CS600/CS700 Series
Programming Guidelines   (V1.0.0)

Preface

This programming guidelines is written about how to program the CS600/CS700 series normal features.

For details about some special features, please refer to their Product Support (PS_xxx.doc) files.

If had any questions met in programming, please ask your delear for further help.

Key Guides of the guidelines

There is an easy way to understand this programming software. It is the ASSEMBLY concept.

The reason why to choose this structure is: there are too many features to set for a certain channel to use, if you put all of them in a 'Channel editor window', the window will be too complicated and there will be too many things to set.

So we use the ASSEMBLY concept, to make the window clearer. It seems we are using google earth, if you wanted to see a detail area, you can choose and enlarge it.

For example,

The 'Zone Information' will be the top layer you will use. You can program up to 2(CS600 model) or 250(CS700 model) zones at MAX. You can choose up to 16 Max available channels to a certain Zone.

Where are the 'channels'? In 'Channel Information'! You should set them before using them.

In the 'Channel Information' edit window, you just can set some basic parameters, such as RX/TX frequency, RF power, Channel spacing etc. Some complicate other settings are packed in the template, such as 'Scan List', Digital 'Emergency System', 'Contact Name', 'Group List'.

Where are the 'Contact Name'? In 'Digital Contact'! You should set them before using them.

And so on…

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1   Some Basic Digital Concepts

1.1   Call Types:

Type	Definition
Private Cal	A call from an individual radio to another individual radio.
Group Call	A call from an individual radio to a group of radios.
All Call	A one-way call from an individual radio to every radio on that channel. All Calls do not communicate across different timeslots or channels within the system. The ability to initiate an All Call is only programmed into radios that are used in supervisory roles. All other radios monitor All Call transmissions by default. This feature is very useful when a supervisor needs to communicate with all the users on a logical channel, rather than just a particular group or individual.

1.2   Call ID:

Type	Range	Definition
Private Call	1 ~ 16776415	This is the Radio ID of the target radio. Every radio only has **one** Radio ID.
Group Call	1 ~ 16776415	This is the ID of the Group that the user wishes to subscribe to.
All Call	16777215	This has a fixed ID of 16777215 (ie. 0xFFFFFF, value is not editable).

NOTE: The ID that is chosen for a particular call type should be consistent with the ID of the target radio's call type.

1.3   Some New Concepts on Digital Conventional Channel

Contact Name

Defines the call that may be initiated on the channel by pressing the Push-to-Talk (PTT) button. However, if the channel is attached to a Group List with multiple Groups and there is an activity on one of the Groups, pressing PTT will initiate a talkback instead of a new call if it is within the hang time of the prior call. Selecting the None option prevents a call from being initiated on the channel. This is a channel-wide (ie. In that whole channel) feature.

Group List

Associates any available RX Group list to the channel for reception. The user can listen to any Group in this list when there is any activity on it and talk back within the Group Call hang time. This is also known as a Group Scan. Selecting the None option disables the user from receiving any Group Calls on this channel, except when the **Call ID** is the same as the **Call ID** of the transmit member. The **Call ID** from the **Contact Name** is automatically added to the RX Group List on this channel by default.

This allows the user to receive this call, even though this feature is set to None. This is a channel-wide feature.

Color Code

This feature allows a color code to be assigned to a given channel. Channels may have the same or different color codes. A repeater can only have one color code.

A color code is used to identify a system. Different color codes are used to identify different systems. This feature enables a radio to roam between multiple systems by switching between channels with different color codes. The radio will be able to scan across channels with different color codes. Radios will ignore any channel activity not containing the matching color code for that system. Repeaters using the same frequency may be associated with different color codes. On shared channels, spectrum regulators may wish to assign different color codes to different licenses as part of their license agreement. This is a channel-wide feature.

Privacy

This feature allows privacy on selected digital channels. Privacy is a software-based scrambling solution that is not robust, and is only meant to prevent eavesdropping. The signaling and user identification portions of a transmission are not scrambled. Receiving radio(s) must have the same Basic Privacy Key (for Basic Privacy) or the same Key Value and Key ID (for Enhanced Privacy) as the transmitting radio in order to unscramble the privacy-enabled voice call or to receive the privacy -enabled data transmission.

Channels may have their privacy enabled or disabled via a short or long programmable button press (privacy On/Off) or privacy (Utilities Menu). A radio must have privacy enabled on the channel to transmit a privacy-enabled transmission, but this is not necessary for receiving radio(s). Privacy -enabled channels are still able to receive clear (unscrambled) transmissions. A visual indication appears on all display radios if the channel is privacy-enabled. The radio LED lights up red when transmitting or green when receiving an ongoing privacy-enabled transmission. The same behavior will be observed during scan operations.

Repeater/Time Slot

DMR utilizes digital Time Division Multiple Access (TDMA) technology to divide a 12.5kHz channel into two alternating time slots, with each carrying an individual call when operating in Repeater mode. As a result, both the assigned frequency and the assigned time slot must be specified in order to completely describe a digital repeater channel. Radios or Groups that need to talk together must be assigned to the same frequency and time slot. This is a channel-wide feature.

For interoperation with other ETSI-DMR radios, it is important to note that transmissions received on repeater inbound (MS TX) slot 1 are repeated on outbound (BS TX) slot 2. This is referred to as aligned channel timing.

The slot number provisioned in the Customer Programming Software(CPS) corresponds to the outbound transmission (BS TX) that the subscriber will monitor. For example, if a channel in the radio

CPS is provisioned for slot 1, this corresponds to the outbound transmission (BS TX) that the subscriber will monitor. Therefore the transmitting unit will use repeater inbound (MS TX) slot 2 while the receiving units will monitor repeater outbound (BS TX) slot 1.

When observing the repeater, the RxA LEDs correspond to the repeater inbound (MS TX) Slot 2 and repeater outbound (BS TX) slot 1. Conversely, the RxB LEDs correspond to repeater inbound (MS TX) slot 1 and repeater outbound (BS TX) slot 2. Therefore, a radio provisioned for slot 1 will light up the RxA LEDs on the repeater and a radio provisioned for slot 2 will light up the RxB LEDs on the repeater.
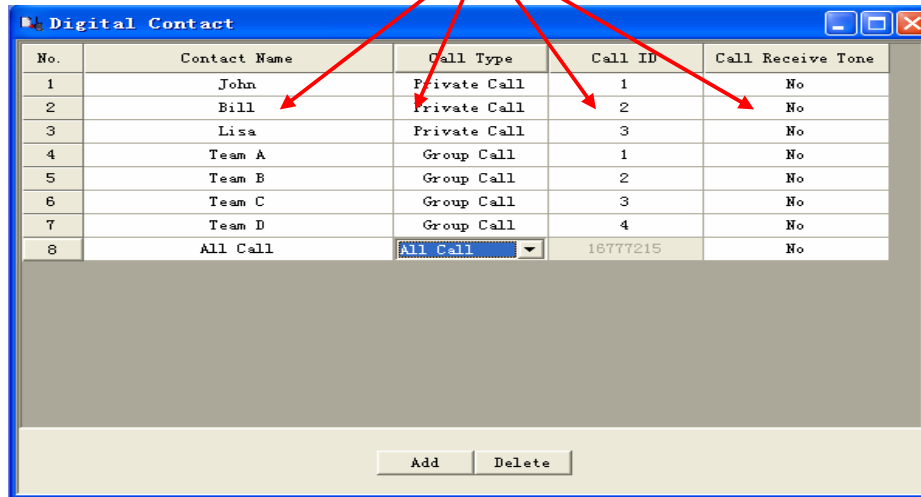
Radio ID

Sets an individual ID that uniquely identifies the radio. This ID is used by other calling radios when addressing the radio, for instance, when making a private call or sending a text message.

The radio ID range is from 1 to 16776415.
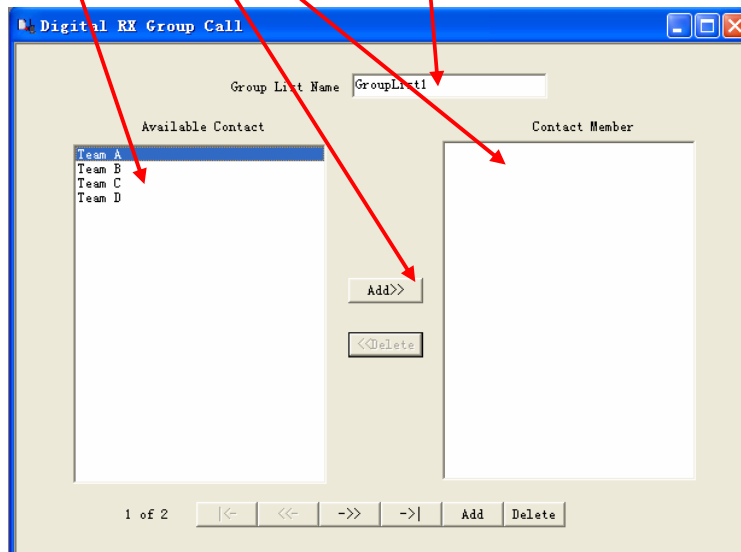
2   A Simple Instance

2.1   Set 'Digital Contact'

1) Click the 'Digital Contact' on the left tree structure window.
2) Set the 'Contact Name', 'Call Type', 'Call ID' , 'Call Receive Tone'
3) You can use 'Add' or 'Delete' button on the bottom of the window to Add a new one or delete a contact.

| No.	Contact Name	Call Type	Call ID	Call Receive Tone
1	John	Private Call	1	No
2	Bill	Private Call	2	No
3	Lisa	Private Call	3	No
4	Team A	Group Call	1	No
5	Team B	Group Call	2	No
6	Team C	Group Call	3	No
7	Team D	Group Call	4	No
8	All Call	All Call	16777215	No

Add   Delete

2.2   Set 'Digital RX Group Call'

1) You can name the new Group List you will edit.
2) You will see all the 'Group Call' you have defined in the 'Available Contact'.
3) You can Add any number of them into the right 'Contact Member', which will form the new 'Group List'

Digital RX Group Call

Group List Name: GroupList1

Available Contact
Team A
Team B
Team C
Team D

Contact Member

Add>>

<<Delete

1 of 2 |←   ≪   -≫   →| Add   Delete

For instance:
1) If one Group List include Team A. The radio on that channel will listen to only Team A and the default **Contact Name**, Surely including it private call and all call.
2) If the other Group List include Team A, Team B and Team D. The radio on that channel will also listen to Team B and Team D. Two teams more than the above instance.
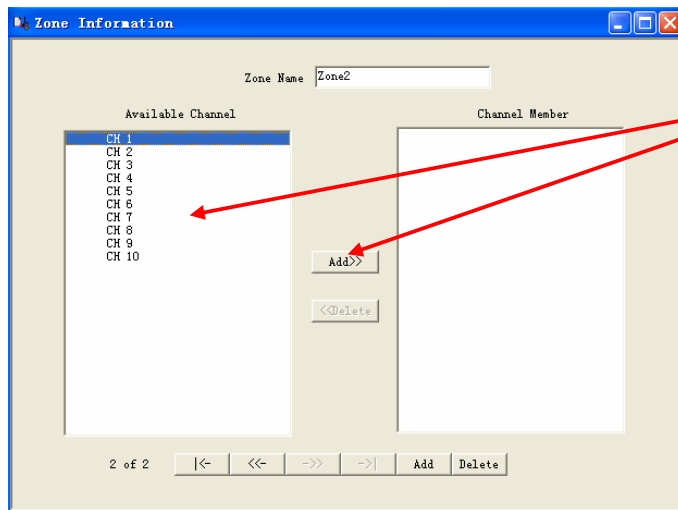
2.3   Set 'Channel Information'
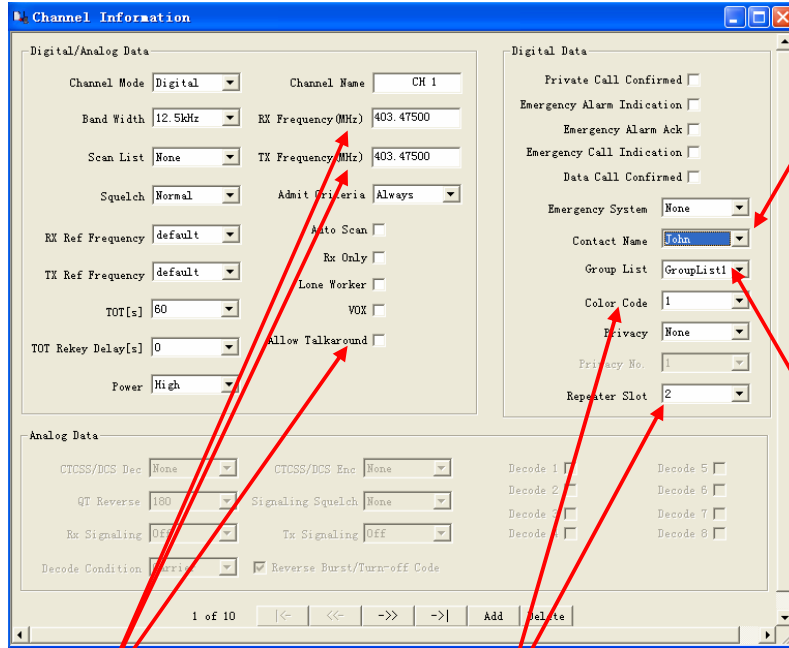
1) If the radio was in idle state, and then press PTT, the radio will call other radio defined in the'Contact Name', can be one person, or one group people, or even All call.
2) If the radio was already in active call state (Group/Private Call Hang Time), and then press PTT, the radio will talkback to other radio(s) defined by the moment the call is set up.

1) If the radio was in idle state, the radio will listen to any Group in this list when there is any activity on it and talk back within the Group Call hang time, surely including the private call to it.
2) The **Call ID** from the **Contact Name** is automatically added to the RX Group List on this channel by default. This allows the user to receive this call, even though this feature is set to None.

NOTE: If the TX/RX frequency is different, and the 'allow Talkaround' is disabled. The radio just can work in repeater mode. The radio will need a response from the repeater, thus the radio can not transmit continuously! This is different with analog models!

NOTE: You should set the same 'Color Code' and Repeater Slot in the talking group you wanted.

2.4   Set 'Zone Information'

You can see all the available ditital and analog chennels in the left window, and you can add up to MAX 16 channels to the right new ZONE channel member.

3   Programming Parameter Description

3.1   Basic Information:

Frequency Range

Shows the working band of the Radio. This parameter just can be set by the manufactory.

Last Programmed Data

Shows the time the last data was saved onto the radio.

Model Name

Shows the modle name of the radio.

Serial Number

Shows the radio's serial number, unique numbe for tracking.

CPS Software Version

Shows the radio's PC software version.

Hardware Version

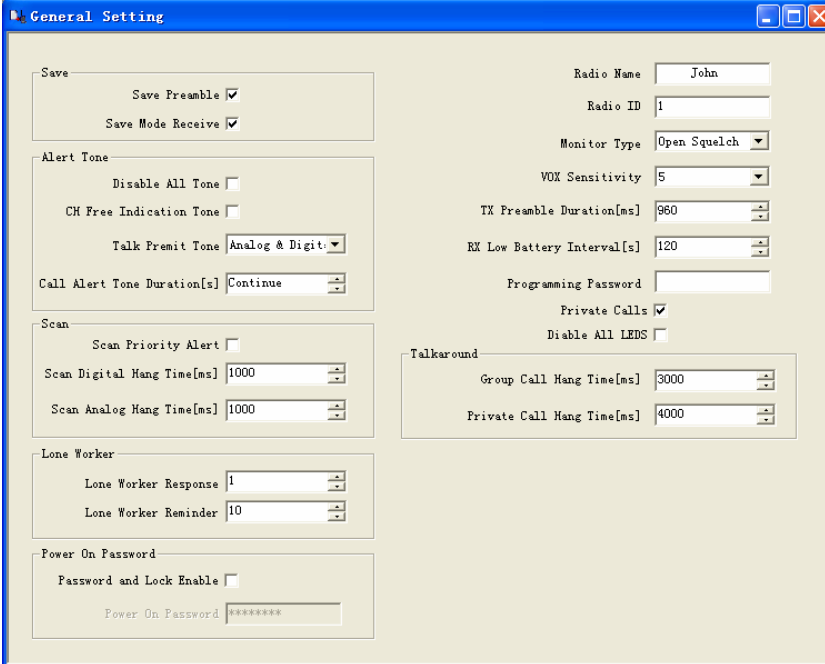Shows the radio's hardware version.

MCU Version

Shows the radio's MCU software version.

Unique Device ID

Shows the unique device ID of the MCU in the radio.

3.2   General Setting:

Save Preamble

This feature enables or disables the battery saver preamble. The radio sends a preamble before each transmission to enhance the ability of receiving radios in battery saver mode to synchronize in preparation for transmissions; reducing the occurrence of late-entry. To avoid interoperability issues, it is recommended that all radios in a system share the same setting for this field. This is a radio-wide (ie. In the whole radio) feature.

Save Mode Receive

Enabling this feature causes an idle radio to automatically enter battery saver mode where it places certain radio functions on standby. After a certain duration or when there is any user button action, the radio returns to normal operation and checks the channel for incoming calls. If no calls are detected, it returns to the battery saver mode. While results vary across battery chemistry and user conditions, battery saver can deliver about a 10% improvement in battery life, but also causes a delay in response time.

When this feature is enabled, it is important to note that for the transmitting radios, there will be a slight delay in call setup (in the range of milliseconds) when pressing the Push-to-Talk (PTT) button. For the receiving radios, there may be an increase in late entry due to radios in battery saver mode having less opportunity to properly synchronize. This may cause the radios to miss the initial second of some audio transmissions in poor radio frequency (RF) conditions. This, however, will not be experienced in good RF coverage. Although they are important to note, these delays are considered minor versus the 10% improved battery life, therefore it is recommended to enable battery saver mode for all radios. This is a radio-wide feature.

Disable All Tones

Uncheck this, unless it is desired to disable all tones radio-wide.

Channel Free Indication Tone

This feature sounds an alert tone when a voice call ends. It also sounds when the voice call is interrupted on the current channel, for example, by interruptions caused by a third radio making an impolite call or sending an emergency alarm. However, this tone does not sound if the interruption is caused by a corrupted radio signal. Voice calls include Group Call, Private Call, All Call, and Emergency Call. A voice call ends when the user of the calling radio releases the Push-To-Talk (PTT) button, regardless of hang time. This feature alerts the receiving radio that the channel is available for him/her to respond producing a smoother flow of conversation. This alert tone does not sound at the end of a Remote Monitor transmission, or during Priority Scan when the voice call ends while the radio is sampling the priority channel(s). This is a radio-wide feature.

Talk Permit Tone

This alert tone sounds after the Push-to-Talk (PTT) button is pressed and the radio is able to transmit on the channel. This is to prompt the user to begin speaking. This is a radio-wide feature.

Call Alert Tone Duration(sec)

Configures the call alert tone sound duration for the radio decoding of the digital/MDC/QCII selective call alert. This is a radio-wide feature.
The setting range: 5,10,15,…,1200, continue.
If the 'continue' option is selected, the call alert tone will continuously sound until the user cancels the call alert indication.

Scan Prority Alert

This is an alert tone that the radio emits when it unmutes to a priority channel during a scan operation.

Scan Digital Hang Time[ms]
Scan Analog Hang Time[ms]

Sets the time the radio will remain on a scan list member following the end of the channel activity. The hang time prevents the radio from resuming scanning until the conclusion of the response to the initial call. The timer starts at the end of a transmission and resets whenever a valid activity is detected on the channel during the hang time.

Lone Worker Response[min]

This timer defines the time period after which the radio will sound Lone Worker alert.
The Lone Worker must respond to this alert, by pressing any button, within the time period set for the Lone Worker Reminder Time, otherwise the radio will go into emergency operation. Once a button is pressed the timer is reset.

This operating mode may be enabled/disabled by the user if a button has been programmed for Lone Worker , on channel change .
This timer can be set from 1 to 255 minutes in 1-minute steps.

Lone Worker Reminder [s]

This timer is used to set the time period for which the Lone Worker alert will sound.After this period the radio will go into the emergency mode of operation.

This timer can be set from 0 to 255 seconds in 1-second steps.

Power On Password

Enter a password to be used for power up. Up to 8 numeric characters are programmable.

Radio Name

Sets an alias for the radio. When the radio powers up, this alias shows up as the welcome text, if the Welcome Image is not used. The user may enter up to a maximum of 16 characters. Valid characters are alphanumerics, spaces and special characters. This is a radio-wide feature.

Radio ID

Sets an individual ID that uniquely identifies the radio. This ID is used by other calling radios when addressing the radio, for instance, when making a private call or sending a text message. This is a radio-wide feature.

ID Range: 1 ~ 16776415

Monitor Type(Analog mode only)

Sets the Monitor mode to either *Open Squelch* or *Silent*. The user can access the Monitor feature by assigning a short or long programmable button press (*Monitor* (Portable only) or *Permanent Monitor*). This is a radio-wide feature.

Option	Functionality
Open Squelch	Radio unmutes regardless of whether there is any channel activity. If no activity is present, noise is heard through the speaker.
Silent	Radio unmutes only if there is channel activity.

Note

- If the Monitor feature is activated by pressing the button, the **PL Type** feature in Scan will be overridden, if PL Type is enabled.

VOX Sensitivity

VOX automatically transmits when the audio level is higher than the configured VOX Gain Level.

Range: Off/ 1 (Sensitivity: Low) - 10 (Sensitivity: High, just need lower voice).

TX Preamble Duration(ms) (Digital Mode Only)

Preamble is a string of bits added in front of a data message or control message (Text Messaging, Location Messaging, Registration, Radio Check, Private Call, etc…) before transmission. This preamble prolongs the message in order to reduce the chances of the message being missed by the receiving radio. The Transmit (TX) Preamble Duration sets the duration of the preamble. This duration needs to be increased as the number of scan members increases on the target radio. This value can be increased in all the transmitting radios if scanning radios are often missing data messages. However, a larger preamble occupies the channel longer. Therefore, increasing the Transmit Preamble duration will increase the success rate of data received while other radios are scanning, but will decrease the amount of data that can be transmitted on the channel. This is a radio-wide feature.

Range	
Maximum	8640 ms
Minimum	0 ms
Increment	60 ms

Note

- The TX Preamble feature is disabled if the duration is set to 0.
- If the Portable is configured in single site conventional repeat mode and Battery Saver is disabled, this feature should not be set to 0. This recommendation applies if MTR base radios/repeaters are being used in single site conventional system.

RX Low Battery Interval [sec]

The Receive (RX) Low Battery tone is an alert tone that sounds when the radio's low battery threshold is reached while a call is being received, or while the radio is in idle mode. The RX Low Battery Interval sets the interval for the generation of this tone. This is a radio-wide feature.

Range	
Maximum	635 sec
Minimum	0 sec
Increment	5 sec

Note

- This feature is disabled if the duration is set to 0.
- This feature is applicable to Conventional radios only.

Programming Password

Set Programming Data Password. If enabled, the right password will be required to enter while reading or writing.

Private Calls

This feature enables or disables the ability of to transmit Private Calls on a digital channel. When disabled, a prohibit tone will sound when the user tries to initiate a Private Call. The user can continue to receive and respond to Private Calls, and is still able to initiate Call Alerts. This is a radio-wide feature.

Disable All LEDS

Turns off all LEDs during radio power up (except for repeater) and while radio is in use.   All LEDs are disabled including the backlight and power up LED, regardless of the backlight setting. This is a radio-wide feature.

Group Call Hang Time [ms]

Sets the duration the repeater reserves the channel after the end of a group call transmission. During this time, only members of the Group that the channel is reserved for can transmit. This produces smoother conversation.

Range	
Maximum	7000 ms
Minimum	0 ms
Increment	500 ms

Note

- This feature is disabled if Repeater Mode is set to Analog.
- The value of this feature must be equal to or less than the SIT value.
- This feature is applicable to Conventional radios in Digital mode only.

SIT(Digital Mode Only)

The Subscriber Inactivity Timer (SIT) controls how long the repeater will continue transmitting with absence of subscriber activity on the uplink. If the repeater is operating on shared-use frequencies, it cannot remain keyed indefinitely for the benefit of broadcasting synchronization signals to subscriber units. The repeater will likely be de-keyed most of the time; thereby requiring subscriber units to first activate the repeater (via the uplink frequency) and acquire synchronization (via the downlink frequency) before completing the call setup request and subsequent first transmission. The net result of these extra procedures is increased access time; therefore, it is desirable to avoid these steps, whenever possible. There is a trade-off to minimizing access time by keeping the repeater keyed for as long as practically possible, while complying with the regulations regarding shared-use channels, which essentially require the repeater to dekey when the channel is not in use. This can be balanced with the use of the Subscriber Inactivity Timer.

The Subscriber Inactivity Timer (SIT) starts when there is no inbound subscriber activity on either time slot (Slot 1 or 2) of a repeater. When the Subscriber Inactivity Timer (SIT) expires, the repeater will stop transmitting until awoken again by a subscriber. In order to accommodate the reserved hang time after each transmission, the SIT timer should always be larger than the call hang time in the repeater. This will allow the reserved hang time and a short unreserved hang time after each transmission prior to the repeater dekeying.

If shared use is not a concern, the SIT can be set to the maximum value. If shared use is a concern, the SIT should be set equal to or slightly longer than the configured call hang timers.

Range	
Maximum	*7000 ms*
Minimum	*1000 ms*
Increment	*500 ms*

Note

- *The value of this feature must be equal to or greater than the hang Time (Group, Private or Emergency - whichever is the longest).*

Private Call Hang Time [ms]

Sets the duration the repeater reserves the channel after the end of a private call transmission. During this time, only the individuals involved in the call that the channel is reserved for can transmit. This produces smoother conversation. The user may want to set a longer hang time than the Group Call

Hang Time as an individual tends to take a longer time to reply (talkback) in a Private Call.

Range	
Maximum	7000 ms
Minimum	0 ms
Increment	500 ms

Note

- This feature is disabled if Repeater Mode is set to Analog.
- The value of this feature must be equal to or less than the SIT value.

3.3 Menu Item:
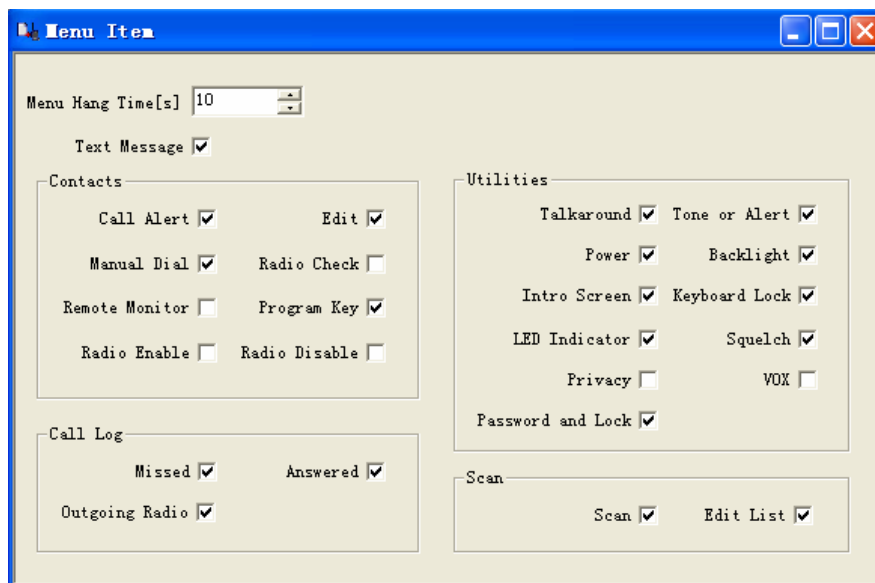
Menu Hang Time [sec]

Sets the amount of time that the radio remains in the menu mode, after which the radio reverts back to the Home screen. If the duration is set to 0, radio remains infinitely in this mode until the user exits the menu manually by pressing the back or home button. This is a radio-wide feature.

Range	
Maximum	30 sec
Minimum	0 sec
Increment	1 sec

Note

- The scan operation is stopped when the radio is in a menu screen.
- This feature is available when the radio is a Display model.

Text Message

Allows the user to access the Text Message feature via the menu. The user has the ability to check the Inbox, edit messages, send messages or Quick Text.

Note

- This feature is available when the radio is a Display model.
- This feature is supported in Digital mode only.

Contacts

Call Alert

Allows the user to initiate Call Alert via the menu. Call Alert allows the user to alert another user, requesting that they call back the user (call initiator) when they (recipient) become available. Call Alert can only be received when the channel is free.

This paragraph is applicable to Conventional radios. In Digital Mode, the user can only initiate a Call Alert to an individual radio. In Analog mode, the destination ID can be a Private, Group or All Call ID.

Note

- For Conventional radios, the Contacts consists of all MDC and Quik-Call II call entries when it is accessed in Analog mode and digital Private Call entries when it is accessed in Digital mode.
- This feature is available when the radio is a Display model.

Edit

Allows the user to edit the alphanumeric characters on the edit screen. The user has the ability to add a new entry to the Contacts list or edit an entry within the Contacts list.

Note

- This feature is available when the radio is a Display model.
- This feature is applicable to Conventional radios in Digital mode only .

Manual Dial

Allows the user to access the Manual Dial capability of the radio via the menu. Manual Dial allows the user to initiate a call (e.g. Private Call, Call Alert) or request (e.g. Remote Monitor, Radio Check, Radio Disable, Radio Enable) or send Text Messages by keying in the destination ID using the keypad, even if the destination ID is not listed in the Contacts.

Note

- This feature is available when the radio is a Display model.
- This feature is supported in Digital mode only.

Radio Check

Allows the user to initiate a Radio Check request from the menu. Radio check allows a user/console operator to determine if a radio is active in a system without showing any indication to the radio's user.

Note

- Disabling this feature prevents user initiation of this feature from the radio's user interface. It does not prevent the radio from responding to a Radio Check command.
- This feature is applicable to Display model only.
- This feature is supported in Digital mode only.

Remote Monitor

Allows the user to initiate a Remote Monitor request to the target radio via the menu. Upon a successful request, the target radio's microphone and transmitter will be activated to be remotely monitored.

Note

- The destination radio must have Remote Monitor Decode enabled in the signaling systems folder.
- Disabling this feature prevents user initiation of this feature from the radio's user interface. It does not prevent the radio from responding to a Remote Monitor command.
- This feature is applicable to Display model only.

Program Key

Allows the user to enable or disable the Program Key menu in the radio. The Program Key feature allows the user to associate a call to the number buttons on the radio keypad (1-9 and 0). When the user long presses these buttons in the home screen, the associated call entry will be prompted. The supported call types are Group, Private, or All Call calls in Digital or Capacity Plus mode. This is a radio-wide feature.

Note

- This feature is supported in Digital mode only.
- This feature is applicable to Display model only.

Radio Enable

Allows the user to initiate the Radio Enable command to the target radio via the menu. Radio Enable is used to enable a target radio that is disabled (inhibited).

Note

- Disabling this feature prevents user initiation of this feature from the radio's user interface. It does not prevent the radio from responding to a Radio Enable command.
- This feature is applicable to Display model only.
- This feature is supported in Digital mode only.

Radio Disable

Allows the user to initiate a Radio Disable command to the target radio via the menu. Upon a successful request, the target radio will disable all its user interfaces (e.g. all LED indicators including Backlight, alert tones, user inputs including PTT except for Volume/On/Off knob on Portable and Power On/Off button on Mobile), ignore Emergency alarms and received data to radio or external devices, mute received voice to radio or external device and disallow transmission of data or command from the radio or external device. This disables the radio if it is lost or stolen. However, the radio continues to monitor the air interface to enable it to receive the Radio Enable command.

Note

- The target radio must have Radio Disable Decode enabled in the signaling systems folder.
- Disabling this feature prevents user initiation of this feature from the radio's user interface. It does not prevent the radio from responding to a Radio Disable command.
- This feature is applicable to Display model only.
- This feature is supported in Digital mode only.

Call Log

Missed
Allows the user to track the last ten incoming private calls that the user missed or failed to respond. The user accesses the call log via the menu. This log also provides a quick way for the user to initiate a private call.

Note

- This feature is applicable to Display model only.
- This feature is supported in Digital mode only.

Answered
Allows the user to track the last ten incoming private calls that the user answered. The user accesses the call log via the menu. This log also provides a quick way for user to initiate a private call.

Note

- This feature is applicable to Display model only.
- This feature is supported in Digital mode only.

Outgoing Radio
This paragraph is applicable to Conventional radios. This feature allows the user to track the last private call and call alert numbers that the user initiated and provides easy redial access. The maximum stored number is ten for both type of calls combined. The user accesses the call log via the menu. This log also provides a quick way for the user to initiate a private call.

Note

- This feature is applicable to Conventional radios in Digital mode only.

Utilities

Talkaround

Allows the user to set the radio in Talkaround mode via the menu. Talkaround mode is required in the absence of a repeater.

Note

- This feature is available when the radio is a Display model.

Tone or Alert

Allows the user to toggle all the tones and alerts on or off via the menu.

Note

- This feature is available when the radio is a Display model.

See Also

- Disable All.

Power

Allows the user to adjust the radio's transmission power level via the menu.

Note

- This feature is available when the radio is a Display model.

Backlight

When enabled, the Portable screen will not be displayed in any receive operation like an incoming call until any user operation is invoked, such as a key press. This is to save the battery energy. This feature can also be toggled via the radio menu.

Note

- This feature is supported in Digital mode only.

Intro Screen

Allows the user to enable or disable the Introduction Screen upon radio power up via the menu. When enabled via the menu, the Radio Name shows as the welcome text when the radio powers up.

Note

- This feature is available when the radio is a Display model.

Keyboard lock

Allows the user to toggle the keypad lock on or off via the menu.

Note

- This feature is available when the radio is a Display model.
- If locked, you can press O(OK) Key and the n * key to unlock.

LED indicator

Allows the user to toggle the radio's LED indicator on or off   via the menu.
Note

- This feature is available when the radio is a Display model.

Squelch

Allows the user to access the Squelch feature to select between Normal or Tight Squelch via the menu.

Note

- This feature is available when the radio is a Display model.
- This feature is supported in Analog mode only.

Privacy

This feature allows the user to toggle the Privacy feature between on and off for the current channel via the menu or programmable soft key.

VOX

Allows the user to toggle the VOX (Voice Activated Transmit) feature between on and off for the current channel via the menu. VOX enables the radio to automatically transmit whenever its microphone on the VOX-capable accessory detects voice. This is a channel-wide feature.

Note

- It is recommended to disable the Talk Permit tone.

Password and lock

Allows the user to enable or disable the Password Lock menu in the radio. When this feature is enabled, the user has the ability to toggle the Password and Lock feature between on and off, or update the   Password through the radio menu. This is a radio-wide feature.

Note

- This feature is available when the radio is a Display model only.

Scan

Scan

Alllows the user to toggle Scan on or off via the menu for the current conventional channel/trunking personality. Scan allows the radio to search the scan list that is attached to the current channel/personality for an eligible channel/personality to receive or unmute.

Note

- During radio operation, if no Scan List is attached to the current channel/personality, the user will not be able to enter the Scan menu.
- This feature is available when the radio is a Display model.

See Also

- Adding Scan Lists.

Edit List

Allows the user to edit the Scan List via the menu. The Edit List allows the user to perform certain actions on the scan list, e.g. view the scan list, change the scan member's priority level, add new scan members to the scan list or delete members from the scan list. Creating a new or deleting an existing scan list is not allowed on the radio.

Note

- This feature is available when the radio is a Display model.

3.4   Buttons Definitions:
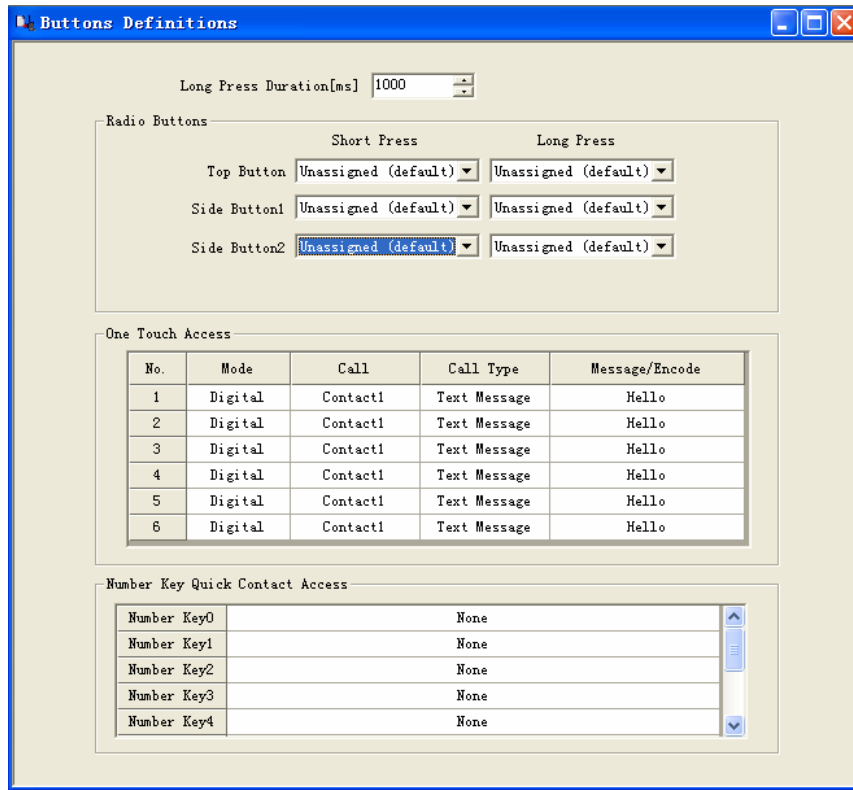
The programmable button feature allows the user to configure the feature that is invoked when the user presses a radio or accessory button.

For Conventional Radios Programmable Button Options:

Option	Functionality
All Alert Tones On/Off	Allows the user to enable or disable all the alert tones simultaneously.
Backlight Intensity (Mobile) / Backlight Auto On/Off (Portable)	Allows radio display and front panel buttons backlight to illuminate for ease of use in low light areas (applicable to Display model only).
Emergency Off	Allows the user to terminate an outgoing emergency call.
Emergency On	Allows the user to set up an emergency call.
High/Low Power	Allows the user to toggle between high and low power.
Lone Work On/Off	Press the Lone Work key to activate Lone Work state and press it again to exit Lone Work state. The lone work function ensures the user is safe when the function is enabled. If enabled, the radio will enter an emergency alarm condition if no radio button is pressed within a defined period of time after the lone work alert.
Monitor (Portable)	Allows the user to toggle the Monitor feature between on or off. The

	Monitor feature allows the user to monitor a channel. In Analog mode, the user is able to listen to the traffic, i.e. the radio will unmute to the actual voice or data traffic in process. However, in Digital mode, the user can only check if activity is present before transmitting, i.e. the radio will emit an audible/visual alert if there is activity present, but it will not unmute to the actual voice or data traffic in process. See also Monitor Type.
One Touch Access (1~6)	Allows the user to make a digital Group Call, digital Private Call, Call Alert or send a Quick Text via a One Touch Access (applicable to Digital mode only).
Privacy On/Off	Allows the user to toggle the Privacy feature between on and off for the channel. This feature is not available on certain radio models. See also Privacy (applicable to Digital mode only).
Repeater/Talkaround	Allows the user to toggle between Repeater and Talkaround mode.
Scan On/Off	Allows the user to toggle the Scan feature between on or off. See also Auto Scan.
Tight/Normal Squelch	Allows the user to toggle between tight or normal squelch (applicable to Analog mode only).
VOX On/Off	Allows the user to toggle the VOX feature between on and off for the channel.

Long Press Duration [ms]

Sets the duration a button is required to be pressed (and held down), for it to be interpreted as a long press. This duration also controls the long press operation of the button assigned to the Emergency feature. This is a radio-wide feature.

Range	
Maximum	3750 ms
Minimum	1000 ms
Increment	250 ms

Radio Buttons

There are 6 rows that can be used to configure one touch access. Each row contains the parameters for a one touch access. Each row can then be assigned to a short or long programmable button press (One touch Access).

Note

- This feature is applicable to Conventional radios in Digital mode.

Number Key Quick Contact Access

This column represents the keys from "0" to "9" on the numeric keypad.
Note

- This feature is supported in Digital mode only.

3.5   Text Message

A user may enter up to a certain amount of characters, i.e. 144. Valid characters are alphanumerics, spaces and special characters. The user can send the text message by assigning a short or long programmable button press (Text Message) or access the Text Messages feature via the Text Message Menu feature.

Note

- The user can copy and paste text from any other rows. The user can also copy and paste rows. If the selected rows to be copied exceed the rows to be pasted, the CPS automatically inserts additional rows at the end of the table.
- This feature is supported in Digital mode only.

3.6 Privacy Setting
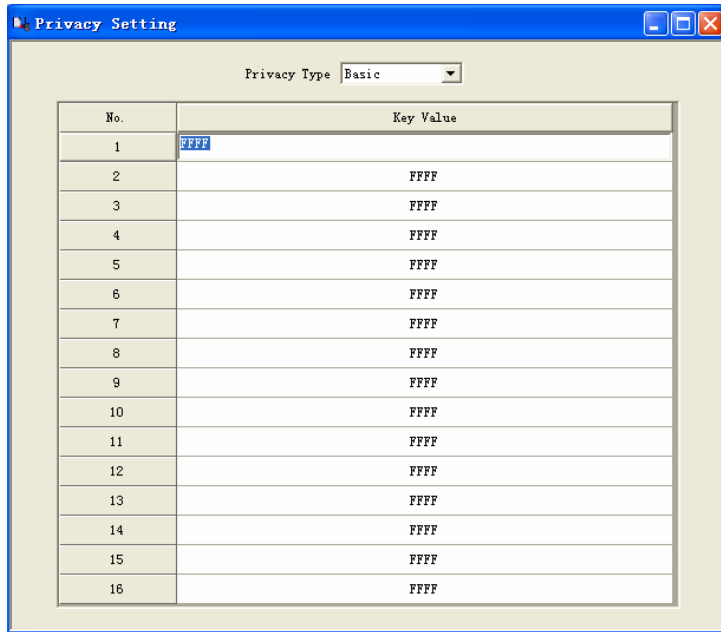
This feature allows privacy on selected digital channels. Privacy is a software-based scrambling solution that is not robust, and is only meant to prevent eavesdropping. The signaling and user identification portions of a transmission are not scrambled. Receiving radio(s) must have the same Basic Privacy Key (for Basic Privacy) as the transmitting radio in order to unscramble the privacy-enabled voice call or to receive the privacy-enabled data transmission.

Channels may have their privacy enabled or disabled via a short or long programmable button press (Privacy On/Off) or Privacy (Utilities Menu). A radio must have privacy enabled on the channel to transmit a privacy-enabled transmission. A visual indication appears on all display radios if the channel is privacy-enabled. The radio LED lights up RED when transmitting and ligts up GREEN when receiving an ongoing privacy-enabled transmission. The same behavior will be observed during scan operations. This is a radio-wide feature.

Option	Functionality
None	Radio will not support any privacy feature.
Basic	Basic Privacy is allowed on selected digital channels. Each radio must have one Basic Privacy Key selected from a pre-defined list. Garbled voice is heard on receiving radios with Basic Privacy Keys which do not match that of the radio transmitting a privacy-enabled voice transmission.
Enhanced	Enhanced Privacy is allowed on selected digital channels. Each privacy-enabled channel must have a securely-configured Key Value associated with it. Garbled voice is heard on receiving radios with Key Values which do not match that of the radio transmitting a privacy-enabled voice transmission. Nothing is heard on the receiving radio if the Key ID of the transmitting radio does not match with all the Key IDs in the list of receiving radios. (NOTE: This feature is supported in the future)

Note

- The Privacy, Basic Privacy Key, Privacy Alias, Key Alias, Key ID, Key Value, and Privacy (Utilities Menu) features are disabled if this feature is set to None.
- The Privacy Alias, Key Alias, Key ID, and Key Value features are disabled if this feature is set to Basic.
- The Basic Privacy Key feature is disabled if this feature is set to Enhanced.
- This feature is supported in Digital mode only.

3.7   Digital Emergency System
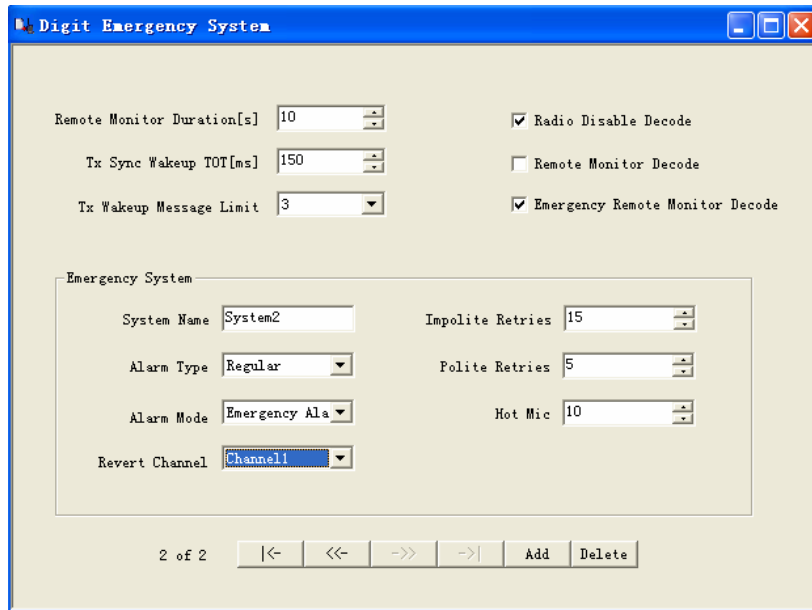
Associates any available digital emergency system to this channel for use during an emergency. Selecting the None option disables the user from transmitting an emergency call from this channel. This is a channel-wide feature.

Note

- Configure the Digital Emergency system under the signaling systems folder before selecting it or the default will be used.
- The RX Only feature must be disabled.
- This feature is applicable to Conventional radios in Digital mode only.

Remote Monitor Duration[s]

Sets the duration that the target radio can be remotely monitored. This is a radio-wide feature.

Range	
Maximum	120 sec

Minimum	10 sec
Increment	10 sec

Note

- This feature is supported in Digital mode only.

See Also

- Remote Monitor Decode.

TX Sync Wakeup TOT[ms] (Digital mode only)

This feature adjusts the value of the timer that begins immediately after a message is sent to wake up the repeater. The timer is stopped when the radio receives a repeater sync signal. If the timer expires before receiving a repeater sync signal, the radio sends another message to wake up the repeater. The number of messages is determined by the TX Wakeup Message Limit, after which the repeater is assumed to be out of range. This is a radio-wide feature.

Range	
Maximum	375
Minimum	125
Increment	25

TX Wakeup Message Limit (Digital mode only)

This feature sets the number of messages sent to wake up the repeater. Setting a higher number improves the success rate of waking up the repeater. This is a radio-wide feature.

Range	
Maximum	4
Minimum	1
Increment	1

Radio Disable Decode(Digital mode only)

Allows the radio to receive and process a Radio Disable command sent from another radio to remotely disable it. This feature helps to block usage of stolen or lost radios. This is a radio-wide feature.

Remote Monitor Decode(Digital mode only)

Allows the radio to receive and process Remote Monitor command sent from another radio. This command instructs the receiving radio to activate its microphone and transmitter for the duration specified in Remote Monitor Duration. A call is silently set up on this radio and its transmission controlled remotely without any indication given to the receiving radio user. This is a radio-wide feature.

Emergency Remote Monitor Decode(Digital mode only)

After an emergency alarm is initiated, this feature allows the radio to receive and process Remote Monitor commands sent from another radio for the duration specified in Remote Monitor Duration. This is an exceptional case of Remote Monitor Decode whereby the radio is able to decode Remote Monitor command even if the Remote Monitor Decode feature is disabled but only for the duration as specified in Remote Monitor Duration. This is a radio-wide feature.

Emergency System (Digital mode only)

System Name
This displays the name of the system.

Alarm Type
Specifies the behavior of the radio's alarm when the emergency button is pressed.

Option	Functionality
Regular	The radio transmits an alarm signal and provides audio and visual indication that it is in Emergency mode.
Silent	The radio transmits an alarm signal but gives no audio or visual indication that it is in Emergency mode. In addition, it will not unmute to any received audio.
Silent w/ Voice	The radio transmits an alarm signal but gives no audio or visual indication that it is in Emergency mode. The radio then unmutes to qualified channel activity.

Alarm Mode
Specifies the behavior of the radio's alarm when the emergency button is pressed. This is a personality-wide feature.

Option	Functionality
Disable	The radio is unable to transmit an alarm signal.
Alarm Only	The radio sends an emergency alarm and exits the emergency mode. This alarm is a non-voice signal that triggers an alert indication on another radio.
Call Only	Once the "Emergency" button is pressed, no emergency alarm is sent but the user can make an emergency call by pressing the Push-To-Talk (PTT) button.
Alarm w/ Call	Once the "Emergency" button is pressed, an emergency alarm is sent, after which an emergency call can be transmitted by pressing the Push-To-Talk (PTT) button.

Revert Channel
This is the channel used for digital emergency alarm or voice. Any single site digital channel may be set as the Revert Channel, including the channel indicated by the radio's channel selector.
Note

- The Alarm Type feature must not be set to Disabled.
- At least one channel must have a Group Call as its Contact Name.
- The Selected option is a valid choice when every digital channel has a Group Call as its Contact Name.
- This feature is supported in Digital mode only.

Impolite Retries

An impolite transmission is a transmission that occurs even when there is activity on the current channel. The radio tries a number of impolite transmissions to get an acknowledgement and then goes on to try a number of polite transmissions. This feature sets the number of attempts to transmit an emergency alarm impolitely.

Range	
Maximum	15
Minimum	1
Increment	1

Note

- The Alarm Type feature must not be set to Disabled.
- This feature is supported in Digital mode only.

Polite Retries

A polite transmission is a transmission that occurs only when the current channel is free of activity. The radio tries a number of impolite transmissions to get an acknowledgement before trying a number of polite transmissions. This feature sets the number of attempts to transmit an emergency alarm politely.

Range	
Maximum	∞
Minimum	0
Increment	1

Note

- The Alarm Type feature must not be set to Disabled.
- The Mode option must not be set to Emergency Alarm with Voice to Follow.
- The radio will attempt to transmit indefinitely if the Infinity option is selected.
- This feature is supported in Digital mode only.

Hot Mic

When enabled, enabled the Emergency With Voice to Follow (Emergency Hot Mic) feature. The Hot Mic feature allows for the programming of the Hot Mic related features, i.e. Hot Mic Duration. An emergency alarm is sent and the microphone is activated for an emergency call. Voice is transmitted without the need to press the Push-To-Talk (PTT) button. This is a personality-wide feature.

Note

- This feature is enabled only if Alarm Mode is set to Alarm & Call and Console Ack Required is disabled (unchecked).

3.8 Digital Contact

Contact Name

Defines the call that may be initiated on the channel by pressing the Push-to-Talk (PTT) button. However, if the channel is attached to a Group List with multiple Groups and there is an activity on one of the Groups, pressing PTT will initiate a talkback instead of a new call if it is within the hang time of the prior call. Selecting the None option prevents a call from being initiated on the channel. This is a channel-wide feature.

Note

- Create the Call member under the Contacts folder before selecting it or the default will be used.
- The RX Only feature must be disabled.
- This feature is applicable to Conventional radios in Digital mode only.

Call Type

Lists the types of calls available to the radio user.

For Conventional radios:

Type	Definition
Private Call	A call from an individual radio to another individual radio.

Group Call	A call from an individual radio to a group of radios.
All Call	A one-way call from an individual radio to every radio on that channel. All Calls do not communicate across different timeslots or channels within the system. The ability to initiate an All Call is only programmed into radios that are used in supervisory roles. All other radios monitor All Call transmissions by default. This feature is very useful when a supervisor needs to communicate with all the users on a logical channel, rather than just a particular group or individual.

Call ID

Sets an ID for a digital call member. This ID is used to identify and communicate with a target radio or group of radios depending on the call type. There are three call types (Group Call, Private Call, All Call). The meaning of the call type's ID is explained as follows.

- Group Call - This is the ID of the Group that the user wishes to subscribe to.
- Private Call - This is the Radio ID of the target radio.
- All Call - This has a fixed ID of 16777215 (value is not editable).

The ID that is chosen for a particular call type should be consistent with the ID of the target radio's call type.

Note

- This feature is supported in Digital mode only.

Range	
Maximum	16776415
Minimum	1
Increment	1

Note

- This feature is applicable to Conventional radios in Digital mode only.

Call Receive Tone

This alert tone sounds on the receiving radio prior to unmuting during a Private Call, Group Call, or All System Call. This is to notify the user that the radio is unmuting. This feature is set on a per-call basis.

Note

- The Disable All Tones feature must be disabled.
- This feature is applicable to Conventional radios in Digital mode only.

3.9   Digital RX Group Call (Digital Mode Only)
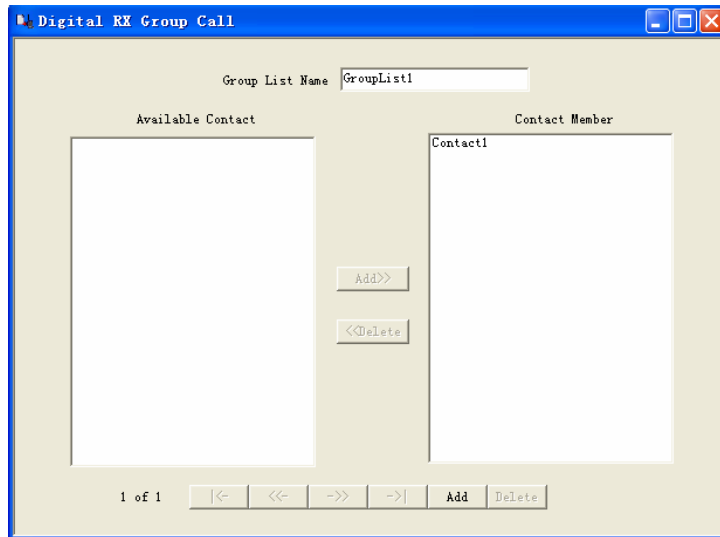
Group List Name

Configures the RX Group List alias.

Available Contact

Displays all available Digital Groups that can be added to the RX Group's Members list.

Contact Member

Lists all Digital Groups which the radio is a member of (or subscribed to) on channels which the list is attached to. When the channel selected has this list attached, if the radio receives a group call that is addressed to any one of its subscribed groups, the radio will participate in that group call (i.e. it will unmute for incoming transmissions and talkback when the PTT is pressed).

3.10   Zone Information
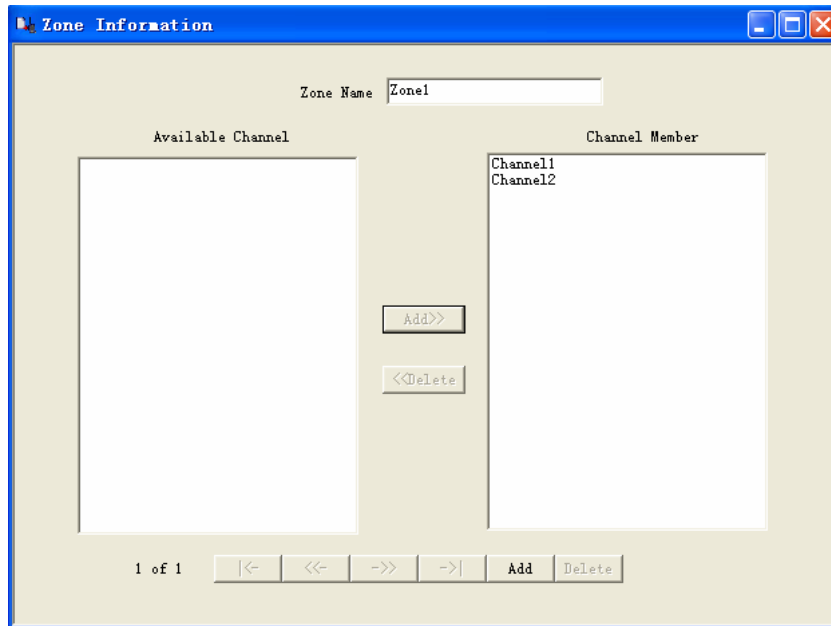
Zone Name
Configures the Zone alias.
Note

- The alias must be unique.

Available Channel
Displays all available Channels that can be added to the Zone.

Channel Member
Lists all Channels which were added to the Zone. The Max channel number of a zone is 16.

3.11   Scan List

Scan List Name

Configures the Scan List alias.

Available Channel

Displays all available Channels that can be added to the Scan List.

Channel Member

Lists all Channels which were added to the Scan List. The Max channel number of a Scan List is 16.

Priority Channel 1

Sets the Priority Channel 1 from the Scan List Channel Member. During scan, 50% of a radio's scans are on the Priority 1 member. If a Priority 2 member exists, scans for the Priority 1 member are reduced from 50% to 25%. Even after landing on a non-priority or Priority 2 member, the radio continues to periodically scan for transmission activity on a Priority 1 member. If the radio discovers activity on the Priority 1 member, it drops the current transmission, and unmutes to the Priority 1 member.

Note:

- This feature is disabled if no channel/personality is selected in the Members list.

Priority Channel 2

Sets the Priority Channel 2 from the Scan List Channel Member. During scan, 25% of a radio's scans are on the Priority 2 member. If a Priority 2 member exists, scans for the Priority 1 member are

reduced from 50% to 25%. Even after landing on a non-priority channel, the radio continues to periodically scan for transmission activity on a Priority 2 member. If the radio discovers activity on the Priority 2 member, it drops the current transmission, and unmutes to the Priority 2 member. Activity on a Priority 2 member will be dropped in the event of any valid activity on a Priority 1 member.

Note:

- This feature is disabled if no channel/personality is selected in the Members list.
- This feature is enabled when there is a Priority 1 member in the Members list.

Tx Desisignated Channel

This feature defines the conventional channel/personality on which the radio will transmit if the user presses the Push-to-Talk (PTT) button while the radio is scanning.   This paragraph is applicable to Conventional radios. If the Talkback option is disabled, this feature also defines the channel/personality where the radio will transmit if the user presses the PTT when the radio has stopped scanning to unmute to an eligible scan list member. Any channel can be selected as the TX Designated Channel. Alternatively, Selected or Last Active Channel may be chosen. This feature is disabled if the Talkback feature is enabled. When enabled, any scan member or Selected may be chosen as the TX Designated Channel in Conventional scanning (Conventional mode). This feature is fixed at Selected.

Type	Definition
Selected	The channel indicated by the channel selector.
Last Free Channel	The channel where the radio detects no signal on it.
Last Active Channel	The last channel where the radio in scan mode stopped and unmuted to receive audio.

Notes:

- For Conventional radios, during a scan operation, if this feature is set to Last Active Channel, when the radio stops and unmutes to an eligible channel and the user presses the PTT, the radio talks back to the Group that initiated the transmission on the channel during the scan hang time. After the scan hang time expires and the user presses the PTT, the user is now transmitting to the TX Contact Name specified for the last active channel. This is because the radio only remembers the last active channel, not the Group that it talked back. Therefore, during a scan operation, if the user wishes to always talk back to the same Group when this feature is set to Last Active Channel, it is suggested that the channel be attached to a RX Group List that has only one Group and that Group be set to the TX Contact Name of the channel. This essentially makes the last active channel the same as the last active Group.
- For Conventional radios, the TX Designated Channel can be an Analog or a Digital channel.
- For Conventional radios, when there are non-analog channels in the Scan List and the Tx Designated Channel is set to Last Free Channel, the radio will transmit on the current selected channel rather than the last free channel.
- The TX Designated Channel must not be set to RX Only.

PL Type

This feature indicates if Private Line (PL) decoding is required to unmute to a channel with activity during a scan operation. Disabling the need for PL decoding increases the scanning speed.

Type	Definition
Disabled	PL decoding not required.
Non-Priority Channel	PL decoding required on non-priority scan list member channels.
Priority Channel	PL decoding required only on a Priority 1 or a Priority 2 scan list member channel.
Priority and Non-Priority Channel	PL decoding required on all current scan list member channels.

Notes:

- Ensure that there are priority members on the scan list before selecting the Priority Channel option.
- Enabling this feature overrides the PL associated with the scan list member channel.

Signaling Hold Time[ms]

Sets the amount of time that the radio waits on an analog scan list channel when a carrier signal of sufficient amplitude is detected on the channel. This pause allows the radio time to decode the analog system signaling data. If the decoded information is incorrect, the radio reverts to scan.

Range	
Maximum	6375 ms
Minimum	50 ms
Increment	25 ms

Note

- This feature must be equal to or greater than the amount of time it takes the radio to transmit the signaling data packet plus the channel's Signaling Systems Pretime.
- This feature is applicable to Conventional radios in Analog mode only.

Priority Sample Time[ms]

Sets the duration that the radio waits, when in a call, before scanning the priority channels. If the call is taking place on a Priority 1 Channel, no scanning will take place. When scanning priority channels, the radio briefly mutes the current transmission. Increasing this interval improves the audio quality of the current transmission as fewer checks are done, but this also increases the chance of the radio missing out priority channel activity.

Range	
Maximum	7750 ms

Minimum	750 ms
Increment	250 ms

Note

- A priority member must be present in the scan list.

3.12   Channel Information

Digital/Analog Data

Type	Definition
Channel Mode	Configures the channel working in digital or analog mode.
Band Width	Configures the analog channel spacing, digital channel default to 12.5KHz
Scan List	Associates a Scan List to this conventional channel. All the members on this list will be scanned during a scan operation. Any available Scan List can be selected. Selecting the None option disables scanning (including Auto Scan) on this channel. This is a channel-wide feature.
Squelch	Configures the analog channel tight or normal squelch (applicable to Analog mode only).
RX Ref Frequency	Configures the PLL Reference Frequecy to use in receiving mode
TX Ref Frequency	Configures the PLL Reference Frequecy to use in transmission mode
TOT	The Time-Out Timer (TOT) is the duration that the radio can continuously transmit before a transmission is automatically terminated. This feature is used to ensure the channel is not monopolized by any one radio. The user may set smaller time-outs for busier channels. This is a channel-wide feature.

TOT Rekey Delay[s]	Sets the amount of time that the radio waits on a channel after the Time-Out Timer (TOT) expires (which stops the radio transmission) before allowing the user to transmit again. This is a channel-wide feature.
Power	Sets the radio's transmission power level for this channel. This feature can be toggled between high or low, via a short or long programmable button press (High/Low Power) or Power (Utilities Menu) feature. This is a channel-wide feature. High Power: Used when a stronger signal is needed to extend transmission distances. Low Power: Used when communicating in close proximity, and to prevent transmissions into other geographical groups.
Channel Name	Configures the Channel alias
Auto Scan	Allows the radio to automatically begin scanning when the user selects the current conventional channel. When disabled, the user is still able to invoke the scan operation, via a short or long programmable button press (Scan On/Off) or Scan (Scan Menu) feature. This is a channel-wide feature.
Rx Only	When enabled, the base radio/repeater becomes a receiver only system. All the transmit parameters in all the channels are disabled.
Lone Worker	This feature enables the Lone Worker feature on a selected channel. When disabled, the user is still able to invoke the lone worker operation, via a short or long programmable button press (Lone Worker On/Off) . This is a channel-wide feature.

RX Frequency(MHz)

Sets a frequency (in MHz) on which the signal is received for the current channel. This is a channel-wide feature.

Note

- The range of frequencies that can be set depends on the radio's band.
- For Digital Mode, the radio does not support the configuration of a direct mode channel that has different TX and RX frequencies. When TX and RX frequencies are different, the channel is defined as a repeater channel and the radio expects to communicate with a repeater.

TX Frequency(MHz)

Sets a frequency (in MHz) on which a signal is transmitted for the current channel. This is a channel-wide feature.
Note

- The range of frequencies that can be set depends on the radio's band.
- For Conventioal radios in Digital mode, the radio does not support the configuration of a direct mode channel that has different TX and RX frequencies. When TX and RX frequencies are different, the channel is defined as a repeater channel and the radio expects to communicate with a repeater.
- The RX Only feature must be disabled.

Admit Criteria

Determines when voice or data is allowed to be transmitted on the channel. This is used to prevent a

radio from transmitting on channels that are already being used. If the radio has different transmit and receive frequencies, only the receive frequency is monitored for activity. If no activity is found on the receive frequency, the radio allows the user to transmit on the transmit frequency even if it is being used. This is a channel-wide feature.

Option	Functionality
Always	The radio will always transmit when the Push-to-Talk (PTT) button is pressed. This option is also referred to as "Impolite" channel access.
Channel Free	The radio will check for an idle channel prior to allowing a transmission. This option is also referred to as "Polite to All" channel access.
Correct PL	The radio will check for a PL match prior to allowing a transmission. This option is available only when Rx Squelch Type is set to TPL or DPL (for Analog channels only).
Color Code Free	The radio will check if the specified Color Code is not in use prior to allowing transmission (except for Group Calls that are already in progress). This option is also referred to as "Polite to Own Digital System" channel access (for Digital channels only).

Note

- Not all transmission types utilize these settings. For example, emergency voice always operates impolitely whereas data and control messages always operates politely. An exceptional case is the emergency alarm that is sent with a mix of impolite and polite channel access.
- The RX Only feature must be disabled.

VOX

This feature enables the VOX (Voice Operated Transmit) feature on a selected channel. VOX provides a convenient means of hands-free voice activated communication, removing the need to press the Push-to-Talk (PTT) button. This feature enables the radio to automatically assume the Push-to-Talk (PTT) button is pressed whenever its microphone on the VOX-capable accessory detects voice.

To avoid truncation at the beginning of the VOX call, Talk Permit tone (TPT) should be disabled. If TPT is enabled, the radio user shall use a trigger word to key-up the radio. This trigger word will not, in most cases, be transmitted. After uttering the trigger word, the radio user should begin speaking only after the TPT is heard. Channels may have their VOX feature toggled on/off via a short or long programmable button press (VOX On/Off) or VOX (Utilities Menu). This is a radio-wide feature.

Note

- This feature is disabled if RX Only.
- It is recommended to disable the Talk Permit tone.
- VOX operates with a "Channel Free" admit criteria regardless of the selected channel Admit Criteria.

Allow Talkaround

Ensures that the Receive parameters are used in place of the Transmit parameters when transmitting. This feature enables communication between radios in close proximity without the use of a repeater, and is, therefore, particularly useful when the radios are in close proximity and the repeater is out of range. This feature can be toggled between Repeater or Talkaround mode, via a short or long programmable button press (Repeater/Talkaround) or Talkaround (Utilities Menu) feature. This is a channel-wide feature.

Note

- For Conventional radios on a Digital channel, the Transmit and Receive frequencies must be the different for this feature to be enabled.
- For Conventional radios on an Analog channel, at least one of the following Transmit and Receive parameters must be different for this feature to be enabled: Frequency,Squelch Type,DPL Code, DPL_Invert, TPL Frequency, TPL Code and Signaling System.
- For Conventional radios on an Analog channel, the channel must have its RX Signaling feature set to an MDC System to send an MDC Emergency in Talkaround mode.

Digital Data

Private Call Confirmed (Digital Mode Only)

This feature sets Private Individual calls on the current digital channel as confirmed. By default, Private Individual calls are unconfirmed. This is a channel-wide feature.

Note

- This feature is disabled if RX Only is enabled.

Emergency Alarm Indication

Determines if audio and visual indication is given by the radio when an emergency alarm is received. If the checkbox is unchecked, the radio displays nothing when it receives an emergency alarm. This is a channel-wide feature.

Note

- This feature is applicable to Conventional radios for Display model only.

Emergency Alarm Ack

Determines if the radio is allowed to acknowledge an emergency alarm. This is a channel-wide feature.

Note

- It is recommended that only a single radio on the group be programmed to acknowledge emergency alarms. This check box should typically only be checked on the dispatchers radio.

- The Emergency Alarm Indication feature must be enabled.
- This feature is applicable to Conventional radios for Display model only.

Emergency Call Indication

Determines if audio and visual indication is given by the radio when an emergency alarm is received. If the checkbox is unchecked, the radio displays nothing when it receives an emergency alarm. This is a channel-wide feature.

Note

- This feature is applicable to Conventional radios for Display model only.

Data Call Confirmed

This feature enables individual packets in data calls (GPS, and Text Message) on the current digital channel or personality to be confirmed (i.e. acknowledged) on the current digital channel to be confirmed on the Data Link level. The transmitting radio resends data packets in the data call if the receiving radio does not respond with Data Link level acknowledgements or confirmations upon receiving the data packets. By default, data calls are unconfirmed. This is a channel-wide feature.

Note

- This feature is disabled if RX Only.

Emergency System

Associates any available digital emergency system to this channel for use during an emergency. Selecting the None option disables the user from transmitting an emergency call from this channel. This is a channel-wide feature.

Note

- Configure the Digital Emergency system under the signaling systems folder before selecting it or the default will be used.
- The RX Only feature must be disabled.
- This feature is applicable to Conventional radios in Digital mode only..

Contact Name

Defines the call that may be initiated on the channel by pressing the Push-to-Talk (PTT) button. However, if the channel is attached to a Group List with multiple Groups and there is an activity on one of the Groups, pressing PTT will initiate a talkback instead of a new call if it is within the hang time of the prior call. Selecting the None option prevents a call from being initiated on the channel. This is a channel-wide (ie. In that whole channel) feature.

Group List

Associates any available RX Group list to the channel for reception. The user can listen to any Group in this list when there is any activity on it and talk back within the Group Call hang time. This is also

known as a Group Scan. Selecting the None option disables the user from receiving any Group Calls on this channel, except when the **Call ID** is the same as the **Call ID** of the transmit member. The **Call ID** from the **Contact Name** is automatically added to the RX Group List on this channel by default. This allows the user to receive this call, even though this feature is set to None. This is a channel-wide feature.

Color Code

This feature allows a color code to be assigned to a given channel. Channels may have the same or different color codes. A repeater can only have one color code.

A color code is used to identify a system. Different color codes are used to identify different systems. This feature enables a radio to roam between multiple systems by switching between channels with different color codes. The radio will be able to scan across channels with different color codes. Radios will ignore any channel activity not containing the matching color code for that system. Repeaters using the same frequency may be associated with different color codes. On shared channels, spectrum regulators may wish to assign different color codes to different licenses as part of their license agreement. This is a channel-wide feature.

Privacy

This feature allows privacy on selected digital channels. Privacy is a software-based scrambling solution that is not robust, and is only meant to prevent eavesdropping. The signaling and user identification portions of a transmission are not scrambled. Receiving radio(s) must have the same Basic Privacy Key (for Basic Privacy) or the same Key Value and Key ID (for Enhanced Privacy) as the transmitting radio in order to unscramble the privacy-enabled voice call or to receive the privacy -enabled data transmission.

Channels may have their privacy enabled or disabled via a short or long programmable button press (privacy On/Off) or privacy (Utilities Menu). A radio must have privacy enabled on the channel to transmit a privacy-enabled transmission, but this is not necessary for receiving radio(s). Privacy -enabled channels are still able to receive clear (unscrambled) transmissions. A visual indication appears on all display radios if the channel is privacy-enabled. The radio LED lights up red when transmitting or green when receiving an ongoing privacy-enabled transmission. The same behavior will be observed during scan operations.

Privacy No

Configures the Basic Privacy number to use.

Repeater/Time Slot

DMR utilizes digital Time Division Multiple Access (TDMA) technology to divide a 12.5kHz channel into two alternating time slots, with each carrying an individual call when operating in Repeater mode. As a result, both the assigned frequency and the assigned time slot must be specified in order to completely

describe a digital repeater channel. Radios or Groups that need to talk together must be assigned to the same frequency and time slot. This is a channel-wide feature.

For interoperation with other ETSI-DMR radios, it is important to note that transmissions received on repeater inbound (MS TX) slot 1 are repeated on outbound (BS TX) slot 2. This is referred to as aligned channel timing.

The slot number provisioned in the Customer Programming Software(CPS) corresponds to the outbound transmission (BS TX) that the subscriber will monitor. For example, if a channel in the radio CPS is provisioned for slot 1, this corresponds to the outbound transmission (BS TX) that the subscriber will monitor. Therefore the transmitting unit will use repeater inbound (MS TX) slot 2 while the receiving units will monitor repeater outbound (BS TX) slot 1.

When observing the repeater, the RxA LEDs correspond to the repeater inbound (MS TX) Slot 2 and repeater outbound (BS TX) slot 1. Conversely, the RxB LEDs correspond to repeater inbound (MS TX) slot 1 and repeater outbound (BS TX) slot 2. Therefore, a radio provisioned for slot 1 will light up the RxA LEDs on the repeater and a radio provisioned for slot 2 will light up the RxB LEDs on the repeater.

Analog Data
CTCSS/DCS Decode
CTCSS/DCS Encode
QT Reverse
Signaling Squelch
RX Signaling
TX Signaling
Decode Condition
Reverse Burst/Turn-off Code
Decode 1 ~ 8

3.13   DTMF Signaling (Not Available Now)