

Serial Port Adapter™

Version 2 and 3

AT Commands

connectBlue

Serial Port Adapter™
Version 2 and 3
AT Commands

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Chapter 1

Introduction

1.1 Related Documents

- The **Serial Port Adapter AT Commands** document, this document, contains a description of the AT commands supported in the Serial Port Adapter. It also contains information on how to use the AT commands to create Bluetooth applications.
- The **OEM Serial Port Adapter Electrical & Mechanical Datasheet** contains important information about the OEM Serial Port Adapter. Read this document if you are using the OEM Serial Port Adapter.

Chapter 2

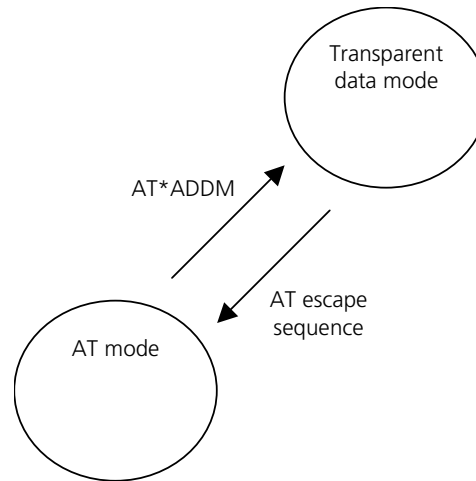
Data Mode and AT Mode

The Serial Port Adapter can be in two different modes AT mode and data mode¹. The Serial Port Adapter starts up in data mode and can be requested to move to AT mode by sending an escape sequence. The default escape sequence consists of three consecutive forward slash characters '/'. The escape sequence character can be changed using the AT\$2 command. Pressing the restore-button on the Serial Port Adapter, when it is powered up, restores the default escape character.

The following criteria must be met for the Serial Port Adapter to interpret the sequence as a valid escape sequence:

- Before the escape sequence there must be silence for 1 second. This time can be changed using the AT*AMET command.
- After the escape sequence there must be silence for 1 second. This time can be changed using the AT*AMET command.
- The entire escape sequence must be sent within 200 ms.

To move from AT mode to data mode, use the "AT*ADDMM" command.



¹ Some serial port adapter models also support the ECI mode, which is not covered in this document.

Chapter 3

Baud Rate

The Serial Port Adapter does not support auto baud rate. The baud rate is set using the "Write_RS232_Settings" command.

The default RS232 settings are 57600 bits/s, 8 data bits, no parity, 1 stop bit, and hardware flow control. Pressing the restore-button on the Serial Port Adapter, when it is powered up, restores the default serial settings.

Chapter 4

Configuration and Operation

This chapter gives some guidelines on how to perform basic configuration and operation.

There are several request packets that can be used to configure the Serial Port Adapter. Many of these request packets take a boolean parameter called `<store_in_startup_database>`. If this parameter is set to 1 the setting will be applied immediately and also when the Serial Port Adapter starts up in the next power cycle. If this parameter is set to 0 the setting will be applied immediately but it will not be applied when the Serial Port Adapter starts up in the next power cycle.

Note that for some of the version 3 modules there is a constraint on some AT commands, which means that the module must be restarted for the command to take affect. For those commands the `<store_in_startup_database>` parameter must always be 1.

Note that for applications that always configure the serial port adapter at startup, it is not necessary to store settings in the startup database. It is intended for applications where the serial port adapter is configured once before installation.

4.1 LED Indication

The LED indicates what mode is currently active and what activity that is currently in progress.

The following color indications are used.

- *Green*: The current mode is data mode and no connection attempt is in progress.
- *Orange*: The current mode is AT mode.
- *Purple*: A connection attempt is in progress.
- *Blue*: A connection is currently active.
- *Blue Blinking*: A connection is active and data is transmitted or received over air.
- *Red Blinking*: Buffer overflow, parity or framing error detected on the UART.

4.2 Bluetooth Settings

A Bluetooth device can be in several different operation modes. The operation mode determines whether or not a device can be connected to and whether or not other devices performing searches can discover a device. Use the `"Write_Discoverability_Mode"` and `"Write_Connectability_Mode"` commands to set the operation mode.

All Bluetooth devices have a user-friendly name. Use the `"Write_Local_Name"` command to set the local device name.

All Bluetooth devices have a 'class-of-device' indicator that can be discovered by other devices when they are performing searches. Use the "Write_Local_COD" command to set the 'class-of-device'.

4.3 Searching for Other Bluetooth Devices

Two commands are available to search for other devices:

- The "Inquiry" command returns the Bluetooth device address and the class of device of all the devices in the vicinity that are in discoverable mode.
- The "Device Discovery" command returns the Bluetooth device address, the class of device and the name of all the devices in the vicinity that are in discoverable mode.

The "Inquiry" command is faster than the "Device_Discovery" command. A "Device_Discovery" is an "Inquiry" followed by a "Name_Discovery" on each found device.

4.4 Searching for Services

It is possible to search for services on remote devices. A service search is performed using the "Service_Search" command.

4.5 Creating Serial Connections and Sending Data

Serial connections are Bluetooth connections based on the Serial Port Profile, the Dial-up Networking Profile and the LAN Access Profile².

How to Select What Profile to Use

It is important that the same profile is used on both devices wanting to communicate. If the remote device is not a Serial Port Adapter, refer to the documentation of that device to determine what profile it uses or to find out how to select what profile to use.

Client or Server

First decide if your device is supposed to act as a client (initiator of connections), a server (acceptor of connections) or both.

Wireless Multidrop™

The Wireless Multidrop™ feature allows the Serial Port Adapter to simultaneously communicate with several devices even when it is in data mode. If Wireless Multidrop™ is used all data sent to the Serial Port Adapter via the serial interface will be forwarded to all connected devices. All data received from any of the connected devices will be forwarded on the serial interface in the order that the data was received.

The Wireless Multidrop™ feature can be used if the Serial Port Adapter has been configured as a server as well as if it has been configured as a client. When configured as a server several devices are able to connect to your Serial Port Adapter and

² Only supported in version 2 of the serial port adapter models.

join the wireless multidrop network. If configured as a client you must tell the Serial Port Adapter which devices to connect to.

Exactly how to configure for Wireless Multidrop™ see Connection Establishment – Server and Connection Establishment – Client.

Connection Establishment – Server

In AT mode, use the “Write_Default_Server_Profile” command to select what profile to use when acting as a server.

If you want to use the Wireless Multidrop™ feature and allow several devices to simultaneously connect to your device you must enable Wireless Multidrop™ using the “Write_Wireless_Multidrop_Configuration” command. In addition, the Serial Port Adapter must be configured to perform a master/slave switch every time a device connects to it. This is done using the “Write_MasterSlaveRole_Policy” command.

After configuring the Serial Port Adapter for server operation, move to data mode.

Connection Establishment – Client

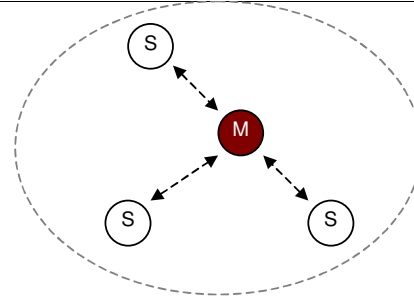
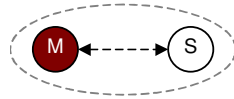
For clients there are two methods that can be used to create connections to a remote device:

1. Establish the connection in AT mode using the “Connect_To_Serial_Service_Data_Mode” command. Then move to data mode and utilize the connection as a transparent data mode connection. It is possible to utilize the Wireless Multidrop™ feature and connect to several devices. Note that Wireless Multidrop™ must be enabled to be able to connect to more than one device.
2. Configure the Serial Port Adapter in AT mode then move to data mode.
 - a. Select the number of devices to connect to using the “Write_No_Of_Remote_Peers” command. Select 1 for point-to-point operation and more than 1 for Wireless Multidrop™ operation. Note that Wireless Multidrop™ must be enabled to be able to use a value higher than 1. The maximum number of remote peers can be determined by calling the “Read_Max_No_Of_Remote_Peers” command.
 - b. Select what device(s) to communicate with using the “Write_Default_Remote_Peer” command.
 - c. Then use the “Write_Default_Client_Profile” command to select what profile to use when connecting to the selected default remote peer.
 - d. Finally move to data mode and send data. The Serial Port Adapter will connect to the selected remote peer(s) using the selected profile according to the connect scheme setting (connect on data, always connected or connect on external signal).

Specify zero number of remote peers using the “Write_No_Of_Remote_Peers” command if you do not want to act as a client.

4.6 Master/Slave Handling

When a device communicates with several other devices it is called the master. The other devices are called slaves.



A master can:

- Setup a connection to another device.
- Perform searches.
- Accept connections from other devices.

A slave cannot:

- Connect to another device.
- Perform searches.
- Accept connections from other devices.

There are a few settings and parameters that affect how the roles master and slave are assigned to the devices communicating.

First, it is possible for a device to request to become the master when another device connects to it. This setting is called the master/slave role policy. Use the “Write_MasterSlaveRole_Policy” command to set the policy to either:

- 0, the device will request to become the master every time another device tries to connect.
- 1, the device will become the slave every time another device tries to connect.

Second, when connecting to another device using the “Connect_To_Serial_Service” command the parameter <must_be_master> indicates whether or not the connecting device allows the server to become the master of the connection.

NOTE: If <must_be_master> is 1 and the server has set master/slave role policy to 0 (become master) the connection will *not* be established.

If you do not specifically need to become the master the <must_be_master> parameter should be set to 0 to allow the server to select which role to take.

4.7 Bluetooth Security

Bluetooth has support for security. The Bluetooth security is based on authentication during connection establishment and encryption of sent and received data.

Security Modes

A Bluetooth device can be in two different security modes, security enabled (authentication and encryption turned on) and security disabled (authentication and encryption turned off). If at least one of the two devices wanting to communicate has security enabled, security will be used. Use the “Write_Security_Mode” command to set the security mode for the device.

Only the highest security level, security level 3 (link level security) and not security level 2 (service level), is supported.

Bonding and Pairing

To be able to communicate if security has been enabled, bonding has to be performed. The bonding procedure creates a link key, valid between two devices, which is used during the authentication procedure. Once bonded the two devices can establish connections with each other using security enabled.

During bonding both devices must be in pairable mode (able to accept bonding). Use the "Write_Pairing_Mode" command to set the device(s) in pairable mode.

During bonding a pin code is used. Use the "Write_Fixed_PIN" command to set the PIN code to use.

To perform bonding use one of the following methods:

- Create a connection. If authentication or encryption is turned on, on either device, bonding will be performed automatically.
- On one device use the "Bond" command. Not supported in all versions of the serial port adapter.

It is possible for the Serial Port Adapter to store link keys for several devices at the same time. Use the "Read_Bonded_Devices" command to get a list of the currently bonded devices.

It is also possible to remove a device from the list of bonded devices. To do this, use the "Un_Bond" command.

Chapter 5

Power Save Modes

The Serial Port Adapter is optimized to consume as little power as possible.

However, the deepest power save mode, called stop mode, is not turned on by default. Instead an AT command (AT*AMPM) is available to allow the host system to turn on the stop mode feature.

When the Serial Port Adapter is in stop mode:

- It can accept incoming connections over Bluetooth.
- The host system cannot send data to the Serial Port Adapter.
- The Serial Port Adapter will send data received over air to the host

The Serial Port Adapter will only enter stop mode if:

- The stop mode feature has been turned on using the AT*AMPM AT command
- The DSR pin on the Serial Port Adapter is not active.
- If the "Always connected" feature has not been turned on.

The Serial Port Adapter will exit stop mode if:

- The host system moves the DSR pin from non-active to active.

Note: The Serial Port Adapter needs 10 ms to leave stop mode. As a consequence the host system must not send data to the Serial Port Adapter until 10 ms after the host system has activated the DSR pin.

5.1 Version 3 vs. Version 2

- In version 2 of the Serial Port Adapter the device will exit stop when there is an active Bluetooth connection.
- In version 3 of the Serial Port adapter the device will stay in stop when there is an active Bluetooth connection.

5.2 How to Use the Stop Mode Feature

When the Serial Port Adapter is in stop mode, the UART is disabled and all data sent to it is lost. This means that the host system has to wake up the Serial Port Adapter before sending any data over the serial interface. Data received over air by the Serial Port Adapter will be written to the host even when it is in stop mode.

Chapter 6

Restoring Default Configuration

6.1 Serial Settings

In some situations it is necessary to restore some settings to their default values. The following settings can be restored using the procedure described below:

- **Serial settings:** 57600 baud, 8 data bits, no parity, 1 stop bit, hardware flow control.
- **Serial interface type:** RS232.
- **AT escape sequence:** '///'.
- **Escape sequence timing:** 1000 ms of no data transmission required before and after the escape sequence for the escape sequence to be valid.

Procedure:

1. Remove power from the Serial Port Adapter.
2. Press and hold the default settings button on the Serial Port Adapter.
3. Apply power to the Serial Port Adapter.

When powered up the default settings will be stored in the Serial Port Adapter.

6.2 Factory Settings

The factory setting is the configuration of the serial port adapter when it is produced. For some modules it may be possible to set a new factory setting configuration by using the "Store_Factory_Settings" command.

To restore the factory setting configuration use the "AT&F" command or perform the following procedure. The latter only applies to version 3 Serial Port Adapters.

1. Remove power from the OEM Serial Port Adapter.
2. Press and hold both the Default settings and Function buttons on the OEM Serial Port Adapter.
4. Apply power to the OEM Serial Port Adapter.

Note that this command should not be used at every startup to restore the factory settings. Instead it is better not to write to the startup database at all.

Chapter 7

AT Commands Over Bluetooth

It is possible to configure and control a remote Serial Port Adapter via Bluetooth using AT commands.

Criteria for using AT commands over Bluetooth:

- A Bluetooth connection to the remote device (the device to configure) must exist. The Bluetooth connection can e.g. be established using another Serial Port Adapter, a device with a PC-card/compact flash or a device with embedded Bluetooth support.
- The remote Serial Port Adapter must have turned on the support for configuration over Bluetooth, for more information see the “Write_Allow_Configuration_Over_Bluetooth” command.
- Once the connection has been established, the escape sequence must be sent over the Bluetooth connection to the remote Serial Port Adapter to move it into AT mode.
 - The same escape sequence rules apply to AT over Bluetooth as for AT over cable, for more information see the section about Data Mode and AT Mode.
 - Note that the same escape sequence is used for cable and Bluetooth. Therefore, if you are using two Serial Port Adapters one of the Serial Port Adapters must have its escape sequence changed using the AT command. This is to keep the first Serial Port Adapter to enter AT mode instead of the remote Serial Port Adapter.

Chapter 8

Optimization

On some versions of the serial port adapter there are some limited optimization support regarding throughput, response time and power consumption.

Typically consider the following settings for the "Write_Link_Policy" command:

- *High throughput*: Link policy 1 and 2 depending on which side is transmitting and receiving. Note that this will only be useful to improve performance in one direction.
- *Short Response times*: Link policy 3. Note that this will increase power consumption. Link policy 4 may also be an option.
- *Low Power Consumption*: Link policy 6-8. A longer sniff period will decrease power consumption more but provide longer response times. To get even better results combine link policy 6-8 with stop mode.

Note that there is no guarantee that the configuration will improve performance for a specific case. There may, for example, be some negotiation with the remote device that forces some other parameters than the selected ones.

For best interoperability it is recommended to use the default link policy. For other configurations make sure to test the specific application.

On some versions of the serial port adapter it is possible to shorten the time for connection establishment and discovery of the serial port adapter when it is acting as a server. Consider the possibilities in the Write Feature Mask command when the time for connection setup and discovery needs to be shortened.

Chapter 9

Version 3 vs. Version 2

If you are migrating from using the version 2 (second generation) of Serial Port Adapters from connectBlue to version 3 there are some AT commands/events that have been changed, added or removed. Each AT command description will include a table to clarify what the differences are (if any) between different models.

Specifically some version 3 models (cB-OEMSPA311, cB-OEMSPA331, cB-OEMSPA312, cB-OEMSPA332) do not support multipoint connections. Hence wireless multidrop is not supported.

Chapter 10

Syntax

10.1 Command Line Format

Each command line sent from the DTE to the DCE is made up of a prefix, body and terminator. As prefix for the Serial Port Adapter AT commands, only "AT" (ASCII 065, 084) and "at" (ASCII 097, 116) can be used. There is no distinction between upper and lower case characters. The body is a string of characters in the range ASCII 032-255. Control characters other than <CR> (carriage return; ASCII 013) and <BS> (back space; ASCII 008) in a command line are ignored. The terminator is <CR>.

Commands denoted with a "*" character are extended AT commands, i.e. Serial Port Adapter specific AT commands.

S-registers are not used and not supported, except for the S2 register.

Multiple commands in the same command line are not supported. Each command has to be terminated by a <CR> before a new command can be sent. A command must not be larger than 300 characters.

A command can either be:

- Read commands without parameters:
AT<command>?<CR>
- Write commands without parameters:
AT<command><CR>
- Read and write commands with parameters:
AT<command>=<parameter1>, parameter2>, ...<parameterN><CR>

Responses are sent back to the host and can be any of the following:

- Successful final message:
<CR><LF>OK<CR><LF>
- Successful intermediate/final message with parameters follows an OK message in some commands. In these cases the OK message works as a confirm message only.
<CR><LF><result_response>:<parameter1>, parameter2>, ...<parameterN>
- Error message:
<CR><LF>ERROR<CR><LF>

10.2 Data Types

The definition of each command specifies the data types used for values associated with the command.

There are four data types:

- String
- Integer
- Enumerator
- Bluetooth Device Address

String

A string shall consist of a sequence of displayable characters from the ISO 8859-1 (8-bit ASCII) character set, except for characters “\” and “ ” and characters below 32 (space). A string constant shall be delimited by two double-quote (“ ”) characters, e.g. “Donald Duck”. If the double-quote character (“ ”) is to be used within a string, e.g. “My friend “Bono” is a singer”, they have to be represented as “\22”. If the back-slash character (“\”) is to be used within a string constant, it has to be represented as “\5C”. An empty string is represented by two adjacent delimiters, “ ”.

Integer

An integer value consists of a sequence of characters all in the range {0..9}.

Numeric constants are expressed in decimal format only.

Enumerator

An enumerator value is actually an integer, where all its possible values are specified in each case. Only the defined values are accepted for the command in question.

Bd_Addr

This type is used to represent the Bluetooth Device Address. The type is composed of six fields, each representing a hexadecimal value using two characters. For example, the Bluetooth Device Address 0x112233AABBCC is represented as 112233AABBCC or 112233aabbcc. Note that the Bluetooth Device Address is **not** delimited with by two double-quote (“ ”) characters.

Chapter 11

AT Commands Reference

11.1 Standard AT Commands

Command "AT"

| AT Command | Description |
|------------|--|
| AT<CR> | Attention command determining the presence of a DCE, i.e. the Serial Port Adapter. |

| Responses | Description |
|-----------------------|----------------------|
| <CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error response. |

Command "AT*"

| AT Command | Description |
|------------|----------------------------------|
| AT*<CR> | Lists the supported AT commands. |

| Responses | Description |
|-----------------------|--|
| <CR><LF><command> | This response is sent to the host for every supported command. |
| <CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error response. |

Command "ATZ"

| AT Command | Description |
|------------|---------------|
| ATZ<CR> | Does nothing. |

| Responses | Description |
|-----------------------|----------------------|
| <CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error response. |

| Model | Constraint |
|--------------|----------------|
| cB-OEMSPA311 | Not supported. |

| |
|--|
| cB-OEMSPA331 cB-OEMSPA312 cB-OEMSPA332 |
|--|

Command "AT&F"

| AT Command | Description |
|------------|--|
| AT&F<CR> | <p>If the command Store_Factory_Settings has been used to fill the factory settings database then this command will restore all the settings to the factory settings.</p> <p>If the command Store_Factory_Settings has not been used to fill the factory settings database then this command will do nothing.</p> <p>Note that this command should not be used at every startup to restore the factory settings. Instead it is better not to write to the startup database at all.</p> |

| Responses | Description |
|-----------------------|----------------------|
| <CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error response. |

| Model | Constraint |
|--|---|
| cB-OEMSPA311 cB-OEMSPA331 cB-OEMSPA312 cB-OEMSPA332 | The Store_Factory_Settings are not available. Instead, the command will restore production settings. After the AT&F command has been sent, the module must be reset for the restored settings to take affect. |

Command "ATS2"

| AT Command | Description |
|---------------------|---|
| ATS2=<esc_char><CR> | Changes the escape character to esc_char. |

| Command Parameters | Type | Description |
|--------------------|---------|--|
| esc_char | integer | <p>esc_char is the ASCII value of the new escape character. E.g. 47 equals '/'. The default value is '/.</p> <p>Note that the escape sequence will be "///". Hence, the character is used three times.</p> |

| Responses | Description |
|-----------------------|----------------------|
| <CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error response. |

Command "ATE"

| AT Command | Description |
|---------------|--|
| ATE<echo><CR> | Set whether or not the Serial Port Adapter shall echo incoming |

| | |
|--|-------------|
| | characters. |
|--|-------------|

| Command Parameters | Type | Description |
|--------------------|---------|--|
| echo | integer | 0: Incoming characters will not be echoed. 1: Incoming characters will be echoed. |

| Responses | Description |
|-----------------------|----------------------|
| <CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error response. |

11.2 GAP Commands

Read_Discoverability_Mode (AT*AGDM?)

| AT Command | Description |
|--------------|--|
| AT*AGDM?<CR> | This command reads the current GAP discoverability mode. |

| Responses | Description |
|--|----------------------|
| <CR><LF>*AGDM:<discoverability_mode><CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error response. |

| Response Parameters | Type | Value |
|----------------------|------------|--|
| discoverability_mode | enumerator | 1: GAP non-discoverable mode 2: GAP limited discoverable mode 3: GAP general discoverable mode (default value) |

Write_Discoverability_Mode (AT*AGDM=)

| AT Command | Description |
|--|---|
| AT*AGDM=<discoverability_mode>,<store_in_startup_database><CR> | This command writes the current GAP discoverability mode. |

| Command Parameters | Type | Value |
|----------------------|------------|--|
| discoverability_mode | enumerator | 1: GAP non-discoverable mode 2: GAP limited discoverable mode 3: GAP general discoverable mode (default value) |

| | | |
|---------------------------|------------|--|
| store_in_startup_database | enumerator | 0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated. |
|---------------------------|------------|--|

| Responses | Description |
|-----------------------|----------------------|
| <CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error response. |

| Model | Constraint |
|--|---|
| cB-OEMSPA311 cB-OEMSPA331 cB-OEMSPA312 cB-OEMSPA332 | Limited discoverability mode not supported. |

Read_Connectability_Mode (AT*AGCM?)

| AT Command | Description |
|--------------|---|
| AT*AGCM?<CR> | This command reads the current GAP connectability mode. |

| Responses | Description |
|---|----------------------|
| <CR><LF>*AGCM:<connectability_mode><CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error response. |

| Result Parameters | Type | Value |
|---------------------|------------|--|
| connectability_mode | enumerator | 1: GAP non-connectable mode 2: GAP connectable mode (default value) |

Write_Connectability_Mode (AT*AGCM=)

| AT Command | Description |
|---|-------------------------------------|
| AT*AGCM=<connectability_mode>,<store_in_startup_database><CR> | Writes the GAP connectability mode. |

| Command Parameters | Type | Value |
|---------------------|------------|--|
| connectability_mode | enumerator | 1: GAP non-connectable mode 2: GAP connectable mode (default value) |

| | | |
|---------------------------|------------|--|
| store_in_startup_database | enumerator | 0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated. |
|---------------------------|------------|--|

| Responses | Description |
|-----------------------|----------------------|
| <CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error response. |

Read_Pairing_Mode (AT*AGPM?)

| AT Command | Description |
|--------------|-------------------------|
| AT*AGPM?<CR> | Reads the pairing mode. |

| Responses | Description |
|--|----------------------|
| <CR><LF>*AGPM:<pairing_mode><CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error response. |

| Result Parameters | Type | Value |
|-------------------|------------|--|
| pairing_mode | enumerator | 1: GAP non-pairing mode 2: GAP pairing mode (default value) |

Write_Pairing_Mode (AT*AGPM=)

| AT Command | Description |
|--|------------------------------|
| AT*AGPM=<pairing_mode>,<store_in_startup_database><CR> | Writes the GAP pairing mode. |

| Command Parameters | Type | Value |
|---------------------------|------------|--|
| pairing_mode | enumerator | 1: GAP non-pairable mode. 2: GAP pairable mode (default value). |
| store_in_startup_database | enumerator | 0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated. |

| Responses | Description |
|-----------------------|----------------------|
| <CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error response. |

Read_Security_Mode (AT*AGSM?)

| AT Command | Description |
|--------------|------------------------------|
| AT*AGSM?<CR> | Reads the GAP security mode. |

| Responses | Description |
|---|----------------------|
| <CR><LF>*AGSM:<security_mode><CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error response. |

| Result Parameters | Type | Value |
|-------------------|------------|--|
| security_mode | enumerator | 1: Link level authentication and encryption disabled (GAP security mode 1 with encryption disabled). (default value) 2: Link level authentication and encryption enabled (GAP security mode 3 with encryption enabled). |

Write_Security_Mode (AT*AGSM=)

| AT Command | Description |
|---|-------------------------------|
| AT*AGSM=<security_mode>,<store_in_startup_database><CR> | Writes the GAP security mode. |

| Command Parameters | Type | Value |
|---------------------------|------------|--|
| security_mode | enumerator | 1: Link level authentication and encryption disabled (GAP security mode 1 with encryption disabled). (default value) 2: Link level authentication and encryption enabled (GAP security mode 3 with encryption enabled). |
| store_in_startup_database | enumerator | 0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated. |

| Responses | Description |
|-----------------------|----------------------|
| <CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error response. |

Name_Discovery (AT*AGND=)

| AT Command | Description |
|-----------------------|--|
| AT*AGND=<bd_addr><CR> | Retrieves the device name of a remote device given its |

| | |
|--|---------------------------|
| | Bluetooth device address. |
|--|---------------------------|

| Command Parameters | Type | Value |
|--------------------|---------|---|
| bd_addr | Bd_Addr | Bluetooth device address of the device from which to retrieve the name. |

| Responses | Description |
|---|---------------------|
| <CR><LF>*AGND:<device_name><CR><LF>OK<CR><LF> | Successful response |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Response Parameters | Type | Value |
|---------------------|--------|---|
| device_name | string | Null terminated string of maximum 240 characters (8-bit ASCII). |

| Model | Constraint |
|--|--|
| cB-OEMSPA311 cB-OEMSPA331 cB-OEMSPA312 cB-OEMSPA332 | Device names longer than 31 bytes will be truncated. |

Device_Discovery (AT*AGDD=)

| AT Command | Description |
|---|----------------------------|
| AT*AGDD=<inquiry_Type>,<inquiry_length><CR> | Performs device discovery. |

| Command Parameters | Type | Description |
|--------------------|------------|--|
| inquiry_type | enumerator | 1: Limited inquiry 2: General inquiry |
| inquiry_length | integer | Maximum amount of time specified before the inquiry is halted. Range: 8-48 Time = inquiry_length*1.28 seconds Range in seconds: 10.24-61.44 |

| Responses | Description |
|--|---|
| <CR><LF>*AGDD: <no_of_devices><CR><LF>OK<CR><LF> | Successful response |
| *AGDDE:<bd_addr>,<cod>,<device_name_valid>,<device_name><CR><LF> | This response is sent for every found device. |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Response Parameters | Type | Value |
|---------------------|------------|---|
| no_of_devices | integer | Value in range {0..255}. Number of devices discovered during the inquiry procedure. |
| bd_addr | Bd_Addr | Bluetooth device address of a discovered device. |
| cod | integer | See Read_Local_COD command. |
| device_name_valid | enumerator | 1: device_Name parameter valid. 0: Device was discovered, but its name could not be retrieved. device_name is parameter invalid and should be ignored. |
| device_name | string | Name of discovered device. ASCII represented string of maximum 240 bytes. |

Inquiry (AT*AGI=)

| AT Command | Description |
|--|---|
| AT*AGI=<inquiry_Type>,<inquiry_length>,<max_no_of_devices_to_find><CR> | Performs an inquiry procedure to find any discoverable devices in the vicinity. |

| Command Parameters | Type | Description |
|---------------------------|------------|---|
| inquiry_type | enumerator | 1: Limited inquiry 2: General inquiry |
| inquiry_length | integer | Maximum amount of time specified before the inquiry is halted. Range: 1-48 Time = inquiry_length*1.28 seconds Range in seconds: 1.28-61.44 |
| max_no_of_devices_to_find | integer | 0: No limitation on the number of devices to find. 1-255: Maximum number of devices to find. |

| Responses | Description |
|------------------------------|---|
| <CR><LF>*AGI:<bd_addr>,<cod> | This response is sent for every found device. |
| <CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Response Parameters | Type | Value |
|---------------------|---------|---|
| Bd_addr | Bd_Addr | Bluetooth device address of a found device. |
| cod | integer | See Read_Local_COD command. |

| Model | Constraint |
|-------|------------|
|-------|------------|

| | |
|--|--|
| cB-OEMSPA311 cB-OEMSPA331 cB-OEMSPA312 cB-OEMSPA332 | If more than 20 devices are found, then devices may be listed several times. |
|--|--|

Bond (AT*AGB=)

| AT Command | Description |
|----------------------|--|
| AT*AGB=<bd_addr><CR> | Performs a GAP bond procedure with another Bluetooth device. During the bonding procedure the fixed PIN code is used, see the Write_Fixed_PIN and Read_Fixed_PIN commands. Note that to be able to perform bonding the remote device must be in pairable mode. |

| Command Parameters | Type | Value |
|--------------------|---------|--|
| bd_addr | Bd_Addr | Bluetooth device address of the device to bond with. |

| Responses | Description |
|-----------------------|---------------------|
| <CR><LF>OK<CR><LF> | Successful response |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Model | Constraint |
|--|--|
| cB-OEMSPA311 cB-OEMSPA331 cB-OEMSPA312 cB-OEMSPA332 | Not supported. Bonding is automatic when connecting if either of the sides enforces security. The link keys are stored in a FIFO of size five. |

Un_Bond (AT*AGUB=)

| AT Command | Description |
|-----------------------|---|
| AT*AGUB=<bd_addr><CR> | This command un-bonds a previously bonded device. |

| Command Parameters | Type | Value |
|--------------------|---------|--|
| bd_addr | Bd_Addr | Bluetooth device address of the device subject to un-bond. |

| Responses | Description |
|-----------------------|---------------------|
| <CR><LF>OK<CR><LF> | Successful response |
| <CR><LF>ERROR<CR><LF> | Error message. |

Read_Bonded_Devices (AT*AGBD?)

| AT Command | Description |
|--------------|--------------------------|
| AT*AGBD?<CR> | Read the bonded devices. |

| Responses | Description |
|--|---|
| <CR><LF>*AGBD:<no_of_devices><CR><LF>OK<CR><LF> | Successful response |
| *AGBDE:<bd_addr>,<device_name_valid>,<device_name><CR><LF> | This response is sent for every found device. |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Response Parameters | Type | Value |
|----------------------|------------|--|
| no_of_bonded_devices | integer | Number of bonded devices. |
| bd_addr | Bd_Addr | Bluetooth device address of the device from which to retrieve the name. |
| device_name_valid | enumerator | 0: device_Name parameter valid. 1: Device is bonded but its name is not available. Device_Name is parameter invalid. |
| device_name | string | Name of discovered device. Null terminated ASCII represented string. |

| Model | Constraint |
|--|---|
| cB-OEMSPA311 cB-OEMSPA331 cB-OEMSPA312 cB-OEMSPA332 | The command will always return an empty string as device name with the device_name_valid parameter always set to 1. |

Read_Fixed_PIN (AT*AGFP?)

| AT Command | Description |
|--------------|--|
| AT*AGFP?<CR> | Read the fixed PIN code used by the Serial Port Adapter during bond and pairing. |

| Responses | Description |
|--|---------------------|
| <CR><LF>*AGFP:<pin_code><CR><LF>OK<CR><LF> | Successful response |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Response Parameters | Type | Value |
|---------------------|--------|--|
| pin_code | string | The PIN code is a string of one to sixteen alphanumeric characters. It is recommended to use a pin code of at least eight characters of mixed type, e.g. "12w35tg7". The default value is "0". |

Write_Fixed_PIN (AT*AGFP=)

| AT Command | Description |
|--|--|
| AT*AGFP=<pin_code>, <store_in_startup_database><CR> | Writes the fixed PIN code used by the Serial Port Adapter during bond. |

| Command Parameters | Type | Value |
|---------------------------|------------|--|
| pin_code | string | The PIN code is a string of one to sixteen alpha-numerical characters. It is recommended to use a pin code of at least eight characters of mixed type, e.g. "12w35tg7". The default value is "0". |
| store_in_startup_database | enumerator | 0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated. |

| Responses | Description |
|-----------------------|----------------------|
| <CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error response. |

Read_Local_Name (AT*AGLN?)

| AT Command | Description |
|--------------|--|
| AT*AGLN?<CR> | Reads the local Bluetooth device name. |

| Responses | Description |
|---|---------------------|
| <CR><LF>*AGLN:<device_name><CR><LF>OK<CR><LF> | Successful response |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Response Parameters | Type | Value |
|---------------------|--------|--|
| device_name | string | Max 240 characters. The default name is "Bluetooth Device". |

Write_Local_Name (AT*AGLN=)

| AT Command | Description |
|---|---|
| AT*AGLN=<device_name>, <store_in_startup_database><CR> | Writes the local Bluetooth device name. |

| Command Parameters | Type | Value |
|--------------------|------|-------|
|--------------------|------|-------|

| | | |
|---------------------------|------------|--|
| device_name | string | Max 240 characters. The default name is "Bluetooth Device". |
| store_in_startup_database | enumerator | 0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated. |

| Responses | Description |
|-----------------------|----------------------|
| <CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error response. |

| Model | Constraint |
|--|--|
| cB-OEMSPA311 cB-OEMSPA331 cB-OEMSPA312 cB-OEMSPA332 | The name is limited to a maximum of 31 characters. |

Read_Local_COD (AT*AGLC?)

| AT Command | Description |
|--------------|---------------------------------------|
| AT*AGLC?<CR> | Reads the Local Class Of Device code. |

| Responses | Description |
|---------------------------------------|----------------------|
| <CR><LF>*AGLC:<cod><CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error response. |

| Response Parameters | Type | Value |
|---------------------|------|-------|
|---------------------|------|-------|

| | | |
|-----|---------|---|
| cod | integer | <p>Valid values for this parameter are specified in the Bluetooth Assigned Numbers Document, www.bluetooth.com. The parameter has been divided into three segments, a service class segment, a major device class segment and a minor device class segment (bits 2-7).</p> <p>Extract from the Bluetooth Assigned Numbers Document: Service class (bit mask, bits 13-23): Bit 16: Positioning (Location identification) Bit 17: Networking (LAN, Ad hoc, etc) Bit 18: Rendering (Printing, Speaker, etc) Bit 19: Capturing (Scanner, Microphone, etc) Bit 20: Object Transfer (v-Inbox, v-Folder, etc) Bit 21: Audio (Speaker, Microphone, Headset service, etc) Bit 22: Telephony (Cordless telephony, Modem, Headset service) Bit 23: Information (WEB-server, WAP-server, etc)</p> <p>Major device class (number, bits 12-8): 00000: Miscellaneous 00001: Computer (desktop, notebook, PDA, etc) 00010: Phone (cellular, cordless, modem, etc) 00011: LAN/Network Access point 00100: Audio/Video (headset, speaker, stereo, video display, VCR) 00101: Peripheral (mouse, joystick, keyboards) 00110: Imaging (printing, scanner, camera, etc) 11111: Uncategorized, specific device code not specified</p> <p>For the minor device class field please refer to [1].</p> <p>The default value is 0.</p> |
|-----|---------|---|

Write_Local_COD (AT*AGLC=)

| AT Command | Description |
|--|--|
| AT*AGLC=<cod>, <store_in_startup_database><CR> | Writes the Local Class Of Device code. |

| Command Parameters | Type | Value |
|---------------------------|------------|--|
| cod | integer | See Read_Local_COD command. The default value is 0. |
| store_in_startup_database | enumerator | 0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated. |

| Responses | Description |
|-----------------------|----------------------|
| <CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error response. |

Get_MasterSlaveRole (AT*AGGMSR=)

| AT Command | Description |
|-------------------------|---|
| AT*AGGMSR=<bd_addr><CR> | Read the local master-slave role. Returns the role of the Serial Port Adapter, master or slave, for the connection between the Serial Port Adapter and the remote device identified by the 'bd_addr' parameter. |

| Command Parameters | Type | Value |
|--------------------|---------|---|
| bd_addr | Bd_Addr | Identifies a device that the Serial Port Adapter is currently communicating with. |

| Responses | Description |
|--|----------------------|
| <CR><LF>*AGGMSR:<role><CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error response. |

| Response Parameters | Type | Value |
|---------------------|------------|-----------------------|
| role | enumerator | 0: Slave 1: Master |

| Model | Constraint |
|--|--|
| cB-OEMSPA311 cB-OEMSPA331 cB-OEMSPA312 cB-OEMSPA332 | Not supported. The module always allows a master slave switch if requested by the remote side. |

Change_MasterSlaveRole (AT*AGCMSR=)

| AT Command | Description |
|--------------------------------|---|
| AT*AGCMSR=<bd_addr>,<role><CR> | Changes the master-slave role. Changes the role of the Serial Port Adapter, master or slave, for the connection between the Serial Port Adapter and the remote device identified by the 'bd_addr' parameter. Note that the remote device does not have to accept the master/slave switch. |

| Command Parameters | Type | Value |
|--------------------|------------|--|
| bd_addr | Bd_Addr | Identifies a device that the Serial Port Adapter is currently communicating with. The role will be changed on the connection to this device. |
| role | enumerator | 0: Slave 1: Master |

| Responses | Description |
|-----------------------|----------------------|
| <CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error response. |

| Model | Constraint |
|--|--|
| cB-OEMSPA311 cB-OEMSPA331 cB-OEMSPA312 cB-OEMSPA332 | Not supported. The module always allows a master slave switch if requested by the remote side. |

Read_MasterSlaveRole_Policy (AT*AGMSP?)

| AT Command | Description |
|---------------|--------------------------------------|
| AT*AGMSP?<CR> | Reads the role policy of the device. |

| Responses | Description |
|--|----------------------|
| <CR><LF>*AGMSP:<role_policy><CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error response. |

| Response Parameters | Type | Value |
|---------------------|------------|--|
| role_policy | enumerator | 0: Always attempt to become master on incoming connections. 1: Always let the connecting device select master/slave role on incoming connections (default value). |

Write_MasterSlaveRole_Policy (AT*AGMSP=)

| AT Command | Description |
|--|---------------------------------------|
| AT*AGMSP=<role_policy>,<store_in_startup_database><CR> | Writes the role policy of the device. |

| Command Parameters | Type | Value |
|---------------------------|------------|--|
| role_policy | enumerator | 0: Always attempt to become master on incoming connections. 1: Always let the connecting device select master/slave role on incoming connections (default value). |
| store_in_startup_database | enumerator | 0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated. |

| Responses | Description |
|-----------------------|----------------------|
| <CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error response. |

| Model | Constraint |
|--|--|
| cB-OEMSPA311 cB-OEMSPA331 cB-OEMSPA312 cB-OEMSPA332 | Not supported. The module always allows a master slave switch if requested by the remote side. |

Get_RSSI (AT*AGRSS=)

| AT Command | Description |
|------------------------|---|
| AT*AGRSS=<bd_addr><CR> | This request returns the current received signal strength, RSSI, for the connection between the ECI Controller and the remote device identified by the 'bd_addr' parameter. Note that this command can only be used on an existing connection that has been established using the Connect_To_Serial_Service_Data_Mode command and only while still in AT mode. |

| Command Parameters | Type | Value |
|--------------------|---------|---|
| bd_addr | Bd_Addr | Identifies a device that the Serial Port Adapter is currently communicating with. |

| Responses | Description |
|---|----------------------|
| <CR><LF>*AGRSS:<rssi><CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error response. |

| Response Parameters | Type | Value |
|---------------------|---------|--|
| rssi | integer | < 128: The received signal strength is 128-RSSI dB below the optimal signal range. 128: The received signal strength is within the optimal signal range. >128: The received signal strength is RSSI-128 dB above the optimal signal range. |

| Model | Constraint |
|--|----------------|
| cB-OEMSPA311 cB-OEMSPA331 cB-OEMSPA312 | Not supported. |

| | |
|--------------|--|
| cB-OEMSPA332 | |
|--------------|--|

11.3 Service Search Commands

Service_Search (AT*ARSS=)

| AT Command | Description |
|---|---|
| AT*ARSS=<bd_addr>,<role_and_profile>,<max_nbr_of_results><CR> | Search for services on a remote device. |

| Command Parameters | Type | Value |
|--------------------|------------|--|
| bd_addr | Bd_Addr | Bluetooth device address of the device on which to search for services. |
| role_and_profile | enumerator | 0: DevB role, Serial Port Profile 1: Gateway role, Dial-Up Networking Profile 2: LAN Access Point role, LAN Access Profile |
| max_nbr_of_results | integer | The maximum number of services to be collected. |

| Responses | Description |
|---|--|
| <CR><LF>*ARSS:<matching_service_records><CR><LF>OK<LR><CR> | Successful response |
| *ARSRSP:<bd_addr>,<rfcomm_server_chan>,<service_name_valid>,<service_name><CR><LF> | This response is the result of a device B serial port profile service search. |
| *ARSRDUN:<bd_addr>,<rfcomm_server_chan>,<service_name_valid>,<service_name>,<audio_feedback_support_valid>,<audio_feedback_support><CR><LF> | This response is the result of a GW dial-up networking profile service search. |
| *ARSRLAN:<bd_addr>,<rfcomm_server_chan>,<service_name_valid>,<service_name>,<service_description_valid>,<service_description>,<service_availability_valid>,<service_availability>,<ip_subnet_valid>,<ip_subnet><CR><LF> | This response is the result of a LAP LAN access profile service search. |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Response Parameters | Type | Value |
|--------------------------|------------|--|
| bd_addr | Bd_Addr | Bluetooth device address of the device on which to search for services. |
| matching_service_records | integer | The number of matching service records. Range 0 to 255. |
| rfcomm_server_chan | integer | RFCOMM server channel number on which this service can be found. It is used when connecting to a profile. Range 1 to 30. |
| service_name_valid | enumerator | 0: The service_name parameter could not be retrieved from the remote device and the value is not valid. 1: The service_name parameter could be retrieved from the remote device and the value is valid. |

| | | |
|------------------------------|------------|--|
| service_name | string | Service name. |
| audio_feedback_support_valid | enumerator | 0: The audio_feedback_support parameter could not be retrieved from the remote device and the value is not valid. 1: The audio_feedback_support parameter could be retrieved from the remote device and the value is valid. |
| audio_feedback_support | enumerator | 0: No, device does not support audio feedback. 1: Yes, device supports audio feedback. |
| service_description_valid | enumerator | 0: The service_description parameter could not be retrieved from the remote device and the value is not valid. 1: The service_description parameter could be retrieved from the remote device and the value is valid. |
| service_description | string | Manufacturer description of the services a product can provide. |
| service_availability_valid | enumerator | 0: The service_availability parameter could not be retrieved from the remote device and the value is not valid. 1: The service_availability parameter could be retrieved from the remote device and the value is valid. |
| service_availability | integer | The service availability parameter available in the LAN Access Profile service record. |
| ip_subnet_valid | enumerator | 0: The ip_subnet parameter could not be retrieved from the remote device and the value is not valid. 1: The ip_subnet parameter could be retrieved from the remote device and the value is valid. |
| ip_subnet | string | IP subnet mask to reach the device on the LAN. |

| Model | Constraint |
|--|---|
| cB-OEMSPA311 cB-OEMSPA331 cB-OEMSPA312 cB-OEMSPA332 | Only supports serial port and dial-up networking profiles and not LAN access profile. |

11.4 Data Mode Commands

Data_Mode (AT*ADDM)

| AT Command | Description |
|-------------|---|
| AT*ADDM<CR> | Request the Serial Port Adapter to move to data mode. After a successful response the Serial Port Adapter will leave AT-mode and enter data mode. |

| Responses | Description |
|-----------------------|----------------------|
| <CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error response. |

Connect_To_Serial_Service_Data_Mode (AT*ADCP=)

| AT Command | Description |
|--|--|
| AT*ADCP=<bd_addr>, <role_and_profile>,<rfcomm_server_channel>,<must_be_master><CR> | Connect to a serial service enabled on a remote device. This request is used to connect to profiles based on the Serial Port Profile. The connection shall be used in data mode. When the host connects to a service on a remote device it implicitly registers to receive the Serial_Connection_Data_Mode_Closed event. |

| Command Parameters | Type | Value |
|--------------------|------------|---|
| bd_addr | Bd_Addr | Bluetooth device address of the device to connect to. |
| role_and_profile | enumerator | 0: DevB role, Serial Port Profile 1: Gateway role, Dial-Up Networking Profile 2: LAN Access Point role, LAN Access Profile |
| rfcomm_server_chan | enumerator | RFCOMM server channel number on which this service can be found. 0: Service search will be performed automatically and the first available <role_and_profile> will be connected. 1-30: RFCOMM server channel number. This server channel number can be retrieved using a service search operation. 31-255: Invalid values. |
| must_be_master | enumerator | 0: The remote device may choose to become master or slave. 1: This device must be master of the new connection. |

| Responses | Description |
|---|----------------------|
| <CR><LF>*ADCP:<connection_handle><CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error response. |

| Response Parameters | Type | Value |
|---------------------|---------|---|
| connection_handle | integer | The connection handle identifies the connection. The connection handle is used when closing the connection. |

| Model | Constraint |
|--|---|
| cB-OEMSPA311 cB-OEMSPA331 cB-OEMSPA312 cB-OEMSPA332 | Only supports serial port and dial-up networking profiles and not LAN access profile. |

Close_Serial_Connection_Data_Mode (AT*ADCC=)

| AT Command | Description |
|---------------------------------|---|
| AT*ADCC=<connection_handle><CR> | Close an existing data mode connection. |

| Command Parameters | Type | Value |
|--------------------|---------|--|
| connection_handle | integer | The connection handle identifies the connection. |

| Responses | Description |
|-----------------------|----------------------|
| <CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error response. |

Read_Default_Client_Profile (AT*ADDCP?)

| AT Command | Description |
|---------------|---|
| AT*ADDCP?<CR> | This command reads the default client profile. The default client profile is the profile that the Serial Port Adapter uses when it establishes a connection, in data mode, to the default remote peer(s). |

| Responses | Description |
|---|----------------------|
| <CR><LF>*ADDCP:<role_and_profile><CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error response. |

| Response Parameters | Type | Value |
|---------------------|------------|---|
| role_and_profile | Enumerator | 0: Serial Port Profile (DevA role) 1: Dial-Up Networking Profile (DT role) 2: LAN Access Profile (LAN Access Point role) 255: No profile (default value) |

Write_Default_Client_Profile (AT*ADDCP=)

| AT Command | Description |
|---|---|
| AT*ADDCP=<role_and_profile>, <store_in_startup_database><CR> | This command reads the default client profile. The default client profile is the profile that the Serial Port Adapter uses when it establishes a connection, in data mode, to the default remote peer(s). |

| Command Parameters | Type | Value |
|--------------------|------|-------|
|--------------------|------|-------|

| | | |
|---------------------------|------------|--|
| role_and_profile | Enumerator | 0: Serial Port Profile (DevA role) 1: Dial-Up Networking Profile (DT role) 2: LAN Access Profile (LAN Access Point role) 255: No profile (default value) |
| store_in_startup_database | Enumerator | 0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated. |

| Responses | Description |
|-----------------------|----------------------|
| <CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error response. |

| Model | Constraint |
|--|--|
| cB-OEMSPA311 cB-OEMSPA331 cB-OEMSPA312 cB-OEMSPA332 | The LAN access profile is not supported. |

Read_Default_Server_Profile (AT*ADDSP?)

| AT Command | Description |
|---------------|---|
| AT*ADDSP?<CR> | This command reads the default server profile. The default server profile is the profile that other devices can connect to when the Serial Port Adapter is in data mode. The default server profile is activated when the Serial Port Adapter is moved to data mode if no connection exists. The default server profile is deactivated when the Serial Port Adapter is moved from data mode to AT mode. |

| Responses | Description |
|---|----------------------|
| <CR><LF>*ADDSP:<role_and_profile><CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error response. |

| Response Parameters | Type | Value |
|---------------------|------------|--|
| role_and_profile | Enumerator | 0: Serial Port Profile (DevB role) (default value) 1: Dial-Up Networking Profile (Gateway role) 2: LAN Access Profile (LAN Access Point role) 3: Serial Port Profile (DevB role) and Dial-Up Networking (Gateway role) 255: No profile |

Write_Default_Server_Profile (AT*ADDSP=)

| AT Command | Description |
|---|--|
| AT*ADDSP=<role_and_profile>,<store_in_startup_database><CR> | This command writes the default server profile. The default server profile is the profile that other devices |

| | |
|--|---|
| | can connect to when the Serial Port Adapter is in data mode. The default server profile is activated when the Serial Port Adapter is moved to data mode if no connection exists. The default server profile is deactivated when the Serial Port Adapter is moved from data mode to packet mode. |
|--|---|

| Command Parameters | Type | Value |
|---------------------------|------------|--|
| role_and_profile | enumerator | 0: Serial Port Profile (DevB role) (default value) 1: Dial-Up Networking Profile (Gateway role) 2: LAN Access Profile (LAN Access Point role) 3: Serial Port Profile (DevB role) and Dial-Up Networking (Gateway role) 255: No profile |
| store_in_startup_database | enumerator | 0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated. |

| Responses | Description |
|-----------------------|----------------------|
| <CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error response. |

| Model | Constraint |
|--|---|
| cB-OEMSPA311 cB-OEMSPA331 cB-OEMSPA312 cB-OEMSPA332 | The LAN access profile is not supported. If the current default server profile is "255: No profile", the "store in startup database" parameter must be 1 and the module must be restarted for the command to take affect. |
| cB-OEMSPA13 cB-OEMSPA33 | "3: Serial Port Profile (DevB) and Dial-Up Networking (Gateway)" not supported. |

Read_Max_No_Of_Remote_Peers (AT*ADM RP?)

| AT Command | Description |
|----------------|--|
| AT*ADM RP?<CR> | For some Serial Port Adapters it is possible to have more than one remote peer defined. This command reads the maximum number of allowed remote peers. |

| Responses | Description |
|--|----------------------|
| <CR><LF>*ADM RP:<max_no_of_remote_peers> <CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error response. |

| Response Parameters | Type | Value |
|---------------------|------|-------|
|---------------------|------|-------|

| | | |
|------------------------|---------|---|
| max_no_of_remote_peers | integer | The maximum number of allowed remote peers. |
|------------------------|---------|---|

| Model | Constraint |
|--|---|
| cB-OEMSPA311 cB-OEMSPA331 cB-OEMSPA312 cB-OEMSPA332 | Not supported. The parameter always has the value of one. |

Read_No_Of_Remote_Peers (AT*ADNRP?)

| AT Command | Description |
|---------------|--|
| AT*ADNRP?<CR> | For some Serial Port Adapters it is possible to have more than one remote peer defined. This command reads the number of remote peers defined. |

| Responses | Description |
|---|----------------------|
| <CR><LF>*ADNRP:<no_of_remote_peers> <CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error response. |

| Response Parameters | Type | Value |
|---------------------|---------|---|
| no_of_remote_peers | integer | The number of remote peers currently defined. The default value is 0. |

Write_No_Of_Remote_Peers (AT*ADNRP=)

| AT Command | Description |
|---|---|
| AT*ADNRP=<no_of_remote_peers>, <store_in_startup_database><CR> | This command writes the number of remote peers defined. The number of remote peers may not be greater than the number returned by the Read_Max_No_Of_Remote_Peers command. After writing the number of remote peers the host must use the Write_Default_Remote_Peer command to write all the remote peers to the Serial Port Adapter. For more information see Read_No_Of_Remote_Peers. |

| Command Parameters | Type | Value |
|---------------------------|------------|--|
| no_of_remote_peers | integer | The number of remote peers. The default value is 0. |
| store_in_startup_database | enumerator | 0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated. |

| Responses | Description |
|-----------------------|----------------------|
| <CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error response. |

Read_Default_Remote_Peer (AT*ADRDRP=)

| AT Command | Description |
|---------------------------|--|
| AT*ADRDRP=< peer_id ><CR> | This command reads the Bluetooth device address and device name of the selected default remote peer (peer id). |

| Command Parameters | Type | Value |
|--------------------|---------|--|
| peer_id | integer | The peer ID can be between 0 and the value written by the Write_No_Of_Peers command -1 or read by the Read_No_Of_Peers command -1. |

| Responses | Description |
|---|----------------------|
| <CR><LF>*ADRDRP:<bd_addr>,<connect_scheme>,<update_remote_peer_on_incoming>,<device_name><CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error response. |

| Response Parameters | Type | Value |
|---------------------|---------|--|
| bd_addr | Bd_Addr | Bluetooth device address of the default remote peer. |

| | | |
|--------------------------------|------------|---|
| connect_scheme | integer | <p>This parameter is a bit field. Bit 0 is the least significant bit. Each bit is defined as follows:</p> <p>Bit 0: Try to connect to default remote peer on data traffic.</p> <p>Bit 1: Always try to be connected to the default remote peer when in data mode.</p> <p>Bit 2: Try to connect to default remote peer on external signal. The external signal is implementation specific, e.g. some Serial Port Adapters might have a button.</p> <p>Bit 3: On reset, try to connect to a device with the name given by the <device_name> parameter. The <device_name> may specify a part of, or the full name of the remote device. The SPA will at reset perform an inquiry followed by name requests on devices found during inquiry until a matching device is found. If no matching device is found the SPA will stop this procedure and operate as normal. If a matching device is found, the SPA will try to connect to this device. If no matching device is found, this is seen as an LED error indication.</p> <p>Bit 4-15: Reserved for future use.</p> <p><i>Advanced:</i></p> <p>Bit 16-23: Always connected period This field can be used to define the period for connection attempts for always connected (Bit 1 set). If not set or set to 0 then the default period 10s is used. Time in seconds.</p> <p>Bit 24-30: Page timeout The page timeout. This field defines for how long the module tries to connect to the remote device. The time is defined in units of 80ms. For example, to set the page time out to 1,040s choose the value 0x0D. If not set or set to 0 then the default page timeout 5,12s is used.</p> |
| update_remote_peer_on_incoming | enumerator | <p>1: Every time a remote device connects to the selected DefaultServerProfile, update the remote peer device address to the device address of the connecting device. The new remote peer device address will be stored in the startup database. Only one of all the remote peers can use this feature.</p> <p>0: Do not update the remote peer device address on incoming connections.</p> |
| device_name | string | Maximum 240 characters. |

Write_Default_Remote_Peer (AT*ADWDRP=)

| AT Command | Description |
|---|---|
| AT*ADWDRP=<peer_id>,<bd_addr>,<connect_scheme>,<update_remote_peer_on_incoming>,<device_name>,<store_in_startup_database><CR> | This command writes the Bluetooth device address, connect scheme and device name of the currently selected default remote peer. |

| Command Parameters | Type | Value |
|--------------------|---------|--|
| peer_id | integer | The peer ID can be between 0 and the value written by the Write_No_Of_Peers command -1 or read by the Read_No_Of_Peers command -1. |
| bd_addr | Bd_Addr | Bluetooth device address of the default remote peer. |

| | | |
|--------------------------------|------------|--|
| connect_scheme | integer | See Read_Default_Remote_Peer. |
| update_remote_peer_on_incoming | enumerator | See Read_Default_Remote_Peer. |
| device_name | string | See Read_Default_Remote_Peer. |
| store_in_startup_database | enumerator | 0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated. |

| Responses | Description |
|-----------------------|----------------------|
| <CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error response. |

| Model | Constraint |
|--|---|
| cB-OEMSPA311 cB-OEMSPA331 cB-OEMSPA312 cB-OEMSPA332 | The parameter <device_name> is only used when bit 3 in the connect scheme is set. The maximum length is 32 characters. |
| cB-OEMSPA13 cB-OEMSPA33 | Connect to name functionality is not supported. This means that bit 3 in the connect scheme parameter is ignored. Bits 4 to 31 are ignored. |

Read_Inactivity_Tick (AT*ADIT?)

| AT Command | Description |
|--------------|---|
| AT*ADIT?<CR> | This command reads the current inactivity tick setting. If there is no data activity between two consecutive ticks the Serial Port Adapter will automatically disconnect the current data mode connection(s). |

| Responses | Description |
|---|---------------------|
| <CR><LF>*ADIT:<inactivity_tick><CR><LF>OK<CR><LF> | Successful response |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Response Parameters | Type | Value |
|---------------------|---------|---|
| inactivity_tick | integer | 0: no inactivity tick (default value). 1-255: the period (in minutes) of the inactivity timer. |

| Model | Constraint |
|--|----------------|
| cB-OEMSPA311 cB-OEMSPA331 cB-OEMSPA312 cB-OEMSPA332 | Not supported. |

Write_Inactivity_Tick (AT*ADIT=)

| AT Command | Description |
|---|--|
| AT*ADIT=<inactivity_tick>,<store_in_startup_database><CR> | This command writes a new inactivity tick setting. If there is no data activity between two consecutive ticks the Serial Port Adapter will automatically disconnect the current connection(s). |

| Command Parameters | Type | Value |
|---------------------------|------------|--|
| inactivity_tick | integer | 0: no inactivity tick (default value). 1-255: the period (in minutes) of the inactivity timer. |
| store_in_startup_database | enumerator | 0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated. |

| Responses | Description |
|-----------------------|----------------------|
| <CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error response. |

| Model | Constraint |
|--|----------------|
| cB-OEMSPA311 cB-OEMSPA331 cB-OEMSPA312 cB-OEMSPA332 | Not supported. |

Read_Wireless_Multidrop_Configuration (AT*ADWM?)

| AT Command | Description |
|--------------|---|
| AT*ADWM?<CR> | <p>This request returns whether or not the Wireless Multidrop™ feature has been enabled.</p> <p>When the Wireless Multidrop™ has been enabled; all data sent to the Serial Port Adapter in data mode will be forwarded to all connected devices. Data received from a remote device will be forwarded to the host. If the Auto_Forward parameter is set to TRUE is will also forward all received data to all the other connected devices.</p> <p>Connections to remote devices can be established using three methods:</p> <ul style="list-style-type: none"> Let the Serial Port Adapter connect to the desired devices when it is in data mode. The host uses the request Write_No_Of_Remote_Peers and Write_Default_Remote_Peer to tell the Serial Port Adapter how many devices to connect to, which devices to connect to and when to connect to the defined devices. A server has been enabled using the request Write_Default_Server_Profile and one or several devices connect to this server. One or several connections are established in packet mode using the request Con- |

| | |
|--|--|
| | <p>nect_To_Serial_Service_Data_Mode. After all desired connection have been setup by the host it moves to data mode.</p> <p>When the Wireless Multidrop™ has been disabled; only one connection at a time can be established. A maximum of one remote peer can be defined.</p> |
|--|--|

| Responses | Description |
|--|---------------------|
| <CR><LF>*ADWM:<enabled>, <auto_forward><CR><LF>OK<CR><LF> | Successful response |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Response Parameters | Type | Value |
|---------------------|------------|---|
| enabled | enumerator | 0: Wireless Multidrop™ disabled (default value). 1: Wireless Multidrop™ enabled. |
| auto_forward | enumerator | 0: Data received from a connected device will only be forwarded to the host (default value). 1: Reserved for future use. |

| Model | Constraint |
|--|----------------|
| cB-OEMSPA311 cB-OEMSPA331 cB-OEMSPA312 cB-OEMSPA332 | Not supported. |

Write_Wireless_Multidrop_Configuration (AT*ADWM=)

| AT Command | Description |
|---|--|
| AT*ADWM=<enable>,<auto_forward>, <store_in_startup_database><CR> | See Read_Wireless_Multidrop_Configuration. |

| Command Parameters | Type | Value |
|---------------------------|------------|--|
| enabled | enumerator | See Read_Wireless_Multidrop_Configuration. |
| auto_forward | enumerator | See Read_Wireless_Multidrop_Configuration. |
| store_in_startup_database | enumerator | 0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated. |

| Responses | Description |
|-----------------------|----------------------|
| <CR><LF>OK<CR><LF> | Successful response. |
| <CR><LF>ERROR<CR><LF> | Error response. |

| Model | Constraint |
|--|----------------|
| cB-OEMSPA311 cB-OEMSPA331 cB-OEMSPA312 cB-OEMSPA332 | Not supported. |

11.5 Informational Commands

Read_Local_BD_ADDR (AT*AILBA?)

| AT Command | Description |
|---------------|---|
| AT*AILBA?<CR> | Reads the Bluetooth Device Address of the local device. |

| Responses | Description |
|---|---------------------|
| <CR><LF>*AILBA:<bd_addr>,<CR><LF>OK<CR><LF> | Successful response |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Response Parameters | Type | Value |
|---------------------|---------|---------------------------------|
| bd_addr | Bd_Addr | Local Bluetooth device address. |

Read_Local_Version_Information (AT*AILVI?)

| AT Command | Description |
|---------------|--|
| AT*AILVI?<CR> | This command reads the local version information to the Serial Port Adapter. |

| Responses | Description |
|---|---------------------|
| <CR><LF>*AILVI:<manufacturer>, < sw_ver>, <host_stack_sw_ver>, <link_manager_sw_ver>, <bluetooth_hardware_manufacturer><CR><LF>OK<CR><LF> | Successful response |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Response Parameters | Type | Value |
|---------------------------------|--------|---------------------------------------|
| manufacturer | string | Serial Port Adapter manufacturer. |
| sw_ver | string | Serial Port Adapter software version. |
| host_stack_sw_ver | string | Bluetooth host stack version. |
| link_manager_sw_ver | string | Bluetooth link manager version. |
| bluetooth_hardware_manufacturer | string | Bluetooth hardware manufacturer. |

11.6 Miscellaneous Commands

Read_RS232_Settings (AT*AMRS?)

| AT Command | Description |
|--------------|---|
| AT*AMRS?<CR> | This command reads current RS232 settings from the Serial Port Adapter. |

| Responses | Description |
|---|---------------------|
| <CR><LF>*AMRS:<baud_rate>, <data_bits>, <stop_bits>, <parity>, <flow_control><CR><LF>OK<CR><LF> | Successful response |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Response Parameters | Type | Value |
|---------------------|------------|--|
| baud_rate | enumerator | Standard baud rates: 1: 300 2: 1200 3: 2400 4: 4800 5: 9600 6: 19200 7: 38400 8: 57600 (default value) 9: 115200 10: 230400 11: 460800 12: 921600 Non standard baud rates: 17: 7200 18: 31250 19: 75000 20: 93750 21: 136000 22: 187500 23: 230000 24: 125000 25: 312500 26: 625000 |
| data_bits | enumerator | 1: 8 data bits (default value) 2: 7 data bits 3: 6 data bits 4: 5 data bits |
| stop_bits | enumerator | 1: 1 stop bit (default value) 2: 2 stop bits |
| parity | enumerator | 1: no parity (default value) 2: odd parity 3: even parity |
| flow_control | enumerator | 1: CTS/RTS used for flow control (default value) 2: CTS/RTS not used. |

| Model | Constraint |
|--|--|
| cB-OEMSPA311 cB-OEMSPA331 cB-OEMSPA312 | For the non-standard baud rates the 312500 and 625000 has an accuracy of 1.5% and 2.5 %. For all other baud rates the accuracy is no worse than 0.5 %. |

| | |
|--------------|--|
| cB-OEMSPA332 | |
|--------------|--|

Write_RS232_Settings (AT*AMRS=)

| AT Command | Description |
|---|--|
| AT* AMRS=<baud_rate>, <data_bits>, <stop_bits>, <parity>, <flow_control>, <change_after_confirm>, <store_in_startup_database><CR> | This command applies new RS232 settings to the Serial Port Adapter. If 5, 6 or 7 data bits are selected the Serial Port Adapter will not change its RS232 settings until the next power cycle. If the command is successful, the baud rate is changed after the response. Wait 100ms from that the response is received before sending a new command to the Serial Port Adapter. |

| Command Parameters | Type | Value |
|---------------------------|------------|--|
| baud_rate | enumerator | See Read_RS232_Settings. |
| data_bits | enumerator | See Read_RS232_Settings. |
| stop_bits | enumerator | See Read_RS232_Settings. |
| parity | enumerator | See Read_RS232_Settings. |
| flow_control | enumerator | See Read_RS232_Settings. |
| change_after_confirm | enumerator | 0: The Serial Port Adapter will not change RS232 settings until after the next power cycle. 1: The Serial Port Adapter will change RS232 settings after it has sent the OK to the ECI Host. |
| store_in_startup_database | enumerator | 0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated. |

| Responses | Description |
|-----------------------|---------------------|
| <CR><LF>OK<CR><LF> | Successful response |
| <CR><LF>ERROR<CR><LF> | Error message. |

Read_Serial_Interface_Type (AT*AMSIT?)

| AT Command | Description |
|---------------|--|
| AT*AMSIT?<CR> | This command reads the serial interface type currently used. |

| Responses | Description |
|--|---------------------|
| <CR><LF>*AMSIT:<serial_interface_type><CR><LF>OK<CR><LF> | Successful response |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Response Parameters | Type | Value |
|-----------------------|------------|---|
| serial_interface_type | enumerator | 1: RS232 (default value) 2: RS422 3: RS485 4-255: Reserved for future use. |

Write_Serial_Interface_Type (AT*AMSIT=)

| AT Command | Description |
|--|---|
| AT*AMSIT=<serial_interface_type>,<store_in_startup_database><CR> | This command writes the serial interface type currently used. Note that the Serial Port Adapter does not change serial interface type until the next time it is restarted. |

| Command Parameters | Type | Value |
|---------------------------|------------|--|
| serial_interface_type | enumerator | See Read_Serial_Interface_Type. |
| store_in_startup_database | enumerator | 0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated. |

| Responses | Description |
|-----------------------|---------------------|
| <CR><LF>OK<CR><LF> | Successful response |
| <CR><LF>ERROR<CR><LF> | Error message. |

Read_Favorites (AT*ACF?)

| AT Command | Description |
|-------------|----------------------------|
| AT*ACF?<CR> | Read the stored favorites. |

| Responses | Description |
|---|--|
| <CR><LF>*ACF:<no_of_stored_favorites><CR><LF>OK<CR><LF> | Successful response |
| *ACFD:<bd_addr>,<favorite_name><CR><LF> | This response is sent for every found favorite device. |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Response Parameters | Type | Value |
|------------------------|---------|--|
| no_of_stored_favorites | integer | Number of stored favorite devices. |
| bd_addr | string | Bluetooth device address of the stored favorite. |
| favorite_name | string | Name of favorite. |

| Model | Constraint |
|--|----------------|
| cB-OEMSPA311 cB-OEMSPA331 cB-OEMSPA312 cB-OEMSPA332 | Not supported. |

Add_Change_Favorite (AT*ACACF=)

| AT Command | Description |
|--|---|
| AT*ACACF=<bd_addr>,<favorite_name><CR> | Add or change a favorite. If the favorite, identified by its Bluetooth device address does not exist, it will be created. |

| Command Parameters | Type | Value |
|--------------------|---------|---|
| bd_addr | Bd_Addr | Bluetooth device address of the favorite. |
| favorite_name | string | Maximum 240 characters (8-bit ASCII). |

| Responses | Description |
|-----------------------|---------------------|
| <CR><LF>OK<CR><LF> | Successful response |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Model | Constraint |
|--|----------------|
| cB-OEMSPA311 cB-OEMSPA331 cB-OEMSPA312 cB-OEMSPA332 | Not supported. |

Delete_Favorite (AT*ACDF=)

| AT Command | Description |
|-----------------------|----------------------------|
| AT*ACDF=<bd_addr><CR> | Deletes a stored favorite. |

| Command Parameters | Type | Value |
|--------------------|---------|--|
| bd_addr | Bd_Addr | Bluetooth device address of the stored favorite. |

| Responses | Description |
|-----------------------|---------------------|
| <CR><LF>OK<CR><LF> | Successful response |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Model | Constraint |
|--|----------------|
| cB-OEMSPA311 cB-OEMSPA331 cB-OEMSPA312 cB-OEMSPA332 | Not supported. |

Read_Allow_Configuration_Over_Bluetooth (AT*ACCB?)

| AT Command | Description |
|--------------|--|
| AT*ACCB?<CR> | Determine whether or not configuration over Bluetooth is allowed. Configuration can either be performed using AT commands or using the ECI protocol. |

| Responses | Description |
|--|---------------------|
| <CR><LF>*ACCB:<allow_configuration_over_bluetooth> <CR><LF>OK<CR><LF> | Successful response |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Response Parameters | Type | Value |
|------------------------------------|------------|--|
| allow_configuration_over_bluetooth | enumerator | 0: Configuration over Bluetooth is not allowed (default value). 1: Configuration over Bluetooth is allowed. |

Write_Allow_Configuration_Over_Bluetooth (AT*ACCB=)

| AT Command | Description |
|---|--|
| AT*ACCB= <allow_configuration_over_bluetooth>, <store_in_startup_database><CR> | See the Read_Allow_Configuration_Over_Bluetooth command. |

| Command Parameters | Type | Value |
|------------------------------------|------------|--|
| allow_configuration_over_Bluetooth | enumerator | See the Read_Allow_Configuration_Over_Bluetooth command. |
| store_in_startup_database | enumerator | 0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated. |

| Responses | Description |
|-----------|-------------|
|-----------|-------------|

| | |
|-----------------------|---------------------|
| <CR><LF>OK<CR><LF> | Successful response |
| <CR><LF>ERROR<CR><LF> | Error message. |

Read_Controller_Power_Save_Mode (AT*AMPM?)

| AT Command | Description |
|--------------|---|
| AT*AMPM?<CR> | This command reads the current power save mode setting. |

| Responses | Description |
|---|---------------------|
| <CR><LF>*AMPM:<mode> <CR><LF>OK<CR><LF> | Successful response |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Response Parameters | Type | Value |
|---------------------|------------|---|
| mode | enumerator | 1: Allow only online mode. The Serial Port Adapter will never enter sleep or stop mode to save power. 2: Allow sleep mode (default value). The Serial Port Adapter will enter sleep mode when possible to save power. 3: Allow sleep mode and stop mode. The Serial Port Adapter will enter sleep or stop mode when possible to save power. 4: As online mode except that the internal clock will always be 32 MHz. 5 – 255: Power modes reserved for future use. |

Write_Controller_Power_Save_Mode (AT*AMPM=)

| AT Command | Description |
|--|---|
| AT*AMPM=<mode>,<store_in_startup_database><CR> | This command writes a new power save mode setting to the Serial Port Adapter. |

| Command Parameters | Type | Value |
|---------------------------|------------|--|
| mode | enumerator | See Read_Controller_Power_Save_Mode. |
| store_in_startup_database | enumerator | 0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated. |

| Responses | Description |
|-----------------------|---------------------|
| <CR><LF>OK<CR><LF> | Successful response |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Model | Constraint |
|--|--|
| cB-OEMSPA311 cB-OEMSPA331 cB-OEMSPA312 cB-OEMSPA332 | Online 32 MHz mode (4) is not supported. Stop mode cannot be configured if the DSR mode is 2 (see AT*AMDS). |

Read_Max_Output_Power (AT*AMMP?)

| AT Command | Description |
|--------------|---|
| AT*AMMP?<CR> | Read the maximum output power used by the Serial Port Adapter when communicating. |

| Responses | Description |
|--|---------------------|
| <CR><LF>*AMMP:<max_output_power> <CR><LF>OK<CR><LF> | Successful response |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Response Parameters | Type | Value |
|---------------------|---------|--|
| max_output_power | integer | 255: Use the highest output power supported by the Serial Port Adapter as the maximum output power (default value). 128-m: -m dBm (m<30) 128: 0 dBm 128+n: n dBm (n<30) |

Write_Max_Output_Power (AT*AMMP=)

| AT Command | Description |
|--|---|
| AT*AMMP=<max_output_power>,<store_in_startup_database><CR> | Set the maximum output power to be used by the Serial Port Adapter when communicating. Note that not all Serial Port Adapter models support output power control. |

| Command Parameters | Type | Value |
|---------------------------|------------|--|
| max_output_power | integer | See Read_Max_Output_Power. |
| store_in_startup_database | enumerator | 0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated. |

| Responses | Description |
|-----------------------|---------------------|
| <CR><LF>OK<CR><LF> | Successful response |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Model | Constraint |
|-------------|----------------|
| cB-OEMSPA13 | Not supported. |

Read_Esc_Sequence_Timing (AT*AMET?)

| AT Command | Description |
|--------------|---|
| AT*AMET?<CR> | For an escape sequence to be valid, a period of no data activity is required before and after the escape sequence. This command reads the minimum time of no data activity required before and after the escape sequence. |

| Responses | Description |
|---|---------------------|
| <CR><LF>*AMET:<min_before_time>, <min_after_time> <CR><LF>OK<CR><LF> | Successful response |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Response Parameters | Type | Value |
|---------------------|---------|---|
| min_before_time | integer | 50-5000 ms. The default value is 1000. |
| min_after_time | integer | 50-5000 ms. The default value is 1000. |

Write_Esc_Sequence_Timing (AT*AMET=)

| AT Command | Description |
|--|--|
| AT*AMET=<min_before_time>, <min_after_time>, <store_in_startup_database><CR> | For an escape sequence to be valid, a period of no data activity is required before and after the escape sequence. This command sets the minimum time of no data activity required before and after the escape sequence. |

| Command Parameters | Type | Value |
|---------------------------|------------|--|
| min_before_time | integer | See Read_Esc_Sequence_Timing. |
| min_after_time | integer | See Read_Esc_Sequence_Timing. |
| store_in_startup_database | enumerator | 0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated. |

| Responses | Description |
|--------------------|---------------------|
| <CR><LF>OK<CR><LF> | Successful response |

| | |
|-----------------------|----------------|
| <CR><LF>ERROR<CR><LF> | Error message. |
|-----------------------|----------------|

Read_Button_Operation_Mode (AT*AMBOR=)

| AT Command | Description |
|--------------------------|---|
| AT*AMBOR=<button_id><CR> | For some Serial Port Adapters it is possible to select the operation that shall be associated with a specific button. |

| Command Parameters | Type | Value |
|--------------------|---------|-----------------------------------|
| button_id | integer | Identifies the button to control. |

| Responses | Description |
|---|---------------------|
| <CR><LF>*AMBOR:<operation_mode>, <general_parameter> <CR><LF>OK<CR><LF> | Successful response |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Response Parameters | Type | Value |
|---------------------|---------|---|
| operation_mode | integer | The button operation mode (1=default). |
| general_parameter | integer | The meaning of this parameter depends on the value of the operation_mode parameter. |

| Model | Constraint |
|--|----------------|
| cB-OEMSPA311 cB-OEMSPA331 cB-OEMSPA312 cB-OEMSPA332 | Not supported. |

Write_Button_Operation_Mode (AT*AMBO=)

| AT Command | Description |
|---|---|
| AT*AMBO=<button_id>, <operation_mode>, <general_parameter>, <store_in_startup_database><CR> | For some Serial Port Adapters it is possible to select the operation that shall be associated with a specific button. |

| Command Parameters | Type | Value |
|--------------------|---------|---------------------------------|
| button_id | integer | See Read_Button_Operation_Mode. |
| operation_mode | integer | See Read_Button_Operation_Mode. |
| general_parameter | integer | See Read_Button_Operation_Mode. |

| | | |
|---------------------------|------------|--|
| store_in_startup_database | enumerator | 0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated. |
|---------------------------|------------|--|

| Responses | Description |
|-----------------------|---------------------|
| <CR><LF>OK<CR><LF> | Successful response |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Model | Constraint |
|--|----------------|
| cB-OEMSPA311 cB-OEMSPA331 cB-OEMSPA312 cB-OEMSPA332 | Not supported. |

Read_LED_Operation_Mode (AT*AMLO?)

| AT Command | Description |
|--------------|---|
| AT*AMLO?<CR> | For some Serial Port Adapters it is possible to select an alternate operation mode for control of LEDs. |

| Responses | Description |
|--|---------------------|
| <CR><LF>*AMLO: <operation_mode>, <general_parameter><CR><LF>OK<CR><LF> | Successful response |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Response Parameters | Type | Value |
|---------------------|---------|---|
| operation_mode | integer | The new LED operation mode (1=default). |
| general_parameter | integer | The meaning of this parameter depends on the value of the operation_mode parameter. |

| Model | Constraint |
|--|----------------|
| cB-OEMSPA311 cB-OEMSPA331 cB-OEMSPA312 cB-OEMSPA332 | Not supported. |

Write_LED_Operation_Mode (AT*AMLO=)

| AT Command | Description |
|--|---|
| AT*AMLO=<operation_mode>, <general_parameter>, <store_in_startup_database><CR> | For some Serial Port Adapters it is possible to select an alternate operation mode for control of LEDs. |

| Command Parameters | Type | Value |
|---------------------------|------------|--|
| operation_mode | integer | See Read_LED_Operation_Mode. |
| general_parameter | integer | See Read_LED_Operation_Mode. |
| store_in_startup_database | enumerator | 0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated. |

| Responses | Description |
|-----------------------|---------------------|
| <CR><LF>OK<CR><LF> | Successful response |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Model | Constraint |
|--|----------------|
| cB-OEMSPA311 cB-OEMSPA331 cB-OEMSPA312 cB-OEMSPA332 | Not supported. |

Store_Factory_Settings (AT*AMSF)

| AT Command | Description |
|-------------|---|
| AT*AMSF<CR> | Store all the current settings in the factory settings database. The factory settings can be restored using the AT&F command. |

| Responses | Description |
|-----------------------|---------------------|
| <CR><LF>OK<CR><LF> | Successful response |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Model | Constraint |
|--|--|
| cB-OEMSPA311 cB-OEMSPA331 cB-OEMSPA312 cB-OEMSPA332 | Not supported. Factory settings can only be set during production. |

Read_Watchdog_Settings (AT*AMWS?)

| AT Command | Description |
|--------------|--|
| AT*AMWS?<CR> | Read current watchdog settings. Watchdog settings are only active in data mode and not AT or ECI mode. |

| Responses | Description |
|--|---------------------|
| <CR><LF>*AMWS: <bt_write_timeout>, <bt_inactivity_timeout>, <bt_connect_timeout>, <bt_disconnect_reset>, <reset><CR><LF>OK<CR><LF> | Successful response |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Response Parameters | Type | Value |
|-----------------------|---------|---|
| bt_write_timeout | integer | Time in seconds before SPA disconnects if out of credits. 0: Disabled (default value) > 0: Timeout in seconds |
| bt_inactivity_timeout | integer | Time in seconds before SPA disconnects if no activity. 0: Disabled (default value) > 0: Timeout in seconds |
| bt_connect_timeout | integer | Max connection time in seconds before a connection is terminated. 0: Disabled (default value) > 0: Timeout in seconds |
| bt_disconnect_reset | integer | 0: Disabled (default value) 1: An SPA enabled, as a server will reset on a terminated connection. |
| reset | integer | Will always read a value of 0. If written, 1 means reset of module. Other parameters are then ignored. |

| Model | Constraint |
|--|---------------|
| cB-OEMSPA311 cB-OEMSPA331 cB-OEMSPA312 cB-OEMSPA332 | Not supported |

Write_Watchdog_Settings (AT*AMWS=)

| AT Command | Description |
|--|---|
| AT*AMWS=<bt_write_timeout>, <bt_inactivity_timeout>, <bt_connect_timeout>, <bt_disconnect_reset>, <reset>, <store_in_startup_database><CR> | Write watchdog parameters. The watchdog functionality is only active in data mode and not AT or ECI mode. Furthermore, the power mode must also be set to online (see AT*AMPM). |

| Command Parameters | Type | Value |
|-----------------------|---------|---|
| bt_write_timeout | integer | Time in seconds before SPA disconnects if out of credits. 0: Disabled (default value) > 0: Timeout in seconds |
| bt_inactivity_timeout | integer | Time in seconds before SPA disconnects if no activity. 0: Disabled (default value) > 0: Timeout in seconds |

| | | |
|---------------------------|------------|--|
| bt_connect_timeout | integer | Max connection time in seconds before a connection is terminated. 0: Disabled (default value) > 0: Timeout in seconds |
| bt_disconnect_reset | integer | 0: Disabled (default value) 1: An SPA enabled, as a server will reset on a terminated connection. |
| reset | integer | If set to 1 the SPA will reset immediately. All other parameters will be ignored. |
| store_in_startup_database | enumerator | 0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated. |

| Responses | Description |
|-----------------------|---------------------|
| <CR><LF>OK<CR><LF> | Successful response |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Model | Constraint |
|--|---|
| cB-OEMSPA311 cB-OEMSPA331 cB-OEMSPA312 cB-OEMSPA332 | Only implemented to reset the module. All other parameters are ignored. |

Read_DTR_DSR_Settings (AT*AMDS?)

| AT Command | Description |
|--------------|-------------------------------------|
| AT*AMDS?<CR> | Read current DTR/DSR configuration. |

| Responses | Description |
|--|---------------------|
| <CR><LF>*AMDS: <dtr_cfg>, <dtr_cfg><CR><LF>OK<CR><LF> | Successful response |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Response Parameters | Type | Value |
|---------------------|---------|--|
| dtr_cfg | integer | Configuration of module behavior on the UART DTR pin. 1: DTR is activated when module is started. (default value) 2: DTR is active if there is a Bluetooth connection. If there is no connection, DTR is inactive. |

| | | |
|---------|---------|--|
| dsr_cfg | integer | <p>Configuration of module behavior on the UART DSR pin.</p> <p>1: DSR is ignored. (default value)</p> <p>2: If DSR goes from inactive to active, the module will try to connect to a remote peer if a remote peer is configured. If DSR goes from active to inactive, the module will disconnect. For the remote peer, the external connect scheme must be set.</p> <p>See Write_Default_Remote_Peer command.</p> |
|---------|---------|--|

| Model | Constraint |
|--|--|
| cB-OEMSPA311 cB-OEMSPA331 cB-OEMSPA312 cB-OEMSPA332 | DSR mode 2 cannot be configured if module is configured for stop mode (see AT*AMPM). |
| cB-OEMSPA13 cB-OEMSPA33 | Not supported. |

Write_DTR_DSR_Settings (AT*AMDS=)

| AT Command | Description |
|---|------------------------------|
| AT*AMDS=<dtr_cfg>, <dsr_cfg>, <store_in_startup_database><CR> | Write DTR/DSR configuration. |

| Command Parameters | Type | Value |
|---------------------------|------------|--|
| dtr_cfg | integer | See Read_DTR_DSR_Settings. |
| dsr_cfg | integer | See Read_DTR_DSR_Settings. |
| store_in_startup_database | enumerator | 0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated. |

| Responses | Description |
|-----------------------|---------------------|
| <CR><LF>OK<CR><LF> | Successful response |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Model | Constraint |
|----------------------------|----------------|
| cB-OEMSPA13 cB-OEMSPA33 | Not supported. |

Read_Link_Policy (AT*AML?)

| AT Command | Description |
|------------|-------------|
|------------|-------------|

| | |
|--------------|---------------------------|
| AT*AMLP?<CR> | Read current Link Policy. |
|--------------|---------------------------|

| Responses | Description |
|---|---------------------|
| <CR><LF>*AMLP: <link_policy>, <parameter><CR><LF>OK<CR><LF> | Successful response |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Response Parameters | Type | Value |
|---------------------|---------|--------------------------------|
| link_policy | integer | See Write_Link_Policy command. |
| parameter | integer | See Write_Link_Policy command. |

| Model | Constraint |
|----------------------------|----------------|
| cB-OEMSPA13 cB-OEMSPA33 | Not supported. |

Write_Link_Policy (AT*AMLP=)

| AT Command | Description |
|---|--|
| AT*AMLP=<link_policy>, <parameter>, <store_in_startup_database><CR> | <p>Write link policy.</p> <p>The link policy can be chosen to optimize the link for a specific application. The link policy can be chosen to reduce power consumption, get faster response times or to optimize the SPA as either sender or receiver.</p> <p>Note! Using other link policies than the default may lead to interoperability problems. Verify that the chosen link policy works with other devices your application is intended to interoperate with. If not, use the default link policy.</p> <p>Link policy 3 or 4 gives the shortest response times.</p> <p>Link policy 8 combined with stop mode (AMPM: 3) gives the lowest power consumption.</p> <p>When using a baud rate of 460 kbps or more on the serial interface, a combination of link policy 2 on the sender and link policy 1 on the receiver gives the highest throughput. When using a slower baud rate, then the default link policy gives equally high throughput.</p> <p>If the remote device rejects the link policy requested by the SPA, then the red LED gives an error indication. If the remote device rejects the link policy, then the default link policy is used.</p> |

| Command Parameters | Type | Value |
|--------------------|------|-------|
|--------------------|------|-------|

| | | |
|---------------------------|------------|--|
| link_policy | integer | <p>Link policy configuration.</p> <p>0: Default, No sniff, All packet sizes. 1: Receiver, No sniff, 1 slot packets 2: Sender, No sniff, 5 slot packets 3: QoS, No sniff, All packet sizes, Short poll interval 4: Sniff, interval 10ms, 1 slot packets 5: Sniff, interval 50ms, 1 slot packets 6: Sniff, interval 100ms, 1 slot packets 7: Sniff, interval 200ms, 1 slot packets 8: Sniff, interval 500ms, 1 slot packets</p> <p>The link policies with sniff may be used to get a link with a specific response time or to decrease the power consumption.</p> <p>9: Long range, DM1 packets 10: Long range, DM1 packets and QoS</p> <p>The link policies using only DM1 packets extend the range of the SPA on the cost of a decreased data throughput.</p> |
| parameter | integer | <p>Bit 0: Exit sniff on data activity. Only used when link policy supports sniff.</p> <p>If set the SPA will try to temporarily exit sniff when receiving data on the serial interface. When no data has been received on the serial interface for 1s, then the link will be put back into sniff mode. If not set, then the link will always be in sniff.</p> <p>Using exit sniff on data activity may be useful when using longer sniff intervals since these links have a low throughput.</p> |
| store_in_startup_database | enumerator | <p>0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated.</p> |

| Responses | Description |
|-----------------------|---------------------|
| <CR><LF>OK<CR><LF> | Successful response |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Model | Constraint |
|----------------------------|----------------|
| cB-OEMSPA13 cB-OEMSPA33 | Not supported. |

Read_Feature_Mask (AT*AMRFM=)

| AT Command | Description |
|--------------------------------|----------------------------|
| AT*AMRFM=<feature_mask_id><CR> | Read current feature mask. |

| Responses | Description |
|---|---------------------|
| <CR><LF>*AMRFM: <feature_mask_id>, <mask_value><CR><LF>OK<CR><LF> | Successful response |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Response Parameters | Type | Value |
|---------------------|---------|---------------------------------|
| feature_mask_id | integer | See Write_Feature_Mask command. |
| mask_value | integer | See Write_Feature_Mask command. |

| Model | Constraint |
|----------------------------|----------------|
| cB-OEMSPA13 cB-OEMSPA33 | Not supported. |

Write_Feature_Mask (AT*AMWFM=)

| AT Command | Description |
|---|---|
| AT*AMWFM=<feature_mask_id>,<mask_value><CR> | Write feature mask. A set of special features can be enabled/disabled using this command. The Serial Port Adapter must be reset for a new feature mask to take affect. |

| Command Parameters | Type | Value |
|--------------------|---------|---|
| feature_mask_id | integer | Feature mask to write. Currently only feature mask 1 is used. |
| mask_value | integer | Feature mask 1: Bit 0: Disable LEDs in stop mode This feature disables the LEDs when the Serial Port Adapter is in stop mode. If the Serial Port Adapter has an active connection, then the Blue LED will be enabled. Bit 1: Enable fast connection. Increased page scan activity for faster response to incoming connections. Bit 2: Enable fast discovery. Increased inquiry scan activity for faster detection of the device during inquiry or device discovery. By default all bits are set to 0. |

| Responses | Description |
|-----------------------|---------------------|
| <CR><LF>OK<CR><LF> | Successful response |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Model | Constraint |
|----------------------------|----------------|
| cB-OEMSPA13 cB-OEMSPA33 | Not supported. |

Read_Channel_Map (AT*AMCM?)

| AT Command | Description |
|---------------|-------------------|
| AT*AMCM? <CR> | Read channel map. |

| Responses | Description |
|---|---------------------|
| <CR><LF>*AMCM: <channel0to15>, <channel16to31>, <channel32to47>, <channel48to63>, <channel64to78> <CR><LF>OK<CR><LF> | Successful response |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Response Parameters | Type | Value |
|---------------------|---------|--------------------------------|
| channel0to15 | Integer | See Write_Channel_Map command. |
| channel16to31 | Integer | See Write_Channel_Map command. |
| channel32to47 | Integer | See Write_Channel_Map command. |
| channel48to63 | Integer | See Write_Channel_Map command. |
| channel64to78 | Integer | See Write_Channel_Map command. |

| Model | Constraint |
|----------------------------|----------------|
| cB-OEMSPA13 cB-OEMSPA33 | Not supported. |

Write_Channel_Map (AT*AMCM=)

| AT Command | Description |
|---|--|
| AT*ACMFM= <channel0to15>, <channel16to31>, <channel32to47>, <channel48to63>, <channel64to78>, <store_in_startup_database><CR> | Write channel map. This command disables the Advanced Frequency Hopping (AFH) and lets the user classify which channels to use. This can be useful to avoid channels that are already preoccupied by other technologies. The AFH works very well and it is recommended not to use this command. Each channel in the spectrum is represented by a bit in the bit masks passed as parameters to this command. Set the bit to enable the channel and clear the bit to disable the channel. If any channel is disabled, then AFH is disabled. If all channels are enabled, then AFH is enabled. The channel map only has effect when the Serial Port Adapter acts as master. |

| Command Parameters | Type | Value |
|--------------------|------|-------|
|--------------------|------|-------|

| | | |
|---------------------------|------------|--|
| channel0to15 | Integer | Bit mask used to enable or disable channels 0 to 15 (Bit 0 = Channel 0). Default value is 0xFFFF. |
| channel16to31 | Integer | Bit mask used to enable or disable channels 16 to 31. Default value is 0xFFFF. (Bit 0 = Channel 16) |
| channel32to47 | Integer | Bit mask used to enable or disable channels 32 to 47 (Bit 0 – Channel 32). Default value is 0xFFFF. |
| channel48to63 | Integer | Bit mask used to enable or disable channels 48 to 63 (Bit 0 = Channel 48). Default value is 0xFFFF. |
| channel64to78 | Integer | Bit mask used to enable or disable channels 64 to 78 (Bit 0 = Channel 64). Default value is 0xFFFF7. |
| store_in_startup_database | enumerator | 0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated. |

| Responses | Description |
|-----------------------|---------------------|
| <CR><LF>OK<CR><LF> | Successful response |
| <CR><LF>ERROR<CR><LF> | Error message. |

| Model | Constraint |
|----------------------------|----------------|
| cB-OEMSPA13 cB-OEMSPA33 | Not supported. |

11.7 Events

Serial_Connection_Data_Mode_Closed (*ADCCO)

| Event | Description |
|---|--|
| *ADCCO:<connection_handle>,<reason><CR><LF> | A connection to a remote device has been disconnected. |

| Event Pa-rameters | Type | Value |
|-------------------|------------|---|
| connection_handle | integer | Identifies the connection. |
| reason | enumerator | 0: Disconnected by command 1: Disconnected by link loss 255: Reason unknown |

Chapter 12

Model Compatibility

The following table describes what AT commands different serial port adapter models supports.

| AT Command | cB-OEMSPA311 cB-OEMSPA331 cB-OEMSPA312 cB-OEMSPA332 | cB-OEMSPA13 | cB-OEMSPA33 |
|------------|--|-------------|-------------|
| AT | Yes | Yes | Yes |
| AT* | Yes | Yes | Yes |
| ATZ | No | Yes | Yes |
| AT&F | Yes | Yes | Yes |
| ATS2 | Yes | Yes | Yes |
| ATE | Yes | Yes | Yes |
| AT*AGDM | Yes ¹ | Yes | Yes |
| AT*AGCM | Yes | Yes | Yes |
| AT*AGPM | Yes | Yes | Yes |
| AT*AGSM | Yes | Yes | Yes |
| AT*AGND | Yes ¹ | Yes | Yes |
| AT*AGDD | Yes | Yes | Yes |
| AT*AGI | Yes | Yes | Yes |
| AT*AGB | No | Yes | Yes |
| AT*AGUB | Yes | Yes | Yes |
| AT*AGBD | Yes | Yes | Yes |
| AT*AGFP | Yes | Yes | Yes |
| AT*AGLN | Yes ¹ | Yes | Yes |
| AT*AGLC | Yes | Yes | Yes |
| AT*AGGMSR | No | Yes | Yes |
| AT*AGCMSR | No | Yes | Yes |
| AT*AGMSP | Yes | Yes | Yes |
| AT*AGRSS | No | Yes | Yes |
| AT*ARSS | Yes ¹ | Yes | Yes |

| AT Command | cB-OEMSPA311 cB-OEMSPA331 cB-OEMSPA312 cB-OEMSPA332 | cB-OEMSPA13 | cB-OEMSPA33 |
|------------|--|-------------|-------------|
| AT*ADDM | Yes | Yes | Yes |
| AT*ADCP | Yes ¹ | Yes | Yes |
| AT*ADCC | Yes | Yes | Yes |
| AT*ADDCP | Yes | Yes | Yes |
| AT*ADDCP | Yes ¹ | Yes | Yes |
| AT*ADDSP | Yes ¹ | Yes | Yes |
| AT*ADM RP | No | Yes | Yes |
| AT*ADN RP | Yes | Yes | Yes |
| AT*ADR DRP | Yes | Yes | Yes |
| AT*ADW DRP | Yes ¹ | Yes | Yes |
| AT*ADIT | No | Yes | Yes |
| AT*ADWM | No | Yes | Yes |
| AT*AILBA | Yes | Yes | Yes |
| AT*AILVI | Yes | Yes | Yes |
| AT*AMRS | Yes | Yes | Yes |
| AT*AMSIT | Yes | Yes | Yes |
| AT*ACF | No | Yes | Yes |
| AT*ACACF | No | Yes | Yes |
| AT*ACDF | No | Yes | Yes |
| AT*ACCB | Yes | Yes | Yes |
| AT*AMPM | Yes ¹ | Yes | Yes |
| AT*AMMP | Yes | No | Yes |
| AT*AMET | Yes | Yes | Yes |
| AT*AMBOR | No | Yes | Yes |
| AT*AMBO | No | Yes | Yes |
| AT*AMLO | No | Yes | Yes |
| AT*AMSF | No ¹ | Yes | Yes |
| AT*AMWS | No ¹ | Yes | Yes |
| AT*AMDS | Yes | No | No |
| AT*AML P | Yes | No | No |
| AT*AMW FM | Yes | No | No |
| AT*AMR FM | Yes | No | No |
| *ADCCO | Yes | Yes | Yes |

1) There is some constraint regarding the AT command. See details for each AT command. Typically this means that some parameter value is not permitted such as e.g. LAN profile is not supported and device names are limited to 31 characters.