



Customer Release Note

AirPrime BX310x R2.6.3



SIERRA
WIRELESS

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Document History

Version	Date	Updates
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1. Introduction

1.1. Document Scope

This document describes AirPrime BX310x firmware release BX310x.2.6.3

1.2. Document Audience

This release note may be distributed to all direct and indirect customers.

1.3. New Features/Enhancements

Table 1. New Features/Enhancements

Feature	Description
Logging	Implement enable /disable part feature debug message (Wi-Fi/BT).
Wi-Fi multi scan	Scan specific channels while Wi-Fi scanning, add a channel parameter (bit mask) into +SRWSTASCN



2. Abbreviations and Definitions

Table 2. Abbreviations and Definitions

Abbreviation/Acronym	Definitions
A2DP	Advanced Audio Distribution Profile
AVRCP	Audio/Video Remote Control Profile
BA	Broadcast Audio
BLE	Bluetooth® Low Energy
BR	Basic Rate
BT	Bluetooth®
EDR	Enhanced Data Rate
GPIO	Generic Programmable Input / Output
HFP	Hands-Free Profile
HID	Human Interface Device Profile
I/O	Input / Output
IAP	iPod Accessory Protocol
LED	Light-emitting diode
MAP	Message Access Profile
MFI	“Made for iPhone/iPod/iPad” license
PBAP	Phone Book Access Profile
SPP	Serial Port Profile
TWS	True Wireless Stereo
UART	Universal Asynchronous Receiver Transmitter



3. Related Documentation

Table 3. Related Documentation

Ref. #	Doc. #	Rev.	Document title
[1]	41111444	6.0	AirPrime BX310X Product Specification
[2]	41111445	1.0	AirPrime BX310X AT Command Guide
[3]	41112399	2.0	Customer Release Note for Firmware R2.0.0.201803141120.BX310x.1
[4]	41112440	1.0	Customer Release Note for Firmware R2.1.0.20180502101500.BX310x.1
[5]	41112615	2.0	Customer Release Note for Firmware R2.2.0.201807121327.BX310x.1
[6]	41112727	2.0	Customer Release Note for Firmware R2.3.0.201809061400.BX310x.1
[7]	41112820	1.0	Customer Release Note for Firmware R2.4.0.201810031030.BX310x.1



4. Compatibility

Table 4. Hardware Compatibility

AirPrime Compatibility List	
BX3100:	PV1 and onwards
BX3105:	PV1 and onwards

Table 5. Software Compatibility

Component	Version
FW	R1.3.1 and greater. Note: HW built with R1.3.1 requires UART Updater tool to update to P1.x and beyond. FOTA does not work on R1.3.1 to update to P1.x and later versions.



5. Software Release Description

5.1. Release Identification

Table 6. Firmware Release Information

Component	Version
Maturity / Maturity ID	BX310x Release Candidate 2.6.3
Date of generation	April 23, 2019
IMEI SV	NA
Baseline version	BX310x.2.6.3
Firmware images - file and identification information	BX310x.2.6.3

5.2. Software Tools Versions

Table 7. Software Tools Versions

S/W Tools Name	Version	Resource file
UART FW Updater Tool	06.18	BX310x FW Updater v2.zip

5.3. Firmware Update Procedures

The BX310x device's firmware can be updated using either the UART firmware update tool, or AirVantage.

5.3.1. UART Firmware Updater Tool

The UART firmware updater tool is available from <https://source.sierrawireless.com/resources/airprime/software/bx310x-firmware-upgrade-tool/>

This is the BX310x UART loader which enables you to flash new firmware onto a BX310x device. It is a command line tool built to run in Windows/DOS.

To use the tool to update a BX310x device:

1. Set GPIO27 high – Place a jumper between the GPIO27 and 'PADS' pins.
2. Reset the board with the terminal emulator connected.

The following output should appear. The last line should show include "WSIH", which means the bootloader is in the correct mode.

```
rst:0x1 (POWERON_RESET),boot:0x13 (SPI_FAST_FLASH_BOOT)
configsp: 0, SPIWP:0xee
```

```
clk_drv:0x00,q_drv:0x00,d_drv:0x00,cs0_drv:0x00,hd_drv:0x00,wp_drv:0x00
mode:DIO, clock div:2
load:0x3fff80d0,len:4
load:0x3fff80d4,len:540
load:0x40078000,len:0
load:0x40078000,len:18412
entry 0x40078c2c
ÅWSIHÀ
```

3. Close the terminal emulator
4. Check the current firmware version – Run the command “BX31xxBITest.exe comXX -v” to output the bootloader (firmware) version, where XX is the com port number you would normally use to send AT commands (e.g. com12). (If the command is entered incorrectly, a help message with all supported options will appear.)

```
BX31xxBITest.exe comXX -v
-v
\\.\com12
BC310x bootloader version 2.0.
```

5. If the previous command returned “connection failed -50”, repeat the command. (The error indicates the port is not ready – Windows has either not finished closing the port, or not finished initializing the port.)
6. Update the BX310x device with the new firmware using the -u switch (as given in the help output) and the appropriate firmware .bin file.
For example:

```
BX31xxBITest.exe com12 -u BX310x.2.5.0-2.bin
Status: 0x1, Percent: 0.000000, Bytes Written: 0
Status: 0x2, Percent: 0.335570, Bytes Written: 4096
Status: 0x2, Percent: 0.671141, Bytes Written: 8192
Status: 0x2, Percent: 1.006711, Bytes Written: 12288
Status: 0x2, Percent: 1.342282, Bytes Written: 16384
.
.
.
Status: 0x2, Percent: 98.993286, Bytes Written: 1208320
Status: 0x2, Percent: 99.328857, Bytes Written: 1212416
Status: 0x2, Percent: 99.664429, Bytes Written: 1216512
Status: 0x2, Percent: 100.000000, Bytes Written: 1220608
Status: 0x2, Percent: 100.000000, Bytes Written: 1220608
Status: 0x4, Percent: 100.000000, Bytes Written: 1220608
completed update with 0
```

5.3.2. AirVantage

To use AirVantage to update BX310x devices:

1. Log in to AirVantage and follow the instructions at <https://source.sierrawireless.com/airvantage/fota/reference/monitor/howtos/upgradeAirPrimeFW/> to identify the BX310x module(s) to upgrade and the firmware you want to upgrade to. By default, the selected BX310x module(s) will update automatically the next time they connect to AirVantage. (Note: Updates can optionally be scheduled.)

2. Connect the BX310x to Wi-Fi and establish a connection:
 - a. Connect to the module using UART and wait for the READY prompt to appear.
 - b. Configure the module in Station mode:
AT+SRWCFG=1
 - c. Scan for Wi-Fi access points:
AT+SRWSTASCN
 - d. Choose an Access Point and configure the station for connection:
AT+SRWSTACFG=<ssid>,<password>
 - e. Request a connection to the configured AP:
AT+SRWSTACON=1

After a few seconds, two notifications will appear:

```
+SRWSTASTATUS: 1,<ssid>,<ap_bsddid>,<ap_channel>,<ap_security_mode>  
+SRWSTAIP: <local_ip>,<netmask>,<gateway_ip>
```

The connection has now been established.

3. Connect the BX30x to AirVantage:
 - a. Enable device services indications:
AT+WDSI=8191
 - b. Start a device services session:
AT+WDSS=1,1

The firmware upgrade selected in Step 1 starts automatically when the session starts. When the upgrade finishes, the module will automatically reboot.



6. Software Changes Description

6.1. Validated Corrections/Improvements

Table 8. Validated Corrections/Improvements

ID	Description	Impacted Domain/Sub-Domain	Fixed in
BX310x-1117	BC smart server side lack of profiles check, Add check bc smart profile when module is server side	BLE	2.6.3
BX310x-1083	Added AT+LOG enable/disable parameter store in NVS.	Common	2.6.3
BX310x-1082	Implement mutil channels Wi-Fi scan, added a channel parameter (bit mask) into +SRWSTASCN	Network	2.6.3
BX310x-1069	Revised <auth mode> and <channel> accepts range. <auth mode> 0: open 1: wep (not supported, will fallback to open) 2: wpa 3: wpa2 4: wpa/wpa2 <channel> 0 for automatic selection.	Network	2.6.3

6.1. Modified Commands – Release 2.6.3

6.1.1. Configure BX301x LOG Feature (BX310x-1083)

AT+LOG	Enable/disable log message
Commands	<p>Write command:</p> <p>AT+LOG=<log_switch></p> <p>Purpose: Enable part debug log message feature.</p>
Response	<p>OK</p> <p>or</p> <p>ERROR</p>
Parameters	<ul style="list-style-type: none"> • < log_switch > enable/disable log <ul style="list-style-type: none"> ○ Enable: 1 ○ Disable: 0 (Default value)
Notes	Enabled part Bluetooth and Wi-Fi debug message
Example	<pre>// Check log output status. (Disabled) AT+LOG? +LOG: 0 OK // Enable log message output AT+LOG=1 OK</pre>
Introduced in FW Revision	2.6.2
Modified in FW Revision	2.6.3

6.1.2. Configure BX301x Wi-Fi Scan Feature (BX310x-1082)

AT+SRWSTASCN	Scans for available Wi-Fi access points
Commands	<p>Write command:</p> <p>AT+SRWSTASCN=<channel_bitmap>[,<scan_min_time>,<scan_max_time>]</p>

Response	+SRWSTASCN: <rss>, <auth_mode>, <channel>, <ssid>, <bssid> ... OK or ERROR
Parameters	<ul style="list-style-type: none"> • <channel_bitmap> scan multiple channels <ul style="list-style-type: none"> ○ HEX value, range 0x0 to 0x3FFF ○ 0: scan all channels ○ 1~14: scan specific channels • <scan_min_time> minimum time that scan dwells on each channel. Range: 120 ms to 5000 ms, Default: 500 ms. • <scan_max_time> maximum time that scan dwells on each channel. Range: 120 ms to 5000 ms, Default: 500 ms.
Example	<pre>//Scan all channels AT+SRWSTASCN=0 +SRSTASCN: -77,5,2,"Wi Fi 1","aa:bb:cc:dd:ee:ff" ... +SRSTASCN: -92,3,6,"Wi Fi 2","12:34:56:78:9a:bc" OK //Scan channel 1,2,6,11, 0x423 = 0000 0100 0010 0011 AT+SRWSTASCN=423 +SRWSTASCN: -77,4,1,"Wi Fi 1","aa:bb:cc:dd:ee:ff" ... +SRWSTASCN: -92,3,11,"Wi Fi 4","12:23:56:78:9a:bc" OK</pre>
Introduced in FW Revision	2.6.3
Modified in FW Revision	

6.2. New AT Commands – Release 2.6.2

6.2.1. Implement LOG Feature (BX310x-1083)

AT+LOG	Enable/disable log message
Commands	<u>Write command:</u> AT+LOG=<log_switch> Enable part debug log message feature
Response	OK or ERROR

Parameters	<ul style="list-style-type: none"> • < log_switch > enable/disable log <ul style="list-style-type: none"> ○ Enable: 1, ○ Disable: 0 (Default value)
Notes	Enabled part Bluetooth and Wi-Fi debug message
Example	AT+LOG=1 OK
Introduced in FW Revision	2.6.2
Modified in FW Revision	-

6.3. Modified AT Commands – Release 2.6.2

6.3.1. Add commands to configure BX301x I2S bit clock features (BX310x-1088)

AT+KI2SCFG	Configure I2S Master TX parameters	
Commands	<u>Write command:</u> AT+KI2SCFG=<port_number>, <enable>[,<sample_rate>, <bits_per_sample>, <communication_format>, <channel_format>,<bck>,<ws>, <data_out>,<data_in>]	<u>Read command:</u> AT+KI2SCFG?
Response	OK or ERROR	+KI2SCFG=<port_number>,<enable= 0> +KI2SCFG=<port_number>, <enable=1>,<sample_rate>, <bits_per_sample>, <communication_format>, <channel_format>,<bck>,<ws>, <data_out>,<data_in>
Parameters	<ul style="list-style-type: none"> • <port_number> A numeric parameter which specifies the port number to configure. <ul style="list-style-type: none"> ○ 0: I2S port number 0 (Default) • <enable> [0...1] A numeric parameter which specifies the option of the enable/disable of the port number. <ul style="list-style-type: none"> ○ 0: Disable port. (Default) ○ 1: Enable port. 	

	<ul style="list-style-type: none"> • <sample_rate> [0...3] A numeric parameter which specifies the sample rate of the I2S. <ul style="list-style-type: none"> ○ 0: 44100 Hz (Default) ○ 1: 88200 Hz ○ 2: 90000 Hz ○ 3: 96000 Hz • <bits_per_sample> [0...2] A numeric parameter which specifies the bits per sample of the I2S. <ul style="list-style-type: none"> ○ 0: 16 bits (Default) ○ 1: 24 bits ○ 2: 32 bits • <communication_format> [0...3] A numeric parameter which specifies the communication format of the I2S peripheral. <ul style="list-style-type: none"> ○ 0: I2S and MSB format (Default) ○ 1: I2S and LSB format ○ 2: PCM and Short format ○ 3: PCM and Long format • <channel_format> [0...5] A numeric parameter which specifies the channel format of the I2S peripheral. <ul style="list-style-type: none"> ○ 0: Right and left channels (Default) ○ 1: All right channel ○ 2: All left channel ○ 3: Only right channel ○ 4: only left channel • <bck> A numeric parameter which specifies the GPIO number assigned for the Bit clock line. Default value: GPIO number 26 (BX310x-ETH: GPIO number 12) • <ws> A numeric parameter which specifies the GPIO number assigned for the Word clock line. Default value: GPIO number 18 (BX310x-ETH: GPIO number 14) • <data_out> A numeric parameter which specifies the GPIO number assigned for the data output line. Default value: GPIO number 32 • <data_in> A numeric parameter which specifies the GPIO number assigned for the data input line. Default value: GPIO number 33 	
Notes		
Example	<pre>AT+KI2SCFG=0,1,0,0,0,0,26,18,32,33</pre>	<pre>AT+KI2SCFG? +KI2SCFG: 0, 0 +KI2SCFG: 1, 0 OK AT+KI2SCFG=0,1,0,0,0,0,26,18,32,33 OK AT+KI2SCFG? +KI2SCFG: 0, 1, 0, 0, 0, 0, 26, 18, 32, 33 +KI2SCFG: 1, 0 OK</pre>
Introduced		
Modified	2.6.2	

6.4. New AT Commands – Release 2.6.0

6.4.1. Implement PING Feature (BX310x-965)

AT+KPING	Start Ping Process (Ping an IP Address)
Commands	<p>Write command:</p> <p>AT+KPING=<addr>[,<count=3>][,<timeout=1000>][,<interval=1000>]]</p> <p>Ping an IP address</p>
Response	<p>OK</p> <p>or</p> <p>ERROR</p>
Parameters	<ul style="list-style-type: none"> • <addr> Destination <ul style="list-style-type: none"> ○ IPv4 address ○ Pinging its own address is not supported. • <count=3> Packet count <ul style="list-style-type: none"> ○ Range [1-2147483647] ○ Stop after sending count ECHO_REQUEST packets. • <timeout=1000> Timeout <ul style="list-style-type: none"> ○ Range [1-2147483647] ○ Time to wait for a response, in milliseconds. • <interval=1000> Interval <ul style="list-style-type: none"> ○ Range [0-2147483647] ○ Wait interval milliseconds between sending each packet.
Notes	<p>Only one ping process can be started at a time. To start a different ping process, wait for the current process to end or use AT+KPINGSTOP to stop it.</p> <p>Individual ping results will be returned with +KPING notification. When the ping process finishes, the global results will be returned with +KPINGSTAT notification.</p>
Example	<p>AT+KPING= 192.168.1.58</p> <p>OK</p>
Introduced in FW Revision	2.6.0
Modified in FW Revision	-

AT+KPINGSTOP	Stop Ping Process
Commands	<p>Execute command:</p> <p>AT+KPINGSTOP</p>
Response	OK

Parameters	-
Notes	If a ping process is already running (started with AT+KPING), it will only be stopped at the end of the next <interval>.
Example	AT+KPINGSTOP OK
Introduced in FW Revision	2.6.0
Modified in FW Revision	-

+KPING	Ping Process Notification
Commands	<u>Notification:</u> +KPING: <bytes>[,<time>] Ping result.
Parameters	<ul style="list-style-type: none"> • <bytes> Received packet size <ul style="list-style-type: none"> ○ 0: No packet received (timeout) ○ >0: Packet size • <time> <ul style="list-style-type: none"> ○ Round-trip time in milliseconds
Notes	
Example	+KPING: 60,8 +KPING: 0,1000
Introduced in FW Revision	2.6.0
Modified in FW Revision	-

+KPINGSTAT	Ping Process Statistics Notification
Commands	<u>Notification:</u> +KPINGSTAT: <send>, <received>, <lost>, <time>, <min_time>, <max_time> Ping statistics.
Parameters	<ul style="list-style-type: none"> • <send> <ul style="list-style-type: none"> ○ Number of packets send • <received> <ul style="list-style-type: none"> ○ Number of packets received • <lost> <ul style="list-style-type: none"> ○ Number of packets lost • <time>

	<ul style="list-style-type: none"> ○ Total round-trip time in milliseconds • <min_time> <ul style="list-style-type: none"> ○ Minimum round-trip time in milliseconds • <max_time> <ul style="list-style-type: none"> ○ Maximum round-trip time in milliseconds
Notes	
Example	+KPINGSTAT: 3,3,0,18,4,8 +KPINGSTAT: 3,0,3,0,0,0
Introduced in FW Revision	2.6.0
Modified in FW Revision	

6.4.2. Add AT command to enable/disable different BX310x features - Web Server (BX310x-607)

AT+SRWSSTATE	Enable/Disable the Web Server	
Commands	<u>Write Command:</u> AT+SRWSSTATE=<state>	<u>Read Command:</u> AT+SRWSSTATE?
Response	OK or ERROR or +CME ERROR: <value>	+SRWSSTATE: <state>
Parameters	<ul style="list-style-type: none"> • <state> A numeric parameter [0...1] which specifies the Disable/Enable state of the web server. <ul style="list-style-type: none"> ○ 0: Disable Web Server ○ 1: Enable Web Server 	
Example	AT+SRWSSTATE=1 OK	AT+SRWSSTATE? +SRWSSTATE: 0 OK
Note	Restriction: <ul style="list-style-type: none"> • Enable: WIFI AP/STA or AP mode only • Disable: Not active connections with the web server 	
Introduced in FW Revision	2.6	2.6
Modified in FW Revision		

6.4.3. Add AT command to configure DNS server IP when not using DHCP (BX310x-935)

AT+SRETHDNSCFG G	Configures the DNS IP addresses for the Ethernet interface	
Commands	<u>Write command:</u> AT+SRETHDNSCFG=[dns_main][,[dns_backup][,[dns_fallback]] Purpose: Configure the DNS IP addresses used for the Ethernet interface.	<u>Read command:</u> AT+SRETHDNSCFG?
Response	OK or ERROR	+SRDNSNETCFG: <dns_main>, <dns_backup>, <dns_fallback> OK
Parameters	<ul style="list-style-type: none"> • dns_main: DNS main IP address <ul style="list-style-type: none"> ○ Configuration value used in static mode (DHCP disabled) • dns_backup: DNS backup IP address <ul style="list-style-type: none"> ○ Configuration value used in static mode (DHCP disabled) <ul style="list-style-type: none"> ▪ If the main DNS server is not available the backup DNS server will be tried • dns_fallback: DNS fallback IP address <ul style="list-style-type: none"> ○ Configuration value used if no DNS servers are set via DHCP when a DHCP client is enabled in WIFI STA or ETH mode, 	
Notes		
Example	AT+SRETHDNSCFG="10.10.10.1","10.10.10.2","10.10.10.1" OK	AT+SRETHDNSCFG? +SRWETHDNSCFG: "10.10.10.1","10.10.10.2","10.10.10.1" OK
Introduced in FW Revision	2.6.0	2.6.0
Modified in FW Revision		

6.4.4. Add commands to enable/disable different BX310x features – BTC (BX310x-607)

AT+SRBTCFILES		Enable/Disable supported BTC profiles
Commands	<p><u>Write command:</u> AT+SRBTCFILES=<profiles></p> <p>Purpose: Enable/disable the supported BTC profiles</p>	<p><u>Read command:</u> AT+SRBTCFILES?</p> <p>Purpose: Read the state of the BTC profiles</p>
Response	<p>OK <i>or</i> ERROR</p>	<p>+SRBTCFILES: <profiles> OK <i>or</i> ERROR</p>
Parameters	<p><profiles>: A decimal value that indicates the BTC profiles enabled/disabled in a bitmask mode</p> <p>Default to 0: All the BTC profiles disabled</p> <p>Examples:</p> <p>BTC SPP ENABLED 0x01 BTC A2DP ENABLED 0x02 BTC AVRCP ENABLED 0x04</p> <p><profiles> = ALL disabled = 0x00 = 0 in decimal value <profiles> = BTC SPP ENABLED = 0x01 = 1 in decimal value <profiles> = BTC A2DP ENABLED & BTC AVRCP ENABLED = 0x06 = 6 in decimal value <profiles> = BTC SPP ENABLED & BTC A2DP ENABLED & BTC AVRCP ENABLED = 0x07 = 7 in decimal value</p>	
Note	<p>In order to enable the A2DP or AVRCP profiles: The I2S port must be configured using AT+KI2SCFG before AT+SRBTCFILES is used</p>	
Example	<p>AT+SRBTCFILES=7 OK</p>	<p>AT+SRBTCFILES? +SRBTCFILES: 6 OK</p>
Introduced in FW Revision	2.6.0	
Modified in FW Revision		

6.4.5. Add commands to enable/disable Audio Codec

AT+SRA2DPCODEC		Enable/Disable DEV kit audio codec	
Commands	<u>Write Command:</u> AT+SRA2DPCODEC=<state>	<u>Read Command:</u> AT+SRA2DPCODEC?	
Response	OK <i>or</i> +CME ERROR: <value> <i>or</i> ERROR	+SRA2DPCODEC: <state> OK	
Parameters	<ul style="list-style-type: none"> <state> [0...1] A numeric parameter which specifies the use of the TLV320aic3111 (used in the BX31 dev kit) Default value: 0 <ul style="list-style-type: none"> 0: Disable the configuration of the chip 1: Enable the configuration of the chip 		
Note	Use with AT+SRBTCFILES to enable A2DP & AVRCP profiles		
Example	AT+SRA2DPCODEC=1 OK	AT+SRA2DPCODEC? +SRA2DPCODEC: 1 OK	
Introduced in FW Revision	2.6.0		

AT+SRA2DPSTATE		Enable/Disable A2DP	
Modified in FW Revision	Deleted in 2.6.0 Use AT+SRBTCFILES to enable A2DP		

AT+SRAVRCPSTATE		Enable/Disable AVRCP	
Modified in FW Revision	Deleted in 2.6.0 Use AT+SRBTCFILES to enable A2DP		

6.4.6. Add Bluetooth class status indication

+SRBTC_IND		BTC profiles status	
Notification	<u>Notification:</u> +SRBTC_IND: <status> Status of the BTC profiles		

Parameters	<ul style="list-style-type: none"> • <status> Status o the BTC profiles in Decimal value <ul style="list-style-type: none"> ○ 0: GAP_ENABLED ○ 1: GAP_ENABLE_ERROR ○ 2: GAP_DISABLED ○ 3: GAP_DISSABLE_ERROR ○ 4: AVRCP_ENABLED ○ 5: AVRCP_ENABLE_ERROR ○ 6: AVRCP_DISABLED ○ 7: AVRCP_DISABLE_ERROR ○ 8: A2DP_ENABLED ○ 9: A2DP_ENABLE_ERROR ○ 10: A2DP_DISABLED ○ 11: A2DP_DISABLE_ERROR ○ 12: SPP_ENABLED ○ 13: SPP_ENABLE_ERROR ○ 14: SPP_DISABLED ○ 15: SPP_DISABLE_ERROR
Notes	
Examples	+SRBTC_IND: 1
Introduced in FW Revision	2.6.0
Modified in FW Revision	

6.4.7. Add MQTT status indication

+KMQTT_IND	MQTT status indication
Notification	<p><u>Notification:</u> +KMQTT_IND: <session id>, <status></p>
Parameters	<ul style="list-style-type: none"> • <session id>: MQTT session in DECIMAL format • <status> <ul style="list-style-type: none"> ○ 0: MQTT connection aborted error. The process to establish or maintain the connection with the MQTT broker failed. ○ 1: MQTT connection successful (CONNACK received from the MQTT broker) ○ 2: MQTT subscribed to a topic successful (SUBACK received from the MQTT broker)

	<ul style="list-style-type: none"> ○ 3: MQTT unsubscribed to a topic successful (UNSUBACK received from the MQTT broker) ○ 4: MQTT message published successful (ACK received from the MQTT broker). It is only generated when publishing message with QOS > 0. ○ 5: MQTT generic error
Example	+MQTT_IND: 1,1
Introduced in FW Revision	2.6.0
Modified in FW Revision	

6.5. Modified AT Commands – Release 2.6.0

6.5.1. Configure I2S Master TX parameters

AT+KI2SCFG	Configure I2S Master TX parameters	
Commands	<u>Write Command:</u> AT+KI2SCFG=<port_number>,<enable>[,<communication_format>,<channel_format>,<bck>,<ws>,<data_out>,<data_in>]	<u>Read Command</u> AT+KI2SCFG?
Response	OK <i>or</i> ERROR	+KI2SCFG=<port_number>,<enable=0> +KI2SCFG=<port_number>,<enable=1>,<communication_format>,<channel_format>,<bck>,<ws>,<data_out>,<data_in>
Parameters	<ul style="list-style-type: none"> • <port_number> A numeric parameter which specifies the port number to configure. Default value: 0 <ul style="list-style-type: none"> ○ 0: I2S port number 0. • <enable> [0...1] A numeric parameter which specifies the option of the enable/disable of the port number. Default value: 0 <ul style="list-style-type: none"> ○ 0: Disable port. ○ 1: Enable port. • <communication_format> [0...3] A numeric parameter which specifies the communication format of the I2S peripheral. Default value: 0 <ul style="list-style-type: none"> ○ 0: I2S and MSB format ○ 1: I2S and LSB format ○ 2: PCM and Short format ○ 3: PCM and Long format 	

	<ul style="list-style-type: none"> • <channel_format> [0...5] A numeric parameter which specifies the channel format of the I2S peripheral. Default value: 0 <ul style="list-style-type: none"> ○ 0: Right and left channels ○ 1: All right channel ○ 2: All left channel ○ 3: Only right channel ○ 4: only left channel • <bck> A numeric parameter which specifies the GPIO number assigned for the Bit clock line. Default value: GPIO number 26 • <ws> A numeric parameter which specifies the GPIO number assigned for the Word clock line. Default value: GPIO number 18 • <data_out> A numeric parameter which specifies the GPIO number assigned for the data output line. Default value: GPIO number 33 • <data_in> A numeric parameter which specifies the GPIO number assigned for the data input line. Default value: GPIO number 32 	
Notes		
Example	AT+KI2SCFG=0,1,0,0,26,18,33,32	AT+KI2SCFG? +KI2SCFG: 0, 0 +KI2SCFG: 1, 0 OK AT+KI2SCFG=0,1,0,0,26,18,33,32 OK AT+KI2SCFG? +KI2SCFG: 0, 1, 0, 0, 26, 18, 33, 32 +KI2SCFG: 1, 0 OK
Introduced		
Modified	2.6.0	

6.5.2. Add commands to enable/disable different BX301x features - BT (BX310x-607)

AT+SRBTSYST EM	Enable/Disable BT subsystem	
Command	<u>Write command:</u> AT+SRBTSYSTEM=<state> Function to write the state of of the BT subsystem.	<u>Read command:</u> AT+SRBTSYSTEM? Function to read the state of the BT subsystem.

Response	OK or ERROR	"+SRBTSYSTEM: <state>" OK or ERROR
Parameters	<ul style="list-style-type: none"> • <state>: BT system mode in decimal value [0...3]. Default to 0: BT system disabled. <ul style="list-style-type: none"> ○ 0: BT system mode disabled ○ 1: BT system mode BLE ○ 2: BT System mode BT Classic ○ 3: BT system mode BTDM (BLE & BT Classic) 	
Notes	<p>From 2.6.0:</p> <p>It is not possible to change the BT mode in runtime. Please follow these steps to change the mode:</p> <p>Example (From BLE to BT Classic):</p> <ol style="list-style-type: none"> 1. Disable BT: AT+SRBTSYSTEM=0 2. Reset the board: AT+RST 3. Enable BT Classic: AT+SRBTSYSTEM=2 	
Example	AT+SRBTSYSTEM=1 OK	AT+SRBTSYSTEM? +SRBTSYSTEM: 1 OK
Introduced in FW Revision	-	
Modified in FW Revision	2.6.0	

6.5.3. Add commands to enable/disable different BX310x features – BLE (BX310x-607)

AT+SRBLE	BLE non volatile configuration	
Commands	<u>Write command:</u> AT+SRBLE=<name>, <max mtu>, <ble_init>[, <appearance>] Function: Set BLE configuration.	<u>Read command:</u> AT+SRBLE? Function: Read BLE configuration.
Responses	OK or ERROR	+SRBLE: <name>,<max mtu>,<ble_init>,<appearance> OK

Parameters

- <name>: BLE name (string)
- <max mtu>: Maximum MTU value in Decimal Format. This is the value used during the exchange MTU procedure. At the end of the exchange the the value negotiated is the one in the +SRBLEMTU response. Range: 0 to 517.
- <ble_init>: A decimal value that indicates the BLE profiles enabled/disabled in a bit filed mode
 - Default to 0: All the BLE profiles disabled
 - **Examples:**
 - 0x01: GATT_CLIENT_ENABLE
 - 0x02: GATT_SERVER_ENABLE
 - 0x04: BCSMART_CLIENT_ENABLE
 - 0x08: BCSMART_SERVER_ENABLE
 - <ble_init> = ALL disabled = 0x00 = 0 in decimal value
 - <ble_init> = GATT_CLIENT_ENABLE = 0x01 = 1 in decimal value
 - <ble_init> = GATT_CLIENT_ENABLE & GATT_SERVER_ENABLE = 0x03 = 3 in decimal value
 - <ble_init> = GATT_CLIENT_ENABLE & GATT_SERVER_ENABLE & BCSMART_CLIENT_ENABLE & BCSMART_SERVER_ENABLE = 0x0F = 15 in decimal value
- <appearance>: BLE Appearance characteristic
 - 0: Unknown
 - 64: Generic Phone
 - 128: Generic Computer
 - 192: Generic Watch
 - 193: Sports Watch
 - 256: Generic Clock
 - 320: Generic Display
 - 384: Generic Remote
 - 448: Generic Eyeglasses
 - 512: Generic Tag
 - 576: Generic Keyring
 - 640: Generic Media Player
 - 704: Generic Barcode Scanner
 - 768: Generic Thermometer
 - 769: Thermometer Ear
 - 832: Generic Heart Rate
 - 833: Heart Rate Belt
 - 896: Generic Blood Pressure
 - 897: Blood Pressure Arm
 - 898: Blood Pressure Wrist
 - 960: Generic Hid
 - 961: Hid Keyboard
 - 962: Hid Mouse
 - 963: Hid Joystick
 - 964: Hid Gamepad
 - 965: Hid Digitizer Tablet
 - 966: Hid Card Reader
 - 967: Hid Digital Pen
 - 968: Hid Barcode Scanner
 - 1024: Generic Glucose
 - 1088: Generic Walking
 - 1089: Walking In Shoe
 - 1090: Walking On Shoe
 - 1091: Walking On Hip

	<ul style="list-style-type: none"> ○ 1152: Generic Cycling ○ 1153: Cycling Computer ○ 1154: Cycling Speed ○ 1155: Cycling Cadence ○ 1156: Cycling Power ○ 1157: Cycling Speed Cadence ○ 3136: Generic Pulse Oximeter ○ 3137: Pulse Oximeter Fingertip ○ 3138: Pulse Oximeter Wrist ○ 3200: Generic Weight ○ 3264: Generic Personal Mobility Device ○ 3265: Powered Wheelchair ○ 3266: Mobility Scooter ○ 3328: Generic Continuous Glucose Monitor ○ 3392: Generic Insulin Pump ○ 3393: Insulin Pump Durable Pump ○ 3396: Insulin Pump Patch Pump ○ 3400: Insulin Pen ○ 3456: Generic Medication Delivery ○ 5184: Generic Outdoor Sports ○ 5185: Outdoor Sports Location ○ 5186: Outdoor Sports Location And Nav ○ 5187: Outdoor Sports Location Pod <p>5188: Outdoor Sports Location Pod And Nav</p>	
Note	The BLE name is also the one for the service 0x1800, or the Generic Access Service.	
Example	AT+SRBLE="myName", 50, 1, 128 OK	AT+SRBLE? +SRBLE: "myName", 50, 1, 128 OK
Introduced in FW Revision		
Modified in FW Revision	2.6.0	

6.5.4. Add address type support to AT+SRBLECFG (BX310x-1022)

AT+SRBLECFG	Create BLE session or print all BLE session	
Commands	<p><u>Write command:</u> AT+SRBLECFG=<bt addr>[,<address type>] Function: Create a new BLE session.</p>	<p><u>Read command:</u> AT+SRBLECFG? Function: Print all BLE sessions</p>

Responses	<p>+SRBLECFG: <session id>,<is connected>,<bt addr>,<address type>,<mtu></p> <p>OK</p> <p>or</p> <p>ERROR</p>	<p>+SRBLECFG: <session id>,<is connected>,<bt addr>,<address type>,<mtu></p> <p>+SRBLECFG: <session id>,<is connected>,<bt addr>,<address type>,<mtu></p> <p>...</p> <p>OK</p>
Parameters	<ul style="list-style-type: none"> • <session id>: BLE session identifier in Decimal Format. • <is connected>: <ul style="list-style-type: none"> ○ 0: Not connected ○ 1: connected • <bt addr>: the Bluetooth address of remote device in Hex Format. • <address type>: <ul style="list-style-type: none"> ○ 0: Public ○ 1: Random ○ 2: Unknown • <mtu>: Maximum Transmission Unit in Decimal Format. 23 is the default value. 	
Note	<p>A new BLE session can also be created automatically when a remote device initiate a connection.</p>	
Example	<p>AT+SRBLECFG="00:11:22:aa:bb:cc"</p> <p>+SRBLECFG: 1,0," 00:11:22:aa:bb:cc" ,0,23</p> <p>OK</p>	<p><i>Note: In this example only the 2nd device is connected.</i></p> <p>AT+SRBLECFG?</p> <p>+SRBLECFG:1,0,"00:11:22:aa:bb:cc",0,23</p> <p>+SRBLECFG:2,1,"33:44:55:dd:ee:ff",0,23</p> <p>OK</p>
Introduced in FW Revision		
Modified in FW revision	<p>2.6.0 Added address type optional parameter and in +SRBLECFG response</p>	<p>2.6.0 Added address type in +SRBLECFG response</p>

6.5.5. Configure BLE security parameters

AT+SRBLESECPARAMS	Read or write the security parameters	
Commands	<p><u>Write command:</u></p> <p>AT+SRBLESECPARAMS=<io_capability>,<auth_req></p> <p>Function: set the IO capability and the authorization request type.</p>	<p><u>Read command:</u></p> <p>AT+SRBLESECPARAMS?</p> <p>Function: get the current security parameters.</p>

Response	OK or ERROR	+SRBLESECPARAMS: <io_capability>,<auth_req> OK
Parameters	<ul style="list-style-type: none"> • <io_capability>: the IO capabilities in DECIMAL format <ul style="list-style-type: none"> ○ 0: display only ○ 1: DisplayYesNo ○ 2: KeyboardOnly ○ 3: NoInputNoOutput ○ 4: Keyboard Display • <auth_req>: the authorization request type in DECIMAL format. <ul style="list-style-type: none"> ○ 1 (0x01): Bonding flag ○ 2 (0x02): Reserved for future use ○ 4 (0x04): MITM ○ 8 (0x08): Secure Connection ○ Examples: <ul style="list-style-type: none"> ▪ Bonding enabled, MITM required = 5 (0x05) ▪ Bonding enabled, MITM required, Secure Connection = 12 (0x0C) <p>Known issue Secure Connection without bonding does not work and will always bond. So 12 will incorrectly behave as 13 and 8 as 9.</p>	
Example	AT+SRBLESECPARAMS=4,4 OK	AT+SRBLESECPARAMS? +SRBLESECPARAMS: 3,13 OK
Modified in FW Revision	2.6	

6.5.6. Add signal strength of AP to +SRWSTATUS (BX310x-1030)

+SRWSTASTATUS	Notification about the current Wi-Fi station connection status
Notifications	<p><u>Notification:</u></p> <p>If <status> = 0: +SRWSTASTATUS: <status>, <reason></p> <p>If <status> = 1: +SRWSTASTATUS: <status>, <ssid>, <bssid>, <channel>, <authmode>, <aprssi></p>
Parameters	<ul style="list-style-type: none"> • <status>: <ul style="list-style-type: none"> ○ 1: Connected ○ 0: Disconnected • <ssid>: AP SSID • <bssid>: AP BSSID • <channel>: AP channel • <authmode>: AP security mode

	<ul style="list-style-type: none"> ○ 0: open ○ 1: wep ○ 2: wpa ○ 3: wpa2 ○ 4: wpa/wpa2 ○ 5: wpa2 enterprise ● <aprssi>: Signal strength of AP ● <reason>: Disconnection reason <ul style="list-style-type: none"> ○ 1: Internal failure ○ 2: Authentication no longer valid ○ 3: De-authenticated, because the sending Station is leaving ○ 4: Disassociated due to inactivity ○ 5: Disassociated, because the AP is unable to handle all currently associated STAs at the same time. ○ 6: Packet received from a non-authenticated STA ○ 7: Packet received from a non-associated STA ○ 8: Disassociated, because the sending STA is leaving (or has left) BSS. ○ 9: STA requesting (re)association is not authenticated by the responding STA. ○ 10: Disassociated, because the information in the Power Capability element is unacceptable. ○ 11: Disassociated, because the information in the Supported Channels element is unacceptable. ○ 13: Invalid element, i.e. an element whose content does not meet the specifications of the Standard in Clause 8. ○ 14: Message integrity code (MIC) failure. ○ 15: Four-way handshake times out. ○ 16: Group-Key Handshake times out. ○ 17: The element in the four-way handshake is different from the (Re-)Association Request/Probe and Response/Beacon frame. ○ 18: Invalid group cipher. ○ 19: Invalid pairwise cipher. ○ 20: Invalid AKMP. ○ 21: Unsupported RSNE version. ○ 22: Invalid RSNE capabilities. ○ 23: IEEE 802.1X. authentication failed. ○ 24: Cipher suite rejected due to security policies. ○ 200: STA lost N beacons continuously ○ 201: STA failed to scan the target AP ○ 202: STA Authentication failed (not because of timeout) ○ 203: STA Association failed (not because of timeout or too many stations) ○ 204: Handshake failed
Example	// Requested AP not found +SRWSTASTATUS=1,201
Modified in FW Revision	2.6.0 - Added Signal strength of AP parameter

6.5.7. Add command to indicate MQTT data received

+KMQTT_DATA	MQTT data received
Notification	<u>Notification:</u> +KMQTT_DATA: <session_id>,"<topicName>","<payload>"
Parameters	<ul style="list-style-type: none"> • <session id>: MQTT session in DECIMAL format • <topicName>: Topic name in string format • <payload>: Payload in string format
Example	+KMQTT_DATA: 1,"home/led","LED ON"
Introduced in FW Revision	
Modified in FW Revision	2.6.0: < 2.6.0 Used to be +KMQTTSUB: "<topicName>","<payload>"

6.6. New AT Commands – Release 2.5.0

6.6.1. Wi-Fi STA DNS configuration (BX310x-847)

AT+SRWSTADNSCFG	Configures the DNS IP addresses for the station interface	
Commands	<u>Write command</u> AT+SRWSTADNSCFG=[dns_main],[dns_backup],[dns_fallback]]	<u>Read command</u> AT+SRWSTADNSCFG?
Response	OK or ERROR	+SRWSTANETCFG: dns_main, dns_backup, dns_fallback OK
Parameters	<ul style="list-style-type: none"> • dns_main: DNS main IP address <ul style="list-style-type: none"> ○ Configuration value used in static mode (DHCP disabled) • dns_backup: DNS backup IP address <ul style="list-style-type: none"> ○ Configuration value used in static mode (DHCP disabled) <ul style="list-style-type: none"> • If the main DNS server is not available the backup DNS server will be tried • dns_fallback: DNS fallback IP address <ul style="list-style-type: none"> ○ Configuration value used if no DNS servers are set via DHCP when a DHCP client is enabled in WIFI STA or ETH mode, 	
Notes		
Example	AT+SRWSTADNSCFG="10.10.10.1","10.10.10.2","10.10.10.1" OK	AT+SRWSTADNSCFG? +SRWSTADNSCFG: "10.10.10.1","10.10.10.2", 10.10.10.1"

		OK
Introduced in FW Revision	2.5.0	2.5.0
Modified in FW Revision	-	-

6.7. Modified AT Commands – Release 2.5.0

6.7.1. AT+KTCPCLOSE command (BX310x-905)

AT+KTCPCLOSE	Close the specified TCP session.
Commands	<p><u>Write command:</u></p> <p>AT+KTCPCLOSE=<tcp_session_id>,<closing_type></p> <p>Purpose: Close the specified TCP session.</p>
Response	<p>OK</p> <p>or</p> <p>ERROR</p> <p>or</p> <p>+CME_ERROR: <value></p> <p>or</p> <p>+KTCP_NOTIF: <tcp_session_id>,<tcp_notif></p>
Parameters	<ul style="list-style-type: none"> • <tcp_session_id> (TCP session ID) <ul style="list-style-type: none"> ○ [1-64]: Unique integer value assigned to the session by AT+KTCPCFG • <closing_type> (Method used to close TCP session) <ul style="list-style-type: none"> ○ 0: Fast closing of the TCP connection ○ 1: Complete close • <tcp_notif> (Connection failure cause) <ul style="list-style-type: none"> ○ 0: Network error ○ 1: No more sockets available; max. number already reached ○ 2: Memory problem ○ 3: DNS error ○ 4: TCP disconnection by the server or remote client ○ 5: TCP connection error ○ 6: Generic error ○ 7: Fail to accept client requests ○ 8: Data sending is OK, but +KTCPSND was waiting for more or fewer characters ○ 9: Bad session ID ○ 10: Session is already running ○ 11: All sessions are used
Note	
Example	<p>AT+KTCPCLOSE=2,1</p> <p>OK</p>

Introduced in FW Revision	-
Modified in FW Revision	2.1.0, 2.3.0, 2.4.0, 2.5.0

6.7.2. AT+SRBLEADDINCSERV documentation is not correct. (BX310x-892)

AT+SRBLEADDINCSERV	Create an included service
Commands	<p><u>Write command:</u></p> <p>AT+SRBLEADDINCSERV=<including_service_handle>, <included_service_handle></p> <p>Function to reference a service with handle <included_service_handle> from a service with handle <including_service_handle>. After this command, the service with handle <included_service_handle> will become an included service to the service with handle <including_service_handle>.</p>
Response	<p>OK or ERROR</p>
Parameters	<p><including_service_handle>: the handle of the including service in DECIMAL format <included_service_handle>: the handle of the service to be included in DECIMAL format</p>
Note	<p>Both primary and secondary services can include services. Both primary and secondary services can be included in services.</p>
Example	<pre>// add a primary service, and its returned handle is 50 AT+SRBLEADDSERV=1234 +SRBLEADDSERV: 50 OK ----- // add a non-primary service, and its returned handle is 150 AT+SRBLEADDSERV=6789,0 +SRBLEADDSERV: 150 OK ----- // add another primary service, and its returned handle is 250 AT+SRBLEADDSERV=2345,1 +SRBLEADDSERV: 250 OK ----- // include a non-primary service</pre>

	<pre>AT+SRBLEADDINCSERV=50,150 OK</pre> <hr/> <pre>// include a primary service AT+SRBLEADDINCSERV=50,250 OK</pre>
Introduced in FW Revision	-
Modified in FW Revision	2.5.0

6.7.3. New format for +SRBLECONNPARAMS response (BX310x-371)

AT+SRBLECONNPARAMS	Update connection parameters	
Commands	<p><u>Write Command:</u></p> <pre>AT+SRBLECONNPARAMS=<session_id>, <min_interval>, <max_interval>, <latency>, <timeout></pre> <p>Function: Update connection parameters.</p>	<p><u>Read command</u></p> <pre>AT+SRBLECONNPARAMS?</pre> <p>Function: Read connection parameters</p>
Response	<pre>OK +SRBLECONNPARAMS: <session_id>, <conn_interval>, <latency>, <timeout></pre> <hr/> <pre>ERROR</pre> <hr/> <pre>+SRBLE_ERROR: <error></pre>	<pre>+SRBLECONNPARAMS: <session_id>, <conn_interval>, <latency>, <timeout></pre> <pre>+SRBLECONNPARAMS: <session_id>, <conn_interval>, <latency>, <timeout></pre> <pre>...</pre> <pre>OK</pre> <pre>or</pre> <pre>ERROR</pre>
Parameters	<ul style="list-style-type: none"> • <session_id>: the session_id of the peer device in DECIMAL format. • <min_interval>: Interval Minimum in DECIMAL format. Range from 6 to 3200. Shall be less than or equal to max_interval. Connection Interval Minimum (connIntervalMin) will be equal to Interval Minimum * 1.25 ms. • <max_interval>: Interval Maximum in DECIMAL format. Range from 6 to 3200. Shall be equal to or greater than min_interval. Connection Interval Maximum (connIntervalMax) will be equal to Interval Maximum * 1.25 ms. 	

	<ul style="list-style-type: none"> • <conn_interval>: the connection interval in DECIMAL format. <ul style="list-style-type: none"> ○ 0: connection parameters have not yet been updated ○ negotiated connection interval • <slave_latency>: Slave Latency in DECIMAL format. Range from 0 to ((connSupervisionTimeout / (connIntervalMax*2)) - 1) and less than 500. • <timeout>: Timeout Multiplier in DECIMAL format. Range from 10 to 3200. Connection Timeout (connSupervisionTimeout) will be equal to Timeout Multiplier * 10 ms 	
Note		
Example	<pre>// Update connection parameters: AT+SRBLEUPCONNPARAMS=1,32,64,0,400 +SRBLECONNPARAMS:1,64,0,400 OK</pre>	<pre>// Read connection parameters: AT+SRBLEUPCONNPARAMS? +SRBLECONNPARAMS:1,64,0,400 +SRBLECONNPARAMS:2,12,0,600 OK</pre>
Introduced in FW Revision	-	-
Modified in FW Revision	2.0.0, 2.5.0	2.0.0, 2.5.0

+SRBLECONNPARAMS		The connection parameters update response indication
Notification	<p><u>Notification:</u> +SRBLECONNPARAMS: <session_id>,<conn_interval>,<latency>,timeout></p>	
Parameters	<ul style="list-style-type: none"> • <session_id>: the session_id of the peer device in DECIMAL format. • <conn_interval>: the connection interval in DECIMAL format. Range from 6 to 3200. • <slave_latency>: Slave Latency in DECIMAL format. Range from 0 to ((connSupervisionTimeout / (connIntervalMax*2)) - 1) and less than 500. • <timeout>: Timeout Multiplier in DECIMAL format. Range from 10 to 3200. Connection Timeout (connSupervisionTimeout) will be equal to Timeout Multiplier * 10 ms 	
Note		
Example	<pre>+SRBLECONNPARAMS: 1,64,0,400</pre>	

+SRBLECONNPARAMS	The connection parameters update response indication
Introduced in FW Revision	2.0.0
Modified in FW Revision	2.5.0

6.8. New AT Commands – Release R2.4.0

6.8.1. Legacy Pairing PIN Configuration (BX310x-546)

AT+SRBTCPCINCFG	Configure legacy pairing PIN feature
Commands	<p><u>Write command:</u></p> <p>AT+SRBTCPCINCFG=<type=0> or AT+SRBTCPCINCFG=<type=1>,<pin_code></p> <p>Configure the legacy pairing pin feature</p>
Response	<p>OK or ERROR</p>
Parameters	<ul style="list-style-type: none"> • type <ul style="list-style-type: none"> ○ 0: Variable pin <ul style="list-style-type: none"> ▪ +SRBTCPCIN notification will be displayed when a remote device request a pairing. The host can answer the request with AT+SRBTCPCIN command. ○ 1: Fixed pin <ul style="list-style-type: none"> ▪ BX310x will automatically accept pairing requests from remote devices and answer them with the specified pin. • pin_code <ul style="list-style-type: none"> ○ Pin code value. Between 1 and 16 digits.
Notes	
Examples	<p>AT+SRBTCPCINCFG=1,1234</p> <p>OK</p>
Introduced in FW Revision	2.4.0

Modified in FW Revision	
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AT+SRBTCPIN	Reply to legacy pairing request
Commands	<p><u>Write command:</u></p> <p>AT+SRBTCPIN=<bluetooth_address>,<accept=0> <i>or</i> AT+SRBTCPIN=<bluetooth_address>,<accept=1>,<pin_code></p> <p>Reply to a legacy pairing request</p>
Response	<p>OK</p> <hr/> <p>ERROR</p>
Parameters	<ul style="list-style-type: none"> • bluetooth_address <ul style="list-style-type: none"> ○ Bluetooth address of the remote device • accept <ul style="list-style-type: none"> ○ 0: Deny the request ○ 1: Accept the request • pin_code <ul style="list-style-type: none"> ○ Pin code value. Between 1 and 16 digits.
Notes	
Examples	<p>AT+SRBTCPIN="20:fa:bb:00:01:79",1,1234</p> <p>OK</p>
Introduced in FW Revision	2.4.0
Modified in FW Revision	

+SRBTCPIN	Reply to legacy pairing request (notification)
Notification	<p><u>Notification:</u></p> <p>+SRBTCPIN: <bluetooth_address></p> <p>Legacy pairing request notification</p>
Parameters	<ul style="list-style-type: none"> • bluetooth_address <ul style="list-style-type: none"> ○ Bluetooth address of the remote device
Notes	This request should be replied to with AT+SRBTCPIN
Examples	+SRBTCPIN: "20:fa:bb:00:01:79"

+SRBTCPIN	Reply to legacy pairing request (notification)
Introduced in FW Revision	2.4.0
Modified in FW Revision	

6.9. New AT Commands – Release R2.3.0

6.9.1. BT Power Saving (BX310x-638)

AT+SRBTPS	Enable/Disable BT Power Saving mode	
Commands	<u>Write command:</u> AT+SRBTPS=<state> Function to write enable BT Power Saving.	<u>Read command:</u> AT+SRBTPS? Function to read the state of the BT Power Saving.
Response	OK <i>or</i> ERROR	"+SRBTPS: <state>" OK <i>or</i> ERROR
Parameters	<ul style="list-style-type: none"> • state <ul style="list-style-type: none"> ○ 0: OFF BT Power Saving ○ 1: ON BT Power Saving 	
Notes	Enable/Disable bluetooth to enter modem sleep	
Example	AT+SRBTPS=1 OK	AT+SRBTPS? +SRBTPS: 1 OK
Introduced in FW Revision	2.3.0	2.3.0
Modified in FW Revision	-	-

6.9.2. BT Transmit Power Setting (BX310x-656)

AT+SRBTCTXPWR		Read/write transmit power configuration	
Commands	<u>Write command:</u> AT+SRBTCTXPWR=<min_tx_power>, <max_tx_power>	<u>Read command:</u> AT+SRBTCTXPWR?	
Response	OK ----- Error	+SRBTCTXPWR=<min_tx_power>, <max_tx_power>	
Parameters	<ul style="list-style-type: none"> • min_tx_power <ul style="list-style-type: none"> ○ Minimum transmit power: 0-6 see values below • max_tx_power <ul style="list-style-type: none"> ○ Minimum transmit power: 0-6 see values below <p>Values</p> <ul style="list-style-type: none"> • 0: -12dBm • 1: -9dBm • 2: -6dBm • 3: -3dBm • 4: 0dBm (Default min_tx_power) • 5: +3dBm (Default max_tx_power) • 6: +6dBm 		
Notes			
Examples	AT+SRBTCTXPWR=4,5 OK	AT+SRBTCTXPWR? +SRBTCTXPWR: 4,5 OK	
Introduced in FW Revision	2.3.0	2.3.0	
Modified in FW Revision			

6.9.3. BLE Transmit Power Setting (BX310x-657)

AT+SRBLETXPWRCFG		Read/Write Transmit power value configuration	
Commands	<u>Write command:</u> AT+SRBTCTXPWRCFG=<type>,<tx_power>	<u>Read command:</u> AT+SRBTCTXPWRCFG?	

Response	OK or ERROR	+SRBTCTXPWRCFG: 0,<tx_power> +SRBTCTXPWRCFG: 1,<tx_power> +SRBTCTXPWRCFG: 2,<tx_power> OK
Parameters	<ul style="list-style-type: none"> • type <ul style="list-style-type: none"> ○ 0 - Default ○ 1 - Advertise ○ 2 - Scan • tx_power <ul style="list-style-type: none"> ○ 0: -12dBm ○ 1: -9dBm ○ 2: -6dBm ○ 3: -3dBm ○ 4: 0dBm ○ 5: +3dBm ○ 6: +6dBm 	
Notes		
Examples	AT+SRBLETXPWRCFG=1,4 OK	AT+SRBTCTXPWRCFG? +SRBTCTXPWRCFG: 0,5 +SRBTCTXPWRCFG: 1,5 +SRBTCTXPWRCFG: 2,5 OK
Introduced in FW revision	2.3.0	2.3.0
Modified in FW revision		

AT+SRBLETXPWR		
Read/Write connected session transmit power value		
Commands	<u>Write command:</u> AT+SRBLETXPWR=<session_id>,<tx_power>	<u>Read command:</u> AT+SRBLETXPWR?
Response	OK or ERROR	+SRBLETXPWR=<session_id>,<is_connected>,<tx_power> +SRBLETXPWR=<session_id>,<is_connected>,<tx_power> ... OK

AT+SRBLETXPWR		Read/Write connected session transmit power value
Parameters	<ul style="list-style-type: none"> • <session id> <ul style="list-style-type: none"> ○ BLE session identifier in Decimal Format. • <is connected>: <ul style="list-style-type: none"> ○ 0: Not connected ○ 1: connected • tx_power <ul style="list-style-type: none"> ○ 0: -12dBm ○ 1: -9dBm ○ 2: -6dBm ○ 3: -3dBm ○ 4: 0dBm ○ 5: +3dBm ○ 6: +6dBm 	
Notes		
Example	AT+BLETXPWR=1,4 OK	AT+SRBLETXPWR? OK AT+SRBLECFG="00:11:22:aa:bb:cc" +SRBLECFG: 1,0,"00:11:22:aa:bb:cc",23 OK AT+SRBLETXPWR=1,5 AT+SRBLETXPWR? +SRBLETXPWR: 1,0,5 OK
Introduce in FW Revision	2.3.0	2.3.0
Modified in FW revision		

6.10. Modified AT Commands – Release 2.3.0

6.10.1. Implement TLS for TCP (BX310x-829)

Secure client (TLS) option 3 added to AT+KTCPCFG command. AT+KTCPCLOSE modified for fast closing of the TCP connection is not available if the session mode is 3=Secure TCP client.

AT+KTCPCFG		Set up (configure) a TCP session, or display the current configuration of all sessions	
Commands	<p><u>Write command:</u></p> <p>AT+KTCPCFG=[<cnx_cnf>],<mode>[,<tcp_remote_address>[,<tcp_port>[,<source_port>][,<data_mode>[,<URC_ENDTCP_enable>]]]]</p> <p>Purpose: Set up (configure) a TCP session, or display the current configuration of all sessions.</p>	<p><u>Read command:</u></p> <p>AT+KTCPCFG?</p> <p>Purpose: Display the current configuration of all TCP connections.</p>	
Response	<p>+KTCPCFG: <tcp_session_id></p> <p>OK</p> <hr/> <p>ERROR</p> <hr/> <p>+CME_ERROR: <value></p>	<p>+KTCPCFG:</p> <p><tcp_session_id>,<status>,[<cnx_cnf>],<mode></p> <p>[,<server_ID>],<tcp_remote_address>,<tcp_port>,[<source_port>],</p> <p><data_mode>,<URC_ENDTCP_enable></p> <p>...</p> <p>OK</p>	
Parameters	<ul style="list-style-type: none"> • <cnx_cnf>: Not used • <tcp_session_id> (TCP session ID) <ul style="list-style-type: none"> ○ [1-64]: Unique integer value assigned to a specific session • <mode> (BX310X module's TCP mode) <ul style="list-style-type: none"> ○ 0: Client ○ 1: Server ○ 2: Child (Generated by server sockets) ○ 3: Secure client (TLS) • <tcp_remote_address> (Remote TCP server's address) <ul style="list-style-type: none"> ○ Format depends on <mode>. ○ If <mode> is: <ul style="list-style-type: none"> ▪ 0, 2: FQDN or IPv4 address ▪ 1: Leave field blank (server configuration) • <tcp_port> (TCP port) <ul style="list-style-type: none"> ○ [0-65535] ○ Note: If <mode> is 0 (Client), this is the remote TCP server's port. • <status> (Connection state of the selected socket) <ul style="list-style-type: none"> ○ 0: Disconnected ○ 1: Connected 		

	<ul style="list-style-type: none"> • <server_ID> (Server session ID index) <ul style="list-style-type: none"> ○ Applies only for socket in <mode>=2 (Child) ○ Integer • <source_port> (Local TCP client port number) <ul style="list-style-type: none"> ○ for mode = 0 <ul style="list-style-type: none"> ▪ [0-65535] or blank. This feature is not supported and the value will be ignored. ○ for mode = 1 <ul style="list-style-type: none"> ▪ value should be left blank • <data_mode> (URC display?) <ul style="list-style-type: none"> ○ 0: (Not supported) Do not display <data> in URC ○ 1: (Default) Display <data> in URC ○ Note: For a child session, the <data_mode> will be the same as the server socket's setting. • <URC_ENDTCP_enable> (Display URC acknowledgement) <ul style="list-style-type: none"> ○ 0: (Default): Do not display URC "+KTCP_ACK" ○ 1: Display URC "+KTCP_ACK" ○ Not used 	
<p>Note</p>		
<p>Example</p>	<pre>// Configure a server AT+KTCPCFG=,1,,5005 +KTCPCFG: 1 OK // Configure a client AT+KTCPCFG=,0,192.168.100.183,5005 +KTCPCFG: 2 OK</pre>	<pre>AT+KTCPCFG? +KTCPCFG: 1,0,,1,"",5005,,1,0 +KTCPCFG: 2,0,,0,"192.168.100.100",5005,,1,0</pre>
<p>Updated in FW Revision</p>	<p>2.2.0, 2.3.0</p>	



7. Troubleshooting

Please contact customer service for support and debugging information.

8. Certification Description

The following table summarizes the certifications passed for this release.

Table 9. Certifications

Product	Version	QDID
BQB BX3100, BX3105	2.5.0	121580



9. Restrictions and Additional Information

This section presents additional information or restrictions that must be taken into account. Issues are sorted by order of ID.

Table 10. Restrictions and Additional Information

ID	Description (What/When)	Impacted Domain/Sub-Domain
BX310x-924	Wi-Fi Power Saving and Bluetooth cannot be enabled simultaneously	Wi-Fi
BX310x-992	If an HTTPS to a server returns a header of size greater than 1024 bytes, an error is returned.	Network
BX310x-1000	An active MQTT session can be deleted without being closed previously.	Network
BX310x-1021	Cannot activate 2 BLE and 2 SPP connections concurrently	Bluetooth Classic SPP and Bluetooth Low Energy
	Memory restrictions may not allow all features to be enabled and used simultaneously.	