

Telink

825X BLE Multiple Connection

SDK M4S3&M1S1 Demo Quick Start User Guide

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Brief

This document gives demo for Telink Kite BLE Multi-connection M4S3 and M1S1.

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Bldg 3, 1500 Zuchongzhi Rd,
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Information

For further information on the technology, product and business term, please contact Telink Semiconductor Company (www.telink-semi.com).

For sales or technical support, please send email to the address of:

telinkcnsales@telink-semi.com

telinkcnsupport@telink-semi.com

Revision History

Version	Change Description
V1.0.0	Initial release.

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1. Introduction

1.1 Related SDK

Multi-connection SDK: telink_kite_ble_multi_connection_sdk

Peer Master SDK: telink_kite_ble_sdk_v3.4.0(need to replace Appendix1 8258_master_kma_dongle under vendor)

Peer Slave SDK: telink_kite_ble_sdk_v3.4.0(need to replace Appendix2 8258_ble_sample under vendor)

1.2 Related Hardware

Multi-connection Device: TLSR8258DK48_EVK(C1T139A30_V1.2)

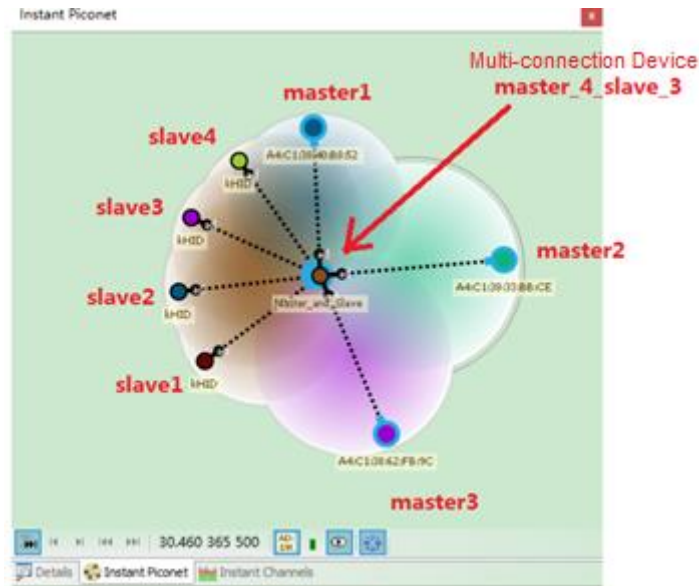
Peer Master Device: TLSR8258DK48_Dongle(C1T139A3_V2_0A), mobile, Pad and etc.

Peer Slave Device: TLSR8258DK48_Dongle(C1T139A3_V2_0A), TLSR8258DK48_RCU(C1T139A5_V1_4), TLSR8258DK48_EVK(C1T139A30_V1.2)

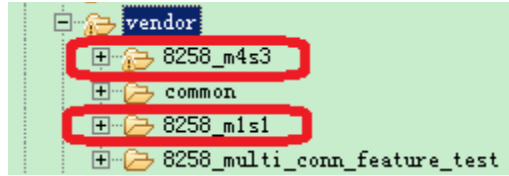
1.3 Application

The multi-connection device can be connected to the peer slave device as the master role and the peer master device as the slave role at the same time. The connection topology is shown in Figure below.

Figure 1-1 Multi-connection Topology



The Multi-connection SDK provides 2 demo examples, 8258_m4s3 and 8258_m1s1.



1.3.1 M4S3 Application

The 8258_m4s3 hardware uses the EVK board, which can connect up to 4 Slaves and can be connected by up to 3 Masters at the same time. The multi-connection device does not provide standard SDP (service discovery) when it is the Master role, only a simple reference SDP is given. The connected 4 Slaves can be Dongle / RCU / EVK, and the connected 3 Masters can be Dongle/Mobile/Pad.

Because it is a Multi-Master application, low power manage is not supported. But it supports the USB function, by opening the macro definition "APPLICATION_DONGLE" the user can output the keyboard key or media key reported by the peer Slave through the USB HID function, if the user opens the macro definition "UI_AUDIO_ENABLE", the ADPCM Voice data reported by the peer Slave_RCU can be passed through USB output.

Figure 1-2 M4S3 Multi-connection Diagram

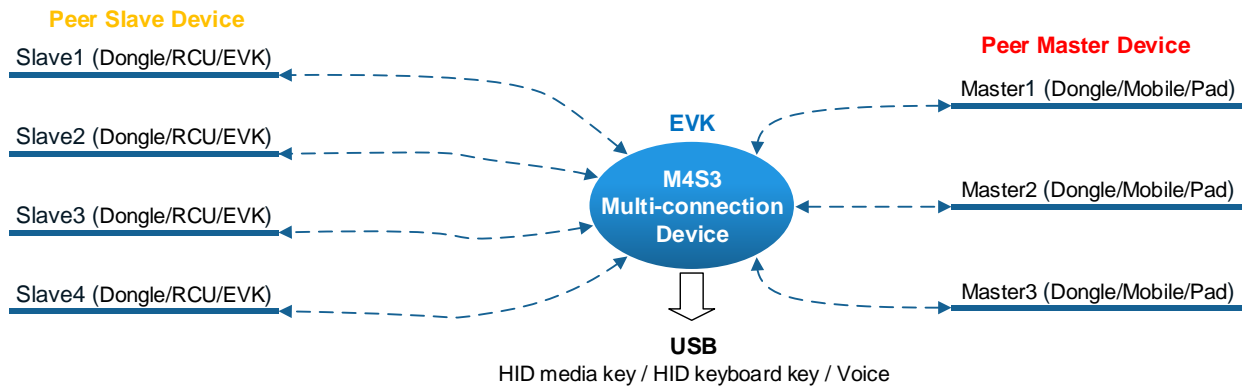
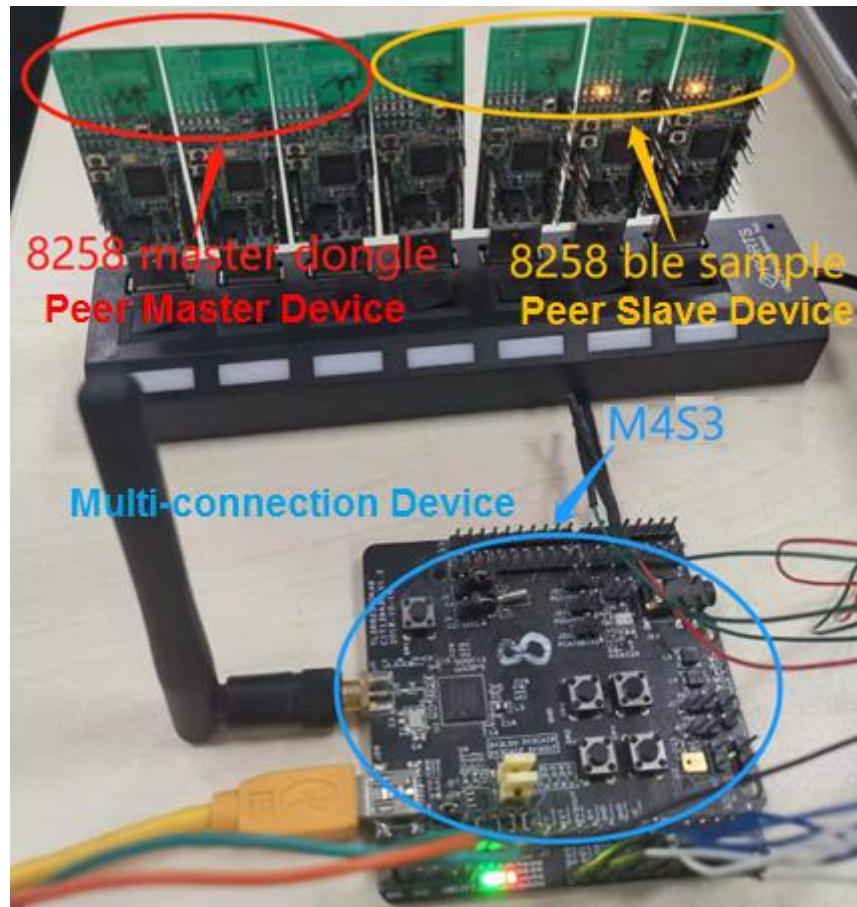


Figure 1-3 M4S3 Multi-connection Devices


Operation Instruction

1. Multi-connection Device (EVK board)

Step 1 Power source input from J18, 'B_D2' and 'G_D3' of J38 are connected with jumper cap, if the user need USB function, J27 and J28 should also be connected with jumper cap. The advertising name is 'TLK_M4S3'.

Step 2 Define 4 functional keys

- SW4 is the scan key. After searching for a nearby Slave device, it will automatically connect to the device. After the connection is successful, you need to press it again if you want to continue scanning for new devices.
- SW5 is the clear pairing key. Pressing it once will unpair a slave device. After unbinding successfully, you need to press it again if you want to continue unbinding the remaining devices.

- SW2 is the key for sending HID volume up to all current peer master devices.
- SW3 is the key for sending HID volume down to all current peer master devices.

Step 3 Define 2 functional LED lights

- D1 is blue light. When the peer slave device sends the key value of HID volume down, the state of the blue light changes once.
- D2 is green light. When the peer slave device sends the key value of HID volume up, the state of the blue light changes once.

Step 4 If you use USB HID media key and keyboard key, open the macro definition 'APPLICATION_DONGLE' and connect the multi-connection device to the computer via a USB cable.

- When the peer slave device sends HID media key, the computer will respond to media input (volume up/down).
- When the peer Slave_RCU device send HID keyboard key, the computer will respond to keyboard input (number keys).

Step 5 If you use USB Voice, open the macro definitions 'APPLICATION_DONGLE' and 'UI_AUDIO_ENABLE' and the multi-connection device is connected to the computer via a USB cable, and the computer opens the sound editing software 'Audacity'.

- When the peer Slave_RCU device turns on the voice function and sends ADPCM Voice data, 'Audacity' will record the Voice waveform.

2. Peer Master Device(Dongle Board)

Step 1 The program uses 8258_master_kma_dongle in Appendix 1. The default connection interval is 31.25ms, the user can modify the connection interval value at Flash 0x70000, such as 8 (10ms), 15 (18.75ms), 20 (25ms).

Step 2 Define 2 functional keys

- SW2 is the scan key, and it will automatically connect to the nearby multi-connection device after searching.
- SW1 is the clear pairing key, pressing it once will unpair the multi-connection device.

Pay attention to avoid connecting the peer slave to the peer master by mistake.

Step 3 Define 4 functional LED lights

- D2 is a red light, and the red light is on when it is connected.
- D5 is a white light, and the white light is on when the connection is disconnected.
- D4 is a blue light. When the connected multi-connection device sends the key value of HID volume up, the blue light status changes once.
- D1 is a green light. When the connected multi-connection device sends the key value of HID volume down, the green light status changes once.

3. Peer Master Device (Mobile, Pad and etc.)

- After the mobile phone or pad is connected to the multi-connection device and the pairing is successful, if the multi-connection device sends the HID volume up/down key value, the phone or pad will adjust the volume change.

4. Peer Slave Device (Dongle Board)

Step 1 The program uses 8258_ble_sample in Appendix 2 and is configured as Dongle board.

```
#define SAMPLE_BOARD_SELECT DONGLE_C1T139A3_V2P0A
```

Step 2 Define 2 functional keys

- SW2 is the key for sending HID volume up to the current multi-connection device.
- SW1 is the key for sending HID volume down to the current multi-connection device.

Step 3 Define 1 functional LED light

- D3 is a yellow light. When the multi-connection device is successfully connected, the yellow light is on, and the yellow light is off when the connection is disconnected.

5. Peer Slave Device (RCU Board)

Step 1 The program uses the default 8258_ble_remote of telink_kite_ble_sdk_v3.4.0.**Step 2** You can send HID media key and keyboard key to the current multi-connection device, and you can also send ADPCM Voice data.

6. Peer Slave Device (EVK Board)

Step 1 The program uses 8258_ble_sample in Appendix 2 and is configured as an EVK board.

```
#define SAMPLE_BOARD_SELECT EVK_C1T139A30_V1P2
```

Step 2 Define 4 functional keys

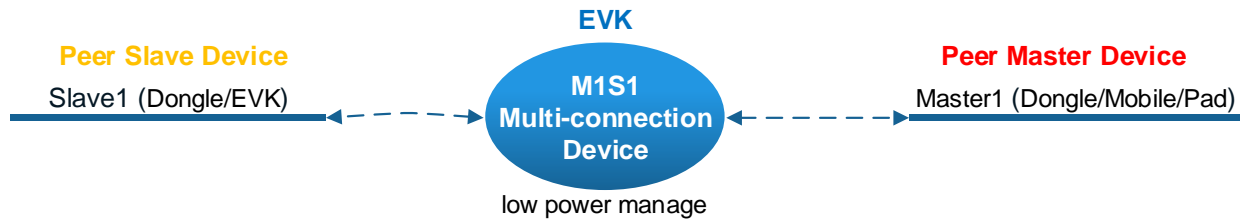
- SW2 is the key value for sending HID volume up to the current multi-connection device.
- SW4 is the key value for sending HID volume down to the current multi-connection device.
- SW3 is the key value for sending "1" to the current multi-connection device.
- SW5 is the key value for sending "2" to the current multi-connection device.

1.3.2 M1S1 Application

The 8258_m1s1 multi-connection device hardware uses the EVK board, which can be connected to 1 Slave device and connected by 1 Master device. The multi-connection device does not provide standard SDP (service discovery) when it is the Master role, only a simple reference SDP is given. The connected slave can be Dongle / EVK, and the connected Master can be Dongle/mobile phone/Pad.

Because it is a Single-Master application, it supports simple low power manage, and the actual power consumption is related to the connection interval. However, the USB function is not supported.

Figure 1-4 Multi-connection Diagram



Power source input from J18, 'B_D2' and 'G_D3' of J38 are connected with jumper cap, The advertising name is 'TLK_M1S1'.

For operation instructions, please refer to "1.3.1 M4S3 application" device operation instructions. It should be noted that the 8258_m1s1 master-slave device can only be connected to 1 Slave device, and can only be connected by 1 Master device, and does not support USB function.

2. M4S3 Demo Video

2.1 M4S3 Multi-connection

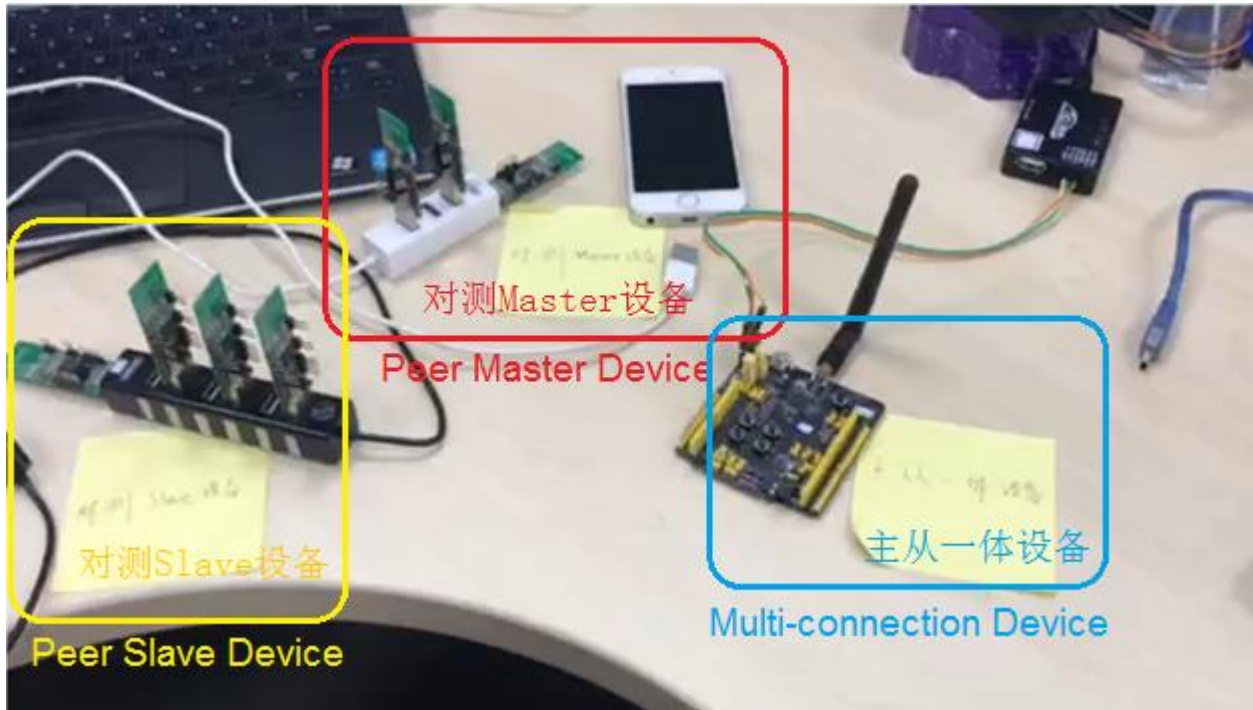
Configure the number of multi-connected devices:

```
#define MASTER_MAX_NUM 4
#define SLAVE_MAX_NUM 3
```

Use 3 Dongle boards for the peer Master device (in the demonstration process, a mobile phone will be used to replace a peer Master device), and use 4 Dongle boards for the peer Slave device.

The burning bin file is placed in Appendix 3.

Demo Video is as following:



[Link: M4S3 Multi-connection_2020-1-10.mp4](#)

2.2 M4S3 with USB Key and Voice

Configure the number of multi-connected devices:

```
#define MASTER_MAX_NUM 3
#define SLAVE_MAX_NUM 2
```

Enable USB and Voice function:

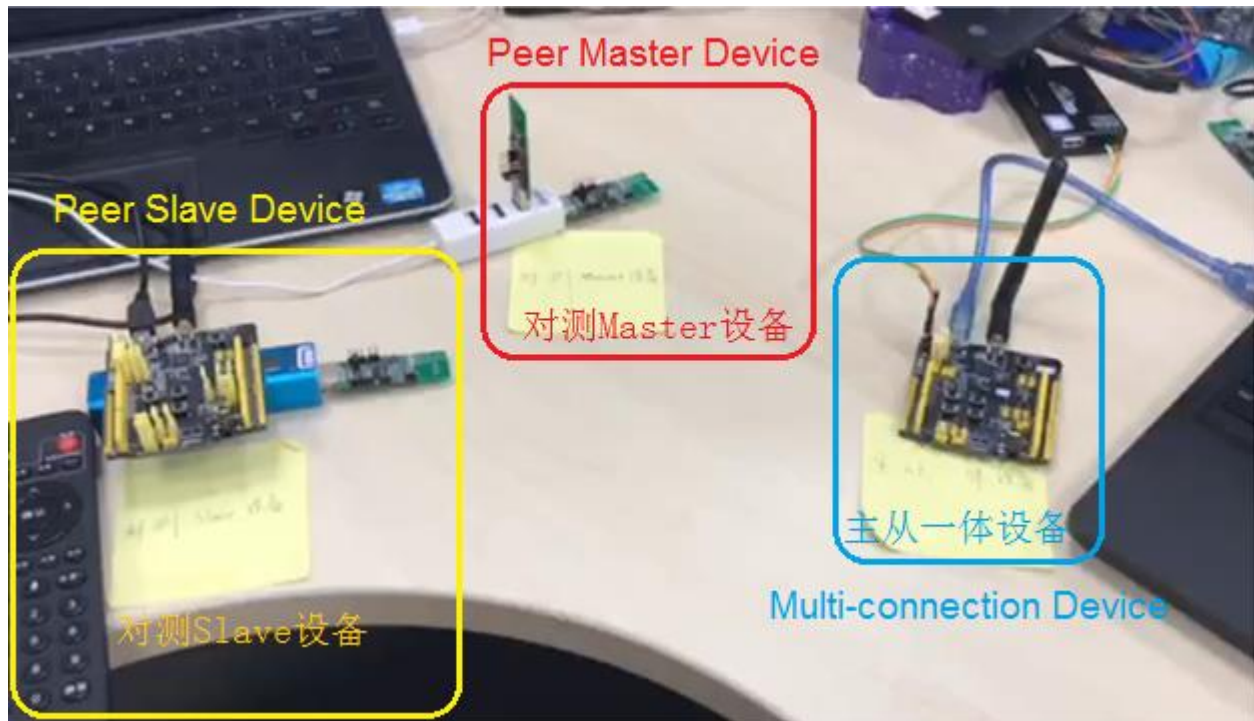
```
#define APPLICATION_DONGLE 1
#if (APPLICATION_DONGLE)

#define UI_AUDIO_ENABLE 1
```

Peer Master device uses 2 dongle boards, peer Slave device uses 1 dongle board, 1 EVK board, and 1 RCU board.

The burning bin file is placed in Appendix 4.

Demo Video is as following:



[Link: M4S3 with USB Key and Voice_2020-1-10.mp4](#)

3. M1S1 Demo Video

3.1 M1S1

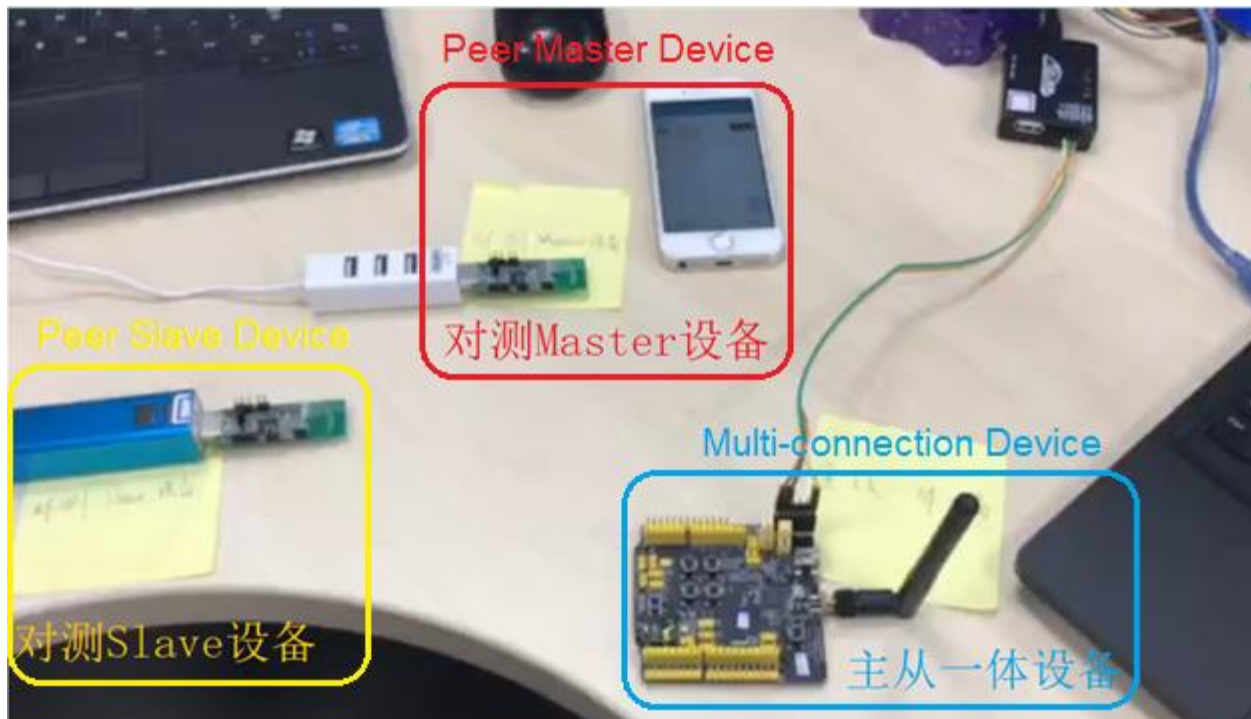
Configure the number of multi-connected devices:

```
#define MASTER_MAX_NUM 1
#define SLAVE_MAX_NUM 1
```

Peer Master device uses 1 dongle boards (in the demonstration process, a mobile phone will be used to replace the peer Master device), peer Slave device uses 1 Dongle board.

The burning bin file is placed in Appendix 5.

Demo Video is as following:



[Link: M1S1_2020-1-10.mp4](#)

4. Appendix

4.1 Appendix1

[Folder<appendix/8258_master_kma_dongle>](#)

4.2 Appendix2

[Folder<appendix/8258_ble_sample>](#)

4.3 Appendix3

[Folder<appendix/bin file---M4S3>](#)

4.4 Appendix4

[Folder<appendix/bin file---M4S3 with USB Key and Voice>](#)

4.5 Appendix5

[Folder <appendix/bin file---M1S1>](#)

4.6 Appendix6

[Folder<appendix/Video>](#)

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