Technical Note TN-3378d-SR

DMR Firmware v3.01.05
DMR Programming Application v3.1.4.5
Tx9000 Calibration Application v3.1.1.1

7 December 2023

This Technical Note applies to DMR cadence release R23.2.
Firmware **v3.01.05.0153** for the TM9300 and TM9700 DMR mobiles and the TP9300, TP9500 and TP9700 DMR portables is supported by:

- DMR Programming Application **v3.1.4.5** (or later)
- Tx9000 Calibration Application **v3.1.1.1** (or later)
- EnableFleet **v4.9.2** (or later)

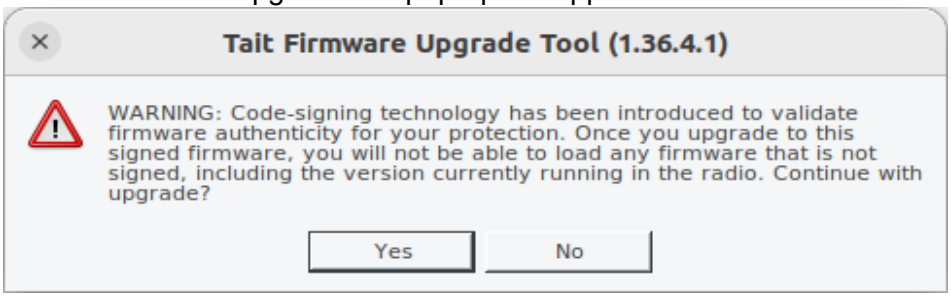
Important Note:
The TMX450 UnifiedVehicle does not support this software. It can operate with Firmware up to v2.30.11 and will be supported in a later version, yet to be confirmed.

Important Note:
The Gridlink TD9300 device does not support this software. It can operate with Firmware up to v2.30.07 and will be supported in a later version, yet to be confirmed.

Important Note: Do not downgrade portables built after **26692342** to firmware older than v2.30.02 as GPS on the new portables will become non-functional

Important Note: Do not downgrade TM9300 25W mobiles built after **21543773** to firmware older than v2.30.07 as the radio will become non-functional

Important Note:
The release of the color control heads requires the TM9300 and TM9700 bodies using these to upgrade to DMR firmware v3.01 code-signed firmware.
The firmware in the body must exactly match the firmware in the control head.
At the start of the upgrade this pop-up will appear:

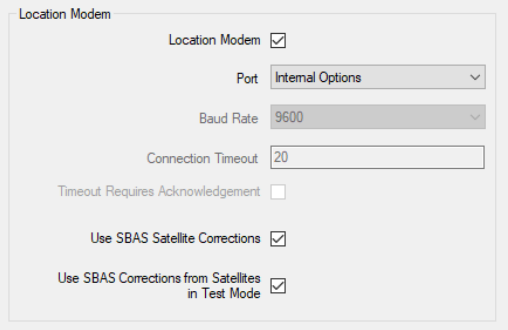


See further details in TN-3397b-AN.

Important Note
Tx9000 Calibration Application v3.1.1.1 is required to support radios running firmware v3.x or later (calibration database 0101). Production builds will be released with this firmware.
Any radios upgraded to firmware v3.x will require this too, therefore, it is imperative during the upgrade that the radio's calibration is read and written back using this calibration application.

New Features

- **JIRA-TRM-38921: Enable Satellite-Based Augmentation System (SBAS/WAAS) on portables**
  Enabled in Global > Serial Protocol > Location, SBAS is a system that improves the accuracy of received integrity and correction data from geostationary satellites in addition to GPS. The geostationary satellites re-transmit ionospheric, ephemeris, clock and other corrections driven by ground RIMS stations. Tait radio GPS technology takes advantage of the augmentation systems that are currently available (WAAS, EGNOS, MSAS).
  Enabling the 'Use SBAS Corrections from Satellites in Test Mode' checkbox allows the radio to process correction data received from systems still in test mode such as EGNOS.
  This can be enabled across all TP9300, TP9500 and TP9700 portables.



- **Audio Profiles**
  Significant and ongoing work to improve the audio in Tait radios includes the introduction of Global > Audio Profile. This allows users to select different profiles on a per-channel basis if desired.
  Standard is the new and preferred audio profile for all users.
  Legacy provides the same audio profile previously provided. This may be split into two options: 'Legacy Default' if not modified and 'Legacy Custom' if the imported datafile had audio settings previously modified. These can then be selected in Conventional > Channels > Detailed on a per-channel basis and in Trunked > Trunked UI > General – where this setting is across all networks. More detail is provided in TN-2699i-AN – Configuring Tait Radio Audio Enhancements. XPA-951

- **Remedy WO 97626: Geofence support on TP9310 and TM9315 models**
  These models have been enhanced to allow Global > Geofencing > Global Configuration > Allow Auto Mode now. Previously this was unavailable as these entry level models could not display this status. However, the ability to inform the user of geofence driven changes by voice annunciations makes this feature valid. The **TMAS105** or **TPAS105** Geofencing Services SFE keys can now be ordered for these models. TRM-49391

- **Mobile Color Control Heads**
  This release will support the releases of the color control heads for the TM9300 (and TM9700) mobiles. Existing mobile bodies must be upgraded to v3.01 code-signed firmware.

- **First Release of TP9700 Multiband Portable and TM9700 Dualband 25W mobile**

TP9700 Multiband Portable

The TP9700 DMR Multiband portable is configured as band 'N0' where it can then be configured to operate on between one and four of the following RF bands:

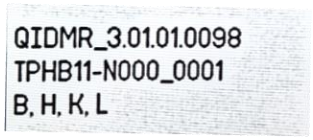
- 'B' 136-174MHz (B1)
- 'H' 378-520MHz (HB, HK, H4, H5 and H7)
- 'K' 757-870MHz (K5)
- 'L' 896-941MHz (L3)

Out of the box the TP9700 radio supports a single band and that is defined with its first programming using the Specifications > Enabled Bands dropdown options.

When additional band(s) are required the SFE Keys 'TPAS133 Dual Band', TPAS134 Multi Band' or 'TPAS135 Dual to Multiband Radio Upgrade' need to be added.

To verify which RF bands a TP9700 has enabled either:

- Power-on the radio with the PTT pressed (this screen is displayed)
- Display this from the radio menu (if enabled): *Radio settings > Radio info > Enabled Bands*

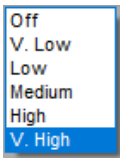


To support multiple RF bands the following antennas are available:

- TPA-AN-050 – Ant Dual 136-174 / 378-520MHz Whip
- TPA-AN-051 – Ant Tri 136-174 / 378-520 / 757-870MHz Whip

At first release the L3-band (896-941MHz) will require the TPA-AN-025 single-band antenna until a multiband antenna encompassing L3-band is available.
Note that all the existing single-band antennas can still be used on the TP9700 if only a single band operation is desired.

The TP9700 portable can provide higher RF power options for the B and H bands (only). For these RF bands the Channels > Power dropdown includes 'V. High'. Very High on VHF is 6W and on UHF is 5W.



TM9700 Dualband Mobile

The TM9700 DMR Dualband 25W mobile is configured as band 'N1' where it can then be configured to operate on one or two of the following RF bands:

- 'B' 136-174MHz (B1)
- 'H' 378-520MHz (HB, HK, H4, H5 and H7)

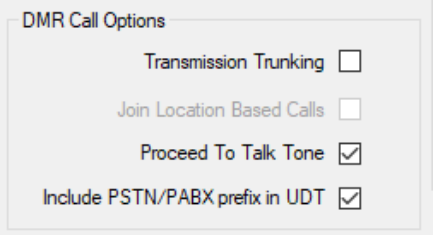
Out of the box the TM9700 radio will support a single band and that is defined with its first programming using the Specifications > Enabled Bands dropdown options.
When the additional band is required the SFE Key 'TMAS133 Dual Band' needs to be added.

- **JIRA-TRM-40558: Utilize more lines when displaying messages and labels**
  Increased to four viewable lines in popup messages, such as the actions assigned to function keys or address book details on the TP9500. Note that some very long function keys action labels can become truncated. See known limitation TRM-50020.
- **Remedy WO 100489: OTAP completion display changes**
  A requested enhancement was to remove the 'Upgrade Successful' display until after the radio has sent it's ACK back to EnableFleet and therefore actually completed the task. Removed 'Success' from the 'Update installed' popup that occurs directly after the OTAP update. The user can press '*OK*' button to this popup and a new '*Contacting Server. Please wait...*' popup informs the user the process is still to complete. This also includes a '*Clear*' button which only removes the displayed popup, OTAP will continue to notify the EnableFleet server in the background. If the '*Clear*' button is not pressed, the popup will remain until the server is contacted. This popup re-appears on each power-cycle until the server is contacted. TRM-49822
- **Remedy WO 94242: Allow Vote/Scan groups in Keypad Store/Recall feature**
  This feature previously supported single channel store and recall using the keypad number buttons when Function Ctrl Settings > Action and Key Settings 'Use Numeric Keypad for Channel Store/Recall' was checked. Users can now also store and recall 'Vote' or 'Scan' groups too. Note only 'Standard' scan type is accommodated, 'Background' and 'In-Zone' are not supported for this. TRM-49882
- **Remedy WO 56129: Remote Lone Worker status enable/disable**
  This feature provides an ability for the radio to report back its Lone Worker status (on or off) via a status message. It also allows a console to remotely enable and disable a radio's Lone Worker status – the radio user will be aware of these remotely driven changes if Global > UI Preferences > Voice Annunciation Functions has 'On' and 'Off' Lone Worker voice annunciations to play these locally. The radio configuration of the Trunked > Trunked Lone Worker > Operation dropdown must be set as 'Selectable by User'. TRM-42798
- **JIRA-TRM-50767: Configurable Voice Annunciation volume**
  Requests from some users were for the fixed volume of the voice annunciation audio to be lower. The new dropdown box in Global > UI Preferences > Voice Annunciation > General 'Volume Level' now provides variability from 1(min) to 6(max). The default is '6' which is the same level that was provided in older firmware. It must be left at '6' if the radio configuration is written back to older firmware.
  Note: This does not affect the value selected for the 'Shutdown Annunciation Volume Level' which has its own level setting.
- **JIRA-TRM-50709: Allow automatic mic selection on portable PTT**
  Allows the portable PTT > Mic PTT / External PTT(1) 'Audio Source' to select 'Automatic' allowing the radio to switch between the radio and the Bluetooth device, so a user can use the same PTT when there is (or isn't) a Bluetooth device connected rather than having to configure two separate PTT's.

- **JIRA-TRM-50706: Allow automatic received audio destination on Bluetooth**
  Allows the received audio destination when using a Bluetooth device to be configurable. For example, the received audio can always be played on the radio speaker or on the Bluetooth speaker. Global > Bluetooth > General 'Speaker Selection' provides Automatic, Bluetooth or Radio. Bluetooth or Radio force the audio to always be to these outputs and Automatic decides which based on the PTT (radio or Bluetooth device) that was last pressed.

- **JIRA-XPA-926: Bluetooth Connectable option**
  In Bluetooth > General > Common is a new checkbox 'Connectable'. When enabled Bluetooth in the portable is put into a mode that allows other Bluetooth devices to request a connection *to* the radio. Disabled is the previous behavior where Bluetooth connection can only be requested *from* the radio. If 'Connectable' is enabled, then the 'Power-On Action' dropdown will allow 'Start in connectable mode'.

- **JIRA-TRM-48185: Full call string for PSTN/PABX calls in extended addressing UDTs**
  For DMR trunked systems using either the DMR or Native dialing schemes the PABX/PSTN dial modifier included in the on-air UDT packet is now configurable.
  A new checkbox in Trunking > Call Options > DMR 'Include PSTN/PABX prefix in UDT' when enabled includes the PSTN or PABX prefixes of '01' or '02' in the address sent in the UDT appended data. If the Fleet Identity > Dialing Scheme is 'DMR' this checkbox is enabled, for 'Native dialing' it is disabled. For other schemes it is disabled and unavailable.



- **Remedy WO 99598: Custom names to identify Bluetooth device connected**
  On 16-key portables, entering the radio menu *Bluetooth* > *Manage Devices* > *Options* now lists '*Edit name*' providing the opportunity to rename any listed devices.
  Use the '0' key to add a space, use the '1' to add special characters '. , ? ! - /' and the '#' key will cycle between uppercase, lowercase and numerals. TRM-49403, XPA-577

Problems Fixed in DMR Firmware v3.01.01

- Balanced Audio has been removed from the application. We've recommended for many years that all DMR configurations have this enabled and with the introduction of Global > Audio Profiles this configuration is now permanently enabled. If this was enabled in an existing configuration it will remain so, and if it was not enabled the 'Balanced Audio' checkbox will appear in Global > UI Preferences > Audio and the decision can be made to leave it unchecked or now enable it. Note that unchecked will impact any inter-operability with other manufacturers in mixed fleets and also impact any changes to Audio Profiles.

- **Remedy WO 95899: Idle display blank screen option not working**
  When the DMR Tier-3 idle display was set to 'Blank' screen it instead returned to display the last message, e.g.: last dialed call, rather than a blank screen. TRM-49767

- **Remedy WO 100348: Hookswitch bouncing resets Loneworker**
  TM9300 mobile users found vehicle vibrations would erroneously reset Loneworker timer functions if the microphone 'bounced' in the hangup clip. To stop this issue for normal trunked calls the Trunked > Trunked UI > General 'Ignore Hookswitch Call Operation' could be unchecked. For those users an additional new checkbox 'Ignore Hookswitch Activity' has been added to both Conventional > Conventional Lone Worker and Trunked > Trunked Lone Worker pages. The TM9700 mobile also supports this. TRM-49819

- **JIRA-TRM-48899: A PTT in Bluetooth 'Manage devices' menu creates more screens**
  Previously a user pressing PTT while the radio was in the 'My devices' or 'Manage devices' Bluetooth menus would transmit but also create duplicates of the screen with each PTT press. This forced the user to press 'Back' as many times as they had pressed the PTT in order to exit. A PTT press in these menu screens will transmit but now closes the screen and takes the user back to the idle screen.

- **Remedy WO 99444: Bluetooth devices unable to be removed**
  Resolved the following two scenarios:
  Issue (a): With a Bluetooth device turned off and all existing devices removed from the 'Manage devices' list the radio was power-cycled and a previous device reappears but cannot be connected to until the device is 'found and paired' again.
  Issue (b): If a radio has no devices paired or in the 'Manage' list, power-cycle the radio and enter Bluetooth menu to find 4 options when only 'Find Device' and 'Options' would be valid. TRM-49414

- **JIRA-TRM-50323, TRM-50412: Dealing with multiple system errors**
  If the radio encounters a system error while still handling an earlier one, it enters a safe mode to prevent an endless system error loop, at which point the radio will change to the display shown right.
  Being in this safe mode makes it possible to read or write a configuration, or upgrade the firmware if required - but not to enter user mode or test mode, until the radios is power-cycled.

- **JIRA-TRM-49667: Unexpected Geofence behavior**
  Found when investigating a related geofence operation that there was no reversion to Auto Mode if a radio has not yet acquired a GPS fix and the user puts the radio into Manual Mode within a trunked region. The radio will now revert to auto mode in a valid trunked site region.

- **Remedy INC 62085: Radio looping between Trunked and Conventional**
  Radios which use internally sourced GPS for Geofencing > Actions > Default Actions such as 'Change to Conventional' will now only process this when the last GPS fix places the radio outside all known zones and the radio is not currently in a Geofencing > Regions > Type of 'Fixed site'. If there has been no GPS location fix since startup, then the radio stays in the current region. TRM-50818

- **JIRA-TRM-50426: BLE Beacon not functioning in DMR v2.30**
  The Global > Bluetooth > BLE Beacon 'Transmit a BLE Beacon' worked correctly in firmware v2.29 but was not beaconing with firmware v2.30. Supported by the TP9300 series 2 and TP9500 as it requires Bluetooth 4 or later.

- **Remedy PBI 10804: Radios stuck with loss of service needing a manual reboot**
  Modified the radio behavior when receiving a C_Move during different hunt types, for example site interference causing control channel changes, and to also accept the C_Move when in an incoming or outgoing call setup. TRM-50292
- **Remedy WO 101364: CCDI Dial command fixes**
  Resolved the following two issues:
  Issue 1: When executing a dial command with numerical checksums, the radio would include the last two-digit checksums as part of the unit ID. For an example, when entering d057123436 (the radio ID is 1234 with checksum 36) the radio incorrectly took the radio ID as 123436.
  Issue 2: Radios would only take a dial command with numerical checksums and not respond to any command with checksums ending in alphabetical letters (e.g., d037609C).
  TRM-50071, TRM-50107
- **JIRA-TRM-51272: Pin entry can be bypassed by emergency mode**
  If a radio has Emergency using Programmable IO input (AUX_GPI2) or via Lone Worker and the radio is powered-off then at power-on the radio starts in emergency mode (as expected) but when the emergency ends the user no longer needed a pin for the radio to enter the idle screen.

Problems Fixed in DMR Firmware v3.01.02

- **Remedy WO 89420: CCDI transmit power functions report unsupported command**
  Functions in CCDI manual MTB-0003-xx defined how to switch between RF power output levels (Off, Very Low, Low, Medium, High) but the terminal always returned an error response. The CCDI commands now correctly permit the selection of transmit power levels – up to the configured value in the programming application for that channel. TRM-45991
- **JIRA-TRM-50646: Serial flash inhibiting Voice Annunciation**
  Resolved an error found in internal testing where the TM9300 mobile hardware version HW0006 had an issue loading voice annunciation files due to driver changes for flash devices. This issue was not present on current hardware version HW0007 and it did not affect HW0006 using firmware v2.30. TM9700 is not affected.

Problems Fixed in DMR Firmware v3.01.03

- **JIRA-TRM-51875: Support for keypad color control head**
  Implemented code changes to accommodate the release of the 21-key color control head (TCH6). Mobile radio bodies expecting to utilize this head need to be running firmware v3.01.03 or later.
- **JIRA-TRM-51817: Dual head primary selection missing**
  A dual head DMR radio should request primary head selection when first connected but if it powered-up in DMR trunked mode this didn't occur and would appear only if/when mode changed to conventional. This now appears regardless of the start-up mode.

- **JIRA-TRM-49487: Modify RS-485 termination configuration**
  Updated the displayed wording for the RS-485 termination when the radio has dual heads connected on the color control heads (TCH). The control heads now utilize the Blue (F2) and Orange (F1) for the shortest and longest cable runs (respectively). Previously these heads were using the scroll up/down keys for this operation.
- **JIRA-TRM-51699: Dual Body displays 'Prog Mode ENTITY ID'**
  Fixed an issue where a dual body system could show 'Prog Mode ENTITY ID' during a boot-up. This was traced to reading identical OTAP values in each body – even though OTAP was disabled. The radio will now use the individually configured Global > OTAP > Global 'Entity ID' if OTAP is enabled. If it is not enabled the greyed-out Entity ID's are ignored.
- **JIRA-TRM-51436: A loud speaker 'pop' heard with repeated button presses**
  An annoying 'pop' could sometimes be heard from the mobile speaker if the user is scrolling through talkgroups/channels with the scroll keys – particularly if they were rapid keypresses. This audible pop was prevalent when a keypress beep occurred close to an indicator beep.
- **JIRA-TRM-51498: System errors on mobile**
  Fixed occasional system errors found in internal test suites. These system errors could create a loop, not resetting the radio as intended until the next power-cycle.

Problems Fixed in DMR Firmware v3.01.04

- **JIRA-TRM-51970: TP9500 and TP9700 producing TDMA noise on transmit**
  Internal testing of DMR transmissions on the TP9500 and TP9700 UHF radios found TDMA noise present if the radios transmitted DMR Tier-2 or Tier-3 between 378 and 410MHz. This was traced to a transistor not switching the speaker circuit fully off when transmitting.
  This did not occur if the transmitting TP9500 or TP9700 was using a RSM or on the TP9300 and TM9300/TM9700 which use a different architecture.

Problems Fixed in DMR Firmware v3.01.05

- **JIRA-TRM-51876: BER failures in factory builds**
  Resolved an issue where factory run-up of only certain radio models were failing Bit Error Rate tests. TRM-52008
- **JIRA-RFET-6940: HK-band mobile not transmitting at top of the band**
  Resolved an issue found in production, but only on the HK-band high power mobile, where transmit would not ramp up correctly at the top of the band. This was an issue with the VCO loop voltage and was only present between firmware v3.01.01 and v3.01.04 inclusive.
  If existing HK mobiles are being upgraded, please ensure they use firmware v3.01.05 or later. TRM-51987

Known Problems or Limitations

- The TMX450 UnifiedVehicle does not support v3.x software. It can operate with Firmware up to v2.30.11 and will be supported in a later version, yet to be confirmed.

- Remedy INC 62665: TM9300 not unmuting to trunked traffic channel audio. This issue only occurs if the radio configuration has 'Traffic Channel Acquired' audible indicator disabled
- JIRA-TRM-50120: TP9500 users of MPT1327 that also utilize WiFi for OTAP may notice events where calls are not setup reliably during the WiFi startup phase
- JIRA-TRM-49104: Site-based Talkgroup selection not yet implemented
- JIRA-TRM-49708: Trunked calls can still be setup even though Inhibit PTT I/O line is active, conventional transmit remains inhibited
- JIRA-TRM-49702: Geo-fencing: 'Turn WiFi Off' is not turning off when crossing into a region
- JIRA-TRM-49638: 'Over-the-Air' alert tone does not work as expected on a Selcall channel during emergency cycling
- JIRA-TRM-47398: When a portable contains a Bluetooth configuration with 'Use Multi-Device UI' and 'Confirm Before Connecting', the user needs to select 'Yes' to a reconnect request at start up. The radio commences the connection process but quickly jumps to the next device in the list and asks the same question. If one of these devices is a Bluetooth PTT button and the other a headset, then this is understood, but if the listed items are both headsets this action becomes confusing.
- The TM9300 may display pop-ups when actions such as function keys are triggered, but if multiple pop-ups occur only the last one is seen
- JIRA-TRM-49566: Emergency cannot be triggered via I/O line when radio is powered off. If IOP_GPIO7 is set to emergency, and an *externally powered* programmable I/O board is connected to the internal options port, emergency will not be successfully triggered after the radio has completed its power-up
- JIRA-TRM-47352: Lone Worker active in Alarm Only emergency
  If Trunked > Fleet Parameters > Emergency > Emergency Call Type is set to 'Alarm Only', and manually activating emergency with a function key, Lone Worker will remain active – when the expectation is that it deactivates until the user toggles the emergency off
- JIRA-APP-15063: The Conventional > Basic Settings > Receiver Monitoring 'Hookswitch Monitor' option for mobile microphone use is inadvertently available in TP9300 and TP9500 portable configurations, and enabling this affects the auto quiet timer operations
- The TP9300 and TP9500 support the Savox BT-COM and BTR-155 Bluetooth devices, however if the device goes out of range of the radio (>10m) it may not successfully reconnect when it returns to the radio without also power-cycling. See TN-3154
- Some combinations of TM9356 dual body may produce TDMA Transmit artefacts on Tier-2 channels. See suggestions to alleviate this in TN-3159
- TM9300 and TM8200 do not support more than 31 BCD selections (5 BCD lines), the TM8100 supported 100 (8 BCD lines) in its later releases
- JIRA-TRM-39994: 'ECR Call Clear' does not cleardown a call if it is still being setup
- JIRA-TRM-40035: Normal PTT operation is not allowed while do not disturb or diverted are active

- JIRA-TRM-40017: Misleading messages are displayed when activating or deactivating ‘Do not disturb’
- JIRA-TRM-39979: Dial menu option is available when dialing on the channel is not supported
- JIRA-TRM-39970: Can't nuisance delete a channel when first selected while background scanning when ‘Include channel in scan regime’ is enabled
- JIRA-TRM-39963: Attempting an emergency call on DMR Tier-2 repeater that is out of range, shows ‘No Ack Received’ and not ‘No Repeater’ as expected
- JIRA-TRM-39944: Radio goes through emergency callout stage even if no emergency sequence configured
- JIRA-TRM-39943: Displayed pop-ups e.g.: ‘No Sat Rcvr’ stay frozen on display during stealth emergency
- JIRA-TRM-39942: A channel without emergency enabled looks frozen if stealth is activated even though keypresses and audio remain normal
- JIRA-TRM-39939: No pop-up given on dual-head secondary head if radio programming is attempted; programming is only supported through the primary (lowest MAC ID) head
- JIRA-TRM-39938: Activating upgrade mode for dual head radio while powered on results in only one head entering the correct mode
- JIRA-TRM-39936: Concealed mic audio is not overridden by standard mic when PTT pressed
- JIRA-TRM-39935: Emergency I/O ‘toggle’ does not function the way online help describes
- JIRA-TRM-38860: GPS location polling does not work if ‘Location Preamble Duration’ is set to 60ms; recommendation is to revert to using the 120ms default
- JIRA-TRM-38874: Occasional failure to send 128-character length message over IP
- JIRA-TRM-38813: TM9315 tries to display address book label of the associated group instead of preset ID when receiving incoming MPT1327 group call
- JIRA-TRM-38787: Unable to send a status to a talkgroup from the address book but sending SDM is allowed
- JIRA-TRM-38786: If the talkgroup is changed on a DMR Tier-2 channel, the radio will only receive statuses or SDMs for the default channel talkgroup, not the currently selected talkgroup
- JIRA-TRM-35525: If Tx9300 is configured with individual DMR Tier-2 calls (unchecked) you cannot return a missed call and cannot always answer an incoming call
- JIRA- TRM-27668: Disabling dynamic regrouping in the dropdown does not stop the radio accepting groups from the node
- JIRA-TRM-38919: If a TP9300 is in a radio unit monitor call and the external PTT is pressed, it will inhibit dialing radio IDs afterwards
- JIRA-TRM-38204, Remedy WO 24811: TM9300 data radios resetting if MAP27 commands are sent to the radio before it is ready, e.g.: immediately after start-up

- JIRA-TRM-37648: Radio does not unmute when returning to receive on a SIBT channel
- JIRA-TRM-37647: Radio may display Selcall/MDC1200 talker ID without also unmuting to a valid SIBT
- JIRA-TRM-35701: Pressing PTT while 'Can't return call on current channel' makes a group call on the channel instead of repeating the message
- JIRA-TRM-35649: Geofencing will not change modes if the radio is in a call
- JIRA-TRM-35565: When queue is full of SDMs, further messages are acknowledged as successful, but discarded
- JIRA-TRM-35482: The maximum transmit time from external PTT does not follow the PTT programmed maximum values
- JIRA-TRM-34041: DTMF freeform dialing is not subject to the TX timer duration
- JIRA-TRM-35535: Radio doesn't respond to the NACK_resp for DMR Tier-2 call alert
- JIRA-TRM-34048: DMR Tier-2: If 'PTT Phone Patch Dialing' is checked, the radio will allow 'Phone Patch Call Dialing' even though that option is unchecked
- JIRA-TRM-34054: 'No dialing on this channel' is accompanied by a valid keypress beep
- JIRA-TRM-34030: In trunked mode, dialing '*0*nnn' when statuses are not being used as dispatcher requests is not rejected
- JIRA-TRM-33336: Hunting sampled channel list reset on returning from payload channel
- JIRA-TRM-34018: DMR Tier-3 displays 'Busy' when attempting to send a status ID which has 'RX Processing' disabled on the receiving radio
- JIRA-TRM-32981: BER Diagnostic 1031 discrepancy between FW v2.14 and v2.15
- JIRA-TRM-32908: No Red TX LED when sending DMR Tier-2 Status
- JIRA-TRM-32036: When '#48#' is dialed and disabling of trunked call queuing is disallowed, the 'feature unavailable' tone is played twice

DMR Programming Application v3.1.2.2

Important Note: The TM8200 mobiles are no longer supported within the DMR programming application. A separate programming application **v2.30.4.13** has been released and will provide support for TM8200. This application will stand-alone alongside any later releases of the DMR programming applications (that will continue to get updates).
Any existing TM8200 datafiles can still be loaded into the DMR programming application using File > Import where it can be *converted* to TM9300 or TP9300 for fleet migration.

New Features and Enhancements:

- Added support for the TP9700 multiband portable and TM9700 dualband mobile.

- **JIRA-XPA-965: Add Checkbox for Color Control Head Adaptive Brightness**
  The mobile color control head will feature an adaptive brightness sensor and a checkbox 'Adaptive Brightness' has been added to Global > Startup > General.
  A Radio Menu checkbox for this is also provided in both *Conventional Menu* and *Trunked Menu* > *Radio settings* > *Display settings.*
  This will provide functionality by the mobile color control head – after first release.
  This feature is separate to the preset 'Low Light Backlight Level Adjustment' checkbox functionality.

- **JIRA-XPA-951: Add Audio Profiles**
  Significant and ongoing work to improve the audio in Tait radios includes the introduction of Global > Audio Profile. This allows users to select different profiles on a per-channel basis in Conventional > Channels > Detailed and in Trunked > Trunked UI > General – where this setting is across all networks.
  More detail is provided in TN-2699i-AN – Configuring Tait Radio Audio Enhancements.

- **JIRA-TRM-49391: Allow Geofence on TM9315 and TP9310 models**
  Modified the programming application such that 'Allow Auto Mode' is no longer disabled when these 'Entry Level' model types were selected

- **JIRA-XPA-926: Bluetooth Connectable option**
  Added in Bluetooth > General > Common a new checkbox 'Connectable' and 'Power-On Action' dropdown where the portable can respond to a Bluetooth connection request.

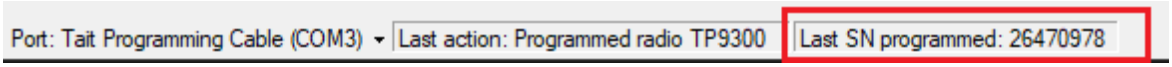
- **JIRA-XPA-915: Allow Lone Worker control remotely**
  Provided the ability to interrogate and modify the status of Lone Worker on individual radios

- **JIRA-XPA-822: Allow Vote/Scan groups in Keypad Store/Recall feature**
  Implement ability in application to store/recall Vote or Scan groups using the keypad number buttons when Conventional > Conv Key Settings 'Use Numeric Keypad for Channel Store/Recall'. TRM-48992

- **JIRA-XPA-801: Add checkbox for mobile hookswitch under Lone Worker**
  TM9300 mobile users found vehicle vibrations would erroneously reset Lone Worker timer functions if the microphone 'bounced' in the hangup clip. A new checkbox was added to both Conventional > Conventional Lone Worker and Trunked > Trunked Lone Worker pages to ignore this microphone clip action. TRM-49819

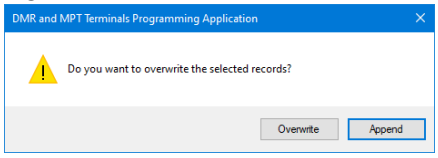
- **JIRA-XPA-519: Add radio menu item for Enabled Bands**
  Expanded *Conventional Menu* > *Radio Settings* > *Radio info* and *Trunked Menu* > *Radio Settings* > *Radio info* to list 'Enabled Bands' checkbox where the actual RF bands enabled and configured in the TP9700 and TM9700 can be viewed by the user.

- **JIRA-XPA-896: Add the radio's serial number to the App status bar**
  Added a box that will display the serial number of the last radio read or programmed radio. There's often a need to confirm the serial number of the current radio – without interrogating the radio again to verify this. This item can also be right-clicked to save to an external list if desired.



- **JIRA-TRM-48185: Full call string for PSTN/PABX calls in extended addressing UDTs**
  Added a new checkbox in Trunking > Call Options > DMR 'Include PSTN/PABX prefix in UDT'. This allows the radio to include the PSTN or PABX prefixes of '01' or '02' in the address sent in the UDT appended data.

- **JIRA-XPA-133: Reword the channel paste pop-up box**
  Previously when using excel to copy and paste channel configurations the user was presented with a pop-up box with the text
  "Do you want to overwrite the selected records?
  Click 'Yes' to overwrite or 'No' to append.".
  This has been simplified to 'Overwrite' or 'Append' on the button text



Problems Fixed:

- **JIRA-XPA-1042: Changing Hardware Flow Control crashes the app**
  Resolved an error when a TM9300 uses Conventional > Conv Data Params > CCDI Mode > Transparent Mode Enabled then attempted to configure Hardware Flow Control for CTS and RTS in Global > Serial Protocol > Hardware Flow Control dropdowns which caused the application to crash.

- **JIRA-XPA-860: Standardize DMR to use the term 'Inhibit'**
  Previously the inhibit commands displayed within the application and on the radio displays were both inhibit and stun.

- **Remedy WO 103832: RS232 mobile option board RTS/CTS configuration**
  Corrected the defaults so that configuring the RS232 board (T02-00007-BAAA) with the RTS/CTS hardware flow control lines using its included documentation now results in the hardware flow control working. This was due to incomplete auto-population of the Programmable I/O > Digital 'Active' state which remained 'None' instead of the expected 'Low'. XPA-913

- **JIRA-XPA-106: Validation won't allow removal of one of the function key actions**
  If a mobile has a function key with both a short and long action configured and a programmable I/O has been assigned to simulate that function key, you could not then remove either of the actions. Corrected the validation such that only one action must be set.

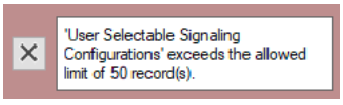
- **Remedy INC 57189: Reset On Error behavior changed**
  The 'Reset On Error' checkbox previously found on the Global > Startup > General page has been removed. This is now enabled by default when creating new configurations and is also enabled regardless of any existing configuration when it is written to a radio.
  If the radio does encounter an operational issue during use that forces it to reset the radio it will display an error code for 5-seconds before restarting into normal operation.
  If a deeper investigation requires the radio to not reset in the event of a system error, a new CCTM command '204 26' allows the next system error to stay on the display until the radio is manually power cycled.
  If this scenario has occurred, it will log this as the last error in the radio error log, which can then be downloaded and cleared using Tools > Radio Error Log process.
  XPA-470, XPA-750
- **JIRA-XPA-102: A radio can have 'Call Alert Rx Enable' but 'Individual Call Tx' disabled**
  With this configuration a radio receiving a call alert displays 'Selected op not allowed' message to the user. A validation warning has been added if this is configured "*Warning: You have configured the radio for call alert but the user does not have the capability to call back the initiator of the call alert.*"

Online Help Changes:

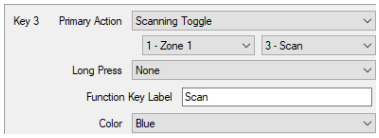
- **Remedy WO 101929: Update Online Help for Emergency Activation Delay**
  Added details to the Conventional > Conv Key Settings > Emergency Activation Delay online help suggestion to also set the Global > UI Preferences > Audible Indicators 'Loneworker Awaiting' audible indicator to 'Enabled' and 'Continuous'. XPA-733
- **JIRA-XPA-857: Update Help text for 'Low-light backlight level'**
  Updated the online help for this item to use the title 'Low-light Backlight Level' and add context that this feature is best utilized with the mobile display backlight set as continuous.
- **JIRA-XPA-731: Add missing help on location formats in trunked**
  Copied the online help for 'Tait Data Format-3' in DMR Embedded Location to also now appear under Trunked > Data Parameters > Location > DMR Location Format
- **JIRA-XPA-564: Geofenced Fixed Site SYS Code is decimal**
  Updated the online help text for Geofencing > Regions > Type using 'Fixed Site' that the SYS Code value entered here is decimal. The Node lists SYS Codes as hex.

DMR Programming Application v3.1.4.5

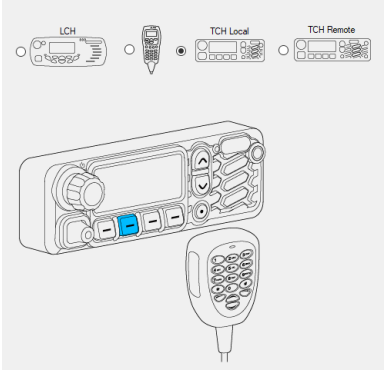
- **Remedy WO 104418: User Selectable Signaling causes error**
  DMR programming applications v2.30.2.7 and v2.30.3.2 would display a pop-up error when attempting to read, save or write a configuration that had the full 50 possible subaudible entries in Conventional > Subaudible Signaling – incorrectly advising the number was exceeded. This pop-up error did not occur in v2.30.1.2 or earlier. XPA-1062



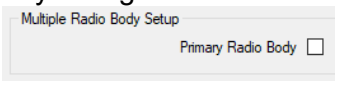
- **JIRA-XPA-715: Implement F3 and F4 labels and colors for Color Control Head**
  The mobile color control heads (TCH) can have a label and a color assigned to function keys F3 and F4.
  The 'Color' option boxes for F3 and F4 appear once an action is selected (an example for F3 shown right).
  If the mobile has a graphical head or HHCH it will ignore these label and color settings configurations.



- **JIRA-XPA-712: Add TCH images to Key Settings page**
  Updated the TM9300 and TM9700 Conv Key Settings and Trunked Key Settings pages to include the display of the (TCH) color control heads and location of the relevant function keys for all head variants.



- **JIRA-XPA-1096: Primary Radio Body checkbox not visible**
  The 'Primary Radio Body' checkbox on the Global > Specifications page was incorrectly left hidden for TM9300 and TM9700 mobiles. This is used to define which body in a dual-body configuration is responsible for the UI display etc. It should only be checked on one radio but if it is checked on more than one radio (or neither) then one radio is chosen at random.



Online Help Changes:

- Corrected a number of Help file pages that did not appear or were blank.

Known Issues Or Limitations

- If there is no Tait programming cable connected to the PC when choosing the 'Voice Annunciation' folder in Tools > Options > General > Browse the application will display an unexpected error and exit. XPA-56
- There is currently no help text for the new Global > UI Preferences > Voice Annunciation > Radio Shutdown Annunciation field for portables in this application release.

Programming Application Database Compatibility

Cadence	DMR Programming Application	TM8200 Database	TM9300, TP9300 and TP9500 Database	TM9700 and TP9700 Database
R22.3	v2.30.0.1	0063	0422	x
R22.3-Patch	v2.30.1.2	0063	0422	x
R22.3-Patch	v2.30.2.7	0063	0423	x
R22.3-Patch	v2.30.3.2	0063	0423	x
TM8200 final	v2.30.4.13	0063	0423	x
R23.2	v3.1.2.2	(use v2.30.4.13)	0443	0443
R23.2-Patch	v3.1.4.5	(use v2.30.4.13)	0443	0443

Calibration Application v3.1.1.1

- **Remedy INC 58640: DCS deviation correction**
  Reading an existing calibration from a radio will now correctly display the DCS on the Dev/Squelch > Deviation Settings page. This should be 15% of FSD but an error (present for some time) showed what the radio has programmed was actually much higher, and the calibration application will now display this.
  The default value in radios built from June 2023 has also been updated to the correct level, but any existing radios can use this application version to decrease the DCS value if desired. Note that modern DCS decoders were able to deal with this higher level without issue.

- **JIRA-TC-192: Add support for TM9700 and TP9700**
  Added support for the TMC (TM9700 and TM9800 mobiles) and the TPH (TP9700 and TP9800 portables) to the calibration application.

Windows O/S Compatibility

- The Programming and Calibration Applications require Microsoft [.NET] framework v4.7.1 (or later). The applications are tested as compatible with the following O/S:
  - Windows 11 (64 bit)
  - Windows 10 (32 and 64 bit)

  Windows XP, Vista, 7, 8.0 and 8.1 are not supported.

First Serial Numbers v3.01.01

TM9300 Mobile Firmware v3.01.01*	S/N **21579272**
TM9700 Mobile Firmware v3.01.01	S/N (*TBA*)
TP9300 Portable Firmware v3.01.01*	S/N **26842138**
TP9500 Portable Firmware v3.01.01	S/N **26829158**
TP9700 Portable Firmware v3.01.01	S/N **26829181**

***** The TM9300 and TP9300 installed firmware is unsigned for this cadence R23.2.
These models will move to signed from the R23.3 cadence onwards.

Publication Information

Related Documentation	TN-1899e-AN – Upgrading Terminal Firmware TN-2699i-AN – Configuring Tait Radio Audio Enhancements TN-3321k-SR – DMR R22.3 Cadence v2.30.10 TN-3396-SR – TM8200 Programming Application v2.30.4.13 TN-3397b-AN – Introducing Code-signing and OTAP2
Compliance Issues	None.
Compatibility Issues	None.
Confidentiality	Confidential – This message or document contains proprietary information intended only for the person(s) or organization(s) to whom it is addressed. All recipients are legally obliged to not disclose Tait technological or business information to any persons or organizations without the written permission of Tait.
Distribution Level	Associate.

Document History

Issue	Date	Description	Author
-	4 September 2023	Release of DMR Firmware v3.01.01, DMR Prog App v3.1.2.2 and Cal App v3.1.1.1	J James G Brenchley
b	21 September 2023	Updated to advise EnableFleet needs to be v4.9.0 or later. Release of Prog App v3.1.4.5 with new control head visuals. Firmware v3.01.02 fixes.	G Brenchley
c	21 November 2023	Added first serial numbers for firmware v3.01.01. Added changes for firmware v3.01.03.	G Brenchley
d	7 December 2023	Added changes for firmware v3.01.04 and v3.01.05	G Brenchley