Report NO: 16P010005

Boxer-6421

Freescale iMX6 platform

RISC System Product

Compatibility Test Report

Summary	☐ Pass ☐ Fail ☒ Pass with Deviation (Comment: 1. Some of DVI monitor unable to support 1920x1080 resolution, suggest to use HDMI monitor for Full HD support, please refer to manual for detail description. 2. LAN2 speed LED support green color only. 3. Gigabit LAN bandwidth max support 114Mbps, it's the limitation of chipset performance..)

Test Results Category				
	Critical	Major	Minor	Enhancement
Defect Found	0	0	0	0
Defect Unsolved	0	0	0	0

Issue date	QE Manager	Test Engineer
2016-07-05	KJ Wang	Louie Lee

Version Released Records

Date	Version	Change History	Note
5/26/2015	A0	1. First release	

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	
SBC	PBA-IMX6	☒	☐	☐	
Processor	Freescale iMX6 Dual Lite-Auto grade 1.0GHz	☒	☐	☐	
System Memory	Onboard DDR3 1GB	☒	☐	☐	
Display Interface	DVI-D x1	☒	☐	☐	
Storage Device	SATAx1 (Default no HDD support, by customized) MicroSD slot x1 8GB eMMC onboard	☒	☐	☐	
Front I/O connector	USB 2.0 x 3 DVI-D x 1	☒	☐	☐	
Rear I/O connector	10/100/1000 base-T x 2 w/ 1.5Kv isolation RS-232 /422 /485 x 1 RS-232 x 1 DC-in Connector	☒	☐	☐	
OS support	Android 4.4 by customization Linux Kernel 3.0.35	☒	☐	☐	
Watchdog Timer	Integrated Watch Dog Timer	☒	☐	☐	
DC input	2-pin DC power input cable 7~24V	☒	☐	☐	

Platform Information

Item	Device Information	Note
Product of department	PAA	
System	Boxer-6421	
PCB Model / Version	PBA-IMX6 A0.3	
CPU Board	N/A	
Carrier Board	N/A	
CPU	Freescale iMX6 Dual Lite-Auto grade 1.0GHz	
Memory Type	Onboard DDR3 1GB	
eMMC	Onboard eMMC 8GB	
SATA HDD	N/A	
SATA DVD-ROM	N/A	
USB DVD-ROM	N/A	
DVI Monitor	Dell U2713HM	
LVDS	N/A	
SD card	Transcend 64GB	
Daughter Board	N/A	
Expansion Board	N/A	
	N/A	
Operating System	☒ Linux freescale kernel3.0.35	
	☐ Android4.4.2 kernel 3.0.35-06522-g0a3529b-dirty	
Power Supply	ATX Power Supply : N/A	
	AT Power Supply: N/A	
	DC adapter: FSP084-DMAA1 84W	
	DC adapter: FSP060-DBAB1 60W	
Battery Model	N/A	
Chipset	Freescale® i.MX6	

Summary Table of contents:

1. Linux - Basic Function and Image Test

1.1. Image boot Test

Process Step:

H/W jumper set boot from eMMC or SD card.

Test result:

Test item	Criteria	Result			Note
		Pass	Fail	N/A	
Boot from eMMC.	Boot to OS should work properly	☒	☐	☐	sudo su <root> SW set 1111
Boot from SD card.	Boot to OS should work properly	☒	☐	☐	SW1 set 0010

1.2. Video Resolution and Function Test

Process Step:

a. In U-boot, check DVI resolution setting is 1920x1080:
<#pri>.
b. Tested DVI resolution detection in Linux environment.
<#cd test>
<#./test_hdmi>

Test result:

Test item	Criteria	Result			Note
		Pass	Fail	N/A	
1920x1080(DVI)	Support 1920x1080 display	☒	☐	☐	Pass with deviation#1
1920x1080 HDMI(Include Audio function)	Support 1920x1080 display and audio function	☒	☐	☐	

1.3. LAN Function Test

Process Step:

a. Connect 1GB LAN switch.
b. Connect 100MB LAN switch.
c. Execute test script “test_lan” for ping test and iperf performance test.

Test result:

Test item		Criteria	Result			Note
			Pass	Fail	N/A	
1GB connection	LAN1	a. Speed LED color should show orange. b. Link LED color should show yellow and blink.	☒	☐	☐	
	LAN2		☒	☐	☐	Pass with deviation.#2 LAN2 1G/100M/10M LED is green
100MB connection	LAN1	a. Speed LED color should show green. b. Link LED color should show yellow and blink.	☒	☐	☐	
	LAN2		☒	☐	☐	
10MB connection	LAN1	a. Speed LED color should show blank. b. Link LED color should show yellow and blink.	☒	☐	☐	
	LAN2		☒	☐	☐	Pass with deviation.#2 LAN2 1G/100M/10M LED is green

Iperf performance	LAN1	a. Ping test result should not error. b. Gigabit bandwidth should > 300Mbps.	☒	☐	☐	Pass with deviation.#3 Bandwidth only 114Mbps
	LAN2		☒	☐	☐	Pass with deviation.#3 Bandwidth only 114Mbps

1.4. USB Function Test

Process Step:

a. Connect USB keyboard / mouse to USB ports.
b. Connect USB flash to USB ports and execute test script “test_USB”
<#cd test>
<#./test_usb>

Test result:

Test item	Criteria	Result			Note
		Pass	Fail	N/A	
USB Mouse and Keyboard	Keyboard and mouse should work properly.	☒	☐	☐	
USB 2.0 Removable Devices	a. USB flash should be detected and read / write work properly. b. USB read performance should > 20MBps	☒	☐	☐	Read: 26.8MB/s Write:6.8MB/s

1.5. UART (Debug port) Function Test

Process Step:

a. Connect Null cable between DUT and Host.
b. Install "Tera Term" to Host PC for UART control.
<Baud rate set 115200bps>

Test result:

Test item	Criteria	Result			Note
		Pass	Fail	N/A	
UART	U-boot and OS root should be controlled by Host PC.	☒	☐	☐	

1.6. RS232 Function Test

Process Step:

a. COM1 and COM2 connect loopback.
b. Execute test scrip “test_uart”.
c. Test baud rate with 9600 / 38400 /115200.

Test result:

Test item	Criteria	Result			Note
		Pass	Fail	N/A	
COM1	No error or loss	☒	☐	☐	
COM2	No error or loss	☒	☐	☐	

1.7. RS422 Function Test

Process Step:

a. Connect 1200M RS422 cable between DUT and Host.
b. Execute test scrip “test_uart_send” and “test_uart_receive”.
c. Select rs422 and count 1000.

Test result:

Test item	Criteria	Result			Note
		Pass	Fail	N/A	

COM2 send	No error or loss	☒	☐	☐	
COM2 receive	No error or loss	☒	☐	☐	

1.8. RS485 Function Test

Process Step:

a. Connect 1200M RS485 cable between DUT and Host.
b. Execute test scrip “test_uart_send” and “test_uart_receive”.
c. Select rs485 and count 1000.

Test result:

Test item	Criteria	Result			Note
		Pass	Fail	N/A	
COM2 send	No error or loss	☒	☐	☐	
COM2 receive	No error or loss	☒	☐	☐	

1.9. SD Function Test

Process Step:

a. Insert SD card and boot up system into OS.
b. Execute test script “test_sdcard”
<#cd test>
<#./test_sdcard>

Test result:

Test item	Criteria	Result			Note
		Pass	Fail	N/A	
SD	a. SD card should be detected and read / write work properly. b. SD card read performance should > 10MBps	☒	☐	☐	Read: 14.3MB/s Write:14.6MB/s

1.10. S/W & Jumper Function Test

Process Step:

Test each jumper function.

Test result:

Test item	Criteria	Result			Note
		Pass	Fail	N/A	
JP5 auto power button	1-2 Auto power button	☒	☐	☐	
SW1, boot select	1111: boot from eMMC 0010: boot from SD card	☒	☐	☐	

1.11. Linux Image Test

Process Step:

Click following icon.

Test result:

Test item	Criteria	Result			Note
		Pass	Fail	N/A	
uname –a	Enter command "uname -a" should work properly.	☒	☐	☐	Linux freescale 3.0.35
Shutdown	Shutdown icon should work properly.	☒	☐	☐	#poweroff
Restart the Computer	Restart icon should work properly.	☒	☐	☐	#reboot
ls / clear ……; cd /dev /ls –l	Enter command " ls / clear ……; cd /dev /ls –l" function should work properly.	☒	☐	☐	

2. Linux - Hardware Periphery Compatibility Test

2.1. Hardware Periphery Compatibility

Process Step:

Connect following periphery devices for compatibility test.

Test result:

USB	Devices should work properly.	Result			Note
		Pass	Fail	N/A	
Keyboard:	Microsoft 1366	☒	☐	☐	
Keyboard:	Logitech K200	☒	☐	☐	
Mouse:	Microsoft 1113	☒	☐	☐	
Mouse:	Logitech M-U0003	☒	☐	☐	
8G Flash	Sandisk Cruzer 8GB	☒	☐	☐	
16G Flash	Kingston Ultimate USB3.0 16GB	☒	☐	☐	
128G Flash	PNY USB3.0 128GB	☒	☐	☐	
HUB	SENSE 01-ELS 190 4port HUB	☒	☐	☐	
SD Card (support FAT only)	**Devices should work properly.**	**Result**			**Note**
		Pass	**Fail**	**N/A**	
8G	ADATA 8GB	☒	☐	☐	
16G	SP 16GB	☒	☐	☐	
32G	Transcend SDHC Premium 300x 32GB	☒	☐	☐	
64G	Transcend SDXC Premium 300x 64GB	☒	☐	☐	
64G	Kingston SDXC 64GB	☒	☐	☐	
128G	Kingston SDXC 128G	☒	☐	☐	
LAN Switch	**Devices should work properly.**	**Result**			**Note**
		Pass	**Fail**	**N/A**	
1G switch	D-Link DGS-1210-16	☒	☐	☐	
1G switch	D-Link DGS-1008D	☒	☐	☐	
100M switch	BUFFALO LSW-TX-5NP-TW	☒	☐	☐	
100M switch	D-Link DES-1008A	☒	☐	☐	
10M HUB	SVEC FD916H	☒	☐	☐	

3. Power Consumption

3.1. Power Consumption

Please refer to the “Power Supply Electronics Test Report”

3.2. CMOS Battery Test

Process Step:

a. Unconnected power source, use meter to measure voltage of CMOS battery
b. Use a mmeter to measure current of CMOS battery.

Test result:

Check item	Measured Voltage		Measured Current		Calculate Result		Result			Note
							Pass	Fail	N/A	
Battery leakage 1. Voltage should be >3V. 2. Calculated result should be > 5 years.	3.27	V	0.8	uA	32	years	☒	☐	☐	

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

3.3. Wide Voltage Test

3.3.1. Wide Voltage Test

SPEC supported 7~24V DC in, test result please refer to the “Power Supply Electronics Test Report”.

3.3.2. DC Adapter Compatibility Test

Test Point:

Confirm each adapter can be compatible with wide voltage design.

Adapter Information (a. System boot to OS should work properly.		AAEON P/N	Result			Note
			Pass	Fail	N/A	
12V	FSP084-DIBAN2 84W	1255900841	☒	☐	☐	
12V	FSP084-DMAA1 84W	1757908403	☒	☐	☐	
12V	FSP060-DBAB1 60W	N/A	☒	☐	☐	
19V	FSP120-ABAN2 120W	1255901202	☒	☐	☐	
19V	FSP120-AAB 120W	1757912005	☒	☐	☐	
24V	SINPRO MPU100-108 100W	XXXXXXXXXX	☒	☐	☐	

4. Time Accuracy Test

Process Step:

a. Check RTC time deviation after 24 hrs at power on status.
b. Check RTC time deviation after 24 hrs at power off status.
c. Press power button to check system boot up time.
   <boot into U-boot>
d. Key in shutdown command to check system shutdown time.
   <#poweroff>
e. Run watchdog timer test with SDK under Linux.
   <#cd Compatibility_test>
   <#./test_wdt> WDT with 3sec

Test result:

No.	Test item	Actual		Result			Remark
				Pass	Fail	N/A	
1	RTC Clock in Power On less 2 sec deviation	+0.5	Sec	☒	☐	☐	
2	RTC Clock in Power Off less 2 sec deviation	+2	Sec	☒	☐	☐	
3	System boot on in 7 sec.	4	Sec	☒	☐	☐	
4	System shutdown in 20 sec.	9.5	Sec	☒	☐	☐	
5	Watch dog time in 3 +/-10% sec	3.18	Sec	☒	☐	☐	

5. Linux - Performance Test

5.1. Video Test

Process Step:

Play MP4 video and check is it lag or hang.

Test result:

Test item		Criteria	Result			Note
			Pass	Fail	N/A	
HDMI	MP4	Play movie should not lag / hang up / blue screen / garbage screen)	☒	☐	☐	
DVI			☒	☐	☐	Pass with deviation#1
HDMI	MPG	Play movie should not lag / hang up / blue screen / garbage screen)	☒	☐	☐	
DVI			☒	☐	☐	Pass with deviation#1

6. Linux Stability Test

6.1. Run in Test

Process Step:

a. Execute test script “test_ for stability testing.
   #cd test_stability
   #./ BurnIn

Test result:

Test item		Criteria	Result			Note
			Pass	Fail	N/A	
BurnIn Test	LAN	No halt, shutdown, reboot and error message.	☒	☐	☐	
	COM		☒	☐	☐	
	Video		☒	☐	☐	
	CPU		☒	☐	☐	

6.2. Cold Boot Test

Process Step:

a. H/W set AT mode and boot into Linux for count.
   <Linux tool: boot_count>
b. On/off fixture set on time 1 min and off time 30sec.
c. To run AC loss on / off for 1000 cycles.
   <Check count:#cat boot_times>
   <Clear count:#rm boot_times>

Test result:

Test item	Criteria	Result			Note
		Pass	Fail	N/A	
Cold boot on/off test	Loss: 0/1000 times	☒	☐	☐	