1. Prepare a recovery usb disk first, I make a recovery image for usb disk, please download the image and utility from google drive.
   - recovery.img.gz
   - LibreELEC.USB-SD.Creator.Win32.exe

2. Launch the LibreELEC.USB-SD.Creator.Win32.exe and then follow the picture to create a recovery usb disk.
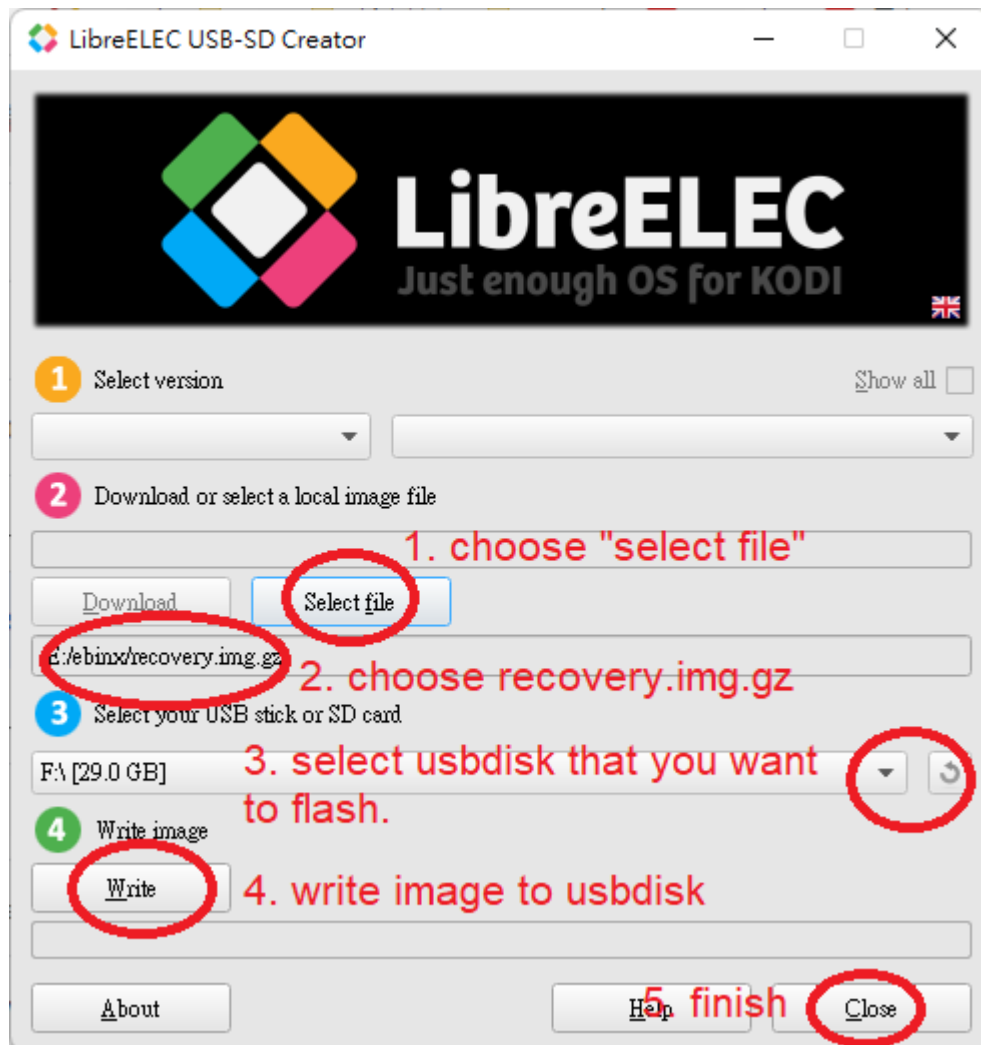
3. After writing is completed, you can see the below files on the usbdisk.

	名稱 ^	修改日期	類型	大小
	armada-3720-ccpe.dtb	2022/3/11 上午 05:45	DTB 檔案	13 KB
	espressobin_ultra_ubuntu_v18.04_kernel_5.16.12.tar.gz	2022/3/11 上午 03:53	WinRAR archive	440,536 KB
	espressobin_ultra_ubuntu_v20.04_kernel_5.16.12.tar.gz	2022/3/11 上午 03:53	WinRAR archive	527,510 KB
	espressobin_ultra-bootloader-cpu-1000-ddr4-1cs-1g-atf-eff6ede...	2022/3/11 上午 03:52	BIN 檔案	3,971 KB
	espressobin_ultra-bootloader-cpu-1000-ddr4-2cs-2g-atf-eff6ede...	2022/3/11 上午 03:52	BIN 檔案	3,971 KB
	espressobin_ultra-bootloader-cpu-1200-ddr4-1cs-1g-atf-eff6ede...	2022/3/11 上午 03:52	BIN 檔案	3,971 KB
	espressobin_ultra-bootloader-cpu-1200-ddr4-2cs-2g-atf-eff6ede...	2022/3/11 上午 03:52	BIN 檔案	3,971 KB
	Image	2022/3/11 上午 05:45	檔案	16,067 KB
	ramdisk	2022/3/11 上午 05:45	檔案	8,690 KB
	recovery.bin	2022/3/11 上午 05:45	BIN 檔案	1 KB
	u-boot-env.txt	2022/3/11 上午 03:53	TXT 檔案	1 KB

4. Insert recovery usbdisk to ESPRESSObin Ultra and then power on the device.
5. Press any key to interrupt autoboot on the serial console before u-boot autoboot counting ends.

```
COM32 - Tera Term VT                                               —   □   ×
File  Edit  Setup  Control  Window  Help
NOTICE:  BL1: Booting BL2
NOTICE:  BL2: v1.5(release):eff6ede8 (Marvell-devel-18.12.2)
NOTICE:  BL2: Built : 10:12:41, Mar  7 2022
NOTICE:  BL1: Booting BL31
NOTICE:  BL31: v1.5(release):eff6ede8 (Marvell-devel-18.12.2)
NOTICE:  BL31: Built : 10

U-Boot 2018.03-devel-18.12.3-g926d08c7ce (Mar 07 2022 - 10:11:07 +0800)

Model: gti cellular cpe board
       CPU    1200 [MHz]
       L2      800 [MHz]
       TClock  200 [MHz]
       DDR     750 [MHz]
DRAM:  1 GiB
SF: Detected mx25u3235f with page size 256 Bytes, erase size 64 KiB, total 4 MiB
Comphy chip #0:
Comphy-0: USB3_HOST0
Comphy-1: PEX0           2.5 Gbps
Comphy-2: SATA0
SATA link 0 timeout.
AHCI 0001.0300 32 slots 1 ports 6 Gbps 0x1 impl SATA mode
flags: ncq led only pmp fbss pio slum part sxs
PCIE-0: Link up
MMC:   sdhci@d8000: 0
Loading Environment from SPI Flash... OK
Model: gti cellular cpe board
Net:   eth0: neta@30000 [PRIME]
Hit any key to stop autoboot:  0
Marvell>>
```

6. Update bootloader first. Please run the below command to update the new bootloader.

```
# For 1G device:
bubt
espressobin_ultra-bootloader-cpu-1200-ddr4-1cs-1g-atf-eff6ede8-uboot-g92
6d08c7ce-utils-52d9aef-20220307-rel.bin spi usb


# For 2G dvice:

bubt
espressobin_ultra-bootloader-cpu-1200-ddr4-2cs-2g-atf-eff6ede8-uboot-g92
6d08c7ce-utils-52d9aef-20220307-rel.bin spi usb
```

```
Marvell>>
Marvell>> bubt espressobin_ultra-bootloader-cpu-1200-ddr4-1cs-1g-atf-eff6ede8-uboot-g926d08c7ce-utils-52d9aef-20220307-r
el.bin spi usb
Burning U-BOOT image "espressobin_ultra-bootloader-cpu-1200-ddr4-1cs-1g-atf-eff6ede8-uboot-g926d08c7ce-utils-52d9aef-202
20307-rel.bin" from "usb" to "spi"
USB0:   Register 2000104 NbrPorts 2
Starting the controller
USB XHCI 1.00
USB1:   USB EHCI 1.00
scanning bus 0 for devices... cannot reset port 2!?
2 USB Device(s) found
scanning bus 1 for devices... 2 USB Device(s) found
Image checksum...OK!
SF: Detected mx25u3235f with page size 256 Bytes, erase size 64 KiB, total 4 MiB
Erasing 4128768 bytes (63 blocks) at offset 0 ...Done!
Writing 4066304 bytes from 0x6000000 to offset 0 ...Done!
Marvell>>
```

7. Reboot device again, and then enter the u-boot console again.
8. Run the usb recovery command to load ramdisk and boot it.

```
usb reset; fatload usb 0 $loadaddr recovery.bin; source $loadaddr
```

```
Hit any key to stop autoboot:  0
Marvell>> usb reset; fatload usb 0 $loadaddr recovery.bin; source $loadaddr
resetting USB...
USB0:   Register 2000104 NbrPorts 2
Starting the controller
USB XHCI 1.00
USB1:   USB EHCI 1.00
scanning bus 0 for devices... cannot reset port 2!?
2 USB Device(s) found
scanning bus 1 for devices... 2 USB Device(s) found
       scanning usb for storage devices... 1 Storage Device(s) found
589 bytes read in 21 ms (27.3 KiB/s)
## Executing script at 06000000
## Resetting to default environment
SF: Detected mx25u3235f with page size 256 Bytes, erase size 64 KiB, total 4 MiB
resetting USB...
USB0:   Register 2000104 NbrPorts 2
Starting the controller
USB XHCI 1.00
USB1:   USB EHCI 1.00
scanning bus 0 for devices... 2 USB Device(s) found
scanning bus 1 for devices... 2 USB Device(s) found
       scanning usb for storage devices... 1 Storage Device(s) found
19964416 bytes read in 524 ms (36.3 MiB/s)
12884 bytes read in 20 ms (628.9 KiB/s)
8897801 bytes read in 253 ms (33.5 MiB/s)
## Flattened Device Tree blob at 00f00000
```

9. After booting into the ramdisk system, run mkemmc.sh to install rootfs tarball from the usbdisk.

```
# mount usbdisk (sda1) to /media
mount /dev/sda1 /media/

# install rootfs to eMMC
./mkemmc.sh /media/espressobin_ultra_ubuntu_v18.04_kernel_5.16.12.tar.gz

# after install completed, umount /media
umount /media

# reboot device
reboot
```

```
Starting network...
Starting os upgrade...
-sh: can't access tty; job control turned off
# [    3.829593] usb-storage 3-1:1.0: USB Mass Storage device detected
[    3.837449] scsi host1: usb-storage 3-1:1.0
[    4.849331] scsi 1:0:0:0: Direct-Access     USB3.0   FLASH DRIVE      1.00 PQ: 0 ANSI: 6
[    4.855540] sd 1:0:0:0: [sda] 60825600 512-byte logical blocks: (31.1 GB/29.0 GiB)
[    4.863171] sd 1:0:0:0: [sda] Write Protect is off
[    4.867921] sd 1:0:0:0: [sda] Write cache: disabled, read cache: disabled, doesn't support DPO or FUA
[    4.894049]  sda: sda1
[    4.895409] sd 1:0:0:0: [sda] Attached SCSI removable disk

# mount /dev/sda1 /media/
[   36.912216] FAT-fs (sda1): Volume was not properly unmounted. Some data may be corrupt. Please run fsck.
#               [   40.324650] random: fast init done
# ./mkemmc.sh /media/espressobin_ultra_ubuntu_v18.04_kernel_5.16.12.tar.gz
[Partitioning /dev/mmcblk0...]
[   46.009077] xenon-sdhci d00d8000.sdhci: Timing issue might occur in DDR mode
10240+0 records in
10240+0 records out

Welcome to fdisk (util-linux 2.27.1).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.

Device does not contain a recognize[   46.545627] random: fdisk: uninitialized urandom read (4 bytes read)
d partition table.
Created a new DOS disk[   46.555962]  mmcblk0: p1
label with disk identifier 0x00fdb4ff.
```

10. After reboot, press any key to enter the u-boot console again.
11. Setup the boot parameter to boot from eMMC.

env default -a

setenv image_name boot/Image
setenv fdt_name boot/armada-3720-ccpe.dtb

setenv bootcmd 'mmc dev 0; ext4load mmc 0:1 $kernel_addr_r $image_name;ext4load mmc 0:1 $fdt_addr_r $fdt_name;setenv bootargs $console root=PARTUUID=89708921-01 rw rootwait net.ifnames=0 biosdevname=0; booti $kernel_addr_r - $fdt_addr_r'

saveenv
boot

12. Input '**boot**' command to boot into Ubuntu linux system
13. The default account / password is **root** / **admin**

```
Ubuntu 18.04 LTS espressobin-ultra ttyMV0

###################################
the default root password is 'admin'.
###################################

espressobin-ultra login: root
Password:
Welcome to Ubuntu 18.04 LTS (GNU/Linux 5.16.12-gc8f061f7baa4 aarch64)

 * Documentation:  https://help.ubuntu.com
 * Management:      https://landscape.canonical.com
```

14. The system will request the user to change password at first boot, **PLEASE type 'x' key to ignore this message**, it will prompt change password message again at next boot.

15. run below commands to simple test units.

```
# check the kernel version,it should be "5.16.12".
root@espressobin-ultra:~# uname -a
Linux ebinx112201 5.16.12-gc8f061f7baa4 #1 SMP PREEMPT Mon Mar 7
10:13:40 CST 2022 aarch64 aarch64 aarch64 GNU/Linux
root@espressobin-ultra:~#

# find the network device.
root@espressobin-ultra:~# ls /sys/class/net/
br0  eth0  lan0  lan1  lan2  lan3  lo  mlan0  uap0  wan
root@espressobin-ultra:~#

# find the storage device. (sda1 is usbdisk)
root@espressobin-ultra:~# lsblk
NAME           MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
sda              8:0    1   29G  0 disk
`-sda1           8:1    1    2G  0 part /media/disk0
mtdblock0       31:0    0  3.9M  0 disk
mtdblock1       31:1    0   64K  1 disk
mtdblock2       31:2    0   64K  0 disk
mmcblk0        179:0    0  7.3G  0 disk
`-mmcblk0p1    179:1    0  7.3G  0 part /
mmcblk0boot0   179:32   0    4M  1 disk
mmcblk0boot1   179:64   0    4M  1 disk
root@espressobin-ultra:~#
root@espressobin-ultra:~#

# test the network connection, plug network cable to the wan port.
root@espressobin-ultra:~# ping -c 4 www.google.com
PING www.google.com (142.250.66.4) 56(84) bytes of data.
64 bytes from bom07s35-in-f4.1e100.net (142.250.66.4): icmp_seq=1
```

```
ttl=111 time=103 ms
64 bytes from bom07s35-in-f4.1e100.net (142.250.66.4): icmp_seq=2
ttl=111 time=103 ms
64 bytes from bom07s35-in-f4.1e100.net (142.250.66.4): icmp_seq=3
ttl=111 time=104 ms
64 bytes from bom07s35-in-f4.1e100.net (142.250.66.4): icmp_seq=4
ttl=111 time=104 ms

--- www.google.com ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3005ms
rtt min/avg/max/mdev = 103.536/103.991/104.243/0.487 ms
root@espressobin-ultra:~#

# list the usbdisk
root@espressobin-ultra:~# ls /media/disk0/
 Image
 armada-3720-ccpe.dtb
espressobin_ultra-bootloader-cpu-1000-ddr4-1cs-1g-atf-eff6ede8-uboot-g92
6d08c7ce-utils-52d9aef-20220307-rel.bin

espressobin_ultra-bootloader-cpu-1000-ddr4-2cs-2g-atf-eff6ede8-uboot-g92
6d08c7ce-utils-52d9aef-20220307-rel.bin

espressobin_ultra-bootloader-cpu-1200-ddr4-1cs-1g-atf-eff6ede8-uboot-g92
6d08c7ce-utils-52d9aef-20220307-rel.bin

espressobin_ultra-bootloader-cpu-1200-ddr4-2cs-2g-atf-eff6ede8-uboot-g92
6d08c7ce-utils-52d9aef-20220307-rel.bin
 espressobin_ultra_ubuntu_v18.04_kernel_5.16.12.tar.gz
 espressobin_ultra_ubuntu_v20.04_kernel_5.16.12.tar.gz
 ramdisk
 recovery.bin
 u-boot-env.txt
root@espressobin-ultra:~#
```