Z9-P or Z9-PE Release Notes

These sections describe the additions, changes, and known limitations in each software version for the ZumLink Z9-P or Z9-PE. The most recent version is listed first.

The latest firmware and software versions and the most recent list of known limitations and workarounds are available on www.freewave.com.

1.1. Version 1.1.2.2

Release Date: July 2019

Additions and Changes

- The Web Interface has been re-designed for improved usability on the Z9-P or Z9-PE.
- Support has been added for:
  - Supply Voltage
    - **localDiagnostics.SupplyVoltage** is NOT supported on **Z9-P**, **Z9-PE**, **Z9-PC**, or **Z9-PC-SR001** models.
    - 0 (zero) indicates the individual radio does not support **localDiagnostics.SupplyVoltage**.
  - VLAN Management
    - Users can only access the device from the VLAN ID.
    - If the VLAN tag is set on a specific Ethernet port, that port cannot be used to access the Management VLAN ID.

Note: See the **network.vlanMgmt** parameter for additional information.

Corrections have been implemented for:

- The **devuser** login password and the sudo password were out of sync when loading a new IQ Application Environment when the default password was changed on the existing IQ Application Environment. These passwords are now in sync.
- Files uploaded using the Web Interface cannot be deleted by users.
- After updating the **systemInfo.rteTemplateVersion** parameter, a reboot is necessary to update the **sys_info.txt** file.

Known Limitations and Workarounds

- Setting **date.timeString** causes the **entire Z9-P or Z9-PE configuration** to revert to saved settings.
  - **Workaround**: Save settings before changing the **date.timeString** parameter.
- Cannot change the **date.timeString** once the time is set using NTP.
- The **UCD-SNMP-MIB-WP201.txt** file is missing definition for **dskIndex**.

- The Ethernet port can become unresponsive after changing networks and the **network.vlanTag** IDs.
  - **Workaround**: Reboot the Z9-P or Z9-PE for changes to take effect.
- Unable to get input voltage via Modbus.
- When using the Web Interface on a computer with **Windows**® 8 or **Windows**® 10, clicking **Cancel** does **not** halt the upload process.
- Files uploaded using the Web Interface drag-n-drop procedure are now write-protected and cannot be deleted.
- When changing and saving the **radiosSettings Parameters**, the CLI interface may momentarily lock.
- If there is enough space to transfer the update firmware but not enough to facilitate the update, the update fails and the Upgrade Failed LEDs do not function.
  - **Workaround**: Users should verify the available free space before uploading an update firmware file.
    At least 2x free space is needed on the Z9-P or Z9-PE for the firmware update file.
- Users should wait at least 30 seconds after a factory default command is issued before making configuration changes.
- The fields in the **NTP** parameters are **not** validated by the system.
  - **Workaround**: Verify the NTP parameter settings are correct.
- Unable to set the time when the **ntpReference** parameter `=NETWORK_TIME_SERVER`.
- The highest baud rate supported for RS422 and RS485 is 421 kbps.
- In Firmware v1.1.2.2, when the **Com1.flowControl** or **Com2.flowControl** parameter is set to `hardware`, the COM port's flow control does not function.
- The **localDiagnostics.signalLevel** parameter reports a maximum of -42 dBm when the `radioSettings.rfDataRate=RATE_1M`.

1.2. Version 1.1.1.2

Release Date: December 2018

Additions and Changes

- Improved encryption configuration via the Web Interface.
- At startup, the Z9-P or Z9-PE will synchronize with an NTP server if a server is listed in the **ntp.ntp_address1-5**.

Support has been added for:

- ARP Filtering
  - ARP requests of a device have a path to the desired IP addresses and are filtered from non-desired IP addresses.
- VLAN
  - VLAN tagging 802.1q (ports and services)
- Modbus Registers

    - Connect to device via Modbus
        - Modbus TCP
        - Modbus RTU over TCP
        - Modbus RTU using COM1 or COM2 serial ports
    - Supports Reading from FreeWave IO Expansion Modules.
    - Supports requests from external MODBUS RTU serial device using COM1 and COM2.
        - Any Modbus TCP, Modbus RTU over TCP, and Modbus RTU request will convert to a serial Modbus RTU request that is sent out the configured serial port to a serial Modbus device.
        - Acts as a Modbus TCP to serial Modbus Gateway.
    - Allows radio diagnostics and settings to be read via Modbus.
- Updated MIB and SNMP agent:
    - Change from type of Float32TC to INTEGER for these OIDs:
        - fwtZumLinkSignalLevel .1.3.6.1.4.1.29956.3.2.10.1.0
        - fwtZumLinkSignalMargin .1.3.6.1.4.1.29956.3.2.10.2.0
        - fwtZumLinkNoiseLevel .1.3.6.1.4.1.29956.3.2.10.40.0

Corrections have been implemented for:

- MIB and SNMP agent:
    - **localDiagnostics.TxAvailability** is ONLY available via MIB, not via SNMP.
    - **localDiagnostics.RxSuccess** is NOT available via SNMP.
    - **localDiagnostics.TxAvailability** returns **localDiagnostics.RxSuccess** value via SNMP.
- The Web Interface and CLI windows now show the same value for the **localDiagnostics.TxSuccess** on the Gateway.
- **network.netmask** value does NOT match the actual value after two value changes.
- **network.ip_address** value does NOT match actual value after two value changes
- Options are visible but not active in the **Com1 and 2.handler** parameter.
- Setting `dataPath.aggregateEnabled=true` on all Endpoints in a network prevents the neighbor table from being populated.
    - The **Network Diagnostics** window does not appear correctly when `dataPath.aggregateEnabled=true`.
- Brackets {} or back slashes \ in a **systemInfo.deviceName** breaks the Network Table.
- The **encryption.setKey** **cannot** be entered using the Web Interface.

Beta Features

Web Interface

- Improved encryption configuration.
    - Added Encryption Configuration table.
    - The Encryption key is can now be entered in the Web Interface.

> **Note**: See the **Change the Encryption Parameters** procedure in the User Manual for detailed information.

- Network Diagnostics menu
  - Added Network Diagram
    - Visual representation of: Radio Network RF, Communication Path, and Link Quality.
    - Available views are: Link Margin, RSSI, Tx Rate, Rx Rate, Margin with Neighbors, and RSSI with Neighbors.

> **Note**: See the **Network Diagnostics** window for additional information.

    - Available options are: Download support bundle, clear stats, clear all stats, refresh network diagnostics, save image.

Known Limitations and Workarounds

- Exiting from the CLI may take up to 30 seconds.
- Entering the shortcut text of `ModbusTcp` and `ModbusRtuOverTcp` results in a DUPLICATE_PARAMETER Error.
  - **Workaround**: The fully-qualified parameter of `modbus.modbusTcp` and `modbus.modbusRtuOverTcp` must be entered.
- The **encryption.getKey** and **encryption.setKey** parameters are now deprecated.
- When issuing the `factoryDefaults=set` command, after making changes for any of the **Network** parameters, the user is locked out of the CLI.
  - **Workaround**: Reboot the Z9-P or Z9-PE for changes to take effect.
- VSWR reading may be inconsistent between the **Network Diagram** on the **Network Diagnostics** window and the information reported in the **Local Diagnostics** window.
- The **File Upload** window shows a 100% upload when the upload file has not completed on **Windows**® 8 and **Windows**® 10 computers.
  - **Workaround**: Wait the appropriate amount of time or watch the LEDs to indicate completion of file transfer or use the **Firmware Upgrade - Drag and Drop** procedure.
- When setting the parameter `network.arpFilterEnabled=true`, ARP requests and responses are NOT blocked on VLAN interfaces.
- The **localDiagnostics.signalLevel** parameter reports a maximum of -42 dBm when the `radioSettings.rfDataRate=RATE_1M`.
- When the **TerminalServerRelay.termserv_relay_mapping** parameter is designated and the **Com1.flowControl** or **Com2.flowControl** parameter is set to `Hardware`, the COM port's flow control does not function.

1.3. Version 1.1.0.1

Release Date: September 2018

Additions and Changes

- Support has been added for:
  - Local Diagnostics:
    - **localDiagnostics.noiseLevel**
    - **localDiagnostics.RxSuccess**
    - **localDiagnostics.TxAvailability**
    - **localDiagnostics.TxSuccess**
    - **localDiagnostics.VSWR**

> **Important!**: VSWR **may not** function on Z9-P or Z9-PE models manufactured prior to September, 2018.
> If the Z9-P or Z9-PE always reports a VSWR value of 0 (zero), VSWR is **not** supported.
> The VSWR is instantaneous, not averaged.
> Each measurement can produce a different value; units that do support VSWR will occasionally report 0 (zero) due to an invalid measurement.

  - **network.mtu** 1994 byte size with a VLAN tag.
    - Previously supported an MTU 1400 byte size with a VLAN tag.
  - Multicast traffic
- Expanded MIB and SNMP agent for Z9-P or Z9-PE:
  - SNMP v2c and v3 write access.
  - Parameters have been added to the MIB and SNMP agent.
- Increase Terminal Server connections from 20 to 128 concurrent TCP connections.
- Default settings were changed to improve field performance:
  - **dataPath.compressionEnabled** default is now **True**.
  - **radioSettings.beaconBurstCount** default is now **3**.
  - **radioSettings.radioHoppingMode** default is now **Hopping_On**.
  - **radioSettings.rfDataRate** default is now **RATE_500K**.
  - **radioSettings.txPower** default is now **30**.

> **Important!**: A Gateway MUST BE configured for the radios to communicate.

- Corrections have been implemented for:
  - Frequency Mask
  - COM ports temporarily stop functioning when passing traffic with certain **TerminalServerRelay.termserv_relay_mapping=** settings enabled.
  - When **radioSettings.rfDataRate** =`RATE_4M` and **radioSettings.beaconBurstCount** =`1`:

    - Endpoint-Repeaters may lose synchronization with the Gateway and reset themselves.
  - Updated time out behavior for the COM1 and COM2 terminal servers:
    - The connection remains open if data is being sent or received.
- The **Comx.TerminalServerTimeOut** connection remains open if data is sent or received.
- A new LED pattern at startup after an upgrade to v1.1.0.1 indicates an active boot of the Z9-P or Z9-PE.
- During boot, the COM LEDs will cycle indicating startup.
- For optimal throughput, when Repeaters are used and the RF environment is noisy, the **radioSettings.beaconBurstCount** is no longer required to be 2 or more.
- When an invalid Gateway is entered, the **network.gateway** is set to a null value.
  - When a Z9-P or Z9-PE with a non-default **network.gateway** value (e.g., 194.2.2.2) is upgraded to v1.1.0.1, it is set to a null value after upgrade.
- IQ Application Environment now available
  - This was previously only available as a standard option in the v1.0.6.0 release.

  Important!: If upgrading to v1.1.0.1 from any previous firmware version, a license key MUST BE requested to activate the IQ Application Environment.
  Contact FreeWave Technical Support for the license key.
- The default value for **ntp.ntpReference** was changed to NETWORK_TIME_SERVER.
  - This causes the Z9-P or Z9-PE to attempt to contact the default external **time.nist.gov** IP address listed in **ntp.ntp_address1**.

Beta Features

Important!: Beta Features have not been fully tested by FreeWave.
The intent is to expose the feature and receive early feedback from customers.

- Web Interface
  - Added a **Configuration** menu.
  - Added a **Network Diagnostics** menu

    Important!: A Gateway is required to use the **Network Diagnostics** menu.
    - Network Discovery
    - Discover other Endpoints in the network.
    - Show hops and their paths from the Gateway.
    - Show the link quality (RSSI and Margin).
    - Show neighbors.
  - Available options are:
    - Download Support Bundle

    - Clear Status
    - Refresh Network Diagnostics
    - Save Network Diagnostics
- MacTableEntryAgeTimeout
  - The MacTableEntryAgeTimeout is the number of seconds before an inactive entry in the radio MAC Table ages out and expires.
  - This feature:
    - Allows the optimization of the time it takes a unit to learn a new path to allow for Repeater redundancy.
    - Is used to adjust fail-over times with parallel Repeaters.
  - User field sets MacTableEntryAgeTimeout period.
    - The default is 120 seconds, with a Minimum of 30 seconds and a Maximum of 86400 seconds.

Known Limitations and Workarounds

- A downgrade from v1.1.0.1 to v1.0.4.x **requires** an intermediate **downgrade** to v1.0.7.0.

  Example: Downgrade v1.1.0.1 to v1.0.7.0, then downgraded to v1.0.4.0.

- v1.0.6.0 / v1.1.0.1 Upgrade or Downgrade
  - When either updating or downgrading, the **ZumIQ**IQ Application Environment template is changed but NOT the active **ZumIQ**IQ Application Environment runtime application environment version.
    - Active applications will continue to run.

  FREEWAVE Recommends: Prior to an update or downgrade procedure, save and backup all applications.

- After updating the **systemInfo.rteTemplateVersion** parameter, a reboot is necessary to update the **sys_info.txt** file.
  - Performing a **runtimeEnvironment.rteReset** to copy in the new FW template erases any existing applications in the original runtime application environment.
    - If the new runtime environment is needed, save all applications prior to performing a **runtimeEnvironment.rteReset**.
- Changing the **network.ip_address** to some value other than 192.x.x.x will prevent all subsequent IP address changes.
  - **Workaround**: Enter a Gateway address and reboot the Z9-P or Z9-PE.
- VSWR **may not** function on Z9-P or Z9-PE models manufactured prior to September, 2018.
  If the Z9-P or Z9-PE always reports a VSWR value of 0 (zero), VSWR is **not** supported.
  - VSWR is less accurate at higher power levels (>20 dBm).

> **Note**: The reported VSWR is a value proportional to the VSWR. It is closer to VSWR at lower powers, but at higher power levels, it still increases with reflected power.

- Rebooting a pair of radios simultaneously when one of the Z9-P or Z9-PE has the parameter `TerminalServerRelay.termserv_relay_mapping=Enabled`, the terminal server relay takes up to 6 minutes to become active.
- To update the **Network Diagnostics** window, refresh the browser to clear the browser cache.
- When upgrading to v1.1.0.1, the **fw_upgrade_result.txt** file **does NOT appear** after the upgrade is completed.
  - If the **fw_upgrade_result.txt** file does appear in the USB drive after an upgrade, it is now write-protected and cannot be deleted.
- Setting `dataPath.aggregateEnabled=true` on all Endpoints in a network prevents the neighbor table from being populated.
  - The **Network Diagnostics** window does not appear correctly when `dataPath.aggregateEnabled=true`.
- **localDiagnostics.TxAvailability** is ONLY available via MIB, not via SNMP.
- **localDiagnostics.RxSuccess** is NOT available via SNMP.
- **localDiagnostics.TxAvailability** returns **localDiagnostics.RxSuccess** value via SNMP.
- Options are visible but not active in the **Com1 and 2.handler** parameter.
- The **localDiagnostics.signalLevel** parameter reports a maximum of -42 dBm when the `radioSettings.rfDataRate=RATE_1M`.
- When the **TerminalServerRelay.termserv_relay_mapping** parameter is designated and the **Com1.flowControl** or **Com2.flowControl** parameter is set to `Hardware`, the COM port's flow control does not function.
- The **encryption.setKey** **cannot** be entered using the Z9-P or Z9-PE Web Interface.

> **Important!**: The **encryption.setKey** MUST BE entered in CLI.

1.4. Version 1.0.7.0

Release Date: June 2018

Warning! DO NOT remove power from the Z9-P or Z9-PE during or immediately after the firmware update process!
Wait until the **Home** window Web Interface is accessible before removing power from the Z9-P or Z9-PE device.

If power is removed prematurely during the update process, the Web Interface pages may not be accessible.
To recover from a failed Web Interface update, use the v1122-Firmware Update - Drag and Drop procedure to reinstall the .pkg file and **WAIT for the file update process to complete**.

DO NOT start another update or configuration change while an update is in progress.

Upgrade Notes for Z9-P or Z9-PE - v1.0.7.0

Important!: Inside the downloaded **Z9-P-and-Z9-PE-v1070-Firmware.zip** file, there are **TWO .pkg** files.
The **CORRECT .pkg** file to use depends on the **ZumLink** version you are upgrading from.

- When upgrading **from v1.0.4.2 or LATER** firmware, use the file named:
  - **1_Device_Firmware_v1_0_7_0_____when_upgrading_from_v1042_or_later.pkg**.
- When upgrading from a version **EARLIER than v1.0.4.2**, use the file named:
  - **1_Device_Firmware_v1_0_7_0_____when_upgrading_from_a_version_earlier_than_v10402.pkg**.
- For all firmware versions, use the **.fcf** file for the second part of the upgrade.

Additions and Changes

- Hop table frequency masking masks the channels that fall within the range plus or minus one-half (½) the channel bandwidth.
- Support has been added for:
  - Multiple Repeaters using a maximum of 3 Repeater slots.
    - The Endpoint-Repeater has a radio Repeater slot range from 1-3.
    - A maximum number of 3 Endpoint-Repeaters are supported in an overlapping communication space or RF coverage area.
    - The radio Repeater slot numbers can be reused where there is no RF connectivity or overlap between the reused radio Repeater slots.

FREEWAVE Recommends: Set the to 2 or more for optimal throughput when Repeaters are used and the RF environment is noisy.
This increases the number of beacons sent in a beacon interval.

- The **Terminal Server Relay Client** provides radio-to-radio serial communication.
- Hopping data rates from the Gateway to Endpoint and the Endpoint to Gateway are now more symmetric.
- Improved sensitivity, noise filtering, and interference avoidance for 250 and 500 kbps rates. Throughput rates between the Gateway and Endpoint have been rebalanced.

  Important!: Data rates 250K and 500K are NOT compatible with previous releases of the ZumLink radio firmware.

- When `network.netmaskFilterEnabled=true`, VLAN tagged packets are filtered out because the radio is not considered on the VLAN and therefore VLAN packets cannot be on the same subnet.
- Multiple FEC-related corrections have been implemented.
- A problem where the Ethernet interface does not work due to pings at boot time has been fixed.

Beta Features

Important!: Beta Features have not been fully tested by FreeWave.
The intent is to expose the feature and receive early feedback from customers.

- 1.5 Mbps RF Data Rate
  - Sensitivity -90dBm
- MacTableEntryAgeTimeout
  - The MacTableEntryAgeTimeout is the number of seconds before an inactive entry in the radio MAC Table ages out and expires.
  - This feature:
    - Allows the optimization of the time it takes a unit to learn a new path to allow for Repeater redundancy.
    - Is used to adjust fail-over times with parallel Repeaters.
  - User field sets MacTableEntryAgeTimeout period.
    - The default is 120 seconds, with a Minimum of 30 seconds and a Maximum of 86400 seconds.

Known Limitations and Workarounds

Caution: **config.restore** can give inconstant results if the **radioSettings.radioMode** was changed.

- Significant data is lost between radios when operating in close proximity (3-6 feet) when `radioSettings.rfDataRate=RATE_4M`..
  - **Workarounds**:
    - Reduce power on radios when operating in close proximity.

    - Enable the **radioSettings.lnaBypass**.
- When using the USB, the CLI may lock up on units with **termserv_relay_mapping** parameter enabled.
    - **Workarounds**:
        - Re-seat the cable
- COM ports temporarily stop functioning when passing traffic with certain **Terminal Server Relay** settings enabled.
- When the **TerminalServerRelay.termserv_relay_mapping** parameter is in use, the **Com1 or Com2.connectionDrops** count should be ignored.
- When operating at `rfDataRate=RATE_4M` and `beaconBurstCount=1`:
    - Endpoint-Repeaters may lose synchronization with the Gateway and reset themselves.
    - TCP traffic can be intermittent when operating multiple Repeaters.
- When operating at `radioSettings.rfDataRate=RATE_4M` and with multiple Repeaters, if a **short** **radioSettings.beaconInterval** and a **high** **radioSettings.beaconBurstCount** are designated, throughput is very low.
    - **Workaround**: Use either a **longer** **radioSettings.beaconInterval** or a **lower** **radioSettings.beaconBurstCount**.
- As Repeaters are chained in the network, round trip delay increases.
    - When issuing pings of large packet sizes at the lower data rates, such as 115.2K, and a `beaconInterval=TWENTY_FIVE_MS`, the latency can increase causing the pings to fail.
        - **Workaround**: Allow an appropriate delay between pings.

    FREEWAVE Recommends: Set the `beaconBurstCount=2` or more and `beaconInterval=ONE_HUNDRED_MS` or more for optimal throughput when extended Repeater networks are used.
- Frequency Mask is not working properly.
- The **localDiagnostics.signalLevel** parameter reports a maximum of -42 dBm when the `radioSettings.rfDataRate=RATE_1M`.
- ZumIQ application environment is not available.

1.5. Version 1.0.6.0

Release Date: September 2017

Additions and Changes

Important!: If a downgrade to v1.0.4.0 is needed, an update to v1.0.7.0 is required first, then the user can install v1.0.4.0.

- IQ Application Environment available
    - Provides the capability to develop and host 3rd party Apps for intelligent control and automation of remote sensors and devices.

- Provides a Debian Linux environment and access to hardware resources for application development and deployment.
- These official sample applications are available at https://github.com/FreeWaveTechnologies/ZumIQ:
  - Mosquitto
  - Node.js
  - Node-RED
  - Python 2.7
  - Python 3.x

Known Limitations and Workarounds

- The web page is not available for several minutes after the Z9-P or Z9-PE reboots.
- A reboot of the Z9-P or Z9-PE is required:
  - when **Security** page settings are changed.
  - after applying a license file.
- The **Node-RED** website times out on slow networks.
  - **Workaround**: Replace **Node.js v8** with **Node.js v7** using the **install-node7.sh** script available on **GitHub**.
- A downgrade from v1.0.6.0 to v1.0.4.0 **requires** an intermediate **upgrade** to v1.0.7.0.

  Example: Upgrade from v1.0.6.0 to v1.0.7.0, then downgrade to v1.0.4.0.
- The **localDiagnostics.signalLevel** parameter reports a maximum of -42 dBm when the `radioSettings.rfDataRate=RATE_1M`.

1.6. Version 1.0.4.2

Release Date: June 2017

Additions and Changes

- Allows for the passing of VLAN tagged traffic.
- Packet Aggregation is now working properly.
- Resolved the **otaMaxFragementSize** performance issues when set to 64.
- When `network.netmaskFilterEnabled=true`, VLAN tagged packets are filtered out because the radio is not considered on the VLAN and therefore VLAN packets cannot be on the same subnet.

Known Limitations and Workarounds

- When changing the COM port to **Terminal Server**, the **ZumLink** must be power cycled after making the change.
- The **localDiagnostics.signalLevel** parameter reports a maximum of -42 dBm when the `radioSettings.rfDataRate=RATE_1M`.

Notes

- If the password was changed from the default, the password is changed back to **admin** after upgrading the radio firmware.
- Firmware v1.0.4.2 and v1.0.4.1 are over-the-air compatible but are NOT compatible with firmware v1.0.3.2 when the **radioSettings.radioHoppingMode** setting is set to **On** (enabled).

1.7. Version 1.0.4.1

Release Date: May 2017

Additions and Changes

Additions and Changes	
Feature	**Description**
IP Filtering	Prevents IP addresses NOT within the IP subnet from being transmitted over the air.
Repeater	Allows a single radio to repeat (store and forward) traffic from one radio to another.
Terminal Server Activity Timeout	Provides a settable time that closes the port when no data is received through the socket connection for longer than the timeout period.
Diagnostic Support Bundle	Generates a zip file containing all the configuration and diagnostics information when IP address followed by /support is typed in a web browser.
Radio Settings	Displays parameters that are required for radio mode, frequency hopping, and so forth. **Example**: The **radioSettings.beaconInterval** is not available for radios configured as Endpoints.
Throughput	Increases in user data throughput in most RF data rates for single channel and frequency hopping when operating unidirectional or bidirectional.
RF Rate 250 kbps	Unexpected packet losses when **radioSettings.beaconInterval** set to 50 msec has been resolved.
Help	Additional details included in the radios help function.
COM port	COM port LEDs are now functional as described in this manual.
USB COM Port	Changed so that each time a **ZumLink** device is plugged into a Windows based computer a unique port number is NOT enumerated.

Notes

- If the password was changed from the default, the password is changed back to **admin** after upgrading the radio firmware.
- Firmware v1.0.4.1 is NOT over-the-air compatible with firmware v1.0.3.2 when the **radioSettings.radioHoppingMode** setting is set to **On** (enabled) or with FEC enabled.

Known Limitations and Workarounds

- Packet Aggregation is currently not working properly.
- When **otaMaxFragementSize** is set to 64, disruptions and failures occur in a ping test with payload size of 20.
- When changing the COM port to **Terminal Server**, the **ZumLink** must be power cycled after making the change.
- The **localDiagnostics.signalLevel** parameter reports a maximum of -42 dBm when the `radioSettings.rfDataRate=RATE_1M`.

1.8. Version 1.0.3.2 (Initial Release)

Release Date: October 2016

Known Limitations and Workarounds

- When changing the COM port to **Terminal Server**, the **ZumLink** must be power cycled after making the change.
- Unexpected packet losses when the **radioSettings.beaconInterval** is set to 50 msec.

Learn More

For additional product information about the ZumLink Z9-P or Z9-PE, visit http://support.freewave.com/.

For additional assistance, contact a local reseller, or contact FreeWave Technologies, Inc. at 303.381.9200 or 1.866.923.6168, or by email at support@freewave.com.

FreeWave Technologies, Inc. reserves the right to make changes to this document or the product described within it without notice. FreeWave assumes no responsibility or liability for the use of this document or the infringement of any copyright or other proprietary right.

The Z9-P or Z9-PE complies with FCC Part 15 rules. Operation is subject to the following two conditions: 1) This device may not cause harmful interference and 2) this device must accept any interference received, including interference that may cause undesired operation.

The Z9-P or Z9-PE must be professionally installed and is only approved for use when installed in devices produced by FreeWave or third party OEMs with the express written approval of FreeWave Technologies, Inc. Changes or modifications should not be made to the device.

FreeWave Technologies, Inc.
5395 Pearl Parkway, Suite 100
Boulder CO 80301
www.freewave.com

Local: 303.381.9200
Toll Free: 1.866.923.6168
Fax: 303.786.9948

FREEWAVE

