DMR Conventional Radio

Release Notes

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Contents

Documentation Information

This section describes the conventions and revision history of this document.

Documentation Conventions

Icon

Icon	Description
💡Tip	Indicates information that can help you make better use of your product.
✏️Note	Indicates references that can further describe the related topics.
⚠️Caution	Indicates situations that could cause data loss or equipment damage.
⚠️Warning	Indicates situations that could cause minor personal injury.
⚠️Danger	Indicates situations that could cause major personal injury or even death.

Notation

Notation	Description
Bold	The text in boldface denotes the name of a hardware button or a software interface element. For example, press the **PTT** key.
->	The symbol directs you to access a multi-level menu. For example, to select **New** from the File menu, we will describe it as follows: "File -> New".

Revision History

Version	Release Date	Description
V2.0	August 2017	Re-released the Customer Programming Software (CPS) and updated the version information.
V1.0	July 2017	Initial release

1. Product Information

Firmware Version

Product	Version
Portable Radio (PD6XX, PD7XX, PD8XX, PD98X, and X1 series) Mobile Radio (MD6XX and MD7XX series)	A8.05.06.005 S8.05.06.005 N8.05.06.005 C8.05.06.005
Repeater	A8.05.07.001 S8.05.07.001 N8.05.07.001 C8.05.07.001

Application Version

Application Software	Version
Customer Programming Software (CPS)	V8.05.06.008
Debug and Testing Software (Tuner)	V8.05.01.003
Repeater Diagnostics and Control (RDAC)	V8.05.01.003
DMR Record Manager	V1.00.02.001

Documentation

The following documents are released in this version:

Document	Release Notes
DMR Conventional Radio_Release Notes_R8.5	Newly added
DMR Conventional Radio_Feature List_R8.5	Updated
DMR Radio_Authorization_Operation Guide_R2.0	Updated
DMR Radio_Record_Application Notes_R1.0	Newly added

Document	Release Notes
DMR Conventional Radio_BT_User Manual_R8.5	Updated
DMR Conventional Radio_IP Multi-site Connect_Application Notes_R6.0	Updated
DMR Conventional Radio_GPS_Application Notes_R2.0	Updated
DMR Radio_SFR_Application Notes_R2.0	Updated
XPT System_Application Notes_R5.0	Updated
XPT System_OTAP Help	Updated
XPT System_XNMS Help	Updated
CPS Help	Updated
TUNER Help	Updated

2. What's New in This Release

2.1 Introduction

R8.5 is an upgraded version based on R8.0 and R8.1. This document describes only the new and enhanced features in R8.5.

Unless otherwise specified, the new and enhanced features described in this document are available to all radios and repeaters specified in the Firmware Version.

2.2 Radio

2.2.1 New Features

2.2.1.1 XPT Trunking Features

Multisite Handover

The Multisite Handover feature is added to ensure smooth communication. When the radio detects the RSSI of current site is weak to satisfy the conditions for multisite handover, it can automatically switch to the adjacent site with better signals to ensure the call quality.

This feature is useful when the radio receives a call or in a call.

For details, refer to the *XPT System_Application Guide_R5.0.* (For more information, please contact Hytera or your local distributor).

To set the related parameters in the CPS, go to:

- XPT Trunking -> Roam -> Roam Settings -> Multisite Handover

- XPT Trunking -> General Setting -> Menu -> Common Menu -> Roam -> Multisite Handover

Note

   The site to which the radio switches may not be the one with the strongest signal, but satisfies the requirements to activate the multisite handover feature or multisite handover weak feature.

2.2.1.2 Conventional Features

SFR (Single Frequency Repeat)

The SFR feature is added for duplex mobile radios.

For details, refer to *DMR Radio_SFR_Application Notes_R2.0.* (For more information, please contact Hytera or your local distributor).

Full Duplex Call

The full duplex call is available for the two radios in direct mode. After the call is established, both calling and called radios can simultaneously transmit and receive the voice. This feature is available only for the PD98X and

MD78X duplex radios.

To set the related parameters in the CPS, go to:

- Conventional -> General Setting -> Menu -> Common Menu -> Settings -> Radio Settings -> Call Setup Mode

- Conventional -> General Setting -> Buttons -> Call Setup Mode Switch

- Conventional -> General Setting -> Buttons -> Full Duplex Call

- Conventional -> Digital Common -> Basic -> Full Duplex

Note

The call record feature is not available for the duplex call.

2.2.1.3 Common Features
Dual-slot Data Transmission

In early release, the data can be only transferred over a single slot among radios. To increase transmission rate, the Dual-slot Data Transmission feature is added in this release. With this feature enabled, the radios transfer data over dual slots.

To set the related parameters in the CPS, go to:

Conventional -> Digital Common -> Basic -> Dual-slot Data Transmission -> Data Transmit Protocol

Note

This feature increases transmission rate of the data transfer and clarity transmission features. The transmission rate is about 2.2Kbit/S.

Indoor BT Positioning (API)

This feature is a general solution for radio positioning. It's a paid feature and only applicable to PD98X supporting BT 4.0.

The third party can develop applications through APIs (Application Programming Interface) to expand more communication and dispatching services.

For details, refer to *DMR Conventional Radio_BT_User Manual_R8.5*. (For more information, please contact Hytera or your local distributor).

To set the related parameters in the CPS, go to:

- Common -> Accessories -> BT Location -> Beacon Info

- General Setting -> Accessories -> BT Location

- General Setting -> Menu -> Accessories -> BT Location

- General Setting -> Network -> Radio Services -> Control Center ID

- Conventional -> Channel -> Digital Channel -> Tx -> Location Info Revert Channel

- XPT Trunking -> Channel -> XPT Personality -> Miscellaneous -> Location Report Type

Note

The BT location data cannot be transmitted with the RSSI data at the same.

Smart Battery Report (API)

The battery data of the radio can be remotely viewed by dispatch station, such as battery model, lifespan, discharging and recharging cycles, battery version, battery capacity and serial number. The data can be transmitted periodically or polled up. This feature is available only for PD98X.

The third party can develop applications through APIs (Application Programming Interface) to expand more communication and dispatching services.

To set the related parameters in the CPS, go to:

- Conventional -> General Setting -> Accessories -> Smart Battery Report

- Conventional -> General Setting -> Network -> Radio Services -> Self-Defined Message Port

- Conventional -> Channel -> Digital Channel -> TX -> Battery Info Revert Channel

- XPT Trunking -> Channel -> XPT Personality -> Miscellaneous -> Battery Report Type

Note

The report interval time must be set no less than 5 minutes.

Middle Power Level (2W)

The Middle Power Level feature is added in this release. With this feature enabled, the **Middle** option is available to set the power level of the radio. This feature is only available for PD98X.

To set the related parameters in the CPS, go to:

- Common -> Setting -> Basic Setting -> Middle Power Level

- Conventional -> Channel -> Digital/Analog Channel -> Tx -> Power Level

- Channel -> XPT Personality -> Per XN -> Power Level

- General Setting -> Menu -> Common Menu -> Radio Settings -> Power Level

- General Setting -> Buttons -> Adjust Power Level

Search by Multiple Letters

When viewing the contact list or channel list via radio menu, the user can input the initials by numeric keys to search related contacts or channels quickly.

To set the related parameters in the CPS, go to:

- General Setting -> Menu -> Digital/Analog Menu -> Contact

- General Setting -> Menu -> Digital Menu -> Message

- General Setting -> Menu -> Common Menu -> Scan -> Scan List

- General Setting -> Menu -> Common Menu -> Roam -> Roam List

- General Setting -> Menu -> Common Menu -> Zone

- General Setting -> Menu -> Common Menu -> Programming -> Channel

- General Setting -> Menu -> Common Menu -> Accessories -> GPS

2.2.2 Enhanced Features

2.2.2.1 XPT Trunking Features

Over the Air Decode

In early release, site capacity and site number can be added to the radio over the air. In this release, site parameters can also be modified or deleted. For details, refer to *XPT System_Application Notes_R5.0.* (For more information, please contact Hytera or your local distributor).

To set the related parameters in the CPS, go to:

XPT Trunking -> Digital Common -> Basic -> Decode -> Over The Air Decode

Note

   This feature is only available in the single site.

Follow Free Channel

The Follow Free Channel feature is added in this release. If enabled, the radio follows free repeaters of the site to receive a call when it's in idle status; while master repeater to initiate a call. If disabled, the radio follows the master repeater to initiate and receive a call.

To set the related parameters in the CPS, go to:

XPT Trunking -> XPT Service -> Setting -> Miscellaneous -> Follow Free Channel

Channel for both Quick GPS and Normal Data

The **QGPS&NormalData** option is added to the data channel type. When this option is selected, slot 1 of the channel is used to transmit normal data (RRS data, GPS data etc.), while slot 2 to transmit GPS data via Quick GPS feature. This feature is helpful when there is only one data repeater in the system.

To set the related parameters in the CPS, go to:

- XPT Trunking -> XPT Service -> Site Data List -> Data Channel List -> Channel Type

- XPT Trunking -> XPT Service -> Site Data List -> Quick GPS Configuration

Data Channel Weak

The Data Channel Weak feature is added in this release. With this feature enabled, the radio automatically

switches to the voice repeater to transmit the data (such as GPS, RRS) in normal way, when the data repeater operates abnormally (such as powers off unexpectedly, disconnects the dispatch station etc.).

To set the related parameters in the CPS, go to:

XPT Trunking -> XPT Service -> Setting -> Miscellaneous -> Data Channel Weak

GPS Data Report during Voice Receiving

The In Call Location Revert feature is added in this release. With this feature enabled, the radio switches to the dedicated data channel to transmit GPS data when it's received the request during voice receiving.

To set the related parameters in the CPS, go to:

XPT Trunking -> Digital Common -> Basic -> Miscellaneous -> In Call Location Revert

2.2.2.2 Conventional Features

Roaming in Emergency

The roam feature during emergency call is enhanced in this release. In early release, when the **Revert Channel** for emergency service is not set as **Selected** (current channel), the roaming will not be activated if the radio fails to roam to the available site or after it stays on the channel for the first time. In this release, the roaming will be activated.

To set the related parameters in the CPS, go to:

- Conventional -> Roam

- Conventional -> Emergency

2.2.2.3 Common Features

Customized Tone

The customized tone needs to associate with a programmable key. When the user presses this key, the radio gives a tone at specified frequency over the air. And when releases the key, the radio stops giving the tone. This feature is available in conventional digital, analog and XPT modes.

To set the related parameters in the CPS, go to:

- General Setting -> Buttons -> Customized Tone

- General Setting -> Setting -> Miscellaneous -> Customized Tone

Channel Alias

The **Channel Alias** option is added to the radio menu. The user can edit the channel alias through the radio menu.

To set the related parameters in the CPS, go to:

Conventional -> General Setting -> Menu -> Common Menu -> Programming -> Channel -> Channel Alias

Record Feature

To improve user experience, the DMR Record Manager and the record feature of the radio are enhanced.

- The Automatic Recording Deletion feature is added. If enabled, the radio deletes the earliest record files when storage capacity of the Micro SD card (TF card) reaches the limits. If disabled, the radio displays "TF Card Full" on the LCD.

- The icon appears on radio screen when storage capacity of the Micro SD card (TF card) is less than 200MB.

- The year and month information displays on the file alias so that the user can find out the file quickly.

- The Recording Compression feature (4:1 compression ratio) is added to save the storage capacity of Micro SD card (TF card).

For details, refer to *DMR Radio_Record_Application Notes_R1.0.* (For more information, please contact Hytera or your local distributor).

To set the related parameters in the CPS, go to:

General Setting -> Accessories -> Record

Enhanced Features for PD78XE

The TF Application, Record and RTC features are added for PD78XE.

To set the related parameters in the CPS, go to:

- General Setting -> Menu -> Common Menu -> TF Application

- General Setting -> Menu -> Common Menu -> Radio Settings -> Date and Time

- Common -> RTC

Send Emergency Exit Message

The emergency exit message can be sent to request the radio to exit emergency status. It's helpful when the emergency is initiated by mistake or after the emergency is eliminated.

The feature can be performed in the following two ways.

- When the calling radio exits emergency status, it sends the message to request the called radios to exit emergency status.

- When the radio receives an emergency exit command from the dispatch station, it exits emergency status and sends the message to request other radios to exit emergency status as well. This requires the third party development (For more information, please contact Hytera or your local distributor).

To set the related parameters in the CPS, go to:

Conventional -> Emergency -> Digital Emergency -> Send Emergency Exit Message

Digital Emergency Call Tone

When the radio receives emergency call, the radio gives a tone with a frequency of 2800Hz to alert the radio user. It is used to differentiate the common calls and emergency call.

To set the related parameters in the CPS, go to:

- General Setting -> UI Indication -> Alert Tones -> Emergency Call Tone

- General Setting -> Menu -> Common Menu -> Radio Settings -> Tones

Auto Add Contacts

This feature is the extension of the Send Talker Alias feature. With it enabled, the radio automatically adds the contact into its contact list when receiving a call. This feature is realized only when the following two conditions are met.

- The call ID and alias of the calling radio are not included in the contact list.

- The Send Talker Alias feature of the calling radio is enabled.

To set the related parameters in the CPS, go to:

- Conventional -> Digital Common -> Basic -> Miscellaneous -> Auto Add Contacts

Call Location

This feature is the extension of Voice w/Location feature. With it enabled, the radio displays the location information of the calling radio during a call. This feature is available only for the radios supporting GPS feature.

The location information can be displayed in the following way.

- Sixteen Azimuth and Distance: The radio displays the rough azimuth and distance to the calling radio.

- Accurate Azimuth and Distance: The radio displays the accurate azimuth and distance to the calling radio.

- Sender GPS Coordinates: The radio displays the longitude and latitude of the calling radio.

To set the related parameters in the CPS, go to:

- Conventional -> Basic Configuration -> Accessories -> Voice w/Location

- Conventional -> General Setting -> Accessories -> Call Location

- Conventional -> General Setting -> Menu -> Common Menu -> Accessories -> GPS -> Call Location

BT Device Name

In this release, the radio can show the name and/or media access control (MAC) address of the connected BT device. This feature can be configured via CPS and radio menu.

To set the related parameters in the CPS, go to:

- Common -> Accessories -> BT -> Device Name

- Conventional -> General Setting -> Menu -> Common Menu -> Accessories -> BT

Displaying Received Message Content

This feature is configured via CPS. With it enabled, the radio displays content of the received message.

To set the related parameters in the CPS, go to:

Digital Common -> Basic -> Display -> Display Received Message Content

Radio UI

The radio UI is optimized in this release including:

- When the knob is used to adjust the volume, volume level (0-16) is added to indicate the value

- The radio ID and radio alias can be displayed on the Home Screen

- Pictures are converted to animation display

- The maximum frequency of the User Defined Tone rises from 2500Hz to 2800Hz. To set User Defined Tone in the CPS, go to "Common -> User Defined Tone -> Tone List X -> Frequency".

Smart Battery Information

The battery version and serial number of the smart battery can be viewed via radio menu. This feature is only available for PD98X.

To set the related parameters in the CPS, go to:

General Setting -> Menu -> Common Menu -> Settings -> Radio Settings -> Battery

Note

The smart battery version is required at V1.01.01.006 or above.

MIC Switching

X1p has a front MIC and a rear MIC. The **MIC&SPK** option is added to the radio menu for MICs selection.

To set the related parameters in the CPS, go to:

General Setting -> Menu -> Common Menu -> Settings -> Radio Settings -> MIC&SPK

One Touch Call/Menu

To satisfy user requirements, the **Operation Mode Switch** and **Radio Silent** options are added to the menu of One Touch Call/Menu and Numeric Keys. For Numeric Keys, the Long Press Switch feature can be enabled for the above two options.

To set the related parameters in the CPS, go to:

- General Setting -> One Touch Call/Menu -> One Touch Call/Menu X -> Menu -> Operation Mode Switch

- General Setting -> One Touch Call/Menu -> Numeric Key X -> Menu -> Radio Silent

GPIO Pins

The **Operation Mode Switch** option is added to the feature of GPIO pins. When an active level is detected, the radio switches its operation mode. This feature is available only for the mobile radios.

To set the related parameters in the CPS, go to:

General Setting -> Accessories -> GPIO Pins -> Feature -> Operation Mode Switch

2.3 Repeater

R8.5 is an upgraded version based on R8.1. This document describes only the new and enhanced features in R8.5.

2.3.1 New Features

Analog IP Multi-site Connect

The Analog IP Multi-site Connect feature is added in this release. This feature can expand the communication coverage of the single repeater system. Similar to the Digital IP Multi-site Connect feature, it allows the repeaters in different locations to be connected through the IP Multi-site network to deliver analog services.

The Analog IP Multi-site Connect is a paid feature. A license is required to activate the IP Multi-site Connect feature. For details, refer to *DMR Conventional Radio_IP Multi-site Connect_Application Notes_R6.0*. Only RD98XS supports this feature. Currently, the feature is not available for third party development (For more information, please contact Hytera or your local distributor).

To set the related parameters in the CPS, go to:

Conventional -> Channel -> Analog Channel -> Analog IP Multi-site Connect

End-to-end Encryption (E2EE)

The repeater encrypts the services through the in-built encryption option board to ensure the services confidentiality. In this release, the Encrypt feature is enhanced. Both the voice service and the data service can be encrypted, but in early release, only the voice service (For more information, please contact Hytera or your local distributor). This feature requires the third party development.

To set the related parameters in the CPS, go to:

- Conventional -> General Setting -> Network -> Application Programming Interface -> Forward to PC
- Conventional -> General Setting -> Network -> Application Programming Interface -> API interface Mode -> End to End Encryption Mode
- Conventional -> General Setting -> Network -> Application Programming Interface -> E2E Slot1 Port
- Conventional -> General Setting -> Network -> Application Programming Interface -> E2E Slot 2 Port

Emergency Exit via Dispatch Station

Usually, the radio sends an emergency alarm when emergency is activated. After receiving the alarm, the dispatcher immediately responds to the emergency. To avoid continuous or repeated alarms from the radio, the Emergency feature is enhanced in this release. The dispatch station is allowed to send an emergency exit command to request the radio to exit emergency status. This feature is realized through APIs of the repeater, requires the third party development and only works with the radios of R8.5 or above. (For more information, please contact Hytera or your local distributor).

API Gateway IP backup

To improve the stability of APIs, the Backup Third Party Server IP feature is added in this release. With the **Backup Third Party Server IP Enable** selected, the repeater requests the backup third-party server for the connection when it fails to connect the default one. If both the default and backup ones cannot be connected, the repeater will apply for registration on them (the default server first and then the backup one) by turns, and register at the one that gets online first. Once the repeater registers at the server successfully, even at the backup one, it will stay on the servicer. The ports of related services are shared.

To set the related parameters in the CPS, go to:

- Conventional -> General Setting-> Network -> Application Programming Interface -> Backup Third Party Server IP Enable

- Conventional -> General Setting -> Network -> Application Programming Interface -> Backup Third Party Server IP

CWID (Continuous Wave Identification)

In some areas, the CWID is applied to manage the wireless devices. To satisfy the demand, the CWID feature is available in the XPT mode. When it's enabled, the XPT repeater sends the CWID code at a specified frequency. The feature configurations in XPT mode are the same as those in conventional mode.

To set the related parameters in the CPS, go to:

- XPT Trunking -> General Setting -> CWID -> CWID On

- XPT Trunking -> General Setting -> CWID -> ID

- XPT Trunking -> General Setting -> CWID -> Tone Frequency

- XPT Trunking -> General Setting -> CWID -> Tx Interval

- XPT Trunking -> General Setting -> CWID -> Mix Mode Timer

- XPT Trunking -> General Setting -> CWID -> Rate

- XPT Trunking -> General Setting -> CWID -> Transmitted without CTC/CDC

Local Access Management

The local access management feature is available in XPT mode. Similar to that in conventional digital mode, this feature allows users to configure the radio IDs to access to the XPT repeater. If a radio is lost, users can remove the radio ID from the local access management list to prevent it accessing to the XPT system. It enhances the system safety and ensures the service confidentiality. This feature can be configured only for the master repeater or submaster repeater.

To set the related parameters in the CPS, go to:

● XPT Trunking -> General Setting -> Access Manager -> Local Access Management -> Local Access Management

● XPT Trunking -> General Setting -> Access Manager -> Local Access Management -> Start ID

● XPT Trunking -> General Setting -> Access Manager -> Local Access Management -> End ID

AIS (Application Interface Specification)

The AIS feature is available in the XPT mode to enrich the application of XPT system, including:

● Group call, private call and all call

● Message

● Ctrl Services

● Registration

● Authentication.

(For more information, please contact Hytera or your local distributor).

To set the related parameters in the CPS, go to:

● XPT Trunking -> AIS-> AIS -> AIS Setting -> AIS Enable

● XPT Trunking -> AIS-> AIS -> AIS Setting -> AIS Server Enable

● XPT Trunking -> AIS-> AIS -> AIS Setting -> AIS Gateway IP

● XPT Trunking -> AIS-> AIS -> AIS Setting -> AIS Voice Service Slot 1 Port

● XPT Trunking -> AIS-> AIS -> AIS Setting -> AIS Voice Service Slot 2 Port

● XPT Trunking -> AIS-> AIS -> AIS Setting -> SIP T1 Timer

● XPT Trunking -> AIS-> AIS -> AIS Setting -> Authentication Password

Seamless Multisite Handover

The signal strength of the site may change when the radio roams from one XPT site to the other. In this case, the voice service may be interrupted or even fails to be delivered during site switching. To solve the problem, the Multisite Handover feature is added to ensure voice quality. This feature needs to work with the radio of R8.5 or above. No configurations are required for the repeater. For details, refer to *DMR Conventional Radio_Feature List* and *XPT System_Application Notes_R5.0.*

Dual-slot Data Transmission

All radios in the current market transmit the voice service or data service over a single slot. But it's time-consuming and inefficient when a mass of data is to be transferred. To meet customer requirements, the dual-slot data transmission feature is added to double the transmission speed. This feature needs to work with the radio of R8.5 or above.

Smart Battery Management

The medium or large-scale communication system requires a large quantity of radios. When these radios are in use for a period of time, the battery performances will degrade to some degree. To better know the battery status, the Smart Battery Report feature is added to the radio, so that the radio can send the battery data periodically to the repeater. Then the repeater transmits the data to the third-party software through the APIs for statistics or warning. This feature requires both the repeater and the radio be with the firmware R8.5 or above (For more information, please contact Hytera or your local distributor).

Indoor BT Positioning

In this release, the repeater can transmit the BT location data via the APIs for radio positioning indoor. The BT Location feature requires both the repeater and the radio be with the firmware R8.5 or above. For details, refer to *DMR Conventional Radio_BT_User Manual_R8.5*.

2.3.2 Enhanced Features

CTCSS Deviation

To meet user demand, **CTCSS/CDCSS Deviation** parameters are added for the repeater. Users can set the CTCSS deviation value for the repeater according to the one transmitted or received by the radio.

To set the related parameters in the CPS, go to:

- Common -> Setting -> Basic -> CTCSS/CDCSS Deviation (25KHz)

- Common -> Setting -> Basic -> CTCSS/CDCSS Deviation (20 kHz)

- Common -> Setting -> Basic -> CTCSS/CDCSS Deviation (12.5 kHz)

TX Radio Interrupted in case of TOT timeout

In early release, the Repeat TOT Time can be enabled to prevent the radio user occupying a channel too long. Once it expires, the repeater stops service delivery. But the channel may still be occupied if the radio remains in the status of service transmitting.

In this release, the feature is enhanced. When the Repeat TOT Time expires, the repeater not only stops service delivery, but also sends the air command to request the radio to stop transmitting the service, completely releasing the channel source. This feature needs to work with the radio of R8.5 or above.

2.4 Application

2.4.1 New Features

Programming among Different Radios

To reduce workload, the same template in the CPS can be used to program radios in different models. In this release, PD6, PD7 and PD9 series of the same frequency can be programmed through the same template. See following table for details.

	PD660 - PD680	
PD750 - PD980	PD660 - PD750	
PD780 - PD980	PD660 - PD780	PD600-PD700
PD660 - PD980	PD680 - PD750	
PD680 - PD980	PD680 - PD780	
	PD750 - PD780	

XNMS Software

Repeater RSSI Map

The following features are added or enhanced in XNMS software R3.0.

- Repeater RSSI Map

- Statistics Data Export

- Simplified Version

- More Channel Parameters

- Performances Optimization (faster response and less deployed resources)

(For more information, please contact Hytera or your local distributor).

2.4.2 Enhanced Features

Channel/Contact List Import

For easy operation, the channel/contact list import by the CPS is enhanced in this release.

- When the channel list is imported, the frequency range will not be detected. The list can be imported successfully as long as the frequency is within the range of the radio (e.g., the channel parameters of U1 radio can be imported to Um or Ux radio).

- When the contact list is imported, the spaces before the string are valid characters, while spaces after the strings are invalid characters.

To set the related parameters in the CPS, go to:

- Tools -> Import/Export Conventional Channel

- Tools -> Import/Export Conventional Contact

DMR Record Manager

The DMR Record Manager is provided when the users apply for the authorization on the record feature. Following features of the software are enhanced.

- The Radio ID of record files can be viewed.

- The directory in Navigation area can be deleted.

For details, refer to *DMR Radio_Record_Application Notes_R1.0*. (For more information, please contact Hytera or your local distributor).

OTAP

In R8.0, the OTAP tool is provided to remotely add parameters into radio. To satisfy user demand, the tool can delete or modify parameters in this released.

3. Important Notes

3.1 Radio

3.1.1 Software

Compatibility

- The authorization feature is enhanced in this release. The newly generated License is in .fcr format and can only be imported by the CPS of R8.5 or above. It's in.fcx format in early release and can be imported by the CPS of R8.5 or above as well.

- The programming process of the Flashburn is optimized. The firmware file must be authorized before it's written into the radio. If not, the radio operates abnormally and displays the related error codes (e.g. 104).

- Real-time display the call location

  This feature is available only for the radios supporting the Voice w/GPS feature.

3.1.2 Hardware

Newly Supported Frequencies and Models

PD68X U3

3.2 Repeater

3.2.1 Software

Compatibility

- The authorization feature is enhanced in this release. The newly generated License is in .fcr format and can only be imported by the CPS of R8.5 or above. It's in.fcx format in early release and can be imported by the CPS of R8.5 or above as well.

- The programming process of the Flashburn is optimized. The firmware file must be authorized before it's written into the radio. If not, the radio operates abnormally and displays the related error codes (e.g. 104).

3.2.2 Hardware

Newly Supported Frequencies and Models

None.

3.3 Application

None.

3.4 Accessory

The new models that support smart battery are as follows.

- PD75X Ex UL913: BL2411-Ex

- PD68X Ex UL913: BL2020-Ex

4. Resolved Issues

This section introduces the issues solved between R8.1 and R8.5.

No.	Product	Description
001	Mobile radio	The memory space is optimized to reduce the GUI buffer space. But a display exception occurs when alias display is set for startup.
002	Mobile radio	When connecting to a microphone, MD65X displays the encryption icon if the services are encrypted via software encryption, while not if via encryption option board.
003	Portable and mobile radios	If no feature options are configured to the radio menu via CPS, the radio crashes after a programmable key (e.g. the key is associated with Message feature) is pressed. In such case, the radio cannot display the feature option after accessing to the menu.
004	Portable and mobile radios	When **PTT Key-up Mode** is set as **Disable**, the radio doesn't reset its TOT (Time-Out Timer) after it transmits the De-key encode in 5-tone system.
005	Portable and mobile radios	The speaker is turned on/off repeatedly and gives a beep tone, when any analog channel is set as the **Priority Channel**, and landed channel and priority channel is 25K bandwidth.
006	Repeater	The slave repeater sometimes crashes and restarts after the group call test is performed for two channels under the XPT system.
007	Repeater	The alert call feature doesn't work when **Multisite Access Management** is set as **Enhanced** for IP Multi-site Connect system in conventional mode.

Appendix

The table below lists the new models that support 1 pulse per second (PPS) in this release.

Model	Model Number
PD70XG	PD70X-000G00PL-M00000-V1-0-B
	PD70X-000G00PL-000000-V1-0-B
	PD70X-000G00PL-M00000-U1-0-B
	PD70X-000G00PL-000000-U1-0-B
	PD70X-000G00PL-M00000-U2-0-B
	PD70X-000G00PL-000000-U2-0-B
	PD70X-000G00PL-M00000-U3-0-B
	PD70X-000G00PL-000000-U3-0-B
	PD70X-000G00PL-M00000-V4-0-A
	PD70X-000G00PL-000000-V4-0-A
PD70XS	PD700-00SG00PL-M00000-U1-0-B
	PD700-00SG00PL-M00000-V1-0-B
	PD700-00SG00PL-000000-V1-0-B
	PD700-00SG00PL-000000-U1-0-B
PD78XG	PD78X-000G00PL-M00000-V1-0-B
	PD78X-000G00PL-000000-V1-0-B
	PD78X-000G00PL-M00000-U1-0-B
	PD78X-000G00PL-000000-U1-0-B
	PD78X-000G00PL-M00000-U2-0-B
	PD78X-000G00PL-000000-U2-0-B
	PD78X-000G00PL-M00000-U3-0-B
	PD78X-000G00PL-000000-U3-0-B
	PD78X-000G00PL-M00000-U6-0-B
	PD78X-000G00PL-M00000-V3-0-B
	PD78X-000G00PL-000000-Ut-0-D
	PD78X-000G00PL-M00000-V4-0-A
	PD78X-000G00PL-000000-V4-0-A

Model	Model Number
PD78X Compass	PD78X-000C00PL-000000-V1-0-B
	PD78X-000C00PL-M00000-V1-0-B
	PD78X-000C00PL-M00000-U1-0-B
	PD78X-000C00PL-000000-U1-0-B
	PD78X-000C00PL-M00000-U5-0-F
	PD78X-000C00PL-M00000-U3-0-B
	PD78X-000C00PL-000000-U3-0-B
PD75XG	PD75X-000G00PL-000000-U1-0-B
	PD75X-000G00PL-M00000-U1-0-B
	PD75X-000G00PL-000000-U2-0-B
	PD75X-000G00PL-M00000-U2-0-B
	PD75X-000G00PL-000000-V1-0-B
	PD75X-000G00PL-M00000-V1-0-B
PD88XL	PD88X-000G00PL-000000-U1-0-B
	PD88X-000G00PL-M00000-U1-0-B
	PD88X-000G00PL-000000-V1-0-B
	PD88X-000G00PL-M00000-V1-0-B
	PD88X-000C00PL-000000-U1-0-B
	PD88X-000C00PL-M00000-U1-0-B
	PD88X-000C00PL-000000-V1-0-B
	PD88X-000C00PL-M00000-V1-0-B
MD78XG	MD78X-000G00P0-000000-V1-H-F
	MD78X-000G00P0-000000-V1-L-F
	MD78X-000G00P0-000000-V3-L-A
	MD78X-000G00P0-000000-U1-H-L
	MD78X-000G00P0-000000-U1-L-L
	MD78X-000G00P0-000000-U2-H-L
	MD78X-000G00P0-000000-U2-L-L
	MD78X-000G00P0-000000-U3-H-L
	MD78X-000G00P0-000000-U3-L-L

Model	Model Number
	MD78X-000G00P0-000000-U6-H-K
	MD78X-000G00P0-000000-U6-L-K
	MD78X-000G00P0-000000-U7-H-L
	MD78X-000G00P0-000000-V1-A-F
	MD78X-000G00P0-000000-U6-L-L
	MD78X-000G00P0-000000-U6-H-L
	MD78X-000G00P0-000000-Ut-L-L
	MD78X-000G00P0-000000-Ut-H-L
MD78X Compass	MD78X-000C00P0-000000-U3-L-K
	MD78X-000C00P0-000000-V1-L-F
	MD78X-000C00P0-000000-V1-A-F
	MD78X-000C00P0-000000-V1-H-F
	MD78X-000C00P0-000000-U1-L-K
	MD78X-000C00P0-000000-U1-L-L
	MD78X-000C00P0-000000-U1-H-L
	MD78X-000C00P0-000000-U3-L-L
	MD78X-000C00P0-000000-U3-H-L
MD78XG_D	MD78X-000G00PD-000000-V1-H-B
	MD78X-000G00PD-000000-V1-L-B
	MD78X-000G00PD-000000-U3-H-A
	MD78X-000G00PD-000000-U3-L-A
MD65XG	MD65X-000G00P0-000000-V1-A-A
	MD65X-000G00P0-000000-U1-A-C
	MD65X-000G00P0-000000-U2-A-C
X1e	X1e0X-000G00P0-MB0000-U1-0-F
	X1e0X-000G00P0-MB0000-U2-0-F
	X1e0X-000G00P0-MB0000-U3-0-F
	X1e0X-000G00P0-MB0000-U6-0-F
	X1e0X-000G00P0-MB0000-V1-0-H

Model	Model Number
	X1e0X-000G00P0-MB0000-U1-0-G
	X1e0X-000G00P0-MB0000-U2-0-G
	X1e0X-000G00P0-MB0000-U3-0-G
	X1e0X-000G00P0-MB0000-U6-0-G
	X1e0X-000C00P0-MB0000-U1-0-G
	X1e0X-000C00P0-MB0000-U3-0-G
	X1e0X-000C00P0-MB0000-V1-0-H
X1p	X1p0X-000G00P0-MB0000-U1-0-F
	X1p0X-000G00P0-MB0000-U2-0-F
	X1p0X-000G00P0-MB0000-U3-0-F
	X1p0X-000G00P0-MB0000-U6-0-F
	X1p0X-000G00P0-MB0000-V1-0-H
	X1p0X-000G00P0-MB0000-U1-0-G
	X1p0X-000G00P0-MB0000-U2-0-G
	X1p0X-000G00P0-MB0000-U3-0-G
	X1p0X-000G00P0-MB0000-U6-0-G
	X1p0X-000G00PE-MB0000-V1-0-K
	X1p0X-000G00PE-MB0000-U1-0-K
	X1p0X-000G00PE-MB0000-U3-0-K
	X1p0X-000C00P0-MB0000-U1-0-G
	X1p0X-000C00P0-MB0000-U3-0-G
	X1p0X-000C00P0-MB0000-V1-0-H
	X1p0X-000C00P0-MB0000-V1-0-K
	X1p0X-000C00P0-MB0000-U1-0-K
	X1p0X-000C00P0-MB0000-U3-0-K
	X1p0X-000C00PE-MB0000-V1-0-K
	X1p0X-000C00PE-MB0000-U1-0-K
	X1p0X-000C00PE-MB0000-U3-0-K
PD60XG	PD60X-000G00P0-M00000-Um-0-C

Model	Model Number
	PD60X-000G00P0-N00000-Um-0-C
	PD60X-000G00P0-100000-Um-0-C
	PD60X-000G00P0-M00000-V1-0-A
	PD60X-000G00P0-N00000-V1-0-A
	PD60X-000G00P0-100000-V1-0-A
	PD60X-000G00P0-N00000-U2-0-C
	PD60X-000G00P0-100000-U2-0-C
PD66XG	PD66X-000G00P0-N00000-Um-0-A
	PD66X-000G00P0-100000-Um-0-A
	PD66X-000G00P0-N00000-U1-0-A
	PD66X-000G00P0-100000-U1-0-A
	PD66X-000G00P0-N00000-U2-0-A
	PD66X-000G00P0-100000-U2-0-A
	PD66X-000G00P0-N00000-V1-0-A
	PD66X-000G00P0-100000-V1-0-A
	PD66X-000G00P0-N00000-U1-0-C
	PD66X-000G00P0-100000-U1-0-C
PD68XG	PD68X-000G00P0-N00000-Um-0-A
	PD68X-000G00P0-100000-Um-0-A
	PD68X-000G00P0-N00000-U1-0-A
	PD68X-000G00P0-100000-U1-0-A
	PD68X-000G00P0-N00000-U2-0-A
	PD68X-000G00P0-100000-U2-0-A
	PD68X-000G00P0-N00000-V1-0-A
	PD68X-000G00P0-100000-V1-0-A
PD78XE	PD78X-000G00PE-M00000-U3-0-B
	PD78X-000C00PE-M00000-U3-0-B
PD70X UL913	PD70X-0U0G00PL-M00000-U1-0-B
	PD70X-0U0G00PL-000000-U1-0-B

Model	Model Number
	PD70X-0U0G00PL-M00000-V1-0-B
	PD70X-0U0G00PL-000000-V1-0-B
	PD70X-0U0G00PL-000000-U2-0-B
	PD70X-0U0G00PL-M00000-U2-0-B
	PD700-0U0G00PL-M00000-U3-0-B
PD78X Ul913	PD78X-0U0G00PL-M00000-U1-0-B
	PD78X-0U0G00PL-000000-U1-0-B
	PD78X-0U0G00PL-M00000-V1-0-B
	PD78X-0U0G00PL-000000-V1-0-B
	PD78X-0U0G00PL-000000-U2-0-B
	PD78X-0U0G00PL-M00000-U2-0-B
	PD78X-0U0G00PL-M00000-U3-0-B
X1p UL913	X1p0X-0U0G00P0-MB0000-U1-0-G
	X1p0X-0U0G00P0-MB0000-V1-0-H
	X1p0X-0U0G00P0-MB0000-U2-0-G
PD68X Ex	PD680-0E0G00P0-100000-V1-0-A
	PD680-0E0G00P0-100000-Um-0-A
PD70X Ex	PD70X-0E0G00P0-M00000-V1-0-D
	PD70X-0E0G00P0-M00000-U1-0-N
	PD70X-0E0G00P0-M00000-U3-0-N
PD75X Ex	PD750-0E0G00P0-M00000-U1-0-N
	PD750-0E0G00P0-M00000-V1-0-N
PD78X Ex	PD78X-0E0G00P0-M00000-V1-0-D
	PD78X-0E0G00P0-M00000-U1-0-N
	PD78X-0E0G00P0-M00000-U3-0-N
	PD780-0E0C00P0-M00000-U3-0-N
PD98X	PD98X-000G00PD-MB0000-Ux-0-D
	PD98X-000G00PD-MB0000-U3-0-D

Model	Model Number
	PD98X-000G00PD-MB0000-U1-0-D
	PD98X-000C00PD-MB0000-Ux-0-D
	PD98X-000C00PD-MB0000-U1-0-D
	PD98X-000C00PD-MB0000-U3-0-D
	PD980-000C00PD-MB0000-Ux-0-F
	PD980-000C00PD-MB0000-U1-0-F
	PD980-000C00PD-MB0000-U3-0-F
	PD980-000G00PD-MB0000-V1-0-A
	PD980-000R00PD-MB0000-V1-0-A
	PD980-000C00PD-MB0000-V1-0-A