



Communication Protocol

Name of protocol: Finger-clamping Spot Measurement Communication Protocol

Edition	Date	Modification Information
V1.0.0	20150427	Initial edition, applicable for the Bluetooth finger-clamping OX100, OX200, C208

Organizer			
Collator			
Reviewer			
Approved			

## I. Introduction

1. If there are no special illustrations, all the data involved in the protocol refer to unsigned integral data.
2. Definition of terminology:

Host: it specially refers to the terminal equipment with Bluetooth 4.0 communication functions, for instance, mobile phone, tablet, etc. Currently, it supports two operating systems, including Android (system 4.3 or superior) and IOS (IOS 7 or superior)

Client: it specially refers to the wireless product abiding by the protocol, including the finger pedometer, wristband, etc.

Little endian: in this protocol, it specially refers to the data arrangement mode in which the low byte is in the front and high byte is in the rear, in the transmission of single multi-byte data, for instance:

Data transmission: transfer decimal data 67305985, and the corresponding hexadecimal data is 0x04030201, it shall be combined in Little endian 0x01020304 for transmission.

Data acceptance: the receiving end receives a 4-byte data, 0x05060708, it shall be re-combined in Little endian as 0x08070605, and the data received is 0x08070605 = 134678021 (decimal system)

## II. BLE 4.0 property

The client Bluetooth offers the following Services and Characteristics for application

0xCD20 is the Characteristic UUID for the host to send data to the client; 0xCD01, 0xCD02, 0xCD03 and 0xCD04 are the Characteristic UUID for the client to send data to the host (refer to note 1)

Device Name	iChoice	
UUID	0xBA11F08C5F140B0D 108000XXXXXXXXXX	Services (refer to note 2)
UUID	0xCD20	Characteristics Write
UUID	0xCD01	Characteristics Notify
UUID	0xCD02	Characteristics Notify
UUID	0xCD03	Characteristics Notify
UUID	0xCD04	Characteristics Notify

### Note 1:

**CD04 is the channel for the client to send real-time data to the host**

**CD01, CD02 and CD03 is the channel for the client to response to the command of host for sending the data, and the following rules are applied: each channel can transmit at most 20 bytes of data each time. When the received data is less than 20 bytes, the data shall be transmitted through CD01; when it is over 20 bytes and less than 40 bytes, the exceeding part shall be transmitted through CD02; when it is over 40 bytes but less than 60 bytes, the exceeded part shall be transmitted through CD03. The host shall conduct the polling for the above mentioned channel according to the 1-2-3-1-2-3 sequence.**

**Note 2:**

Number of byte	Contents (hex system)	Description	Remark
#1-#9	0xBA11F08C5F140B0D10	None	
#10	0x80	Type of equipment	<b>Finger-clamping SpO2 spot measurement equipment OX100,OX200,C208</b>
#11	0x00	Broadcasting mark	
#12-#16	0XXXXXXXXXXXXX	Bluetooth MAC address	

## III. Protocol format

- Two types of equipment are involved in the protocol: host and client
- Packet composition:

Packet header: it stands for the start of a complete command, occupying two bytes

Data length: it stands for the subsequent effective instruction data bytes, occupying one byte

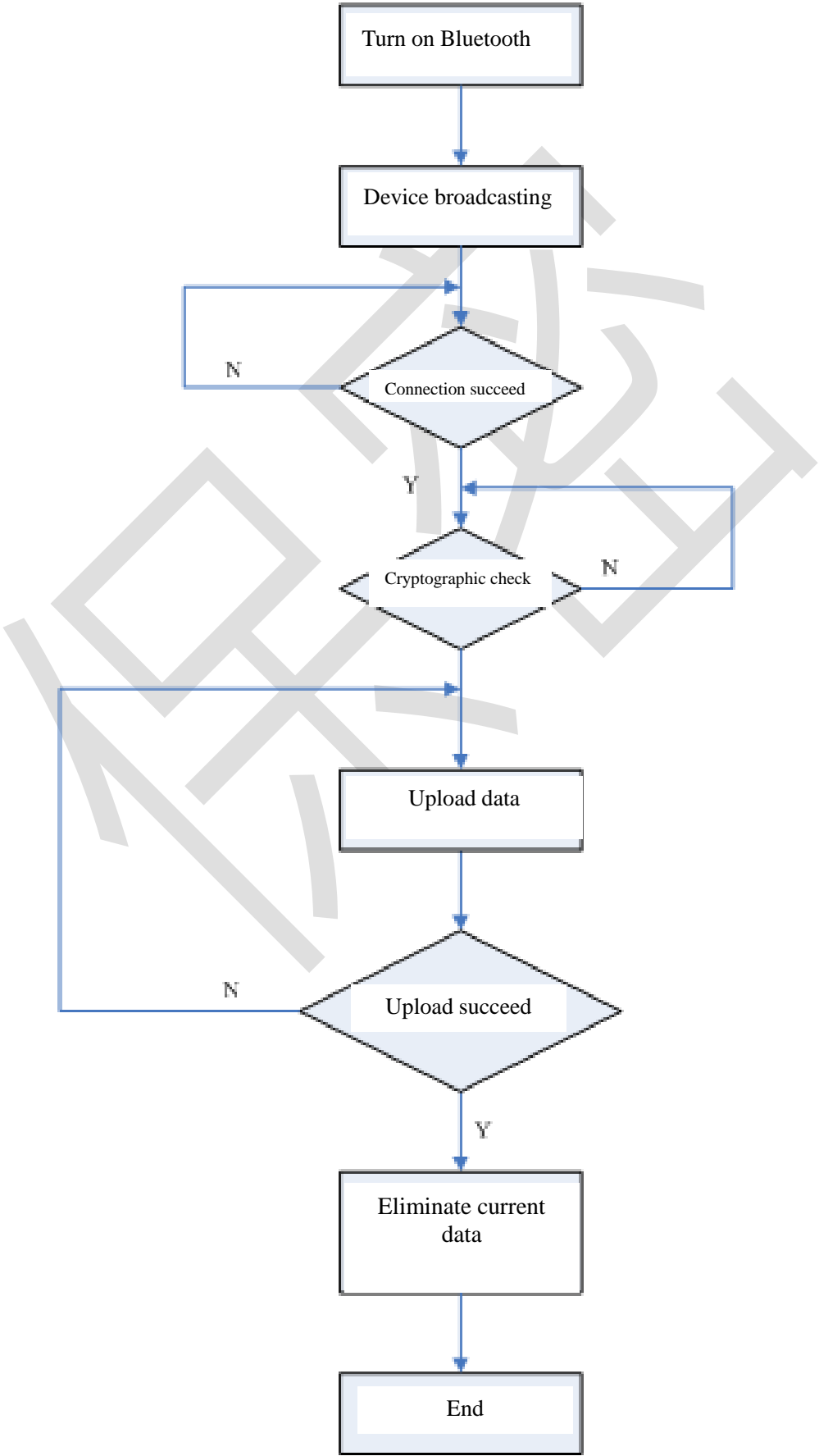
Command: it stands for the name of instruction, occupying one byte

Parameter: parameters transmitted by the instruction, with uncertain length

Checksum: the sum of all bytes in an integral instruction, excluding the Packet header, occupying one byte

## IV. Connection description

When connections are established between the host and client, it shall send pairing code to the client (0xB1 instruction), the default code is of fixed value 0x00, 0x00, when the cryptographic check instruction is released, the client will return the information of success or failure After the client finishes measuring, it will upload the measurement result initiatively.



# Communication Protocol

Document No.: BD-RJ-03B

NO.: \_\_\_\_\_

## V. Communication instruction set

Host instruction table					
Serial number	Instruction	Parameter	Functional description	Response	Remark
1	0xB1	Pairing code	Cryptographic check	Yes	
2	0xC0	None	Acquire the ID of client	Yes	

Client instruction table					
Serial number	Instruction	Parameter	Functional description	Response	Remark
1	0xB1	Pairing result	Respond to the instruction of the cryptographic check	None	
2	0xA0	ID of client	Respond to acquire ID instruction	None	
3	None	Measuring result	Automatic uploading of measuring result	None	

### 1. Cryptographic check

Instruction of host

Number of byte	Contents (hex system)	Description	Remark
#1-#2	0xAA 0x55	Packet header	
#3	0x04	Data length	
#4	0xB1	Request cryptographic check	
#5	0x00	Code to be checked	
#6	0x00	Code to be checked	
#7	0xB5	Checksum	

Response of client:

Number of byte	Contents (hex system)	Description	Remark
#1-#2	0x55 0xAA	Packet header	
#3	0x03	Data length	
#4	0xB1	Respond to the verification result	
#5	0XX	Result of cryptographic check	0x00 correct code 0x01 wrong code
#6	0XX	Checksum	

Document No.: BD-RJ-03B

NO.: \_\_\_\_\_

## 2. Acquire ID of equipment

Instruction of host

Number of byte	Contents (hex system)	Description	Remark
#1-#2	0xAA 0x55	Packet header	
#3	0x02	Data length	
#4	0xC0	Acquire ID	
#5	0xC2	Checksum	

Response of client:

Number of byte	Contents (hex system)	Description	Remark
#1-#2	0x55 0xAA	Packet header	
#3	0x07	Data length	
#4	0xA0	Send ID	
#5-#10	0xFF	#5: Device type #6: reserve #7-#10: Product serial number	<b>Equipment type: 0x80</b> <b>#7-#10 arrange according to the Little endian, and form a 32-bit product serial number</b>
#11	0xFF	Checksum	

## 3. Automatic uploading of measurement data

When the host is connected to the client, after successful pairing, the client may send the current measurement data to the host through 0xCD04 channel.

Instruction of the client:

Number of byte	Contents (hex system)	Description	Remark
#1-#2	0x55 0xAA	Packet header	
#3	0x03	Data length	
#4	0xFF	SpO2	<b>Unit: 1%</b>
#5	0xFF	Pulse rate:	<b>Unit: bpm</b>
#6	0xFF	Checksum	