**DIN DC Packet Format Specification**

**Version 1.5.4**

**(Internal Only)**

1. Summary

This document is made for engineer and should not disclose to customer. This document defines the content of every reporting packet of DC.

DC means data collector, a component of DIN, is responsible for aggregating the raw data and transfer them to useful data.

The DIN Packet Types are listed below:

* Overall Device Info
* Wi-Fi Device (Station Mode) Info
* Wi-Fi Device (Access Point Mode) Info
* 2G Device Info
* 3G Device Info
* WiMAX Device Info
* LTE Device Info
* VoIP Device Info
* Ethernet Info

1. Category

The standard packet format can be categorized as six types, but VoIP has his own category.

* Device Info (Overall and Individual)
* Connecting History Info
* Network Entry Info (include BS Scan Result)
* Handover Info (include BS Scan Result)
* IP Changing Info
* System Alert Info (Only WAN DC)
* Network Performance Info (Focus on Radio and Broadband Network Surfing)

**Remarks:**

1. Every Packet has **10** bytes header and the value cannot be empty. The expression of header is like [Data Item].
2. **Yellow** means the data item in packet is in a loop.
3. **Blue** means the data set is unique and should send once on every report, so only the DC who plays the WAN role can own this data set.
4. **Pink** means the value or description is unusual, so please check them carefully.
5. **Green** means the next data is coded in a special way.
6. “--------------------” in Invalid Value Field means this Data Item must have a valid value.

**For example:**

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| Connected Client Device MAC | 6 | -1 / 0xFF |  |
| Device Temperature | 1 | 127 / 0x7F |  |

1. Overall Device Info Packet Format

Overall Device Info

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| Unique ID | 8 | -------------------- | **Depend on Header** |
| Vendor Length (V1) | 1 | -1 / 0xFF |  |
| Vendor | Variable | -------------------- | No Data if length is -1 |
| Device Model Length (V2) | 1 | -1 / 0xFF |  |
| Device Model | Variable | -------------------- | No Data if length is -1 |
| Firmware Version Length (V3) | 1 | -1 / 0xFF |  |
| Firmware Version | Variable | -------------------- | No Data if length is -1 |
| Serial Number Length (V4) | 1 | -1 / 0xFF |  |
| Serial Number | Variable | -------------------- | No Data if length is -1 |
| Chipset Revision Length (V5) | 1 | -1 / 0xFF |  |
| Chipset Revision | Variable | -------------------- | No Data if length is -1 |
| Processor Count | 1 | -1 / 0xFF |  |
| Processor Speed in MHz | 2 | -1 / 0xFF |  |
| Memory Size in MB | 2 | -1 / 0xFF |  |
| Flash Size in MB | 2 | -1 / 0xFF |  |
| Battery Capacity | 2 | -1 / 0xFF |  |
| USB Device Count | 1 | -1 / 0xFF |  |
| USB Device Type | 1 | -------------------- | No Data if count is 0,-1 |
| NIC Device Count | 1 | -1 / 0xFF |  |
| NIC Device Type | 1 | -------------------- | No Data if count is 0,-1 |
| NIC Device ID | **6 or 8** | -------------------- | No Data if count is 0,-1 |

1. Wi-Fi Packet Format

Wi-Fi Device Info (Station)

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| Unique ID | 8 | -------------------- | **Depend on Header** |
| Country Region | 2 | -1 / 0xFF |  |
| Supported Frequency Bands (2.4/5 GHz) | 1 | -1 / 0xFF |  |
| Supported Modes (a/b/g/n/ac) | 1 | -1 / 0xFF |  |
| Supported Encryptions | 1 | -1 / 0xFF |  |

Wi-Fi Connecting History Info (Station)

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| RSSI | 1 | 127 / 0x7F |  |

Wi-Fi Network Entry Info (Station)

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| Unique ID | 8 | -------------------- | **Depend on Header** |
| Location (Longitude) \* 10000 | 4 | -------------------- | **Depend on Header** |
| Location (Latitude) \* 10000 | 4 | -------------------- | **Depend on Header** |
| Working Frequency Band (2.4/5 GHz) | 1 | -1 / 0xFF |  |
| Working Mode (a/b/g/n/ac) | 1 | -1 / 0xFF |  |
| Working Encryption | 1 | -1 / 0xFF |  |
| Working Channel | 1 | -1 / 0xFF |  |
| AP BSSID (MAC) | 6 | -1 / 0xFF |  |
| SSID Length | 1 | -1 / 0xFF |  |
| SSID | Variable | -------------------- | No Data if length is -1 |
| Neighboring AP Count | 1 | -1 / 0xFF |  |
| Neighboring AP BSSID (MAC) | 6 | -1 / 0xFF | No Data if count is 0,-1 |
| Neighboring AP Mode | 1 | -1 / 0xFF | No Data if count is 0,-1 |
| Neighboring AP Encryption | 1 | -1 / 0xFF | No Data if count is 0,-1 |
| Neighboring AP Channel | 1 | -1 / 0xFF | No Data if count is 0,-1 |
| Neighboring AP RSSI | 1 | 127 / 0x7F | No Data if count is 0,-1 |

Wi-Fi System Alert Info (Station)

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| Unique ID | 8 | -------------------- | **Depend on Header** |
| Location (Longitude) \* 10000 | 4 | -------------------- | **Depend on Header** |
| Location (Latitude) \* 10000 | 4 | -------------------- | **Depend on Header** |
| System Alert (Type/Level) Combination | 1 | -------------------- | **Should not be empty** |
| MAX Processor Usage (0-100) | 1 | -1 / 0xFF |  |
| MIN Processor Usage (0-100) | 1 | -1 / 0xFF |  |
| AVG Processor Usage (0-100) | 1 | -1 / 0xFF |  |
| MAX Memory Usage (0-100) | 1 | -1 / 0xFF |  |
| MIN Memory Usage (0-100) | 1 | -1 / 0xFF |  |
| AVG Memory Usage (0-100) | 1 | -1 / 0xFF |  |
| Device Temperature | 1 | 127 / 0x7F |  |
| Battery Temperature | 1 | 127 / 0x7F |  |

Wi-Fi Performance Info (Station)

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| Unique ID | 8 | -------------------- | **Depend on Header** |
| Location (Longitude) \* 10000 | 4 | -------------------- | **Depend on Header** |
| Location (Latitude) \* 10000 | 4 | -------------------- | **Depend on Header** |
| MAX RSSI | 1 | 127 / 0x7F |  |
| MIN RSSI | 1 | 127 / 0x7F |  |
| AVG RSSI | 1 | 127 / 0x7F |  |
| RSSI StdDev Below \* 100 | 2 | -1 / 0xFF |  |
| RSSI StdDev Above \* 100 | 2 | -1 / 0xFF |  |
| Use Dynamic Size by first 2 bits |  |  |  |
| **MAX Uplink TP in KB/s** | 2 | -1 / 0xFF |  |
| **MIN Uplink TP in KB/s** | 2 | -1 / 0xFF |  |
| **AVG Uplink TP in KB/s** | 2 | -1 / 0xFF |  |
| **StdDev Below Uplink TP in KB/s** | 2 | -1 / 0xFF | **Keep original value** |
| **StdDev Above Uplink TP in KB/s** | 2 | -1 / 0xFF | **Keep original value** |
| Use Dynamic Size by first 2 bits |  |  |  |
| **MAX Downlink TP in KB/s** | 2 | -1 / 0xFF |  |
| **MIN Downlink TP in KB/s** | 2 | -1 / 0xFF |  |
| **AVG Downlink TP in KB/s** | 2 | -1 / 0xFF |  |
| **StdDev Below Downlink TP in KB/s** | 2 | -1 / 0xFF | **Keep original value** |
| **StdDev Above Downlink TP in KB/s** | 2 | -1 / 0xFF | **Keep original value** |
| Tx Packet Count | 2 | -1 / 0xFF |  |
| Rx Packet Count | 2 | -1 / 0xFF |  |
| Tx Packet Retry Count | 2 | -1 / 0xFF |  |
| Tx Packet Retry ACK Lost Count | 2 | -1 / 0xFF |  |
| Rx Packet Error Count | 2 | -1 / 0xFF |  |
| Tx Power | 1 | 127 / 0x7F |  |
| Device Temperature | 1 | 127 / 0x7F |  |
| Battery Temperature | 1 | 127 / 0x7F |  |
| Battery Level (0-100) | 1 | -1 / 0xFF |  |
| AVG Processor Usage (0-100) | 1 | -1 / 0xFF |  |
| AVG Memory Usage (0-100) | 1 | -1 / 0xFF |  |
| Report Interval | 1 | -------------------- | **Should not be empty** |
| Report Latency | 2 | -------------------- | **Should not be empty** |

Wi-Fi Device Info (AP)

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| Unique ID | 8 | -------------------- | **Depend on Header** |
| Country Region | 2 | -1 / 0xFF |  |
| Supported Frequency Bands (2.4/5 GHz) | 1 | -1 / 0xFF |  |
| Supported Modes (a/b/g/n/ac) | 1 | -1 / 0xFF |  |
| Supported Encryptions | 1 | -1 / 0xFF |  |

Wi-Fi Performance Info (AP)

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| Unique ID | 8 | -------------------- | **Depend on Header** |
| Working Frequency Bands (2.4/5 GHz) | 1 | -1 / 0xFF |  |
| Working Modes (a/b/g/n/ac) | 1 | -1 / 0xFF |  |
| Working Channel Count | 1 | -1 / 0xFF |  |
| Working Channels | 1 | -------------------- | No Data if count is 0,-1 |
| Multi-SSID Count | 1 | -1 / 0xFF |  |
| SSID Length | 1 | -1 / 0xFF | No Data if count is 0,-1 |
| SSID | Variable | -------------------- | No Data if count is 0,-1 |
| Encryption | 1 | -1 / 0xFF | No Data if count is 0,-1 |
| WAN IP Length | 1 | -1 / 0xFF |  |
| WAN IP | **4 or 16** | -------------------- | No Data if length is -1 |
| Client Count | 1 | -1 / 0xFF |  |
| Client BSSID | 6 | -1 / 0xFF | No Data if count is 0,-1 |
| MAX Uplink TP in KB/s | 2 | -1 / 0xFF |  |
| MIN Uplink TP in KB/s | 2 | -1 / 0xFF |  |
| AVG Uplink TP in KB/s | 2 | -1 / 0xFF |  |
| StdDev Below Uplink TP in KB/s | 2 | -1 / 0xFF | **Keep original value** |
| StdDev Above Uplink TP in KB/s | 2 | -1 / 0xFF | **Keep original value** |
| MAX Downlink TP in KB/s | 2 | -1 / 0xFF |  |
| MIN Downlink TP in KB/s | 2 | -1 / 0xFF |  |
| AVG Downlink TP in KB/s | 2 | -1 / 0xFF |  |
| StdDev Below Downlink TP in KB/s | 2 | -1 / 0xFF | **Keep original value** |
| StdDev Above Downlink TP in KB/s | 2 | -1 / 0xFF | **Keep original value** |
| Tx Packet Count | 2 | -1 / 0xFF |  |
| Rx Packet Count | 2 | -1 / 0xFF |  |
| Tx Packet Retry Count | 2 | -1 / 0xFF |  |
| Tx Packet Retry ACK Lost Count | 2 | -1 / 0xFF |  |
| Rx Packet Error Count | 2 | -1 / 0xFF |  |
| Tx Power | 1 | 127 / 0x7F |  |
| Report Interval | 1 | -------------------- | **Should not be empty** |

1. 2G Packet Format

2G Device Info

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| Unique ID | 8 | -------------------- | **Depend on Header** |
| 2G Supported Frequency List | 2 | -1 / 0xFF | 14 Bands |

2G Connecting History Info

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| RSSI | 1 | 127 / 0x7F |  |
| RXQUAL | 1 | -1 / 0xFF |  |

2G Network Entry Info

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| Unique ID | 8 | -------------------- | **Depend on Header** |
| Location (Longitude) \* 10000 | 4 | -------------------- | **Depend on Header** |
| Location (Latitude) \* 10000 | 4 | -------------------- | **Depend on Header** |
| Device IP Length | 1 | -1 / 0xFF |  |
| Device IP | **4 or 16** | -------------------- | No Data if length is -1 |
| Working Mode | 1 | -1 / 0xFF |  |
| Current Cell ID | 2 | -1 / 0xFF |  |
| MCC | 2 | -1 / 0xFF |  |
| MNC Length | 1 | -1 / 0xFF |  |
| MNC | Variable | -------------------- | No Data if length is -1 |
| LAC | 2 | -1 / 0xFF |  |
| Network Entry Latency | 2 | -1 / 0xFF |  |
| Connected Time | 20 | -1 / 0xFF |  |
| Disconnect Reason | 1 | -1 / 0xFF |  |
| Neighboring Cell Count | 1 | -1 / 0xFF |  |
| Neighboring Cell ID | 2 | -1 / 0xFF | No Data if count is 0,-1 |
| Neighboring Cell MCC | 2 | -1 / 0xFF | No Data if count is 0,-1 |
| Neighboring Cell MNC Length | 1 | -1 / 0xFF | No Data if count is 0,-1 |
| Neighboring Cell MNC | Variable | -------------------- | No Data if length is -1 |
| Neighboring Cell LAC | 2 | -1 / 0xFF | No Data if count is 0,-1 |
| Neighboring Cell RSSI | 1 | 127 / 0x7F | No Data if count is 0,-1 |
| Neighboring Cell RXQUAL | 1 | -1 / 0xFF | No Data if count is 0,-1 |

2G System Alert Info

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| Unique ID | 8 | -------------------- | **Depend on Header** |
| Location (Longitude) \* 10000 | 4 | -------------------- | **Depend on Header** |
| Location (Latitude) \* 10000 | 4 | -------------------- | **Depend on Header** |
| System Alert (Type/Level) Combination | 1 | -------------------- | **Should not be empty** |
| MAX Processor Usage (0-100) | 1 | -1 / 0xFF |  |
| MIN Processor Usage (0-100) | 1 | -1 / 0xFF |  |
| AVG Processor Usage (0-100) | 1 | -1 / 0xFF |  |
| MAX Memory Usage (0-100) | 1 | -1 / 0xFF |  |
| MIN Memory Usage (0-100) | 1 | -1 / 0xFF |  |
| AVG Memory Usage (0-100) | 1 | -1 / 0xFF |  |
| Device Temperature | 1 | 127 / 0x7F |  |
| Battery Temperature | 1 | 127 / 0x7F |  |

2G Handover Info

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| Unique ID | 8 | -------------------- | **Depend on Header** |
| Location (Longitude) \* 10000 | 4 | -1 / 0xFF | **Depend on Header** |
| Location (Latitude) \* 10000 | 4 | -1 / 0xFF | **Depend on Header** |
| Original Cell ID | 2 | -1 / 0xFF |  |
| Original Cell RSSI | 1 | 127 / 0x7F |  |
| Org Neighboring Cell Count | 1 | -1 / 0xFF |  |
| Org Neighboring Cell ID | 2 | -1 / 0xFF | No Data if count is 0,-1 |
| Org Neighboring Cell MCC | 2 | -1 / 0xFF | No Data if count is 0,-1 |
| Org Neighboring Cell MNC Length | 1 | -1 / 0xFF | No Data if count is 0,-1 |
| Org Neighboring Cell MNC | Variable | -------------------- | No Data if length is -1 |
| Org Neighboring Cell LAC | 2 | -1 / 0xFF | No Data if count is 0,-1 |
| Org Neighboring Cell RSSI | 1 | 127 / 0x7F | No Data if count is 0,-1 |
| Org Neighboring Cell RXQUAL | 1 | -1 / 0xFF | No Data if count is 0,-1 |
| Destination Cell ID | 2 | -1 / 0xFF |  |

2G IP Changing Info

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| Unique ID | 8 | -------------------- | **Depend on Header** |
| Original Device IP Length | 1 | -1 / 0xFF |  |
| Original Device IP | **4 or 16** | -------------------- | No Data if length is -1 |
| Destination Device IP Length | 1 | -1 / 0xFF |  |
| Destination Device IP | **4 or 16** | -------------------- | No Data if length is -1 |

2G Network Performance Info

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| Unique ID | 8 | -------------------- | **Depend on Header** |
| Location (Longitude) \* 10000 | 4 | -1 / 0xFF | **Depend on Header** |
| Location (Latitude) \* 10000 | 4 | -1 / 0xFF | **Depend on Header** |
| Device IP Length | 1 | -1 / 0xFF |  |
| Device IP | **4 or 16** | -------------------- | No Data if length is -1 |
| Working Mode | 1 | -1 / 0xFF |  |
| Current Cell ID | 2 | -1 / 0xFF |  |
| ARFCN | 2 | -1 / 0xFF |  |
| MAX RSSI | 1 | 127 / 0x7F |  |
| MIN RSSI | 1 | 127 / 0x7F |  |
| AVG RSSI | 1 | 127 / 0x7F |  |
| RSSI StdDev Below \* 100 | 2 | -1 / 0xFF |  |
| RSSI StdDev Above \* 100 | 2 | -1 / 0xFF |  |
| MAX RXQUAL | 1 | -1 / 0xFF |  |
| MIN RXQUAL | 1 | -1 / 0xFF |  |
| AVG RXQUAL | 1 | -1 / 0xFF |  |
| RXQUAL StdDev Below \* 100 | 2 | -1 / 0xFF |  |
| RXQUAL StdDev Above \* 100 | 2 | -1 / 0xFF |  |
| Uplink MCS Count (GMSK) | 1 | -1 / 0xFF |  |
| Uplink MCS Count (8-PSK) | 1 | -1 / 0xFF |  |
| Downlink MCS Count (GMSK) | 1 | -1 / 0xFF |  |
| Downlink MCS Count (8-PSK) | 1 | -1 / 0xFF |  |
| MAX Uplink TP in KB/s | 2 | -1 / 0xFF |  |
| MIN Uplink TP in KB/s | 2 | -1 / 0xFF |  |
| AVG Uplink TP in KB/s | 2 | -1 / 0xFF |  |
| StdDev Below Uplink TP in KB/s | 2 | -1 / 0xFF | **Keep original value** |
| StdDev Above Uplink TP in KB/s | 2 | -1 / 0xFF | **Keep original value** |
| MAX Downlink TP in KB/s | 2 | -1 / 0xFF |  |
| MIN Downlink TP in KB/s | 2 | -1 / 0xFF |  |
| AVG Downlink TP in KB/s | 2 | -1 / 0xFF |  |
| StdDev Below Downlink TP in KB/s | 2 | -1 / 0xFF | **Keep original value** |
| StdDev Above Downlink TP in KB/s | 2 | -1 / 0xFF | **Keep original value** |
| Tx Packet Count | 2 | -1 / 0xFF |  |
| Rx Packet Count | 2 | -1 / 0xFF |  |
| Tx Packet Error Rate (0-100) | 1 | -1 / 0xFF |  |
| Rx Packet Error Rate (0-100) | 1 | -1 / 0xFF |  |
| Tx Frame Count | 2 | -1 / 0xFF |  |
| Rx Frame Count | 2 | -1 / 0xFF |  |
| Tx Frame Error Rate (0-100) | 1 | -1 / 0xFF |  |
| Rx Frame Error Rate (0-100) | 1 | -1 / 0xFF |  |
| Handover Success Count | 1 | -1 / 0xFF |  |
| Handover Failure Count | 1 | -1 / 0xFF |  |
| AVG Handover Latency | 2 | -1 / 0xFF |  |
| Tx Power | 1 | 127 / 0x7F |  |
| Device Temperature | 1 | 127 / 0x7F |  |
| Battery Temperature | 1 | 127 / 0x7F |  |
| Battery Level (0-100) | 1 | -1 / 0xFF |  |
| AVG Processor Usage (0-100) | 1 | -1 / 0xFF |  |
| AVG Memory Usage (0-100) | 2 | -1 / 0xFF |  |
| Report Interval | 1 | -------------------- | **Should not be empty** |
| Report Latency | 1 | -------------------- | **Should not be empty** |

1. 3G Packet Format

3G Device Info

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| Unique ID | 8 | -------------------- | **Depend on Header** |
| 3G Supported Frequency List | 4 | -1 / 0xFF | 26 Band |

3G Connecting History Info

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| RSSI | 1 | 127 / 0x7F |  |
| RSCP | 1 | 127 / 0x7F |  |

3G Network Entry Info

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| Unique ID | 8 | -------------------- | **Depend on Header** |
| Location (Longitude) \* 10000 | 4 | -------------------- | **Depend on Header** |
| Location (Latitude) \* 10000 | 4 | -------------------- | **Depend on Header** |
| Device IP Length | 1 | -1 / 0xFF |  |
| Device IP | **4 or 16** | -------------------- | No Data if length is -1 |
| Working Mode | 1 | -1 / 0xFF |  |
| Current Cell ID | 2 | -1 / 0xFF |  |
| MCC | 2 | -1 / 0xFF |  |
| MNC Length | 1 | -1 / 0xFF |  |
| MNC | Variable | -------------------- | No Data if length is -1 |
| LAC | 2 | -1 / 0xFF |  |
| Network Entry Latency | 2 | -1 / 0xFF |  |
| Connected Time | 20 | -1 / 0xFF |  |
| Disconnect Reason | 1 | -1 / 0xFF |  |
| Neighboring Cell Count | 1 | -1 / 0xFF |  |
| Neighboring Cell ID | 2 | -1 / 0xFF | No Data if count is 0,-1 |
| Neighboring Cell MCC | 2 | -1 / 0xFF | No Data if count is 0,-1 |
| Neighboring Cell MNC Length | 1 | -1 / 0xFF | No Data if count is 0,-1 |
| Neighboring Cell MNC | Variable | -------------------- | No Data if length is -1 |
| Neighboring Cell LAC | 2 | -1 / 0xFF | No Data if count is 0,-1 |
| Neighboring Cell RSSI | 1 | 127 / 0x7F | No Data if count is 0,-1 |
| Neighboring Cell RSCP | 1 | 127 / 0x7F | No Data if count is 0,-1 |
| Bearer-Flow Max Speed | 2 | -1 / 0xFF |  |

3G System Alert Info

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| Unique ID | 8 | -------------------- | **Depend on Header** |
| Location (Longitude) \* 10000 | 4 | -------------------- | **Depend on Header** |
| Location (Latitude) \* 10000 | 4 | -------------------- | **Depend on Header** |
| System Alert (Type/Level) Combination | 1 | -------------------- | **Should not be empty** |
| MAX Processor Usage (0-100) | 1 | -1 / 0xFF |  |
| MIN Processor Usage (0-100) | 1 | -1 / 0xFF |  |
| AVG Processor Usage (0-100) | 1 | -1 / 0xFF |  |
| MAX Memory Usage (0-100) | 1 | -1 / 0xFF |  |
| MIN Memory Usage (0-100) | 1 | -1 / 0xFF |  |
| AVG Memory Usage (0-100) | 1 | -1 / 0xFF |  |
| Device Temperature | 1 | 127 / 0x7F |  |
| Battery Temperature | 1 | 127 / 0x7F |  |

3G Handover Info

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| Unique ID | 8 | -------------------- | **Depend on Header** |
| Location (Longitude) \* 10000 | 4 | -1 / 0xFF | **Depend on Header** |
| Location (Latitude) \* 10000 | 4 | -1 / 0xFF | **Depend on Header** |
| Original Cell ID | 2 | -1 / 0xFF |  |
| Original Cell RSSI | 1 | 127 / 0x7F |  |
| Org Neighboring Cell Count | 1 | -1 / 0xFF |  |
| Org Neighboring Cell ID | 2 | -1 / 0xFF | No Data if count is 0,-1 |
| Org Neighboring Cell MCC | 2 | -1 / 0xFF | No Data if count is 0,-1 |
| Org Neighboring Cell MNC Length | 1 | -1 / 0xFF | No Data if count is 0,-1 |
| Org Neighboring Cell MNC | Variable | -------------------- | No Data if length is -1 |
| Org Neighboring Cell LAC | 2 | -1 / 0xFF | No Data if count is 0,-1 |
| Org Neighboring Cell RSSI | 1 | 127 / 0x7F | No Data if count is 0,-1 |
| Org Neighboring Cell RSCP | 1 | 127 / 0x7F | No Data if count is 0,-1 |
| Destination Cell ID | 2 | -1 / 0xFF |  |

3G IP Changing Info

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| Unique ID | 8 | -------------------- | **Depend on Header** |
| Original Device IP Length | 1 | -1 / 0xFF |  |
| Original Device IP | **4 or 16** | -------------------- | No Data if length is -1 |
| Destination Device IP Length | 1 | -1 / 0xFF |  |
| Destination Device IP | **4 or 16** | -------------------- | No Data if length is -1 |

3G Network Performance Info

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| Unique ID | 8 | -------------------- | **Depend on Header** |
| Location (Longitude) \* 10000 | 4 | -1 / 0xFF | **Depend on Header** |
| Location (Latitude) \* 10000 | 4 | -1 / 0xFF | **Depend on Header** |
| Device IP Length | 1 | -1 / 0xFF |  |
| Device IP | **4 or 16** | -------------------- | No Data if length is -1 |
| Working Mode | 1 | -1 / 0xFF |  |
| Current Cell ID | 2 | -1 / 0xFF |  |
| UL UARFCN | 2 | -1 / 0xFF |  |
| DL UARFCN | 2 | -1 / 0xFF |  |
| Channel Bandwidth | 1 | -1 / 0xFF |  |
| MAX RSSI | 1 | 127 / 0x7F |  |
| MIN RSSI | 1 | 127 / 0x7F |  |
| AVG RSSI | 1 | 127 / 0x7F |  |
| RSSI StdDev Below \* 100 | 2 | -1 / 0xFF |  |
| RSSI StdDev Above \* 100 | 2 | -1 / 0xFF |  |
| MAX RSCP | 1 | 127 / 0x7F |  |
| MIN RSCP | 1 | 127 / 0x7F |  |
| AVG RSCP | 1 | 127 / 0x7F |  |
| RSCP StdDev Below \* 100 | 2 | -1 / 0xFF |  |
| RSCP StdDev Above \* 100 | 2 | -1 / 0xFF |  |
| MAX CQI | 1 | -1 / 0xFF |  |
| MIN CQI | 1 | -1 / 0xFF |  |
| AVG CQI | 1 | -1 / 0xFF |  |
| CQI StdDev Below \* 100 | 2 | -1 / 0xFF |  |
| CQI StdDev Above \* 100 | 2 | -1 / 0xFF |  |
| Uplink MCS Count (QPSK) | 1 | -1 / 0xFF |  |
| Uplink MCS Count (16QAM) | 1 | -1 / 0xFF |  |
| Uplink MCS Count (64QAM) | 1 | -1 / 0xFF |  |
| Downlink MCS Count (QPSK) | 1 | -1 / 0xFF |  |
| Downlink MCS Count (16QAM) | 1 | -1 / 0xFF |  |
| Downlink MCS Count (64QAM) | 1 | -1 / 0xFF |  |
| MAX Uplink TP in KB/s | 2 | -1 / 0xFF |  |
| MIN Uplink TP in KB/s | 2 | -1 / 0xFF |  |
| AVG Uplink TP in KB/s | 2 | -1 / 0xFF |  |
| StdDev Below Uplink TP in KB/s | 2 | -1 / 0xFF | **Keep original value** |
| StdDev Above Uplink TP in KB/s | 2 | -1 / 0xFF | **Keep original value** |
| MAX Downlink TP in KB/s | 2 | -1 / 0xFF |  |
| MIN Downlink TP in KB/s | 2 | -1 / 0xFF |  |
| AVG Downlink TP in KB/s | 2 | -1 / 0xFF |  |
| StdDev Below Downlink TP in KB/s | 2 | -1 / 0xFF | **Keep original value** |
| StdDev Above Downlink TP in KB/s | 2 | -1 / 0xFF | **Keep original value** |
| Tx Packet Count | 2 | -1 / 0xFF |  |
| Rx Packet Count | 2 | -1 / 0xFF |  |
| Tx Packet Error Rate (0-100) | 1 | -1 / 0xFF |  |
| Rx Packet Error Rate (0-100) | 1 | -1 / 0xFF |  |
| Tx Frame Count | 2 | -1 / 0xFF |  |
| Rx Frame Count | 2 | -1 / 0xFF |  |
| Tx Frame Error Rate (0-100) | 1 | -1 / 0xFF |  |
| Rx Frame Error Rate (0-100) | 1 | -1 / 0xFF |  |
| Handover Success Count | 1 | -1 / 0xFF |  |
| Handover Failure Count | 1 | -1 / 0xFF |  |
| AVG Handover Latency | 2 | -1 / 0xFF |  |
| Tx Power | 1 | 127 / 0x7F |  |
| Device Temperature | 1 | 127 / 0x7F |  |
| Battery Temperature | 1 | 127 / 0x7F |  |
| Battery Level (0-100) | 1 | -1 / 0xFF |  |
| AVG Processor Usage (0-100) | 1 | -1 / 0xFF |  |
| AVG Memory Usage (0-100) | 2 | -1 / 0xFF |  |
| Report Interval | 1 | -------------------- | **Should not be empty** |
| Report Latency | 1 | -------------------- | **Should not be empty** |

1. WiMAX Packet Format

WiMAX Device Info

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| Unique ID | 8 | -------------------- | **Depend on Header** |
| WiMAX Supported Frequency List | 1 | -1 / 0xFF |  |

WiMAX Connecting History Info

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| RSSI | 1 | 127 / 0x7F |  |
| CINR\_R3 | 1 | 127 / 0x7F |  |
| CINR\_R1 | 1 | 127 / 0x7F |  |

WiMAX Network Entry Info

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| Unique ID | 8 | -------------------- | **Depend on Header** |
| Location (Longitude) \* 10000 | 4 | -------------------- | **Depend on Header** |
| Location (Latitude) \* 10000 | 4 | -------------------- | **Depend on Header** |
| Device IP Length | 1 | -1 / 0xFF |  |
| Device IP | **4 or 16** | -------------------- | No Data if length is -1 |
| Current Cell(BS) ID | 6 | -1 / 0xFF |  |
| Network Entry Latency | 2 | -1 / 0xFF |  |
| Connected Time | 20 | -1 / 0xFF |  |
| Disconnect Reason | 1 | -1 / 0xFF |  |
| Neighboring Cell(BS) Count | 1 | -1 / 0xFF |  |
| Neighboring Cell(BS) ID | 6 | -1 / 0xFF | No Data if count is 0,-1 |
| Neighboring Cell(BS) RSSI | 1 | 127 / 0x7F | No Data if count is 0,-1 |
| Neighboring Cell(BS) CINR\_R3 | 1 | 127 / 0x7F | No Data if count is 0,-1 |
| Neighboring Cell(BS) CINR\_R1 | 1 | 127 / 0x7F | No Data if count is 0,-1 |
| Service-Flow Max Speed | 2 | -1 / 0xFF |  |

WiMAX System Alert Info

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| Unique ID | 8 | -------------------- | **Depend on Header** |
| Location (Longitude) \* 10000 | 4 | -------------------- | **Depend on Header** |
| Location (Latitude) \* 10000 | 4 | -------------------- | **Depend on Header** |
| System Alert (Type/Level) Combination | 1 | -------------------- | **Should not be empty** |
| MAX Processor Usage (0-100) | 1 | -1 / 0xFF |  |
| MIN Processor Usage (0-100) | 1 | -1 / 0xFF |  |
| AVG Processor Usage (0-100) | 1 | -1 / 0xFF |  |
| MAX Memory Usage (0-100) | 1 | -1 / 0xFF |  |
| MIN Memory Usage (0-100) | 1 | -1 / 0xFF |  |
| AVG Memory Usage (0-100) | 1 | -1 / 0xFF |  |
| Device Temperature | 1 | 127 / 0x7F |  |
| Battery Temperature | 1 | 127 / 0x7F |  |

WiMAX Handover Info

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| Unique ID | 8 | -------------------- | **Depend on Header** |
| Location (Longitude) \* 10000 | 4 | -1 / 0xFF | **Depend on Header** |
| Location (Latitude) \* 10000 | 4 | -1 / 0xFF | **Depend on Header** |
| Original Cell(BS) ID | 6 | -1 / 0xFF |  |
| Original Cell(BS) RSSI | 1 | 127 / 0x7F |  |
| Org Neighboring Cell(BS) Count | 1 | -1 / 0xFF |  |
| Org Neighboring Cell(BS) ID | 6 | -1 / 0xFF | No Data if count is 0,-1 |
| Org Neighboring Cell(BS) RSSI | 1 | 127 / 0x7F | No Data if count is 0,-1 |
| Org Neighboring Cell(BS) CINR\_R3 | 1 | 127 / 0x7F | No Data if count is 0,-1 |
| Org Neighboring Cell(BS) CINR\_R1 | 1 | 127 / 0x7F | No Data if count is 0,-1 |
| Destination Cell(BS) ID | 6 | -1 / 0xFF |  |

WiMAX IP Changing Info

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| Unique ID | 8 | -------------------- | **Depend on Header** |
| Original Device IP Length | 1 | -1 / 0xFF |  |
| Original Device IP | **4 or 16** | -------------------- | No Data if length is -1 |
| Destination Device IP Length | 1 | -1 / 0xFF |  |
| Destination Device IP | **4 or 16** | -------------------- | No Data if length is -1 |

WiMAX Network Performance Info

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| Unique ID | 8 | -------------------- | **Depend on Header** |
| Location (Longitude) \* 10000 | 4 | -1 / 0xFF | **Depend on Header** |
| Location (Latitude) \* 10000 | 4 | -1 / 0xFF | **Depend on Header** |
| Device IP Length | 1 | -1 / 0xFF |  |
| Device IP | **4 or 16** | -------------------- | No Data if length is -1 |
| Current Cell(BS) ID | 6 | -1 / 0xFF |  |
| Frequency in (KHz / 100) | 2 | -1 / 0xFF |  |
| Bandwidth in KHz | 2 | -1 / 0xFF |  |
| MAX RSSI | 1 | 127 / 0x7F |  |
| MIN RSSI | 1 | 127 / 0x7F |  |
| AVG RSSI | 1 | 127 / 0x7F |  |
| RSSI StdDev Below \* 100 | 2 | -1 / 0xFF |  |
| RSSI StdDev Above \* 100 | 2 | -1 / 0xFF |  |
| MAX CINR\_R3 | 1 | 127 / 0x7F |  |
| MIN CINR\_R3 | 1 | 127 / 0x7F |  |
| AVG CINR\_R3 | 1 | 127 / 0x7F |  |
| CINR\_R3 StdDev Below \* 100 | 2 | -1 / 0xFF |  |
| CINR\_R3 StdDev Above \* 100 | 2 | -1 / 0xFF |  |
| MAX CINR\_R1 | 1 | 127 / 0x7F |  |
| MIN CINR\_R1 | 1 | 127 / 0x7F |  |
| AVG CINR\_R1 | 1 | 127 / 0x7F |  |
| CINR\_R1 StdDev Below \* 100 | 2 | -1 / 0xFF |  |
| CINR\_R1 StdDev Above \* 100 | 2 | -1 / 0xFF |  |
| Uplink MCS Count (QPSK) | 1 | -1 / 0xFF |  |
| Uplink MCS Count (16QAM) | 1 | -1 / 0xFF |  |
| Uplink MCS Count (64QAM) | 1 | -1 / 0xFF |  |
| Downlink MCS Count (QPSK) | 1 | -1 / 0xFF |  |
| Downlink MCS Count (16QAM) | 1 | -1 / 0xFF |  |
| Downlink MCS Count (64QAM) | 1 | -1 / 0xFF |  |
| MAX Uplink TP in KB/s | 2 | -1 / 0xFF |  |
| MIN Uplink TP in KB/s | 2 | -1 / 0xFF |  |
| AVG Uplink TP in KB/s | 2 | -1 / 0xFF |  |
| StdDev Below Uplink TP in KB/s | 2 | -1 / 0xFF | **Keep original value** |
| StdDev Above Uplink TP in KB/s | 2 | -1 / 0xFF | **Keep original value** |
| MAX Downlink TP in KB/s | 2 | -1 / 0xFF |  |
| MIN Downlink TP in KB/s | 2 | -1 / 0xFF |  |
| AVG Downlink TP in KB/s | 2 | -1 / 0xFF |  |
| StdDev Below Downlink TP in KB/s | 2 | -1 / 0xFF | **Keep original value** |
| StdDev Above Downlink TP in KB/s | 2 | -1 / 0xFF | **Keep original value** |
| Tx Packet Count | 2 | -1 / 0xFF |  |
| Rx Packet Count | 2 | -1 / 0xFF |  |
| Tx Packet Error Rate (0-100) | 1 | -1 / 0xFF |  |
| Rx Packet Error Rate (0-100) | 1 | -1 / 0xFF |  |
| Tx Frame Count | 2 | -1 / 0xFF |  |
| Rx Frame Count | 2 | -1 / 0xFF |  |
| Tx Frame Error Rate (0-100) | 1 | -1 / 0xFF |  |
| Rx Frame Error Rate (0-100) | 1 | -1 / 0xFF |  |
| Handover Success Count | 1 | -1 / 0xFF |  |
| Handover Failure Count | 1 | -1 / 0xFF |  |
| AVG Handover Latency | 2 | -1 / 0xFF |  |
| Tx Power | 1 | 127 / 0x7F |  |
| Device Temperature | 1 | 127 / 0x7F |  |
| Battery Temperature | 1 | 127 / 0x7F |  |
| Battery Level (0-100) | 1 | -1 / 0xFF |  |
| AVG Processor Usage (0-100) | 1 | -1 / 0xFF |  |
| AVG Memory Usage (0-100) | 1 | -1 / 0xFF |  |
| Report Interval | 1 | -------------------- | **Should not be empty** |
| Report Latency | 2 | -------------------- | **Should not be empty** |

1. LTE Packet Format

LTE Device Info

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| Unique ID | 8 | -------------------- | **Depend on Header** |
| LTE Supported Frequency List | 6 | -1 / 0xFF | 44 Band |

LTE Connecting History Info

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| RSSI | 1 | 127 / 0x7F |  |
| RSRP | 1 | 127 / 0x7F |  |
| RSRQ | 1 | 127 / 0x7F |  |

LTE Network Entry Info

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| Unique ID | 8 | -------------------- | **Depend on Header** |
| Location (Longitude) \* 10000 | 4 | -------------------- | **Depend on Header** |
| Location (Latitude) \* 10000 | 4 | -------------------- | **Depend on Header** |
| Device IP Length | 1 | -1 / 0xFF |  |
| Device IP | **4 or 16** | -------------------- | No Data if length is -1 |
| Current Cell ID | 2 | -1 / 0xFF |  |
| MCC | 2 | -1 / 0xFF |  |
| MNC Length | 1 | -1 / 0xFF |  |
| MNC | Variable | -------------------- | No Data if length is -1 |
| LAC | 2 | -1 / 0xFF |  |
| Network Entry Latency | 2 | -1 / 0xFF |  |
| Connected Time | 20 | -1 / 0xFF |  |
| Disconnect Reason | 1 | -1 / 0xFF |  |
| Neighboring Cell Count | 1 | -1 / 0xFF |  |
| Neighboring Cell ID | 2 | -1 / 0xFF | No Data if count is 0,-1 |
| Neighboring Cell MCC | 2 | -1 / 0xFF | No Data if count is 0,-1 |
| Neighboring Cell MNC Length | 1 | -1 / 0xFF | No Data if count is 0,-1 |
| Neighboring Cell MNC | Variable | -------------------- | No Data if length is -1 |
| Neighboring Cell LAC | 2 | -1 / 0xFF | No Data if count is 0,-1 |
| Neighboring Cell RSSI | 1 | 127 / 0x7F | No Data if count is 0,-1 |
| Neighboring Cell RSRP | 1 | 127 / 0x7F | No Data if count is 0,-1 |
| Neighboring Cell RSRQ | 1 | 127 / 0x7F | No Data if count is 0,-1 |
| Bearer-Flow Max Speed | 2 | -1 / 0xFF |  |

LTE System Alert Info

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| Unique ID | 8 | -------------------- | **Depend on Header** |
| Location (Longitude) \* 10000 | 4 | -------------------- | **Depend on Header** |
| Location (Latitude) \* 10000 | 4 | -------------------- | **Depend on Header** |
| System Alert (Type/Level) Combination | 1 | -------------------- | **Should not be empty** |
| MAX Processor Usage (0-100) | 1 | -1 / 0xFF |  |
| MIN Processor Usage (0-100) | 1 | -1 / 0xFF |  |
| AVG Processor Usage (0-100) | 1 | -1 / 0xFF |  |
| MAX Memory Usage (0-100) | 1 | -1 / 0xFF |  |
| MIN Memory Usage (0-100) | 1 | -1 / 0xFF |  |
| AVG Memory Usage (0-100) | 1 | -1 / 0xFF |  |
| Device Temperature | 1 | 127 / 0x7F |  |
| Battery Temperature | 1 | 127 / 0x7F |  |

LTE Handover Info

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| Unique ID | 8 | -------------------- | **Depend on Header** |
| Location (Longitude) \* 10000 | 4 | -------------------- | **Depend on Header** |
| Location (Latitude) \* 10000 | 4 | -------------------- | **Depend on Header** |
| Original Cell ID | 2 | -1 / 0xFF |  |
| Original Cell RSSI | 1 | 127 / 0x7F |  |
| Org Neighboring Cell Count | 1 | -1 / 0xFF |  |
| Org Neighboring Cell ID | 2 | -1 / 0xFF | No Data if count is 0,-1 |
| Org Neighboring Cell MCC | 2 | -1 / 0xFF | No Data if count is 0,-1 |
| Org Neighboring Cell MNC Length | 1 | -1 / 0xFF | No Data if count is 0,-1 |
| Org Neighboring Cell MNC | Variable | -------------------- | No Data if length is -1 |
| Org Neighboring Cell LAC | 2 | -1 / 0xFF | No Data if count is 0,-1 |
| Org Neighboring Cell RSSI | 1 | 127 / 0x7F | No Data if count is 0,-1 |
| Org Neighboring Cell RSRP | 1 | 127 / 0x7F | No Data if count is 0,-1 |
| Org Neighboring Cell RSRQ | 1 | 127 / 0x7F | No Data if count is 0,-1 |
| Destination Cell ID | 2 | -1 / 0xFF |  |

LTE IP Changing Info

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| Unique ID | 8 | -------------------- | **Depend on Header** |
| Original Device IP Length | 1 | -1 / 0xFF |  |
| Original Device IP | **4 or 16** | -------------------- | No Data if length is -1 |
| Destination Device IP Length | 1 | -1 / 0xFF |  |
| Destination Device IP | **4 or 16** | -------------------- | No Data if length is -1 |

LTE Network Performance Info

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| Unique ID | 8 | -------------------- | **Depend on Header** |
| Location (Longitude) \* 10000 | 4 | -1 / 0xFF | **Depend on Header** |
| Location (Latitude) \* 10000 | 4 | -1 / 0xFF | **Depend on Header** |
| Device IP Length | 1 | -1 / 0xFF |  |
| Device IP | **4 or 16** | -------------------- | No Data if length is -1 |
| Current Cell ID | 2 | -1 / 0xFF |  |
| UL EARFCN | 2 | -1 / 0xFF |  |
| DL EARFCN | 2 | -1 / 0xFF |  |
| Channel Bandwidth | 1 | -1 / 0xFF |  |
| MAX RSSI | 1 | 127 / 0x7F |  |
| MIN RSSI | 1 | 127 / 0x7F |  |
| AVG RSSI | 1 | 127 / 0x7F |  |
| RSSI StdDev Below \* 100 | 2 | -1 / 0xFF |  |
| RSSI StdDev Above \* 100 | 2 | -1 / 0xFF |  |
| MAX RSRP | 1 | 127 / 0x7F |  |
| MIN RSRP | 1 | 127 / 0x7F |  |
| AVG RSRP | 1 | 127 / 0x7F |  |
| RSRP StdDev Below \* 100 | 2 | -1 / 0xFF |  |
| RSRP StdDev Above \* 100 | 2 | -1 / 0xFF |  |
| MAX RSRQ | 1 | 127 / 0x7F |  |
| MIN RSRQ | 1 | 127 / 0x7F |  |
| AVG RSRQ | 1 | 127 / 0x7F |  |
| RSRQ StdDev Below \* 100 | 2 | -1 / 0xFF |  |
| RSRQ StdDev Above \* 100 | 2 | -1 / 0xFF |  |
| MAX CQI | 1 | -1 / 0xFF |  |
| MIN CQI | 1 | -1 / 0xFF |  |
| AVG CQI | 1 | -1 / 0xFF |  |
| CQI StdDev Below \* 100 | 2 | -1 / 0xFF |  |
| CQI StdDev Above \* 100 | 2 | -1 / 0xFF |  |
| Uplink MCS Count (QPSK) | 1 | -1 / 0xFF |  |
| Uplink MCS Count (16QAM) | 1 | -1 / 0xFF |  |
| Uplink MCS Count (64QAM) | 1 | -1 / 0xFF |  |
| Downlink MCS Count (QPSK) | 1 | -1 / 0xFF |  |
| Downlink MCS Count (16QAM) | 1 | -1 / 0xFF |  |
| Downlink MCS Count (64QAM) | 1 | -1 / 0xFF |  |
| MAX Uplink TP in KB/s | 2 | -1 / 0xFF |  |
| MIN Uplink TP in KB/s | 2 | -1 / 0xFF |  |
| AVG Uplink TP in KB/s | 2 | -1 / 0xFF |  |
| StdDev Below Uplink TP in KB/s | 2 | -1 / 0xFF | **Keep original value** |
| StdDev Above Uplink TP in KB/s | 2 | -1 / 0xFF | **Keep original value** |
| MAX Downlink TP in KB/s | 2 | -1 / 0xFF |  |
| MIN Downlink TP in KB/s | 2 | -1 / 0xFF |  |
| AVG Downlink TP in KB/s | 2 | -1 / 0xFF |  |
| StdDev Below Downlink TP in KB/s | 2 | -1 / 0xFF | **Keep original value** |
| StdDev Above Downlink TP in KB/s | 2 | -1 / 0xFF | **Keep original value** |
| Tx Packet Count | 2 | -1 / 0xFF |  |
| Rx Packet Count | 2 | -1 / 0xFF |  |
| Tx Packet Error Rate (0-100) | 1 | -1 / 0xFF |  |
| Rx Packet Error Rate (0-100) | 1 | -1 / 0xFF |  |
| Tx Frame Count | 2 | -1 / 0xFF |  |
| Rx Frame Count | 2 | -1 / 0xFF |  |
| Tx Frame Error Rate (0-100) | 1 | -1 / 0xFF |  |
| Rx Frame Error Rate (0-100) | 1 | -1 / 0xFF |  |
| Handover Success Count | 1 | -1 / 0xFF |  |
| Handover Failure Count | 1 | -1 / 0xFF |  |
| AVG Handover Latency | 2 | -1 / 0xFF |  |
| Tx Power | 1 | 127 / 0x7F |  |
| Device Temperature | 1 | 127 / 0x7F |  |
| Battery Temperature | 1 | 127 / 0x7F |  |
| Battery Level (0-100) | 1 | -1 / 0xFF |  |
| AVG Processor Usage (0-100) | 1 | -1 / 0xFF |  |
| AVG Memory Usage (0-100) | 1 | -1 / 0xFF |  |
| Report Interval | 1 | -------------------- | **Should not be empty** |
| Report Latency | 2 | -------------------- | **Should not be empty** |

1. VoIP Packet Format

VOIP Device Info

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| Unique ID | 8 | -------------------- | **Depend on Header** |
| Vendor Name Length | 1 | -1 / 0xFF |  |
| Vendor Name | Variable | -------------------- | No Data if length is -1 |
| Telephone Socket Count | 1 | -1 / 0xFF |  |

VOIP Call Info

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| Unique ID | 8 | -------------------- | **Depend on Header** |
| Telephone Socket Index | 1 | -1 / 0xFF |  |
| Call Type | 1 | -1 / 0xFF |  |
| Setup Time | 4 | -1 / 0xFF |  |
| Termination Time | 4 | -1 / 0xFF |  |
| Termination Reason | 1 | -1 / 0xFF |  |
| Codec | 1 | -1 / 0xFF |  |
| Remote IP Length | 1 | -1 / 0xFF |  |
| Remote IP | **4 or 16** | -------------------- | No Data if length is -1 |
| Remote Port | 2 | -------------------- | No Data if length is -1 |

VOIP Performance Info

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| Unique ID | 8 | -------------------- | **Depend on Header** |
| Telephone Socket Index | 1 | -1 / 0xFF |  |
| MAX Uplink TP in KB/s | 2 | -1 / 0xFF |  |
| MIN Uplink TP in KB/s | 2 | -1 / 0xFF |  |
| AVG Uplink TP in KB/s | 2 | -1 / 0xFF |  |
| StdDev Below Uplink TP in KB/s \* 100 | 2 | -1 / 0xFF |  |
| StdDev Above Uplink TP in KB/s \* 100 | 2 | -1 / 0xFF |  |
| MAX Downlink TP in KB/s | 2 | -1 / 0xFF |  |
| MIN Downlink TP in KB/s | 2 | -1 / 0xFF |  |
| AVG Downlink TP in KB/s | 2 | -1 / 0xFF |  |
| StdDev Below Downlink TP in KB/s \* 100 | 2 | -1 / 0xFF |  |
| StdDev Above Downlink TP in KB/s \* 100 | 2 | -1 / 0xFF |  |
| Tx Packet Count | 2 | -1 / 0xFF |  |
| Rx Packet Count | 2 | -1 / 0xFF |  |
| Tx Packet Error Rate (0-100) | 1 | -1 / 0xFF |  |
| Rx Packet Error Rate (0-100) | 1 | -1 / 0xFF |  |
| MAX TX Jitter | 2 | -1 / 0xFF |  |
| MIN TX Jitter | 2 | -1 / 0xFF |  |
| AVG TX Jitter | 2 | -1 / 0xFF |  |
| StdDev Below TX Jitter \* 100 | 2 | -1 / 0xFF |  |
| StdDev Above TX Jitter \* 100 | 2 | -1 / 0xFF |  |
| MAX RX Jitter | 2 | -1 / 0xFF |  |
| MIN RX Jitter | 2 | -1 / 0xFF |  |
| AVG RX Jitter | 2 | -1 / 0xFF |  |
| StdDev Below RX Jitter \* 100 | 2 | -1 / 0xFF |  |
| StdDev Above RX Jitter \* 100 | 2 | -1 / 0xFF |  |
| Report Interval | 1 | -------------------- | **Should not be empty** |
| Roundtrip Time | 2 | -------------------- | **Should not be empty** |

1. Ethernet Packet Format

Ethernet Performance Info

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Size | Invalid Value | Remark |
| [IPC Message Type] | 4 | -------------------- | **Should not be empty** |
| [IPC DC Type] | 4 | -------------------- | **Should not be empty** |
| [DIN Packet Role Type] | 1 | -------------------- | **Should not be empty** |
| [DIN Packet Message Type] | 1 | -------------------- | **Should not be empty** |
| Unique ID | 8 | -------------------- | **Depend on Header** |
| Active Client(Port) Count | 1 | -1 / 0xFF |  |
| Client(Port) Index | 1 | -1 / 0xFF | No Data if count is 0,-1 |
| Client(Port) Speed (10/100/1000) | 1 | -1 / 0xFF | No Data if count is 0,-1 |
| Use Dynamic Size by first 2 bits |  |  |  |
| **MAX Uplink TP in KB/s** | 2 | -1 / 0xFF | No Data if count is 0,-1 |
| **MIN Uplink TP in KB/s** | 2 | -1 / 0xFF | No Data if count is 0,-1 |
| **AVG Uplink TP in KB/s** | 2 | -1 / 0xFF | No Data if count is 0,-1 |
| **StdDev Below Uplink TP in KB/s** | 2 | -1 / 0xFF | **Keep original value** |
| **StdDev Above Uplink TP in KB/s** | 2 | -1 / 0xFF | **Keep original value** |
| Use Dynamic Size by first 2 bits |  |  |  |
| **MAX Downlink TP in KB/s** | 2 | -1 / 0xFF | No Data if count is 0,-1 |
| **MIN Downlink TP in KB/s** | 2 | -1 / 0xFF | No Data if count is 0,-1 |
| **AVG Downlink TP in KB/s** | 2 | -1 / 0xFF | No Data if count is 0,-1 |
| **StdDev Below Downlink TP in KB/s** | 2 | -1 / 0xFF | **Keep original value** |
| **StdDev Above Downlink TP in KB/s** | 2 | -1 / 0xFF | **Keep original value** |
| Tx Packet Count | 2 | -1 / 0xFF | No Data if count is 0,-1 |
| Rx Packet Count | 2 | -1 / 0xFF | No Data if count is 0,-1 |
| Tx Packet Error Rate (0-100) | 1 | -1 / 0xFF | No Data if count is 0,-1 |
| Rx Packet Error Rate (0-100) | 1 | -1 / 0xFF | No Data if count is 0,-1 |
| Tx Frame Count | 2 | -1 / 0xFF | No Data if count is 0,-1 |
| Rx Frame Count | 2 | -1 / 0xFF | No Data if count is 0,-1 |
| Tx Frame Error Rate (0-100) | 1 | -1 / 0xFF | No Data if count is 0,-1 |
| Rx Frame Error Rate (0-100) | 1 | -1 / 0xFF | No Data if count is 0,-1 |
| Report Interval | 1 | -------------------- | **Should not be empty** |