# Datalogger Message illustration

**MAC record the PP\_BATT\_VCC current profile in the test process. The ADC is 20-bits, the raw data will be sent to MAC, MAC calculate the result with calibration. ARM Board can record the time stamp and upload it to MAC. DUT can use trigger IO to let FPGA record a special time stamp. Calibration data for Data logger is stored in the EEPROM of Data Logger PCBA**

## Data format

* **ADC data frame length: 6 bytes**
* **Timestamp frame length: 7 bytes**

### Frame format for Datalogger



### Timestamp format

**UTC format, 32bits for second, 14bits for millisecond.**



UTC format : Time base is 1970-01-01T00:00:00Z.

|  |  |
| --- | --- |
| Time | Second |
| 1 min | 60 |
| 1 hour | 3600 |
| 1 day | 86400 |
| 1 week | 604800 |
| 1 month (30.44 day) | 2629743 |
| 1year (365.24 day) | 31556926 |

### First Byte Flag

**First Byte:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| BIT7 | BIT6 | BIT5 | BIT4 | BIT3 | BIT2 | BIT1 | BIT0 |
| A | B | X | X | X | X | X | X |

**BIT7: 1 -- This is first bytes for one frame.**

**0-- This is not the first byte for ADC data frame or timestamp.**

**BIT6: If BIT7 = 1, BIT6 =0 : This is the first byte for ADC.**

**If BIT7 = 1, BIT6 =1 : This is the first byte for timestamp. Timestamp is 7 Bytes.**

### Other Bytes for Data

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| BIT7 | BIT6 | BIT5 | BIT4 | BIT3 | BIT2 | BIT1 | BIT0 |
| A | Data | Data | Data | Data | Data | Data | Data |

**The first bit is used for differentiating first byte of one frame.**

## Example:

### ADC data example:

**Data frame: 8A 2B 5A 73 20 00。 The Sample data is A576B990h。**



### Timestamp example

**Timestamp frame:**

**C5, 2A, 7B, 45, 58, 01, 48,**



**Valid data: UTC field(binary format): 0101,0110,0010,0001,1011,1110,0110,0101**

**Millisecond field(binary format): 00,0001,0000,0001**

**Timestamp: 2015/10/17 11:20:05 257ms**