Empowering a Connected World of Infinite Possibilities

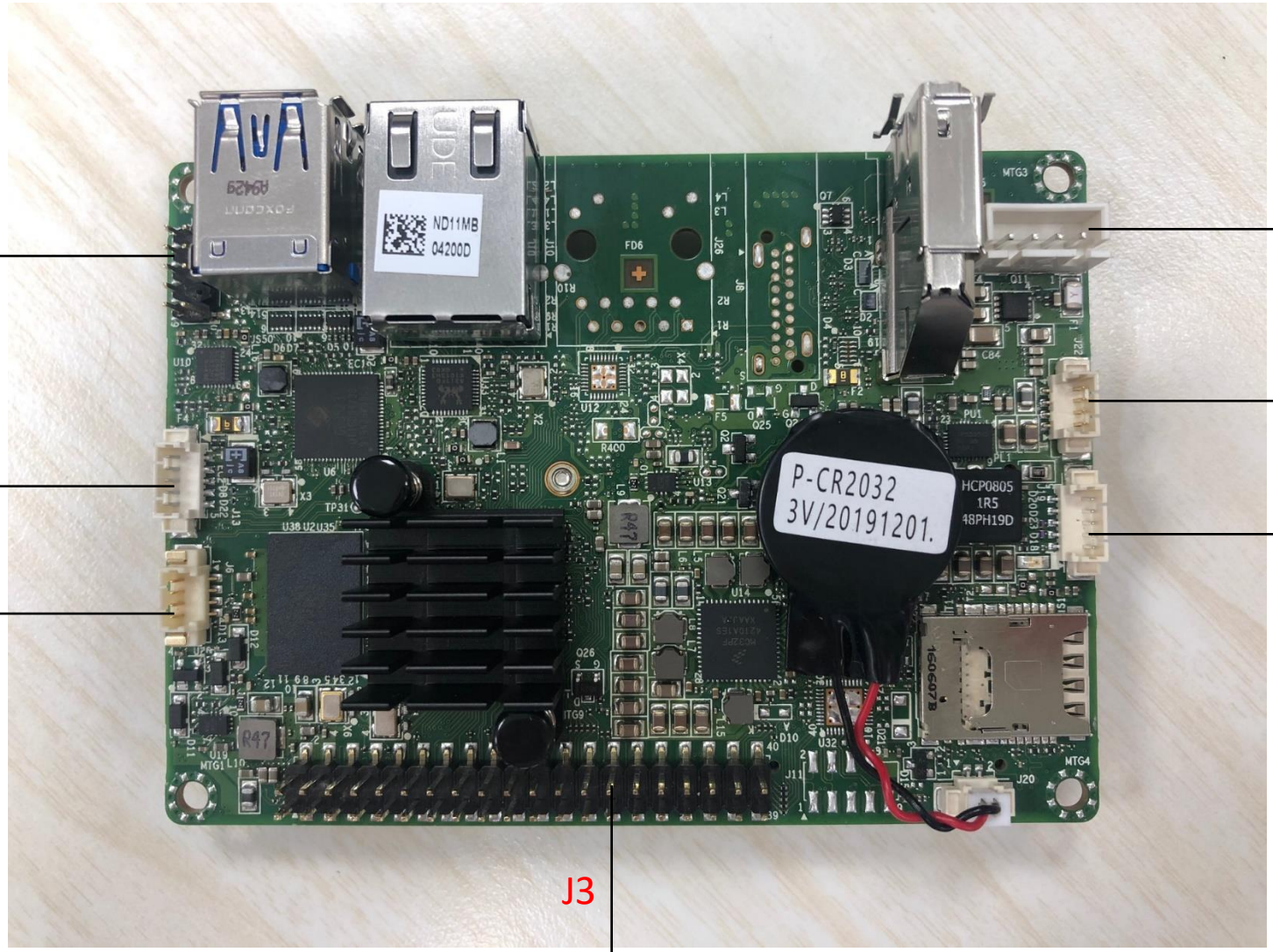
MiTAC ND108T Quick Installation Guide

V01

2020/7/30

MiTAC COMPUTING TECHNOLOGY CORP.

MB Placement



1 x Line-out/Mic-in

1 x USB2.0 ports header — J13

1 x Power Switch

J1 — 12V internal 4-pin DC-in connector

J22 — 1 x UART header for debugging

J19 — 1 x USB 2.0 OTG port Header for programming

J3 — 1 x Raspberry Pi 40-pin header

Pin Definition (1/3)

J1

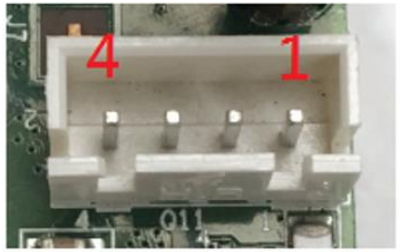


Figure 1: DC IN Connector (J1)

Pin	Signal
1	+12V
2	+12V
3	Ground
4	Ground

Table 1 : DC IN Connector pin-out reference

J19

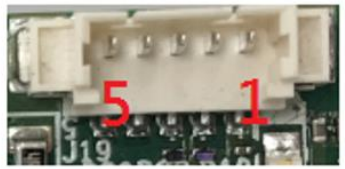


Figure 2: USB 2.0 Header for programming (J19)

Pin	Signal
1	5V_USB
2	Data (negative)
3	Data (positive)
4	Ground
5	NC

Table 2: 5-pin USB 2.0 header Pin out reference

Pin Definition (2/3)

J13

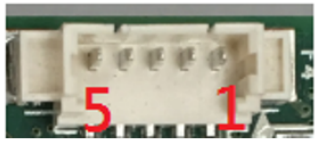


Figure 3: Single USB2.0 pin-out for normal use (J13)

Pin	Signal
1	5V_USB
2	Data (negative)
3	Data (positive)
4	Ground
5	NC

Table 3: Single USB 2.0 Header

J22

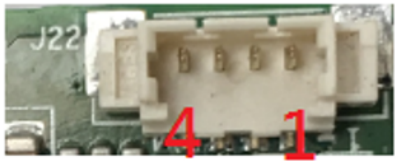


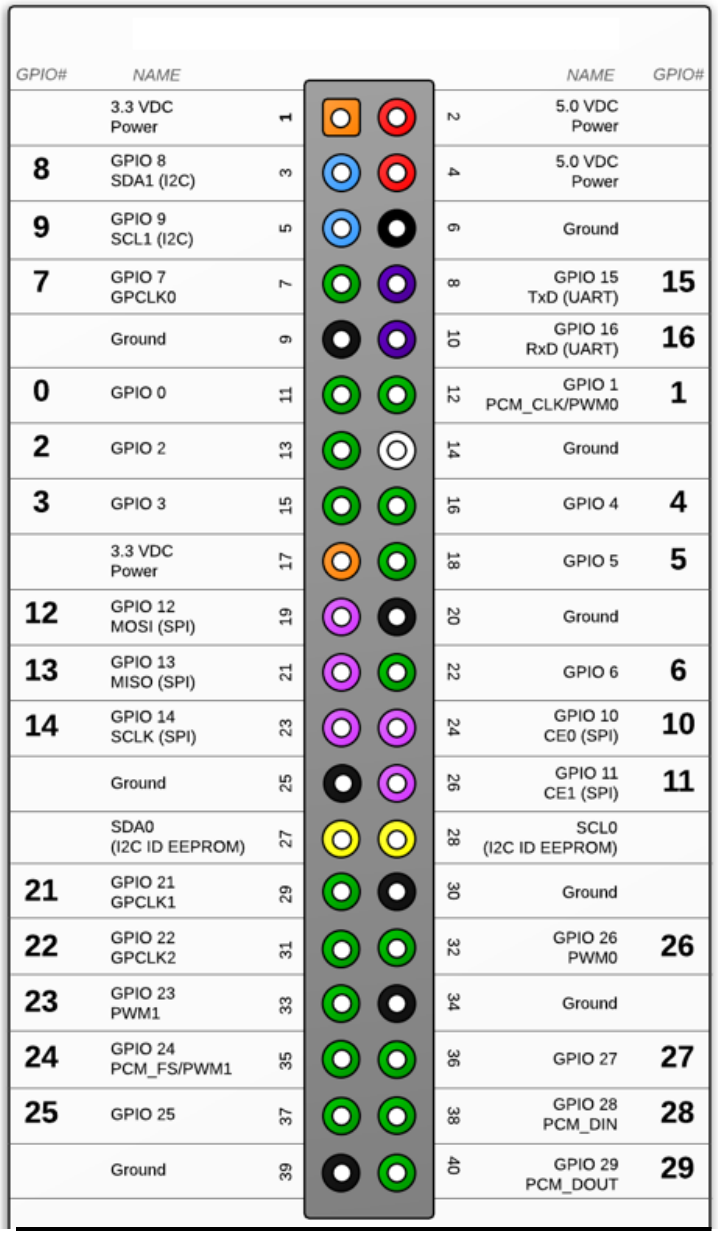
Figure 4: UART pin-out for Debug (J22)

Pin	Signal
1	5V
2	UART Transmission
3	UART Receive
4	Ground

Table 4: UART Header Pin out reference

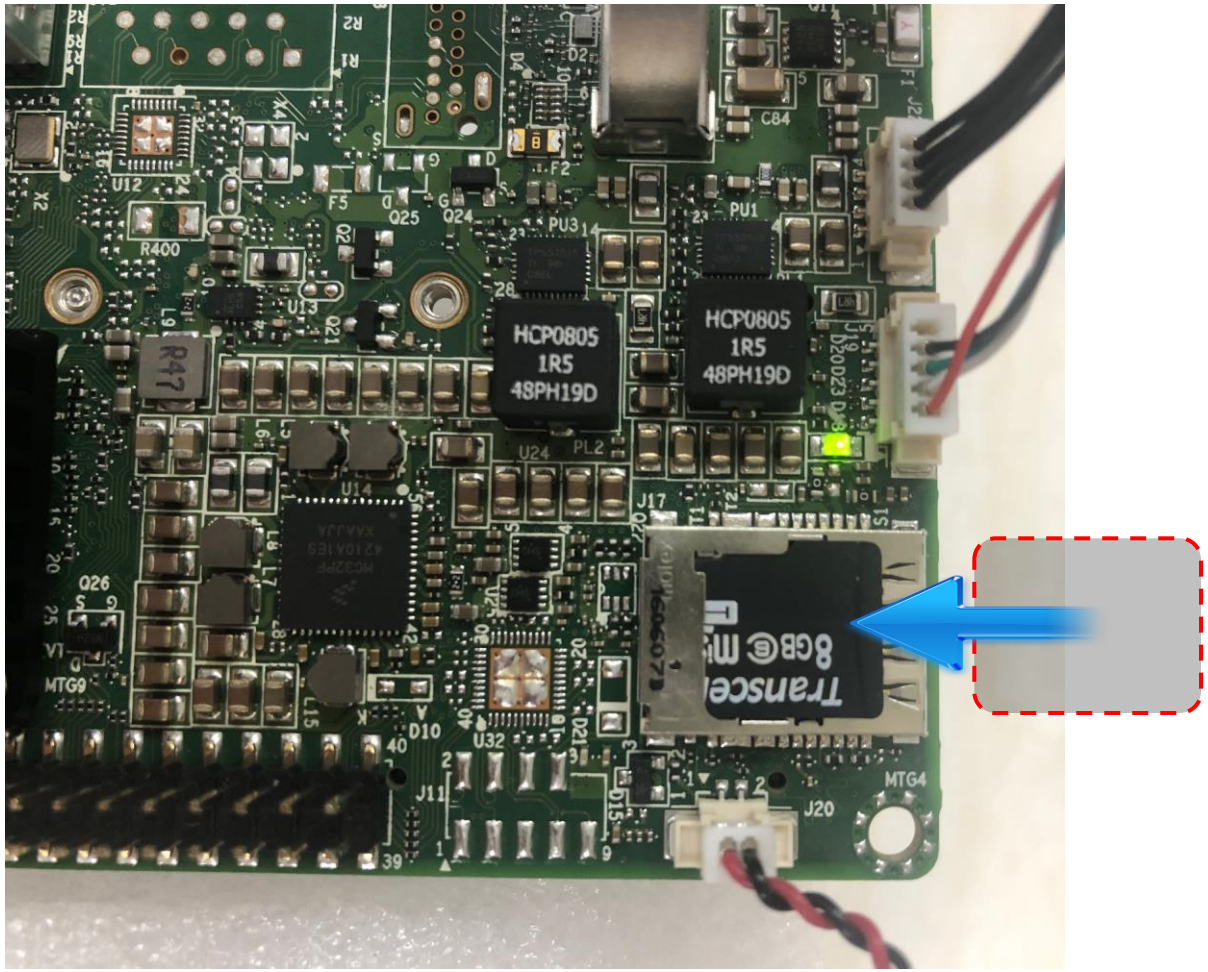
Pin Definition (3/3)

J3 Raspberry Pi 40-pin header



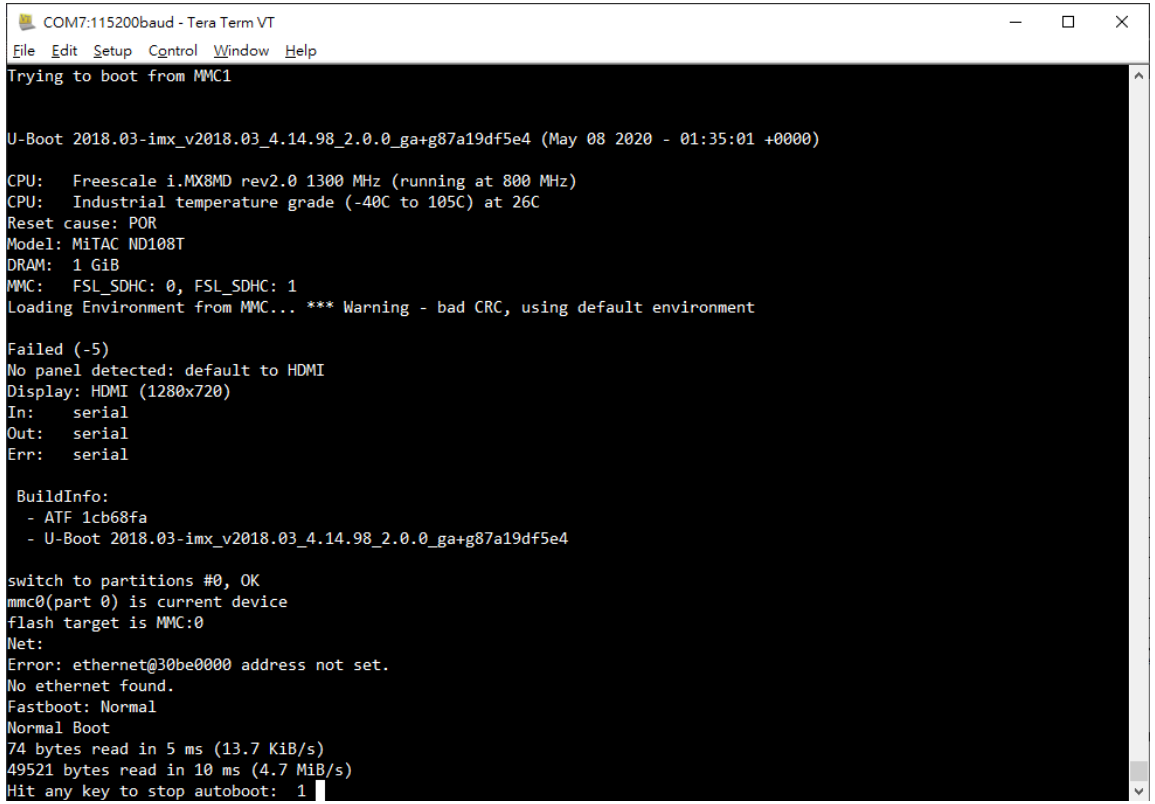
GPIO#	NAME			NAME	GPIO#
	3.3 VDC Power	1	2	5.0 VDC Power	
8	GPIO 8 SDA1 (I2C)	3	4	5.0 VDC Power	
9	GPIO 9 SCL1 (I2C)	5	6	Ground	
7	GPIO 7 GPCLK0	7	8	GPIO 15 TxD (UART)	15
	Ground	9	10	GPIO 16 RxD (UART)	16
0	GPIO 0	11	12	GPIO 1 PCM_CLK/PWM0	1
2	GPIO 2	13	14	Ground	
3	GPIO 3	15	16	GPIO 4	4
	3.3 VDC Power	17	18	GPIO 5	5
12	GPIO 12 MOSI (SPI)	19	20	Ground	
13	GPIO 13 MISO (SPI)	21	22	GPIO 6	6
14	GPIO 14 SCLK (SPI)	23	24	GPIO 10 CE0 (SPI)	10
	Ground	25	26	GPIO 11 CE1 (SPI)	11
	SDA0 (I2C ID EEPROM)	27	28	SCL0 (I2C ID EEPROM)	
21	GPIO 21 GPCLK1	29	30	Ground	
22	GPIO 22 GPCLK2	31	32	GPIO 26 PWM0	26
23	GPIO 23 PWM1	33	34	Ground	
24	GPIO 24 PCM_FS/PWM1	35	36	GPIO 27	27
25	GPIO 25	37	38	GPIO 28 PCM_DIN	28
	Ground	39	40	GPIO 29 PCM_DOUT	29

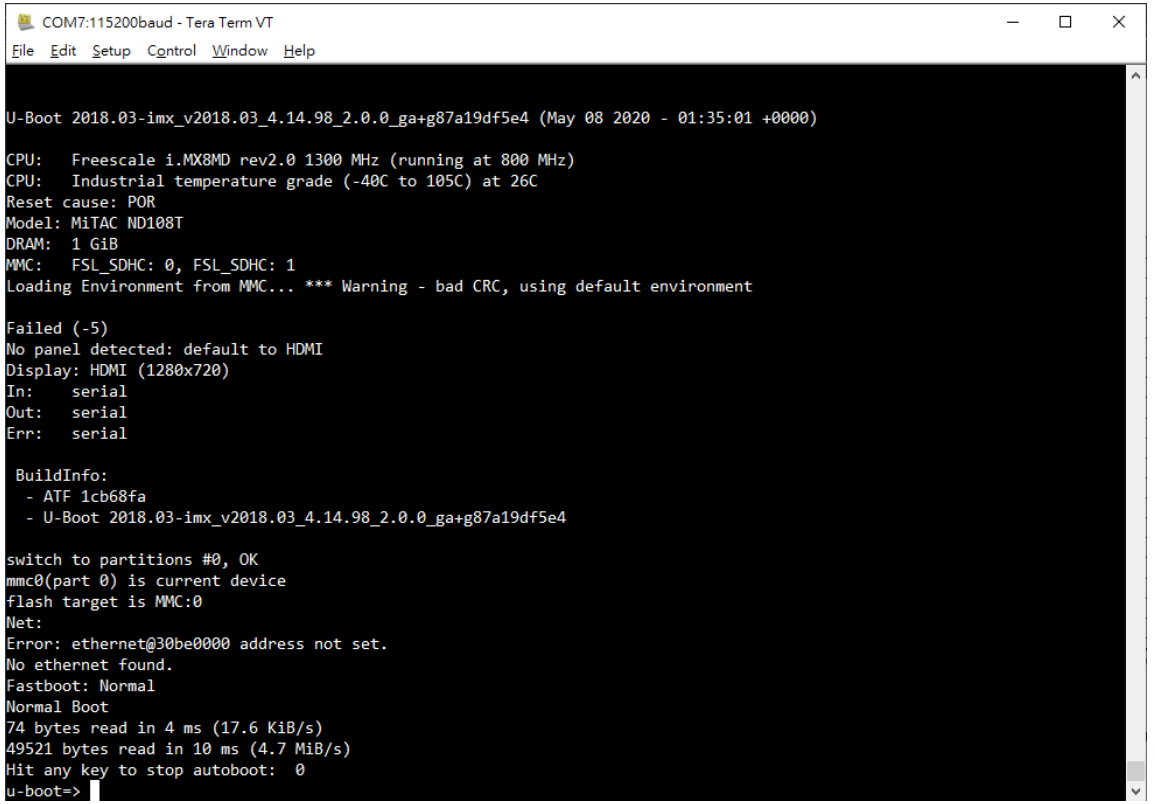
How to insert the Micro SD card



How to enter U-boot

The bring up sequences will count-down 3 seconds in u-boot.
Please use RS232 to connect ND108T's J22 (UART_TX and UART_RX), and press any key in 3 seconds to enter u-boot.





ND108T Yocto & Android Image Update Standard Operation Procedure

Title:	**ND108T Yocto & Android Image Update Standard Operation Procedure**		
Project:	**ND108T**	**Revision:**	**1.1**
Author:		**Revision Date:**	**2020/06/29**

Rev.	Date	Name	Comment
1.0	2020/04/22	Mark Chang	Draft (skeleton)
1.1	2020/06/29	Mark Chang	Add Android image support

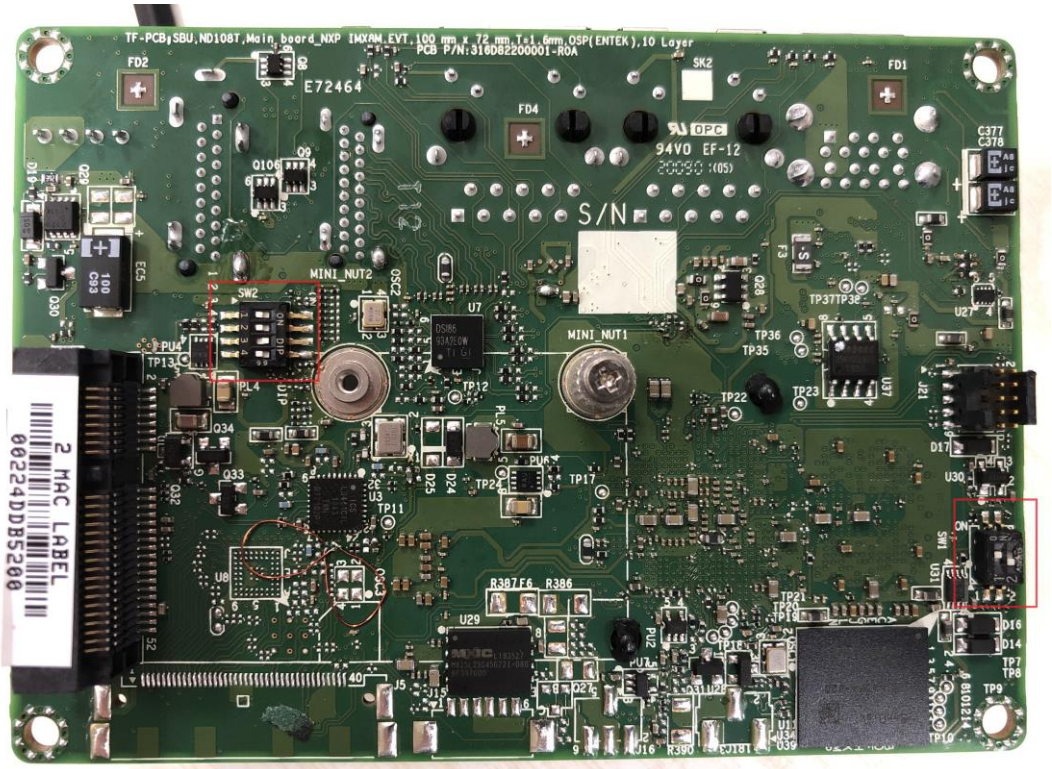
Table of Contents

1 Purpose

This Standard Operation Procedure (SOP) describes the usage of Yocto & Android image update method for ND108T project.

2 Yocto Image Update

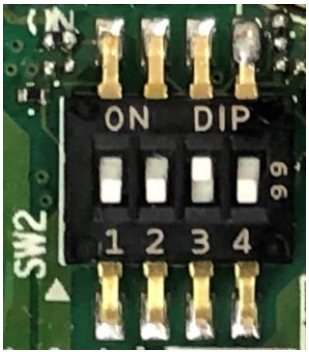
1) Configure DIP switches SW1 [1 2] to [OFF ON] and SW2 [1 2 3 4] to [OFF OFF ON OFF].

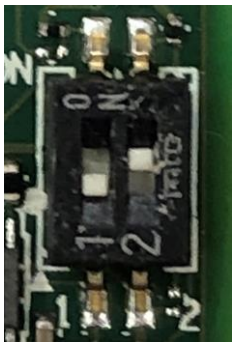


SW1 (Boot Mode DIP)		
DIP1	**DIP2**	**Boot Source**
OFF	ON	Serial Download Mode
ON	OFF	Internal Boot Mode

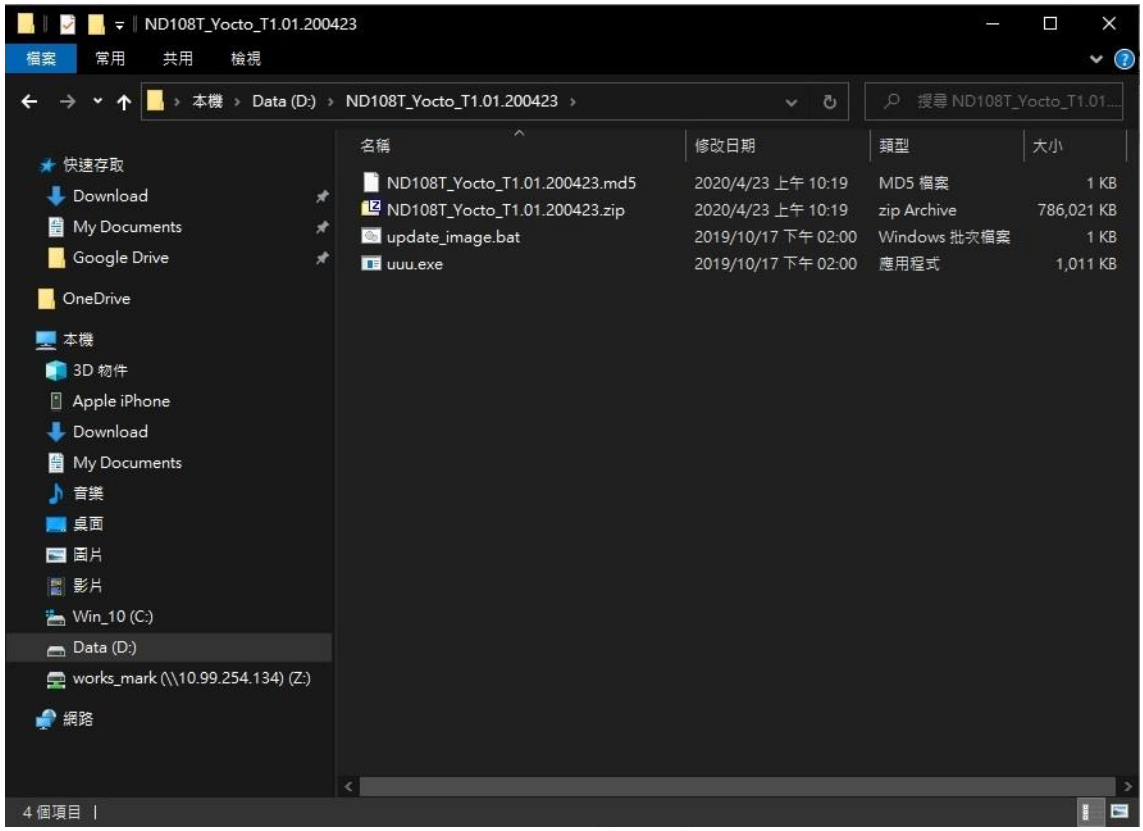
SW2 (Boot Media DIP)				
DIP1	**DIP2**	**DIP3**	**DIP4**	**Boot Media Configuration**
OFF	OFF	ON	OFF	eMMC
ON	ON	OFF	OFF	microSD

2) Connect USB cable between your J19 connector of ND108T device and desktop PC, then plug-in power source to J1 connector.





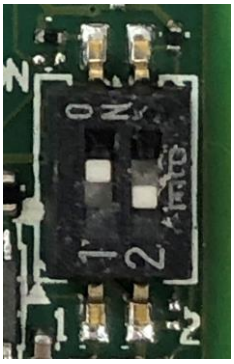
3) Unzip Yocto image (ND108T_Yocto_xx.xx.xxxxxx.zip) in your Windows 10 desktop-PC.



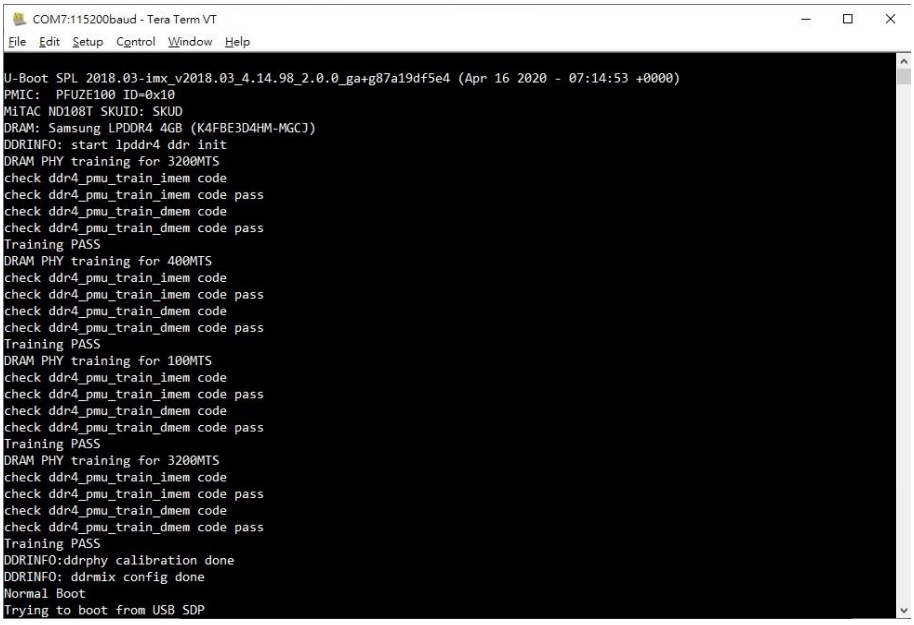
4) Launch the batch file “update_image.bat” to update image.

5) Wait for the upgrade progress is done.

6) Unplug USB cable and power source, and configure DIP switch SW1 [1 2] to [ON OFF] to Internal Boot Mode.

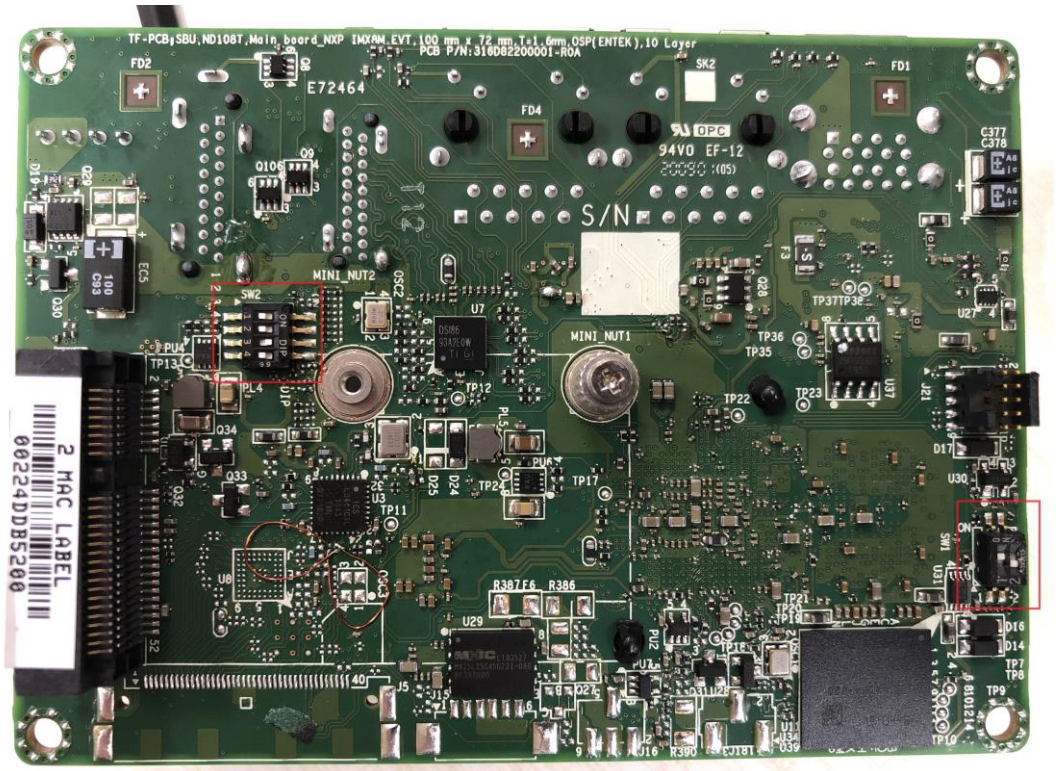


7) Plug in power source to boot up device; if you have the debug board and connect to desktop-PC, then you could get logs.



3 Android Image Update

1) Configure DIP switches SW1 [1 2] to [OFF ON] and SW2 [1 2 3 4] to [OFF OFF ON OFF].



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ON	ON	OFF	OFF	microSD

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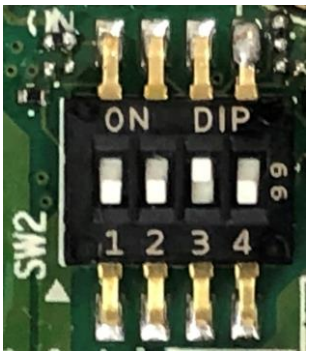
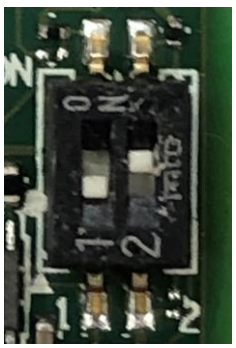
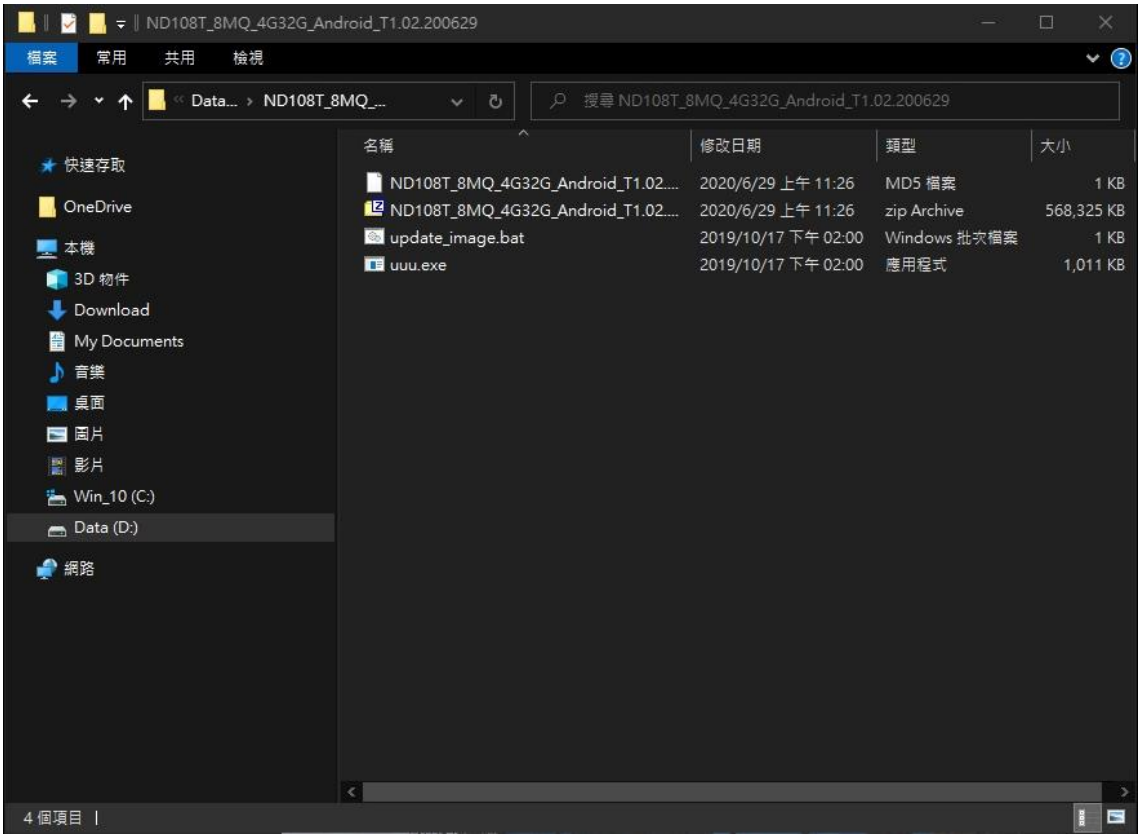




3) Unzip Android image (ND108T_8MQ_4G32G_Android_xx.xx.xxxxxx.zip) in your Windows 10 desktop-PC.



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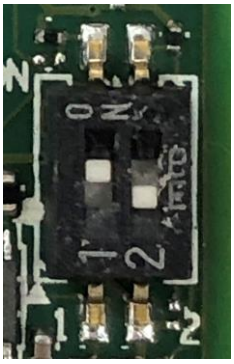

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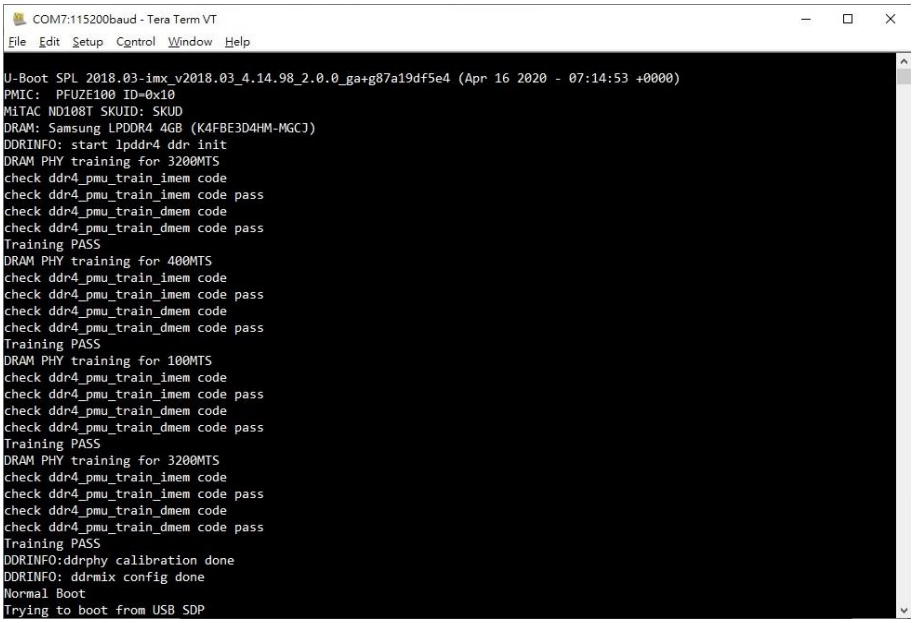

MiTAC I.MX8M Product Series

ME1-108T / ND108T

Linux BSP User Guide

For MiTAC I.MX8M series product (Box PC: ME1-108T, MB: ND108T), MiTAC provides the following Linux BSP (Board support Package) software for developer to develop your targeting Linux OS. These BSPs with source code are customizable, allowing the developers to specify which drivers and routines should be included in the build based on your targeting Linux version and software options.

Moreover, the BSP also contain a pre-compiled binaries image for Yocto and Android which can let developer to have quick try or install for demo purpose. The source code of these pre-compiled images are also provided and developers can base on it to further develop your preferred UI, new device drivers and field applications to build up your final Yocto and Android OS.

1. Hardware Quick Installation Guide

In this file, you will know how to quick install the board for your following Linux development, including:

- Know all the board related headers and pin definition
- How to install the Micro SD card
- How to enter the U-boot

★Please download the installation guide Here

2. BSP for Yocto Sumo

Yocto project is a framework for creating a Linux distributions for embedded devices. It's layering mechanism makes it easy to add Linux to new target devices highly customized for a particular platform; it can include custom start-up scripts, software packages built with a high degree of optimization for a particular architecture, and different user interfaces from full Gnome desktop to a simple a serial console. This release is based on NXP BSP layer for Yocto framework and MiTAC extends this layer to support our I.MX8M product related functions.

Yocto Sumo (Kernel version 4.14.98) BSP,
including source code and files for:

- Bootloader
- Libraries and header files
- All board function device drivers
- Detailed manual describing installation, all APIs and functions, files and utilities
- Sample Source code with pre-compiled binaries image for testing and demo purpose

★Please download the BSP source code Here

3. BSP for Android 9

This release is based on NXP BSP layer for Android 9 framework and MiTAC extends this layer to support our I.MX8M product related functions.

Android 9 (Pie, Kernel version 4.14.98) BSP,
including source code and files for:

- Bootloader
- Libraries and header files
- All board function device drivers
- Detailed manual describing installation, all APIs and functions, files and utilities
- Sample Source code with pre-compiled binaries image for testing and demo purpose

  *Note: due to Google CTS (Compatibility Test Suite), the sample image cannot support Google Play for Marketplace function. For this function enabling, developers you may need to contact Google and apply it based on your final developed Android image.

★Please download the BSP source code Here

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4. Customization Support

For other customization items beyond our standard BSP coverage above, please contact our sales window for more business discussion and it will only support by requested. The customization items could be:

- **Yocto and Android sample image customization**
  ex: UI customization, new Android option enable/disable, new App pre-install
- **Other Linux shell support**
  ex: Ubuntu, Debian, RTOS
- **Other Linux kernel version support**
  ex: Android 10, Yocto Legacy version
- **Other peripheral device driver support**
  ex: WiFi card, LTE card, CAN bus card

Remark:

In the BSP documents, there are several Linux Reference Manuals released from NXP. Based on the NXP document using rule, **please help to register on their website below to sign in and get the authority**. You will also be available get more technical related documents or support through your account on their website.
https://www.nxp.com/webapp-signup/register