EEG Data Format

Tag Conut Tag 1 ID Tag 1 len Tag 1 content Tag 2 ID Tag 2 len Tag 2 content Tag n	1 Byte	1 Byte	1 Byte	content Len	1 Byte	1 Byte	content len	
	Tag Conut	Tag 1 ID	Tag 1 len	Tag 1 content	Tag 2 ID	Tag 2 len	Tag 2 content	Tag n

COBS(Consist Overhead Byte Stuff)

Package Serial Number:

 $Tag\ ID = 1$

Tag Length = 4

Data Type = unsigned 32 bit

4 byte

Serial Number

Auxiliary Data:

Tag ID = 2

Tag Length = 24

Data Type = signed 24 bit

| 3 Byte |
|--------|--------|--------|--------|--------|--------|--------|--------|
| Ch 1 | Ch 2 | Ch 3 | Ch 4 | Ch 5 | Ch 6 | Ch 7 | Ch 8 |

EEG Data:

Tag ID = 3

Tag Length = 192

Data Type = signed 24 bit

3 Byte	3 * N Byte	3 Byte						
Ch 1	Ch 2	Ch 3	Ch 4	Ch 5	Ch 6	Ch 7	Ch N	Ch 64

G-Sensor Data:

Tag ID = 4

Tag Length = 6

Data Type = signed 16 bit

| 2 Byte |
|--------|--------|--------|--------|--------|--------|
| Gyro X | Gyro Y | Gyro Z | Acc X | Acc Y | Acc Z |

Gyroscope: $^{\circ}/S$ = raw value / 262.4 (Full Range = $\pm 125 ^{\circ}/S$) Accelerometer: G = raw value / 16384 (Full Range = $\pm 2 G$)

SYNCTICK:

Tag ID = 10

Tag Length = 4

Data Type = unsigned 32 bit

4 byte

Serial Number

Battery Power:

Tag ID = 6

Tag Length = 1

Data Type = unsigned 8 bit

1 Byte

Battery Power

0-100 : Battery percentage 120 : Battery Charging

Event:

Tag ID = 7

Tag Length = 1

Data Type = unsigned 8 bit

1 Byte

Event

Connection Status:

Tag ID = 9

Tag Length = 1

Data Type = char

1 Byte

Status

Status = 0 : BLE Disconnected Status = 1 : BLE connected

Command:

Tag ID = 8 Tag Length = 1+N

1 Byte	N Byte
Type	Commend content

Command Type :

Туре	Length	Description
0x01	0	ADC scan ON
0x02	0	ADC scan OFF
0x03	0	Impedance measure ON and switch to AC mode
0x04	0	Impedance measure ON and switch to DC mode
0x05	0	Impedance measure OFF
0x11	0	Read Synctick
0x12	0	Get Connection status

Example (with COBS):

- ADC scan ON: 0x05, 0x01, 0x08, 0x02, 0x01, 0x01, 0x00
- ADC scan OFF: 0x05, 0x01, 0x08, 0x02, 0x02, 0x01, 0x00

```
7.8Hz
ac_amp = fft_result[freq_idx]/(fft_points/2)
ac_imp = (5*(10^(-11))*(ac_amp^4) - (10^(-6))*(ac_amp^3)
+ 0.0129*(ac_amp^2) + 129.73*ac_amp + 5520.2)*0.001
```