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	24	2
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
D171104QEE01	Minor	Burnintest fail	Fixed
D171104QEE02	Minor	Mechanical issue	Fixed
D171104QEE03	Minor	PXE Function fail	Fixed
D171104QEE04	Minor	DP Audio issue	Fixed
D171104QEE05	Minor	USB 3.0 ports with power in S3/S5 mode fail	Fixed
D171104QEE06	Minor	TPM issue	Fixed
D171104QEE07	Minor	Camera issue	Fixed
D171104QEE08	Minor	AMPAK AP6355SD WIFI + BT function fail	Fixed
D171104QEE09	Enhancement	Driver issue	Fixed
D171104QEE10	Minor	Wake on lan function fail	Fixed
D171104QEE11	Minor	S3 issue	Fixed
D171104QEE12	Minor	USB3.0 port speed issue	Fixed
D171104QEE13	Minor	eDP function fail	Fixed
D171104QEE14	Minor	SATA DVD-ROM issue	Fixed
D171104QEE15	Minor	Power Consumption S3/S5 mode issue	Fixed
D171104QEE16	Minor	LAN issue	Fixed
D171104QEE17	Minor	hi-safe issue	Fixed
D171104QEE18	Minor	Device Manager yellow Mark	Fixed
D171104QEE19	Minor	Press Power button delay 4sec issue	Fixed
D171104QEE20	Minor	Reset issue	Fixed
D171104QEE21	Minor	Shutdown issue	Fixed
D171104QEE22	Minor	BIOS issue	Fixed
D171104QEE23	Minor	Spec issue	Fixed
D171104QEE24	Enhancement	Booting Time issue	Fixed
D171104QEE25	Minor	Usable memory issue	Fixed
D171104QED01	Minor	LAN issue (S4 mode)	Fixed

Version Released Records

Date	Version	Change History	Note
5/26/2015	C0	1. Add UEFI,GPS,CANBUS,POE, Cold boot test item	
3/22/2016	C1	1. Add issue status 2. Update CTOS devices 3. Add HDMI 5M cable compatibility test 4. Modified boot up without display test 5. Add Touch Function test 6. Add DC adapter compatibility test 7. Add Windows10 compatibility test 8. Update Benchmark tool 9. Update DOS / Windows on/off test rule 10. Add DDR4 SO-DIMM 11. Update Linux to Ubuntu16.04 12. Add Stability Test \ Memory test	
10/21/2016	C2	1. Remove Smartbits test item 2. Update chapter7.2 \ LVDS type support 3. Add chapter9.6. System stability after S3 / S4 / S5 cycles	
01/15/2018	C3	1. Modified PWB test item 2. Update Benchmark test tool 3. Modified wide voltage test item 4. Add Iperf for LAN performance test 5. Defined USB3.0 power status 6. Update POE LAN test item 7. Add PCIe bear card test 8. Define booting time test criteria 9. Add TPM test item 10. Update CTOS compatibility devices	

Note :

For all test items in this report, 3 results have been defined and described as following:

Pass: Functionality work perfectly
Fail: Functionality failed and must be resolved in the next version
N/A: Functionality Not Applicable or Not Available

This test report would be updated when re-test completed in product next change version

Specification Validation
Main Specification

Item	Specification	Result			Note
		Pass	Fail	N/A	
CPU/Chipset	Intel® Apollo Lake SoC E3930/E3940/N3350/N4200	☒	☐	☐	
Memory	Onboard Single/Dual Channel LPDDR4 memory, Max 8GB	☒	☐	☐	
Graphics	Intel® HD Graphics DPx1 Full eDPx1	☒	☐	☐	
WIFI/BT	AMPAK AP6355SD WIFI 802.11 a/b/g/n/ac + BT 4.2 2xAntenna Note: Only supported by E39XX. Not supported on N3350 and N4200	☒	☐	☐	
Audio	via DP and I2S (from Docking)	☒	☐	☐	
MIPI CSI	Support simultaneous display 1x MIPI-CSI 2 Channel connector (for 2M Camera) 1x MIPI-CSI 4 Channel connector (for 8M camera)	☒	☐	☐	
Storage	32GB/64GB eMMC 1x SATA0 to Docking Connector 2 1x SATA1 optional with USB3.0 to Docking Connector 2	☒	☐	☐	
USB	1x USB 3.0 Host 1x USB 3.0 OTG (With device port) 2x USB 2.0 pin header 1x USB 2.0 to Docking Connector 1 3x USB 2.0 to Docking Connector 2 2x USB 3.0 optional with PCIe (Not include USB 2.0) to Docking Connector 2 1x USB 3.0 optional with SATA1 (Not include USB 2.0) to Docking Connector 2	☒	☐	☐	
PCIe	1x PCIe optional with USB3.0 to Docking Connector 1 3x PCIe to Docking Connector 2 2x PCIe optional with USB 3.0 to Docking Connector 2	☒	☐	☐	
Expansion Slots	Docking Connector 1 100 pin: 1. 5V, GND 2. Original HAT 40pin interface with MAX10 (GPIOx28, I2Cx2, SPIx1, HSUART1x1, ADCx1, 5V, GND) 3. PCIex1 (Optional USB 3.0) 4. USB2.0x1 5. LPC Docking Connector 2 100 pin: 1. 12V, GND 2. DDIx1 (for 3rd display on HDMI	☒	☐	☐	

				Pass	Fail	N/A	
			/ DP) 3. 3x PCIex1 4. 2x PCIex1 or USB3.0 5. 1xSATA1 or USB 3.0 6. 1x SATA0 7. 3xUSB2.0 Note: One PCIex4 + 1 PCIex1 possible				
I/O Placement	Rear I/O Ports		1x USB 3.0 Host	☒	☐	☐	
			1x USB OTG	☒	☐	☐	
			1x 12V DC JACK	☒	☐	☐	
			1x DP	☒	☐	☐	
			1x Power Button	☒	☐	☐	
	Internal I/O Connectors		1x RTC Pin Header	☒	☐	☐	
			1x BIOS Program Pin Header	☒	☐	☐	
			1x FAN Pin Header	☒	☐	☐	
			1x Power Button Pin Header	☒	☐	☐	
			1x Reset Pin Header	☒	☐	☐	
			2x Antenna Headers	☒	☐	☐	
			1x eDP connector	☒	☐	☐	
			1x MIPI-CSI 21 pin FPC connector (2 Channel) 1x MIPI-CSI 31 pin FPC connector (4 Channel)	☒	☐	☐	
			1x USB wafer(2x USB2.0+1xUART0(debug UART)	☒	☐	☐	
			2x 100 pin docking connector	☒	☐	☐	
Power			12V DC in Power up from Docking Connector 1 with 5V Power up from Docking Connector 2 with 12V Limitation: 1. Only 1 power source allowed at one time between (12V DCIn, Docking Connector 1 5V, and Docking Connector 2 12V) 2. When power up from Docking Connector 1 with 5V, 12V to Docking Connector 2 is not supported	☒	☐	☐	

O.S. Support

Item	Specification	Result			Note
		Pass	Fail	N/A	
Microsoft Windows	Windows 10 64bit	☒	☐	☐	
Linux	Ubuntu 16.04.4 or higher	☒	☐	☐	

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)
Driver folder	UPC-PLUS\20181017 UPC-PLUS-LAN
CPU Type	Intel ® Atom ™ Processor E3940 @ 1.60GHz
Memory Type	Onboard memory LPDDR4 4GB
Storage	Onboard eMMC 32GB
SATA DVD-ROM	LG DVD ROM GH20NS15
USB DVD-ROM	AOpen EDR8865U Slim DVD ROM
LCD Monitor	DELL U2713HM
eDP	FutureLabs LTD DSAM-101JDHX30BP1U1 10.1" 1280x800
Operating System	☒ Windows 10 Enterprise English Version 64Bit (1703)
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

Summary Table of contents:

1. Hardware Compatibility

1.1. CPU Compatibility Test

CPU Information (Information and frequency should show correct value)	Result			Note
	Pass	Fail	N/A	
Intel ® Atom ™ Processor E3940 @ 1.60GHz	☒	☐	☐	
Intel ® Atom ™ Processor E3930 @ 1.30GHz	☒	☐	☐	
Intel ® Pentium ® CPU N4200 @ 1.10GHz	☒	☐	☐	
Intel ® Celeron ® CPU N3350 @ 1.10GHz	☒	☐	☐	

1.2. Memory Compatibility Test

Memory Information a. Information and frequency should show correct value b. System should boot up and into OS normally	AAEON P/N	Result			Note
		Pass	Fail	N/A	
Onboard memory					
Onboard memory LPDDR4 2GB	-	☒	☐	☐	
Onboard memory LPDDR4 4GB	-	☒	☐	☐	
Onboard memory LPDDR4 8GB	-	☒	☐	☐	

1.3. SATA Compatibility Test
1.3.1. Onboard SATA(AHCI) Test

SATA Device Information (Information and size should show correct value with AHCI mode)	AAEON P/N	Result			Note
		Pass	Fail	N/A	
Main Board project test with 80~100cm SATA cable , typical #1709070800					
SATAII	Seagate 2.5" SATAII ST9120823AS 120GB 5400rpm	N/A	☒	☐	☐	
SATAII	TOSHIBA 2.5" SATAII MK1676GSX 160GB 5400rpm	N/A	☒	☐	☐	
SATAIII	WD 2.5" SATA 3 HDD 500GB - WD5000LPVX	N/A	☒	☐	☐	
SATAIII	TOSHIBA 3.5" SATAIII HDS721010DLE630 1TB 7200rpm	N/A	☒	☐	☐	
SATAIII	WD 3.5" SATAIII WD20EZRX 2TB 7200rpm	N/A	☒	☐	☐	
SATAIII	Seagate 3.5" SATAIII ST3000DM001 3TB 7200rpm	N/A	☒	☐	☐	
DVD	LG DVD ROM GH20NS15	N/A	☒	☐	☐	
SSD	Transcend ,TS512GSSD420K-AA 512GB MLC	968C512G06	☒	☐	☐	
SSD	Phison SSBP064GTB3C0-S11 64GB ,3D TLC	N/A	☒	☐	☐	
SSD	Phison SSBP128GTB3C0-S11 128GB ,3D TLC	N/A	☒	☐	☐	
SSD	Intel SSD 540s Series 120GB	AP-SS968C120G08	☒	☐	☐	
SSD	Transcend TS32GSSD370 2.5".32GB.SATA III SSD MLC	968C032G2D	☒	☐	☐	
SSD	Innodisk 3MG2-P MLC 16GB DGS25-16GD81BC3SC-26	AP-SS968C016G3K	☒	☐	☐	

SSD	Innodisk 3MG2-P MLC 32GB DGS25-32GD81BC3DC-26	AP-SS968C032G1P	☒	☐	☐	
SSD	Innodisk 3MG2-P MLC 64GB DGS25-64GD81BC3QC-26	968C064G39	☒	☐	☐	
SSD	Innodisk 3MG2-P MLC 128GB DGS25-A28D81BC3QC-26	AP-SS968C128G1P	☒	☐	☐	
SSD	Innodisk 3MG2-P MLC 256GB DGS25-B56D81BC3QC-26	AP-SS968C256G16	☒	☐	☐	

1.4. Monitor Compatibility Test

Monitor Information a. Monitor should display under DOS and OS environment b. Monitor should not appear ghost or ripples	Result			Note
	Pass	Fail	N/A	
Display port				
DELL U2713HM	☒	☐	☐	
DELL P2415Qb	☒	☐	☐	
ViewSonic VP2770-LED	☒	☐	☐	

2. Basic Function Test

2.1. Video Function Test

2.1.1. Single Output Function Test

Configuration	
CPU	Intel ® Atom ™ Processor E3940 @ 1.60GHz
Memory	Onboard memory LPDDR4 4GB
Storage	Onboard eMMC 32GB
Display port	DELL P2415Qb
eDP	FutureLabs LTD DSAM-101JDHX30BP1U1 10.1" 1280x800
Operating system	Windows 10 Enterprise English Version 64Bit (1703)
Color Quality	☒16bit ☐24bit ☒32bit

Resolution	DP			eDP			Note
	Pass	Fail	N/A	Pass	Fail	N/A	
800X600	☒	☐	☐	☒	☐	☐	
1024X768	☒	☐	☐	☒	☐	☐	
1280X600	☒	☐	☐	☒	☐	☐	
1280X720	☒	☐	☐	☒	☐	☐	
1280X768	☒	☐	☐	☒	☐	☐	
1280X800	☒	☐	☐	☒	☐	☐	
1280X1024	☒	☐	☐	☐	☐	☒	
1360X768	☒	☐	☐	☐	☐	☒	
1366X768	☒	☐	☐	☐	☐	☒	
1600X900	☒	☐	☐	☐	☐	☒	
1600X1200	☒	☐	☐	☐	☐	☒	
1680X1050	☒	☐	☐	☐	☐	☒	
1920X1080	☒	☐	☐	☐	☐	☒	
1920X1200	☒	☐	☐	☐	☐	☒	
2048X1152	☒	☐	☐	☐	☐	☒	
2560X1440	☒	☐	☐	☐	☐	☒	
3840X2160	☒	☐	☐	☐	☐	☒	
EDID check	☒	☐	☐	☐	☐	☒	
Hot plug	☒	☐	☐	☐	☐	☒	
Rotation(0/90/180/270)	☒	☐	☐	☒	☐	☐	
DOS Display	☒	☐	☐	☒	☐	☐	

Note: Pay attention to Full Screen under POST screen and Text Mode

2.1.2. Multi-Display Output Test

Selection	Output	Result			Note
		Pass	Fail	N/A	
Dual Display Clone	DP + eDP	☒	☐	☐	
Extended Desktop		☒	☐	☐	

2.1.3. Boot up Without Display Test

Process step:
1. Power on without inserting any DP connector until system reaches Windows desktop
2. Plug DP connector into test machine while system reaches Windows then check Graphics driver and display
3. Check DP output Brightness is normal and it shows "Ghost Image" / "Flicker" or not
4. Repeat step 1~3 for DP testing

Test item		Result			Note
		Pass	Fail	N/A	
Display should working normal	Display port	☒	☐	☐	

in Windows Desktop					

2.2. Audio Function Test

Function Test	Result			Note
	Pass	Fail	N/A	
DP Audio	☒	☐	☐	

2.3. LAN Function Test

Connect two computers via different speed LAN HUB by using "Ping" instruction (1000 times) Command: ping xxx.xxx.xx.xx –l 65500 –n 1000									
1000Mbps LAN HUB		D-Link DGS-1008D							
100Mbps LAN HUB		Accton Desktop-3005							
10Mbps LAN HUB		SVEC FD916H							
OnBoard LAN1	Intel ® I211 Gigabit Network Connection #2				MAC Address		00-07-32-53-EF-54		
OnBoard LAN2	Intel ® I211 Gigabit Network Connection #3				MAC Address		00-07-32-53-EF-55		

LAN Speed	Link / Speed LED	Active LED	LAN 1			LAN 2			Note
			Pass	Fail	N/A	Pass	Fail	N/A	
1000Mbps Ping loss≦1	🟧	🟩	☒	☐	☐	☒	☐	☐	
100Mbps Ping loss≦1	🟩	🟩	☒	☐	☐	☒	☐	☐	
10Mbps Ping loss≦1	⬜	🟩	☒	☐	☐	☒	☐	☐	
Wake On LAN (WOL should work properly when resume from S3/S4/S5)	S3		☒	☐	☐	☒	☐	☐	
	S4		☒	☐	☐	☒	☐	☐	
	S5		☒	☐	☐	☒	☐	☐	
LAN Boot (PXE) (Boot from LAN should work properly)			☒	☐	☐	☒	☐	☐	
Internet Browser (DHCP Server) (Visit the website should work properly)			☒	☐	☐	☒	☐	☐	
Access 1GB file from ftp (Access file should not stop or error)			☒	☐	☐	☒	☐	☐	

Connect two computers via different speed LAN HUB by using "Ping" instruction (1000 times) Command: ping xxx.xxx.xx.xx –l 65500 –n 1000									
1000Mbps LAN HUB		D-Link DGS-1008D							
100Mbps LAN HUB		Accton Desktop-3005							
10Mbps LAN HUB		SVEC FD916H							
OnBoard LAN3	Intel ® I211 Gigabit Network Connection				MAC Address		00-07-32-53-EF-56		
OnBoard LAN4	Intel ® I211 Gigabit Network Connection #4				MAC Address		00-07-32-53-EF-57		

LAN Speed	Link / Speed LED	Active LED	LAN 3			LAN 4			Note
			Pass	Fail	N/A	Pass	Fail	N/A	
1000Mbps Ping loss≦1	🟧	🟩	☒	☐	☐	☒	☐	☐	
100Mbps Ping loss≦1	🟩	🟩	☒	☐	☐	☒	☐	☐	
10Mbps Ping loss≦1	⬜	🟩	☒	☐	☐	☒	☐	☐	
Wake On LAN (WOL should work properly when	S3		☒	☐	☐	☒	☐	☐	
	S4		☒	☐	☐	☒	☐	☐	

resume from S3/S4/S5)	S5	☒	☐	☐	☒	☐	☐	
LAN Boot (PXE) (Boot from LAN should work properly)		☒	☐	☐	☒	☐	☐	
Internet Browser (DHCP Server) (Visit the website should work properly)		☒	☐	☐	☒	☐	☐	
Access 1GB file from ftp (Access file should not stop or error)		☒	☐	☐	☒	☐	☐	

2.4. CSI 2 Lane Header

Test item		Result			Note
		Pass	Fail	N/A	
CSI 2 Lane Header	2M camera function	☒	☐	☐	1.BIOS select : Front Camera\OV2740 2.OS must use Windows10 (1607) 3.Installation guide refer to [Install Camera driver SOP ver2]

2.5. CSI 4 Lane Header

Test item		Result			Note
		Pass	Fail	N/A	
CSI 4 Lane Header	8M camera function	☒	☐	☐	1.BIOS select: Rear Camera\IMX135 2.OS must use Windows10 (1607) 3.Installation guide refer to [Install Camera driver SOP ver2]

2.6. UART Test

Test item	Result			Note
	Pass	Fail	N/A	
UART Test	☒	☐	☐	COM1 / COM2

2.7. FAN / GPIO Control

Test item	Result			Note
	Pass	Fail	N/A	
FAN enable / disable control (Intel GPIO tool \ GPIO36 PWM2 \ Level 1 \ Tx enable \ Rx disable \ update)	☒	☐	☐	GPIORxDis➜Disable / GPIOTxDis➜Enable➜FAN On

GPIORxDis➜Enable / GPIOTxDis➜ Disable➜FAN Off |

2.8. USB Port Integration Test

Item	USB Port	USB2.0 ports (under OS)			USB3.0 ports (under OS)			Note
		Pass	Fail	N/A	Pass	Fail	N/A	
USB HDD:	Transcend TS500GSJ25D3 500GB	☒	☐	☐	☒	☐	☐	
USB2.0 Flash:	ADATA PD4 512MB	☒	☐	☐	☒	☐	☐	
USB3.0 Flash:	Transcend 32GB	☒	☐	☐	☒	☐	☐	

	Apacer 128GB	☒	☐	☐	☒	☐	☐	
	ADATA 128GB	☒	☐	☐	☒	☐	☐	
USB DVD ROM:	AOpen EDR8865U Slim DVD ROM	☒	☐	☐	☒	☐	☐	
USB Keyboard:	Microsoft 1366	☒	☐	☐	☒	☐	☐	
USB Mouse:	Microsoft 1113	☒	☐	☐	☒	☐	☐	
USB FDD:	Galileo FD-05PUB	☒	☐	☐	☒	☐	☐	
USB2.0 HUB:	Cliptec	☒	☐	☐	☒	☐	☐	

Test item	Result			Note
	Pass	Fail	N/A	
USB3.0 ports with power in S3 mode	☒	☐	☐	
USB3.0 ports with power in S5 mode	☒	☐	☐	

2.9. TPM Function Test

Test item		Result			Note
		Pass	Fail	N/A	
TPM driver and version check in device manager		☒	☐	☐	
TPM Administration	TPM Information check	☒	☐	☐	
	Clear TPM	☒	☐	☐	
BitLocker Test	Encryption test	☒	☐	☐	
	Recovery key test	☒	☐	☐	
	Decryption test	☒	☐	☐	

2.10. Jumper and Connector Function Test

Test item		Result			Note
		Pass	Fail	N/A	
Clear CMOS will clear CMOS date, time, setting, password		☒	☐	☐	
Power button	One touch for power on	☒	☐	☐	
	One touch for power off in BIOS manual	☒	☐	☐	
	One touch for system shutdown in Windows environment (power manager need to set press PWB for shutdown)	☒	☐	☐	
Power LED behavior	S1(boot up): Power LED on	☒	☐	☐	
	S3: Power LED off	☒	☐	☐	
	S4: Power LED off	☒	☐	☐	
	S5: Power LED off	☒	☐	☐	

3. Expansion card and Application Test

3.1. Expansion Slot Compatibility Test

Test point: Make sure expansion slots are compatible with expansion cards

Full Size Mini PCI Express Card (**Test on full size slot**)		Result			Note
		Pass	**Fail**	**N/A**	
Full size	Quectel UC20 3G Card	☒	☐	☐	If M/B support SIM slot
Full size	Sierra Wireless AirPrime MC7304 Qualcomm 4G	☒	☐	☐	If M/B support SIM slot 1. Ping 168.95.1.1 for 1000 clcyes, loss<2 times 2. Download 1GB file from website
Full size	AAEON PER-C41C-A10 4 port RS-232	☒	☐	☐	
Half Size Mini PCI Express Card (**Test on full size & half size slot**)		**Result**			**Note**
		Pass	**Fail**	**N/A**	
Half size	AzureWave AW-NB159H 802.11b/g/n RTL8723BE combo module	☒	☐	☐	
Half size	AzureWave AW-CB161H 802.11a/b/g/n/ac(PCI-e Wireless+ USB Bluetooth) Realtek RTL8821AE	☒	☐	☐	
Half size	Bointec DPE909-AA WIFI	☒	☐	☐	

3.2. Display port Converter Compatibility Test

Test Item			Result			Note
			Pass	**Fail**	**N/A**	
DP to HDMI converter: LPC-1504	DOS display	Full screen	☒	☐	☐	
	OS display	Full screen	☒	☐	☐	Max resolution
DP to DVI converter: LPC-1503	DOS display	Full screen	☒	☐	☐	
	OS display	Full screen	☒	☐	☐	Max resolution

4. Power Consumption Test

Configuration	
CPU	Intel ® Atom ™ Processor E3940 @ 1.60GHz
Memory	Onboard memory LPDDR4 4GB
Storage	Onboard eMMC 32GB
O.S	Windows 10 Enterprise English Version 64Bit (1703)

4.1. Power Consumption

Test Equipment					
Equipment	DC source				
Manufacturer	Chroma				
Model name	62012P-600-8				
Power Supply		**Current**		**P**	**Note**
(Full Loading Mode) Windows10 with Prime 95 Full Loading Test	(+12V)	0.97	A	11.64	W	
Full Loading Total Watt	11.64 (W)				
S3 mode: Measure the current value when system in S3 mode of windows and without running any	(+12V)	0.11	A	1.32	W	
Suspend Total Watt	1.32 (W)				
Win. Idle mode: Measure the current value when system in windows mode and without running any program	(+12V)	0.45	A	5.4	W	CPU utilization must< 2% while idle mode
Idle Total Watt	5.4 (W)				
S5 mode: Measure the current value when system in S5 mode of windows and without running any	(+12V)	0.10	A	1.2	W	
Suspend Total Watt	1.2 (W)				

4.2. Wide Voltage Test
4.2.1. DC Adapter Compatibility Test
Test Point:
Confirm each adapter can be compatible with wide voltage design

Adapter Information		AAEON P/N	Result			Note
System boot to OS should work properly			**Pass**	**Fail**	**N/A**	
12V	FSP084-DIBAN2 84W	1255900841	☒	☐	☐	
12V	FSP084-DMAA1 84W	1757908403	☒	☐	☐	

4.3. CMOS Battery Test

Test Point: Calculated result should be > 5 years
Battery: CR2032
  Capacity 225mAh

Check item	Measured Voltage		Measured Current		Calculate Result		Result			Note
							Pass	Fail	N/A	
Battery leakage 1. Voltage should be > 3 V 2. Calculated result should be > 5 years	3.05	V	3.1	uA	8.3	years	☒	☐	☐	

Calculate result=225mAh/measured current/365days/24hours

5. Time Accuracy Test

5.1. System Clock & RTC Clock Test

Under Room Temperature:26℃

Item / Function	Time Interval	Criteria	Actual		Result Pass	Result Fail	Result N/A	Note
RTC Clock in Power On Mode	24 hrs	+/-2 sec	0	Sec	☒	☐	☐	
RTC Clock in Power Off Mode	24 hrs	+/-2 sec	0	Sec	☒	☐	☐	

5.2. Booting Time Test

Installation	Criteria	Actual		Note
System Booting Time <Press the Power Button till "Beep" Sound or display appears>	Booting time ≦12sec, Pass Booting time 13~20 sec, Enhancement Booting time > 20sec, Fail	11.72	Sec	

6. O.S. Compatibility Test

6.1. Windows 10 Enterprise English Version 64Bit (1703)

64bit Driver Information	
Chipset Software	Intel ® Chipset Device Software 10.1.1 (2015-06-03)
Graphics Media	Intel ® HD Graphics 21.20.16.4565 (12/10/2016)
LAN Driver	Intel ® I211 Gigabit Network Connection 12.15.184.0 (12/8/2016)
	Intel ® I211 Gigabit Network Connection #2 12.15.184.0 (12/8/2016)
	Intel ® I211 Gigabit Network Connection #3 12.15.184.0 (12/8/2016)
	Intel ® I211 Gigabit Network Connection #4 12.15.184.0 (12/8/2016)

Install OS to eMMC

Installation	Result			Note
	Pass	Fail	N/A	
Windows 10 Enterprise English Version 64Bit (1703)	☒	☐	☐	UEFI

Test Results

Test Item		Result			Note
		Pass	Fail	N/A	
Single Display					
DP -- Full Screen		☒	☐	☐	
eDP -- Full Screen		☒	☐	☐	
Multi display		☒	☐	☐	
Basic Function Test					
Usable memory	64bit: 3.85GB	☒	☐	☐	
USB Mouse and Keyboard		☒	☐	☐	
USB Removable Devices	USB2.0	☒	☐	☐	
	USB3.0	☒	☐	☐	
	Safe to remove icon	☒	☐	☐	
TPM 2.0 detection		☒	☐	☐	
LAN Function Test					
LAN1 --- Auto		☒	☐	☐	
LAN2 --- Auto		☒	☐	☐	
LAN3 --- Auto		☒	☐	☐	
LAN4 --- Auto		☒	☐	☐	
Audio Function Test					
DP Audio		☒	☐	☐	
Start Menu					
Log off User		☒	☐	☐	
Shut down (S5)		☒	☐	☐	
Sleep (S3)		☒	☐	☐	
Restart		☒	☐	☐	
Hibernate (S4)		☒	☐	☐	

7. BIOS Function Test

Configuration	
CPU	Intel ® Atom ™ Processor E3940 @ 1.60GHz
Memory	Onboard memory LPDDR4 4GB
Storage	Onboard eMMC 32GB
O.S	Windows 10 Enterprise English Version 64Bit (1703)

Test Point:
Confirm BIOS control items are working correctly

7.1. Advanced Test

Test Item (Following item should work properly)		Result			Note
		Pass	Fail	N/A	
ACPI settings					
Enable ACPI Auto Conf		☒	☐	☐	Enabled/Disabled
Enable Hibernation		☒	☐	☐	Enabled/Disabled
ACPI Sleep State	Suspend Disabled	☒	☐	☐	
	S3 (Suspend to RAM)	☒	☐	☐	
CPU Configuration					
CPU Power Management	EIST	☒	☐	☐	Enabled/Disabled
	Turbo Mode	☒	☐	☐	Enabled/Disabled
Active Processor Core	Core 0	☒	☐	☐	Enabled
	Core 1	☒	☐	☐	Enabled/Disabled
	Core 2	☒	☐	☐	Enabled/Disabled
	Core 3	☒	☐	☐	Enabled/Disabled
Intel Virtualization		☒	☐	☐	Enabled/Disabled
Network Stack Configuration					
Network Stack		☒	☐	☐	Enabled/Disabled
Ipv4 PXE Support		☒	☐	☐	Enabled/Disabled
USB Configuration					
USB Mass Storage Driv		☒	☐	☐	Enabled/Disabled
Hardware Monitor		☒	☐	☐	
Trusted Computing					
Security Device Sup		☒	☐	☐	Enabled/Disabled
Pending operation	None	☒	☐	☐	
	TPM Clear	☒	☐	☐	
Power Management					
RTC wake system from	Disabled	☒	☐	☐	
	Fixed Time	☒	☐	☐	
	Dynamic Time	☒	☐	☐	
CRB Setup	Front Camera\OV2740	☒	☐	☐	2M Camera OS must use Windows10 (1607)
	Rear Camera\IMX135	☒	☐	☐	8M Camera OS must use Windows10 (1607)

7.2. Chipset Test

Test Item (Following item should work properly)		Result			Note
		Pass	Fail	N/A	
North Bridge	Memory Information	☒	☐	☐	
South Bridge	HD-Audio Configuration				
	HD-Audio Support	☒	☐	☐	Enabled/Disabled
	HD-Audio DSP	☒	☐	☐	Enabled/Disabled
	SATA Configuration				
	Chipset SATA	☒	☐	☐	Enabled/Disabled

		⊠	☐	☐	
SATA Mode Selection	AHCI	⊠	☐	☐	
Port 0		⊠	☐	☐	Enabled/Disabled
SATA Port 0 Hot Plug		⊠	☐	☐	Enabled/Disabled
SCC Configuration					
SCC eMMC Support (D28		⊠	☐	☐	Enabled/Disabled
eMMC Max Speed	HS400	⊠	☐	☐	R/W: 257/162MB/s
	HS200	⊠	☐	☐	R/W: 173/152MB/s
	DDR50	⊠	☐	☐	R/W: 88/77MB/s

7.3. Boot Test

Test Item (Following item should work properly)		Result			Note
		Pass	Fail	N/A	
Quiet Boot		⊠	☐	☐	
UEFI PXE		⊠	☐	☐	
Boot From eMMC		⊠	☐	☐	
Boot From CDROM		⊠	☐	☐	
Boot From USB HDD		⊠	☐	☐	
Boot From USB Floppy		⊠	☐	☐	
Boot From USB CD-ROM		⊠	☐	☐	
Boot from LAN		⊠	☐	☐	
Disable		⊠	☐	☐	
OS Selection	Windows	⊠	☐	☐	
	Intel Linux	⊠	☐	☐	

7.4. Clear CMOS and Load Default Test

Test Item (Following item should work properly)		Result			Note
		Pass	Fail	N/A	
Clear CMOS by remove battery(under G3 status)		⊠	☐	☐	Clear date, time, setting, password
Load default	Date, time, password should be kept	⊠	☐	☐	
	BIOS setting should be restored to default	⊠	☐	☐	
	Boot option priorities should restore from disable to default	⊠	☐	☐	

7.5. Administrator / User Password Test

Test Item (Following item should work properly)	Result			Note
	Pass	Fail	N/A	
Administrator Password	⊠	☐	☐	Upassw0rd
User Password	⊠	☐	☐	Press Enter

7.6. Negative Test
7.6.1. USB Keyboard Negative Test

Methods	Result			Note
	Pass	Fail	N/A	
1. Boot into BIOS setup manual 2. Press NumLock or ScrLk and press arrow key 3. Confirm arrow key function are normally	☒	☐	☐	

7.6.2. Suspend S3 Negative Test

Methods		Result			Note
		Pass	Fail	N/A	
1. Resume from S3 2. Confirm USB ports, DP audio can work properly	USB ports	☒	☐	☐	
	DP audio	☒	☐	☐	

7.6.3. UEFI Mode Negative Test

Methods	Result			Note
	Pass	Fail	N/A	
1. Install Windows with UEFI mode 2. Clear CMOS 3. Confirm BIOS\Boot device was not loss "Windows boot manager" and should boot into Windows properly	☒	☐	☐	

8. Performance Test

Configuration	
CPU	Intel ® Atom ™ Processor E3940 @ 1.60GHz
Memory	Onboard memory LPDDR4 4GB
Storage	Onboard eMMC 32GB
O.S	Windows 10 Enterprise English Version 64Bit (1703)

8.1. System Performance Test

Test Result: (Display set 1920x1080 test)

3Dmark11 Professional Edition			
Performance 1280*720 (Default)			
3Dmark 11Score	P577	-	
Graphics Score	508	-	
Physics Score	2015	-	
Combined Score	553	-	

Testing Software	Criteria	Result		
		Pass	Fail	N/A
3DMark-v2-3-3693 \ Sky Diver	1. No error or hang during test 2. To compare with reference score and the deviation should < -20%	☒	☐	☐
	Score	Note		
Score	1158			
Graphics score	1078			
Graphics test 1	6.25FPS			
Graphics test 2	4.06FPS			
Physics score	2463			
8 threads	43.10FPS			
24 threads	25.35FPS			
48 threads	0.00FPS			
96 threads	0.00FPS			
Combined score	941			
Combined test	3.87FPS			

Testing Software	Criteria	Result		
		Pass	Fail	N/A
3DMark-v2-3-3693 \ Fire Strike	1. No error or hang during test 2. To compare with reference score and the deviation < -20%	☒	☐	☐
	Score	Note		
Score	356			
Graphics score	381			
Graphics test 1	1.74FPS			
Graphics test 2	1.58FPS			
Physics score	2345			
Physics test	7.45FPS			
Combined score	129			
Combined test	0.60FPS			

Testing Software	Criteria	Result		
		Pass	**Fail**	**N/A**
Performance Test 8.0	1. No error or hang during test 2. To compare with reference score and the deviation should < -20%	☒	☐	☐
	Score	**Note**		
PassMark Rating	976			
CPU Mark	1928			
2D Graphics Mark	200.7			
3D Graphics Mark	403.7			
Memory Mark	815			
Disk Mark	1050			

8.2. Performance of Storage Interface Test

Onboard eMMC Performance				
Onboard eMMC	Onboard eMMC 32GB			
CPU	Intel ® Atom ™ Processor E3940 @ 1.60GHz			
Memory	Onboard memory LPDDR4 4GB			
O.S	Windows 10 Enterprise English Version 64Bit (1703)			
Item	Comment / (unit)	Software	Score	Note
Onboard eMMC	Maximum Read	ATTO Disk Benchmark	257MB/s	
	Maximum Write		162MB/s	

SATA Performance				
SATA SSD	Transcend SATA SSD 128GB - TS128GSSD370			
CPU	Intel ® Atom ™ Processor E3940 @ 1.60GHz			
Memory	Onboard memory LPDDR4 4GB			
O.S	Windows 10 Enterprise English Version 64Bit (1703)			
Item	Comment / (unit)	Software	Score	Note
SATAIII ports	Maximum Read	ATTO Disk Benchmark	524MB/s	SATAII 150~300MB SATAIII up 300M/B
	Maximum Write		164MB/s	

USB3.0/2.0 Performance				
USB Flash	Transcend USB3.0 8GB			
Item	Comment / (unit)	Software	Transfer Rate (MB/s)	Note
USB3.0 ports	Maximum Read	ATTO Disk Benchmark	99MB/s	
	Maximum Write		38MB/s	
USB3.0 ports	Maximum Read		107MB/s	
	Maximum Write		38MB/s	
USB3.0 OTG ports	Maximum Read		100MB/s	
	Maximum Write		38MB/s	
USB2.0 ports	Maximum Read		37MB/s	
	Maximum Write		31MB/s	
USB2.0 ports	Maximum Read		39MB/s	
	Maximum Write		32MB/s	

9. Stability test

Configuration	
CPU	Intel ® Atom ™ Processor E3940 @ 1.60GHz
Memory	Onboard memory LPDDR4 4GB
Storage	Onboard eMMC 32GB
O.S	Windows 10 Enterprise English Version 64Bit (1703)
Environment	Under room temperature

9.1. Run In Test

O.S: Windows 10 Enterprise English Version 64Bit (1703)

Test Item		Result			Note
		Pass	Fail	N/A	
Burn In Test V8.1(1025 above) Duty: 100 Time: over 12 hours <System should not error or hang during testing>	CPU	☒	☐	☐	
	RAM	☒	☐	☐	
	Video	☒	☐	☐	
	2D	☒	☐	☐	
	3D	☒	☐	☐	
	Disk	☒	☐	☐	
	Sound	☒	☐	☐	
	Network <Advanced>	☒	☐	☐	
	GPGPU	☒	☐	☐	
	USB 3.0	☒	☐	☐	X3

9.2. Reboot Test

O.S: Windows 10 Enterprise English Version 64Bit (1703)
Test Tool: Passmark rebooter.exe

Test item	Result			Note
	Pass	Fail	N/A	
Reboot test for 500 cycles <a. System should not error or hang during testing> <b. Device manager should not loss any devices or yellow bang>	☒	☐	☐	

9.3. ACPI G3 Cold Boot Test

O.S: DOS or UEFI shell
Test Point:
1. Make sure system boot up is stable
2. Make sure boot function support AC power restored in short time

Test item	Result			Note
	Pass	Fail	N/A	
G3(AC loss) cold boot over 1000 cycles Setting: Power on- 40sec ; Power off- 20sec <Criteria: a. loss rate: 0 /1000 times b. RTC date and time should not loss>	☒	☐	☐	
G3(AC loss) cold boot over 20 cycles	☒	☐	☐	

Setting: Power on- 40sec ; Power off- 5sec <Criteria: a. loss rate: 0 /20 times b. RTC date and time should not loss>				

9.4. ACPI S5 Cold Boot Test

O.S: Windows 10 Enterprise English Version 64Bit (1703)

Test item	Result			Note
	Pass	**Fail**	**N/A**	
S5(standby power) cold boot over 500 cycles <System should complete 500 cycles without any error or hang>	☒	☐	☐	1. "PassMark Rebooter" set 500 cycles ; delay 30 sec and enable "auto load Rebooter at startup" 2. On/off fixture cycle time to set 150sec

9.5. Memory Test

O.S: UEFI
Tool: PassMark MemTest86 Version7.4 UEFI
Memory information: Onboard memory LPDDR4 8GB

Test item	Result			Note
	Pass	**Fail**	**N/A**	
Memory Test for 4 loops <Memtest result should not error or hang>	☒	☐	☐	

9.6. System stability after S3 / S4 / S5 cycles

O.S: Windows 10 Enterprise English Version 64Bit (1703)

Test item	Criteria	Result			Note
		Pass	**Fail**	**N/A**	
System stability after S3 cycles <Perform S3 cycles 3 times>	1. SUT boots to OS successfully 2. No yellow bang observed if all the drivers are installed 3. SUT does S3-resume cycles successfully without any issues	☒	☐	☐	
System stability after S4 cycles <Perform S4 cycles 3 times>	1. SUT boots to OS successfully 2. No yellow bang observed if all the drivers are installed 3. SUT does S4-resume cycles successfully without any issues	☒	☐	☐	
System stability after S5 cycles <Perform S5 cycles 3 times>	1. SUT boots to OS successfully 2. No yellow bang observed if all the drivers are installed 3. SUT does S5-resume cycles successfully without any issues	☒	☐	☐	