

Report NO: 15D010011

AIOT-QM

Board Level Product P5 Verification Test Report

Summary	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Pass with Deviation (Comment: _____)			
	Test Results Category			
	Critical	Major	Minor	Enhancement
Defect Found	0	0	0	0
Defect Unsolved	0	0	0	0

Issue date

2015/10/30

Approval

KJ Wang

Test Engineer

Jack Huang

Version Released Records

Date	Version	Change History	Note
2010/04/21	P5-1001	1. Re-composing test Items	
2010/06/01	P2P5-1001	1. New Test Report	
2010/06/21	P2P5-1002	1. Add BIOS -> SPI ROM Setting (South Bridge - GPIO)	
2010/12/02	P2P2-1003	1. New Test Report	
2011/02/23	P2P5-1101	1. Re-composing test Items	
2011/03/04	P2P5-1102	1. Add Specification Validation	
2012/05/29	P2P5-1201	1. Add Summary Table of DTS	
2013/12/6	P2P5-1301	1. Rename document : [Board Level Product P2-P5 Verification Test Plan & Report Template] 2. Chapter1:Memory compatibility add AAeon P/N 3. Chapter1:Add CFast and m-SATA test item. 4. Chapter3:Add RS422 1.2KM/115200bps transmission test 5. Chapter3:BurninTest test add USB2.0/3.0. 6. Chapter5: Modify power consumption test item. 7. Chapter7: add Windows XP Professional English Version 32/64Bit and Windows 8 Pro English Version 32/64Bit test. 8. Chapter8: Change BIOS format from Award to AMI and add Hi-Safe, Hi-Manager test item. 9. Chapter9: Add SATA performance test and USB3.0 performance. 10. Remove Chapter10: Other Tests..	

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 will be updated when re-test completed in product next change version.

Specification Validation

Main Specification

Item	Specification	Result			Note
		Pass	Fail	N/A	
SBC	AIOT-X1000	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Processor	Intel® Quark SoC X1021	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Memory	Onboard 1GB DDR3 800MHz, ECC, un-buffered memory	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Expansion Slots	1 x Full Size Mini-PCle Slot for PCIe and USB Host Interface	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	1 x Half Size Mini-PCle Slot for PCIe	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
USB	USB 2.0 ports x2,	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Storage	1 x Micro SD Slot	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ethernet	TI DP83848I 1x 10/100 Mbps Ethernet	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Serial Port	RS-232/422/485 port x1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
DIO	Digital I/O interface x1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
SPI	2 pair (support optional module)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
I2C	1 pair (support optional module)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Micro SIM socket	1 slot	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Front I/O connector	Digital IO x1 Power input x1 USB 2.0 Ports x2 Serial Port (RS-232/422/485) x1 LAN (RJ-45) Ports x1 Power switch x 1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Rear I/O connector	SD LED x1 Power LED x1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Connectivity	1 x Full Size mini-PCle Express Slot providing PCIe and USB host interface 1 x Half Size mini-PCle Express Slot providing PCIe 1xSIM card	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

System	
SBC	AIOT-X1000
Processor	Intel® Quark SoC X1021
Chipset	Intel® Quark SoC X1021
System Memory	Onboard 1GB DDR3 800MHz, ECC, un-buffered memory
Display Interface	N/A
Storage Device	Micro SD Slot x1

Front I/O connector	Digital IO x1 Power input x1 USB 2.0 Ports x2 Serial Port (RS-232/422/485) x1 LAN (RJ-45) Ports x1 Power switch x 1
Rear I/O connector	SD LED x1 Power LED x1
Expansion Slot	Full Size Mini-PCIe Slot for PCIe and USB Host Interface x1 Half Size Mini-PCIe Slot for PCIe x1 SPI Slot for optional module
OS support	Wind River(with Moon Island Program) Yocto Linux
Mechanical	
Mounting	Din-Rail Mounted
Dimension	TBD
Gross Weight	TBD
Net Weight	TBD
Power Supply	
DC input	9~24V

O.S. Support

Item	Specification	Result			Note
		Pass	Fail	N/A	
Linux	Linux version 3.4.88-grsec-WR5.0.1.19_standard_IDP-XT_2.0.2.19 #4 M on Dec 15 18:24:49 CST 2014 i586 GNU/Linux	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Environmental Specifications

Item	Specification
Operating temperature	TBD
Storage temperature	TBD
Operating humidity	TBD

Note: Please refer to Environment Test Report for detail information

Platform Information

Item	Device Information	Test Item
PCB Model / Version	AIOT-QM A1.0	1,2,3,4,5,6,7
Carrier Board	N/A	N/A
BIOS / Version	N/A	1,2,3,4,5,6,7
EC / Version	N/A	N/A
CPU Type	Intel® Quark™ SoC X1021 (16K Cache, 400 MHz)	1,2,3,4,5,6,7
Memory Type	Onboard DDR3-800 1GB	1,2,3,4,5,6,7
SSD	Micro SD Transcend 4GB C10	1,2,3,4,5,6,7
Operating System	<input checked="" type="checkbox"/> Linux version 3.4.88-grsec-WR5.0.1.19_standard_IDP-XT_2.0.2.19 #4 M on Dec 15 18:24:49 CST 2014 i586 GNU/Linux	6-1
Power Supply	FSP FSP060-DBAB1	1,2,3,4,5,6,7
Hardware Information with Wind River Linux 5.0.1.16 32 Bit Driver Version		
Chipset Software	Intel® Quark™ SoC X1021 (16K Cache, 400 MHz)	
SOC Bridge	Intel® Quark™ SoC X1021 (16K Cache, 400 MHz)	
Ethernet Chipset	System default (TI DP83848I)	

Summary Table of contents:

1. Hardware Test	7
1.1. CPU Compatibility Test	7
1.2. Memory Compatibility Test.....	7
1.3. Keyboard/Mouse Compatibility Test.....	7
1.4. Power Supply Compatibility Test.....	7
1.5. USB Compatibility Test	7
2. Basic Function Test.....	8
2.1. LAN Function Test	8
3. Integration Test.....	11
3.1. USB Port Integration Test	11
3.2. Digital I/O Port Test.....	11
3.3. COM Port Integration Test	11
3.4. ADC Port Integration Test.....	11
3.5. RS-422 / RS-485 Test.....	12
4. Application Test	13
4.1. PCI-Express Function Test.....	13
4.2. SIM socket Function Test	13
5. Power Consumption Test	14
5.1. AT/ATX Power Consumption	14
6. O.S. Compatibility Test	15
6.1. English Wind River Linux 5.0.1.19	15
7. Performance Test	16

1. Hardware Test

1.1. CPU Compatibility Test

CPU Information	Result			Note
	Pass	Fail	N/A	
Intel® Quark™ SoC X1000 (16K Cache, 400 MHz)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

1.2. Memory Compatibility Test

Memory Information	Install OS			Note
	Pass	Fail	N/A	
Onboard DDR3-800 1GB SEC K4B4G0846D	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

1.3. Keyboard/Mouse Compatibility Test

Keyboard/mouse Information		Result			Note
		Pass	Fail	N/A	
USB Keyboard	Microsoft 1366	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Logitech K200	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
USB Mouse	Microsoft 1113	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Logitech M-U0003	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

1.4. Power Supply Compatibility Test

Power Supply Information		Result			Note
		Pass	Fail	N/A	
ATX	FSP FSP-DBAE1 12V out	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

1.5. USB Compatibility Test

USB Information		Result			Note
		Pass	Fail	N/A	
DVD ROM	Pioneer DVR-XD11T	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
DVD ROM	ASUS-SDRW-08D2S-U	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
DVD ROM	Pioneer DVR XD10T	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Blu-Ray	Pioneer BDR-XD04T	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
USB Flash	USB3.0 Kingston DT Ultimate G2 32GB	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
USB Flash	USB3.0 Transcend 8GB	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
USB Flash	USB2.0 ADATA C802 2GB	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
USB Flash	USB3.0 SanDisk 64 GB	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

2. Basic Function Test

2.1. LAN Function Test

[] No Support

Connect two computers via different speed LAN HUB by using "Ping" instruction (1000 times)										
1000MBps LAN HUB			D-Link DGS-1008D							
100MBps LAN HUB			HP J4095A 24 Ports							
10MBps LAN HUB			SVEC FD916H							
OnBoard LAN1		10/100 Mbps Ethernet					MAC Address		00-11-A1-22-24-54	
OnBoard LAN2		10/100 Mbps Ethernet					MAC Address		00-11-A1-22-24-55	
LAN Speed	Link / Speed LED	Active LED	LAN 1			LAN 2			Note	
			Pass	Fail	N/A	Pass	Fail	N/A		
100MBps	N/A	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
10MBps	N/A	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Wake On LAN			<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	S1/S3/S4/S5/DOS	
Boot ROM to Novell 4.11 [RPL]			<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
LAN Boot (PXE)			<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Internet Browser (DHCP Server)			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

2.1.1. Throughput Test

DUT Platform Information:

<input type="checkbox"/>	Fedora Core 14 – Kernel
<input type="checkbox"/>	Cent OS5.6
<input checked="" type="checkbox"/>	Wind River Linux 5.0.1.16
<input type="checkbox"/>	Red Hat

Note : Connection-Level Performance (Interaction Constants Duration Time Set to 60 Sec.)

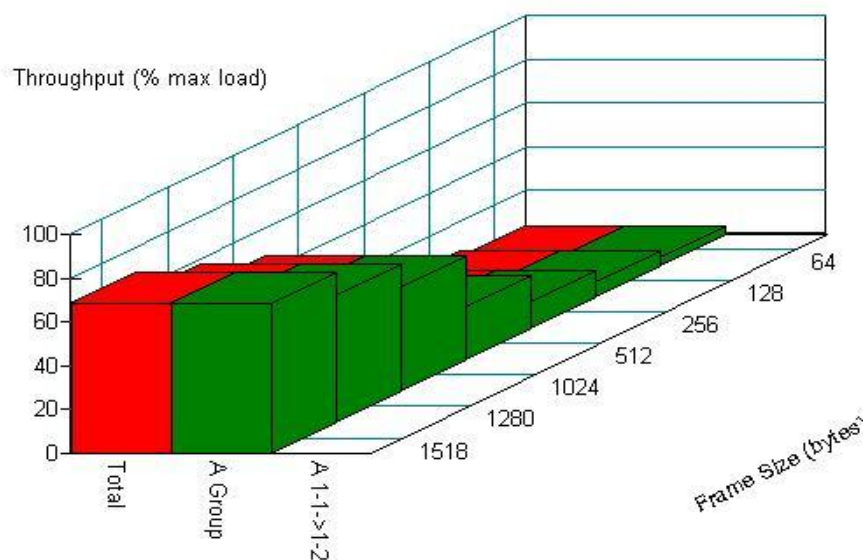
Graphics Media	Default setting
LAN	Default setting (TI DP83848I)
	Default setting (TI DP83848I)
Audio Driver	N/A

SMB Platform Information:

Chassis	SPIRENT Smartbits 600B
Chassis Version	2.80.003 (Cur) 2.50.000
Chassis Serial #	06014047
Library	6.00-29
API	5.50.42.01
File	0550042
Module	2 * LAN-3324A SmartMetrics XD 4-Port 10/100/1000Base-T Gigabit Ethernet
Test Software	SmartFlow5.50.42.1

Test Result:

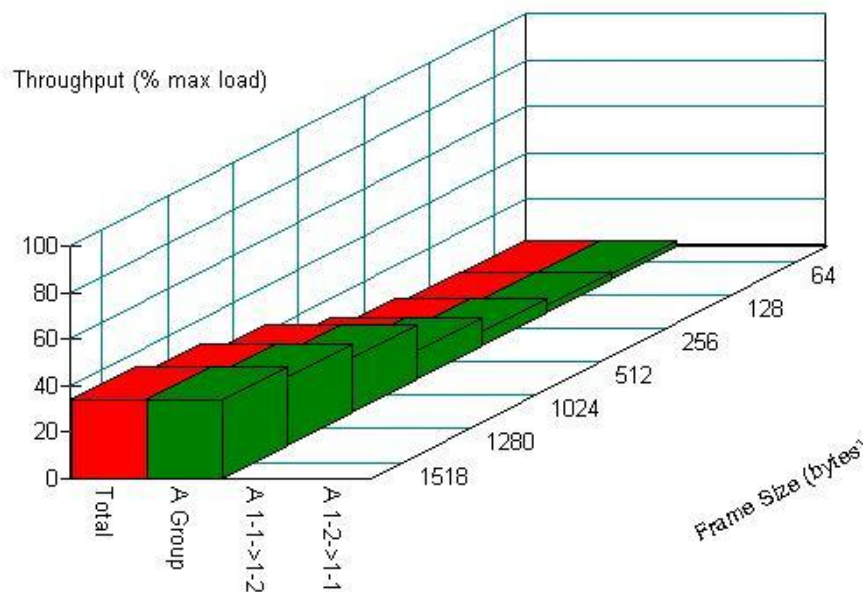
- Half Direction (LAN1: TI DP83848I 10/100MB Ethernet → LAN2: TI DP83848I 10/100MB Ethernet)



Throughput vs Frame Size

<u>Name/FrameSize</u>	<u>64</u>	<u>128</u>	<u>256</u>	<u>512</u>	<u>1024</u>	<u>1280</u>	<u>1518</u>
Total	3.3203125	6.4140625	11.828125	23.4296875	46.6328125	57.4609375	68.2890625
A Group	3.3203125	6.4140625	11.828125	23.4296875	46.6328125	57.4609375	68.2890625
A 1-1->1-2	N/A	N/A	N/A	N/A	N/A	N/A	N/A

2. Binary Direction (LAN1: TI DP83848I 10/100MB Ethernet ↔ LAN2: TI DP83848I 10/100MB Ethernet)



Throughput vs Frame Size

<u>Name/Framesize</u>	<u>64</u>	<u>128</u>	<u>256</u>	<u>512</u>	<u>1024</u>	<u>1280</u>	<u>1518</u>
Total	1.7734375	2.546875	5.640625	11.828125	22.65625	28.84375	33.484375
A Group	1.7734375	2.546875	5.640625	11.828125	22.65625	28.84375	33.484375
A 1-1->1-2	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A 1-2->1-1	N/A	N/A	N/A	N/A	N/A	N/A	N/A

3. Integration Test

	Hardware Information with Wind River Linux 5.0.1.16 32 Bit Driver Version
CPU	Intel® Quark™ SoC X1000 (16K Cache, 400 MHz)
Memory	Onboard DDR3-800 1GB
SSD	Micro SD Transcend 4GB C10
	Chipset Information with Windows8 Pro English 64Bit Driver Version
Chipset Software	System default
SOC Bridge	System default
Super IO Chipset	System default
VGA Chipset	System default
Ethernet Chipset	System default

3.1. USB Port Integration Test

Item	USB Port	Boot			Function(Win 8)			Note
		Pass	Fail	N/A	Pass	Fail	N/A	
USB HDD		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
USB FDD Mitsumi D353GUE		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
ASUS SDRW-08D2S-U		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
USB Hub Test (Connect USB Device) HUB Port1: USB Keyboard / HUB Port2: USB Mouse / HUB Port3: USB HDD								
USB 2.0 HUB PowerSync / USB 2.0 4 Port HU-155					<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

3.2. Digital I/O Port Test

DIO Address ()	Result			Note
	Pass	Fail	N/A	
DIO VCC +5.0V	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

3.3. COM Port Integration Test

Test Item	Result			Note
	Pass	Fail	N/A	
Serial Modem Dial Out	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Cmsol	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

3.4. ADC Port Integration Test

Test Item	Result			Note
	Pass	Fail	N/A	
Voltage 0	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0.33062 V
Voltage 1	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0.57218V
Voltage 2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0.85522V
Voltage 3	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0.67588V
Voltage 4	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1.85318V
Voltage 5	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0.74298V
Voltage 6	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0.87718V
Voltage 7	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0.00244V

3.5. RS-422 / RS-485 Test

Test Item	Result			Note
	Pass	Fail	N/A	
RS-422 for COM1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Comsol test
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The communication between the RS-422 port of two boards is linked by one 1.2km cable on Putty tools Terminal
RS-485 for COM1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	COMsol test
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The communication between the RS-485 port of two boards is linked by one 1.2km cable on Putty tools Terminal

4. Application Test

4.1. PCI-Express Function Test

Mini PCI Express Card	Function Test			Note
	Pass	Fail	N/A	
AzureWave AW-NB037 Wireless /blueTooth	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
AzureWave AW-NB159H Wireless /blueTooth	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	BT #bluetoothd #hciconfig #hcitool #hcitool scan Wifi Use OS 192.168.1.1
Intel® Wireless-N 7260 and AW-NB159H	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

4.2. SIM socket Function Test

SIM socket Function	Function Test			Note
	Pass	Fail	N/A	
3G Drive check	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Telit HE910-D → 3G Mini PCIe Cared
Send Message to phone	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	at+cmgs="+886 phone NB"
3G Network	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	#ifconfig 3g-wan & Ping test

5. Power Consumption Test

Hardware Information with Wind River Linux 5.0.1.16 32 Bit Driver Version	
CPU	Intel® Quark™ SoC X1000 (16K Cache, 400 MHz)
Memory	Onboard DDR3-800 1GB
SSD	Micro SD Transcend 4GB C10

5.1. AT/ATX Power Consumption

Test Equipment						
Equipment	Digital Multimeter					
Manufacturer	HOLA					
Model name	DM-1240					
Test Environment						
ATX Power Model	Be quiet! E7-550W					
Keyboard/Mouse	PS/2 Keyboard: Atake KJ118; PS/2 mouse: Genius NetScroll 120					
Note	Power consumption does not include HDD consumption.					
Power Supply	ATX Power					Note
(Full Loading Mode) Wind River Linux 5.0.1.19 Full Loading Test	(+12V)	0.32	A	3.84	W	./DMS-test.sh
Full Loading Total Watt	3.84 (W)					
Win. Idle mode: Measure the current value when system in windows mode and without running any program	(+12V)	0.30	A	3.6	W	
Idle Total Watt	3.6 (W)					
Power on - Boot sequence: Measure the maximum current value of between system power on and boot-up to O.S.	(+12V)	0.32	A	3.84	W	
Suspend Total Watt	3.84 (W)					

6. O.S. Compatibility Test

6.1. English Wind River Linux 5.0.1.19

[] No Support

Driver Information:

Chipset Software	System default
Graphics Media	System default
Audio Driver	System default
LAN Driver	System default
LAN Driver	System default

Install OS to SATA HDD:

Installation	Result			Note
	Pass	Fail	N/A	
Linux version 3.4.88-grsec-WR5.0.1.19_standard_IDP-XT_2.0.2.19 #4 Mon Dec 15 18:24:49 CST 2014 i586 GNU/Linux	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Type uname -a

Test Result:

Test Item	Result			Note
	Pass	Fail	N/A	
Network Function Test				
Connect to Internet – LAN 1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Base Function Test				
Keyboard Test	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	USB
USB 2.0 Removable Devices	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Command Test On Text Mode: Attention Delay Phenomenon				
uname -a	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Show information
ls / clear; cd /dev /ls -l	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Command instruction

7. Performance Test

Hardware Information with Wind River Linux 5.0.1.16 32 Bit Driver Version	
CPU	Intel® Quark™ SoC X1000 (16K Cache, 400 MHz)
Memory	Onboard DDR3-800 1GB
SATA HDD	Micro SD Transcend 4GB C10

USB3.0/2.0 Performance				
USB Flash	Transcend JF700 USB3.0 8GB (Transcend Spec 52 MB/S)			
Item	Comment / (unit)	Software	Score	Note
Single HDD (Rear I/O USB2.0) USB2.0	Timing cached reads: 104 MB in 2.01 seconds	hdparm -Tt /dev/sda	51.62 MB/sec	
	Timing buffered disk reads: 40 MB in 3.15 seconds	hdparm -Tt /dev/sda	12.71 MB/sec	
Single HDD (Rear I/O USB2.0) USB2.0	Timing cached reads: 102 MB in 2.02 seconds	hdparm -Tt /dev/sda	50.61 MB/sec	
	Timing buffered disk reads: 40 MB in 3.13 seconds	hdparm -Tt /dev/sda	12.78 MB/sec	
Single HDD (USB port CN8) USB2.0	Timing cached reads: 130 MB in 2.00 seconds	hdparm -Tt /dev/sda	64.86 MB/sec	
	Timing buffered disk reads: 38 MB in 3.09 seconds	hdparm -Tt /dev/sda	12.29 MB/sec	
Single HDD (USB port CN8) USB2.0	Timing cached reads: 112 MB in 2.04 seconds	hdparm -Tt /dev/sda	55.03 MB/sec	
	Timing buffered disk reads: 36 MB in 3.07 seconds	hdparm -Tt /dev/sda	11.74MB/s ec	