



UG100:Bouffalo Lab Zigbee (BLZ) Protocol

Version: 2.0

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Title	NO.	Revision	Classification	Status	Date
AN 100: Bouffalo Lab Zigbee (BLZ) Protocol	1	2.0	Public	Release	Apr 15, 2025

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1 Revision History

- 1.0 (2024-01-02): Version 1.0 –first release.
- 1.0 (2024-01-18): Reorganization of BLZ UART implementation (app layer must override the UART operations), addition of OTA-server demo, and NCP backup/restore demo.
- 1.0 (2024-02-07): Added CLI command to dump source route table and CLI command to send ZCL request.
- 1.1 (2024-02-20): Added NCP OTA.
- 1.2 (2024-03-19): Added command to get NCP version, dump neighbor table, and route table;
- 2.0 (2025-04-15): Updated user guide with new layout. Moved the host demo part to AN101.

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2 BouffaloLab Zigbee Serial Protocol

BLZ is BouffaloLab's Zigbee serial protocol used by the host application (HOST) to interact with BouffaloLab's Zigbee network Co-Processor (NCP).

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3 Frame Format

The BLZ frame consists of the following fields:

- Start Byte
- Frame Control Byte
- Sequence Byte
- Frame ID (2 bytes)
- Data Field (0-n bytes depending on Frame ID)
- CRC (2 bytes)
- Stop Byte

Byte No.:	1	2	3	4	5	0-n	n+6	n+7	n+8
Description:	Start	Control	Sequence	Frame ID		Data		CRC	Stop

Table 3.1: Table 1.1 –Frame Format

Byte No	Description	Value
1	Start	0x42
2	Control	Frame Control
3	Sequence	Sequence Number
4-5	Frame ID	2 bytes
6-(n+5)	Data	Variable length
(n+6)- (n+7)	CRC	2 bytes
(n+8)	Stop	0x4C

3.1 Start Byte

The Start Byte (0x42) is the first byte of a frame.

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3.2 Frame Control Byte

The Frame Control Byte uses 8 bits. Currently, 2 bits are designated for future use and the remaining 6 bits are defined as follows:

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Debug	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	ReTx

Table 3.2: Table 1.2 –Frame Control Format

Bit	Description	Value
7	Debug mode	1 for Debug mode
6-1	Reserved	0
0	Re-transmission	1 for Re-transmission

- **Bit7: Debug mode** (used only for BLZ development).
- **Bit0: Re-transmission** (indicates the frame is a re-transmission if no ACK was received).

3.3 Sequence Byte

The Sequence Byte contains two fields:

Reserved Rx Sequence Reserved Tx Sequence

Table 3.3: Table 1.3 –Rx/Tx Sequence Format

Field	Bits	Description
Reserved	7	0
Rx Sequence	6-4	Last received seq
Reserved	3	0
Tx Sequence	2-0	Last sent seq

- **Rx Sequence:** The sequence number of the last frame received from the remote peer (used as acknowledgment).
- **Tx Sequence:** The sequence number of the last frame sent (to be used as the Rx Sequence by the remote peer).

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3.4 Frame ID

The 2-byte Frame ID is in little-endian format. Refer to the “Frames” section below for detailed definitions.

3.5 Data

The Data field contains 0 or more bytes, depending on the Frame ID. Its format is defined by the specific frame. For each data section, it is in little-endian format

3.6 CRC

The CRC is a 2-byte field (big-endian) computed over all bytes preceding it (excluding the Start Byte and any bytes added by byte stuffing). The CRC algorithm used is **CRC-16/CCITT-FALSE** (polynomial $x^{16} + x^{12} + x^2 + 1$) with an initial value of 0xFFFF.

3.7 Stop Byte

The Stop Byte (0x4C) marks the end of a frame.

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4 Reserved Bytes and Byte Stuffing

4.1 Reserved Bytes

The reserved bytes in the BLZ protocol are as follows:

- 0x42: Start Byte
- 0x4C: End Byte
- 0x07: Escape Byte (used for byte stuffing)

Table 4.1: Table 1.4 –Reserved Bytes

Byte Value	Name	Purpose
0x42	Start Byte	Frame start
0x4C	Stop Byte	Frame end
0x07	Escape Byte	Byte stuffing

4.2 Byte Stuffing

To send a reserved byte within the data field:

1. Send the escape byte (0x07).
2. XOR the original byte with 0x10 and send the modified value.

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5 Frames

5.1 NCP Configuration

5.1.1 BLZ_FRAME_ID_ACK (0x0001)

Function: Acknowledges the receipt of a frame. It contains no Data field and does not require further acknowledgment.

Command Parameters

None

Response Parameters

None

5.1.2 BLZ_FRAME_ID_ERROR (0x0002)

Function: Used to notify the remote peer of an error. No subsequent acknowledgment is required.

Command Parameters

Table 5.1: Table -BLZ_FRAME_ID_ERROR (Command Parameters)

Parameter	Description
Error Code (uint8_t)	Specifies the error code.

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Response Parameters

None

5.1.3 BLZ_FRAME_ID_RESET (0x0003)

Function: Sent by the Host to instruct the NCP to reset. No acknowledgment is required.

Command Parameters

None

Response Parameters

None

5.1.4 BLZ_FRAME_ID_RESET_ACK (0x0004)

Function: Indicates the NCP has reset and is ready. No acknowledgment is required.

Command Parameters

None

Response Parameters

None

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5.1.5 BLZ_FRAME_ID_GET_COUNTS (0x0005)

Function: Retrieves internal statistics and buffer counts.

Command Parameters

None

Response Parameters

Table 5.2: Table -BLZ_FRAME_ID_GET_COUNTS (Response Parameters)

Parameter	Description
Free Heap (uint32_t)	FreeRTOS reported free heap size
Min Free Heap (uint32_t)	Minimum ever seen heap size
RX Queue Length (uint8_t)	Current number of frames in RX queue
TX Queue Length (uint8_t)	Current number of frames in TX queue
Retransmit Queue (uint8_t)	Current number of frames in Retransmit queue
Max RX Frames (uint8_t)	Max RX queue capacity
Max TX Frames (uint8_t)	Max TX queue capacity
Max Retransmit Frames(uint8_t)	Max ReTx queue capacity
RX Dropped (uint8_t)	Count of dropped RX frames
TX Dropped (uint8_t)	Count of dropped TX frames
ReTX Dropped (uint8_t)	Count of dropped retransmission frames

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5.1.6 BLZ_FRAME_ID_GET_VALUE (0x0010)

Function: Reads a value from the NCP.

Command Parameters

Table 5.3: Table -BLZ_FRAME_ID_GET_VALUE (Command Parameters)

Parameter	Description
Value Id (uint8_t)	Specifies which value to read.

Response Parameters

Table 5.4: Table -BLZ_FRAME_ID_GET_VALUE (Response Parameters)

Parameter	Description
Status (uint8_t)	Operation status (e.g., BLZ_SUCCESS).
Value Length (uint8_t)	Provided if status indicates success.
Value Bytes	Actual value data.

5.1.7 BLZ_FRAME_ID_SET_VALUE (0x0011)

Function: Writes a value to the NCP.

Command Parameters

Table 5.5: Table -BLZ_FRAME_ID_SET_VALUE (Command Parameters)

Parameter	Description
Value Id (uint8_t)	Specifies which value to write.
Value Bytes	New value to apply.

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Response Parameters

Table 5.6: Table -BLZ_FRAME_ID_SET_VALUE (Response Parameters)

Parameter	Description
Status (uint8_t)	Operation result.

5.1.8 BLZ_FRAME_ID_GET_NODE_ID_BY_EUI64 (0x0012)

Function: Returns Node ID corresponding to a given IEEE address.

Command Parameters

Table 5.7: Table -BLZ_FRAME_ID_GET_NODE_ID_BY_EUI64 (Command Parameters)

Parameter	Description
IEEE Address (uint64_t)	EUI-64 MAC address of the device

Response Parameters

Table 5.8: Table -BLZ_FRAME_ID_GET_NODE_ID_BY_EUI64 (Response Parameters)

Parameter	Description
Status (uint8_t)	Success or failure
Node ID (uint16_t)	Zigbee short address

5.1.9 BLZ_FRAME_ID_GET_EUI64_BY_NODE_ID (0x0013)

Function: Returns IEEE address corresponding to a given Node ID.

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Command Parameters

Table 5.9: Table -BLZ_FRAME_ID_GET_EUI64_BY_NODE_ID (Command Parameters)

Parameter	Description
Node ID (uint16_t)	Zigbee short address

Response Parameters

Table 5.10: Table -BLZ_FRAME_ID_GET_EUI64_BY_NODE_ID (Response Parameters)

Parameter	Description
Status (uint8_t)	Success or failure
IEEE Address (uint64_t)	EUI-64 MAC address of the device

5.1.10 BLZ_FRAME_ID_GET_NEXT_ZDP_SEQUENCE_NUM (0x0014)

Function: Requests the next ZDP sequence number.

Command Parameters

None

Response Parameters

Table 5.11: Table -BLZ_FRAME_ID_GET_NEXT_ZDP_SEQUENCE_NUM (Response Parameters)

Parameter	Description
Sequence Number (uint8_t)	Next ZDP sequence number

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5.1.11 BLZ_FRAME_ID_SET_BOOT_ENTRY (0x0090)

Function: Sets the boot partition index to boot from (FW or MFG).

Command Parameters

Table 5.12: Table -BLZ_FRAME_ID_SET_BOOT_ENTRY (Command Parameters)

Parameter	Description
Index (uint8_t)	0 = FW partition, 1 = MFG partition.

Response Parameters

Table 5.13: Table -BLZ_FRAME_ID_SET_BOOT_ENTRY (Response Parameters)

Parameter	Description
Status (uint8_t)	Indicates success or failure.

5.2 Application Framework

5.2.1 BLZ_FRAME_ID_ADD_ENDPOINT (0x0015)

Function: Adds a dynamic endpoint to the NCP.

Command Parameters

Table 5.14: Table -BLZ_FRAME_ID_ADD_ENDPOINT (Command Parameters)

Parameter	Description
Endpoint Id (uint8_t)	ID of the new endpoint.
Profile Id (uint16_t)	Zigbee Profile Identifier.
Device Id (uint16_t)	Zigbee Device Identifier.
Endpoint Flags (uint8_t)	Implementation-specific flags (if any).

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Table 5.14: Table -BLZ_FRAME_ID_ADD_ENDPOINT (Command Parameters)(continued)

Parameter	Description
Input Cluster Count (uint8_t)	Number of server-side clusters.
Output Cluster Count (uint8_t)	Number of client-side clusters.
Input Cluster List (uint16_t[])	List of server-side clusters.
Output Cluster List (uint16_t[])	List of client-side clusters.

Response Parameters

Table 5.15: Table -BLZ_FRAME_ID_ADD_ENDPOINT (Response Parameters)

Parameter	Description
Status (uint8_t)	Indicates if the operation was successful.

5.3 Network Management

5.3.1 BLZ_FRAME_ID_FORM_NETWORK (0x0026)

Function: Instructs the NCP to form a Zigbee network with specified parameters.

Command Parameters

Table 5.16: Table -BLZ_FRAME_ID_FORM_NETWORK (Command Parameters)

Parameter	Description
Extended Pan Id (uint64_t)	If set to 0, the NCP's MAC address is used.
Pan Id (uint16_t)	16-bit Zigbee PAN ID.
Channel (uint8_t)	Zigbee network channel (11-26).

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Response Parameters

Table 5.17: Table -BLZ_FRAME_ID_FORM_NETWORK (Response Parameters)

Parameter	Description
Status (uint8_t)	Indicates the result of the operation.

5.3.2 BLZ_FRAME_ID_LEAVE_NETWORK (0x0028)

Function: Instructs the NCP to leave its current network (reset its network).

Command Parameters

None

Response Parameters

Table 5.18: Table -BLZ_FRAME_ID_LEAVE_NETWORK (Response Parameters)

Parameter	Description
Status (uint8_t)	Indicates success or failure.

5.3.3 BLZ_FRAME_ID_PERMIT_JOINING (0x0029)

Function: Opens or closes the Zigbee network for new device joins.

Command Parameters

Table 5.19: Table -BLZ_FRAME_ID_PERMIT_JOINING (Command Parameters)

Parameter	Description
Duration (uint8_t)	Duration (seconds) the network is open. A value of 0 closes the network.

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Response Parameters

Table 5.20: Table -BLZ_FRAME_ID_PERMIT_JOINING (Response Parameters)

Parameter	Description
Status (uint8_t)	Indicates if the operation was successful.

5.3.4 BLZ_FRAME_ID_GET_NETWORK_PARAMETERS (0x002B)

Function: Retrieves current network parameters from the NCP.

Command Parameters

None

Response Parameters

Table 5.21: Table -BLZ_FRAME_ID_GET_NETWORK_PARAMETERS (Response Parameters)

Parameter	Description
Status (uint8_t)	Operation status.
Node Type (uint8_t)	Typically 0x00 for Zigbee Coordinator.
Extended Pan Id (uint64_t)	Current extended PAN ID.
Pan Id (uint16_t)	Current 16-bit PAN ID.
Tx Power (uint8_t)	Default is 14 dBm.
Channel (uint8_t)	Current Zigbee channel.
Network Manager (uint16_t)	The designated Network Manager ID.
Network Update Id (uint8_t)	Zigbee NWK Update ID.
Channel Mask (uint32_t)	Channel mask used for scanning/forming nets.

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5.3.5 BLZ_FRAME_ID_GET_NEIGHBOR_TABLE_COUNT (0x002D)

Function: Returns the number of entries in the neighbor table.

Command Parameters

None

Response Parameters

Table 5.22: Table -BLZ_FRAME_ID_GET_NEIGHBOR_TABLE_COUNT (Response Parameters)

Parameter	Description
Status (uint8_t)	Success or failure
Count (uint16_t)	Number of neighbor table entries

5.3.6 BLZ_FRAME_ID_GET_NEIGHBOR_TABLE_ENTRY (0x002E)

Function: Returns the neighbor table entry at a specific index.

Command Parameters

Table 5.23: Table -BLZ_FRAME_ID_GET_NEIGHBOR_TABLE_ENTRY (Command Parameters)

Parameter	Description
Index (uint16_t)	Index of the entry to retrieve

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Response Parameters

Table 5.24: Table -BLZ_FRAME_ID_GET_NEIGHBOR_TABLE_ENTRY (Response Parameters)

Parameter	Description
Status (uint8_t)	Success or error code
IEEE Address (uint64_t)	Extended address
Node ID (uint16_t)	Network address
Device Type (uint8_t)	Coordinator/Router/End Device
RxOnWhenIdle (uint8_t)	1 if receiver is on when idle
Link Quality (uint8_t)	Link quality
Link Cost (uint8_t)	Calculated link cost
Outgoing Cost (uint8_t)	Outgoing link cost
Age (uint8_t)	Age of the entry

5.3.7 BLZ_FRAME_ID_GET_SOURCE_ROUTE_TABLE_COUNT (0x002F)

Function: Returns the number of entries in the source route table.

Command Parameters

None

Response Parameters

Table 5.25: Table -BLZ_FRAME_ID_GET_SOURCE_ROUTE_TABLE_COUNT (Response Parameters)

Parameter	Description
Status (uint8_t)	Success or failure
Count (uint16_t)	Number of source route entries

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5.3.8 BLZ_FRAME_ID_GET_SOURCE_ROUTE_TABLE_ENTRY (0x0030)

Function: Returns the source route entry and its relay list.

Command Parameters

Table 5.26: Table -BLZ_FRAME_ID_GET_SOURCE_ROUTE_TABLE_ENTRY (Command Parameters)

Parameter	Description
Index (uint16_t)	Index of the source route entry

Response Parameters

Table 5.27: Table -BLZ_FRAME_ID_GET_SOURCE_ROUTE_TABLE_ENTRY (Response Parameters)

Parameter	Description
Status (uint8_t)	Success or failure
Destination (uint16_t)	Destination address
Relay Count (uint8_t)	Number of relays in path
Relay List (uint16_t[])	List of relay node IDs

5.3.9 BLZ_FRAME_ID_GET_ROUTE_TABLE_COUNT (0x0031)

Function: Returns the number of entries in the routing table.

Command Parameters

None

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Response Parameters

Table 5.28: Table -BLZ_FRAME_ID_GET_ROUTE_TABLE_COUNT (Response Parameters)

Parameter	Description
Status (uint8_t)	Success or failure
Count (uint16_t)	Number of route entries

5.3.10 BLZ_FRAME_ID_GET_ROUTE_TABLE_ENTRY (0x0032)

Function: Returns the route table entry at a specific index.

Command Parameters

Table 5.29: Table -BLZ_FRAME_ID_GET_ROUTE_TABLE_ENTRY (Command Parameters)

Parameter	Description
Index (uint16_t)	Index of the route table entry

Response Parameters

Table 5.30: Table -BLZ_FRAME_ID_GET_ROUTE_TABLE_ENTRY (Response Parameters)

Parameter	Description
Status (uint8_t)	Success or error code
Destination (uint16_t)	Destination address
Next Hop (uint16_t)	Next hop address
Route Status (uint8_t)	Route status and flags

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5.3.11 BLZ_FRAME_ID_NETWORK_INIT (0x0034)

Function: Resumes or initializes the NCP' s network.

Command Parameters

None

Response Parameters

Table 5.31: Table -BLZ_FRAME_ID_NETWORK_INIT (Response Parameters)

Parameter	Description
Status (uint8_t)	Indicates success/failure (not in network).

5.3.12 BLZ_FRAME_ID_STACK_STATUS_HANDLER (0x0035)

Function: Sends a callback to the host to indicate changes in the Zigbee stack state (e.g., joined or left a network).

Command Parameters

Table 5.32: Table -BLZ_FRAME_ID_STACK_STATUS_HANDLER (Command Parameters)

Parameter	Description
Status (uint8_t)	0x00 = NETWORK_UP, 0xFF = NETWORK_DOWN.

Response Parameters

None

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5.3.13 BLZ_FRAME_ID_DEVICE_JOIN_CALLBACK (0x0036)

Function: Callback informing the host of a device joining or leaving the Zigbee network.

Command Parameters

Table 5.33: Table -BLZ_FRAME_ID_DEVICE_JOIN_CALLBACK (Command Parameters)

Parameter	Description
Extended Address (uint64_t)	IEEE address of the joining/leaving device.
Node ID (uint16_t)	Zigbee short address of the device.
Status (uint8_t)	0x00 = Join, 0x01 = Rejoin, 0x03 = Leave.

Response Parameters

None

5.3.14 BLZ_FRAME_ID_GET_NWK_PAYLOAD_LIMIT (0x0037)

Function: Retrieves the network layer payload size limit for a given destination.

Command Parameters

Table 5.34: Table -BLZ_FRAME_ID_GET_NWK_PAYLOAD_LIMIT (Command Parameters)

Parameter	Description
Destination Address	NWK destination address (uint16_t).

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Response Parameters

Table 5.35: Table -BLZ_FRAME_ID_GET_NWK_PAYLOAD_LIMIT (Response Parameters)

Parameter	Description
Status (uint8_t)	Indicates success or failure.
Payload Limit	Maximum bytes allowed (uint8_t).

5.3.15 BLZ_FRAME_ID_NWK_STATUS_CALLBACK (0x0038)

Function: Callback from NCP reporting network-level status changes.

Command Parameters

Table 5.36: Table -BLZ_FRAME_ID_NWK_STATUS_CALLBACK (Command Parameters)

Parameter	Description
Status (uint8_t)	Network status code.
Network Address (uint16_t)	NWK address related to the status.
IEEE Address (uint64_t)	Device address related to the event.

Response Parameters

None

5.4 Security and Access Control

5.4.1 BLZ_FRAME_ID_GET_NWK_SECURITY_INFOS (0x0050)

Function: Retrieves security-related information from the NCP.

Title	NO.	Revision	Classification	Status	Date
AN 100: Bouffalo Lab Zigbee (BLZ) Protocol	1	2.0	Public	Release	Apr 15, 2025

Command Parameters

None

Response Parameters

Table 5.37: Table -BLZ_FRAME_ID_GET_NWK_SECURITY_INFOS (Response Parameters)

Parameter	Description
Status (uint8_t)	Operation status.
Network Key (uint8_t[16])	16-byte Zigbee network key.
Network Outgoing Frame Counter	Outgoing NWK frame counter (uint32_t).
Network Key Sequence (uint8_t)	Network key sequence number.

5.4.2 BLZ_FRAME_ID_SET_NWK_SECURITY_INFOS (0x0051)

Function: Sets security-related information in the NCP.

Command Parameters

Table 5.38: Table -BLZ_FRAME_ID_SET_NWK_SECURITY_INFOS (Response Parameters)

Parameter	Description
Network Key (uint8_t[16])	16-byte Zigbee network key.
Network Outgoing Frame Counter	Outgoing NWK frame counter (uint32_t).
Network Key Sequence (uint8_t)	Network key sequence number.

Title	NO.	Revision	Classification	Status	Date
AN 100: Bouffalo Lab Zigbee (BLZ) Protocol	1	2.0	Public	Release	Apr 15, 2025

Response Parameters

Table 5.39: Table -BLZ_FRAME_ID_SET_NWK_SECURITY_INFOS (Response Parameters)

Parameter	Description
Status (uint8_t)	Operation status.

5.4.3 BLZ_FRAME_ID_GET_GLOBAL_TC_LINK_KEY (0x0052)

Function: Gets the global trust center link key.

Command Parameters

None

Response Parameters

Table 5.40: Table -BLZ_FRAME_ID_GET_GLOBAL_TC_LINK_KEY (Response Parameters)

Parameter	Description
Status (uint8_t)	Operation status
Key (uint8_t[16])	Global link key
Outgoing Frame Counter	NWK frame counter (uint32_t)
Trust Center Address	TC IEEE address (uint64_t)

Title	NO.	Revision	Classification	Status	Date
AN 100: Bouffalo Lab Zigbee (BLZ) Protocol	1	2.0	Public	Release	Apr 15, 2025

5.4.4 BLZ_FRAME_ID_SET_GLOCAL_TC_LINK_KEY (0x0053)

Function: Sets the global trust center link key.

Command Parameters

Table 5.41: Table -BLZ_FRAME_ID_SET_GLOCAL_TC_LINK_KEY (Command Parameters)

Parameter	Description
Key (uint8_t[16])	Global trust center link key.
Outgoing Frame Counter	NWK frame counter to use (uint32_t).

Response Parameters

Table 5.42: Table -BLZ_FRAME_ID_SET_GLOCAL_TC_LINK_KEY (Response Parameters)

Parameter	Description
Status (uint8_t)	Indicates success or failure.

5.4.5 BLZ_FRAME_ID_GET_UNIQUE_TC_LINK_KEY (0x0054)

Function: Retrieves a unique trust center link key entry.

Command Parameters

Table 5.43: Table -BLZ_FRAME_ID_GET_UNIQUE_TC_LINK_KEY (Command Parameters)

Parameter	Description
Index (uint16_t)	Index into the link key table.

Title	NO.	Revision	Classification	Status	Date
AN 100: Bouffalo Lab Zigbee (BLZ) Protocol	1	2.0	Public	Release	Apr 15, 2025

Response Parameters

Table 5.44: Table -BLZ_FRAME_ID_GET_UNIQUE_TC_LINK_KEY (Response Parameters)

Parameter	Description
Status (uint8_t)	Indicates success or failure.
Key (uint8_t[16])	Trust center link key.
Outgoing Frame Counter	Frame counter for the key (uint32_t).
Device IEEE Address	Associated device address (uint64_t).

5.4.6 BLZ_FRAME_ID_SET_UNIQUE_TC_LINK_KEY (0x0055)

Function: Sets a unique trust center link key for a specific IEEE address.

Command Parameters

Table 5.45: Table -BLZ_FRAME_ID_SET_UNIQUE_TC_LINK_KEY (Command Parameters)

Parameter	Description
Device IEEE Address	Destination device address (uint64_t).
Key (uint8_t[16])	Link key to associate.

Response Parameters

Table 5.46: Table -BLZ_FRAME_ID_SET_UNIQUE_TC_LINK_KEY (Response Parameters)

Parameter	Description
Status (uint8_t)	Indicates success or failure.

Title	NO.	Revision	Classification	Status	Date
AN 100: Bouffalo Lab Zigbee (BLZ) Protocol	1	2.0	Public	Release	Apr 15, 2025

5.4.7 BLZ_FRAME_ID_ADD_WHITE_LIST (0x0056)

Function: Adds a device to the whitelist.

Command Parameters

Table 5.47: Table -BLZ_FRAME_ID_ADD_WHITE_LIST (Command Parameters)

Parameter	Description
Device IEEE Address	Address to add to the whitelist.

Response Parameters

Table 5.48: Table -BLZ_FRAME_ID_ADD_WHITE_LIST (Response Parameters)

Parameter	Description
Status (uint8_t)	Indicates success or failure.

5.4.8 BLZ_FRAME_ID_CLEAR_WHITE_LIST (0x0057)

Function: Clears all entries from the whitelist.

Command Parameters

None

Response Parameters

Table 5.49: Table -BLZ_FRAME_ID_CLEAR_WHITE_LIST (Response Parameters)

Parameter	Description
Status (uint8_t)	Indicates success or failure.

Title	NO.	Revision	Classification	Status	Date
AN 100: Bouffalo Lab Zigbee (BLZ) Protocol	1	2.0	Public	Release	Apr 15, 2025

5.4.9 BLZ_FRAME_ID_GET_WHITE_LIST_COUNT (0x0058)

Function: Returns the number of entries in the whitelist.

Command Parameters

None

Response Parameters

Table 5.50: Table -BLZ_FRAME_ID_GET_WHITE_LIST_COUNT (Response Parameters)

Parameter	Description
Status (uint8_t)	Indicates success or failure.
Count (uint16_t)	Number of devices in the whitelist.

5.4.10 BLZ_FRAME_ID_GET_WHITE_LIST_ENTRY (0x0059)

Function: Retrieves an entry from the whitelist by index.

Command Parameters

Table 5.51: Table -BLZ_FRAME_ID_GET_WHITE_LIST_ENTRY (Command Parameters)

Parameter	Description
Index (uint16_t)	Index of the entry to retrieve.

Title	NO.	Revision	Classification	Status	Date
AN 100: Bouffalo Lab Zigbee (BLZ) Protocol	1	2.0	Public	Release	Apr 15, 2025

Response Parameters

Table 5.52: Table -BLZ_FRAME_ID_GET_WHITE_LIST_ENTRY (Response Parameters)

Parameter	Description
Status (uint8_t)	Indicates success or failure.
Device IEEE Address	Whitelist entry (uint64_t).

5.4.11 BLZ_FRAME_ID_ADD_BLACK_LIST (0x005A)

Function: Adds a device to the blacklist.

Command Parameters

Table 5.53: Table -BLZ_FRAME_ID_ADD_BLACK_LIST (Command Parameters)

Parameter	Description
Device IEEE Address	Address to add to the blacklist.

Response Parameters

Table 5.54: Table -BLZ_FRAME_ID_ADD_BLACK_LIST (Response Parameters)

Parameter	Description
Status (uint8_t)	Indicates success or failure.

5.4.12 BLZ_FRAME_ID_CLEAR_BLACK_LIST (0x005B)

Function: Clears all entries from the blacklist.

Title	NO.	Revision	Classification	Status	Date
AN 100: Bouffalo Lab Zigbee (BLZ) Protocol	1	2.0	Public	Release	Apr 15, 2025

Command Parameters

None

Response Parameters

Table 5.55: Table -BLZ_FRAME_ID_CLEAR_BLACK_LIST (Response Parameters)

Parameter	Description
Status (uint8_t)	Indicates success or failure.

5.4.13 BLZ_FRAME_ID_GET_BLACK_LIST_COUNT (0x005C)

Function: Returns the number of entries in the blacklist.

Command Parameters

None

Response Parameters

Table 5.56: Table -BLZ_FRAME_ID_GET_BLACK_LIST_COUNT (Response Parameters)

Parameter	Description
Status (uint8_t)	Indicates success or failure.
Count (uint16_t)	Number of devices in the blacklist.

5.4.14 BLZ_FRAME_ID_GET_BLACK_LIST_ENTRY (0x005D)

Function: Retrieves an entry from the blacklist by index.

Title	NO.	Revision	Classification	Status	Date
AN 100: Bouffalo Lab Zigbee (BLZ) Protocol	1	2.0	Public	Release	Apr 15, 2025

Command Parameters

Table 5.57: Table -BLZ_FRAME_ID_GET_BLACK_LIST_ENTRY (Command Parameters)

Parameter	Description
Index (uint16_t)	Index of the entry to retrieve.

Response Parameters

Table 5.58: Table -BLZ_FRAME_ID_GET_BLACK_LIST_ENTRY (Response Parameters)

Parameter	Description
Status (uint8_t)	Indicates success or failure.
Device IEEE Address	Blacklist entry (uint64_t).

5.4.15 BLZ_FRAME_ID_DEL_WHITE_LIST (0x005E)

Function: Deletes a device from the whitelist.

Command Parameters

Table 5.59: Table -BLZ_FRAME_ID_DEL_WHITE_LIST (Command Parameters)

Parameter	Description
Device IEEE Address	Address to remove from the whitelist.

Title	NO.	Revision	Classification	Status	Date
AN 100: Bouffalo Lab Zigbee (BLZ) Protocol	1	2.0	Public	Release	Apr 15, 2025

Response Parameters

Table 5.60: Table -BLZ_FRAME_ID_DEL_WHITE_LIST (Response Parameters)

Parameter	Description
Status (uint8_t)	Indicates success or failure.

5.4.16 BLZ_FRAME_ID_DEL_BLACK_LIST (0x005F)

Function: Deletes a device from the blacklist.

Command Parameters

Table 5.61: Table -BLZ_FRAME_ID_DEL_BLACK_LIST (Command Parameters)

Parameter	Description
Device IEEE Address	Address to remove from the blacklist.

Response Parameters

Table 5.62: Table -BLZ_FRAME_ID_DEL_BLACK_LIST (Response Parameters)

Parameter	Description
Status (uint8_t)	Indicates success or failure.

5.5 APS

5.5.1 BLZ_FRAME_ID_SEND_APS_DATA (0x0080)

Function: Sends an APS-layer data request. Supports unicast, broadcast, multicast, and indirect transmission.

Title	NO.	Revision	Classification	Status	Date
AN 100: Bouffalo Lab Zigbee (BLZ) Protocol	1	2.0	Public	Release	Apr 15, 2025

Command Parameters

Table 5.63: Table -BLZ_FRAME_ID_SEND_APS_DATA (Command Parameters)

Parameter	Description
Msg Type (uint8_t)	BLZ_MSG_TYPE_UNICAST / BROADCAST / MULTICAST / INDIRECT
Dst Addr (uint16_t)	Destination address
Profile ID (uint16_t)	Zigbee profile ID
Cluster ID (uint16_t)	Zigbee cluster ID
Src EP (uint8_t)	Source endpoint
Dst EP (uint8_t)	Destination endpoint
Tx Options (uint8_t)	Bit flags: ACK/SEC/NWK_KEY etc.
Radius (uint8_t)	Maximum hops
Message Tag (uint32_t)	Application tag for tracking
Payload Length (uint8_t)	Length of the payload
Payload (uint8_t[])	Raw APS payload

Response Parameters

Table 5.64: Table -BLZ_FRAME_ID_SEND_APS_DATA (Response Parameters)

Parameter	Description
Status (uint8_t)	Success, Invalid Argument, ASDU too long, or general failure

Title	NO.	Revision	Classification	Status	Date
AN 100: Bouffalo Lab Zigbee (BLZ) Protocol	1	2.0	Public	Release	Apr 15, 2025

5.5.2 BLZ_FRAME_ID_APS_DATA_CONFIRM (0x0081)

Function: Confirms transmission status of an APS frame previously sent by the host.

Command Parameters

Table 5.65: Table -BLZ_FRAME_ID_APS_DATA_CONFIRM (Command Parameters)

Parameter	Description
Profile ID (uint16_t)	Zigbee profile ID.
Cluster ID (uint16_t)	Cluster ID of the message.
	Destination Address (uint16_t) NWK address of the recipient.
Source Endpoint (uint8_t)	Source endpoint.
	Destination Endpoint (uint8_t) Destination endpoint.
Message Type (uint8_t)	Type of message (Unicast, Multicast, etc).
Status (uint8_t)	Delivery status code.
Message Tag (uint32_t)	Tag to correlate with send request.

Response Parameters

None

5.5.3 BLZ_FRAME_ID_APS_DATA_INDICATION (0x0082)

Function: Indicates an incoming APS frame from the Zigbee network to the host.

Command Parameters

Table 5.66: Table -BLZ_FRAME_ID_APS_DATA_INDICATION (Command Parameters)

Parameter	Description
Profile ID (uint16_t)	Zigbee profile ID.
Cluster ID (uint16_t)	Cluster ID of the message.
Source Address (uint16_t)	NWK address of the sender.

Title	NO.	Revision	Classification	Status	Date
AN 100: Bouffalo Lab Zigbee (BLZ) Protocol	1	2.0	Public	Release	Apr 15, 2025

Table 5.66: Table -BLZ_FRAME_ID_APS_DATA_INDICATION (Command Parameters)(continued)

Parameter	Description
Destination Address(uint16_t)	NWK address of the receiver.
Source Endpoint (uint8_t)	Endpoint of the sender.
Destination Endpoint(uint8_t)	Endpoint of the receiver.
Message Type (uint8_t)	E.g., Unicast, Multicast, Broadcast.
Last Hop LQI (uint8_t)	Link Quality Indicator.
Last Hop RSSI (int8_t)	Received Signal Strength Indicator.
ASDU Length (uint8_t)	Length of the APS payload.
ASDU (uint8_t[])	Raw payload bytes.

Response Parameters

None