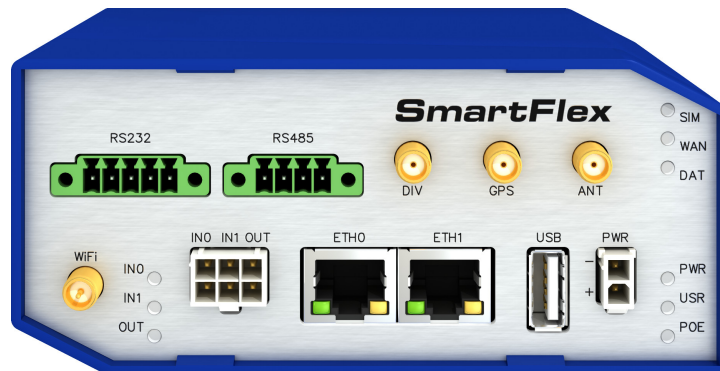


# Firmware 6.1.7

## RELEASE NOTES



**B+B SMARTWORX**

Powered by

**ADVANTECH**

# Abstract

This document describes:

- Firmware upgrade instructions.
- Description of all new features, fixes and other changes implemented in firmware 6.1.7.
- Known issues.

For detailed information about firmware 6.1.7, see the Configuration Manual for your router.

# Firmware Details

- **Version:** 6.1.7
- **Release date:** July 25, 2018
- **Hardware compatibility:** This firmware is applicable to any router made by Advantech B+B SmartWorx s.r.o.



Please note that not all new Advantech routers are produced and shipped with the latest release of the firmware. The reason usually is an existing certification made for a specific carrier or a region. For more information see document **Firmware Distribution Overview**.

## **Part I**

# **Firmware Upgrade Instructions**

## General Upgrade Instructions and Notices

**HTTPS certificates:** The HTTPS certificate creation in the router was updated in FW 5.3.5 in order to improve security. Existing HTTPS certificates on previously manufactured routers will not automatically be upgraded with the firmware upgrade! It is possible to upgrade HTTPS certificates by deleting the files within /etc/certs/https\* in the router (e.g. via SSH). The certificates will be re-created automatically during the router's next start.



**Python** user module is not uploaded by default to the produced routers with firmware of version 6.0.2 and later. Python user module can be downloaded from [Engineering Portal](#) on [this link](#).



The **SPECTRE v3 LTE** and **SPECTRE v3 ERT** routers were renamed to **SmartFlex**. You will find them under this name in the Changelog below.

## Specific Upgrade Instructions – new filename

If the filename of a firmware for your router was changed recently, then you can have an issue during manual firmware updating or with automatic firmware update feature. Following warning message will appear during the firmware updating process: *"You are trying to upload file "xx.bin" but "yy.bin" is expected. Are you sure to continue?"*

To proceed with the firmware updating please follow these steps: Check the table below with details of recent firmware filename changes for routers and make sure you have the correct firmware file for your router. Go ahead with manual firmware updating and confirm displayed warning message.

To proceed with automatic firmware updating, rename new firmware files (\*.bin and \*.ver) to filenames valid before the filename change. This should allow the router to pass through the process of automatic firmware updating. Next time, the automatic firmware update feature will work as expected and no other file renaming will be required.

Router model	FW ver.	New filename	Original filename
SmartMotion ST352 SmartMotion ST355	6.0.2	SPECTRE-v3T-LTE.bin	BIVIAS-v3LL.bin
SmartStart SL302	6.0.3	SPECTRE-v3L-LTE-US.bin	SPECTRE-v3L-LTE-AT.bin

Table 1: Recent firmware filename changes

## Specific Instructions for Upgrading from Firmware Older than 5.3.0



It is necessary to follow specific upgrade instructions below only if you are upgrading from firmware older than 5.3.0.

**Due to a (now fixed) bug in the firewall when a WAN device is part of a bridged interface, caution should be taken when upgrading in following case:**

- Condition:** When a WAN device is part of a bridged interface, access to that WAN device (HTTPS, SSH) is always granted regardless of configuration.
- Problem:** If this is your configuration, it is highly likely that you are not aware of this, so the undesired effect of the bridge firewall fix may render the router inaccessible.
- Recommended Action:** Enable access to both the web and ssh services before upgrading if you want to retain the current behavior (access to the WAN interface). This can be done on the *NAT* page in the *Configuration* section of the router's Web interface.

### Changing the password

It is necessary to change the password for user "root" (or enter it again) when upgrading to firmware version 5.3.0. or newer. The reason for this is an upgrade of the authentication system (encryption algorithm *crypt* was changed to *MD5*; passwords are now stored in the */etc/shadow* file instead of */etc/passwd*). Changing of the password is required before it is possible to set up remote access on the *NAT Configuration* page.

Please note that when downgrade from 5.3.0+ to previous firmware versions, the password for user *root* is reset to default ("root").

# Part II

# Changelog



**Legend:** Affected routers are marked as shown below for every changelog item:

Affected router version    Router version not affected

## Signature of the firmware

ER75i    SPECTRE 3G    SPECTRE RT    SPECTRE LTE-AT    SPECTRE LTE-VZ  
 ER75i v2    UR5i v2    XR5i v2    LR77 v2    CR10 v2    UR5i v2L    RR75i v2    LR77 v2L    XR5i v2E  
 Bivias v2HC    Bivias v2LC    Bivias v2LL    Bivias v2LH    Bivias v2HH  
 SmartFlex SR300    SmartFlex SR303    SmartFlex SR305    SmartFlex SR306    SmartFlex SR307    SmartFlex SR308  
 SmartFlex SR309    SmartStart SL302    SmartStart SL304    SmartMotion ST352    SmartMotion ST355

Firmware signature for routers of v2 platform was implemented. This signature is being checked during process of automatic firmware update only. It is not used for manual update of the firmware to allow firmware downgrade. The purpose is to improve security for automatic firmware updates.

## Policy module for iptables

ER75i    SPECTRE 3G    SPECTRE RT    SPECTRE LTE-AT    SPECTRE LTE-VZ  
 ER75i v2    UR5i v2    XR5i v2    LR77 v2    CR10 v2    UR5i v2L    RR75i v2    LR77 v2L    XR5i v2E  
 Bivias v2HC    Bivias v2LC    Bivias v2LL    Bivias v2LH    Bivias v2HH  
 SmartFlex SR300    SmartFlex SR303    SmartFlex SR305    SmartFlex SR306    SmartFlex SR307    SmartFlex SR308  
 SmartFlex SR309    SmartStart SL302    SmartStart SL304    SmartMotion ST352    SmartMotion ST355

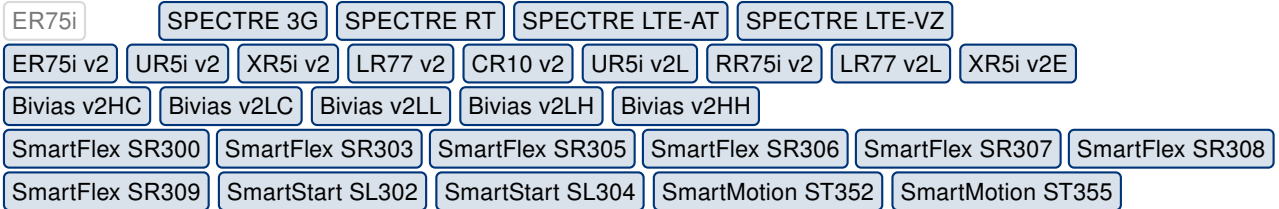
Added support for *policy* match extension module to *iptables* utility program. This module matches the policy used by IPsec for handling a packet. For more information about the usage of this module see online help or execute `iptables -m policy --help` command in router's console.

## Empty battery warning

ER75i    SPECTRE 3G    SPECTRE RT    SPECTRE LTE-AT    SPECTRE LTE-VZ  
 ER75i v2    UR5i v2    XR5i v2    LR77 v2    CR10 v2    UR5i v2L    RR75i v2    LR77 v2L    XR5i v2E  
 Bivias v2HC    Bivias v2LC    Bivias v2LL    Bivias v2LH    Bivias v2HH  
 SmartFlex SR300    SmartFlex SR303    SmartFlex SR305    SmartFlex SR306    SmartFlex SR307    SmartFlex SR308  
 SmartFlex SR309    SmartStart SL302    SmartStart SL304    SmartMotion ST352    SmartMotion ST355

Information about router's RTC backup battery state was added to the *System Information* section under *General Status* page. This information can also be retrieved by SNMP protocol.

## New options for LED command



Added new options to the *led* command:

### Synopsis:

```
led [-p] [-u] <command>
```

### Options:

Option	Description
-p	Control of PWR LED
-u	Control of USR LED (default)

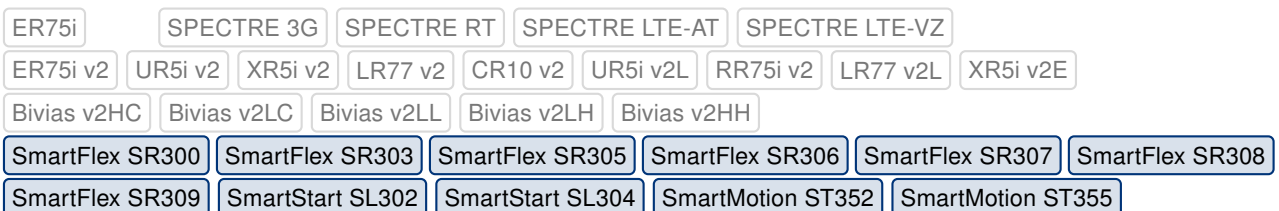
Table 2: led options

### Commands:

Command	Description
on	Power on the LED
off	Power off the LED
slow	Start blinking the LED slowly
fast	Start blinking the LED fast

Table 3: led commands

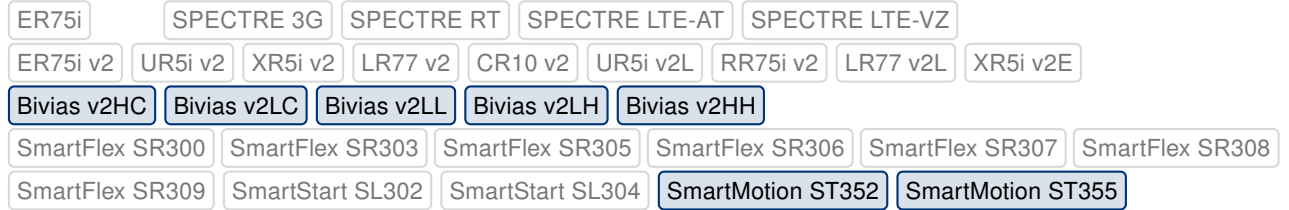
## FTP and Telnet services



FTP and Telnet services configuration pages were returned back to the *Services* menu under *Configuration* section of the router's GUI. These services are disabled by default.

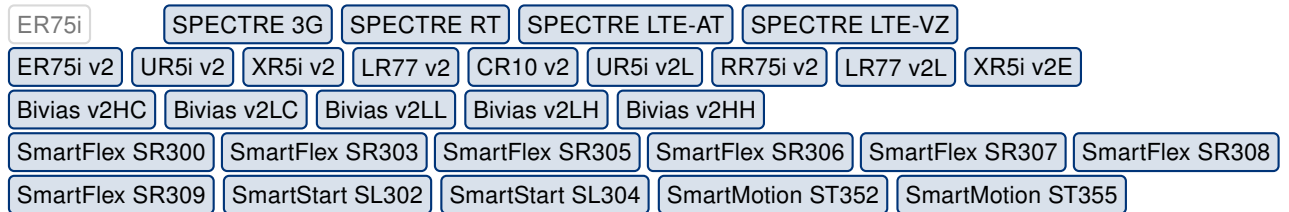


## Default cellular module



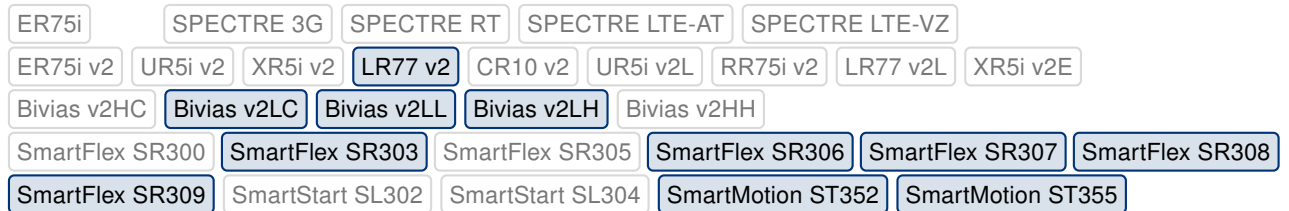
Added option *none* to the *Default Module* selection item on *Mobile WAN -> Module Switching* configuration page. If set to *none*, no preferred cellular module is determined.

## DNS setting for PPPoE



IP and IPv6 addresses of DNS servers can now be set on the PPPoE configuration page. This setting can be used especially in situation when the PPPoE does not assign an IP address of the DNS server.

## New cellular module firmware



Added support for new firmware version 05.05.58 for *Sierra Wireless MC7304* cellular module.

## Removed option "Enable Dial-In access"

ER75i	SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ				
ER75i v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH				
SmartFlex SR300	SmartFlex SR303	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307	SmartFlex SR308			
SmartFlex SR309	SmartStart SL302	SmartStart SL304	SmartMotion ST352	SmartMotion ST355				

Option *Enable Dial-In access* has been completely removed from the *Mobile WAN* configuration page.

## PPPoE bridge mode usage changes

ER75i	SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ				
ER75i v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH				
SmartFlex SR300	SmartFlex SR303	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307	SmartFlex SR308			
SmartFlex SR309	SmartStart SL302	SmartStart SL304	SmartMotion ST352	SmartMotion ST355				

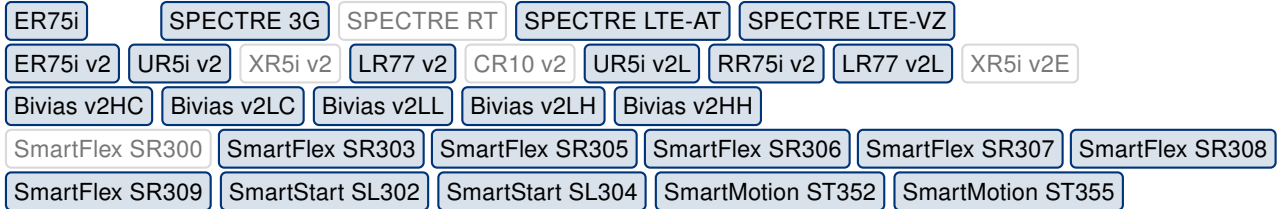
Option *PPPoE bridge mode* has been removed from *2nd Module* and *Module Switching* configuration pages. The *PPPoE bridge mode* now works only on the first cellular module while the second module can provide connectivity for the router itself.

## Reboot SMS restriction

ER75i	SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ				
ER75i v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH				
SmartFlex SR300	SmartFlex SR303	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307	SmartFlex SR308			
SmartFlex SR309	SmartStart SL302	SmartStart SL304	SmartMotion ST352	SmartMotion ST355				

Reboot SMS command is no longer accepted from any phone number due to the security reasons.

## Updated information SMS

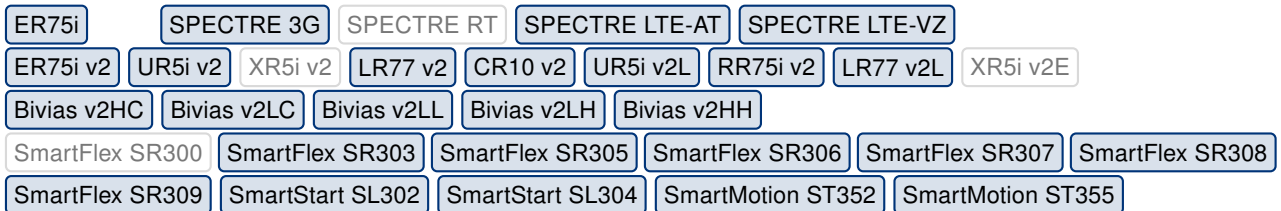


Texts of informational SMS has been updated to the following format:

- Router (*unit\_id*) has established data connection on the *card\_no* SIM card. IP address: *x.x.x.x*.
- Router (*unit\_id*) has lost data connection on the *card\_no* SIM card.
- Router (*unit\_id*) has exceeded *warning\_treshold* % of the data limit on the *card\_no* SIM card.
- Router (*unit\_id*) has exceeded the data limit on the *card\_no* SIM card.

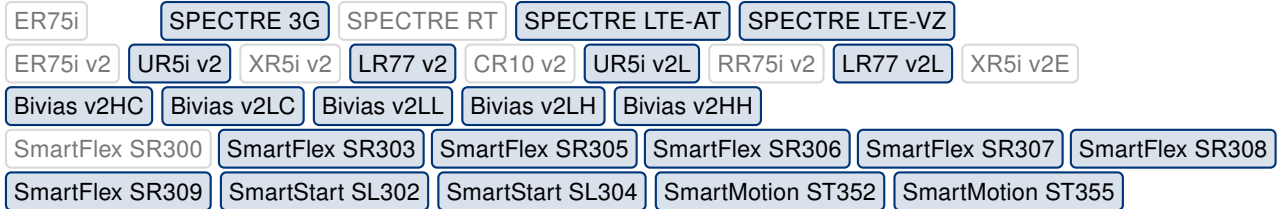
Note: Variables are written in italics.

## Statistics and logging improvements



Statistics on *Mobile WAN* status page have been enhanced to provide more details separately for individual SIM card. Messages in connection log has been changed to be more clear and helpful.

## MWAN signal strength scale

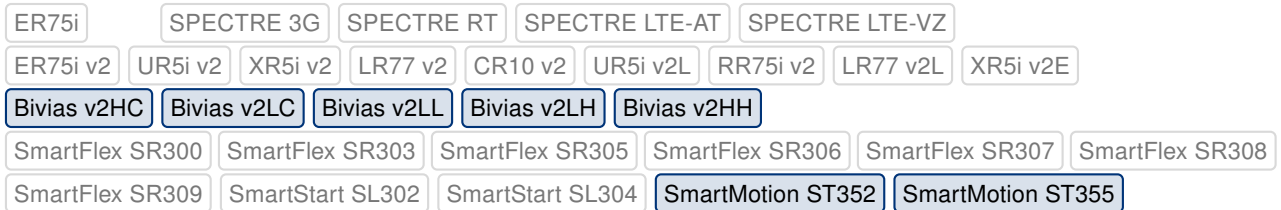


Rating scale for mobile signal strength indication was changed and from now it varies for different mobile technologies. Specification of value ranges is listed in the table below.

	GPRS/EDGE	UMTS/HSPA	LTE
good	> -70 dBm	> -75 dBm	> -90 dBm
fair	-70 dBm to -89 dBm	-75 dBm to -94 dBm	-90 dBm to -109 dBm
poor	< -89 dBm	< -94 dBm	< -109 dBm

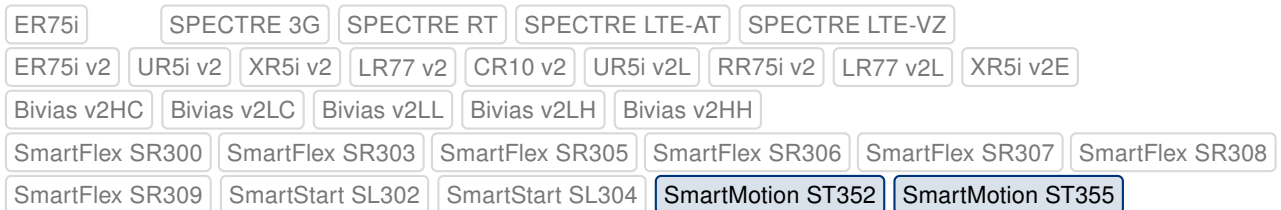
Table 4: Signal value ranges

## Modified restarting of mobile connection



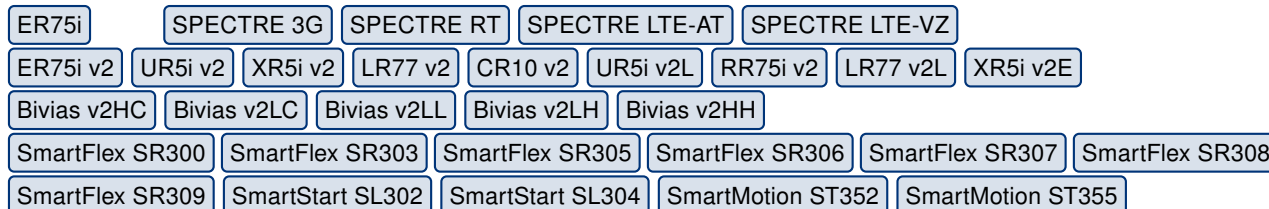
Both of the mobile WAN connections on SmartMotion and Bivias routers, can now be restarted independently. Settings of modules switching rules, made on *Module Switching* configuration page, can now be applied without termination of the mobile WAN connection.

## WAN LED control



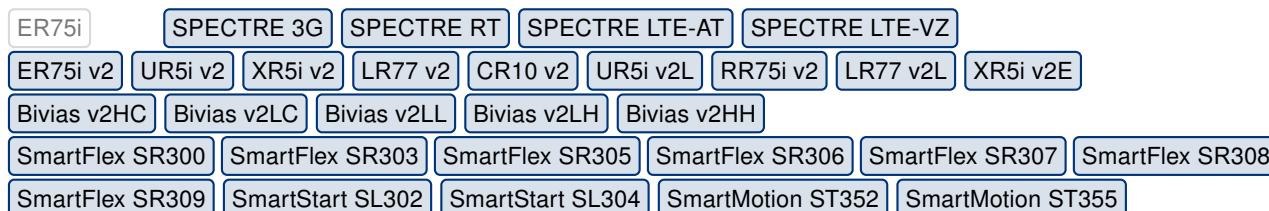
Both WAN LEDs on *SmartMotion* router will shine resp. blink independently in case the mobile connection for the module was established successfully. These LEDs do not signalize which module is currently in use any more.

## Netmask validation rule improvement



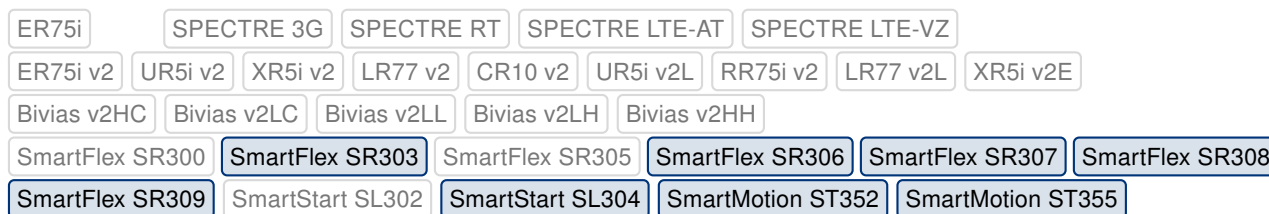
The netmask validation rule for router’s GUI was improved to check correct format of the mask.

## Modified selection of local IPsec IP



By now, local IP address of an IPsec tunnel was identical to the IP address of WAN interface. This may cause a connection issue if the remote IP address was not routed via the default gateway. From now, local IP address is dynamically assigned to the correct one, based on the routing table.

## PLMN parsing issue



Fixed PLMN parsing issue for *Quectel EC25* cellular module when MCC and MNC parts were not parsed correctly due to the non-standard occurrence of leading zeros.

### Fixed transfer data statistic

ER75i	SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ				
ER75i v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH				
SmartFlex SR300	SmartFlex SR303	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307	SmartFlex SR308			
SmartFlex SR309	SmartStart SL302	SmartStart SL304	SmartMotion ST352	SmartMotion ST355				

In some rare cases, statistic data for the mobile connection could have been evaluated incorrectly. The situation occurs once the mobile connection was re-established without previous reset of the cellular module.

### IPv6 address assignment issue

ER75i	SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ				
ER75i v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH				
SmartFlex SR300	SmartFlex SR303	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307	SmartFlex SR308			
SmartFlex SR309	SmartStart SL302	SmartStart SL304	SmartMotion ST352	SmartMotion ST355				

Fixed an IPv6 address assignment issue which could occur under certain circumstances. This issue results in identical IPv6 addresses assignment for both cellular modules.

### Fixed IPv6 connection check

ER75i	SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ				
ER75i v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH				
SmartFlex SR300	SmartFlex SR303	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307	SmartFlex SR308			
SmartFlex SR309	SmartStart SL302	SmartStart SL304	SmartMotion ST352	SmartMotion ST355				

ICMPv6 ping enabled on *Mobile WAN* configuration page should now work correctly if option *Check Connection* is set to *enabled + bind*.

**Fixed DNS64 translation**

ER75i	SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ				
ER75i v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH				
SmartFlex SR300	SmartFlex SR303	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307	SmartFlex SR308			
SmartFlex SR309	SmartStart SL302	SmartStart SL304	SmartMotion ST352	SmartMotion ST355				

Fixed DNS64 translation which has failed for the very first query due to the configuration issue.

**Fixed selection of SNMP trap agent address**

ER75i	SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ				
ER75i v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH				
SmartFlex SR300	SmartFlex SR303	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307	SmartFlex SR308			
SmartFlex SR309	SmartStart SL302	SmartStart SL304	SmartMotion ST352	SmartMotion ST355				

Fixed IP address of SNMP agent to match the IP address of an interface from which the SNMP trap will be sent.

**Fixed wget utility**

ER75i	SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ				
ER75i v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH				
SmartFlex SR300	SmartFlex SR303	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307	SmartFlex SR308			
SmartFlex SR309	SmartStart SL302	SmartStart SL304	SmartMotion ST352	SmartMotion ST355				

Fixed an issue with *wget* utility which was related to downloading of a file with relative URL path.

## Configuration import issue

ER75i	SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ				
ER75i v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH				
SmartFlex SR300	SmartFlex SR303	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307	SmartFlex SR308			
SmartFlex SR309	SmartStart SL302	SmartStart SL304	SmartMotion ST352	SmartMotion ST355				

Fixed the issue which could occur if the partial router's configuration, that does not contain configuration for the expansion port, is being restored. In this case, the mode of the expansion port was set to "server" mode.

## OpenSSL library upgrade

ER75i	SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ				
ER75i v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH				
SmartFlex SR300	SmartFlex SR303	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307	SmartFlex SR308			
SmartFlex SR309	SmartStart SL302	SmartStart SL304	SmartMotion ST352	SmartMotion ST355				

Upgraded *OpenSSL* library to version 1.0.2o. This update has fixed [CVE-2018-0739](#).

## Fixed control of WiFi channel

ER75i	SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ				
ER75i v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH				
SmartFlex SR300	SmartFlex SR303	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307	SmartFlex SR308			
SmartFlex SR309	SmartStart SL302	SmartStart SL304	SmartMotion ST352	SmartMotion ST355				

Fixed displaying of error message in case when forbidden WiFi channel for given country code was selected in the GUI.



## Fixed USB driver issues

ER75i	SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ				
ER75i v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH				
SmartFlex SR300	SmartFlex SR303	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307	SmartFlex SR308			
SmartFlex SR309	SmartStart SL302	SmartStart SL304	SmartMotion ST352	SmartMotion ST355				

Several issues in USB driver were fixed. These issues could cause that the communication through the WiFi, cellular module or 3rd Ethernet got stuck after some time in case of high data load.

## Curl program upgrade

ER75i	SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ				
ER75i v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH				
SmartFlex SR300	SmartFlex SR303	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307	SmartFlex SR308			
SmartFlex SR309	SmartStart SL302	SmartStart SL304	SmartMotion ST352	SmartMotion ST355				

Upgraded *curl* program to version 7.61.0. This update has fixed [CVE-2018-0500](#), [CVE-2018-1000300](#) and [CVE-2018-1000301](#).

# **Part III**

## **Known Issues**

## 5 GHz band for WiFi

The first one hundred v3 routers produced (with serial number from 6200000 to 6200099) contain a WiFi chip which does not support the 5 GHz band. There is no way of detecting this, the 5 GHz ranges on these devices will simply not work and the router will not be able to detect this.

## Warning during WiFi configuration update

During a WiFi configuration update a warning may appear in syslog. This has no other known effects other than the appearance of the warning message.

## Firmware Update – unexpected filename

If the filename of a firmware for your router was changed recently, you can have an issue during manual firmware updating or with Automatic Update feature. Following warning message will appear: *"You are trying to upload file "xx.bin" but "yy.bin" is expected. Are you sure to continue?"* To fix this issue follow instructions in Part I - [Firmware Upgrade Instructions](#).

## SmartStart – cellular network registration

It is necessary to use router's firmware of version 6.1.5 or higher if the *Telit* cellular module installed in your SmartStart router has following version the firmware:

- *Telit LE910-EU V2* cellular module with firmware version 20.00.403 or newer,
- *Telit LE910-NA1* cellular module with firmware version 20.00.014 or newer.

Note: The model name and firmware version of the cellular module can be found on router's web GUI at *Mobile WAN Status* page in *Mobile Network Information* section.

## SmartStart SL302 – cellular network authentication

It is not possible to use username and password when connecting to Mobile WAN network (on *Mobile WAN Configuration* page) if your SmartStart SL302 router has the 20.00.522 firmware version inside the *Telit LE910-NA1* cellular module. The version of cellular module firmware can be found at *Mobile WAN Status* page in *Mobile Network Information* section.

## SmartStart SL302 – SMS in Verizon network

SmartStart SL302 router (equipped with the *Telit* modules *LE910-SV1* or *LE910-NA1*) supports sending and receiving of SMS in *Verizon* cellular network since the firmware version 6.1.4. Please note that to support SMS receiving, cellular module with Verizon firmware of version higher than 20.00.012 is required.