Report No: 19D010002_I

UPC-PLUS

UPCore Plus (UPCP)

Board Level Product
P3 Compatibility Test Report

Summary	☒ Pass ☐ Fail ☐ Pass with Deviation (Comment: _____)			
Test Results Category				
	Critical	Major	Minor	Enhancement
Defect Found	0	0	4	0
Defect Unsolved	0	0	0	0

Issue date	QE Manager	Test Engineer
2019-02-01	KJ Wang	Mike Lee

Summary Table of DTS:

Defect No.	Severity	Description	Issue status
D171104QEE10	Minor	Wake on lan function fail	Fixed
D171104QEE13	Minor	eDP function fail	Fixed
D171104QEE16	Minor	LAN issue	Fixed
D171104QED02	Minor	Display issue	Fixed

Platform Information

Item	Device Information
Product of department	DMS
PCB Model / Version	UPC-PLUS Rev A0.4_0_0
I/O Board / Version	NET-PLUS Rev A0.2_0_0
BIOS / Version	UPC-PLUS R0.A (UPCPSM0A)(11/23/2018)
CPU Type	Intel ® Celeron ® CPU N3350 @ 1.10GHz
Memory Type	Onboard memory LPDDR4 4GB
Storage	Onboard eMMC 32GB
USB DVD-ROM	AOpen EDR8865U
LCD Monitor	DELL U2713HM
Operating System	☒ Ubuntu 16.04.4 LTS / kernel: 4.13.0-36-generic #40
Power Supply	FSP084-DMAA1 12V 7A
Chipset Information	
SOC Bridge	Intel ® Apollo Lake SoC
Graphics Chipset	Intel ® HD Graphics
Ethernet Chipset	Intel ® I211 Gigabit Network

1. Basic Function Test

1.1. CPU Function Test

Configuration:

   CPU: Intel ® Celeron ® CPU N3350 @ 1.10GHz

   Memory: Onboard memory LPDDR4 4GB

Procedure:

   Step1. Connected CPU with product specification max supported

   Step2. Boot into BIOS manual and check CPU information is correct

   Step3. Confirm CPU max speed can meet CPU specification in OS environment

   <#watch –n 1 "cat /proc/cpuinfo | grep MHz">

   Step4. Install and execute benchmark AP "sysbench", recode the benchmark

   <1 thread #sysbench --test=cpu --cpu-max-prime=20000 run>

   <4 threads #sysbench --test=cpu --cpu-max-prime=20000 --num-threads=4 run>

Test result

No.	Test item			Result		Remark
			Pass	Fail	N/A	
1	System can boot properly		☒	☐	☐	
2	BIOS\CPU information is correct		☒	☐	☐	
3	CPU speed should meet specification		☒	☐	☐	
4	Recode CPU Benchmark	Intel 1.10G	1 thread	21.0841s		
			4 threads	11.0749s		

1.2. Memory Function Test

Configuration:

   CPU: Intel ® Celeron ® CPU N3350 @ 1.10GHz

   Memory: Onboard memory LPDDR4 4GB

Procedure:

   Step1. Connected memory with product specification max supported

   Step2. Boot into BIOS manual and check memory information is correct

   Step3. Execute benchmark AP "sysbench", recode the benchmark

   <read # sysbench --test=memory --memory-block-size=8K --memory-total-size=2G
    --memory-oper=read run>

   <write # sysbench --test=memory --memory-block-size=8K --memory-total-size=2G run>

Test result

No.	Test item			Result		Remark
			Pass	Fail	N/A	
1	System should boot properly		☒	☐	☐	
2	BIOS\Memory information is correct		☒	☐	☐	
3	Onboard Memory	System should boot up properly	☒	☐	☐	
4	Recode Memory Benchmark		read	Transferred: 21498.68MB/s Total time: 0.0953s		
			write	Transferred: 4727.54MB/s Total time: 0.4332s		

1.3. eMMC Function Test

Configuration:

   eMMC: Onboard eMMC 32GB

Procedure:

   Step1. Connect eMMC

   Step2. Boot into BIOS manual and check eMMC information is correct

   Step3. Install Ubuntu with eMMC

   Step4. Check eMMC read/write speed can meet the specification

                                        <install# apt-get install hdparm -y>

                                        <check HDD# fdisk -l>

                                        <Read command#: hdparm -t /dev/sdaX>

                                        <Write command#: time dd if=/dev/zero of=/var/test bs=2k count=1000000>

Test result

No.	Test item	Result			Remark
		Pass	**Fail**	**N/A**	
1	eMMC information should correct during BIOS	☒	☐	☐	
2	eMMC R/W speed should meet specification	☒	☐	☐	Read: 283.20 MB/s Write: 95.4 MB/s

1.4. Video Function Test

Procedure:

   Step1. Connect DP monitor

   Step2. Install Ubuntu 16.04.4 LTS to DUT system

   Step3. After installation and boot to Ubuntu 16.04.4 LTS for test X-windows mode and Text mode

Test result

No.	Test item		Result			Remark
			Pass	**Fail**	**N/A**	
1	Display shouldn't loss during OS installation	DP	☒	☐	☐	
2	Display shouldn't flicker during POST and OS	DP	☒	☐	☐	
3	DP should display normal with x-window and text mode		☒	☐	☐	1920x1080
4	Hot Plug		☒	☐	☐	

1.4.1. Video Function Test

Procedure:

   Step1. Connect eDP panel

   Step2. Install Ubuntu 16.04.4 LTS to DUT system

   Step3. After installation and boot to Ubuntu 16.04.4 LTS for test X-windows mode and Text mode

Test result

No.	Test item		Result			Remark
			Pass	Fail	N/A	
1	Display shouldn't loss during OS installation	eDP	☒	☐	☐	
2	Display shouldn't flicker during POST and OS	eDP	☒	☐	☐	
3	eDP should display normal with x-window and text mode		☒	☐	☐	1280x800

1.5. USB Ports Function Test

Procedure:

Step1. Connect USB keyboard and check it works properly under BIOS/DOS/Ubuntu 16.04.4 LTS

Step2. Connect USB flash, check system can boot from USB flash and USB flash can work properly under Ubuntu 16.04.4 LTS

Step3. Connect USB2.0/3.0 Flash, check system can boot from USB flash and USB flash can work properly under Ubuntu 16.04.4 LTS

Step4. Check USB2.0/3.0 flash read speed can meet the Flash specification

<Read command#: hdparm -t /dev/sdaX>

<Write command#: time dd if=/dev/zero of=/var/test bs=2k count=1000000>

Test Result

No.	Test item	Result			Remark
		Pass	Fail	N/A	
1	Boot from USB DVD-ROM	☒	☐	☐	Install OS
2	USB 1.1/2.0/3.0 devices (Flash, keyboard, mouse, DVD ROM) can work properly on USB 2.0/3.0 ports	☒	☐	☐	
3	USB2.0 Port R/W speed should meet specification	☒	☐	☐	Read:34.73 MB/s Write:33.8 MB/s
4	USB3.0 Port R/W speed should meet specification	☒	☐	☐	Read:94.20 MB/s Write:91.1 MB/s

1.6. LED Function Test

Procedure:

Step1. To check Ethernet LED status can follow below methods

A. Use LAN cable to connect 1GB switch between Server PC and DUT, transmit some packets between Server PC and DUT

B. Use LAN cable to connect 100MB switch between Server PC and DUT, transmit some packets between Server PC and DUT

C. Use LAN cable to connect 10MB switch between Server PC and DUT, transmit some packets between Server PC and DUT

	Speed LED
1GB/s	Color Orange
100MB/s	Color Green
10MB/s	Color Blank

	Link/Act LED
Un-Linked	TBD
Linked	TBD
Transmit	LED Blink

Test result

No.	Test item	Result			Remark
		Pass	Fail	N/A	
1	1000M connection LAN LED action as below: Speed LED: Orange Link LED: Green / Blinking	☒	☐	☐	
2	100M connection LAN LED action as below: Speed LED: Green Link LED: Green / Blinking	☒	☐	☐	
3	10M connection LAN LED action as below: Speed LED: Blank Link LED: Green / Blinking	☒	☐	☐	

1.7. LAN Function Test
Configuration:
    1G switch: D-Link DGS-1210-16
    100M switch: D-Link DES-1008A
    10M HUB: SVEC FD916H

Procedure:
    Step1. Each LAN port connect DHCP server
    Step2. Connect internet and ping Google (8.8.8.8)
    Step3. Test each LAN port WOL function properly which from OS shutdown
    Step4. Client PC to install and execute iperf and host PC execute iperf –s (Windows OS)
    Step5. Iperf test with 1G, 100M, 10M switch/Hub
    <#apt-get install iperf>
    <#iperf3 -c 172.16.12.50 -i 1 -t 120>

Test result

Test item	LAN 1			Note
	Pass	Fail	N/A	
Internet Browser (DHCP Server) Ping website(8.8.8.8) should work properly	☒	☐	☐	
Wake On LAN WOL should work properly when resume from S5	☒	☐	☐	MAC :00-07-32-53-EF-54 MAC :00-07-32-53-EF-55 MAC :00-07-32-53-EF-56 MAC :00-07-32-53-EF-57
1Gbps connection Iperf test result should not loss and max bandwidth must be in 900MB or more	☒	☐	☐	
100Mbps connection Iperf test result should not loss and	☒	☐	☐	

	Pass	Fail	N/A	
max bandwidth must be in 90MB or more				
10Mbps connection Iperf test result should not loss and max bandwidth must be in 9MB or more	☒	☐	☐	

1.8. Wi-Fi Function Test

Procedure:

    Step1. Open Wi-Fi switch connect access point

    Step2. Wi-Fi connect DHCP server

    Step3. Connect internet and ping Google (8.8.8.8)

    Step4. Download files (Size 1G) from internet

    Step5. Wi-Fi Performance test / Web link：www.bandwidthplace.com

    Step6. Wi-Fi switch enabled / disabled

Test Result

Wi-Fi Function	Function			Note
	Pass	Fail	N/A	
Enable / Disable	☒	☐	☐	Switch on/off
Connect to internet	☒	☐	☐	
Download files from internet	☒	☐	☐	
Performance Test	☒	☐	☐	(www.bandwidthplace.com) Download speed:6.71 Mbps Upload speed:4.45 Mbps

1.9. 3G Function Test

Procedure:

    Step1. 3G switch Enable / Disable

    Step2. Open 3G network search provider connect DHCP server

    Step3. Connect internet and ping Google (8.8.8.8)

    Step4. Download files (Size 1G) from internet

    Step5. 3G Performance test / Web link:www.bandwidthplace.com

Test Result

3G Function	Function			Note
	Pass	Fail	N/A	
Enable / Disable	☒	☐	☐	Switch on/off
Connect to internet	☒	☐	☐	
Download files	☒	☐	☐	
Performance Test	☒	☐	☐	(www.bandwidthplace.com) Download speed:4.36 Mbps Upload speed:1.09 Mbps

1.10. Bluetooth Function Test

Procedure:

    Step1. <install# apt-get install Bluetooth bluez blueman>

    Step2. Connect to Bluetooth device

    Step3. Check BT device can work properly under Ubuntu 16.04.4 LTS

    Step4. Send / Receive file (10MB above) from BT

Test Result

Bluetooth Function		Function			Note
		Pass	Fail	N/A	
Bluetooth Devices	Microsoft Mobile Keyboard 5000	☒	☐	☐	
	Logitech M557	☒	☐	☐	
	Earphone MW600	☒	☐	☐	
File transmission	Send file(10 MB)	☒	☐	☐	
	Receive(10 MB)	☒	☐	☐	

2. Hardware Compatibility Test

2.1. CPU Compatibility Test

Procedure:

    Step1. Check CPU information and frequency should show correct value during BIOS and O.S

        <Linux CPU info # cat /proc/cpuinfo>

    Step2. CPU supported must meet specification

Test Result

Test item	Result			Note
	Pass	**Fail**	**N/A**	
Below CPU information and frequency should show correct value				
Intel ® Celeron ® CPU N3350 @ 1.10GHz	☒	☐	☐	

2.2. USB Compatibility Test

Procedure:

    Step1. Insert USB device to USB2.0 / 3.0 ports

    Step2. Test each USB device function

O.S: Ubuntu 16.04.4 LTS / kernel: 4.13.0-36-generic #40

Test Result

Test Item		Result			Note
		Pass	**Fail**	**N/A**	
USB devices function should work properly					
Keyboard	Microsoft 1366	☒	☐	☐	
Mouse	Microsoft 1113	☒	☐	☐	
DVD ROM	AOpen EDR8865U	☒	☐	☐	
HUB	CLiPtec USB2.0 4Port Hub	☒	☐	☐	
HDD	Transcend USB3.0 500GB - TS500GSJ25D3	☒	☐	☐	
USB2.0 Flash	ADATA PD4 512MB	☒	☐	☐	
USB3.0 Flash	Transcend 32GB	☒	☐	☐	
	Apacer 128GB	☒	☐	☐	

3. O.S Compatibility Test

3.1. Linux OS Compatibility Test

Procedure:

Step1. Install Ubuntu from USB DVD ROM

Step2. Enter lspci command detect H/W

Step3. Enter dmesg or dmesg|mort, review dmesg log to find out the error and warning key words

Step4. Force speed(ifconfig)

   (1) Execute command "ethtool –s ethx(enpxsx) autoneg on speed 1000" ,link cable to confirm speed light is orange

   (2) Execute command "ethtool –s ethx(enpxsx) autoneg off speed 100" ,link cable to confirm speed light is green

   (3) Execute command "ethtool –s ethx(enpxsx) autoneg off speed 10" ,link cable to confirm speed light is blank

Step5. ifconfig Ethernet

   (1) Execute command "ifconfig ethx(enpxsx) down" close ethernet interface

   (2) Execute command "ifconfig ethx(enpxsx) up" start ethernet interface

Step6. Jumbo Frame

   (1) Setting #ifconfig enpxsx mtu 9000

   (2) Check #ifconfig enpxsx (mtu will change from 1500 to 9000)

Step 7. Enter ping Google command (ping 8.8.8.8), test network function is whether normal

Step 8. Execute command "init 0" or press shutdown icon to shutdown system

Step 9. Execute command "init 6" or press reset icon to reset system

Test result

3.1.1. Ubuntu 16.04.4 LTS / kernel: 4.13.0-36-generic #40

Test Item		Result			Note
		Pass	Fail	N/A	
System should not any error during install process		☒	☐	☐	
lspci to check H/W device		☒	☐	☐	
Record log file which was error or warring key words		☒	☐	☐	Run record log file finish will red key words / error items appear with confirm this items no impact to any function by SW RD
Force speed	LAN connection speed should show 1000Mb when execute command "ethtool –s ethx(enpxsx) autoneg on speed 1000"	☒	☐	☐	
	LAN connection speed should show 100Mb when execute command "ethtool –s ethx(enpxsx) autoneg off speed 100"	☒	☐	☐	
	LAN connection speed should show 10Mb when execute command "ethtool –s ethx(enpxsx) autoneg off speed 10"	☒	☐	☐	
Ifconfig	Ethernet interface should be closed when execute command "ifconfig ethx(enpxsx) down"	☒	☐	☐	
	Ethernet interface should be started when execute command "ifconfig ethx(enpxsx) up"	☒	☐	☐	

Jumbo	Jumbo function should work properly	☒	☐	☐	
Connected internet and ping the website should work properly (Google: 8.8.8.8)		☒	☐	☐	
Shutdown	System should be shutdown when execute command "init 0" or press shutdown icon	☒	☐	☐	
Reboot	System should be reset when execute command "init 6" or press reset icon	☒	☐	☐	
Switch User		☒	☐	☐	
Lock Screen		☒	☐	☐	
Logout		☒	☐	☐	