects the tone type that sounds when a Sel Call is received. There 16 user-defined alert templates can be selected, which have been defined in Alert template.

Message Tone

Selects the tone type that sounds when a Message is received. There 16 user-defined alert templates can be selected, which have been defined in Alert template

Message Encode

Allows Message to be transmitted for Signaling Systems. When disabled, Message will don't allow to transmit, and a error alert will be heard when menu button is pressed in the Message menu.

Status Encode

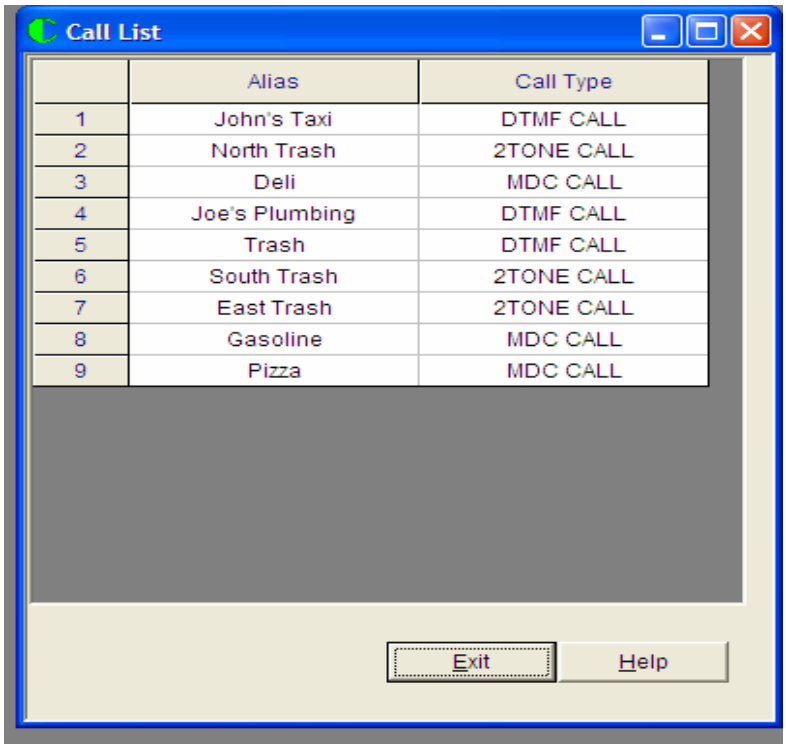
Allows Status to be transmitted for Signaling Systems. When disabled, Status will don't allow to transmit, and a error alert will be heard when menu button is pressed in the Status menu.

Status on Power Up

When enabled, will send status of radio when radio first turns on.

Call List Screen

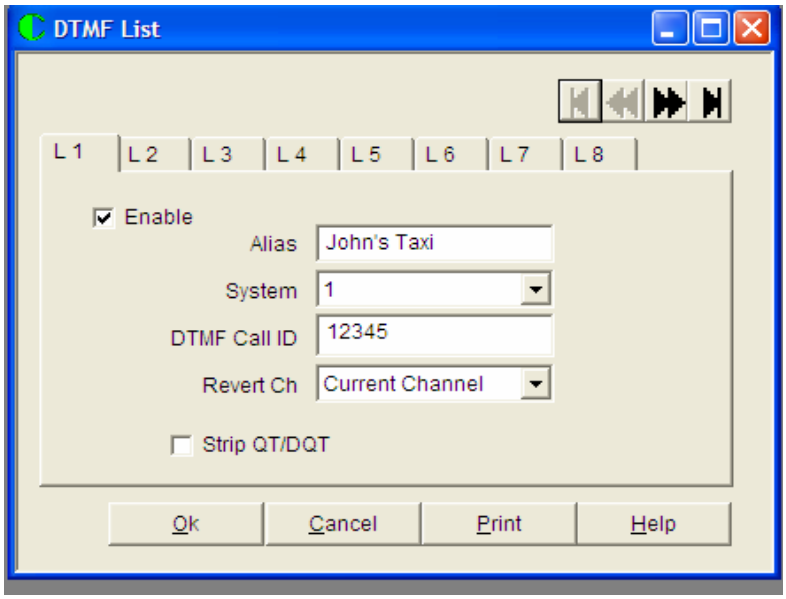
When the Call List entry from the tree bar is accessed, the following screen appears:



This screen is for information only. It shows the alias of each signaling format currently enabled in the system.

DTMF List Screen

When the DTMF List entry from the tree bar is accessed, the following screen appears:



Enable

There are up to 32 possible DTMF list that can be programmed. To use a particular list check the enable box before programming the rest of the fields.

Alias

This allows the radio users to easily recognize and select to the current DTMF Call List. Characters, Numbers, Spaces can be used for Alias.

System

This drop down box is used to select which DTMF System will be used for the current DTMF Call List.

DTMF Call ID

Allows the ability to add call information entry to the DTMF List. Possible Selection: 0 thru 9, the pound sign # , the asterisk *

Revert Ch

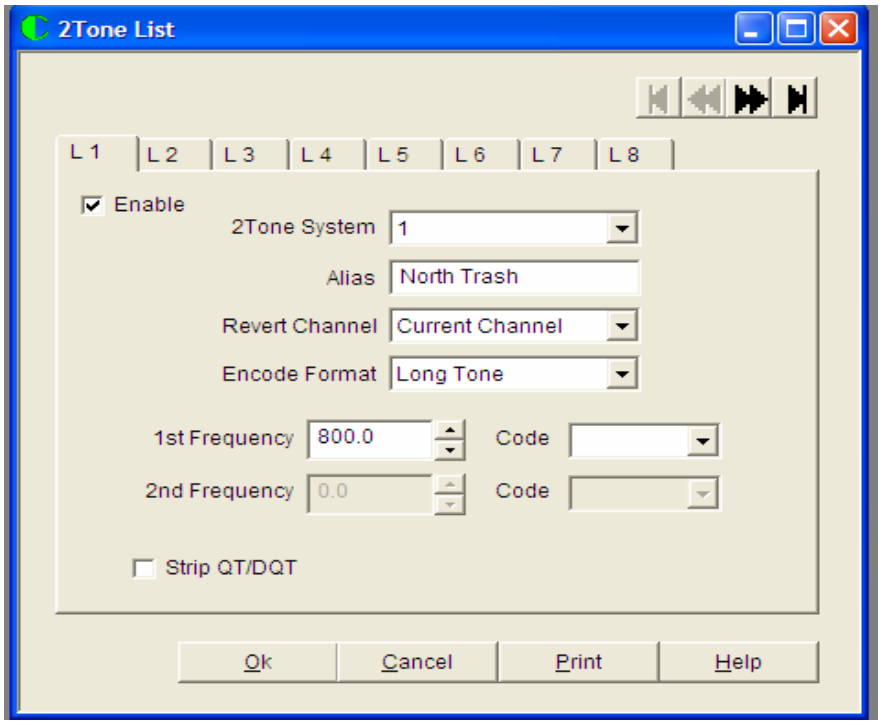
This is used to select the channel used for the current DTMF Call List.

Strip QT/DQT

If enabled, the QT/DQT will be not transmitted for the current DTMF Call List even if the revert channel have the QT/DQT encode.

2Tone List Screen

When the 2Tone List entry from the tree bar is accessed, the following screen appears:



Enable

There are up to 32 possible two tone list that can be programmed. To use a particular list check the enable box before programming the rest of the fields.

2Tone System

This drop down box is used to select which two tone System will be used for the current two tone Call List.

Alias

This allows the radio users to easily recognize and select to the current two tone Call List. Characters, Numbers, Spaces can be used for Alias.

Revert Ch

This is used to select the channel used for the current two tone Call List.

Encode Format

Select either long tone or two tone. The frequency is selected below and the characteristics of the timing is defined in the 2Tone System screen.

1st Frequency

This is the frequency used for a single tone transmission or the first tone of a two tone transmission

2nd Frequency

This is the frequency used for the second tone of a two tone transmission.

Code

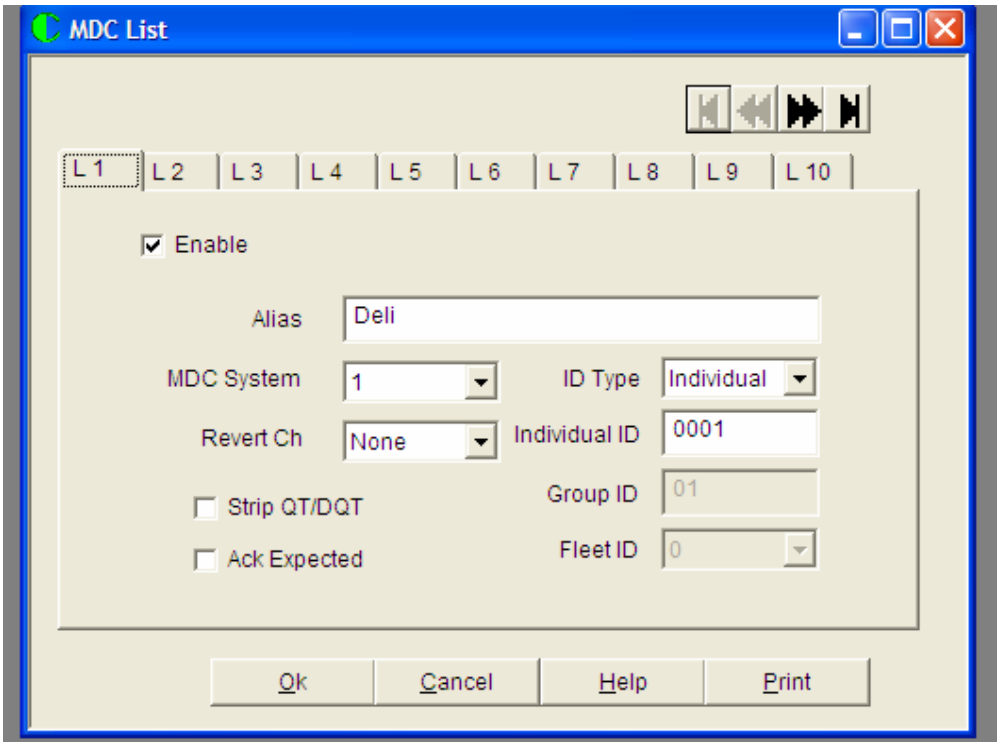
Certain frequencies have certain codes associated with it. You can enter the frequency or the code and the other box will fill in by itself if there is a match. If the frequencies selected has no corresponding code then the code box will stay blank.

Strip QT/DQT

If enabled, the QT/DQT will be not transmitted for the current two tone Call List even if the revert channel have the QT/DQT encode.

MDC List Screen

When the MDC List entry from the tree bar is accessed, the following screen appears:



Enable

There are up to 350 possible MDC list that can be programmed. To use a particular list check the enable box before programming the rest of the fields.

MDC System

This drop down box is used to select which MDC System will be used for the current MDC Call List.

Revert Ch

This is used to select the channel used for the current MDC Call List.

Strip QT/DQT

If enabled, the QT/DQT will be not transmitted for the current two tone Call List even if the revert channel have the QT/DQT encode.

Ack Expected

Causes the radio to expect a reply from the radio being called, for the current MDC - Call List Member. Replies are generally expected from call types such as, Call Alerts and Radio Checks. The radio continues to transmit these call types until an acknowledge is received. The maximum number of transmission retries is five.

Disabling this feature causes the radio to send Call Alerts and Radio Checks only once. The radio shows no indication of acknowledges, therefore Radio Checks are rendered ineffective. The benefit is to reduce channel traffic by eliminating mandatory acknowledges and possible retries for Call Alerts. This applies for the current MDC Call List Member.

ID Type

Selects the transmit Call ID format for the current MDC - Call List Member.

Individual ID

Selects the unique four digit ID to be transmitted for the current MDC - Call List Member. The transmitted ID can target one or more receiving radios. This allows MDC calls to be made to a specific radio (or radios) without disturbing other radios operating on the same channel.
When an Individual ID is transmitted with a call, it must be equal to the receiving radio's current Primary ID for the call to be successfully received. The "F" character can be used as a wildcard (an all-inclusive digit) in the last three digits of the ID.

Group ID

Selects the unique two digit ID to be transmitted for the current MDC - Call List Member. The Fleet ID
must also be defined. The transmitted Call Group ID can target several receiving radios. This allows MDC transmissions to be made to a specific Group of radios without disturbing other radios operating on the same channel.
For a Group ID Type call, the Fleet ID combines with this two digit Call Group ID to define the first digit of the three digit transmitted ID. This transmitted ID must be equivalent to the (three digit) Group ID of the receiving radios for the call to be successful.

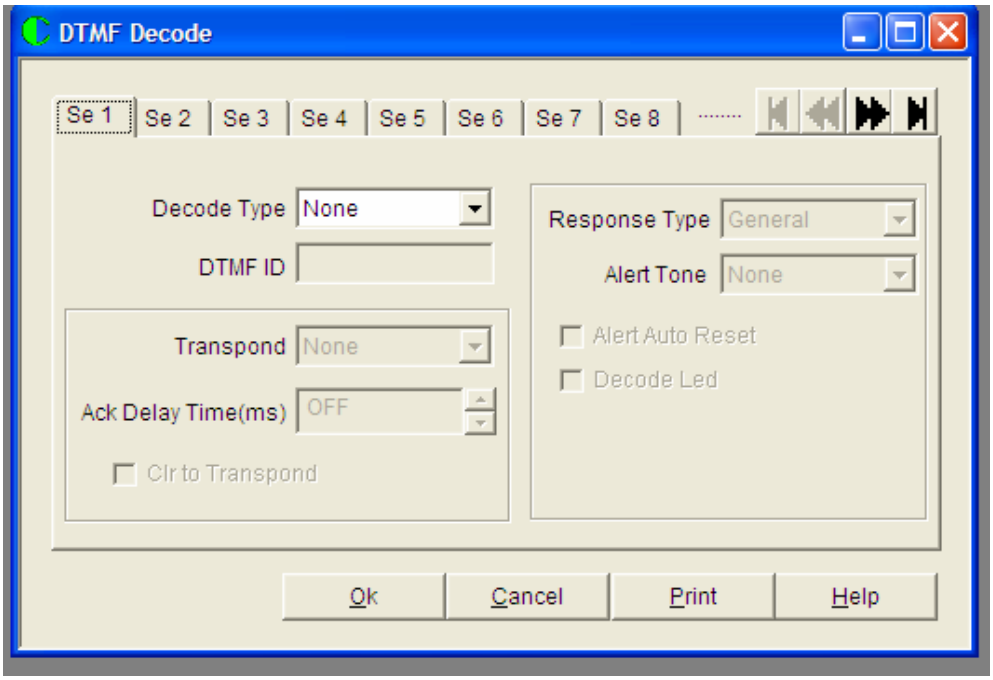
Fleet ID

Selects the unique one digit ID to be transmitted for the current MDC - Call List Member. The transmitted Fleet ID can include many receiving radios. This allows MDC transmissions to be made to a specific Fleet of radios without disturbing other radios operating on the same channel.

The Fleet can include more than one Call Group ID. The Fleet ID can define the first digit of the three digit Call Group ID. However, for a Fleet ID Type call, the second and third digits of the targeted Groups are sent using the "F" wildcard character (an all-inclusive digit).
The Fleet ID must be equal to the first digit of the receiving radio's current (three digit) Group ID for the call to be successfully received.

DTMF Decode Screen

When the DTMF Decode entry from the tree bar is accessed, the following screen appears:



Decode Type

This options offered by selecting the drop down combo box are None, Call Alert, Call Alert with voice and Sel Call. This features allows the radio to respond differently when receiving the Two Tone decode. Call Alert and Call Alert with voice will allow the transmitting radio to notify or leave evidence of the call on the received radio. When the radio user is not present, the call alert led will persist until reset by the user. The Call Alert with Voice is combination of Call Alert and Sel Call. A Sel Call is typically used when the majority of transmissions are between a dispatcher and a radio user, or a group of radio users and when others need not be bothered.

DTMF ID

This field holds the DTMF sequence that should be decoded for this template. A decode sequence can consist of up to 12 characters. Only numbers can be used for the characters.

Transpond

This option specifies which predefined DTMF sequence from the drop down combo box is used for Auto Acknowledge.

Ack Delay Time (ms)

This option will cause the radio to transmit the reply when the acknowledge delay timer expires, regardless of the state of carrier detect on the channel. If the acknowledge delay timer

is programmed as zero then the radio will reply to the call as fast as possible but obviously not instantly.

Clr to Transpond

When this option is selected the radio will transmit the reply as soon as there is no RF carrier detected on the channel, or when the acknowledge delay timer expires, which ever occurs first.

Response Type

Determines the type of action taken by the radio on receiving a valid telegram. They are used to enable features of the radio, from lifting the squelch and opening the radios audio circuits for an individual call sequence, to instigating an emergency and they can also be used to display information if the radio has a display or give alerts.
Selections are:

General: This is used for decoding own (individual/group) ID' s. Upon successful decoding the appropriate alert may be sounded.

Security Inquire: Enabling this feature means that if a security inquire decode is received, a security inquire alert will be sounded. During the security inquire time, if no key pressed, the radio will enter emergency mode as soon as the security inquire time expire. Security inquire time is set in emergency feature.

Stun: Enabling this feature means that if a stun decoder is received, any attempts used to transmit will be inhibited except emergency. When the radio has been stunned, forbid TX Alert will be heard when the PTT is pressed.

Kill: If a radio has a decoder set up for kill then on decoding the sequence the radio will be 'killed'. All attempts at user activity, except powering on/off, will be ignored. The only received signal action by the radio will be the Un Stun decode sequence.

Un Stun: If a decoder is programmed with Revive and the radio has been killed or stunned, then on receiving this sequence the radio will be active.

Active: If a stunned radio has a decoder programmed for active, then on reception of this tone sequence the radio will revert to normal operation. The radio may also be activated by reprogramming the radio.

Alert Tone

Select the alert type that will sound when a call is received.

Alert Auto Reset

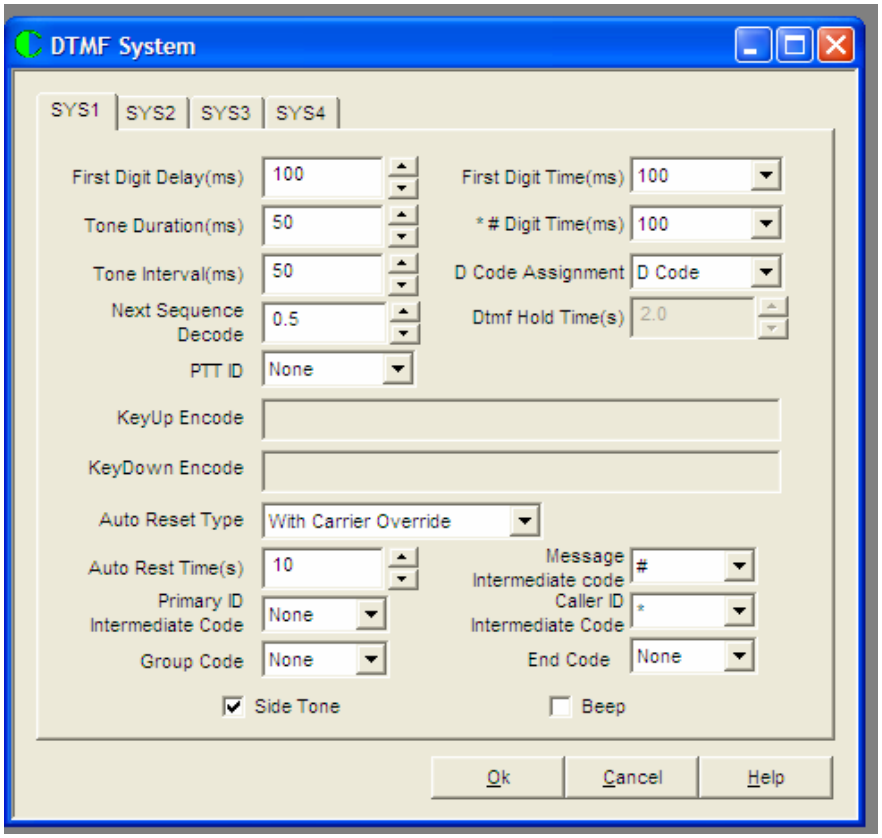
If enabled, the radio will sound only one sequence alert when receiving call alert or call alert with voice decode. If disabled, the radio will sound alert circularly. The interval between two sequence is 5 second.

Decode LED

If enabled, the orange LED will flash when received a call alert or sel call.

DTMF System Screen

When the DTMF System entry from the tree bar is accessed, the following screen appears:



First Digit Delay (ms)

Select the amount of time between PTT pressed and first digit of signaling system data packet transmission. This time allows the receiving radio to stabilize before receiving data.

First Digit Time(ms)

This parameter increases the length of the first digit. If the normal length of the first digit is 100 milliseconds and this parameter is set to 300 milliseconds then the total length of the digit is 400 milliseconds. This has almost the same effect as the first digit delay except the radio is fully modulated during the extra time. This feature is useful if the receiver you are transmitting to is in scan mode or battery save mode.

Tone Duration(ms)

Selects the amount of time that a DTMF tone is transmitted for a single digit. The range is between 30ms-2540ms in 10ms increments.

Tone Interval(ms)

Selects the amount of time that the radio waits between DTMF digits. The range is between 30ms-2540ms in 10ms increments.

*** and # Tone**

This parameter extends the sending time of "*" and "#" tones. This function is required by some systems in which these tones must be set longer than numeric tones. However, if a transmission starts with the "*" or "#" tone, the transceiver compares the tone duration with the set "First Digit" time, and uses the longer time of the two. The range is between 0 ms and 1000 ms in increments of 10 ms.

D Code Assignment

D code assignment allows the “D” symbol to be used as a pause period in the Autodial, BOT ID, EOT ID. “D” Code assignment means it is a DTMF “D”. The pause range is between 1 and 16 seconds in 1 second increments

DTMF Hold Time

This feature not supported in the current software.

Next Sequence Decode

Select the amount of time that the radio must wait for the next set of tones to be received.

PTT ID

Selects when the PTT ID is sent during normal transmission for the current DTMF System. The selectable option are none, pre only, post only, pre & post.

None: The PTT ID will be not transmitted during normal transmission when the channel have set its Tx Signaling System to DTMF.

Pre Only: The PTT ID will be sent on PTT pressed. The KeyUp box will be enabled.

Post Only: The PTT ID will be sent on releasing the PTT. The KeyDown box will be enabled.

Pre & Post: The PTT ID will be sent on pressing and releasing the PTT. The KeyUp and KeyDown box will be all enabled.

KeyUp Encode

This field is used to define DTMF encode sequence used for Pre PTT ID. All 16 DTMF characters can be used.

KeyDown Encode

This field is used to define DTMF encode sequence used for post PTT ID. All 16 DTMF characters can be used.

Auto Reset Type

This is a feature that is typically associated with signaling squelch operation but is also applied to coded squelch. On receipt of a selective call or upon de-keying, the radio will enter auto-reset mode in which certain squelch requirements are defeated. The available options in this drop down combo box are None, With carrier override, Without carrier override, Manual.

None: The radio does not consider a Release Squelch State.

With carrier override: The timer begins on the receiving radio once its Signaling Squelch Unmuting Rules are met.(While the time is running, the radio is in the Release Squelch State.) While the time is active, it is stopped and reset every time the radio's PTT button is pressed. The timer is re-started when PTT is released. Once the radio is muted, the time is reset, and re-started in effect extending the Release Squelch state again. If the radio is muted when the timer expires the Signaling Squelch Unmuting Rules are then required again. If the radio is unmuted when the timer expires, the radio remains unmuted.

Without carrier override: The timer begins on the receiving radio once its Signaling Squelch Unmuting Rules are met. While the timer is active, it is stopped and reset every time the radio's PTT button is pressed. The timer is re-started when PTT is released. If the timer expires regardless of whether the radio is muted or unmuted, the radio is muted, the Release Squelch State is ended, and the radio's Signaling Squelch Unmuting Rules are again required.

Manual: Pressing the Monitor button ends the Release Squelch State.

Auto Reset Time

On entering into auto-reset mode the auto-reset timer will be started. The radio will reset to the previous Squelch Mode on expiry of the auto-reset timer.

The auto-reset mode will be entered for the following reasons:

a) On dekey of the radio.

b) If the radio is selectively called. The auto-reset timer will be started as soon as the selective call has been received.

c) If the radio detects the correct PL for coded squelch only channels. The auto-reset timer will be started as soon as the PL frequency is detected (detecting PL whilst in the auto-reset mode will not restart the timer unless carrier override is specified - see below).

Primary ID Intermediate Code

A Primary ID Intermediate Code can be programmed with DTMF codes A, B, C, D, * or #. If the called radio receive this primary ID Intermediate Code, the codes after it and before other wild card character will be recognize as the calling ID . The calling ID will be displayed on the received radio.

Group Code

A Group Code can be programmed with DTMF codes A, B, C, D,* or #. If the transceiver receive a valid ID code with one to all of its digits substituted with this Group Code wild card, it will decode.

Message Intermediate Code

A Message Intermediate Code wild card character can be programmed with DTMF codes A, B, C, D, * or #. If the transceiver receives this Message Intermediate Code wild card character, the codes after it and before other wild code will be recognize as Status Codes. When decode, the radio will show the status ID or status alias.

Caller ID Intermediate Code

A Caller ID Intermediate Code wild card character can be programmed with DTMF codes A, B, C, D, * or #.

End Code

A End Code wild card character can be programmed with DTMF codes A, B, C, D, * or #.

Side Tone

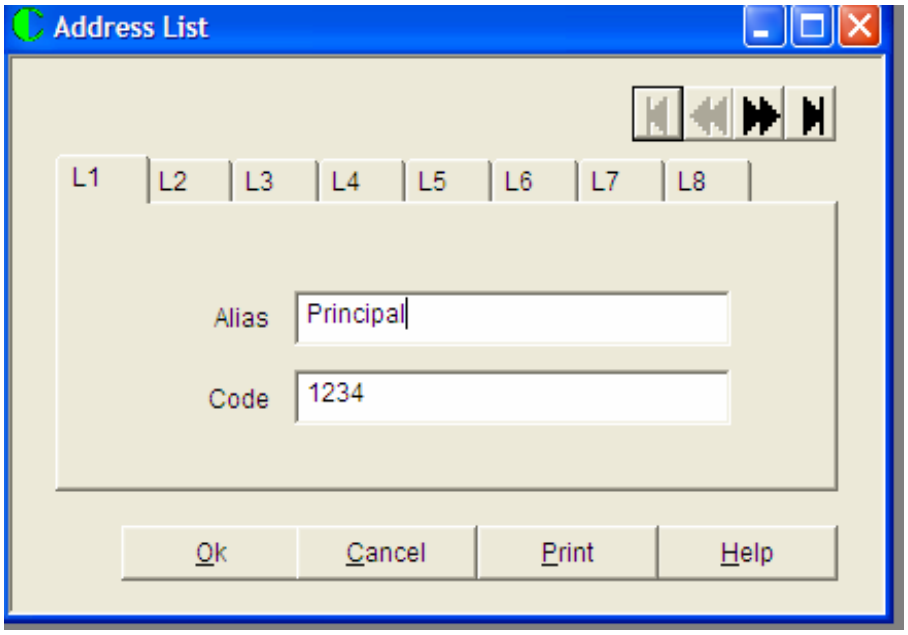
If enabled, the tone alert will be heard during the DTMF data packet transmitted.

Beep

If enabled, the beep will be heard after the DTMF data transmitted.

Address List Screen

When the Address List entry from the tree bar is accessed, the following screen appears:



This screen allows the entry of telephone numbers. The user should enter the name of the telephone (alias) and the telephone number (code).

Alias

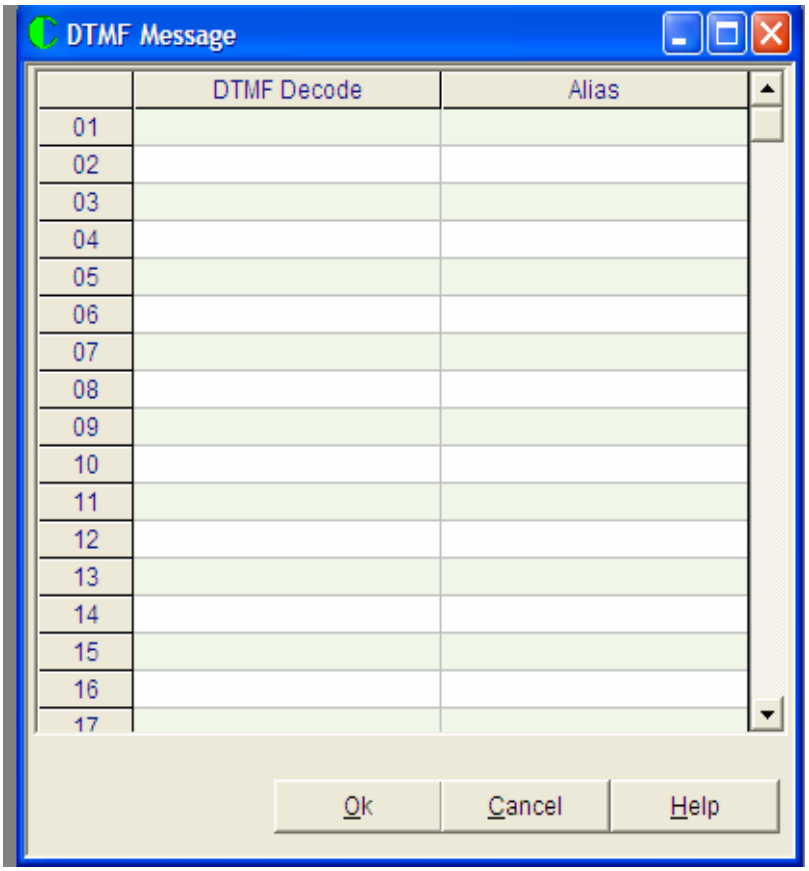
Allows the ability to add a user-recognizable name to a correlating Phone number entry in the Phone List.

Code

Allows the ability to add a phone number entry to the Phone List. The allowable characters are 0 thru 9, the pound sign #, the asterisk *, and P. The letter P allows you to insert a pause where it might be needed. There may be a need for a pause when the radio is transmitting a Phone Number entry that is set-up for one-touch Speed Dialing. The amount of pause time can be defined in the Pause Duration field of the Phone System screen. The letter P must be in UPPERCASE.

DTMF Message Screen

When the DTMF Message entry from the tree bar is accessed, the following screen appears:



DTMF Decode

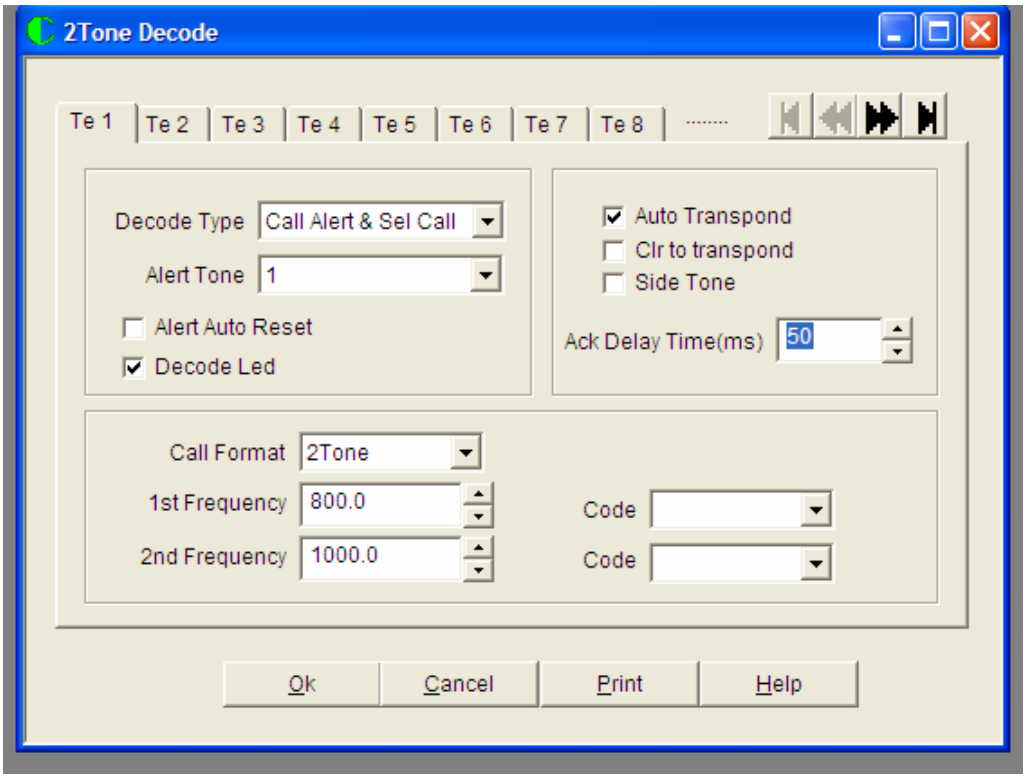
Sets the decode sequence for DTMF Decoding.

Alias

What will appear on the LCD if the decoding is successful.

2Tone Decode Screen

When the 2Tone Decode entry from the tree bar is accessed, the following screen appears:



Decode Type

This options offered by selecting the drop down combo box are None, Call Alert, Call Alert with voice and Sel Call. This features allows the radio to respond differently when receiving the Two Tone decode. Call Alert and Call Alert with voice will allow the transmitting radio to notify or leave evidence of the call on the received radio. When the radio user is not present, the call alert led will persist until reset by the user. The Call Alert with Voice is combination of Call Alert and Sel Call. A Sel Call is typically used when the majority of transmissions are between a dispatcher and a radio user, or a group of radio users and when others need not be bothered.

Alert Tone

Select the alert type that will sound when a call is received.

Alert Auto Reset

If enabled, the radio will sound only one sequence alert when receiving call alert or call alert with voice decode. If disabled, the radio will sound alert circularly. The interval between two sequence is 5 second.

Decode LED

If enabled, the orange LED will flash when received a call alert or sel call.

Auto Transpond

If enabled, the radio will reply to the calling radio on the reception of 2T call or until the expiration of the Acknowledge Delay Time. This option box will only work with two tone.

Clr to Transpond

When this option is selected the radio will transmit the reply as soon as there is no RF carrier detected on the channel, or when the acknowledge delay timer expires, which ever occurs first.

Side Tone

When enabled, the radio user will hear the two tone as it is being transmitted.

Ack Delay Time (ms)

This option will cause the radio to transmit the reply when the acknowledge delay timer expires, regardless of the state of carrier detect on the channel. If the acknowledge delay timer is programmed as zero then the radio will reply to the call as fast as possible but obviously not instantly.

Call Format

Select either long tone or two tone. The frequency is selected below and the characteristics of the timing are defined in the 2Tone System screen.

1st Frequency

This is the frequency used for a single tone transmission or the first tone of a two tone transmission

2nd Frequency

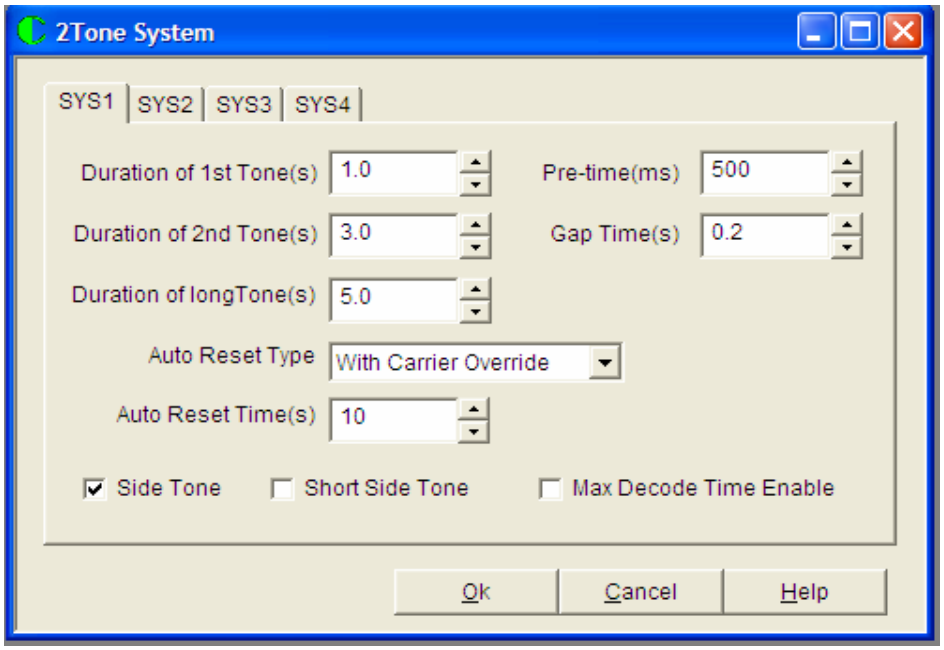
This is the frequency used for the second tone of a two tone transmission.

Code

Certain frequencies have certain codes associated with it. You can enter the frequency or the code and the other box will fill in by itself if there is a match. If the frequencies selected has no corresponding code then the code box will stay blank.

2Tone System Screen

When the 2Tone System entry from the tree bar is accessed, the following screen appears:



Tone Duration of 1st Tone(s)

Selects the amount of time used when transmitting the first tone of a two tone transmission. The range is 0.5-10 seconds in increments of 100 milliseconds.

Duration of 2nd Tone(s)

Selects the amount of time used when transmitting the second tone of a two tone transmission. The range is 0.5-10 seconds in increments of 100 milliseconds.

Duration of long Tones(s)

Selects the amount of time used when transmitting a single Tone for the current 2tone Signaling System. This is used with group calling and has a range of 0.5-10 seconds in increments of 100 milliseconds.

Pre-time(ms)

Selects the amount of time between the PTT button press and the first tone of the 2tone transmission. This time allows the receiving radio to stabilize before receiving the tone. The range is 100 ms to 1 second in increments of 100 milliseconds.

Gap Time(s)

Selects the amount of time amount used between 1st tone and 2nd tone when transmitting two tones. The range is 100 ms to 500 milliseconds in increments of 100 milliseconds.

Auto Reset Type

This is a feature that is typically associated with signaling squelch operation but is also applied to coded squelch. On receipt of a selective call or upon de-keying, the radio will enter auto-reset mode in which certain squelch requirements are defeated. The available options in this drop down combo box are None, With Carrier Override, Without Carrier Override, Manual.

None: The radio does not consider a Release Squelch State.

With Carrier Override: The timer begins on the receiving radio once its Signaling Squelch Unmuting Rules are met.(While the time is running, the radio is in the Release Squelch State.) While the time is active, it is stopped and reset every time the radio's PTT button is pressed. The timer is re-started when PTT is released. Once the radio is muted, the time is reset, and re-started in effect extending the Release Squelch state again. If the radio is muted when the timer expires the Signaling Squelch Unmuting Rules are then required again. If the radio is unmuted when the timer expires, the radio remains unmuted.

Without Carrier Override: The timer begins on the receiving radio once its Signaling Squelch Unmuting Rules are met. While the timer is active, it is stopped and reset every time the radio's PTT button is pressed. The timer is re-started when PTT is released. If the timer expires regardless of whether the radio is muted or unmuted, the radio is muted, the Release Squelch State is ended, and the radio's Signaling Squelch Unmuting Rules are again required.

Manual: Pressing the Monitor button ends the Release Squelch State.

Auto-reset time(s)

On entering into auto-reset mode the auto-reset timer will be started. The radio will reset to the previous Squelch Mode on expiration of the auto-reset timer.

The auto-reset mode will be entered for the following reasons:

a) On dekey of the radio.

b) If the radio is selectively called. The auto-reset timer will be started as soon as the selective call has been received.

c) If the radio detects the correct PL for coded squelch only channels. The auto-reset timer will be started as soon as the PL frequency is detected (detecting PL whilst in the auto-reset mode will not restart the timer unless carrier override is specified - see below).

Side Tone

When enabled, the radio user will hear the two tone as it is being transmitted.

Short Side Tone

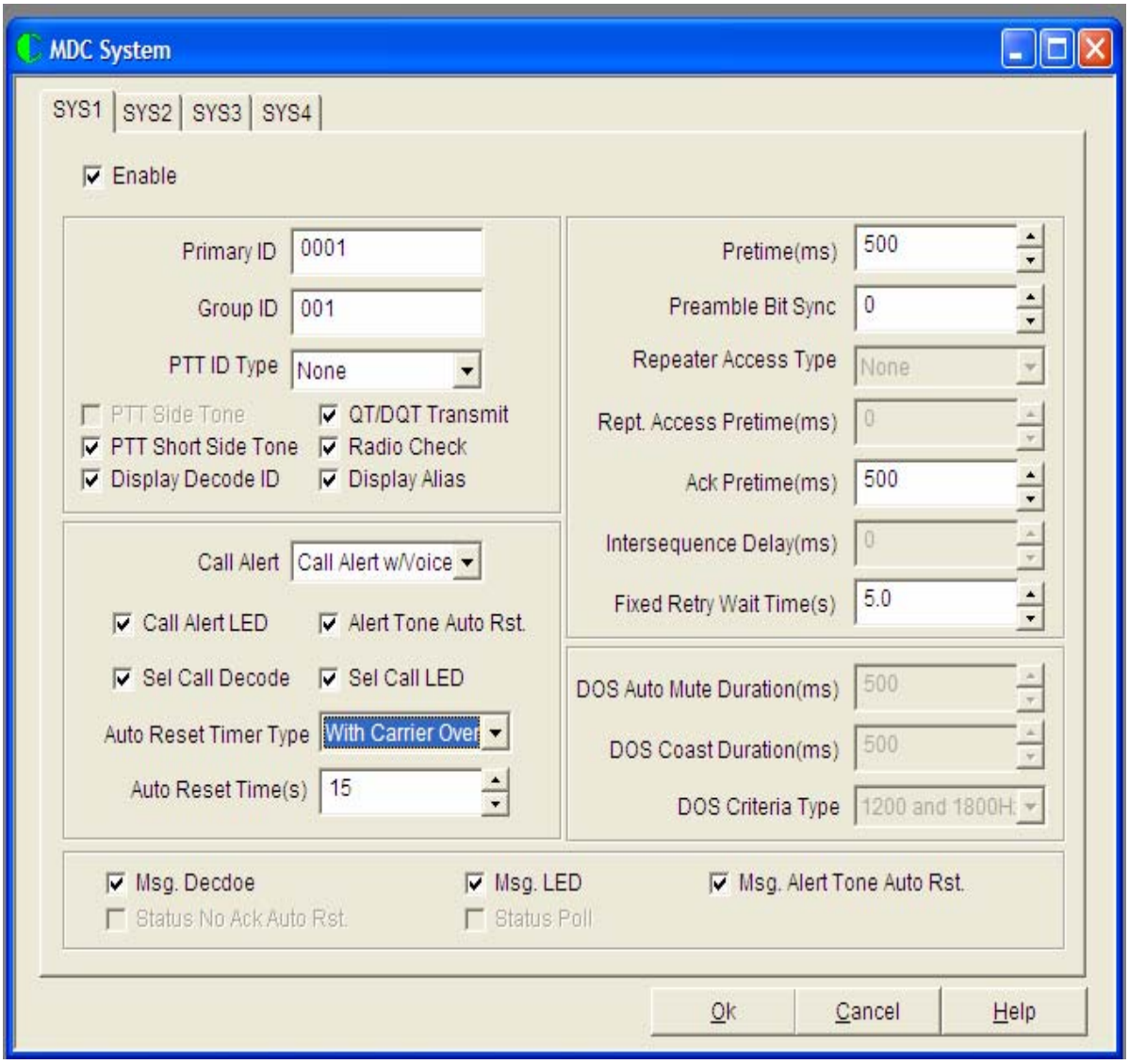
When enabled, the beep tone will be heard after the tones have been transmitted.

Max Decode Time Enable

This feature not supported in the current software.

MDC System Screen

When the MDC System entry from the tree bar is accessed, the following screen appears:



Enable

There are up to 4 possible MDC Systems that can be programmed. To use a particular system check the enable box before programming the rest of the fields.

Primary ID

Selects the unique one to four digit ID that identifies the radio while operating (transmitting or receiving MDC calls) on the current MDC - Signaling System.

Group ID

Selects the unique three digit ID that identifies the radio as belonging to a unique group while operating (receiving MDC calls) on the current MDC - Signaling System.

PTT ID Type

Selects when the PTT ID is sent during a Normal Dispatch transmission for the current MDC Signaling System.

None: The PTT ID will not transmit during the transmission for the current MDC-Signaling System.

Pre Only: Sent prior to a Normal Dispatch transmission.

Post Only: Sent after a Normal Dispatch transmission.

Pre & Post: Sent both prior to and after a Normal Dispatch transmission.

Side Tone

When enabled, the radio user will hear the two tone as it is being transmitted.

PTT Short Sidetone

When selected, Causes the radio to sound one short alert tone, after the PTT button is pressed, and immediately following the Signaling System data packet being transmitted. The purpose is to indicate to the radio-user when voice may be initiated. This feature applies for the current MDC Signaling System.

Display Decode ID

When enabled, causes the transmitting radio's Primary ID to appear in this radio's display upon receipt of certain MDC transmissions. This feature applies for the current MDC Signaling System. These MDC call types include; PTT ID's, Call Alerts, and Sel Cal's. If Reverse Aliasing is possible, the Alias has priority over the Primary ID.

QT/DQT Transmit

When selected, causes the radio to transmit CTCSS/DCS signals for the current MDC Signaling System. CTCSS/DCS is only transmitted if the Conventional Personality that uses this MDC system has CTCSS/DCS selected in its Tx Squelch Type field.

When disabled, causes the radio to not transmit CTCSS/DCS signals for current MDC Signaling System. The only exception being PTT-ID transmissions. Disabling CTCSS/DCS speeds up transmissions and reduces radio channel traffic.

Radio Check

Enable: Causes the radio to acknowledge receipt of a Radio Check from a dispatcher or another radio by sending back a reply. This feature applies for the current MDC - Signaling System.

Display Alias

Displays the Alias on the LCD.

Call Alert Type

Selects the type of Call Alerts that can be received for the current MDC - Signaling System. A Call Alert allows a transmitting radio to notify (with an alert tone) and leave evidence of (by lighting the LED) a call on a receiving radio, when the radio-user is away. The Call Alert LED persists until reset by the user. A Call Alert w/Voice is a combination of a Sel Cal and a Call Alert.

Call Alert LED

Causes the receiving radio to blinks its LED when it has received a Call Alert, for the MDC - Signaling System. The radio's LED double-flashes yellow for an individual call, and single-flashes yellow for a group call.

Alert Tone Auto Reset

Causes the radio to generate only one sequence of the Call Alert or Call Alert w/Voice alert tone, for the current MDC - Signaling System. Normally the Call Alert Tone Tag is a repeating alert tone.

Sel Cal Decode

Allows the radio to receive a Sel Cal (Select Call) for the current MDC Signaling System. A Select Call is typically used when the majority of transmissions are between a dispatcher and a radio-user, or a group of radio-users, and when other users need not be bothered. This is accomplished by addressing based on Radio ID's.

Sel Cal LED

Causes the radio to blink its LED while receiving a Sel Cal (Select Call) for the current MDC Signaling System. The radio's LED double-flashes yellow for an individual call, and single-flashes yellow for a group call.

Auto Reset Timer Type

Selects a **Timed or *Manual exception to the Signaling Squelch unmuting rule for the current MDC - Signaling System.
This **Timed or *Manual exception is known as the Release Squelch State. The Release Squelch State begins once the radio unmutes to a Voice Call.
When Signaling Squelch is set to "And" and once the radio is in the Release Squelch state, then

only the current personalities - Unmute Rules must be satisfied for unmuting to re-occur, a Voice Call is no longer required. Trunking dispatch only supports "And" Signaling.

When Signaling Squelch is set to "And" and once the radio is in the Release Squelch State, only Carrier Squelch Detect is required for unmuting to re-occur, PL and Voice Call are not required. "or" Signaling is only supported by Conventional dispatch.

None: The radio does not consider a Release Squelch state.

* Manual Reset: Short Pressing the programmed Monitor button (for a Conventional channel), and pressing the programmed Signaling Squelch button (for a Trunking channel) ends the Release Squelch state.

**Auto Reset With Carrier Override Rules
**Auto Reset Without Carrier Override Rules

Auto Reset Timer

Selects the maximum period of time that the radio is allowed to transmit voice communications once the Request to Talk (RTT) permission (from the dispatcher) has been received. This feature applies for the current MDC - Signaling System. Time is in seconds. The radio is not restricted from receiving voice or data, or transmitting data on this channel.

Pretime(ms)

Selects the amount of time between PTT button press and the first digit of the Signaling System data packet transmission. This time allows the receiving radio to stabilize before receiving data. This applies for the current MDC Signaling System. Time is in milliseconds.

Preamble Bit Sync

Selects the number of synchronizing packets sent during MDC Pretime, for the current MDC Signaling System. Synchronizing packets allow transmitting and receiving radios to synchronize prior to Signaling System data packet transmission.
WARNING: If you do not have complete knowledge of the system configuration that this radio will be operating on, do not attempt to modify this setting!

Repeater Access Type

Selects the type of Repeater access for the current MDC - Signaling System. This repeater Access Type field has to do with transmitting the Repeater Access ID.

Repeater Access Pretime(ms)

Selects the amount of time between PTT button press and the first digit of a Signaling Systems data packet transmission to the Repeater. This time allows the Repeater to stabilize before receiving data. This applies for the current MDC Signaling System. Time is in milliseconds.

Ack Pretime(ms)

Selects the amount of time between automatic transmitter key-up and the first sent digit of a Signaling System data packet, for a transmission acknowledgement. This time allows the receiving radio to stabilize before receiving data. This applies for the current MDC Signaling System. Time is in milliseconds.

Intersequence Delay(ms)

Selects the length of time separation between data-words that are part of the same call, for the current MDC - Signaling System. Time is in milliseconds.

Fixed Retry Wait Time(s)

This duration is added to the retry-wait-duration for Polite and Impolite transmissions. This has the effect of randomly staggering retry attempts, in an effort to have unsynchronized retry attempts from competing radios. This applies for the current MDC - Signaling System. Time is in seconds.

DOS Auto Mute Duration(ms)

Selects the amount of time that the radio is muted once Carrier Squelch is detected. This DOS timer is then active while receiving MDC Signaling data, this helps to reduce unwanted noise. This applies for the current MDC - Signaling System. Time is in milliseconds.
WARNING: If you do not have complete knowledge of the system configuration that this radio will be operating on, do not attempt to modify this setting!

DOS Coast Duration(ms)

Selects an amount of time that the radio waits muted once the Carrier Squelch signal has been lost. This applies for the current MDC - Signaling System. Time is in milliseconds.
When MDC Signaling data is detected and then once the Carrier Squelch signal is lost - this timer begins. While this timer is active the radio waits muted for Carrier Squelch to be re-detected. If Carrier Squelch is re-detected while this timer is running; this timer is stopped and reset, and the DOS Auto Mute Duration (timer) begins again.

This helps to prevent temporary loss of DOS in areas of poor signal strength, or high multi-path distortion.
WARNING: If you do not have complete knowledge of the system configuration that this radio will be operating on, do not attempt to modify this setting!

DOS Criteria Type

Selects the frequency type used to determine DOS activation, for the current MDC - Signaling System.
WARNING: If you do not have complete knowledge of the system configuration that this radio will be operating on, do not attempt to modify this setting!
1200 or 1800 Hz: This selection is needed for backward compatibility to earlier radios. Therefore it is rarely used.
1200 and 1800 Hz

Message Decode

Allows the radio to receive MDC Messages for the current MDC - Signaling System.

Message LED

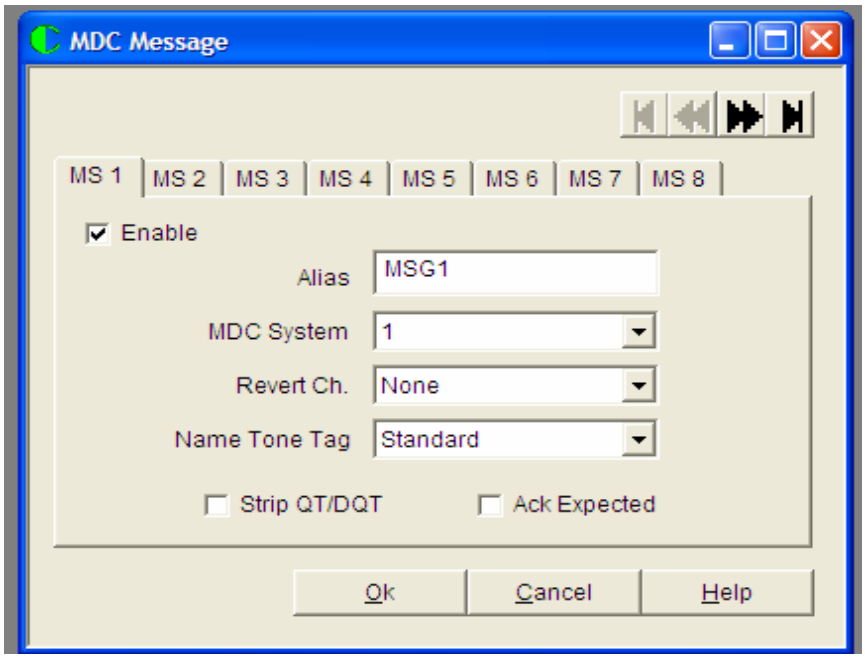
Causes the receiving radio to blinks its LED (yellow) immediately upon receiving an MDC Message. The LED continues to flash until there is radio-user interaction with the radio, such as a button press. This feature applies for the current MDC - Signaling System.

Message Alert Tone Auto Reset

Causes the radio to generate only one sequence of an MDC Message alert tone. Normally an MDC Message Alert Tone Tag is a repeating alert tone. This feature applies for the current MDC - Signaling System.

MDC Message Screen

When the MDC Message entry from the tree bar is accessed, the following screen appears:



Alias

Allows the ability to add a radio-user recognizable description to be associated with the current MDC Message. Hence, when selecting an MDC Message to be transmitted, the Message Alias represents (in the radio-user's display) the Message that will be sent. Additionally, this same message will be displayed if the radio receives the message from the dispatcher. It is not possible to send messages directly from radio to radio.

MDC System

Selects the MDC Signaling System to be used by the current MDC Message.
Note: This Signaling System becomes the default Signaling System whether a Revert Personality is selected or not.

Revert Channel

Selects a channel for causing the current MDC Message to transmit on that channel.

Name Tone Tag

Selects the tone that sounds when receiving the current MDC Message. This allows the radio-user to identify the message by a distinctive tone. This setting takes precedence over the Message Tone Tag setting. However, when this field is set to Standard, the Message Tone Tag setting then takes precedence. There are several ring tones to choose from.

Strip QT/DQT

Causes the radio to not transmit CTCSS/DCS codes for the current current MDC Message. CTCSS/DCS codes are stripped when the current Revert Personality, or current (Channel Selector) position Conventional Personality has Transmit CTCSS/DCS enabled.
Note: This is useful when it is necessary to communicate to a radio or group of radios without disturbing other radio-users.

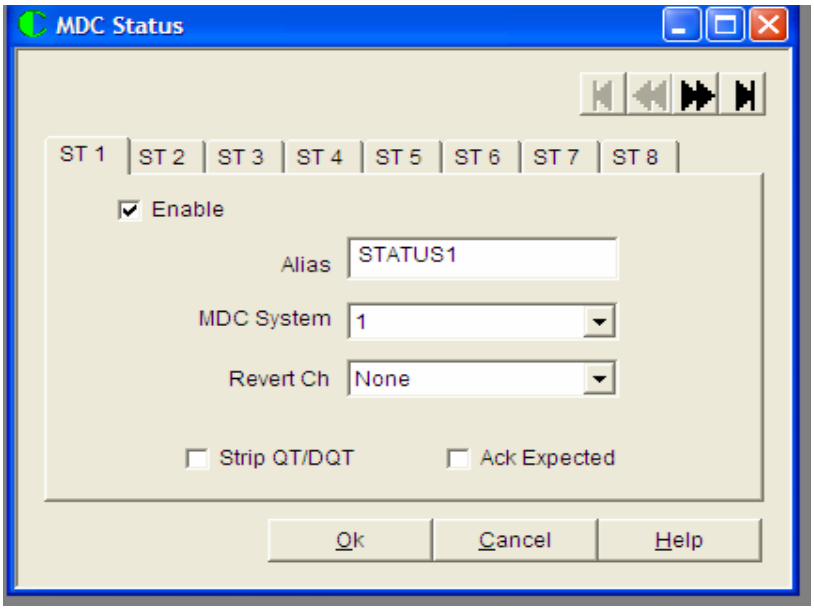
Ack Expected

When enabled causes the radio to expect a reply from the radio being called, for the current MDC Message. Upon a successful transmission, the receiving radio then transmits back an Acknowledge packet as a confirmation. Acknowledge" then momentarily appears in the radio's display. The radio will retry up to 5 times or until an Acknowledge is received.

When disabled causes the radio to transmit this MDC Message only one time, with no expectation of an acknowledgement. The benefit is to reduce channel traffic by eliminating mandatory acknowledges and possible retries for this MDC Message.

MDC Status Screen

When the MDC Status entry from the tree bar is accessed, the following screen appears:



Alias

Allows the ability to add a radio-user recognizable description to be associated with the current MDC Status. Hence, when selecting an MDC Status to be transmitted, the Status Alias represents (in the radio-user's display) the Status that will be sent.

MDC System

Selects the MDC Signaling System to be used by the current MDC Status.

Revert Channel

Selects a channel for causing the current MDC status to transmit on that channel.

Strip QT/DQT

Causes the radio to not transmit Private Line (PL) codes for the current MDC Status. PL codes are stripped when the current Revert Personality, or current (Channel Selector) position Conventional Personality has Transmit PL enabled.

Ack Expected

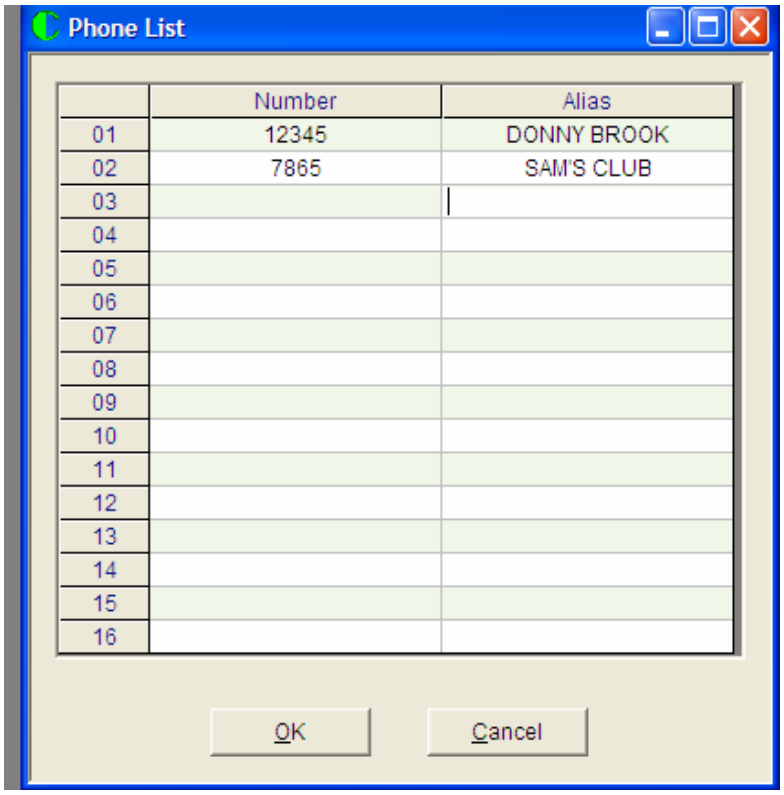
When enabled, causes the radio to expect a reply from the radio being called, for the current MDC Status. Upon a successful transmission, the receiving radio (dispatcher) then transmits back an Acknowledge packet as a confirmation. "Acknowledge" then momentarily appears in

the radio's display. The radio will retry up to 5 times or until an Acknowledge is received.

When disabled, causes the radio to transmit this MDC Status only one time, with no expectation of an acknowledgement. The benefit is to reduce channel traffic by eliminating mandatory acknowledges and possible retries for this MDC Status.

Phone List Screen

When the Phone List entry from the tree bar is accessed, the following screen appears:



The Phone list Page allows you to add and delete phone numbers and correlating alias, to the Phone List.

Number

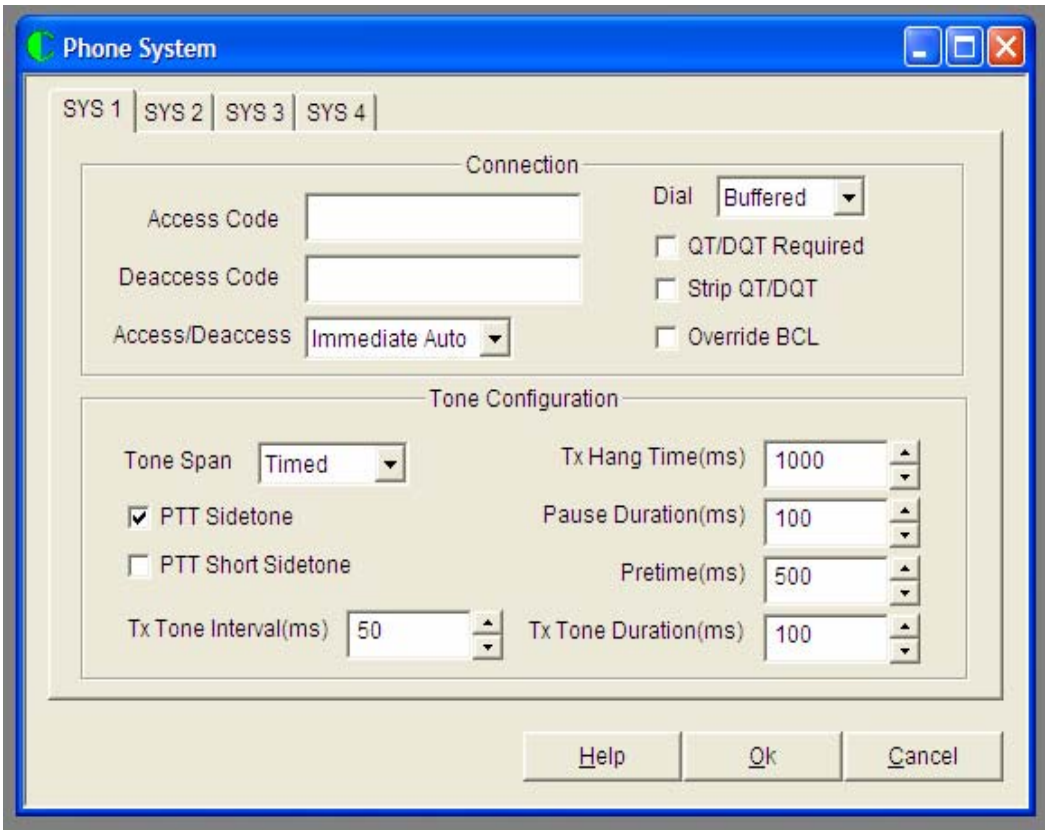
Allows the ability to add a phone number entry to the phone list. 0 to 9, the pound #, and asterisk * can be entered.

Alias

Allows the ability to add a user-recognizable name to a correlating Phone number.

Phone System Screen

When the Phone System entry from the tree bar is accessed, the following screen appears:



CONNECTION SUB MENU

Access Code

Specifies the Access Code for the current Phone System. The Access Code allows a connection to a telephone line and subsequent dial tone. Up to 16 characters are allowed.

Deaccess Code

Specifies the Deaccess Code for the current Phone System, The Deaccess Code causes disconnection from a phone call. Up to 16 characters are allowed.

Access/Deaccess

Selects the method used to send the Access and Deaccess codes that are defined for the current Phone System. This feature applies while in Phone Mode for the current Phone System.

Manual: Radio-user enters the Access or Deaccess code from the Keypad.

Delayed Auto: Radio-user presses and releases the PTT button to automatically send the Access code. The Deaccess code is automatically sent when the radio exits the Phone Mode.

Immediate Auto: The Access code is automatically sent when the radio enters the Phone Mode. The Deacess code is automatically sent when the radio exits the Phone Mode.

Dial

Selects the method that the radio users to transmit the DTMF digits- dialed by the radio-user, while in the Phone Mode. This applies for the current Phone System.

Live: Automatically keys-up the radio and sends out DTMF digits as they are dialed.

Buffered: Sends out all DTMF digit input once PTT is pressed.

QT/DQT Required

Causes a QT/DQT code match to be required on a incoming phone call- while in the Phone Mode, in order for communication to occur. This only applies when the current Phone System is assigned to a channel that requires QT/DQT.

Strip QT/DQT

Causes the radio to not transmit QT/DQT codes while in the Phone Mode. This only applies when the current Phone System is assigned to a channel that is required for transmit QT/DQT

Override BCL

Causes the radio to override the Busy Channel Lockout Rule, while operating in Phone Mode, and for the current Phone System.

TONE CONFIGURATION SUB MENU

Tone Span

Selects the type of DTMF tone length that is sent when dialing - while in the Phone Mode, and for the current Phone System.

Timed: Causes a continuous DTMF tone to be generated for the specified Tx Tone Duration timer setting.

Continuous: Causes a continuous DTMF tone to be generated for the entire length of the keypad depression.

PTT Sidetone

Causes the radio to sound DTMF digits as they are sent. The purpose is to indicate to the radio-user when the next process may be started. This feature applies while in Phone Mode for the current Phone System.

This applies to Speed Dialed phone numbers, or phone numbers selected from the Phone List, or manually dialed numbers when the Dial Type field is set to Buffered.
This also applies to Access and Deaccess codes when the Access/Deaccess Type field is set to Delayed or Immediate Auto. However, Access/Deacess DTMF tones codes can be muted.

PTT Short Sidetone

Causes the radio to sound one short alert tone, after the PTT button is pressed, and immediately following the phone data packet being transmitted. The purpose is to indicate to the radio-user when voice may be initiated. This feature applies while in Phone Mode for the current Phone System. The Short Sidetone does not apply when the Tone Span is set to Continuous.

Tx Tone Interval

Selects the amount of time that the radio waits between DTMF digits during a preprogrammed Speed Dial. Once the Tx Tone Duration ends, this Tone Interval begins, and vice-versa. This feature applies while in Phone Mode for the current Phone System. Time is in milliseconds (ms).

Tx Hang Time

Selects the maximum time that the radio waits between key presses (DTMF digits) - when manually dialing a phone number, before Pretime is automatically inserted before the transmission of the next digit. If the Pretime value is required to be to a large duration, it can significantly slow the dialing process. This feature applies while in Phone Mode for the current Phone System. Time is in milliseconds (ms).

Pause Duration

Selects the amount of time that the radio waits during a dialing pause. This creates a momentary wait at a strategic point - when the radio is automatically dialing pre-programmed speed dial numbers. This wait is sometimes needed, so that the radio does not get ahead of the external phone system that it is attempting to access. This feature applies while in Phone Mode for the current Phone System. Time is in milliseconds (ms).

Pretime

The Tone Configuration page allows you to define audio and timing functionality while operating in the Phone Mode for the current Phone System.

Tx Tone Duration

Selects the amount of time that a single DTMF tone is transmitted for manually dialed digits, and when the Tone Span field is set to Timed. This field automatically applies during a preprogrammed Speed Dial, even when the Tone Span field is not set to Timed. This feature applies while in Phone Mode for the current Phone System. Time is in milliseconds (ms).