



Customer Programming Software (CPS) Plus 7.7 User Guide

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Customers or end-users in EU countries should contact their local equipment supplier representative or service centre for information about the waste collection system in their country.

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Icon Conventions

The documentation set is designed to give the reader more visual clues. The following graphic icons are used throughout the documentation set.



DANGER: The signal word DANGER with the associated safety icon implies information that, if disregarded, will result in death or serious injury.



WARNING: The signal word WARNING with the associated safety icon implies information that, if disregarded, could result in death or serious injury, or serious product damage.



CAUTION: The signal word CAUTION with the associated safety icon implies information that, if disregarded, may result in minor or moderate injury, or serious product damage.

CAUTION: The signal word CAUTION may be used without the safety icon to state potential damage or injury that is not related to the product.



IMPORTANT: IMPORTANT statements contain information that is crucial to the discussion at hand, but is not CAUTION or WARNING. There is no warning level associated with the IMPORTANT statement.



NOTICE: NOTICE contains information more important than the surrounding text, such as exceptions or preconditions. They also refer the reader elsewhere for additional information, remind the reader how to complete an action (when it is not part of the current procedure, for instance), or tell the reader where something is on the screen. There is no warning level associated with a notice.

Chapter 1

CPS Plus Overview

Customer Programming Software (CPS) Plus provides a programming interface between a PC and TETRA radios.

CPS Plus allows you to program radios with configuration files called **codeplugs**. A codeplug is a repository of configuration data for a radio. It includes features (also the **selling features**) and adjustable parameters.

Codeplugs can be modified using CPS Plus.

CPS Plus enables you to easily manage radio software updates. A typical software package contains platform-specific software components: firmware, codeplugs, language packs, and selling features (licenses required). Such packages, for all available platforms, are bundled in **release packets** and delivered on a disk or online. You can import release packets directly to CPS Plus and use the bundled software to **upgrade** radios.

Figure 1: CPS Plus – Overview

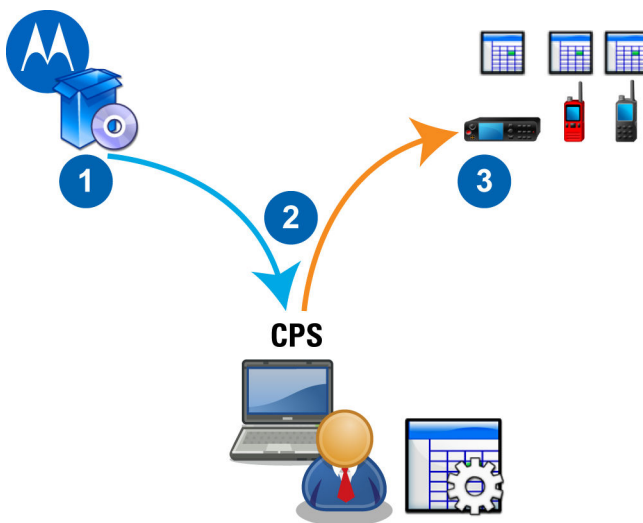


Table 1: CPS Plus – Overview

Annotation	Description
1	Motorola Solutions supplies its customers with radio software release packets and CPS Plus.
2	CPS Plus User can modify radio codeplugs, apply audio templates, and manage radio software upgrades.
3	CPS Plus is compatible with assorted models of Motorola Solutions TETRA radios and can read and write radio configuration from up to 16 devices through the USB port on a PC or a laptop.

The most common tasks using CPS Plus include:

- Reading codeplugs from radios.
- Writing codeplugs to radios.

- Editing codeplugs.
- Upgrading radios with newer software.
- Enabling standard features.
- Enabling selling features.


1.1

Installing / Upgrading CPS Plus

Prerequisites:

- Close all programs.
- Disconnect TETRA radios from the PC.
- Reserve approximately 20 minutes for the complete installation.

Table 2: CPS Plus – System Requirements

System Component	Minimal Configuration	Recommended Configuration
Processor	Single core, 2 GHz; for programming a single radio	Dual core, faster than 2 GHz; for programming multiple radios
Physical Memory (RAM)	1 GB	2 GB DDR3 1333 MHz
USB Port	Two USB 2.0/3.0 ports.  NOTICE: If you program 16 radios in parallel, you need 16 USB ports (PCI-USB card) for programming.	-
Free hard disk space	20 GB	-
Optical drive	DVD-ROM drive	-
Monitor display resolution	1024x768 pixels	1280x1024 pixels
Operating system	Windows 8/8.1®	-
	Windows 8/8.1 Pro®	-
	Windows 8/8.1 Enterprise®	-
	Windows 10 Pro®	-
	Windows 10 Enterprise®	-

When and where to use:

Depending on the software DVD that you ordered, one of two types of installation are available.

- Standalone Installation: It is used to install a fresh copy or upgrade an old version of CPS Plus.
- Release Packet: It is used to upgrade an old version of CPS Plus.

You want to install the CPS Plus application on your PC. If it is a fresh installation and the CPS Plus is the only instance of the CPS on this machine, follow the procedure steps. If it is an additional CPS

instance or the legacy CPS replacement, verify the concept of migrating between the CPS versions and using the USB Driver tool.

Procedure:

- 1 Insert the CPS Plus DVD in to the DVD-ROM drive.
- 2 Browse through the DVD contents. Double-click the relevant installation file , for example: `TetraCPSPlus32Setup.exe` .



NOTICE: If the **Security Window** appears, allow to run the software on your machine.

- 3 Follow the installation wizard and accept the license agreement.



NOTICE: Do not change the default installation directories.

The installation /upgrade begins. For the **Complete** version, it takes approximately 15 minutes to finish the installation.

Postrequisites:After a successful installation, you can launch the application using the desktop shortcut. The default location for the executable file is `C:\Program Files\MotorolaSolutions\Tetra CPS Plus\Bin\` for the 32-bit version of Windows and `C:\Program Files(x86)\MotorolaSolutions\Tetra CPS Plus\Bin\` for the 64-bit version of Windows.

1.2

Starting CPS Plus

Prerequisites:CPS is installed on the computer.

When and where to use:To launch the CPS Plus application.

Procedure:

- 1 Double-click the **TETRA CPS Plus** shortcut icon on the desktop or click **Start**→**Programs**→**Motorola**→**TETRA CPS Plus**.



NOTICE: To skip the application welcome screen when starting the application, in CPS click **Tools**→**User Options**→**Display** and select the checkbox **Hide Splash Window**.

The application launches.

Postrequisites:Before proceeding to further operations, read more about CPS Plus functions.

1.2.1

Power Plans/Schemes

The performance of CPS may go down when your laptop is running on the battery mode and the Windows high performance power plan (scheme) is not set.

- In Windows 8/8.1 you can change the setting by selecting `High performance` in the **Choose or customize a power plan** section from **Control Panel**→**All Control Panel Items**→**Power Options**.
- In Windows 10 you can change the setting by selecting `High Performance` in the **Choose or customize a power plan** section from **Control Panel**→**Hardware and Sound**→**Power Options**.

1.3

Activating CPS Plus


Perform the following steps when you want to activate your version of CPS Plus and gain access to all the functions of the application.

Prerequisites:

- Purchase an official entitlement from Motorola Solutions.
- Run CPS Plus.

Procedure:

- 1 Perform one of the following actions:

If...	Then...
If you want to activate CPS Plus online and the application can connect to the license server,	<p>perform the following actions:</p> <ol style="list-style-type: none"> From the License menu, select Activate CPS Application. In the Activate CPS window enter the Entitlement ID value and click Activate CPS. Restart CPS Plus to complete the activation procedure.
If you want to activate CPS Plus offline using a license file stored locally,	<p>perform the following actions:</p> <ol style="list-style-type: none"> From the License menu, select Activate CPS Application. In the Activate CPS window click Import License File. Navigate to the license file and click Open. Restart CPS Plus to verify the imported license. <p> NOTICE: The license file from the network drive must not be used to activate CPS Plus offline.</p> <p>To generate an offline package from CPS for the Integrated Terminal Management (ITM), ensure that the imported Release Packet and CPS version are compatible with the related release.</p>
If you want to use CPS Plus as an interface to obtain a license file for a non-activated CPS Plus that cannot connect to the license server,	<p>perform the following actions:</p> <ol style="list-style-type: none"> In the non-activated CPS Plus, from the License menu, select Activate CPS Application. In the Activate CPS window click Save License Request. Navigate to the chosen location, enter the file name and click Save. Transfer the license request file to the PC with the CPS Plus that can connect to the license server. In the CPS Plus, from the License menu, select Request License File. Optional: If Tools→Options→Licensing→Automatic Licensing Mode is not selected, enter the Entitlement ID value and click Load Entitlement. Click Load Request File. Navigate to the license request file and click Open. Optional: If needed, load another request file – go to step g. Click Request License File.


If...	Then...
	<p>k Wait for the response from the server and save the license file to a chosen folder.</p> <p>l Transfer the license file to the PC with the non-activated CPS Plus.</p> <p>m Import the license file.</p>

1.4

Using CPS Plus Online Help

When and where to use: To learn about the application and to search content.

Procedure:

- 1 For information about changes in radio software releases (Release Packets), click **Help**→**What's New in CPS Plus**.
 - 2 To open the help file, press F1 or click **Help** →**CPS Help Index** .
 - 3 To find the content, browse the table of contents or use the **Search** tab.
-  **NOTICE:** To narrow your search criteria, enter the keyword in quotation marks, for example "keyword".
- 4 To navigate between the viewed pages, press **LEFT/RIGHT ARROW + ALT**.
 - 5 To preview the pages from the table of contents, press **UP/DOWN ARROW + ALT**.
 - 6 To increase the font size in the CHM browser click **Options**→**Internet Options**→**Accessibility**. Select the check box **Ignore font sizes specified on Web pages**. Click **OK**.

1.5

Migrating Between CPS Versions

After installing the CPS Plus application, you can still retain previous versions of CPS. Legacy CPS may be needed if you support radios running on legacy software platforms, not supported by the new CPS Plus (**lower than MR5.9**). The new CPS Plus supports multiple radio software versions (release packets). Therefore you do not need to upgrade CPS Plus for every new radio software release.

Replacing Legacy CPS with CPS Plus

You have decided to replace the legacy CPS with the latest CPS Plus. It is possible only if your radios run on the software platforms **MR5.9 and higher** . If not, first upgrade the radios using the legacy CPS and then you may uninstall the legacy CPS.

Maintaining Legacy CPS and CPS Plus

You have decided to use CPS Plus for newer radios and retain your legacy CPS to use it with radios running on legacy platforms, not supported by CPS Plus (**lower than MR5.9**). Always install CPS Plus as the last one, to make sure that you have installed the latest USB drivers. The legacy CPS versions lower than **R6x.575.01** (also known as lower than **MR5.10** radio software) require older USB drivers. Therefore remember to use the **USB Driver Tool** before connecting the legacy radios and the other way around.

Check marks indicate in what cases, when switching between the two instances of CPS, you use the USB Driver Tool. For example, you currently use CPS Plus but want to program older radios. The old legacy CPS version that you have on your PC reads **D6x.509.02** . It is older version than the

R6x.575.01 , therefore use the USB Driver Tool and install old drivers. In the table, this case is under the first row **CPS Plus** and the third column **Legacy CPS Preceding R6x.575.01** .

Table 3: CPS Plus – The Use of USB Driver Tool for Switching Between Different CPS Versions

	CPS Plus	Legacy CPS Preceding R6x.575.01	Legacy CPS R6x.575.01 or Newer
CPS Plus		✓	
Legacy CPS Preceding R6x.575.01	✓		✓
Legacy CPS R6x.575.01 or Newer		✓	

1.6

Supported File Formats

Table 4: CPS Plus – Supported File Formats

File Extension	Description	Create	Edit	Import	Export
.add	Audio Device Descriptors file format.			✓	
.cpd	Old codeplug file format. Use File→Save As to save to the new .cpe format.		✓		
.cpe	Codeplug file format.		✓		
.dbf	Old codeplug file format. Use File→Save As to save to the new .cpe format.		✓		
.gif	A screen saver graphic file format.			✓	
.mou	TETRA key distribution file format.			✓	
.prl	Profile file format.	✓	✓		
.rpk	Radio software release			✓	



File Extension	Description	Create	Edit	Import	Export
	packets file format.				
.stf	Single audio template file format.	✓		✓	
.stfs	Audio template package file format.			✓	
.wav	Audio Tones file format.			✓	
.z19	Old radio software file format.	✓		✓	Only as .rpk software release packet files.

1.7

Motorola Solutions TETRA Radios Supported by CPS Plus

Example:

Table 5: CPS Plus – Supported Radios

Radio Type	Radio Model	Radio Icon in CPS Plus
Portable	MTP810Ex, MTP830, MTP830FuG, MTP830S, MTP850, MTP850FuG, MTP850S	
	MTP850Ex	
	MTH800	

Radio Type	Radio Model	Radio Icon in CPS Plus
	CEP400	
	MTP3100, MTP3200 SIM, MTP3200FuG, MTP3500	
	MTP3150, MTP3250, MTP3250 SIM, MTP3250FuG, MTP3550	
	MTP6450, MTP6550, MTP6650, MTP6750	
	MTP8500 Ex	
	MTP8550 Ex	
	MXP600	

Radio Type	Radio Model	Radio Icon in CPS Plus
	ST7000, ST7500	
Mobile	MTM800	
	Transceiver and Control Head for: MTM800E, MTM5200, MTM5400, MTM800 FuG, MTM5500, MTM800 FuG ET	
		
Covert	TCR1000	
Pager	Advisor™ TPG2200	
PDA	MTC100	

Chapter 2

User Interface

CPS Plus content is arranged in a classic tri-pane design with the menu on top and the work-spaces split with adjustable bars.

Figure 2: CPS Plus – Main Window

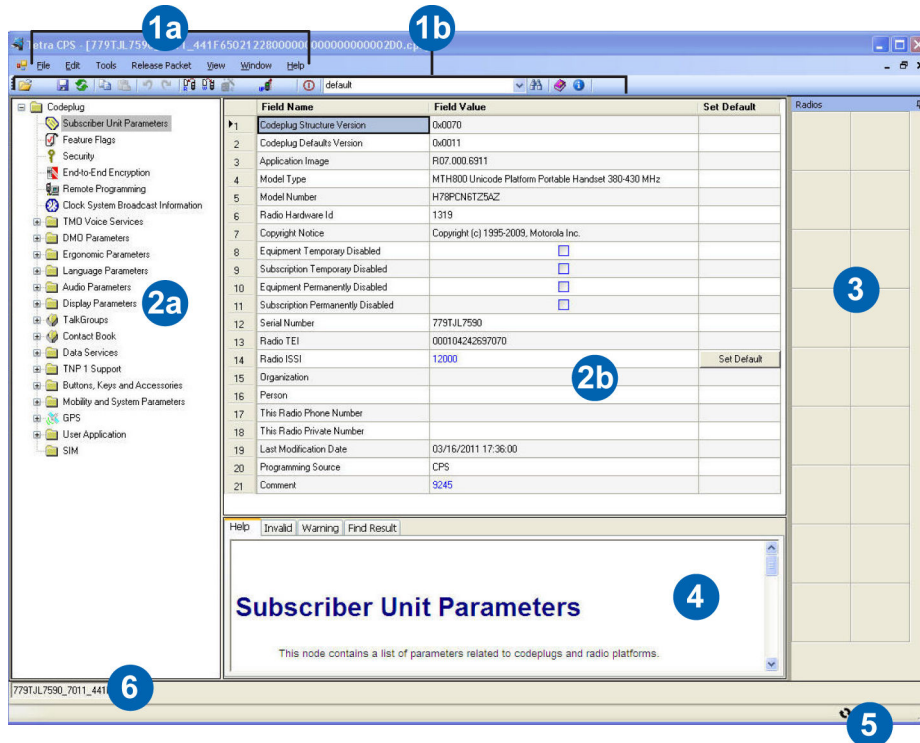


Table 6: CPS Plus – Graphical User Interface



Annotation	GUI Item	Description
1a	Menu bar	An area that groups all the menus.
1b	Toolbar	An area that groups icons for basic tasks.
2a	Codeplug pane – Codeplug tree	Represents a hierarchical data structure of a codeplug.
2b	Codeplug pane – Codeplug fields	A table with data-entry points for features and values.
3	Radio Icons List	A fly-out area that visually represents connected radios and status of programming operations.
4	Information pane	An area that provides a dialog interface between the application and the user. It contains the following tabs: <ul style="list-style-type: none"> • Help – displays context-sensitive topics.


Annotation	GUI Item	Description
		<ul style="list-style-type: none"> • Invalid – displays invalid parameters, for example when the parameter you have entered is out of range. • Warning – displays cautionary messages.
5	Progress bar	Conveys the progress of a programming task.
6	Codeplug file name tab	Allows you to switch between the opened codeplugs. Click to bring the preferred codeplug to front.

2.1

File Menu

Table 7: CPS Plus – File Menu Items

Menu Item	Description
Open Codeplug	Use to open a configuration file.
Open Profile	Use to open a profile.
Open OTAP Profile	Use to open an Over-the-Air Programming (OTAP) profile generated from Generate OTAP Profile .
Open Codeplug with Upgrade	<p>Use to create a newer version of an existing codeplug and open it in CPS Plus. You can use your already configured codeplugs with the newer radio software, but first upgrade the device to the relevant radio software version.</p> <p> NOTICE: Upgraded codeplugs preserve all the user data settings.</p>
Open Profile with Upgrade	<p>Use to create a newer profile. In order to support newer radio software versions the profiles must be up-to-date.</p> <p> NOTICE: The upgraded profile preserves all the settings from the baseline profile.</p>
Convert Model	Use to convert a codeplug from one radio model to another.
Close	Use to close the active codeplug.
Save	Use to save changes to the active codeplug.
Save As	Use to save as a new codeplug.
Read Radio	Use to transfer a codeplug from a radio to CPS Plus.
Write Radio	Use to transfer an active codeplug from CPS Plus to a radio.
Radio Copy Wizard	Use to copy and write a subset of specified codeplug parameters from an active codeplug to the selected radio.
Codeplug Copy Wizard	Use to copy and replicate a subset of specified codeplug parameters from an active codeplug to the selected codeplug.
Validate Codeplug/Profile	Use to verify the codeplug for errors before copying it to a radio.

Menu Item	Description
Generate Profile	Use to create a file with a subset of specified codeplug parameters. This function is like Copy Wizard , but you can save the profile on a disk and reuse it in the future.
Generate OTAP Profile	Use to generate an OTAP profile for configuration update.  NOTICE: This profile is platform dependent and is generated according to the radio model type selected for update.
Apply Profile to Radio	Use to program configuration from a profile to the selected radio.
Apply Profile to Codeplug	Use to copy values from a profile and replicate them on to an active codeplug. This function is like Codeplug Copy Wizard .
Send MSI Service Package	Use to bring out Over the Air Programming window to send critical updates through OTAP.
Send OTAP	Use to bring out Over the Air Programming window to send OTAP configuration interfaces for setting up targeted radios.
Compare Codeplug	Use to examine configuration differences between two codeplugs.
Import	Use to import a file to CPS Plus.
Export	Use to export a file from CPS Plus.
Change Codeplug Password	Use to protect a codeplug with a password.
Exit	Use to close CPS Plus.

2.2

Edit Menu

The **Edit** menu contains commands used while editing codeplugs.




Table 8: CPS Plus – Edit Menu Items


Menu Item	Description
Copy	Use to copy text content from the selected codeplug field so you can paste it in another location.
Paste	Use to paste the text content you have copied from another codeplug field.
Find	Use to search an active codeplug to find a specific field.
Undo	Use to reverse changes that you have done to the active codeplug. This function does not work after you save the changes to the codeplug.
Redo	Use to remake changes done by the Undo command.

2.3

Tools Menu

Table 9: CPS Plus – Tools Menu Items

Menu Item	Description
Authenticate Radio	Use to authenticate a radio protected with the Codeplug Authentication feature.
Set Radio Password	Use to set a password to one or more radios. You can also set the protection scope to Protect Radio and/or Protect Codeplug File .
Turn Off Radio	Use to turn off the radio safely.
Upgrade Radio	Use to upgrade a post-MR5.9 version radio without loosing all the user data.
Write Software	Use to write a selected firmware to a radio. Verify that you perform this operation to the correct unit. The software version must match the codeplug version that resides on the radio. The software version can be found in the Codeplug → Subscriber Unit Parameters → Application Image .
Up/Downgrade Radio Lite	<p>Upgrade Lite only allow upgrading radios that are version pre-MR5.9 to a version that is MR 5.9 or newer. Downgrade Lite only allows downgrading a radio to MR5.9 or newer.</p> <p> NOTICE: When using the downgrade option, all the user data is lost. Only the factory and the sensitivity data remain unchanged. It is not recommended to downgrade codeplugs and then downgrade radios. Use the Restore Radio option instead.</p>
Restore Radio	<p>Use to write a previous version of software to a radio. CPS Plus uses radio software from the release packet repository and copies of compatible codeplugs. Each time after reading a radio, CPS Plus automatically backs up each codeplug and stores in the directory chosen during the installation, by default: C:\Program Files\MotorolaSolutions\Tetra CPS Plus\BackupCodeplugs .</p> <p> NOTICE: After this operation, the user data values remain unchanged.</p>
Erase Memory	<p>Use to delete entire radio flash memory. That is to delete the radio software, codeplug with all settings, and security keys.</p> <p> NOTICE: After this operation, the radio is no longer functional. The radio cannot be restored using the CPS. To restore the software and codeplug, send the radio to the Service Center.</p>
Display Radio CPU ID	Use to collect the unique CPU HW ID that identifies your radio or control head.




Menu Item	Description
Restore Permanent Disable V2 Radio	Use to reactivate a disabled radio (only for PDV2). CPS Plus automatically selects the appropriate software version and uses codeplugs from the backup folder to restore the radio.  NOTICE: Ensure that a PDV2 feature license file is imported or that the PVD2 selling feature was enabled on the PC.
Radio Languages Settings	Use to write a selected language pack to a radio.
Collect Runtime Log	Use to collect mobility log and Short Data Services (SDS) or Call-out data from the radio or pager.
Detect Radio on RS232 Port	Use to detect a radio connected through the RS-232 port.
Import/Remove Audio Template Files	By default, audio template files are included in release packets. If you removed the default audio templates or received a set of customized templates, use this option to import the files to the CPS Plus repository.
Options	Use to change CPS Plus general settings.


2.3.1

Options

Table 10: CPS Plus – Description of the Options

Menu Item	Description
General	Use to set the user interface language and to protect codeplugs with a password before saving.
Licensing	Use to configure the Motorola Solutions Licensing System entitlement. Automatic Licensing Mode – if selected, when you enable selling features on the radio, CPS Plus automatically activates the features included in the stored entitlements. You can add entitlements to the list (by entering the unique entitlement IDs and clicking Add) and remove them from it. The list can contain maximum twenty entitlements. Use a Customized Proxy Server to connect to Motorola Solutions License Server – select and enter the necessary data if you do not want to use the default proxy server. To verify the settings, click Test .
Security	Protection Mode: – use to set the protection mode for the radio. <ul style="list-style-type: none"> • Basic – CPS Plus uses a codeplug password encryption that is backward compatible to the previous CPS Plus version. • Enhanced - Manual – CPS Plus uses the new codeplug/radio protection mechanism. You can set an individual password to the radio through Tools→Set Radio Password • Enhanced - Automatic – CPS Plus uses the new codeplug/radio protection mechanism. You can select one of the following options: <ul style="list-style-type: none"> - Use Certification File – allows you to import certification files, remove them or create PC-bound machine signatures that are used to generate certification files. Each certification file contains a PC-bound machine

Menu Item	Description
	<p>signature and a password list. When using a certification file, the user does not know the actual password stored in the file.</p> <p> NOTICE: The certification file generated by a specific PC-bound machine signature can only be imported to the CPS Plus that generated that signature.</p> <ul style="list-style-type: none">- Use Self-defined Passwords – allows you to add passwords to the list or remove them from it.• Mixed – CPS Plus allows you to choose the protection scope when you perform a security action, such as setting or changing the password. If you select Mixed mode and perform a security action, a password dialog pops-up with Basic and Enhanced - Manual options. <p> NOTICE: Send your radio to service provider for reprogramming if you forgot your password.</p>
Filename	<p>Use to define a file name pattern for codeplugs that you have read from radios and want to store on a hard drive, for example SN[999ABC9999]_TEI[F8F9FAFBFCDFEF]_ISSI[100]_CP[7014]_SW[Unknown].cpe .</p> <p> NOTICE: Consistent file names help you control a codeplug inventory.</p>
Display	<p>Use to control graphical elements of the interface.</p> <p>Hide splash window Do not show the splash screen while loading the application (launch faster).</p> <p>Show tooltips for Codeplug fields (range for parameters) Display a small box with range values when hovering a mouse cursor over a codeplug field.</p> <p>Minimize the icon in the system tray (conserve space on taskbar) Minimize to an icon in the system tray (next to the system clock icon) — conserve space on the taskbar for other applications.</p> <p>Remember USB ports location in Terminal Icon List Boxes in the Radio Icon List can remember the USB port assignments. Therefore you can organize and keep the same array of connected radios and manage the programming almost intuitively. For example, you connect four radios to four separate USB ports for the first time. CPS Plus remembers the port assignment and next time you connect a single radio to the USB port 2, the radio appears in the box 2 in Radio Icon List .</p> <p>Enable feedback tones (Note: this option will impact IE browser as well) Allows you to enable or disable feedback tones (clicking sound). These tones are played while you click on codeplug fields. When the flag is checked, feedback tones are enabled. You may uncheck this option to mute the feedback tones.</p> <p>Enable Windows Visual Style Allows CPS Plus to adopt Windows Visual Style. Windows XP and later operating systems support a feature called Visual Styles that enables the appearance of common controls to change based on the theme chosen by you. When the flag is checked, the CPS Plus is configured to use Windows Visual Styles and if left unchecked, the CPS Plus uses Windows Classic style.</p>

Menu Item	Description
Communications	Use to toggle data compression and enable faster programming.
Directories	Use to define the default locations for codeplugs.  IMPORTANT: If you decide to change the backup codeplug directory, remember to move the backup codeplug files to the new location.
Default Selling Features	Use to define which selling features are selected by default in the License → Enable Radio Selling Features dialog box.
Default Language Packs	Use to define which languages appear as default radio languages in the Tools → Languages option.
Log	Use to define the default location and the format for log files.
Recovery	Use to define the recovery mode. If you accidentally disconnect and turn off the radio during programming (corrupted software, codeplug or a language pack), this function can recover radio. <ul style="list-style-type: none"> • Recovery <ul style="list-style-type: none"> Detect corrupted software and start recovery automatically — after you connect the corrupted radio, CPS Plus detects the software version, and starts the recovery process automatically. If no suitable software or a codeplug is stored in the default location on the hard drive, CPS Plus switches to the manual recovery. Detect corrupted software but let me start recovery manually — after you connect the corrupted radio, CPS Plus detects the software version but lets you start the recovery process manually. • Software Version Strategy <ul style="list-style-type: none"> Use the latest available software – CPS Plus uses the most recent radio software and codeplug available on the hard drive (release repository and backup folder). Use the oldest available software – CPS Plus uses the earliest radio software and codeplug available on the hard drive (release repository and backup folder).

2.4

Release Packet Menu

A delivery method for release packets may vary (on a disk or online). Ask your local customer representative for details.

Table 11: CPS Plus – Release Packet Menu Items

Menu Item	Description
Import Release Packet	Use to import release packets to the local CPS Plus repository.
Import Software	Use to import release packets that contain specific radio software.
Release Packet Manager	Use to explore and manage (import, view, and remove content) software files stored in the CPS Plus repository.
Reset all Release Packets	Use to restore the packet repository to its default contents (packets shipped and installed with CPS Plus). CPS Plus deletes all

Menu Item	Description
	the release packets imported manually after the installation and preserves only the default packets. You can also use this option to restore the default release packets if you accidentally removed them from the repository. The default location of the release packets is: c:\Program Files\MotorolaSolutions\Tetra CPS Plus\Bin\repository_link_folder\

2.4.1

Release Packet Manager


Table 12: CPS Plus – Description of the Packet Browser Window

Window Element	Description
Imported Packets	Lists the release packets stored in the CPS Plus repository. To add a new packet to the repository, click Import New Packets and select the file. To remove a packet from the repository, select the item from the list and click Remove Packets . CPS Plus restarts after each operation.
Content Manifest	Lists all the components of the selected release packet. You can only view the content but cannot add or remove the packet elements.
Import New Packets	Use to import a packet or packets to the CPS Plus repository.
Remove Packets	Use to remove a packet or packets from the CPS Plus repository.

2.5

License Menu

Table 13: CPS Plus – License Menu Items

Menu Item	Description
Activate this CPS Application	Use to activate the CPS Plus application online (by connecting to the license server) or offline (by importing a license file stored locally).
Enable Radio Selling Features	Use to enable selling features on the connected radios.
Export Radio Information List	Use to export radio information to a file. The exported list contains the TETRA Equipment Identity (TEI) number that uniquely identifies the radio and is necessary when requesting a license file from a non-activated CPS Plus.
Request License File	Use to request license files for CPS Plus applications or radio selling features.  NOTICE: To generate an offline package from CPS for the Integrated Terminal Management (ITM), ensure that the imported Release Packet and CPS version are compatible with the related release.

Menu Item	Description
Import License File	Use to import selling feature licenses from a file in an activated CPS Plus.

2.6

View Menu

The **View** menu contains commands to toggle the CPS Plus panes.

Table 14: CPS Plus – View Menu

Menu Item	Description
Hide Tree View	Use to toggle the codeplug tree view pane.
Hide Bottom View	Use to toggle the bottom information pane.
OTAP Tracking Window	Use to track Over-the-Air Programming (OTAP) update statuses for sent MSI Service Packages and general radio configuration updates.
Task Window	Use to verify programming operations history.

2.7

Window Menu

The **Window** menu contains commands that allow you to arrange codeplug windows that are currently opened on the desktop.

2.8

Help Menu

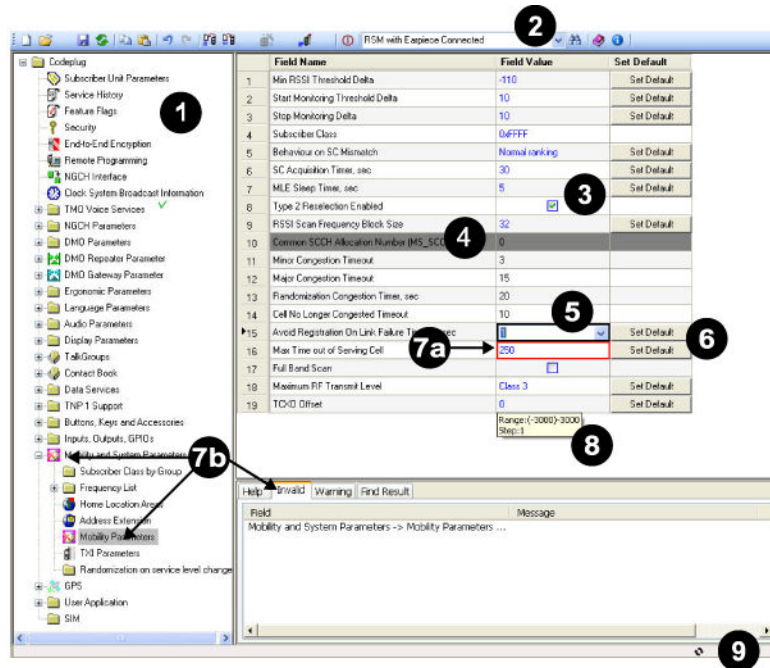
The **Help** menu contains commands that allow you access the online help browser and information about the CPS Plus version. You can also report CPS Plus related issues by using the **Report Issue** option.



NOTICE: To find out more about the supported radio models, go to **Help**→**About**.

2.9 Codeplug Panes

Figure 3: CPS Plus – Codeplug Panes GUI Elements






NOTICE: The number of codeplug nodes and fields varies according to the radio model.

Table 15: CPS Plus – Codeplug Panes GUI Elements

Annotation	GUI Item	Description
1	Codeplug tree	Represents a hierarchical data structure of all codeplug nodes (features).
2	Codeplug fields search bar	Allows you to search the active codeplug and find a codeplug field.
3	Check boxes	Select to enable codeplug features and options.
4	Selling Feature indicator	The grey bar indicates that it is a selling feature.
5	Drop-down list	Contains multiple values to choose from.
6	Set Default button	Allows to reset the field to its default value.
7a	Invalid parameter indicator	Indicates that the parameter value is incorrect.
7b		Indicates that some parameters in this node have incorrect values.
8	Range tooltip	Indicates a range for numerical parameters.

Annotation	GUI Item	Description
9	Status bar	Indicates the protection mode set for the radio.

Table 16: CPS Plus – Status Bar Protection Mode Icons List

GUI Item	Description
	Current protection mode set to Basic .
	Current protection mode set to Enhanced - Manual .
	Current protection mode set to Enhanced - Automatic .

2.10

Radio Icons List

Radio Icons List provides monitoring and operational functions to manage radios. It is a fly-out element so it can automatically appear and hide out from the working area (useful to save space). Icons and color codes help you to identify radios and a programming operations status. The context-menu, in other words the right-click menu, provides access to the most frequently used functions.

Figure 4: CPS Plus – Radio Icons Panels

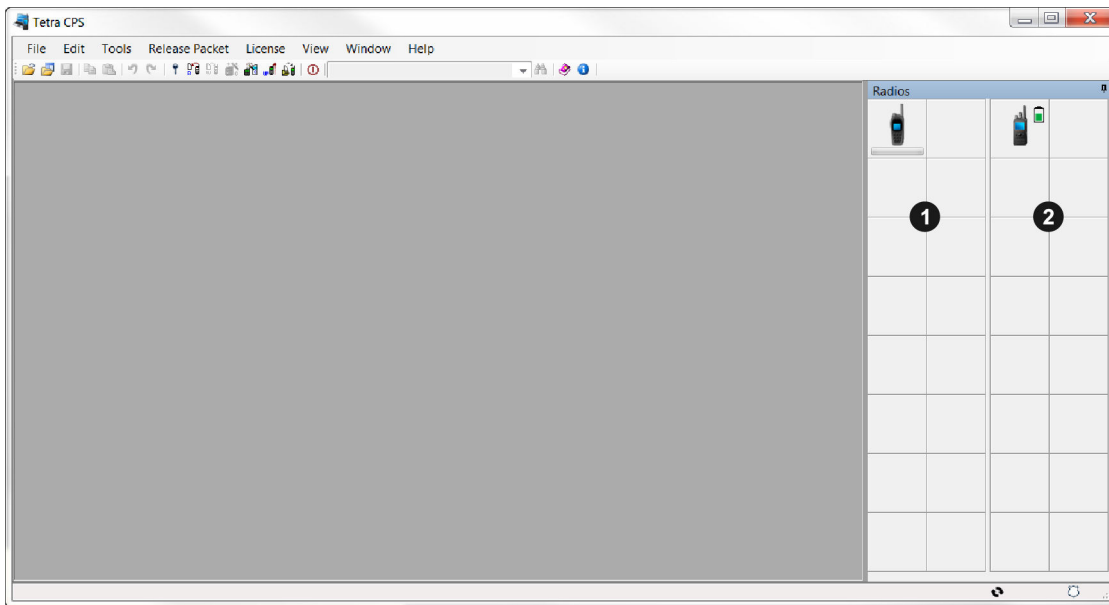


Table 17: CPS Plus – Radio Icons Panels

Annotation	GUI Item	Description
1	Programmable radios	Radios are connected to the PC and operating in the flashing mode.

Annotation	GUI Item	Description
2	Non-programmable radios	Radios are connected to the PC but not operating in the flashing mode.

Figure 5: CPS Plus – Radio Icons List (Programmable Radios)

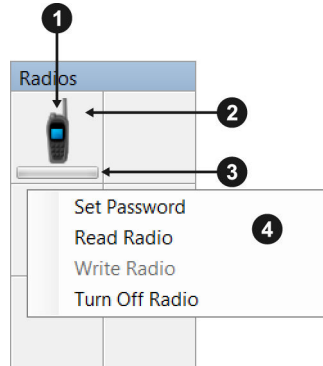


Figure 6: CPS Plus – Radio Icons List (Non-Programmable Radios)

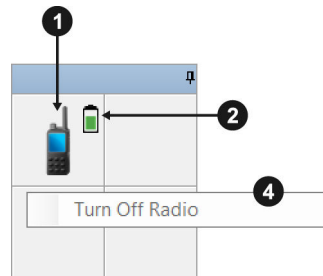






Table 18: CPS Plus – Radio Icons List

Annotation	GUI Item	Description
1		The radio is detected. CPS Plus initializes the connection.
		Assorted radio model icons.
		The radio needs a recovery.
		Automatic radio recovery is in progress.










Annotation	GUI Item	Description
2		The radio is connected and ready for programming.
		An imported license for the radio is detected (the indicator in the bottom-right corner).
		The programming operation finished. The radio is ready for programming.
		The programming operation is in progress.
		An operation error has occurred.
		The radio is protected by the Authentication feature (the radio authentication icon in the top-left corner).
		The radio is protected but not authenticated.
		The radio is charging. The battery level is visible in the top-right corner.
3	Progress bar	Conveys the progress of a programming operation.
4	Context-menu	Available when the radio is ready for programming.

Table 19: CPS Plus – Radio Authentication Icons List

GUI Item	Description
	Protection scope set to Protect Radio and Protect Codeplug File .

GUI Item	Description
	Protection scope set to Protect Radio .
	Protection scope set to Protect Codeplug File .

2.11

Keyboard Shortcuts

Table 20: CPS Plus – Keyboard Shortcuts

Description	Keyboard Shortcut
CPS Help	F1
Open Codeplug	CTRL + O
Save	CTRL + S
Read Radio	CTRL + R
Write Radio	CTRL + W
Copy	CTRL + C
Paste	CTRL + V
Undo	CTRL + Z
Redo	CTRL + Y
Find	CTRL + F
Options	CTRL + K
Switch focus to the next/previous opened codeplug	CTRL + TAB
Exit	ALT + F4

Chapter 3

Getting Started

Whether you are a new user or have used earlier versions of the application, the following topics are designed to help you get started.

3.1

Connecting Radios to a PC

Prerequisites:

- Prepare the USB programming cable.
- For portable radios, ensure that the battery is not discharged (CPS Plus detects the required battery level before triggering the flashing mode).
- For mobile radios, ensure that a DC power source is attached – a car battery or a DC power supply.
- Run CPS Plus.

When and where to use: Always perform the following steps before using a radio with CPS Plus. Some of the CPS Plus options are unavailable until you attach a radio and turn it on in flashing mode.

Procedure:

Figure 7: CPS Plus – Connecting Portable Radios

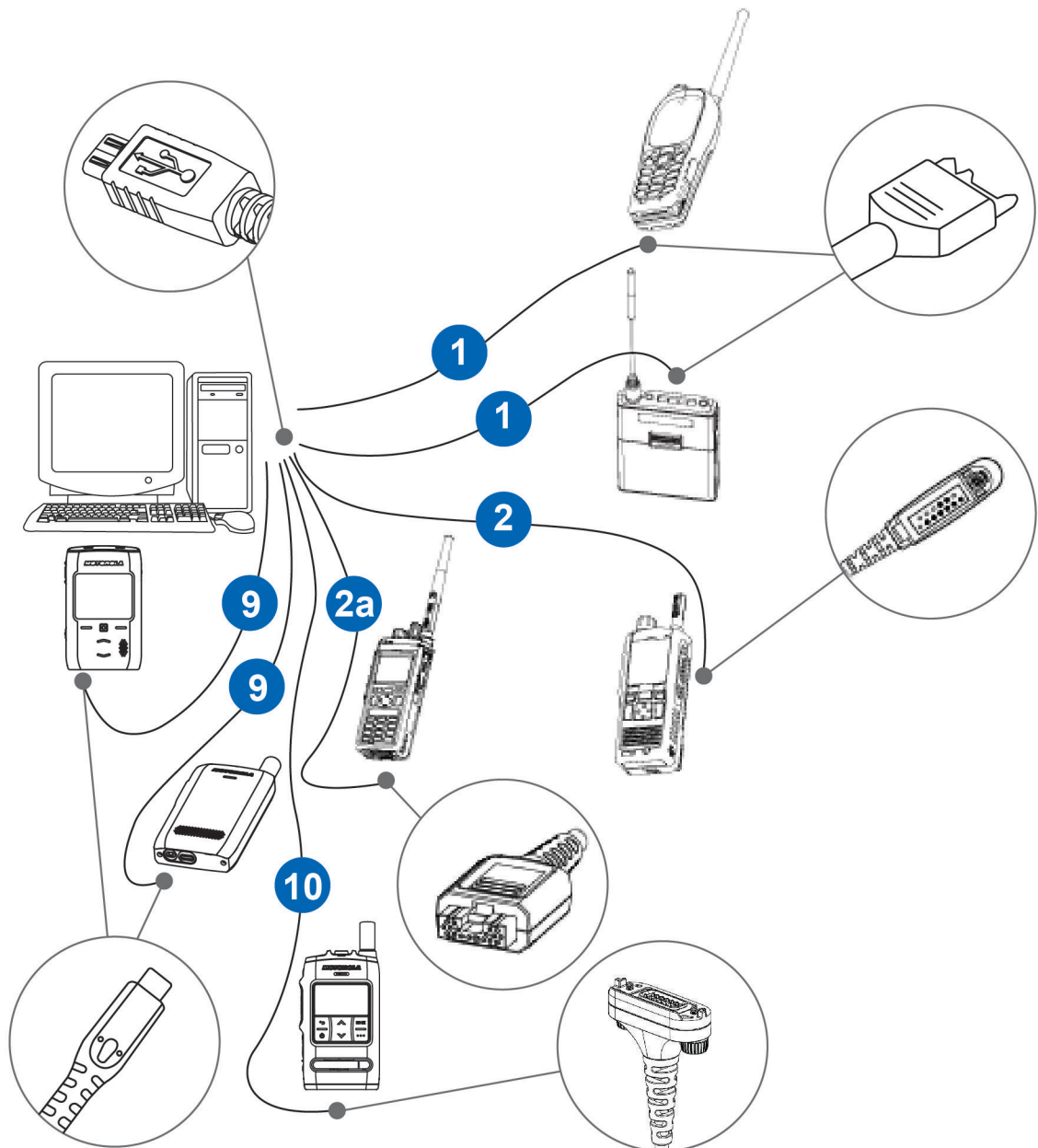


Figure 8: CPS Plus – Connecting Mobile Radios

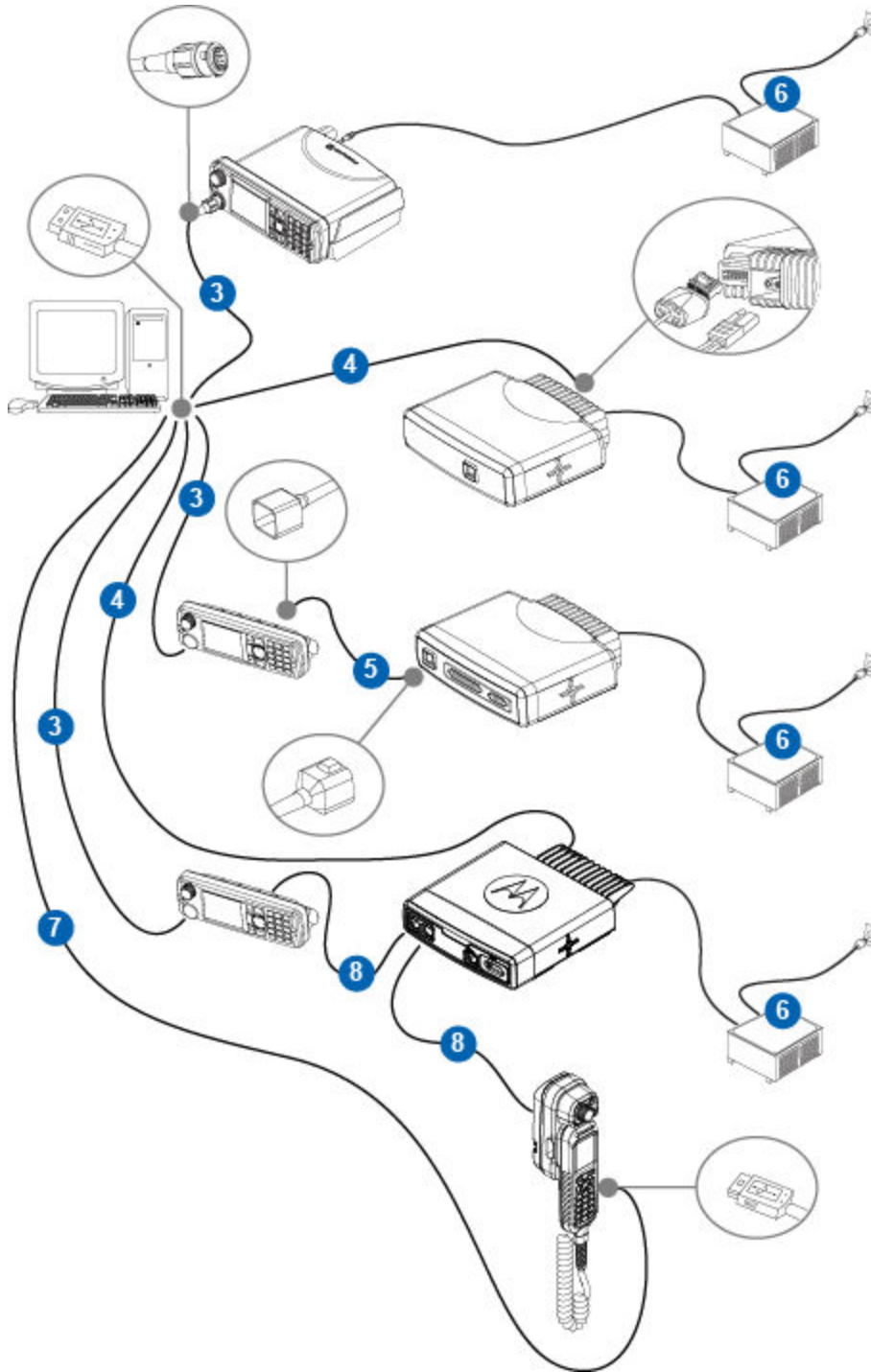


Table 21: CPS Plus – Radio Cables

Annotation	Description	Part Number	Radio Model
1	Programming Cable	PMKN4026_	MTH800, MTP850 series, CEP400, MTP830, TCR1000

Annotation	Description	Part Number	Radio Model
2	Programming Cable	PMLN5235_	MTP810 Ex, MTP850 Ex
2a	Programming Cable	PMKN4129_	MTP3100, MTP3150, MTP3200, MTP3250
3	Programming Cable	HKN6184_	MTM800E, MTM5200, MTM5400, MTM5500 RECH, MTM800 FuG, MTM800 FuG ET RECH
4	Programming Cable	PMKN4110_	MTM5x00 Transceiver, MTM800 FuG Transceiver, MTM800 FuG ET Transceiver
4a	Programming Cable	3071810M01	MTM800 Transceiver, MTM800E Transceiver
5	Remote Mount Cable – 3 m, 5 m, 7 m, 10 m	RKN4077_ RKN4078_ RKN4079_ PMKN4020_	MTM800E, MTM5200, MTM5400, MTM800 FuG
6	Desktop power supply	GPN6145_	MTM800, MTM800E, MTM5x00, MTM800 FuG, MTM800 FuG ET
7	USB Programming Cable	25-124330-01_	MTM5500 TSCH, MTM800 FuG ET TSCH
8	Tetra Mobile Ethernet Cable	PMKN4135_ – PMKN4141_ (length: 40 m – 3 m)	MTM5500, MTM800 FuG ET
9	Programming Cable	PMKN4196_	ST7000, TPG2200
10	Programming Cable	PMKN4203_	ST7500

For MTM5200, MTM5400, and MTM800 FuG it is possible to program the transceiver through the control head cable while the devices are paired. When upgrading MTM5500 and MTM800 FuG ET, the Ethernet control heads and their transceiver should be connected to the PC USB ports at the same time, using their respective programming cables. When only the transceiver codeplug is to be programmed, connect the transceiver alone to the PC USB port, using its respective programming cable. The error message displayed on the connected control heads during the programming process may be ignored.

When three USB ports are not available, it is possible to upgrade the control heads first, and then to upgrade the transceiver. You should **not** upgrade the transceiver first.

For MTM5500, MTM800FuG, and MTM800 FuG ET languages need to be loaded in both the control head and the transceiver. When upgrading from an earlier release, load the same language data in both the control head and the transceiver. If the languages in the transceiver differ from the languages in the control head (or are their subset), **Software Incompatible Ver** is displayed.

MTP6x50 radios have two USB connection modes: **Mass Storage** and **PEI**. When CPS Plus detects an MTP6x50 radio is connected to a PC in the **Mass Storage** mode, CPS Plus automatically switches the radio mode to **PEI**. To operate an MTP6x50 radio in the **Mass Storage** mode (as a mass storage device), close CPS Plus before connecting the radio to the PC.

Before using a USB 3.0 port to program a radio, ensure that the USB 3.0 Host Controller driver is upgraded to improve stability and prevent connection issues. The driver is usually provided by your motherboard manufacturer – please refer to the relevant website.

3.1.1

Connecting a Radio to a PC through the RS-232 Port

Prerequisites:

- Prepare the RS-232 programming cable.

Table 22: CPS Plus – RS-232 Cables

Part Number	Radio Model
PMKN4025_	CEP400, MTH800, MTP830, MTP830FuG, MTP850, MTP850 S, MTP850FuG
PMKN4127_	MTP3100, MTP3200, MTP3150, MTP3250
PKMN4122_	MTP3100, MTP3200, MTP3150, MTP3250

- Ensure that the battery is not discharged (CPS Plus detects the required battery level before triggering the flashing mode).
- Run CPS Plus.

When and where to use: Only when connecting a radio to CPS Plus, using an RS-232 cable. Some of the CPS Plus options are unavailable until you attach a radio and turn it on in flashing mode.

Procedure:

- 1 Connect the radio to a PC using the RS-232 programming cable.
- 2 Click **Tools**→**Detect Radio on RS232 Port**.
- 3 In the **Serial Port:** field of the **Detect RS-232 Radio** window enter the RS-232 port to which the radio is connected. Click the **Detect** button.

The result of detecting the radio on the defined serial port is displayed in the **Detect Result:** box.

- 4 If the radio is successfully detected, the radio icon is displayed in the Radio Icon List of the CPS.

Postrequisites:



IMPORTANT: When radio programming is complete, turn off the radio. Right-click the radios icon and select **Turn Off Radio**.

3.1.2

Transceiver Installation Configuration through Control Head

CPS Plus is able to program MTM5500 and MTM800 FuG ET radios in a single operation through the control head USB or GCAI connector.

CPS Plus supports Multi-Radio Control, the programming of multi-transceivers through a single control head and cable, only from radio software version MR16 onwards.

The following installation configurations are supported.

- Single control head with a single transceiver.
- Single control head with multiple transceivers.
- Multiple control head with a single transceiver.



NOTICE: Each control head is programmed separately. Either one of the control heads can access the transceiver but are not visible to each other.

The control head can be the Remote Ethernet Control Head (RECH) or Telephone Style Control Head (TSCH).

3.2

Turning On Radios in the Flashing Mode – Automatically

Prerequisites:

- Connect the radio to a PC.
- Charge the radio battery to more than 15% capacity.
- Insert the radio into a charging dock or attach a charger.
- For mobile radios, ensure that the desktop power supply (12 V DC power source) is connected.
- Enable the **Remote Programming** feature in **Codeplug**→**Feature Flags**.



NOTICE: A portable radio can be turned on or off.

When and where to use: Before programming, each radio must be turned on in flashing mode. If you insert a fully charged portable radio in to a charging dock, that is connected to the PC through a programming cable, CPS Plus automatically detects the radio and turns it on in flashing mode. You do not have to manually turn on the radio in flashing mode, which is useful if you connect and program multiple radios. The mechanism also works with a single radio connected to CPS Plus through a programming cable with a charger attached.

Procedure:

- 1 Perform the following actions:

If...	Then...
If you use a portable radio,	connect the radio to a PC using a proper USB cable. Step result: The USB alert sound is heard. The radio display turns red and blinks. The radio is ready for programming when the radio icon appears in CPS Plus.
If you use a mobile radio without a control head or MTM800,	connect the transceiver rear connector to a PC using a proper USB cable. Step result: The USB alert sound is heard. The radio is ready for programming when the radio icon appears in CPS Plus.

If...	Then...
<p>If you use MTM800E, MTM5200, MTM5400 or MTM800FuG with NGCH control head,</p>	<p>perform the following actions:</p> <ul style="list-style-type: none"> a Connect the control head to a PC using a proper USB cable. b If the radio is powered off, press and hold for about three seconds the POWER key. <p>Step result: The USB alert sound is heard. The radio display blinks. The radio and the control head are ready for programming when proper icons appear in CPS Plus.</p>
<p>If you use MTM5500 or MTM800FuG with RECH and/or TSCH control head(s),</p>	<p>perform the following actions:</p> <ul style="list-style-type: none"> a Connect each control head to a PC using a proper USB cable. b Connect the transceiver rear connector to a PC using a proper USB cable. <p>Step result: The USB alert sound is heard. The radio and the control heads are ready for programming when proper icons appear in CPS Plus.</p>



NOTICE: It takes approximately 15 seconds after the USB notification tone to auto-start in the flashing mode.

3.3

Turning On Portable Radios in the Flashing Mode – Manually

Prerequisites:

- Turn off the radio.
- Connect the radio to a PC.
- For TCR1000, prepare a pen or a sturdy paper clip to press the Encryption Key button.

When and where to use: Always before using a radio with CPS Plus. Some of the CPS Plus options are unavailable until you attach a radio and turn it on in flashing mode. Entering in to flashing mode varies for different radios.



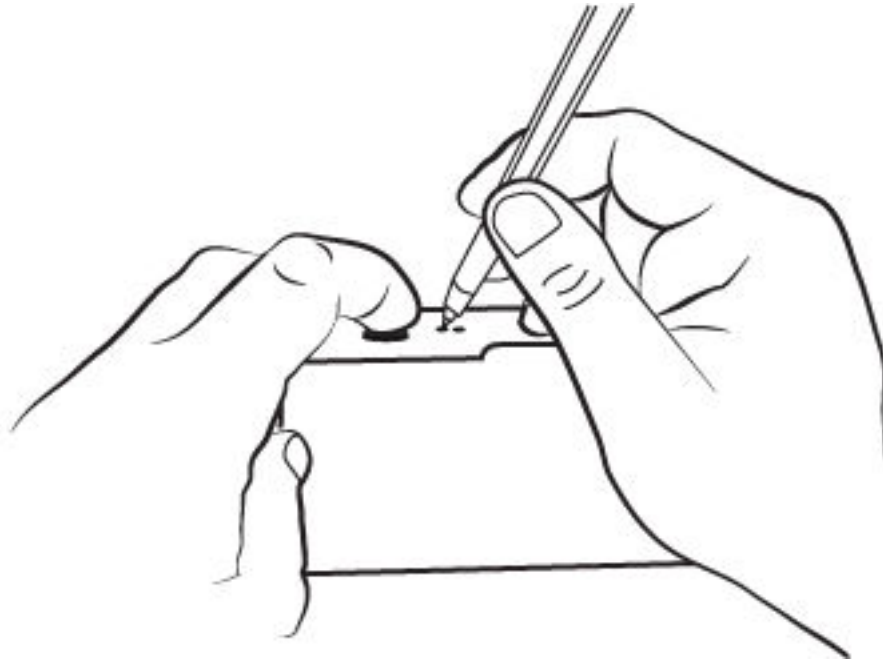
NOTICE: A radio in the flashing mode will revert to the charging mode after a time-out period of five minutes. Follow the procedure below to set the radio back into flashing mode.


Procedure:

- 1 Perform the following actions:

If...	Then...
<p>If you use a portable radio with a full numeric keypad or a mobile radio with a control head,</p>	<p>press and hold the 1+9+POWER keys for about three seconds.</p>
<p>If you use a portable radio with a limited keypad,</p>	<p>press and hold the FUN1+FUN2+POWER keys for about three seconds.</p>
<p>If you use TCR1000,</p>	<p>press and hold the POWER+ENCRYPTION keys for about three seconds (see the picture below).</p>

Figure 9: Turning On TCR1000 in the Flashing Mode



 **NOTICE:** The application can detect mobile transceivers connected through the rear connector and automatically turn on in the flashing mode.

The USB alert sound is heard. The radio is ready for programming when the radio icon appears in CPS Plus.

Postrequisites: To turn off the radio from the flashing mode, right-click the radio icon and select **Turn Off Radio**.


3.4

Turning On Mobile Radios in the Flashing Mode – Manually

Prerequisites:

- Turn off the radio.
- Ensure that the desktop power supply (12 V DC power source) is connected.

When and where to use: Always before using a radio with CPS Plus. Some of the CPS Plus options are unavailable until you attach a radio and turn it on in flashing mode. Entering in to flashing mode varies for different radios.

 **NOTICE:** A radio in the flashing mode will power off after a time-out period of 15 minutes. Follow the procedure below to set the radio back into the flashing mode.

Procedure:

Perform the following actions:

If...	Then...
If you use a mobile radio without a control head,	connect the transceiver rear connector to a PC using a proper USB cable. Step result: The USB alert sound is heard. The radio is ready for programming when the radio icon appears in CPS Plus.

If...	Then...
If you use MTM800,	connect the transceiver rear connector to a PC using a proper USB cable. Step result: The USB alert sound is heard. The radio is ready for programming when the radio icon appears in CPS Plus.
If you use MTM800E, MTM5200, MTM5400 or MTM800FuG with NGCH control head ,	perform the following actions: <ul style="list-style-type: none"> a Connect the NGCH Control Head to a PC using a proper GCAI USB cable. b Press and hold the 1+9+POWER keys for about three seconds. Step result: The USB alert sounds are heard. The transceiver and the control head are ready for programming when proper icons appear in CPS Plus.
If you use MTM5500 or MTM800FuG with RECH and/or TSCH control head(s),	program each component separately (first the control head, then the transceiver). For the control head: <ul style="list-style-type: none"> a Connect the RECH/TSCH Control Head to the PC using proper USB cable (GCAI-USB for RECH, microUSB for TSCH). b Press and hold the 1+9+POWER keys for about three seconds. Step result: The USB alert sound is heard. The control head is ready for programming when its icon appears in CPS Plus. For the transceiver: <ul style="list-style-type: none"> a Connect the transceiver rear connector to a PC using a proper USB cable. Step result: The USB alert sound is heard. The radio is ready for programming when the radio icon appears in CPS Plus.

Postrequisites: To turn off the radio and/or the control head from the flashing mode, right-click the appropriate icon and select **Turn Off Radio**.

3.5

Opening a Codeplug

Prerequisites: You have a codeplug on a disk or connected a radio to PC and turned on in flashing mode.

When and where to use: Always before viewing or modifying a codeplug in CPS Plus.

Procedure:

- 1 To open a codeplug from a disk,** click **File**→**Open Codeplug**.
The file manager dialog box appears.
- 2** Choose a location, select the file, and click **Open**.
- 3 To read a codeplug from a radio,** in the **Radio Icons List**, right-click the radio icon.
- 4** In the context menu click **Read Radio**.

Once the reading operation begins, do not disconnect or turn off the radio. The radio icon turns orange and the progress bar displays the operation status. When the operation is complete, the radio icon turns green.

5 To read codeplugs from multiple radios, click File→Read Radio.

The **Read Radio** dialog box appears.

6 Select the radio or radios and click Start Operation.

Once the reading operation begins, do not disconnect or turn off the radio. The radio icon turns orange and the progress bar displays the operation status. When the operation is complete, the radio icon turns green.

3.6

Reading Codeplugs from Radios

Prerequisites: Connect the radio to a PC, turn it on in the flashing mode, and wait until the radio icon appears on the list. It is possible to connect multiple radios at the same time.

When and where to use: You want to view a current configuration of a connected radio or radios.

Procedure:

1 To read a codeplug from a single radio, right-click the radios icon and select Read Radio.

Once the reading operation begins, do not disconnect or turn off the radio. The radio icon turns orange and the progress bar displays the operation status. When the operation is complete, the radio icon turns green. A codeplug displays.

2 To read codeplugs from multiple radios, click File→Read Radio

3 In the Read Radio dialog box select the radios.

4 Click Start Operation.

Once the reading operation begins, do not disconnect or turn off the radio. The radio icon turns orange and the progress bar displays the operation status. When the operation is complete, the radio icon turns green. Codeplugs for each selected radio display.



NOTICE: If the radio is protected by enhanced security (**Tools→Options→Security→Protection Mode**) and the **Protection Scope** is set to **Protect Radio**, the radio is authenticated before reading a codeplug.

3.7

Reading More than Supported Number of Codeplugs

The CPS can open several codeplugs at a time depending on the size of the codeplug and free memory.

When and where to use: You want to read more than the number of codeplugs that the CPS can support at a time.

Procedure:

1 If you read more than the supported number of codeplugs, a pop-out window displays all the opened codeplugs.

2 Perform one of the following options.

a To save and close codeplugs to free up memory, select the codeplugs and click Start Operation.

The selected codeplugs are saved in the default directory. If you free up memory by closing the other codeplugs that are already opened, you can open the codeplugs that are saved in the default directory.

- b To cancel all pending read-codeplug operations, click **Cancel**.

3.8

Writing a Codeplug to a Single Radio

Prerequisites: Connect the radio to a PC, turn it on in the flashing mode, and wait until the radio icon appears on the list. It is possible to connect multiple radios at the same time.

When and where to use: You want to write a codeplug to a single radio.



IMPORTANT: Hardware calibration values are tuned individually, that means that each radio has its unique codeplug.

For MTM5500: before connecting to CPS, connect the control head(s) to the transceiver and power up the radio.



NOTICE: To apply the changes to multiple compatible radios, use a **profile** or the **Copy Wizard** option with a master codeplug.

Procedure:

- 1 Open a codeplug from a data storage device or read it from a radio.
- 2 Modify the codeplug accordingly.
- 3 Save the codeplug.
- 4 To write the codeplug to the radio, click **File**→**Write Radio**.
- 5 Select the radio and click **Start Operation**.

Once the programming operation begins, do not disconnect or turn off the radio. The radio icon turns orange and the progress bar displays the operation status. When the operation is complete, the radio icon turns green.



NOTICE: If the radio is protected by enhanced security (**Tools**→**Options**→**Security**→**Protection Mode**) and the **Protection Scope** is set to **Protect Radio**, the radio is authenticated before writing a codeplug.

3.9

Writing a Master Codeplug to Multiple Radios

Prerequisites:

- Connect the radio to a PC, turn it on in the flashing mode, and wait until the radio icon appears on the list. It is possible to connect multiple radios at the same time.
- The codeplug must be compatible with the target radio or radios.
- All the programmed radios are of the exact same model.

When and where to use: You want to apply common settings to multiple, identical radios. Instead of writing individual codeplugs to each radio, you can prepare a single, **master codeplug** or a **profile**. Either one allows you to replicate common settings (user data) to another radio or radios.



IMPORTANT:

Using **Radio Copy Wizard** or a **profile** you overwrite user data (adjustable parameters) on the selected radio. Hardware calibration values (so important for each individual device) remain unchanged.

For MTM5500: before connecting to CPS, connect the control head(s) to the transceiver and power up the radio.

Procedure:

- 1 Open a codeplug from a data storage device or read it from a radio.
- 2 Modify the codeplug accordingly.
The modified codeplug becomes a master codeplug for multiple radios.
- 3 Save the master codeplug.
- 4 Click **File**→**Radio Copy Wizard**.
- 5 In the **Copy Wizard — Select Groups** dialog box, click **Select All**. Click **Next**>.
The **Copy Wizard** dialog box appears.
- 6 Optional: Perform the following actions:

If...	Then...
If you want CPS Plus to automatically assign consecutive ISSI numbers,	perform the following actions: <ol style="list-style-type: none"> a Select the Auto ISSI Assignment check box. b Enter the starting number. Each radio must have a unique ISSI.
If you want to enable a password on the selected radio,	perform the following actions: <ol style="list-style-type: none"> a Select the Enable Setting Password check box. b Enter the chosen password and confirm it. If the target radio is already protected by a password, this change will not apply.
If you want to activate the selected selling features on each radio,	select the Enable Selling Feature check box.

- 7 Select the radio or radios and click **Start Operation**.



IMPORTANT: Once the programming operation begins, do not disconnect or turn off the radio. The radio icon turns orange and the progress bar displays the operation status. When the operation is complete, the radio icon turns green.

- 8 Optional: If you did not assign ISSI values automatically, perform the following actions:
 - a Go to **Codeplug**→**Subscriber Unit Parameters**→**Radio ISSI**.
 - b Enter the value.



IMPORTANT: The value needs to match the ISSI enabled on the network.

- c Write the codeplug to the radio.



NOTICE: If the radio is protected by enhanced security and the **Protection Scope** is set to **Protect Radio**, the radio is authenticated before writing a codeplug.

3.10

Adding a First, New Radio to the System

Prerequisites:

- Connect the radio to a PC, turn it on in the flashing mode, and wait until the radio icon appears on the list. It is possible to connect multiple radios at the same time.
- This task requires a thorough knowledge about the system and network.

When and where to use: You want to configure a radio to make and receive calls on the network.

Procedure:

- 1 Read a codeplug from the new radio.
- 2 Assign ISSI. Go to **Codeplug**→**Subscriber Unit Parameters**→**Radio ISSI** and enter the value.



IMPORTANT: The value needs to match the ISSI enabled on the network.

- 3 If configured, users can preview the radio ISSI from the menu or as a home screen information, or a welcome screen. Copy the ISSI number and paste to the following fields accordingly:
 - a **Codeplug**→**Subscriber Unit Parameters**→**This Radio Private Number** — ISSI displays on a radio when the user navigates to **Menu**→**My Info**→**My Private Num**.
 - b **Codeplug**→**Display Parameters**→**Home Mode Display**→**Home Mode Display Text** — ISSI displays on a radio in the idle mode.
 - c **Codeplug**→**Display Parameters**→**Home Mode Display**→**Welcome Screen** — ISSI displays as a radio welcome screen; only if a screen saver is disabled.
- 4 Assign GSSI to talkgroups.

All Motorola Solutions radios support a folder structure for talkgroups. There can be a single level or dual level folder structure. Before you add GSSI to talkgroups, create the folders and the talkgroups.

- a To create a folder, go to **Codeplug**→**TalkGroups**→**TMO**→**TMO Folders List** and name each folder.
- b To make the folder visible and allow users to enter talkgroups, select the **Status** check box.



NOTICE: To fill out multiple fields with the same value or to select multiple check boxes in the same column, highlight the fields, right-click, and select **Fill Down**.

- c To define the capacity of the folder, enter the value for the **Number of Talkgroups in the Range**.



NOTICE: The total number of talkgroups for all folders determines the number of rows in the **Talkgroups In Folder** node.

- d To organize folders into a structure with subfolders nested underneath the parent folders, from the **Parent Folder**, select the primary one.
- e To prevent users from transmitting voice, select the **Receive Only** check box.
- f To create a talkgroup, go to **Codeplug**→**TalkGroups**→**TMO**→**TMO Talkgroup List**, name each talkgroup and enter the GSSI in to the **ID** field.

- g To set visibility properties for talkgroups, go to **Codeplug**→**TalkGroups**→**TMO**→**Talkgroups In Folder**, click a field under the **Name** column and select the talkgroup.

The following statuses are available:

Programmed

Users can see and select this talkgroup. Leave as the default status.

Not Programmed

Users cannot see nor select this talkgroup. It is also unreachable by Call Out messages.

Invisible

Users cannot see nor select this talkgroup but it is reachable by Call Out messages.



NOTICE: To quickly select a talkgroup, enter the first character of the name before scrolling down the talkgroup list.

- h Go back to **Codeplug**→**TalkGroups**→**TMO**→ **TMO Talkgroup List** and if needed, from the **Default Folder**, select the primary folder for each talkgroup.
- i If Announcement Talkgroups (ATG) are enabled on the network then each talkgroup can have one ATG assigned to it. To make the talkgroup ATG, select the **Announce Group** check box. You can allow users to start announcement calls. To assign to ATG, from the **Associated Announce Group** drop-down list, select the value.
- j Select a group priority if the network supports this feature.
- 5 Verify Group Cipher Key (GCK). Go to **Codeplug**→**TalkGroups**→**TMO Talkgroup List**→**GCK Number**.

GCK allows the radio to operate on networks that have this level of security.

- a To import the keys, click **File**→**Import**→**GCK KAR** or **SDMO KAG**.
- b Select the appropriate files and click **Import**.
- c For many talkgroups, more than one KAR or KAG file may be required. Make sure that you import all files.

Once the keys are imported, the **GCK Number** column displays the values. If no KAGs have been imported, it shows the default number **65536**.

- 6 Adjust the security settings. Go to **Codeplug**→**Security**.



IMPORTANT: Consult your network provider to ensure the correct setup.

- 7 Set the start scan frequency and a number of frequencies to scan. Go to **Codeplug**→**Mobility and System Parameters**→**Frequency List**→**Frequency List1 – Frequency List4** and enter the values.
- **Frequency List1** — the radio populates this list once it has registered on a network and so the CPS Plus cannot load frequencies.
 - **Frequency List2** — a list of permanent frequencies used on a network that can be used to enable faster initial registration.
 - **Frequency List3** and **Frequency List4** — use to force the radio to scan two sub bands. It can speed up the first registration of a radio on a network.

- **First Frequency to Scan** must match the lowest frequency used on the network.



NOTICE: It is not always a round number, such as 490.00000 MHz. For example a network that uses 12.5 kHz offsets may start at 490.0125 MHz.

- **Number of Frequencies** is normally set to 400.

- 8 Set Country Code and Network Code of the system to register on. Go to **Codeplug**→**Mobility and System Parameters**→**Address Extension**→**Country Code/ Network Code** and enter the values.
- 9 Save the changes.
- 10 Write the codeplug to the radio.



NOTICE: Each radio must have unique ISSI. If you write the codeplug to multiple radios, you can use the **Radio Copy Wizard** option and assign consecutive numbers of ISSI to each device.

Postrequisites: Test the radio on the network.

3.11

Adding Another, New Radio to the System

Prerequisites:

- Connect the radio to a PC, turn it on in the flashing mode, and wait until the radio icon appears on the list. It is possible to connect multiple radios at the same time.
- You have a master codeplug that you use for existing radios or you have a properly configured radio to read the codeplug from.
- The codeplug must be compatible with the target radio or radios.

When and where to use: You want to add another radio or radios to an existing fleet. You want the new radio to have the same configuration as the existing devices (master codeplug).



IMPORTANT: Using **Copy Wizard** or a **profile**, overwrites the user data (adjustable parameters) on the selected radio. Hardware calibration values (important for each individual device) remain unchanged.

Procedure:

- 1 Open a codeplug from a data storage device or read it from a radio.



NOTICE: The new and the existing radios must be of the exact same model.

- 2 Click **File**→**Radio Copy Wizard**.
- 3 In the **Copy Wizard — Select Groups** dialog box, click **Select All**.
- 4 Click **Next**>.

The **Copy Wizard** dialog box appears.

- 5 Optional: Perform the following actions:

If...	Then...
If you want CPS Plus to automatically assign consecutive ISSI numbers,	perform the following actions: <ol style="list-style-type: none"> a Select the Auto ISSI Assignment check box. b Enter the starting number. Each radio must have a unique ISSI.
If you want to enable a password on the selected radio,	perform the following actions: <ol style="list-style-type: none"> a Select the Enable Setting Password check box. b Enter the chosen password and confirm it.

If...	Then...
	If the target radio is already protected by a password, this change will not apply.
If you want to activate the selected selling features on each radio,	select the Enable Selling Feature check box.

6 Select the radio or radios and click **Start Operation**.



IMPORTANT: Once the programming operation begins, do not disconnect or turn off the radio. The radio icon turns orange and the progress bar displays the operation status. When the operation is complete, the radio icon turns green.

7 Optional: If you did not assign ISSI values automatically, perform the following actions:

a Go to **Codeplug**→**Subscriber Unit Parameters**→**Radio ISSI**.

b Enter the value.



IMPORTANT: The value needs to match the ISSI enabled on the network.

c Write the codeplug to the radio.



NOTICE: If the radio is protected by enhanced security and the **Protection Scope** is set to **Protect Radio**, the radio is authenticated before writing a codeplug.

3.12

Enabling a Standard Feature on a Radio

Prerequisites: Connect the radio to a PC, turn it on in the flashing mode, and wait until the radio icon appears on the list. It is possible to connect multiple radios at the same time.

When and where to use: You want to enable a feature on a radio or radios.

Procedure:

- 1 Open a codeplug from a data storage device or read it from a radio.
- 2 Go to **Codeplug**→**Feature Flags** and select the check box for the appropriate feature.
- 3 To write the codeplug to a radio, click **File**→**Write Radio** or use the right-click menu from the **Radio Icons List**.



IMPORTANT: Once the programming operation begins, do not disconnect or turn off the radio. The radio icon turns orange and the progress bar displays the operation status. When the operation is complete, the radio icon turns green.



NOTICE: To apply the changes to multiple compatible radios, use a **profile** or the **Copy Wizard** option with a master codeplug.

3.13

Requesting a License File for Selling Features

You want to obtain a license file for relevant selling features that can be enabled on your radio(s).

Prerequisites:

- Activate the CPS Plus application by loading the necessary entitlement or importing the relevant license file.
- Go to **License**→**Export Radio Information List** and export radio information to a file.

- To generate an offline package from CPS for the Integrated Terminal Management (iTM), ensure that the imported Release Packet and CPS version are compatible with the related release.

Procedure:

- 1 Click **License**→**Request License File**.
The **Request Radio Selling Features License File** dialog box appears.
- 2 Optional: If **Tools**→**Options**→**Licensing**→**Automatic Licensing Mode** is not selected, enter the **Entitlement ID** value and click **Load Entitlement**.
- 3 Click **Load Radios**.
- 4 Navigate to the radio information file and click **Open**.
- 5 Select the radio(s).
- 6 From the **Feature** list, select the items.
- 7 Click **Request License File**.
- 8 Wait for the response from the server and save the selling features license file to a chosen folder.

3.14


Enabling a Selling Feature on a Radio

Prerequisites:

- Ensure that you loaded the necessary entitlement or imported the relevant license file(s).
- Connect the radio to a PC, turn it on in the flashing mode, and wait until the radio icon appears on the list. It is possible to connect multiple radios at the same time.
- Close all codeplugs.

When and where to use: You want to update the configuration of the radios and add selling features, for example the WAP feature. Licenses for the paid features are stored in files that need to be downloaded from the license server. The availability of features depends on the radio model and the software version.

Procedure:

- 1 Click **License**→**Enable Radio Selling Features**.
The **Enable Feature** dialog box appears with all the connected radios listed.
- 2 From the **Feature** list, select the items.
- 3 Select the radio or radios and click **Start Operation**.
 **IMPORTANT:** Once the programming operation begins, do not disconnect or turn off the radio. The radio icon turns orange and the progress bar displays the operation status. When the operation is complete, the radio icon turns green.
- 4 To verify that the proper features are enabled on the radio, read the codeplug from the radio and go to **Codeplug**→**Feature Flags**.
- 5 Select the check box for the required feature.
- 6 To write the codeplug to a radio, click **File**→**Write Radio**.

You have added and enabled the selling feature to the radio.

3.15

Modifying a Codeplug Using an XML File

Prerequisites:

- Connect the radio to a PC, turn it on in the flashing mode, and wait until the radio icon appears on the list. It is possible to connect multiple radios at the same time.
- You have MS Excel 2003® or higher or other XML editor.

When and where to use: You want to modify radio configurations using an external XML file. It is especially useful when you want to change and apply the same configuration to multiple radios of the same type by creating a template (a master codeplug). For example, in a special event you want to configure a fleet of radios with the same operational talkgroups. An XML file can be prepared outside CPS Plus (use MS Excel 2003® or higher), then imported and applied to a master codeplug.

Procedure:

- 1 Open a codeplug from a data storage device or read it from a radio.
- 2 **To export an XML file from CPS Plus:** click **File**→**Export**→**User Data**
- 3 In the **Feature List** dialog box, select user data and click **OK**.
The file manager dialog box appears.
- 4 Choose a location, enter the file name and click **Save**.
After a confirmation message appears, you can switch from CPS Plus to an external XML editor to modify user data values.
- 5 **To modify the XML file:** launch the XML editor, open the XML file that you exported from CPS Plus, modify the values, and save the file as the XML format.
You have modified the XML file. You can switch to CPS Plus and import the **User Data** file.
- 6 In CPS Plus, verify that the codeplug you want to modify using the XML file is opened.
- 7 Clear the unique list before importing user data.
- 8 **To import the XML file to CPS Plus,** click **File**→**Import**→**User Data**.
The file manager dialog box appears.
- 9 Choose a location, select the file, and click **Open**.
The importing operation begins. Wait until a confirmation message appears.
- 10 Save the codeplug.

You modified the codeplug using data from the XML file. You can use the modified codeplug as a master codeplug.



NOTICE: To apply the changes to multiple compatible radios, use a **profile** or the **Copy Wizard** option with a master codeplug.

3.16

Upgrading a Radio

Prerequisites:

- Connect the radio to a PC, turn it on in the flashing mode, and wait until the radio icon appears on the list. It is possible to connect multiple radios at the same time.
- Obtain the proper software release pack. See [Importing Release Packets to CPS Plus on page 54](#).

- If you are upgrading a mobile radio version along with languages, enable the desired languages for the transceiver in the codeplug. See [Adding Languages to Radios on page 61](#).

When and where to use: You want to load newer software to a radio.



NOTICE:

Due to USB limitations, you can upgrade **up to 16 radios** at the same time.

When upgrading MTM5x00, MTM800FuG, and MTM800FuG ET radios to MR10.6.9, remember to load and align the languages of the control head and the transceiver.

To upgrade the radio from any pre-MR10.6.3 release to the MR10.6.9 release (or future releases), first you need to upgrade the radio to the 10.6.3c release, then restart it, and finally upgrade it to the MR10.6.9 release.

It is impossible to downgrade an MTP3xx0 radio from the MR10.7 release to the MR10.5/MR10.5.1 release.



IMPORTANT: Before upgrading MTP3xx0 radios from the MR10.5/MR10.5.1 release to the MR10.7 release, ensure that the radio battery level is no less than 50%.

Procedure:

- 1 Click one of the following:
 - **Tools**→**Upgrade Radio**
 - To roll back a radio to its previous version without losing user data, use the **Restore Radio** function
 - To upgrade a radio between MR5.6 and MR5.9 or post-MR5.9 version, use the **Up/Downgrade Radio Lite** function.
 - **Tools**→**Up/Downgrade Radio Lite**
 - Upgrade Lite only upgrades radios that are version pre-MR5.9 to a version that is MR5.9 or newer.



NOTICE: The following radios are supported by Upgrade Lite:

- MTP850
 - MTH800
 - MTM800
 - MTM800E
 - NGCH
- Downgrade Lite only downgrades a radio to a version that is MR5.9 or newer.



NOTICE: This removes all the user data and only keeps the selling feature, factory and sensitivity data after up/downgrade. If you want to keep the user data during the upgrade, use the **Upgrade Radio** function instead.

- 2 From the **Up/Downgrade to** drop-down list, select the software version.



IMPORTANT: When upgrading the radio to the MR10.6.3c release, select the R14xxx8288 software version for the control head. Make sure the **Keep Control Head and Transceiver consistent** option is enabled.

- 3 From the **Languages** drop-down list, select the language(s) that are to be used on the radio.



IMPORTANT: For mobile radios, select matching languages for both transceiver and control head.

- 4 Select the radio or radios and click **Start Operation**.



IMPORTANT: After upgrading the radio to the MR10.6.3c release, restart the radio before starting the upgrade to the MR10.6.9 release.

Once the programming operation begins, do not disconnect or turn off the radio. The radio icon turns orange and the progress bar displays the operation status. When the operation is complete, the radio icon turns green.

Postrequisites: To verify that the operation is successful and to find logs from other operations, go to **Window**→**Task Window**.

3.17

Changing a Radio Screen Saver

Prerequisites:

- Prepare a **GIF** image (maximum **256 colors**) on a disk (an animated GIF file is also supported for all platforms except MTP850S, MTP850FuG, MTP830S, MTP830FuG and CEP400).
- Resize the image if needed – the recommended dimensions are **130x130 pixels** for portable radios, **640x480 pixels** for mobile control heads, and **240x320 pixels** for TSCH (Telephone Style Control Head).
- Ensure that the graphic file size does not exceed **18 kB** for portable radios and **40 kB** for mobile radios.



NOTICE: It applies only to radios with a color display.

When and where to use: You want to replace a default radio screen saver image with a custom picture, for example the department logo. The screen saver image is a decorative, background element for the radio display (it does not save the screen or a battery).



NOTICE: To apply the changes to multiple compatible radios, use a **profile** or the **Copy Wizard** option with a master codeplug.

Procedure:

- 1 Open a codeplug from a data storage device or read it from a radio.
- 2 To import the image to CPS Plus, click **File**→**Import**→**Screen Saver**.
- 3 In the **Import Screen Saver** dialog box, click **Load**.

The file manager dialog box appears.

- 4 Choose a location, select the file, and click **Open**.

The **Import Screen Saver** dialog box appears. You can preview the selected image.

- 5 Click **Import**.

The `Operation completed successfully` message appears.



NOTICE: For MTM5x00, MTM800FuG, and MTM800FuG ET, the screen saver is imported to the control head codeplug, not the transceiver codeplug. For MTM800FuG, if **Codeplug**→**Control Head Configurations**→**Control Head Settings**→**Control Head Type** is set to **Handset**, the screen saver is imported to the transceiver codeplug.

- 6 To adjust the screen saver parameters, go to **Codeplug**→**Display Parameters**→**Screen Saver** and modify accordingly.

- 7 To verify that the screen saver option is available from the radio menu, go to **Codeplug**→**Display Parameters**→**Menu Configuration**→**Setup**→**Display**→**Screen Saver**.

Postrequisites: Write the codeplug to the radio.



NOTICE: You can assign **One-Touch Button** to this function.

Chapter 4

CPS Plus Operations

The following topics are designed to help you perform specific tasks using the CPS Plus application.

4.1

Using the USB Driver Tool

Prerequisites:

- CPS is installed on the computer.
- You know your CPS version.
- You understand the concept of switching between the new and old USB drivers.

When and where to use: After installing the CPS Plus application, you can still retain previous versions of CPS. Legacy CPS may be needed if you support radios running on legacy software platforms, not supported by the new CPS Plus (lower than MR5.9). The USB Driver Tool ensures that you always install the proper USB drivers for relevant CPS. If you want to use the legacy CPS (versions older than R6x.575.01) with old radios (MR5.9 and older), use **Install Old Driver**. Each time when you install the drivers, you overwrite the existing USB drivers (newer or older). Therefore, to program radios using CPS Plus after using the legacy, old CPS and radios, use **Install New Driver**. CPS Plus always works with the new USB drivers.

Procedure:

- 1 Click **Start**→**Programs**→**Motorola**→**USB Driver Tool**.
- 2 In the **CPS Driver Tool** window, click **Install Old Driver** or **Install New Driver** to install the relevant driver.



NOTICE: If the **Software Installation** window appears, click **Continue Anyway**.

The installation begins. Wait until the following message appears: *Installation finished! Press any key to continue....*

4.1.1

Radio Software Release Versions Matrix

CPS Plus supports radio software from MR5.9 onwards. For older radio software, use the legacy CPS.

Table 23: CPS Plus – Samples of Radio Software Versions

Radio Model	MR5.9	MR5.10	MR5.11	MR5.12
MTP850, 800MHz	R10.xxx.6511	R10.xxx.6911	R10.xxx.7108	R10.xxx.7412
MTM800E Con- trol Head/ Trans- ceiver	R14.xxx.6511/ R17.xxx.6511	R14.xxx.6911/ R17.xxx.6911	R14.xxx.7108/ R17.xxx.7108	R14.xxx.7412/ R17.xxx.7412


4.2

Importing Release Packets to CPS Plus

Prerequisites: You have the release packet on the disk.

When and where to use: You have received new release packets and you want to use CPS Plus to upgrade radios. Also, when you had your CPS Plus repository folder removed from the disk (for example after a disk failure).

Procedure:

- 1 Click **Release Packet**→**Import Release Packet**.
- 2 In the **Open** window, select the release packet file and click **Open**.
 **NOTICE:** To select multiple files, press and hold the **CTRL** key. To select a block of files, press and hold the **SHIFT** key.
Importing begins. It takes approximately 20 seconds to import a single packet.
- 3 After the operation is complete, click **OK**.
CPS Plus restarts.

CPS Plus stores the packet in the default repository folder. The content of the packet (software files, codeplugs, audio profiles and audio device descriptors) is ready to use with your radios.

4.3

Converting Codeplug/Profile Radio Model

Prerequisites:

- Ensure that the release packet supporting the target radio model is imported into the CPS.
- The source codeplug or profile is opened in the CPS.

When and where to use: Use to convert a codeplug or profile for use with other radios.

Procedure:

- 1 Click **File**→**Convert Model**.
- 2 In the **Convert Model** window, select the target radio models that you want to convert the codeplug or profile to.
- 3 In the **Target Version** column, select the target version the codeplug or profile will be converted to.
- 4 Click **Convert** and allow the operation to finish.
The new converted codeplug or profile window appears.

Postrequisites: After converting the codeplug or profile for a radio it is necessary to save the results for each new window.

4.4

Copying Configuration Between Codeplugs and Radios

Prerequisites:

- The codeplug parameters must be valid.
- The codeplug must be compatible with the target codeplug or codeplugs.
- The codeplug must be compatible with the target radio or radios.

When and where to use: You want to copy parameter values from one codeplug to other codeplug or codeplugs, or directly to other radio or radios. CPS Plus provides multiple ways to replicate configuration between codeplugs or radios.

- 1 You can copy configuration (whole nodes) between two codeplugs, for example all values for the **Security** node from a codeplug A to a codeplug B.
- 2 You can copy configuration (entire or only selected user data) from a master codeplug to other codeplugs or radios using the **Codeplug Copy Wizard** and **Copy Wizard** options.
- 3 You can create a profile with a subset of specified codeplug parameters. You can store the profiles on the disk and apply to codeplugs or radios anytime (the **Copy Wizard** is a real-time option) or even share with other CPS Plus users.



NOTICE: If you copy **Subscriber Unit Parameters** to multiple radios, verify that each radio has a unique **ISSI**.

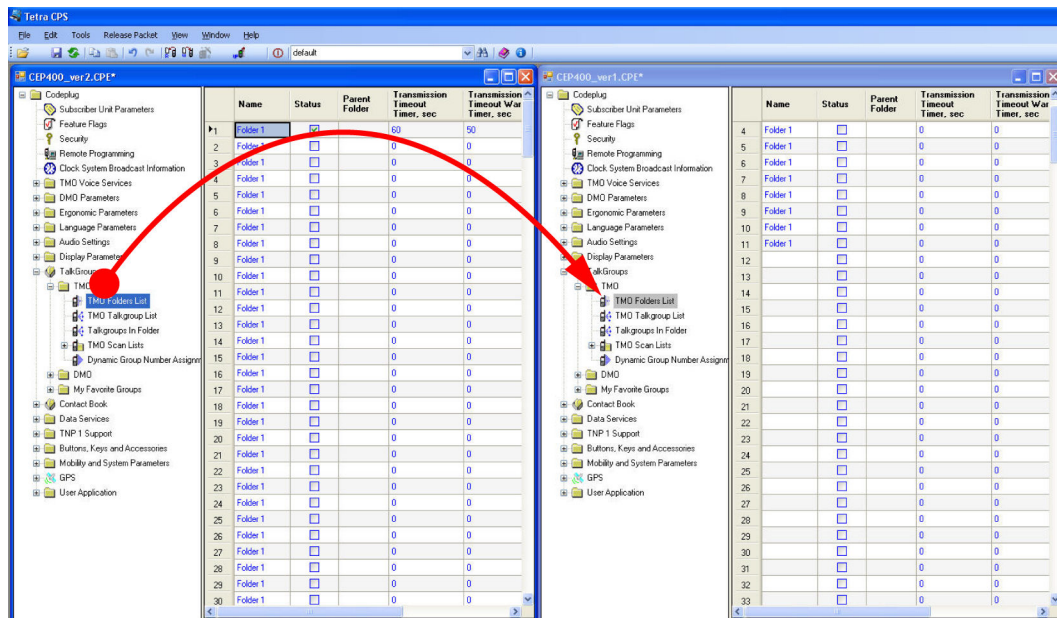


IMPORTANT: Using **Copy Wizard** or a **profile**, overwrites the user data (adjustable parameters) on the selected radio. Hardware calibration values (important for each individual device) remain unchanged.

Procedure:

- 1 To copy parameters between a **codeplug A** and a **codeplug B** follow the substeps:
 - a Open the two codeplugs or read the codeplugs from radios.
 - b To fit the two codeplugs on the screen, click **Window**→**Tile Vertical**.
 - c Click the relevant node in the **codeplug A** to select it.
 - d Drag the node from the **codeplug A** to the corresponding node in the **codeplug B**.

Figure 10: CPS Plus – Drag-and-Drop Operation Between Codeplugs



You have copied parameter values from the selected node in the **codeplug A** to the same node in the **codeplug B**.

- e Save changes in the **codeplug B**.



NOTICE: When you attempt to copy audio settings between non-compatible radios (For example, between MTP850FuG and MTP850Ex), CPS copies only those fields that have identical paths. The remaining fields in the target codeplug are left unchanged. CPS does not indicate which fields have been copied.

- 2 To copy parameters from a master codeplug to other codeplugs using the **Codeplug Copy Wizard**, follow the substeps:

- a Open the master codeplug from a disk or read it from the radio.

- b Click **File**→**Codeplug Copy Wizard**.

The **Codeplug Copy Wizard — Select Group** dialog box appears.

- c Select a group or groups with user data parameters and click **Next**.



NOTICE: Lower-level user data is selected automatically.

Step example:You want to copy over all Ergonomic Parameters. When you select the **Ergonomic Parameters** checkbox in the **Codeplug Copy Wizard – Select Group** window, all user data of lower level (**Keypad, Tones, Dialing Methods**, and so forth.) is selected automatically.

The **Select the Target Codeplug Files** dialog box appears.

- d Select a codeplug or codeplugs and click **Open**.

The **Target Codeplugs** dialog box appears. The compatible codeplugs are selected.

- e Click **Copy**.

The operation begins. Wait until it is completed. CPS Plus copies the parameters and saves changes to the updated codeplugs.

- f To change ISSI, open the codeplug, go to **Codeplug**→**Subscriber Unit Parameters**→**Radio ISSI** and enter the value.

- 3 To copy parameters from a master codeplug to radios using the **Copy Wizard**, follow the substeps:

- a Open the master codeplug from a disk or read it from the radio.

- b Click **File**→**Copy Wizard**

The **Copy Wizard — Select Group** dialog box appears.

- c Select a group or groups with user data parameters and click **Next**.



NOTICE: Lower-level user data is selected automatically.

Step example:You want to copy over all Ergonomic Parameters. When you select the **Ergonomic Parameters** checkbox in the **Copy Wizard – Select Group** window, all user data of lower level (**Keypad, Tones, Dialing Methods**, and so forth.) is selected automatically.

The **Copy Wizard** dialog box appears.

- d Select the radio or radios and click **Start Operation**.

Auto ISSI Assignment

To make CPS Plus automatically assign consecutive ISSI numbers (each radio must have a unique ISSI), select the check box and enter the starting number. Otherwise, after applying the master codeplug to the radios, you must manually assign ISSI to each device.

Enable Selling Feature

To activate the selected selling features on each radio, plug in the selling feature dongle and select the check box.

Once the programming operation begins, do not disconnect or turn off the radio. The radio icon turns orange and the progress bar displays the operation status. When the operation is complete, the radio icon turns green.

4.5

Comparing Codeplugs

When and where to use: You want to examine differences in configuration between two codeplugs and copy the values between the codeplugs.

Procedure:

- 1 Open the two required codeplugs.
- 2 Click **File**→ **Compare Codeplug**.
- 3 In the **Select Document** window, select the check boxes and click **OK**.



NOTICE:

If the **OK** button is inactive it means that the codeplugs are not compatible. Verify the version and the model and open the correct file.

Select the **Bypass the User Defined Language comparison** checkbox to bypass the comparison of the User Defined Language Nodes of the two codeplugs.

The **Compare Codeplug** window with listed differences appears.

- 4 To filter the codeplug tree and display only the different nodes, click **Diff Features**.
The codeplug tree shows only the different nodes but all the fields within these nodes.
- 5 To filter the codeplug tree and display only the different nodes and the particular different fields within these nodes, click **Diff Fields**.

The codeplug tree shows only the differing nodes and the differing fields within these nodes.



NOTICE: Click **Report** to save the comparison results to a *.txt file.

- 6 (Optional) To copy a value from one codeplug to another, highlight the appropriate codeplug path in the **Compare Codeplug** window.
- 7 (Optional) From the **Compare Codeplug** window toolbar press <- or -> depending on which value you want to copy.
The changed codeplug value becomes highlighted.
- 8 Close the window and chose the codeplug(s) to save. Press **Save**.

4.6

Validate Codeplug/File

Prerequisites:

- The codeplug or profile is opened in the CPS.

When and where to use: Use to verify if there are any invalid fields in the codeplug or profile before copying them to the radio.

Procedure:


- 1 Select the desired codeplug or profile you would like to verify.
- 2 Click **File**→**Validate Codeplug/File**
 - If passed a message box saying `Valid profile/codeplug. It`s applicable to be copied to other radio. is displayed.`
 - If failed the **Potential Invalid Fields** window is displayed. Double-click on each field displayed in the window and correct the values.

4.7

Upgrading a Codeplug

When and where to use: You have received a new release packet. You can use the new codeplugs (modify if needed) or upgrade your older, already configured codeplugs, and add the latest radio features and parameters. After this operation, the user data values in your old codeplug remain unchanged and only the newly added parameters are set to defaults.

Procedure:

- 1 Click **File**→**Open Codeplug with Up/Downgrade**.
- 2 Select the file and click **Open**.
 -  **NOTICE:** You can select multiple files.
- 3 From the **Target Version** drop-down list in the **Up/Downgrade Codeplug** window, select the software version.
- 4 Click **Start Operation**.

After the upgrade is complete, the individual codeplugs open.
- 5 Save the upgraded codeplug.

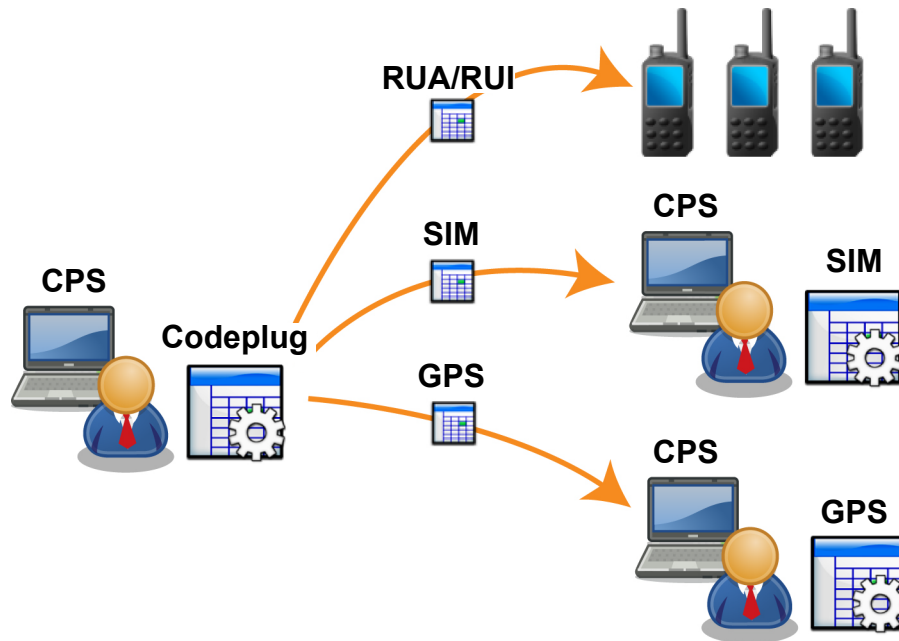
Postrequisites: If needed, configure the new parameters.

4.8

Profile-Based Configuration Modification

Profile is a subset of specified parameters. Unlike codeplugs, profiles contain only selected nodes and fields. Profiles are smaller than codeplugs; therefore programming time for a single profile is much shorter than for an entire codeplug.

Figure 11: CPS Plus – Using Profiles



Examples for Using Profiles

- 1 You have a codeplug with default values. You want to have it configured according to operational requirements. You want to delegate the configuration to engineers with specific knowledge domains for example GPS experts, audio experts, and so on. You create separate profiles with specific nodes and send them to the engineers.
- 2 You received an announcement about an upcoming event and as a result the radios must be reconfigured for a weekend. It turned out that only Audio Settings must be temporarily tuned up. You generate two profiles with Audio Settings. The first profile contains current settings. The second profile is modified according to the new requirements for the weekend event. You program your radios for the event. After the weekend, you revert the changes using the profile with the original audio values.
- 3 You want to make a minor change to the codeplug and replicate the changed configuration among multiple radios. Creating a profile and writing it to multiple radios is efficient especially when your change involves a single or a few related fields, for example enabling/disabling features.

4.8.1


Creating a Profile

When and where to use: You want to create a configuration file with a subset of specified parameters from a codeplug. You can use profiles with codeplugs or radios. Profiles are smaller than codeplugs; therefore programming time for a single profile is much shorter than for an entire codeplug.

Procedure:

- 1 Open a codeplug from a data storage device or read it from a radio.
- 2 To create a profile, click **File**→**Generate Profile**.
The **Generate Profile — Select Groups** dialog box appears.

- 3 Select a group or groups with user data parameters and click **Next**.

 **NOTICE:** Lower-level user data is selected automatically.

The file manager dialog box appears.

- 4 Choose a location, enter the file name and click **Save**.

Postrequisites:To modify the profile, click **File**→**Open Profile** and adjust the parameters accordingly.

4.8.2

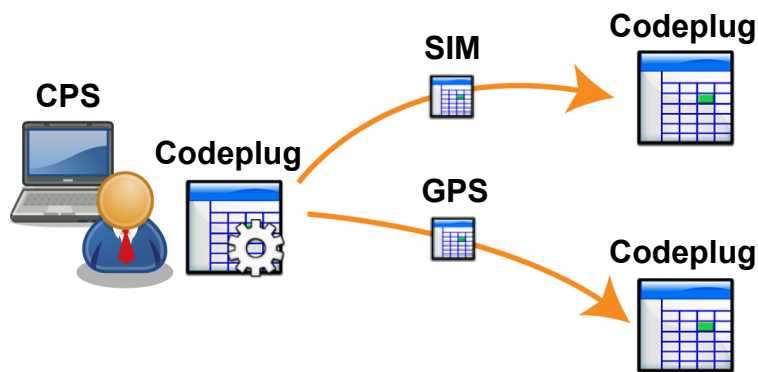
Applying Profiles to Codeplugs

Prerequisites:

- The codeplug is opened and active.
- The profile and the codeplug are for the same radio model type.
- The profile version is not higher than the codeplug version.

When and where to use:To replicate configuration from a profile to a codeplug.

Figure 12: CPS Plus – Applying Profiles to Codeplugs



Procedure:

- 1 Click **File**→**Apply Profile to Codeplug**.
- 2 In the **Open** window, select the profile and click **Open**.

Configuration from the opened profile is applied to the codeplug.

4.8.3

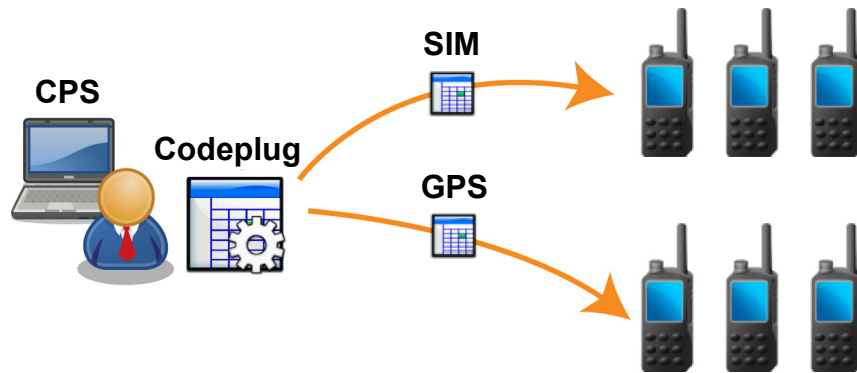
Applying Profiles to Radios

Prerequisites:

- Connect the radio to a PC, turn it on in the flashing mode, and wait until the radio icon appears on the list. It is possible to connect multiple radios at the same time.
- You have the profile file on the disk.
- The profile is appropriate for the radio model type.
- The profile version is not higher than the radio version.

When and where to use:To replicate configuration from a profile to a radio.

Figure 13: CPS Plus – Applying Profiles to Radios



Procedure:

- 1 Click **File**→**Apply Profile to Radio**.
The file manager dialog box appears.
- 2 Select the required profile and click **Open**.
The **Apply Profile to Radio** dialog box appears.
- 3 Select the radio or radios and click **Start Operation**.
Once the programming operation begins, do not disconnect or turn off the radio. The radio icon turns orange and the progress bar displays the operation status. When the operation is complete, the radio icon turns green.

4.9

Adding Languages to Radios

Prerequisites:

- Connect the radio to a PC, turn it on in the flashing mode, and wait until the radio icon appears on the list. It is possible to connect multiple radios at the same time.
- The radio software supports the chosen language.
- The radio software ships with default language, it is highly recommended to add local language to the first codeplug.

When and where to use: You want to localize the radio settings. In other words, after programming multiple language packs to the radio, the radio user can choose a preferred language from the radio menu.

Procedure:

- 1 Click **Tools**→**Radio Languages Settings**.
The **Languages** dialog box appears.
- 2 From the drop-down list, select a language.



NOTICE: To define a default language pack (always selected languages), click **Tools**→**User Options** →**Default Language Packs** , then select the default language packs and click **OK**.

3 Select the radio or radios and click **Start Operation**.

Once the programming operation begins, do not disconnect or turn off the radio. The radio icon turns orange and the progress bar displays the operation status. When the operation is complete, the radio icon turns green.

4 To activate a specific language on a radio, open or read the codeplug from the radio.

5 Go to **Codeplug** → **Language Parameters** → **Language Settings**.

6 Select a language.

7 Select the radio or radios and click **Start Operation**.

Once the programming operation begins, do not disconnect or turn off the radio. The radio icon turns orange and the progress bar displays the operation status. When the operation is complete, the radio icon turns green.

Postrequisites: Radio users can select a local language using the language menu on the radio.

4.10

Importing Audio Templates to CPS Plus

Prerequisites:

- Close all codeplugs.
- You have an audio template file (*.stf) or an audio template package (*.sfts).

When and where to use: Default audio template files are included in release packets. In some cases, engineers can provide you with separate, customized templates. You can import them to the CPS Plus repository and use for radio audio profiles.

You cannot create audio templates using CPS Plus.

Procedure:

1 Click **Tools** → **Import/Remove Audio Template Files**.

The **Import/Remove Audio Template Files** window appears.

2 To import a new audio file or an audio package, click **Import**.

3 To replace an existing audio template, select the file and click **Remove**. Import the new file afterwards.

4.11

Applying Audio Templates to Radios

Prerequisites:

- The radio must support audio profiles.
- You imported audio templates to CPS Plus.

When and where to use: There are many situations where the demand of audio quality changes according to the working environment. For example, an airport worker, who works partly in a noisy outdoor field and partly inside the relatively quiet airport lobby requires different audio settings for those

two environments. Having different audio profiles programmed on the radio, the radio user can switch between conditions-specific audio settings when needed.



NOTICE: There is a clear distinction between an audio template and an audio profile. Motorola Solutions engineers provide audio templates (for example Outdoor, Indoor, Street Use, General) with a range of default values which customers can adjust. The customer can apply the audio template to audio profiles (for example Outdoor for User Profile 1, Indoor for User Profile 1) and program them to radios.

Procedure:

- 1 Open a codeplug from a data storage device or read it from a radio.
- 2 Go to **Codeplug**→**Audio Settings**→**User Profile 1 – User Profile 10**→**Select Template**.
- 3 From the drop-down menu, select the template for this **User Profile**.
- 4 Repeat the task for other user profiles, if needed.
- 5 Save the codeplug.
- 6 Write the codeplug to the radio.

The radio user can select an audio profile from the radio menu.

Postrequisites:



NOTICE: You can assign **One-Touch Button** to this function.

4.12

Importing Audio Tones to the Codeplug

Prerequisites:

- Only the Advisor™ TPG2200 Pager supports this feature.
- You have an audio tones file (*.wav) that is sampled with 8000 Hz, quantized with 16 bits, and normalized to the full dynamic range smaller than 100 KB.

When and where to use: You can import and store your own audio tones to the codeplug and pager. These tones can be selected as indication tones.

Procedure:

- 1 Open the codeplug from a data storage device or read it from the pager.
- 2 Go to **Codeplug**→**Ergonomic Parameters**→**User Tones**.
- 3 At **User Tone 1**, click **Import**.
- 4 Choose a location, select the file, and click **Open**.
- 5 Repeat the task for other user tones, if needed.
- 6 Save the codeplug.
- 7 To apply the audio tones to the pager, write the codeplug to the pager.

4.13

Removing Audio Tones from the Codeplug

Prerequisites: Audio Tones are already stored in the codeplug. You can see the name of the audio tones at **Codeplug**→**Ergonomic Parameters**→**User Tones**→**User Tone Alias**.

Procedure:

- 1 Open the codeplug from a data storage device or read it from the pager.
- 2 Go to **Codeplug**→**Ergonomic Parameters**→**User Tones**.
- 3 At the selected user tone, click **Remove**.

The **User Tone Alias** becomes blank to indicate that the audio tones file is removed from the codeplug.

- 4 Repeat the task for other user tones, if needed.
- 5 Save the codeplug.
- 6 To remove the audio tones from the pager, write the codeplug to the pager.

4.14

Importing Audio Device Descriptors to CPS Plus

Import Audio Device Descriptors (ADDs) to ensure acceptable audio performance for every accessory connected to next generation Motorola Solutions mobile and portable radio models (MTM800FuG, MTM5xx0, MTP3xx0, MTP6xx0).

An ADD is a file containing relevant audio parameters required for a proper RX/TX configuration of a particular audio accessory. One ADD defines only one audio accessory, so the number of ADDs corresponds to the number of supported accessories.

ADDs are listed in the order they are imported. You can change the default order by removing all ADDs and importing them again in the preferred order. It is recommended to remove unused ADDs (see [Removing Audio Device Descriptors from CPS Plus](#)).

You cannot create an ADD using CPS Plus.



NOTICE: If you are unable to find the **Accessory List** node, your radio model does not support ADD files. All information about the accessories hardware is included in the audio templates and you can skip this procedure.



IMPORTANT: The Car Kit will not work unless relevant ADD files for the related accessories are imported.

Prerequisites:

- Your accessory is not listed in the following codeplug table: **Codeplug**→**Buttons, Keys and Accessories**→**Accessory List**
- You have an Audio Device Descriptors (*.add) file. These files are provided separately by Motorola Solutions.

Procedure:

- 1 Open a codeplug from a data storage device or read it from a radio.
- 2 To import the ADD file, go to **Codeplug**→**Buttons, Keys and Accessories**→**ADD Import / Remove**.
- 3 Click **Import**.
The file manager dialog box appears.
- 4 Choose a location, select the file, and click **Open**.

The codeplug stores information about the accessories specified in the *.add file. After programming, the radio supports the listed accessories.

4.15

Removing Audio Device Descriptors from CPS Plus

Prerequisites: Audio Device Descriptors are already stored by CPS and you can see a list of supported accessories in the following codeplug table: **Codeplug**→**Buttons, Keys and Accessories**→**Accessory List**.

When and where to use: Some radio models (MTP3xx0, MTP6xx0) use Audio Device Descriptors for compatible IMPRES accessories (with an ADS chip). In such cases, a separate ADD file holds information about the hardware and a separate audio template provides audio settings for the accessory. You can import an ADD file and store the relevant data in the CPS repository. That means that you can have your own, custom audio values for the attached accessory, different than those stored by the ADS chip itself. You cannot create an ADD file using CPS Plus.



NOTICE: If you are unable to find the **Accessory List** node, that means that your radio model does not support ADD files. All information about accessories hardware is in audio templates. You can skip this procedure.

Procedure:

- 1 Open a codeplug from a data storage device or read it from a radio.
- 2 To remove an accessory from the codeplug, go to **Codeplug**→**Buttons, Keys and Accessories**→**ADD Import / Remove**.
- 3 Click **Remove**.
The **Remove Accessory** dialog box appears.
- 4 Select the accessory and click **OK**.
- 5 To save the codeplug, go to **File**→**Save as**.
A dialog box appears.
- 6 Choose the location and a proper file name, and click **Save**.
CPS stores on the disk and updates the codeplug with the information about the imported hardware.

The codeplug no longer stores information about the removed hardware. After programming, the radio no longer supports the removed accessory.

4.16

Restoring a Radio

Prerequisites:

- You have a relevant software release packet on a disk.



NOTICE: After you import a release packet using the **Import Release Packet** option, CPS Plus stores all the software components in the following directory: `c:\Program Files\MotorolaSolutions\Tetra CPS Plus\Bin\repository_link_folder\`.

- You have copies of the relevant codeplugs in the backup folder.



NOTICE: Each time after reading a radio, CPS Plus automatically backs up each codeplug and stores in the following directory: `c:\Program Files\MotorolaSolutions\Tetra CPS Plus\BackupCodeplugs\`.

When and where to use: You want to downgrade a radio. In other words, you want to write a previous version of software to the radio. For example, you wrote a newer beta software to the radio for testing purposes and afterwards, decided to revert the radio to its previous configuration.



NOTICE: After this operation, the user data values remain unchanged.

Procedure:

- 1 Click **Tools**→**Restore Radio**.
- 2 From the **Restore To** drop-down list in the **Restore Radio** window , select the software version. CPS Plus automatically selects the appropriate software for the radio.
- 3 Select the radio or radios and click **Start Operation**.

Once the programming operation begins, do not disconnect or turn off the radio. The radio icon turns orange and the progress bar displays the operation status. When the operation is complete, the radio icon turns green.



IMPORTANT: If the radio software version, that you selected, does not match the codeplug version, that resides on the radio, an error message appears. Verify that the radio software used for restoring and the codeplug that resides on the restored radio have the same version.

4.17

Recovering a Radio

Prerequisites:

- The **Tools**→**Options**→**Recovery** is set to **Detect corrupted software but let me start recovery manually**.
- You connected the radio to PC and turned it on in flashing mode.
- The radio icon displays a red warning sign and the context-menu in the Radio Icons List is not available for the radio.
- You are unable to read the radio.
- You have a relevant software release packet on a disk.



NOTICE: After you import a release packet using the **Import Release Packet** option, CPS Plus stores all the software components in the following directory: `c:\Program Files\MotorolaSolutions\Tetra CPS Plus\Bin\repository_link_folder\`.

- You have copies of the relevant codeplugs in the backup folder.



NOTICE: Each time after reading a radio, CPS Plus automatically backs up each codeplug and stores in the following directory: `c:\Program Files\MotorolaSolutions\Tetra CPS Plus\BackupCodeplugs\`.

When and where to use: To manually recover the corrupted areas of the radio flash memory (occurred due to programming errors) and write the correct software components again.



NOTICE: CPS Plus can trigger the recovery automatically. Go to **Tools**→**Options**→**Recovery** , select the **Detect corrupted software and start recovery automatically** mode and let CPS Plus perform the recovery when needed. CPS Plus uses radio software from the release packet repository and copies of compatible codeplugs. If all software components (release packets, backup codeplugs) are proper and located on the disk, CPS Plus automatically selects the appropriate radio software and starts the process.

Procedure:

- 1 To verify that the radio is corrupted, click **File**→**Read Radio**.

The **Read Radio** dialog box appears. You are unable to select the radio and the description line displays: *The radio is corrupted. Please use Recover Radio to repair it and try again.*

- 2 Click **Tools**→**Recover Radio**.
- 3 From the **Recover To** drop-down list in the **Recover Radio** dialog box, select the software version.
- 4 Select the radio or radios and click **Start Operation**.

Once the programming operation begins, do not disconnect or turn off the radio. The radio icon turns orange and the progress bar displays the operation status. When the operation is complete, the radio icon turns green.

Once the radio is recovered, the radio icon turns green. You can read the radio.

4.18

Applying a Hotfix File

Prerequisites:

- You have the appropriate .hfx hotfix file.
- Connect the radio to a PC, turn it on in the flashing mode, and wait until the radio icon appears on the list. It is possible to connect multiple radios at the same time.

When and where to use: You received a hotfix file that contains customized values of codeplug parameters. You want to fix radios configuration using the hotfix file.

Procedure:

- 1 Locate the hotfix file on the disk, using the Windows Explorer.

- 2 Double-click the hotfix file.

CPS Plus is brought to front and the **Select Radio** dialog box appear.

- 3 Select the radio or radios and click **Start Operation**.

Once the programming operation begins, do not disconnect or turn off the radio. The radio icon turns orange and the progress bar displays the operation status. When the operation is complete, the radio icon turns green.

Postrequisites: Verify that the radio settings are correct.

4.19

Collecting Radio CPU ID


You want to collect the CPU ID that identifies your radio or control head.

Prerequisites:

- Connect the radio to a PC, turn it on in the flashing mode, and wait until the radio icon appears on the list. It is possible to connect multiple radios at the same time.

Procedure:

- 1 Click **Tools**→**Display Radio CPU HW ID**.
- 2 In the **Radio CPU HW ID List** box, perform one of the following actions:

If...	Then...
If you want to copy the CPU ID in a text data format,	<ol style="list-style-type: none">a Highlight the relevant cell in the table.b Click Copy Selection to Clipboard or press CTRL + C.c Paste the CPU ID into any text editor. <p> NOTICE: It is possible to highlight multiple cells. To highlight the whole column, click the column header.</p>
If you want to save all the CPU ID data,	<ol style="list-style-type: none">a Click Save All to File.b Navigate to a selected location, enter a chosen file name and click Save. <p>The CPU ID of all the radios in the list is saved to a <code>.CSV</code> file.</p>

4.20

Collecting Runtime Log

You can use the AT Command to collect mobility log and Short Data Services (SDS) or Call-out data from the radio or pager.

Prerequisites:

Connect the radio to a PC, turn it on in the flashing mode, and wait until the radio icon appears on the list. It is possible to connect multiple radios at the same time.

Procedure:

- 1 Click **Tools**→**Collect Runtime Log**.
- 2 The **Read Radio** pop-up window displays all the connected radios and general information such as **Model Name**, **Serial Number**, **TEI**, and **Radio Version**.
- 3 Select the required radios.
- 4 Click **<Browse...>** to choose a location to save the log.
The default path is `../data/MobilityLog`.
- 5 Click **Start Operation**.

4.21

Setting Passphrase for OTAP Bridges

You can use Over-the-Air Programming (OTAP) to remotely reconfigure radios over TETRA network. The OTAP feature is secured with a passphrase which is required every time OTAP is used.

When and where to use: A passphrase must be created during the initial set up of OTAP on your CPS.

Procedure:

- 1 Enable the OTAP feature by follow the instructions up to [step 2](#) in [Enabling a Selling Feature on a Radio on page 48](#).
- 2 In the **Radio Icon List**, right-click on the targeted radio model and select **Use as OTAP Bridge**.
- 3 Follow the instruction on screen to create your passphrase.



NOTICE: Passphrase is only created once. Once the passphrase is programmed, the passphrase is not editable or retrievable through CPS or any interface on the radio. Passphrase reset or recovery options are not available. In cases where the passphrase is forgotten, the affected radio must be sent to your service provider for reprogramming for a new OTAP passphrase.

4.22

Setting Up OTAP Bridges

Over-the-Air Programming (OTAP) bridges are over-the-air communication channels between the Customer Programming Software (CPS) and recipient radios. You can set up a radio to function as a bridge.

Prerequisites:

- 1 Connect a radio to the PC.
- 2 Enable the OTAP feature flag for the connected radio.
- 3 To avoid interruption due to calls during an OTAP operation, disable feature flags relating to calls on the bridge radio.
- 4 To set the radio as an OTAP bridge, the radio must be powered on and in service mode.
- 5 Ensure that the radio is in Trunked Mode Operation (TMO).
- 6 Ensure that the radio is **not** in charger-only mode.

When and where to use: The OTAP bridge must be set up and ready for use before configuring an update with OTAP.

Procedure:

- 1 Disable the automatic start programming mode. Do the following:
 - a Click **Tools**→**Options**.
 - b Clear the **Enable auto reset radio to programming mode** check box.
- 2 To enable the connected radio as an OTAP bridge, right-click on the targeted radio model in the **Radio Icon List** and select **Use as OTAP Bridge**.
- 3 Log on with your passphrase which was created during the initial OTAP setup.

The OTAP bridge is ready for use.


4.23

Sending Critical Updates

Prerequisites: Motorola Solutions sends you a service package for critical update.

When and where to use: You want to send a critical update (also known as codeplug hotfix) as provided by Motorola Solutions through Over-the-Air-Programming (OTAP).

Procedure:


- 1 Click **File**→**Send MSI Service Package**.
Over the Air Programming window pops up.
- 2 Load the provided MSI Service Package.
- 3 Insert the identity of the target radio.
 **NOTICE:** For group updates, add the identities of the impacted group radios into the list.
- 4 Click **Send** after configuration is completed to deliver the update to the identified radio.

4.24

Sending General Radio Configuration Update

When and where to use: You want to send a general radio configuration update through Over-the-Air-Programming (OTAP). OTAP supports both clear and encrypted updates.

Procedure:

- 1 Connect the identified radio model to the CPS.
- 2 Read the radio codeplug until completion.
- 3 To generate an OTAP Profile, perform the following actions:
 - a Click **File**→**Generate OTAP Profile**.
 - b Select the groups of configurations to be added into the profile from the **Generate OTAP Profile - Select Groups** window.
 - c Save the generated profile to a preferred location.You are now ready for configuration update over OTAP.
- 4 To start the OTAP configuration update, load the OTAP profile by clicking **File**→**Open OTAP Profile**. Update the codeplug fields as required.
To successfully send OTAP updates, the payload size must not exceed 100%. As you configure the OTAP profile, you can view the payload percentage in **OTAP List** at the bottom pane. If the payload size exceeds 100%, you must reduce the size by removing some of the codeplug field selections.
- 5 When the update is completed, send the configuration update by clicking **File**→**Send OTAP**.
Over the Air Programming window pops up.
- 6 Insert the identity of the target radio.
 **NOTICE:** For group updates, add the identities of the impacted group radios into the list.
- 7 Click **Send** after configuration is completed to deliver the update to the identified radio.

4.25

Viewing OTAP Update Status

Procedure:

Select **View**→**OTAP Tracking Window**.

The **OTAP Tracking** window appears and displays the update status.

Chapter 5

Troubleshooting

The troubleshooting topics can help you to identify and overcome difficulties while programming your radio.

5.1

Unable to Launch CPS

Only one CPS instance can run at a time so before re-launching the application you need to verify if the application window is not minimized.

If the window is not minimized, you can terminate the CPS process manually and launch the application again. Shut down the process by performing the following actions:

- 1 Press **CTRL+ALT+DELETE**.
- 2 Click **Task Manager**.
- 3 Select the **cpsplus.exe** instance and click **End Process**.

5.2

Unable to Exit CPS Plus

Terminate the CPS process manually. To shut down the process, perform the following actions.

- 1 Press **CTRL+ALT+DELETE** and click **Task Manager**.
- 2 Select the **cpsplus.exe** instance and click **End Process**.

5.3

A Radio is not Functioning

- 1 Charge the battery.
- 2 Remove the battery, wait for 10 seconds and reinstall the battery.
- 3 Contact customer support.

5.4

Programming Mode Cannot Initiate

You connected the radio to the PC but failed to turn it on in flashing mode.

- 1 Charge the battery.
- 2 Verify that the radio functions properly. Turn the radio on and off. If you cannot turn it on, remove the battery, wait for 10 seconds and reinstall the battery.
- 3 Connect the radio to a different USB port.
- 4 Verify that the hardware is properly installed in Windows. Go to **Device Manager**→**Universal Serial Bus controllers**. If the TETRA hardware is not on the list, scan for new USB devices and reinstall the USB drivers.
- 5 Verify that you use proper USB drivers dedicated to the software release.
- 6 Do not disconnect the radio and restart the PC. If new hardware is found, reinstall the USB drivers manually.

- 7 Contact customer support.

5.5

I Disconnected a Radio During Programming

- 1 Do not turn off the radio.
- 2 Do not exit CPS Plus.
- 3 Reconnect the radio to the PC.
- 4 Wait until CPS Plus discovers the radio (it appears in Radios Icons List).
- 5 Repeat the programming operation.



NOTICE: To verify the programming operations history, click **Window**→**Task Window**.

5.6

Programming Interrupted or Failed

Connect the radio to the PC as for programming. If needed, CPS Plus automatically recovers the radio using its previous configuration, (CPS Plus backs up the proper configuration on a disk).



IMPORTANT: The radio codeplug must have been read at least once by the CPS in order to take backup.



NOTICE: To verify the programming operations history, click **Window**→**Task Window**.

5.7

Invalid Codeplug Parameters

You are unable to save the codeplug or perform certain operations.

- 1 To find the invalid parameters, go to the **Information pane**, click the **Invalid** tab, and double-click the path.



NOTICE: Alternatively, you can use the **Compare Codeplug** to find the differences (including the invalid parameters) between two files.

- 2 Correct the values and try again.

5.8

Report Issue

When and where to use:When an application or codeplug error occurs, you may prepare a report, which can be provided to the Motorola Solutions support in order to determine the root cause.

Procedure:

- 1 Click **Help**→**Issue Report**.
- 2 In the **Report Issue** window enter optional information such as **User Name** and **Issue Description**. Select the check boxes to choose information that will be included in the report.
- 3 Press **Create Report Archive**. A pop-up window appears that allows you to save the issue report to a ZIP file.

A message window saying `The report archive has been saved to` appears.

- 4 Inform the Motorola Solutions support about the issue and provide the generated report.

5.9

Windows Crashes When Using a USB 3.0 Port

If Windows crashes when you are programming the radio using a USB 3.0 port, you need to upgrade the USB 3.0 Host Controller driver on your PC. The driver is usually provided by your motherboard manufacturer – please refer to the relevant website.

Chapter 6

CPS Glossary

Active document or file – The document in which you are working.

ADD – Audio Device Descriptors. A structure which provides hardware information about a particular audio accessory (for both IMPRESS and core accessories). Files with ADD have an extension .add.

AIE – Air Interface Encryption provides confidentiality on the radio link over the air.

APAC – Asia Pacific region.

ASSI – Alias Short Subscriber Identity.

Audio Profile – represents radios audio characteristics that fit to a specific operating environment, for example Indoor for an office or Outdoor for high traffic noise. It is not recommended to edit it.

Audio Template – a baseline file for creating audio profiles. Audio experts prepare and modify audio templates.

BUP – Backup.

Calibration values – a set of important and unique, factory-defined values (such as frequency tuning) assigned to radios. Also known as Sensitive data.

Call – There are two types of calls: individual call or group call. An individual call is a complete sequence of related call transactions between two radios in DMO. There are always two participants in an individual call. A group call is a complete sequence of related call transactions involving two or more DM-MSs. The number of participants in a group call is not fixed, but it is at least two. Participants may join (late entry) and leave an on-going group call.

CCK – Common Cipher Key. The infrastructure generates this key to protect a group address signaling and traffic. Also used to protect SSI identities (ESI).

Class – Also called the security class.

Class 1 – no encryption, may use authentication.

Class 2 – SCK encryption, ESI with SCK, may use authentication.

Class 3 – DCK encryption, ESI with CCK, authentication.

Clear – An application without encryption support.

CP – Codeplug. Repository of personality data for a radio. It includes features (also the selling features) and adjustable parameters.

Compatibility field – Codeplug fields that include identity information such as Model Type, Codeplug Structure Version, and Codeplug Default Version.

CPS – Customer Programming Software used to program TETRA radios.

CPV – Codeplug Value, clear-text file format that contains codeplug paths and values in lines; `<fullpath, value>`. It is not recommended to export and import CPV files, unless you have a thorough knowledge about the codeplug structure.

DCE – Data Communication Equipment.

DCK – Derived Cipher Key generated during authentication for protection of individually addressed signaling and traffic.

DCK – Digital Car Kit

DGNA – Dynamic Group Number Assignment allows a network operator or an authorized user to dynamically allocate talkgroups to selected radios over the air interface. Using supplementary services

messages (SS-DGNA) the network operator can command the radio to add talkgroups to the radios talkgroup list, to attach or select these talkgroups, to delete talkgroups from the list, or modify parameters of existing talkgroups. A special feature of the radio, if provisioned, causes a new group that is assigned by the SwMI to be automatically attached as the selected group, whether an attachment was received with the assignment. In order for an MS to be allowed to participate in communication of a given group, the MS must request and receive permission from the SwMI. This is called group attachment.

DMO – Direct Mode Operation a mode of simplex operation where radios may communicate using radio frequencies that may be monitored by, but which are outside the control of, the TETRA V+D network. DM is performed without the intervention of a base.

DMO Gateway – Direct Mode Operation Gateway: A device that provides gateway connectivity between DM-MS and the TETRA V+D network. The gateway provides the interface between the TETRA DMO and TETRA V+D modes. A gateway may provide only the gateway function (DM-GATE) or may provide the functions of both a DM repeater and a DM gateway during a call (DM-REP/GATE).

Downgrade – to replace radio firmware with an older version and preserve User and Sensitive Data..

DTE – Data Radio Equipment.

DTMF – Dual Tone Multi-Frequency. Tone-based signaling scheme which combines two of a set of standard frequencies. The result is a third or beat frequency (signal) which is the desired or usable signal. DTMF signaling is used as tone-dialing in the common telephone.

EMEA – Europe, the Middle East and Africa regions.

Encryption – Secure communications systems are designed to provide coded (“encrypted”) signals between some or all links in the system. In order to do this, each device involved in secure communications is loaded with a multi-digit encryption variable (called a key). This key is used by an encryption algorithm built into the device to encrypt voice or data as needed. Only devices in the system with the same algorithm and encryption key can decode the encrypted signals.

ESI – Encrypted Short Identity.

ESSC – EMEA System Support Center

Firmware – computer instructions that reside as read-only software on a radio's flash memory.

Flash – a storage chip integrated in to radio hardware, that can be erased and reprogrammed.

Flashing – Writing a software image file to a radio.

Fly-out GUI element or menu – a popup menu that extends from other visual element. In CPS Plus, it is a right-side bar that can auto hide or 'fly out' to display connected radios.

GCK – Group Cipher Key. Predetermined cipher key used to provide confidentiality in Class 3 system with corresponding algorithm.

GCK KAR – Group Cipher Key Key Association Range

GPIO – General Programmable Input Output pins.

Group Call – an instant communication between users that belong to the same talkgroup.

GSSI – Group Short Subscriber Identity.

Home Location Address – Area within radio coverage of a base station or group of base stations within which a radio is allowed to operate.

Hotfix – a special purpose file, used by service or support teams, that allows to apply a set of predefined settings to codeplugs. Hotfixes are similar to profiles but allow to modify not only user data but also calibration values, which are not available to a regular CPS Plus user.

ISSI – Individual Short Subscriber Identity.

ITSI – Individual TETRA Subscriber Identity.

Key – Each device involved in secure communications is loaded with a multi-digit encryption variable – an encryption key. An encryption algorithm built into the device uses this key to encrypt voice or data as needed. Only devices in the system with the same algorithm and encryption key can decode the encrypted signals.

LIP – Location Information Protocol.

Local Site Trunking – allows radio subscribers of the same cell site to communicate when the link between the site and network central controller fails. Entering and exiting Local Site Trunking (that is, returning to Site Wide Trunking) is done automatically – the display shows the “Local Area Service” message. Any call in progress is dropped upon entering Local Site Trunking mode. Registration, Group Call, and Emergency Call are available in Local Site Trunking.

LRPP – Location Request/Response Protocol. This protocol allows for a single and efficient format of passing location information (requests and responses).

MACE – Motorola Advanced Crypto Engine

MCCH – Main Control Channel. The principal common control channel transmitted by the infrastructure to control the radios in a cell.

MLE – Mobile Link Entity.

MMI – Man Machine Interface, relates to the CPS Plus and radios user interface.

NGCH – Next Generation Control Head.

OTAK – Over the Air Keying.

OTAR – Over the Air Rekeying.

PABX – Private Automatic Branch Exchange, allows to call local (office) extension numbers.

PABX Gateway – A device that provides connectivity from a TETRA user to a PABX subscriber and the other way around.

PDV2 – Permanent Disable Version 2; you can restore a disabled radio using CPS Plus.

PEI – Peripheral Equipment Interface.

PHF – Personal Hands-Free kit, in other words an earpiece or a handset.

Private Call – call between two and only individuals. Apart from the two interlocutors, no one else can participate or listen to the call.

Private Duplex Call – a private call between two radios that resembles a telephone conversation. The two individuals can talk and listen at the same time without pressing PTT.

Private Number – also called Private ID.

PSTN – Public Switched Telephone Network.

PSTN Gateway – a device that provides connectivity from a TETRA user to a PSTN subscriber and the other way around. Additionally, for the duration of the call, the PSTN gateway allows TETRA signaling information to be passed from TETRA Switching and Management Infrastructure to the external network user and from the external network user to the TETRA SwMI in accordance with the TETRA Call Control (CC) procedures.

PTPC – Point-to-Point Call also known as Private Call.

PTT Button – Push To Talk button that initiates a group call.

RCU – Remote Control Unit, a small device attached to a covert radio over a thin wire, used for operating the radio.

Remote flashing – programming the transceiver via the control head.

RSM – Remote Speaker Microphone.

RSSI – Receiver Signal Strength Indication.

RUA – Radio User Assignment.

RUI – Radio User Identity.

SCK – Static Cipher Key, used to provide confidentiality in Class 2 system with corresponding algorithm.

SDS – Short Data Services.

SDMO KAG – Secure Direct Mode Operation Key Association Group.

Selling Feature – requires an entitlement purchased from Motorola Solutions.

Semi-Duplex Private Call – Also called Private Call or Express Connect Call. In this type of one-way call, the user presses and holds the PTT while talking, and releases the PTT while listening.

Sensitive data – a set of important and unique, factory-defined values (such as frequency tuning) assigned to radios.

SIM – Subscriber Identity Module a smart card that holds subscriber information (including the authentication key) and is inserted into the radio to grant its personality.

Software image – a collection of files distinguished by individual releases. It contains firmware, codeplug, and audio template files dedicated to specific radio models.

Status ID – A feature that makes it possible for a subscriber to send status messages to other subscribers. The user can enter a status message for each ID in a Status ID list. When a subscriber sends a status message, the ID of the subscriber's unit is sent along with the status message.

SwMI – Switching and Management Infrastructure. The TETRA term for Fixed Network Equipment (FNE). It consists of the system components, that is, the Central Network Equipment located at the Master Site (or Mobile switching Office) and all the remote site equipment, but excludes the mobile equipment.

TEI – TETRA Equipment Identity, an electronic serial number that is permanently embedded in the TETRA equipment.

Talkgroup – A group of subscribers enabled to initiate and participate in a Group Call.

Telephone Interconnect – also known as Phone Call.

TETRA – Terrestrial Trunked Radio. The digital trunked radio standard produced by ETSI providing detailed telecommunications specifications to which Base Stations and Mobile Stations should adhere.

TMO – Trunking Mode Operation.

Trunked – Trunked Radio Communications - A computer controlled communications system that allocates speech channels on demand selecting on a random basis from the group of channels available.

Upgrade – to replace radio firmware with a newer version and preserve User and Sensitive Data.

User Data – a set of codeplug nodes and values, that can be edited and replicated to other codeplugs or radios.

VASSI – Visitor Alias Short Subscriber Identity.

Chapter 7

Service Information for EMEA

EMEA Technical Support Operations (TSO)

The EMEA Technical Support Operations (TSO) provides a remote Technical Support Service to help customers resolve technical issues and quickly restore networks and systems. This team of highly skilled professionals is available to customers with current service agreements in place that include the Technical Support Service. The TSO technical experts may be accessed through the Service Desk either electronically or using the listed telephone numbers. If you are unsure whether your current service agreement entitles you to benefit from this service, or if you would like more information about the Technical Support Service, contact your local customer support or account manager for further information.

Contact Details

Technical Requests: techsupport.emea@motorolasolutions.com

Repair Support: repair.emea@motorolasolutions.com

Contact Us: https://www.motorolasolutions.com/en_xu/support.html

Parts Identification and Ordering

If you need help in identifying non-referenced spare parts, direct a request to the Customer Care Organization of a local area Motorola Solutions representative. Orders for replacement parts, kits, and assemblies should be placed directly at the local distribution organization of Motorola Solutions or through the Extranet site Motorola Online at <https://emeaonline.motorolasolutions.com>.

However, you cannot order export-controlled products or spare parts such as TEA-related boards through Motorola Online. Send an order form with actual end-customer details by e-mail to your customer care team.

Your Input

Send questions and comments regarding user documentation to documentation@motorolasolutions.com.

Appendix A

Service Information for APAC

This topic contains contact details to service centers in Asia and Pacific region.

Technical Support

Technical support is available to assist the dealer/distributor in resolving any malfunction which may be encountered. Initial contact should be by telephone wherever possible. When contacting Motorola Solutions Technical Support, be prepared to provide the product model number and the serial number.

Further Assistance from Motorola Solutions

You can also contact the Customer Help Desk through the website: http://www.motorolasolutions.com/en_xp/products. If a unit requires further complete testing, knowledge and/or details of component level troubleshooting or service than is customarily performed at the basic level, send the radio to a Motorola Solutions Service Center as listed in the following table:

Table 24: Service Information – Telephone Numbers and Addresses of the Asia and Pacific Motorola Solutions Centers

Country	Telephone Number	Address
Singapore	+65-6352-6383	Motorola Solutions Singapore Pte. Ltd, c/o Azure Engineering, 49 Jalan Pemimpin, #03-11 APS Industrial Building, Singapore 577203 Contact: Alvin Tan E-mail: alvin.tan@motorolasolutions.com Contact: Gan Saw See E-mail: gan.sawsee@motorolasolutions.com
Malaysia	+603-7809-0000	Motorola Solutions Sdn. Bhd. Level 14, Persoft Tower, No. 68, Pesiaran Tropicana, 47410 Petaling Jaya, Selangor Darul Ehsan, Malaysia Contact: Koh Tiong Eng E-mail: A21001@motorolasolutions.com
Indonesia	+62-21-3043-5239	PT. Motorola Solutions Indonesia 30th Floor, Gedung BRI II, Suite 3001, Jl. Jend. Sudirman Kav. 44-46, Jakarta 10210, Indonesia Contact: Eko Haryanto E-mail: Eko.Haryanto@motorolasolutions.com
Thailand	Tel: +662-653-220	Motorola Solutions (Thailand) Ltd.

Country	Telephone Number	Address
	Fax: +668-254-5922	142 Two Pacific Place Suite 2201, 3220 Sukhumvit Road, Klongtoey, Bangkok 10110 Contact: Nitas Vatanasupapon E-mail: Nitas@motorolasolutions.com
India	+91-9844218850	Motorola Solutions India Pvt. Ltd. C/o Communication Test Design India Private Limited, #4, 5 Maruthi Industrial Estate, Rajapalya, Hoodi Village, Bangalore - 560048, India Contact: K. Umamaheswari E-mail: umamaheshwari@motorolasolutions.com
China	+86-10-8473-5128	Motorola Solutions (China) Co. Ltd. No. 1 Wang Jing East Road, Chao Yang District, Beijing, 100102, P.R. China Contact: Sophy Wang E-mail: C18170@motorolasolutions.com
Hong Kong	852-2966-4823	Motorola Solutions Asia Pacific Ltd. Unit 1807-1812, 18/F, Two Harbourfront, 22 Tak Fung Street, Hung Hom, Kowloon, Hong Kong Contact: Judy Leung E-mail: Judy.Leung@motorolasolutions.com
Philippines	Tel: +632 858-7500 Fax: +632 841-0681	Motorola Communications Philippines, Inc. Unit 2102, One Global Place Building, 5th Ave., Bonifacio Global City, Taguig, Philippines 1634. Contact: Arthur Nieves E-mail: Arthur.Nieves@motorolasolutions.com
Korea	+822-3497-3649	Motorola Solutions Korea, Inc. 9th Floor, Hibrand Building, 215, Yangjae-Dong, Seocho-Gu, Seoul, 137-924, Korea. Contact: KS Kwak E-mail: r45321@motorolasolutions.com
Taiwan	+886-2-8729 8000	Motorola Solutions Taiwan, Ltd. 8F, No. 9, Songgao Rd., Taipei 110,

Country	Telephone Number	Address
		Taiwan (R.O.C.) Contact: Michael Chou E-mail: ftpe239@motorolasolutions.com
Australia	+613-9847-7725	Motorola Solutions Australia Pty. Ltd. 10 Wesley Court, Tally Ho Business Park, East Burwood Victoria 3151, Australia. E-mail: servicecentre.au@motorolasolutions.com

Piece Parts

Some replacement parts, spare parts, and/or product information can be ordered directly. If a complete Motorola Solutions part number is assigned to the part, it is available from Motorola Solutions Service Organization. If no part number is assigned, the part is not normally available from Motorola Solutions. If a list of parts is not included, that means that no user-serviceable parts are available for that kit or assembly.

Customer Programming Software has no capability to tune the radio. Tuning the radio can only be performed at the factory or at the appropriate Motorola Solutions Repair Center. Component replacement can affect the radio tuning and must only be performed by the appropriate Motorola Solutions Repair Center.

All orders for parts/information should include the complete Motorola Solutions identification number. All part orders should be directed to your local Motorola Solutions Service Organization. See your latest price pages.

Expansion and Vocon board are working in pair for AVR version and NON-AVR version, whenever expansion board is replaced, Vocon board also have to be replaced and vice versa. PA000471A02 need to pair with PA000470A03 and PMLF4167D need to pair with PMLF4176C. There is not allowed to mix the Vocon-expansion pair as it can deeply affect the functionality of the radio.

Parts Identification and Ordering

Request for help in identification of non-referenced spare parts should be directed to the Customer Care Organization of Motorola Solutions local area representation. Orders for replacement parts, kits, and assemblies should be placed directly on a Motorola Solutions local distribution organization or from the Motorola Solutions Online (Extranet).

Appendix B

Service Information – Americas

This topic contains contact details to service centers in Latin America and Caribbean region.

Technical Support

To request technical support, go to <https://businessonline.motorolasolutions.com>, **Contact Us**.

Some replacement parts, spare parts, and/or product information can be ordered directly. If a complete Motorola Solutions part number is assigned to the part, it is available from Motorola Solutions. If no part number is assigned, the part is not normally available from Motorola Solutions. If the part number is appended with an asterisk, the part is serviceable by Motorola Solutions Depot only. If a list of parts is not included, that means that no user-serviceable parts are available for that kit or assembly.

Warranty and Repairs

Table 25: Service Information – Telephone Numbers and Addresses of Latin America Radio Support Centers

Country	Telephone Number	Address
Colombia	571- 376-6990	Motorola Solutions de Colombia Service Centre Torre Banco Ganadero Carrera 7 No. 71-52 Torre B piso 13 Oficina 1301 Bogota
Mexico	5252576700	Motorola Solutions de México Service Centre Bosques de Alisos #125 Col. Bosques de las Lomas CP 05120 Mexico DF

Piece Parts

To order parts in Latin America and the Caribbean contact your local Motorola Solutions CGISS representative.

Table 26: Service Information – Telephone Numbers and Addresses of Latin America Motorola Solutions Centers

Country	Telephone Number	Address
Argentina	5411-4317-5300	Motorola Solutions Argentina Ave. del Libertador 1855 B1638BGE, Vicente Lopez Buenos Aires
Brasil	5511-3847-668	Motorola Solutions Ltda Av. Chedid Jafet

Country	Telephone Number	Address
		222 Bloco D Conjuntos 11,12,21,22 E 41 Condominio Millennium Office Park 04551-065- Vila Olimpia, Sao Paulo
Chile	562-338-9000	Motorola Solutions Chile S.A. Av. Nueva Tajamar 481 Edif. World Trade Center Of. 1702, Torre Norte Las Condes Santiago
Colombia	571-376-6990	Motorola Solutions Colombia LTDA. Carrera 7 #71-52 Torre A, Oficina 1301 Bogotá
Costa Rica	506-201-1480	Motorola Solutions de Costa Rica Parque Empresarial Plaza Roble Edificio El Portico, 1er Piso Centro de Negocios Internacional Guachepelin, Escazu San Jose
Ecuador	5932-264-1627	Motorola Solutions del Ecuador Autopist Gral. Rumiñahui, Puente 2 Conjunto Puerta del Sol Este-Ciudad Jardin Pasa E, Casa 65 Quito
Mexico	52-555-257-6700	Motorola Solutions de México, S.A. Calle Bosques de Alisos #125 Col. Bosques de Las Lomas 05120 México D.F.
Peru	511-211-0700	Motorola Solutions del Peru Ave. República de Panama 3535 Piso 11, San Isidro Lima 27
USA	954-723-8959	Motorola Solutions, Inc. Latin American Countries Region 789 International Parkway Sunrise, FL 33325
Venezuela	58212-901-4600	Motorola Solutions de Los Andes C.A. Ave. Francisco de Miranda Centro Lido, Torre A Piso 15, El Rosal Caracas, 1060