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| GMR : Module version & identification | Command code : 0x08 |

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| **GMR Request** | | | | | |
| Magic | Type | Size | | SEQ | Checksum |
| LSB | MSB |
| **0x88** | **0xA8** | **0** | **0** |  |  |

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| **GMR Response** | | | | | | | | | | |
| Magic | Type | Size | | SEQ | Result | FW | Major | Minor | Revision | Checksum |
| LSB | MSB |
| **0x88** | **0xE8** | **5** | **0** |  |  |  |  |  |  |  |

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| **Request frame** | | |
| SEQ | Sequence ID | Frame identifier; will be send back in the response header so that it is matched with the request frame |
|  |  | Frame SEQ 0x00 is reserved; using it may result in unpredictable sequence matching |
|  |  |  |
| **Response frame** | | |
| Result | SUCCESS | No reason this frame returns otherwise than success |
| FW | UINT8\_T | Frame firmware version |
| Major | UINT8\_T | SDK major version number |
| Minor | UINT8\_T | SDK minor version number |
| Revision | UINT8\_T | SDK revision number |

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| CWMODE : Wireless mode | Command code : 0x09 |

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| **CWMODE Request** | | | | | |
| Magic | Type | Size | | SEQ | Checksum |
| LSB | MSB |
| **0x88** | **0xA9** | **0** | **0** |  |  |

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| **CWMODE Command** | | | | | | |
| Magic | Type | Size | | SEQ | CWMODE | Checksum |
| LSB | MSB |
| **0x88** | **0xC9** | **0** | **0** |  |  |  |

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| **CWMODE Response** | | | | | | | |
| Magic | Type | Size | | SEQ | Result | CWMODE | Checksum |
| LSB | MSB |
| **0x88** | **0xE9** | **2** | **0** |  |  |  |  |

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| **Request frame** | | |
| SEQ | Sequence ID | Frame identifier; will be send back in the response header so that it is matched with the request frame |
|  |  | Frame SEQ 0x00 is reserved; using it may result in unpredictable sequence matching |
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|  |  |  |
| **Command frame** | | |
| CWMODE | 1, 2, 3 | The new wireless mode |
|  |  | 1 : STA; stand-alone mode |
|  |  | 2 : AP; access point mode |
|  |  | 3 : BOTH |
|  |  |  |
| **Response frame** | | |
| Result | SUCCESS | No reason this frame returns otherwise than success |
| FW | 1, 2, 3 | Current wireless mode |
|  |  |  |
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| COM : Serial communication mode | Command code : 0x0A |

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| **COM Request** | | | | | |
| Magic | Type | Size | | SEQ | Checksum |
| LSB | MSB |
| **0x88** | **0xAA** | **0** | **0** |  |  |

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| **COM Change** | | | | | | |
| Magic | Type | Size | | SEQ | COM | Checksum |
| LSB | MSB |
| **0x88** | **0xCA** | **0** | **0** |  |  |  |

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| **COM Response** | | | | | | | |
| Magic | Type | Size | | SEQ | Result | COM | Checksum |
| LSB | MSB |
| **0x88** | **0xEA** | **2** | **0** |  |  |  |  |

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| **Request frame** | | |
| SEQ | Sequence ID | Frame identifier; will be send back in the response header so that it is matched with the request frame |
|  |  | Frame SEQ 0x00 is reserved; using it may result in unpredictable sequence matching |
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| **Command frame** | | |
| COM | Bit 0 | Enable AT mode for commands |
|  | Bit 1 | Enable frame mode for commands |
|  | Bit 2 | Use frame mode for incoming data |
|  |  |  |
|  |  | AT and frame modes can be used both at the same time; the module will auto detect the format of the incoming data and reply back in the same format;  Bit 2 is used for selecting incoming data format; although AT-only command mode is supported when incoming data is to be sent as frames, it is highly discouraged. |
|  |  |  |
| **Response frame** | | |
| Result | SUCCESS | No reason this frame returns otherwise than success |
| COM | 1-7 | Current serial communication mode |
|  |  |  |
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| CWJAP : Join access point | Command code : 0x0B |

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| **CWJAP Request** | | | | | |
| Magic | Type | Size | | SEQ | Checksum |
| LSB | MSB |
| **0x88** | **0xAB** | **0** | **0** |  |  |

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|  | |  |  |  | |  | | **CWJAP Command** | | | | |
| Magic | Type | | Size | | | | SEQ | Flags | Timeout | SSID | Password | Checksum |
| LSB | | MSB | |
| **0x88** | **0xCB** | | **0** | | **0** | |  |  | **0-255** | **String** | **String** |  |

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|  | |  |  | **CWJAP Response** | | | | | | | |
| Magic | Type | | Size | | SEQ | Result | IP | MASK | GW | SSID | Checksum |
| LSB | MSB |
| **0x88** | **0xEB** | | **2** | **0** |  |  | **4byte** | **4byte** | **4byte** | **String** |  |

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| **Request frame** | | |
| SEQ | Sequence ID | Frame identifier; will be send back in the response header so that it is matched with the request frame |
|  |  | Frame SEQ 0x00 is reserved; using it may result in unpredictable sequence matching |
|  |  |  |
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| **Command frame** | | |
| Flags | Bit 0 | Asynchronous flag; if set, the module will wait for the connection to be established |
|  | Bit 1 | No notification; when in asynchronous mode, setting this bit to 1 will disable the join access point notification; bit is ignored in synchronous mode; in synchronous mode, the module always replies with the connection status once connected |
| Timeout | UINT\_8T | Timeout, in seconds, to wait for connection to the chosen access point, when synchronous mode is requested; ignored otherwise. |
| SSID | String | SSID of the AP to connect to. Null terminated string. |
| Password | String | Password of the AP to connect to. Null terminated string. |
|  |  |  |
| **Response frame** | | |
| Result | UINT\_8T | Return code |
| IP | UINT32\_T | 4 byte IP address |
| MASK | UINT32\_T | 4 byte netmask |
| GW | UINT32\_T | 4 byte network gateway |
| SSID | String | Null terminated string holding the current access point name |
|  |  |  |
| **Error codes** | | |
|  | INFO\_CWJAP\_AP\_NONE | Received in response to a request frame when module is not connected to an AP |
|  | INFO\_CWJAP\_AP\_PENDING | Received in response to a request frame when module is trying to connect to an AP |
|  | ERROR\_AP\_ALREADY\_CONNECTED | Received in response to a command frame when the module is already connected |
|  | ERROR\_AP\_CONNECTION\_PENDING | Received in response to a command frame when the module is trying to connect to an AP |
|  | ERROR\_AP\_CONNECTION\_TIMEOUT | Send as status frame when connection timeouts |
|  | ERROR\_AP\_ONLY\_APMODE | Received in response to a command frame when the module is not configured as STA |

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| CWQAP : Query access point | Command code : 0x0C |

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| CIPSTART : | Command code : 0x0D |

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| CIPSERVER : | Command code : 0x0E |

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| CIPMUX : | Command code : 0x0F |

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| GPIO : IO Operations | Command code : 0x10 |

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| **GPIO Request** | | | | | | |
| Magic | Type | Size | | SEQ | IO | Checksum |
| LSB | MSB |
| **0x88** | **0xB0** | **1** | **0** |  | **BIT** |  |

|  |  |  |  |  |  |  |  |  |
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| **GPIO Command** | | | | | | | | |
| Magic | Type | Size | | SEQ | IO | COMMAND | PARAM | Checksum |
| LSB | MSB |
| **0x88** | **0xD0** | **6** | **0** |  | **BIT** | **CMD** | **0-0xFFFFFFFF** |  |

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| **GPIO Response** | | | | | | | | |
| Magic | Type | Size | | SEQ | Result | IO | VALUE | Checksum |
| LSB | MSB |
| **0x88** | **0xF0** | **5** | **0** |  |  | **BIT** | **0-0xFFFFFFFF** |  |

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| **Request frame** | | |
| SEQ | Sequence ID | Frame identifier; will be send back in the response header so that it is matched with the request frame |
|  |  | Frame SEQ 0x00 is reserved; using it may result in unpredictable sequence matching |
| IO | UINT8\_T | IO bit number : 0..31; use 0xff to retrieve or set the entire IO register |
| CMD | UINT8\_T | 0x00 : SET |
|  |  | 0x01 : CLEAR |
|  |  | 0x02 : ENABLE |
|  |  | 0x03 : DISABLE |
|  |  |  |
|  |  |  |
| **Response frame** | | |
| Result | SUCCESS | No reason this frame returns otherwise than success |
| BIT | UINT8\_T | GPIO Bit number; 0xff for entire IO register; normally it will return the same bit number as incoming frame |
| VALUE | UINT32\_T | Current value |
|  |  |  |
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| RGPIO : Remote IO Operations | Command code : 0x11 |

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| **GPIO Request** | | | | | | | |
| Magic | Type | Size | |  |  | SEQ | Checksum |
| LSB | MSB |
| **0x88** | **0xAD** | **0** | **0** |  |  |  |  |

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| **GPIO Command** | | | | | | | | | | |
| Magic | Type | Size | | SEQ | Flags | REMOTE IP | IO | COMMAND | PARAM | Checksum |
| LSB | MSB |
| **0x88** | **0xCD** | **0** | **0** |  |  | **UINT\_32T** | **BIT** | **CMD** | **0-255** |  |

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| **GPIO Response** | | | | | | | | |
| Magic | Type | Size | | SEQ | Result | IO | VALUE | Checksum |
| LSB | MSB |
| **0x88** | **0xED** | **2** | **0** |  |  | **BIT** | **0-255** |  |

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| **Request frame** | | |
| SEQ | Sequence ID | Frame identifier; will be send back in the response header so that it is matched with the request frame |
|  |  | Frame SEQ 0x00 is reserved; using it may result in unpredictable sequence matching |
| REMOTE IP | UINT32\_T | Send a remote command to the provided address |
| IO | UINT8\_T | IO bit number : 0..31; 0xff if undefined |
| CMD | UINT8\_T | 0x00 : SET |
|  |  | 0x01 : CLEAR |
|  |  | 0x02 : ENABLE |
|  |  | 0x03 : DISABLE |
|  |  | 0x04 : QUERY |
|  |  |  |
| **Response frame** | | |
| Result | SUCCESS | No reason this frame returns otherwise than success |
| BIT | UINT8\_T | GPIO Bit number; 0xff if undefined; normally it will return the same bit number as incoming frame |
| VALUE | UINT8\_T | Current value |
|  |  |  |
|  |  |  |