TAINY IQ

Product variants
IQ-LTE
IQ-LTE 6E
3GDSE2
3GDSE6
4GDSE2
4GDSE6

Software Release Note

Sagemcom
Dr. NEUHAUS

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Papenreye 65
22453 Hamburg
Germany
Internet: http://www.sagemcom.com

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Dok.-Nr.:	3202PB011 Version 2.5

Table of Content

1 Introduction

This Release Note describes the major differences – new functionalities and enhancements – of the current firmware and OS versions.

For readability the collective term “TAINY IQ” is used.

Unless otherwise noted this information applies to all variants of the TAINY IQ series.

Unless otherwise noted the collective term “TAINY IQ-LTE” is used for all variants of the TAINY IQ-LTE series

First official Release Note TAINY IQ: **Version 1.000**.

2 Version 3.022

This chapter describes the changes of firmware version 3.022 compared to version 3.020.
Please note the information on updating in chapter *Firmware and OS Update*.

 If not installed already, please perform a **system version** (OS) update to version **1608** before installing the firmware 3.022. Otherwise the firmware will be rejected by the TAINY IQ-LTE and not be installed.

2.1 Compatibility

After the firmware update, the previous settings are retained. This firmware is only executable on the TAINY IQ-LTE.

 **The firmware must not be loaded on devices of the predecessor series TAINY IQ 3GDSE2, 3GDSE6, 4GDSE2, and 4GDSE6.**

2.2 Improved Functions and Enhanced Features

2.2.1 Firmware changes

- Bugfix for 3G deactivation: In Germany some providers deactivated 3G on 30.06.2021
    - Implemented: automatic falling back of the TAINY IQ-LTE to automatic or 3G/4G net selection if registration of the TAINY IQ-LTE to 3G is not successful
    - Factory Reset: implemented default value for net mode choice for the TAINY IQ-LTE (3G/4G) variant: 3G/4G
- Implemented activation and deactivation of sshd.socket and sshd_root.socket dependent on SSH (de)activation within the Web interface
- Implemented checking if the TAINY IQ-LTE is able to accept new SSH connections:
    - Due to brute force attacks the TAINY IQ-LTE can enter the state "Failed to start SSH Per-Connection Server"
    - Those log entries can be found within /var/log/daemon.log
    - Implemented timer for checking every 30 minutes and rebooting the TAINY IQ-LTE in case of failed state (entry in logbook)
- Bugfix for unwanted entries in the log file in /var/log/apache2/
- Extended hostname length for RSYSLOG from 100 to 255 within the Web interface
- Bugfix for port checking within the Web interface: a warning is given if the input is not a number

2.3 Known Problems

- If TACACS+ is used for authentication and the TACACS+ server does not respond, it is only possible to log on to the website again after 5 to 10 minutes (regardless of the method selected)

  This applies to all of the previous versions

- User management: Users with names that contain any of these characters '#', '%', '\' or '/' can be added and deleted, but not edited.

- *Hostname* and *Searchpath* cannot be used to address the TAINY IQ-LTE. The device does not respond to a hostname.

- SSH connection attempts are not logged via RSYSLOG, when the SSH service is deactivated.

- TAINY IQ-LTE 6E only: If the IP addresses of two or more logical VLAN networks are in the same subnet, the user instantly cannot access the device via local interfaces ETH1 to ETH5 anymore. If configured, access via Radio WAN or ETH0 as additional LAN port is still possible.

3 Version OS 1608

This chapter describes the changes of OS version 1608 compared to version 1600.
Please note the information on updating in chapter *Firmware and OS Update*.

If not installed already, please perform a system version (OS) update to version 1560 at least before installing the OS 1608.

3.1 Compatibility

After the OS update, the previous settings are retained. This OS version is only executable on the TAINY IQ-LTE.

The OS version 1608 may be loaded only on devices with firmware version 3.000 and the following versions.

The OS version 1608 must not be loaded on devices of the predecessor series TAINY IQ 3GDSE2, 3GDSE6, 4GDSE2, and 4GDSE6.

3.2 Improved Functions and Enhanced Features

3.2.1 Firmware changes

- The version of OpenSSH has been updated from 6.6p1 to 8.6p1
- The configuration of OpenSSH has been adjusted to version 8.6p1
- The version of pam-tacplus (TACACS+) has been updated from 1.3.8 to 1.6.1
- The webserver certificate has been updated (valid: 30.07.2021 – 31.07.2031)

3.3 Known Problems

- Under certain conditions a downgrade to earlier OS versions is possible.

Do not perform any OS downgrades under any circumstances. This could lead to a malfunctioning of the device.

4 Version 3.020

This chapter describes the changes of firmware version 3.020 compared to version 3.013.
Please note the information on updating in chapter *Firmware and OS Update*.

 If not installed already, please perform a **system version** (OS) update to version **1600** before installing the firmware 3.020. Otherwise the firmware will be rejected by the router and not installed.

4.1 Compatibility

After the firmware update, the previous settings are retained. This firmware is only executable on the TAINY IQ-LTE.

 **The firmware must not be loaded on devices of the predecessor series TAINY IQ 3GDSE2, 3GDSE6, 4GDSE2, and 4GDSE6.**

4.2 Improved Functions and Enhanced Features

4.2.1 Firmware changes

- Rsyslog: destination configurable via web page (URI and port)
- If enabled rsyslog sends auth.info log entries (level „info“ and higher) per UDP

5 Version OS 1600

This chapter describes the changes of OS version 1600 compared to version 1563.
Please note the information on updating in chapter *Firmware and OS Update*.

If not installed already, please perform a system version (OS) update to version 1560 at least before installing the OS 1600.

5.1 Compatibility

After the OS update, the previous settings are retained. This OS version is only executable on the TAINY IQ-LTE.

The OS version 1600 may be loaded only on devices with firmware version 3.000 and the following versions.

The firmware must not be loaded on devices of the predecessor series TAINY IQ 3GDSE2, 3GDSE6, 4GDSE2, and 4GDSE6.

5.2 Improved Functions and Enhanced Features

5.2.1 Firmware changes

- The version of Apache has been updated from 2.0.64 to 2.2.32 (APR 1.5.2, APR-UTIL 1.54)
- Only TLS 1.2 is supported (Option in mod_ssl : -all +TLS1.2)

6 Version OS 1563

This chapter describes the changes of OS version 1563 compared to version 1562.
Please note the information on updating in chapter *Firmware and OS Update*.

If not installed already, please perform a system version (OS) update to version 1560 at least before installing the OS 1563.

6.1 Compatibility

After the OS update, the previous settings are retained. This OS version is only executable on the TAINY IQ-LTE.

The OS version 1563 may be loaded only on devices with firmware version 3.000 and the following versions.

The firmware must not be loaded on devices of the predecessor series TAINY IQ 3GDSE2, 3GDSE6, 4GDSE2, and 4GDSE6.

6.2 Improved Functions and Enhanced Features

6.2.1 Firmware changes

- Fix for production regarding restart (power up) after power cut. (Fix per update)
  The integrated power management of the i.MX28 CPU can get into an undefined state after a power cut due to chip errata 2814, this undefined state lasts until the backup capacitor of the RTC is drained.
  By changing the brownout level of the power supply this behaviour is avoided.
- Update of the stored MIB for SNMP

7 Version 3.013

This chapter describes the changes of firmware version 3.013 compared to version 3.008.
Please note the information on updating in chapter *Firmware and OS Update*.

 If not installed already, please perform a **system version** (OS) update to version **1560** before installing the firmware 3.013. Otherwise the firmware will be rejected by the router and not installed.

7.1 Compatibility

After the firmware update, the previous settings are retained. This firmware is only executable on the TAINY IQ-LTE.

 **The firmware must not be loaded on devices of the predecessor series TAINY IQ 3GDSE2, 3GDSE6, 4GDSE2, and 4GDSE6.**

7.2 Improved Functions and Enhanced Features

7.2.1 Firmware changes

- Implemented 4G signal strength values: RSRP (Reference Signal Received Power) and RSRQ (Reference Signal Received Quality);
  --> Values are displayed within WebInterface in the Overview and Cellular Network Status
  --> Values can by asked by snmpwalk OID ... 67 and ... 68
  --> Values can be set in the rules within the WAN interface in the WebGUI

- Implemented DeviceIdentifier1 and DeviceIdentifier2 which can be set within the WebInterface and by snmpset;
  --> Values are displayed and can be set within the WebInterface in the Device Management: Setting Device Identifier
  --> Values can be asked by snmpwalk/snmpget and set by snmpset OID ... 42 and ... 43

- Corrected read/write attribute for read-only OIDs

  Implemented the information concerning both SIM card
  - IMSINotActiveSIM
  - ICCIDNotActiveSIM

- Added the implementation for the change of the SIM slot counter
  - SIMSlotChangeCounter

- Implemented Traffic Prio

8 Version OS 1562

This chapter describes the changes of OS version 1562 compared to version 1560.
Please note the information on updating in chapter *Firmware and OS Update.*

If not installed already, please perform a system version (OS) update to version 1560 before installing the OS 1562.

8.1 Compatibility

After the OS update, the previous settings are retained. This OS version is only executable on the TAINY IQ-LTE.

The OS version 1562 may be loaded only on devices with firmware version 3.000 and the following versions.

The firmware must not be loaded on devices of the predecessor series TAINY IQ 3GDSE2, 3GDSE6, 4GDSE2, and 4GDSE6.

8.2 Improved Functions and Enhanced Features

8.2.1 Firmware changes

- Fix regarding restart (power up) after power cut. (For production)
  The integrated power management of the i.MX28 CPU can get into an undefined state after a power cut due to chip errata 2814, this undefined state lasts until the backup capacitor of the RTC is drained.
  By changing the brownout level of the power supply this behaviour is avoided.
- The version of OpenSSL has been updated from 1.0.1m to 1.0.1u
- The version of PHP has been updated from 5.4.39 to 5.4.45

9 Version OS 1559

This chapter describes the changes of OS version 1559 compared to version 1556.
Please note the information on updating in chapter *Firmware and OS Update.*

If not installed already, please perform a system version (OS) update to version 1556 before installing the OS 1559.

9.1 Compatibility

After the OS update, the previous settings are retained. This OS version is only executable on the TAINY IQ-3GDSE2, 3GDSE6, 4GDSE2, 4GDSE6.

The OS version 1559 may be loaded only on devices with firmware version 2.000. HW 2.5 and higher is a prerequisite for proper function.

9.2 Improved Functions and Enhanced Features

9.2.1 Firmware changes

- Fix regarding restart (power up) after power cut.
  The integrated power management of the i.MX28 CPU can get into an undefined state after a power cut due to chip errata 2814, this undefined state lasts until the backup capacitor of the RTC is drained.
  By changing the brownout level of the power supply this behaviour is avoided.

10 Version 3.008

This chapter describes the changes of firmware version 3.008 compared to version 3.007.
Please note the information on updating in chapter *Firmware and OS Update.*

 If not installed already, please perform a system version (OS) update to version 1560 before installing the firmware 3.008. Otherwise the firmware will be rejected by the router and not installed.

10.1 Compatibility

After the firmware update, the previous settings are retained. This firmware is only executable on the TAINY IQ-LTE.

 **The firmware must not be loaded on devices of the predecessor series TAINY IQ 3GDSE2, 3GDSE6, 4GDSE2, and 4GDSE6.**

10.2 Improved Functions and Enhanced Features

10.2.1 Firmware changes

- Troubleshouting regarding SSH access.

11 Version 3.007

This chapter describes the changes of firmware version 3.007 compared to version 3.002.
Please note the information on updating in chapter *Firmware and OS Update.*

 If not installed already, please perform a system version (OS) update to version 1560 before installing the firmware 3.007. Otherwise the firmware will be rejected by the router and not installed.

11.1 Compatibility

After the firmware update, the previous settings are retained. This firmware is only executable on the TAINY IQ-LTE.

 **The firmware must not be loaded on devices of the predecessor series TAINY IQ 3GDSE2, 3GDSE6, 4GDSE2, and 4GDSE6.**

11.2 Scope of Functions

- Support of TAINY IQ-LTE 6E
- The function „Traffic Priority“ is not longer supported.

11.3 Improved Functions and Enhanced Features

11.3.1 Firmware changes

- Root cause fixed for unwanted device restart when ETH0 is configured as additional LAN interface and Ethernet link is missed.
- Increased reliability when setting up an IPsec tunnel when the ETH0 interface is operated in LAN mode.

12 Version 3.002

This chapter describes the changes of firmware version 3.002 compared to version 3.001.
Please note the information on updating in chapter *Firmware and OS Update*.

 Be sure to perform a system version (OS) update to version 1560 before installing on firmware 3.001. Otherwise the firmware will be rejected by the router and not installed.

12.1 Compatibility

After the firmware update, the previous settings are retained. This firmware is only executable on the TAINY IQ-LTE.

 **The firmware must not be loaded on devices of the predecessor series TAINY IQ 3GDSE2, 3GDSE6, 4GDSE2, and 4GDSE6.**

12.2 Improved Functions and Enhanced Features

12.2.1 Firmware changes

- Fixed Bug VPN-Tunnel Data pass through. Data from one VPN Network to the remote VPN Network (Network-VPN-Network Configuration) can be send and received.
- Added feature Network Selection 3G/4G only Mode (does not fall back to 2G Networks)

13 Version 3.001

This chapter describes the changes of firmware version 3.001 compared to version 3.000.
Please note the information on updating in chapter *Firmware and OS Update.*

 Be sure to perform a system version (OS) update to version 1560 before installing on firmware 3.001. Otherwise the firmware will be rejected by the router and not installed.

13.1 Compatibility

After the firmware update, the previous settings are retained. This firmware is only executable on the TAINY IQ-LTE.

 **The firmware must not be loaded on devices of the predecessor series TAINY IQ 3GDSE2, 3GDSE6, 4GDSE2, and 4GDSE6.**

13.2 Improved Functions and Enhanced Features

13.2.1 Firmware changes

- Only bugfix version. No features added
- Fixed problem with data communication between VPN and local TAINY IQ networks.
  Due to an error in the firewall configuration, no data could be transferred between the VPN tunnel and the connected subnets.

14 Version 3.000

This chapter describes the changes of firmware version 3.000 compared to version 2.000.
Please note the information on updating in chapter *Firmware and OS Update.*

 Be sure to perform a system version (OS) update to version 1560 before installing on firmware 3.000. Otherwise the firmware will be rejected by the router and not installed.

14.1 Compatibility

After the firmware update, the previous settings are retained. This firmware is only executable on the TAINY IQ-LTE.

 **The firmware must not be loaded on devices of the predecessor series TAINY IQ 3GDSE2, 3GDSE6, 4GDSE2, and 4GDSE6.**

14.2 Improved Functions and Enhanced Features

14.2.1 Firmware changes

- Support for obtaining an IPv6 address from the mobile operators possible. The router can be operated from the local area network to applications in public or private networks (private or public APN) using IPv6. It should be noted that the service provider must provide a worldwide unique and valid IPv6 address.
- IPv6-based firewall and routing with rules for filtering data IPv6 incoming and outgoing data packets
- Network Tool Ping to a destination host with IPv6 possible.
  Example: host address: “ipv6.google.com”
- NSlookup with IPv6 usable
- Traceroute with IPv6 usable
- IPv6 enabled device web server
- IPv6 support via a 6to4 tunnel. IPv6 packets can be transmitted over an IPv4 network
- IPv6 on the local LAN and WAN port with a link local address
- IPv6 on the local LAN and WAN port with a global IPv6 address. With this setting, the router assigns globally valid IPv6 addresses in the local IPv6 network via router advertisements
- Display of IP information extended to IPv6
- General troubleshootings and Bug Fixing affecting software stabilization

15 Version 2.000

This chapter describes the changes of firmware version 2.000 compared to version 1.002.
Please note the information on updating in chapter *Firmware and OS Update.*

Be sure to perform an OS update to version 1556 before installing on the firmware 2.000. Otherwise the firmware will be rejected by the router and not installed.

15.1 Compatibility

After the firmware update, the previous settings are retained. This firmware is additionally executable on the TAINY IQ-LTE. Compatibility with its predecessors 3GDSE2, 3GDSE6, 4GDSE2, 4GDSE6 is maintained.

15.2 Improved functions

15.2.1 Hardware changes (only if TAINY IQ-LTE new hardware version is available):

- Isolated DC power supply. Isolated DC power supply.
- Second diversity antenna, MIMO antenna system
- Status display (optical) SIM1 / 2 LEDs merged
- RF radio module with firmware version 3.017
- Serial RS232 local UART interface support

15.2.2 Firmware changes (applies to all TAINY IQ variants)

- Exposed Host Funktion. And added Exposed Host firewall rules
- Added netzwork tools Ping and Traceroute using over web interface
- Added Setting of dynamic/custom HTTPS web server listen port
- Fixed problem with re-set power led
- Added RADIUS support
- TACACS and RADIUS can be routed through the IPSec tunnel
- Added VRRP IPs to DNSMASQ Config. Fixed some serve VRRP bugs.
- Added setting of DHCP Parameters/Options for Static (MAC Based) Entries
- Added support for RF-Module with revision 3.017
- Added Delayed Reboot Action. A reboot action should be executed at the earliest 5 minutes after a reboot
- IPSec with secure SHA2 Crypto Algorithem
- Added Serial Interfaces implementation (TX, RX, CTS, RTS) (only TAINY IQ-LTE)
- Some generic software bug fixes, code improvements, and stability improvements were made

16 Version 1.002

This chapter describes the changes to the firmware version 1.002 compared to version 1.001.
Please follow the notes for updating in Chapter Firmware- and OS-Update.

16.1 Compatibility

The previous settings remain active after the firmware update.

16.2 Enhanced Features

16.2.1 SNMP Agent adapted

- Not-functional variables are removed
- Bridge MIB now contains VLAN IDs
- PhysicalSoftware and PhysicalMfgName added
- See also. Dok.: xMODv3_iQ_2016_11_08_AF_v100.pdf

16.2.2 Mac Filter

The mac filter is now also functional for connections to the VPN network

16.2.3 Firewall

Firewall log entries now have a prefix

16.2.4 Delayed Boot-Action

You can now add an action which is started after a minimum runtime after boot.

16.2.5 SCEP

Service Update for SCEP Client Certificate Download

16.2.6 Operating System

New operating system update: Version 1550

17 Version 1.001

This chapter describes the changes to the firmware version 1.001 compared to version 1.000.
Please follow the notes for updating in Chapter Firmware- and OS-Update.

17.1 Compatibility

The previous settings remain active after the firmware update.

17.2 Enhanced Features

17.2.1 Extension of WAN-Setup rules

Enhancement:
RSCP-value has been added to the rule-conditions and can be used to trigger actions.

17.2.2 Extension of the SNMP requests

Enhancement:
The values:

- RSCP
- EC/NO
- total RAM
- CPU-Load last minute (percent)
- CPU-Load last 5 minutes (percent)
- CPU-Load last 15 minutes (percent)
- Process count
- Uptime

has been added to the available SNMP values and can be fetched over SNMP requests.

The TAINY-MIB.txt has been adjusted accordingly.

17.2.3 Configuration network status interval

Enhancement:
A configuration field for the network status (RSSI, RSCP, …) refresh interval has been added in the General Cellular Interface Settings.

value range: 5 – 300 seconds

18 Version 1.000

Initial firmware of the product series.
Please follow the notes for updating in Chapter Firmware- and OS-Update.

19 Firmware and OS Update

This chapter describes how to update firmware and operating system (OS) packages.

19.1 From Firmware-version 1.000

The update functionality can be found on the web interface at: System -> Update.

A klick on the textbox opens a File browser where you can choose the update-file.
After clicking on the Submit-button the file will be transmitted to the device and checked. When the check is successful the device is rebooting and installing the update.

Make sure you are logged in with a user who has the rights to update the firmware.

If a new OS version is available, please install first the new OS and then the new firmware. Another order may lead the device unusable.
For security reasons, a given firmware may only run together with a specific and tested OS.