

Product Change Notification
Software Release Notice

MultiConnect® rCell 100 Series Cellular Routers

mPower™ Edge Intelligence mPower 5.2 Firmware Available



Date: June 2, 2020

Product Change Notification Number
PCN 06022020-MTR-001

I. Overview

MultiTech announces updated firmware versions for MultiConnect® rCell 100 Series cellular router devices.

The purpose of this Software Release Notice is to alert customers that updated code is available for evaluation and to provide customers important information on this new release.

New mPower Version: mPower MTR 5.2

Contents

- | | |
|--|---|
| I. Overview | VII. Upgrading Firmware |
| II. Schedule | DeviceHQ |
| III. mPower™ Edge Intelligence | Web Interface |
| IV. Models Impacted | VIII. Ordering Part Numbers Impacted |
| V. Release Guidelines | IX. Future mPower Releases |
| VI. mPower 5.2 Overview | X. MultiConnect rCell Overview |
| New Features | XI. Additional Information |
| Feature Enhancements | |
| Bug Fixes | Appendix A: Current Firmware Versions |

II. Schedule

There are multiple versions of mPower Edge Intelligence firmware available for customer evaluation and final release.

- Downloadable Versions
 - mPower MTR 5.2 Availability: May 28, 2020
 - 1. Visit <https://www.multitech.com/brands/multiconnect-rCell-100-series>
 - 2. Locate and select the correct model number from the Product Listing
 - 3. Visit DOWNLOADS tab and select mPower 5.2 from the list of available firmware downloads
- Manufacturing
 - See [Ordering Numbers Impacted](#) for details on when mPower MTR 5.2, will be available for different devices
- DeviceHQ®
 - Cloud-based IoT Device Management
 - mPower MTR 5.2 Availability: May 28, 2020
 - https://www.devicehq.com/sign_in

III. mPower™ Edge Intelligence

mPower™ Edge Intelligence is MultiTech's embedded software offering, building on the popular application enablement platform, to deliver programmability, network flexibility, enhanced security and manageability for scalable Industrial Internet of Things (IIoT) solutions.

mPower Edge Intelligence simplifies integration with a variety of popular upstream IoT platforms to streamline edge-to-cloud data management and analytics, while also providing the programmability and processing capability to execute critical tasks at the edge of the network to reduce latency, control network and cloud services costs, and ensure core functionality – even in instances when network connectivity may not be available.

In response to evolving customer security requirements, mPower Edge Intelligence incorporates a host of security features including signed firmware validation, enhanced firewall and VPN settings, secure authentication and more.

IV. Models Impacted

The following models are impacted by these firmware updates:

- MultiConnect® rCell 100 Series Cellular Router

For a specific list of the ordering part numbers impacted, reference [Ordering Part Numbers Impacted](#)

V. Release Guidelines

With each new mPower firmware release, the following release guidelines are followed. For a specific list of the ordering part numbers impacted, reference [Ordering Part Numbers Impacted](#)

Hardware Status	Manufacturing Updates	Comments
New	May 2020	- New device that is shipping for the first time - Some customers may be testing devices with an earlier version of mPower firmware or a beta version of mPower firmware - MultiTech recommends that customers update this hardware to mPower 5.2 firmware
Active	July 2020	- Active devices continue to ship with earlier mPower versions for the next 60 to 90 days - Customers are encouraged to evaluate mPower 5.2 firmware prior to this transition
NEOL	n/a	- NEOL devices continue to ship with earlier mPower versions - Devices can be individually updated by customers
EOL	n/a	- EOL devices are no longer available for sale from MultiTech and not supported in mPower 5.2 firmware - Technical inquiries: email support@multitech.com - Sales inquiries: email sales@multitech.com

VI. mPower 5.2 Overview

Minimum System Requirements (MTR 5.2)

To install mPower 5.2, the MultiConnect rCell must be upgraded to MTR 5.0.0 or higher. Customers that are running earlier versions of mPower should use the following upgrade process:

MultiConnect rCell Models:

- mPower MTR 3.4.5
 - Upgrade to MTR 5.0.0
 - Install and upgrade to MTR 5.2
- mPower versions earlier than mPower 3.4.5
 - Upgrade to MTR 3.4.5
 - Upgrade to MTR 5.0.0
 - Install and upgrade to MTR 5.2
- mPower 5.0.0
 - Install and upgrade to MTR 5.2

New Features (MTR 5.2):

mPower 5.2 versions include the following new features:

- Verizon APN: Setting for Verizon APN is now configurable to override what is in the PDP context [GP-33, GP-435]
- Security (/tmp Director Change) [GP-59]
 - The /tmp directory includes the following permissions: noexec, nosuid, nodev (default noexec)
 - This change affects any custom applications that try to run scripts in that directory.
 - Custom applications can no longer be executed from this directory.

3. Added PPP Configurability: [GP-274]
 - IP mode in the PDP context is configurable (ipb6cp-max-configure *n*)
 - Maximum number of IPv6CP configure-request transmissions, default 10 (ipb6cp-max-failure *n*)
 - Maximum number of IPv6CP configure-NAKs returned before starting to send configure-rejects, default 10 (ipb6cp-max-terminate *n*)
 - Maximum number of IPv6CP terminate-request transmissions, default 3 (ipb6cp-restart *n*)
 - Set the IPv6CP restart interval (retransmission timeout), default 3 seconds
4. MTU Support: Support added for Maximum Transmission Unit (MTU) and other connection settings through Web UI and API [GP-341]
5. arping Requests: Enhancement to use arping to broadcast IPs on interfaces. This enhancement was implemented in order to improve Web UI responsiveness after a reboot. [GP-343]

API Command Changes (MTR 5.2):

The MultiConnect rCell 100 Series Router uses the RESTful JSON API for managing configurations, polling statistics, and issuing commands. mPower MTR 5.2 versions include a number of API changes.

API Reference: <http://www.multitech.net/developer/software/mtr-api-reference/#http://www.multitech.net/developer/software/mtr-api-reference/>

API Delta Document (mPower 5.1 to mPower 5.2):
<http://www.multitech.net/developer/software/mtr-software/mtr-api-reference/api-changes/>

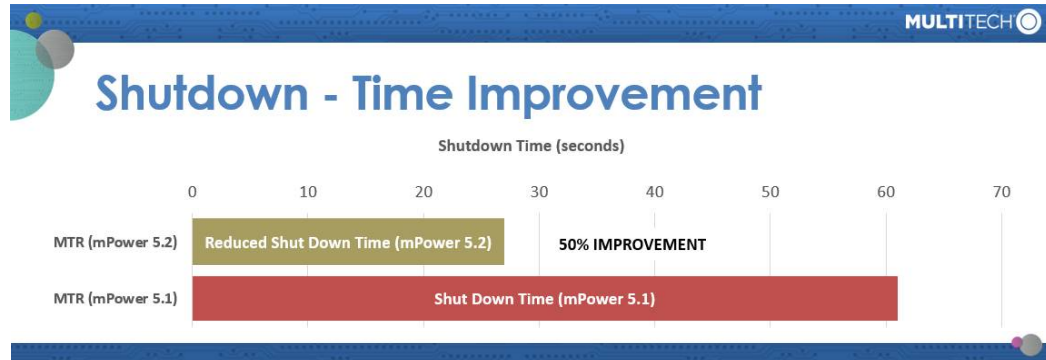
Feature Enhancements (MTR 5.2):

mPower 5.2 versions include the following feature enhancements:

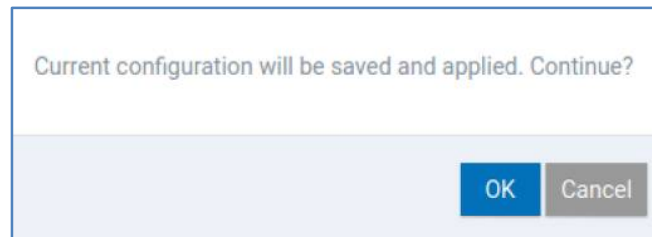
1. Reduced Boot Time Previous versions of mPower resulted in longer boot times. mPower 5.2 includes new features and optimization that decrease the device boot time up to 25% [GP-256, GP-360, GP-362, GP-363, GP-364]



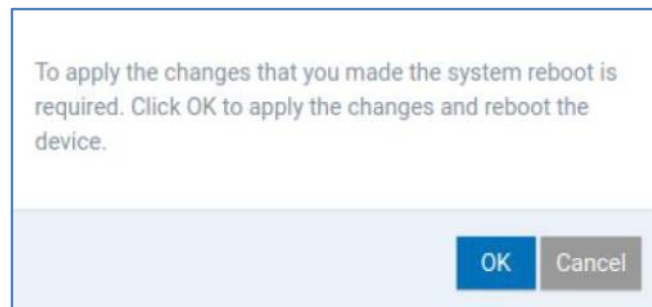
2. Shutdown Time Optimization: When restarting a device, the total time to reboot also includes shutdown time. Previous versions of mPower resulted in longer shutdown times. mPower 5.2 has been updated to reduce shutdown time. MTR mPower shutdown time has been shortened by 50%.



3. Save and Apply Configuration Settings without Restarting: Previous versions of mPower required a device reboot for most system configuration settings. mPower 5.2 has been updated to save and apply many configuration settings without the need to restart. In these cases, the user will be presented a “Save and Apply” button after making configuration settings. If “Cancel” is selected, changes are not saved. [GP-339]



A limited number of system configuration setting changes will still require the device to be restarted. In these cases, the user will be presented with a “Save and Reboot” button after making configuration settings. If “Cancel” is selected, changes are not saved.



Only the following configuration changes will still require a reboot.

Functionality	Description
Access Configuration → Brute Force Prevention	Brute Force Prevention prevents brute force password authentication attacks (requires API restart)
Access Configuration → Session Timeout	This is the amount of inactivity time that a logged in Web UI user can have before being logged out. (requires API restart)
Debug Options	Log level in API requires a reboot (requires an API restart)
PPP-IP Passthrough Mode → Cellular Configuration	Most of the changes on the Cellular Configuration page except “Connect Timeout”, “Dialing Max Retries”, “Diversity”, “IPv4 Primary DNS”, and “IPv6 Primary DNS” will require a reboot.
Serial Modem Mode – Modem Configuration	Serial Port Configuration and LAN Configuration on the Serial Modem Mode Configuration page will require reboot if user changes any of the available settings.
Network Interfaces Configuration	Due to the nature of all the things impacted by changing an interface IP, or other configuration item, a reboot will still be required.
X.509 Certificates (Web Server Certificate)	Due to the number of things changing the certificate affects (lighttpd and API primarily) it still requires a reboot.
Firmware Upgrade	Required for applying upgrade
Restore Configuration	All the features that require a reboot (since their configuration can be changed by this feature) force this feature to require a reboot also.
Initial Setup Wizard	Serial Modem Mode, PPP-IP Passthrough Mode, and configuration of network interfaces
Cellular Configuration	Enable/Disable PPP/WWAN will require a reboot
Wi-Fi as WAN	Enable/Disable WLAN0 (WiFi-As-WAN)

4. Radio Support:

- It has been deemed best practice to de-register the cellular radio before setting the PDP context and re-registering [GP-438]
- The firmware will check if the PDP context values are correct. If the IP mode and APN are already correct, do not make changes to PDP context. In earlier mPower versions, PDP context changes were applied no matter what the state in the PDP context, which proved to be problematic [GP-439]
- When checking registration on LTE cellular radios, if CREG, CGREG, and/or CERE are available, the firmware needs to check for registered status. If any one of these returns a registered status, then device can proceed to connect [GP-440]
- When using roaming SIMs, if 0,5 is returned by any of the registration check commands, the device can be treated as “registered” and create a connection to the network [GP-441]

5. SMS Storage:

- Earlier versions of mPower firmware stored SMS messages on the SIM card.
- In mPower 5.2, this has been changed and now SMS messages are stored on the cellular radio.
- This change resolves SMS send and receive failures. [GP-515]

6. ppp_pre_chat Updates: Earlier mPower versions execute some separate paths for FWSWITCH radios that do the exact same thing for the different modes including PDP context handling. mPower 5.2 has been updated to handle these requests in the same manner whenever possible [GP-327]

7. Cellular Radio Reset: Customer feedback has reported that occasionally, the cellular radio needs to be reset when it is unable to register on the wireless network. mPower 5.2 has been updated to include a new option to help resolve this issue: "Radio Reset Registration Failure" [GP-443]
8. Support for Passive FTP Sessions: Users can enable [nf_contrack_helper](#) when they create FTP rules in the web user interface [GP-516]
9. Web User Interface: HTML 5 Updates: Local storage issue was causing unresponsive user interface after device was updated to mPower 5.1.5. mPower 5.2 has been updated to correct this issue. [GP-521]
10. DeviceHQ Custom Application Support: When installing a new application, the backup of the original application will now be optional. If the installation of the new application fails, the original application will not be restored. [GP-540]
11. Lighttpd Version Update: lighttpd updated to version 1.4.48 [GP-552]

Bug Fixes (MTR 5.2):

mPower 5.2 versions include the following fixes to bugs that were identified in earlier mPower versions:

1. GRE Tunnel. In mPower 5.0 versions, the network interface configuration was changed and in some cases worked incorrectly. In mPower 5.2, GRE Tunnel IP address has been added to the GRE tunnel configuration page to correct this issue. [GP-336]
2. IPv6 in PPP-IP Passthrough with Verizon. The code is trying to use dual stack mode "IPv4V6" in the PDP context and it is not getting a global IPv6 address. This has been corrected in mPower 5.2 [GP-447]
3. Remote Management Repeatable Time Option: When Remote Management (DeviceHQ) is enabled and repeatable option set at Daily, an extra colon is added to the end of the time (i.e. 9:00:). Functionally, this works but the user receives an "Invalid Repeat Time" message because of the extra colon. This has been corrected in mPower 5.2 [GP-499]
4. User-Interface Dialog Box Update: When the browser window is small enough for a hidden left menu, if the user selects one of the Commands options a pop-up with "OK | Cancel" is provided. The user cannot reach the dialog as it is behind the progress overlay. In full size browser this does not happen. This has been corrected in mPower 5.2 [GP-522]
5. API Updates: In mPower 5.2, the following characters and sequences (separated by commas) are now prohibited in API commands that use the system() call: &, &&, |, ||, ;, \$ ` , 0x0a, \n [GP-541]

Known Behaviors (MTR 5.2)

1. OpenVPN Tunnel Names. [MTX3353]
 - In earlier versions of mPower firmware, customers have created OpenVPN tunnel names that include spaces.
 - After upgrading to mPower 5.0, mPower 5.1, or mPower 5.2, the device can become inaccessible due to the spaces in the OpenVPN tunnel name.
 - Customers are encouraged to rename OpenVPN tunnel names and remove spaces prior to upgrading to mPower 5.2.
2. Lost Cellular Connection – MTR-LNA7 Models
 - When changing the MTR-LNA7 from one SIM card to another, cellular connection can be lost.
 - Scenario #1: Customer first inserts an AT&T SIM card and then later replaces it with a Verizon SIM card
 - Resolution: <https://www.multitech.com/support/resolutionid/5102328>

- Scenario #2: Customer first inserts a Verizon SIM card and then later replaces it with an AT&T SIM card [GP-652]
 - Resolution: The following steps should be followed when switching from a Verizon SIM card to an AT&T SIM card.
 - (1) Remove the Verizon SIM card
 - (2) Insert the AT&T SIM card
 - (3) Reboot the device and restore factory settings by pressing the RESET button for 30 seconds or longer
- Scenario #3: Customer first insert a Verizon SIM card with one APN and then later replaces it with a second Verizon SIM card with a different APN [GP-653]
 - Resolution: <https://www.multitech.com/support/resolutionid/5102328>
- 3. **SMS Messages Not Being Received – MTR-LNA7 Models** [GP-655]
 - When a Verizon SIM and MTR-LNA7 have different 3GPP configurations, the MTR-LNA7 will not receive SMS messages
 - Resolution: <https://www.multitech.com/support/resolutionid/5102329>
- 4. **Dial-On Demand – MTR-LVW2 and MTR-LNA7 Models** [GP-656]
 - Dial-on demand is not supported on the Verizon network. Previously, a warning was presented to the customer, but this warning has been removed.

Cellular Radio Support (MTR 5.2):

mPower 5.2 supports the following cellular radios:

Cellular WAN Support	Wireless Carrier	MultiConnect rCell
LTE Cat M1/NB-IoT Global (-MNG2 models) Telit ME910C1-WW	Europe North America	X
3G-HSPA+ Global (-H5 models) Telit HE910-D and Telit HE910-G	AT&T Global	X
4G-LTE Category 3 North America (-LAT1 models) Telit LE910-NAG	AT&T	X
4G-LTE Category 3 Europe (-LEU1 models) Telit LE910-EUG	European Carriers	X
4G-LTE Category 3 North America (-LVW2 models) Telit LE910-SVG	Verizon	X
4G-LTE Category 4 Europe (-LEU7 models) Quectel EG95-E	European Carriers	X
4G-LTE Category 4 North America (-LNA7 models) Quectel EG95-NA	AT&T Verizon	X

VII. Upgrading Firmware

Upgrading Using DeviceHQ

At any time in the upgrade process, customers can send an email to support@multitech.com or call +1(763) 717-5863.

DeviceHQ can update the firmware running on any supported device. Since devices have no live connection to DeviceHQ, firmware updates are made the next time a device checks into DeviceHQ.

Instructions:

1. Visit <https://www.devicehq.com>
2. Sign in to your account using your **email address** and **password**
3. Click **Devices**. The device list page opens.
4. Click the name of the device you want to update. You can update firmware on filtered devices or selected devices.
 - If you select individual devices, you update firmware on selected devices or the filtered devices.
 - If you do not select devices you update the firmware on the filtered devices.
5. Click **Schedule** and select **Upgrade Firmware**. From the list of firmware that appears, select the name of the firmware file. A confirmation message appears, informing you that the new firmware is to be applied to the device when the device next checks in.
6. To confirm that you want to update the firmware click **OK**.

NOTE: To schedule multiple devices at once, see help file within DeviceHQ

Upgrading Using the Web Interface

At any time in the upgrade process, customers can send an email to support@multitech.com or call +1 (763) 717-5863.

It is recommended that customers backup their configuration before performing an upgrade.

- If the firmware upgrade fails, or it does not show the login page again, wait an additional 10 minutes.
- Power off and on the hardware and log in using the web interface to check the version.
- If the version does not show the latest, then the upgrade was not successful.
- Try to perform the firmware upgrade again by repeating all the steps.

Instructions:

1. Before upgrading, reboot the device.
2. Visit <https://www.multitech.com/brands/multiconnect-rcell-100-series>
3. Locate and select the model number from the product listing
4. For the model number selected, open the DOWNLOADS menu
5. Select the latest firmware version and download it to a known location
6. Open the device web interface
 - a. Select **Administration > Firmware Upgrade**. The Administration: Firmware Upgrade pane opens
 - b. Click **Choose Firmware Upgrade File** button:
 - i. Click **Browse** to find where the firmware file resides that you want to apply
 - ii. Select the file and click **Open**. The file name appears next to the **Choose Firmware Upgrade File** button. Make sure you select the correct BIN file; otherwise, your device can become inoperable.
 - c. Click **Start Upgrade**.
 - d. A message about time needed to upgrade appears. Click **OK**. A progress bar appears indicating the status of the upgrade. When upgrade is completed, your device reboots.
 - e. After the firmware upgrade is complete, verify your configuration to make sure it is what you expected.

Notes:

- The new firmware is written into flash memory.
- It may take up to 10 minutes to upgrade the firmware. Do not interfere with the device power or press the reset button during this time.

VIII. Ordering Part Numbers Impacted

The following ordering part numbers are impacted by these updates:

Model Name		Ordering Part Numbers
MultiConnect® rCell 100 Cellular Routers		
Status: Active ⁽²⁾	Status: Active ⁽²⁾	Status: NEOL ⁽³⁾
MTR-H5-B07-US-EU-GB ⁽²⁾	MTR-H6-B18-EU ⁽²⁾	MTR-LAT1-B07 ⁽³⁾
MTR-H5-B09-US-EU-GB ⁽²⁾	MTR-H6-B18-GB ⁽²⁾	MTR-LAT1-B07-US ⁽³⁾
MTR-H5-B08-US ⁽²⁾	MTR-H6-B19 ⁽²⁾	MTR-LAT1-B07-US-NP ⁽³⁾
MTR-H5-B08-US-EU-GB ⁽²⁾	MTR-H6-B18-EU-GB ⁽²⁾	MTR-LAT1-B08 ⁽³⁾
MTR-H5-B07 ⁽²⁾	MTR-LEU7-B07 ⁽²⁾	MTR-LAT1-B07-AS ⁽³⁾
MTR-H5-B07-US ⁽²⁾	MTR-LEU7-B07-EU-GB ⁽²⁾	MTR-LAT1-B08-US ⁽³⁾
MTR-H5-B07-GB ⁽²⁾	MTR-LEU7-B10 ⁽²⁾	MTR-LVW2-B07 ⁽³⁾
MTR-H5-B07-EU ⁽²⁾	MTR-LEU7-B10-EU-GB ⁽²⁾	MTR-LVW2-B07-US ⁽³⁾
MTR-H5-B08 ⁽²⁾	MTR-LEU7-B07-HZ ⁽²⁾	MTR-LVW2-B07-PS ⁽³⁾
MTR-H5-B09 ⁽²⁾	MTR-LEU7-B10-HZ ⁽²⁾	MTR-LVW2-B08 ⁽³⁾
MTR-H5-B09-US ⁽²⁾	MTR-LNA7-B07-HZ ⁽²⁾	MTR-LVW2-B08-US ⁽³⁾
MTR-H5-B09-GB ⁽²⁾	MTR-LNA7-B10-HZ ⁽²⁾	MTR-LEU1-B07 ⁽³⁾
MTR-H5-B09-EU ⁽²⁾	MTR-LNA7-B07 ⁽²⁾	MTR-LEU1-B07-EU-GB ⁽³⁾
MTR-H5-B10 ⁽²⁾	MTR-LNA7-B07-US ⁽²⁾	MTR-LEU1-B08 ⁽³⁾
MTR-H5-B10-US ⁽²⁾	MTR-LNA7-B07-PS ⁽²⁾	MTR-LEU1-B08-EU-GB ⁽³⁾
MTR-H5-B10-US-EU-GB ⁽²⁾	MTR-LNA7-B10 ⁽²⁾	
MTR-H6-B16 ⁽²⁾	MTR-LNA7-B10-US ⁽²⁾	
MTR-H6-B16-EU ⁽²⁾	MTR-MNG2-B07 ⁽²⁾	
MTR-H6-B16-GB ⁽²⁾	MTR-MNG2-B10 ⁽²⁾	
MTR-H6-B16-EU-GB ⁽²⁾	MTR-MNG2-B07-WW ⁽²⁾	
MTR-H6-B18 ⁽²⁾	MTR-MNG2-B10-WW ⁽²⁾	

Footnotes:

	Hardware Status	Manufacturing Updates	Comments
(1)	New	May 2020	- New device that is shipping for the first time - Some customers may be testing devices with an earlier version of mPower firmware or a beta version of mPower firmware - MultiTech recommends that customers update this hardware to mPower 5.2 firmware
(2)	Active	July 2020	- Active devices continue to ship with earlier mPower versions for the next 60 to 90 days - Customers are encouraged to evaluate mPower 5.2 firmware prior to this transition
(3)	NEOL	n/a	- NEOL devices continue to ship with earlier mPower versions - Devices can be individually updated by customers

IX. Future mPower Firmware Release

The next version of mPower is anticipated to be released in the autumn of 2020. This release will include:

- New cellular radio support
- New features, feature improvements and bug fixes

This release will also include some major changes that customers should be aware of:

1. Upgrade to TLS 1.3
 - Current mPower versions support configurable TLS 1.0, 1.1, and 1.2.
 - The benefits of TLS 1.3 are:
 - Increased speed of encrypted connections
 - Improved security due to the removal of obsolete and insecure features from TLS 1.2
 - Greater browser support
 - Increased SSL server support

X. MultiConnect® rCell® 100 Series Intelligent Cellular Routers

The MultiConnect rCell is a compact, intelligent and fully-featured communications platform that provides cellular capabilities for fixed and mobile applications. It is intended for use in settings such as:

- Remotely monitoring solar micro-inverters, tanks, pipelines, meters, pumps and valves in any energy, utility, or industrial application.
- The MultiConnect rCell 100 series family has also been successfully deployed by professionals in emergency services, vending, remote patient monitoring, renewable energy systems, process automation and mobile applications (truck, rail, and boat).

The MultiConnect rCell 100 series (MTR-xx) of cellular routers are a part of the MultiTech comprehensive portfolio of cellular connectivity products optimized for M2M (machine-to-machine). The MultiConnect rCell comes with no cost access to DeviceHQ® which is MultiTech's cloud platform service to monitor and manage deployed MultiConnect rCell cellular routers in the field.

XI. Additional Information

If you have any questions regarding this Product Change Notification/Software Release Notice, please contact your MultiTech sales representative or visit the technical resources listed below:

World Headquarters – USA

+1 (763) 785-3500 | sales@multitech.com

EMEA Headquarters – UK

+(44) 118 959 7774 | sales@multitech.co.uk

Knowledge Base:

<http://www.multitech.com/kb.go>

Immediate access to support information and resolutions for all MultiTech products.

MultiTech Support Portal:

<https://support.multitech.com/support/login.html>

Create an account and submit a support case directly to our technical support team.

MultiTech Website:

www.multitech.com

APPENDIX A: Currently Shipping Firmware Versions

mPower Edge Intelligence Firmware: Currently Shipping Versions (May 12, 2020)

MultiConnect rCell Model Number	mPower Firmware Version	Link to Release Notes
MTR-H5 Models	MTR 5.1.4	MTR 5.1.4 RELEASE NOTES
MTR-H6 Models	MTR 5.1.4	MTR 5.1.4 RELEASE NOTES
MTR-LAT1 Models	MTR 5.0.0	MTR 5.0.0 RELEASE NOTES
MTR-LEU1 Models	MTR 3.0.13 MTR 4.1.0	MTR 3.0.13 RELEASE NOTES MTR 4.1.0 RELEASE NOTES
MTR-LVW2 Models	MTR 5.0.0	MTR 5.0.0 RELEASE NOTES
MTR-LNA7 Models	MTR 5.1.3	MTR 5.1.3 RELEASE NOTES
MTR-LEU7 Models	MTR 5.1.3	MTR 5.1.3 RELEASE NOTES
MTR-MNG2 Models	MTR 5.1.3	MTR 5.1.3 RELEASE NOTES

All models can be upgraded to mPower MTR 5.2 using the [DeviceHQ](#) or the [Web Interface](#).