

AIR-020_A101-2

DVT Function Test Report

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Revision History :

Date	Revision	Description	Creator
2021/10/15	V1.0	The First version released for AIR-020 DVT function test Report.	Shane GH

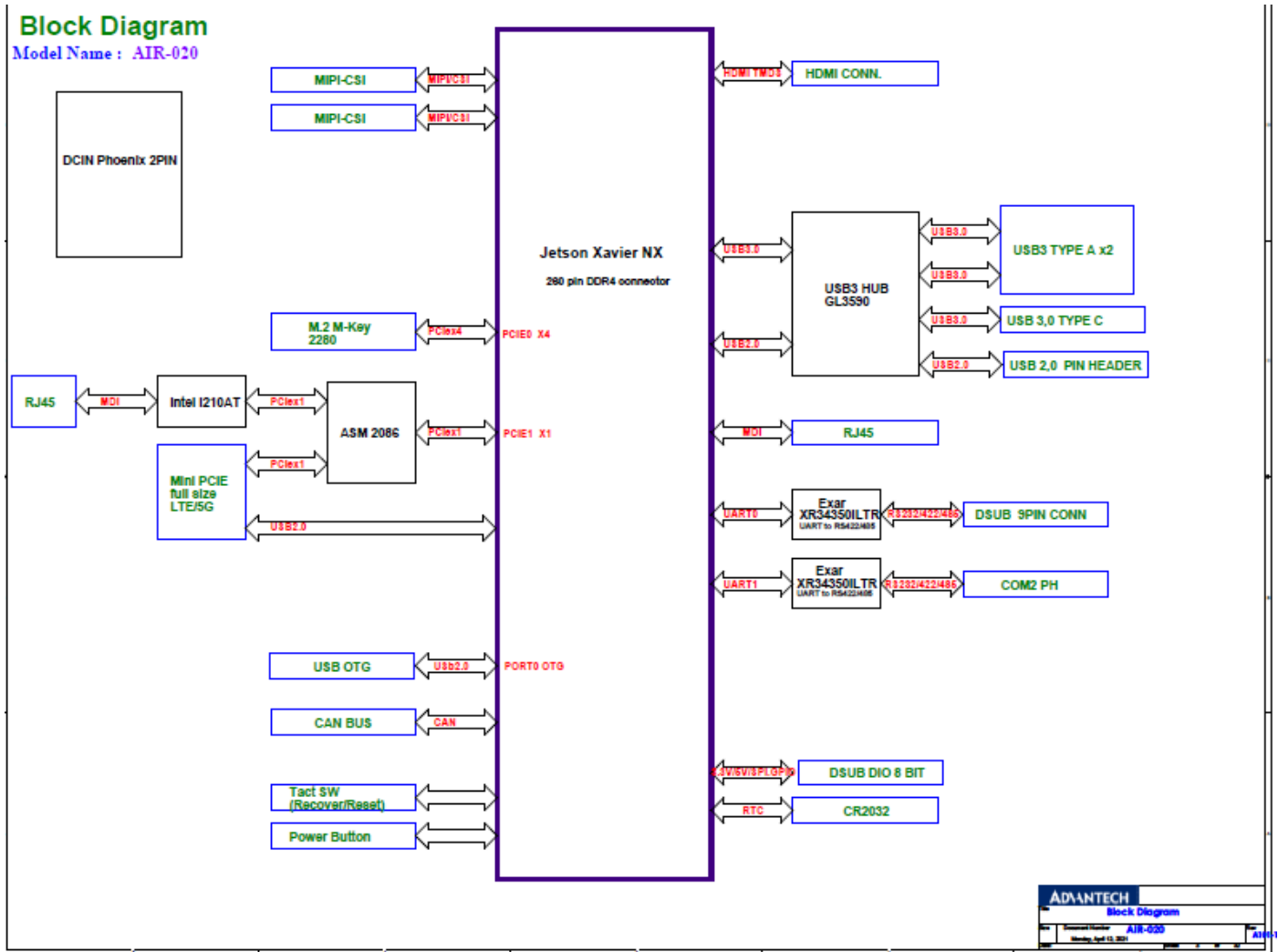
Table of Contents

Revision History :	2
Table of Contents	3
Product Specification :	4
System Configuration :	6
Test Utility and Tool List :	7
Test Equipment :	8
Test Results Definition :	9
Test Results Summary :	10
1. Function	11
1.01 Support Processor and Memory SPEC Check	11
1.01.01 Support CPU SPEC Test	11
1.01.02 Memory Specification Test	11
1.02 Output Display Function	11
1.02.01 HDMI Output Display Function Test	11
1.03 Storage Function	11
1.03.01 M.2 Function Test	11
1.04 USB Function	12
1.04.01 USB3.2 Gen1 x 2 Function Test	12
1.05 Serial Port Function	12
1.05.01 Serial Port Function Test	12
1.06 Jumper/Connector/Pin Header Function	12
1.06.01 AT/ATX Jumper Function Test	12
1.07 Mini PCIe Basic Function	13
1.08 MIPI-CSI Basic Function	13
1.09 TPM Function	13
2. Reliability	15
2.01 Power On/Off Test	15
2.02 Reboot Test	15
2.03 IO Port Stress Test	15
2.04 Integrated Stress Test	16

Product Specification :

Block Diagram

Model Name : AIR-020



ADVANTECH	
Block Diagram	
Document Number	AIR-020
Version	1.0
Date	Monday, April 13, 2020

	AIR-020N Jetson Nano	AIR-020T Jetson TX2 NX	AIR-020X Jetson Xavier NX
CPU	Quad core ARM Cortex® A57	Dual core Denver 2 and quad-core Arm® Cortex®-A57 processor complex	Six core Carmel ARM v8.2
GPU	Maxwell 128 CUDA	Pascal 256 CUDA	Volta 384 CUDA+ 48 Tensor cores
Memory	4GB 64bit LPDDR4	4GB 128bit LPDDR4	8GB 128bit LPDDR4
Flash	16GB of eMMC 5.1	16GB of eMMC 5.1	16GB of eMMC 5.1
Display	1x HDMI 2.0, max. 3840x2160@30Hz		
Ethernet	1x GbE	2 x GbE	2x GbE
GPIO	1, 4bit In, 4bit Out	1, 4bit In, 4bit Out	1, 4bit In, 4bit Out
COM	1 x RS232/RS422/RS485	1 x RS232/RS422/RS485	2 x RS232/RS422/RS485
USB	2x USB 3.0	2x USB 3.0 (gen1)	2x USB 3.1
CANBus	NA	Reserved	1, DB9
OTG	Micro USB	Micro USB	Micro USB
Extra Storage	1x M.2 2280 M key	1x M.2 2280 M key, NVMe	1x M.2 2280 M key, NVMe
Expansion	LTE or BT supported	5G or WIFI6 supported	5G or WIFI6 supported
Dimension	139 x 110 x 44.5 mm		
Power input	12-24V Phoenix connector		
Working temp.	-20~60C w/ 0.7 m/s air flow		





System Configuration :

Item.	Description.
Project Name.	AIR-020X
M/B Name	Jetson Xavier NX
Carrier Board Model.	AIR-020
Carrier Version.	A101-2
CPU Model/Info	Six core Carmel ARM v8.2
Memory Type/Info/Size	8GB 128bit LPDDR4
Graphic Controller	Volta 384 CUDA+ 48 Tensor cores
LAN1 Controller	On chip GBE
LAN2 Controller	Intel I210AT
HDD Type/Info.	Flash 16GB of eMMC 5.1
Power Supply Model	DELTA ADP-60KD B OUTPUT 12.0V 5.0A 60W
Display Monitor	AUSU PA238Q 14" LCD display
Test OS Version	Ubuntu 18.04
Image File Version	air020_image_20210914.tar.gz

Test Utility and Tool List :

Title	Version	Remark
burnin.sh	NA	

Test Equipment :

Model	Description
Advantech Power on/off test equipment (ATX/AT)	
Serial Port cable for Transmission test	
COM RS232 Loopback Plug	
WLAN Access Point (Model. ASUS RT-AC66U Dual Band x3 802.11 AC Gigabit Router)	

Test Results Definition :

Criteria	Definition
PASS	Test result pass and function work perfectly.
Fail	Test fail or cannot meet the spec requirement.
Limitation	There are no plans to fix this function.
N/A	Not Available or Not Applicable.
Check Next Version	HW modified circuit and solution verified, and checks the function result has pass. Need to check next version.

Test Results Summary :

Num.	Test Item	Result	Remark
1	Function		
1.01	Support Processor and Memory SPEC Check	PASS	
1.02	Output Display Function	PASS	
1.03	Storage Function	PASS	
1.04	USB Function	PASS	
1.05	Serial Port Function	PASS	
1.06	Jumper/Connector/Pin Header Function	PASS	
1.07	Mini PCIe Basic Function	PASS	
1.08	MIPI-CSI Basic Function	PASS	
1.09	TPM Function	PASS	
2	Reliability		
2.01	Power On/Off Test	PASS	
2.02	Reboot Test	PASS	
2.03	IO Port Stress Test	PASS	
2.04	Integrated Stress Test	PASS	

1. Function

1.01 Support Processor and Memory SPEC Check

1.01.01 Support CPU SPEC Test

1.01.01.0.1 Test Purpose :

The purpose of this test is to validate and ensure the CPU Specification.

1.01.01.0.2 Test Data:

Test Item	Description	Result	Remark
CPU SPEC Information Check	Jetson Xavier NX: Six Core Carmel ARMv8 Processor rev 0	PASS	

1.01.02 Memory Specification Test

1.01.02.01.01 Test Purpose :

The purpose of this test is to validate and ensure the Memory Specification.

1.01.02.01.01 Test Data:

Test Item	Description	Result	Remark
Memory Spec. Check	8GB 128bit LPDDR4 (For Jetson Xavier NX)	PASS	

1.02 Output Display Function

1.02.01 HDMI Output Display Function Test

1.02.01.01.01 Test Purpose :

The purpose of this test is to examine the function of HDMI interface.

1.02.01.01.02 Test Data :

Test Item	Description	Location	Result	Remark
HDMI function	Display resolution check at 1080P. 1920x1080, 60 Hz	HDMI (HDMI1)	PASS	
	3840x2160, 60Hz (HDMI 2.0)	HDMI (HDMI1)	PASS	
	Max resolution (SPEC) check under Windows OS. <u>Max spec resolution:</u> => 3840x2160, 60Hz <u>Monitor Model and Fixture No.</u> => BenQ EL2870U 28"	HDMI (HDMI1)	PASS	

1.03 Storage Function

1.03.01 M.2 Function Test

1.03.01.01.01 Test Purpose :

The test is to ensure the on-board M.2 socket functionality could work properly.

1.03.01.01.02 Test Data :

Test Item	Description	Location	Result	Remark
M.2 (NVME)	Read or Write. Device Model and fixture No. => XPG GAMMIX S50 1TB (EX-A01016: M.2 2280 PCIe Gen4x4 SSD)	NVME1	PASS	

1.04 USB Function

1.04.01 USB3.2 Gen1 x 2 Function Test

1.04.01.01.01 Test Purpose :

The purpose of this test is to ensure the USB3.2 port functional of DUT.

1.04.01.01.02 Test Data :

Test Item	Description	Location	Result	Remark
USB3.2 Type C-plug function	1. USB 3.2 Type-C device Hot-Plug test under OS 2. R/W test for Type-C (play back media and speedtest). => USB3.2: Type-C: SanDisk E80 500G (Type A/C)	USB Type-C	PASS	

1.05 Serial Port Function

1.05.01 Serial Port Function Test

1.05.01.01.01 Test Purpose :

The purpose of this test is to ensure the system Serial Port function.

1.05.01.01.02 Test Data :

Test Item	Description	Location	Result	Remark
RS-232 Function	Use burnin.sh test program to send message from TX to RX to make sure com port function properly	COM1/ COM2	PASS	
RS-422 Function	Use burnin.sh test program to send message from DUT1 to DUT2 make sure com port function properly (terminal set off)	COM1/ COM2	PASS	
RS-485 Function	Use burnin.sh test program to send message from DUT1 to DUT2 make sure com port function properly (terminal set off)	COM1/ COM2	PASS	

1.06 Jumper/Connector/Pin Header Function

1.06.01 AT/ATX Jumper Function Test

1.06.01.01.01 Test Purpose :

The purpose of this test is to examine the GPIO Connector function.

1.06.01.01.02 Test Data :

Test Item	Description	Location	Result	Remark
AT/ATX Jumper Check	1-2 : AT 2-3 : ATX (Default)	JPS0N1	PASS	

1.07 Mini PCIe Basic Function

1.07.01.01.01 Test Purpose :

The test is to ensure the Mini PCIe slot functionality could work properly.

1.07.01.01.02 Test Data :

Test Item	Description	Location	Result	Remark
Mini PCIE Slot Function	100MB file(s) read/write function check. (Please connect to Hinet for test. http://speed.hinet.net/httpptest.htm) *No CRC check test needed for the download file. Or Please connect to below links to test.\\192.168.11.200\File_Read_Write	MINI_PCIE1	PASS	
	Mini-PCIE Card: => EWM-W189H02E(WIFI)			
	Use Mini PCIE device via USB signal to check function. Mini-PCIE Card: => EWM-W189H02E(BT)	MINI_PCIE1	PASS	

1.08 MIPI-CSI Basic Function

1.08.01.01.01 Test Purpose :

The test is to ensure the MIPI-CSI socket functionality could work properly.

1.08.01.01.02 Test Data :

Test Item	Description	Location	Result	Remark
MIPI-CSI Function	Connect MIPI-CSI camera to make sure MIPI-CSI socket is function properly	CN4	PASS	
	MIPI-CSI Camera Card: => Raspberry Pi Camera V2	CN6	PASS	

1.09 TPM Function

1.09.01.01.01 Test Purpose :

The test is to ensure the TPM functionality could work properly.

1.09.01.01.02 Test Data :

Test Item	Description	Location	Result	Remark
TPM Function	1. Generate random code 2. Encrypt the specified file msg.dat 3. Save data to tpm memory	U26	PASS	

Test Item	Description	Location	Result	Remark
	4. Confirm that it has been written to the storage area			

2. Reliability

2.01 Power On/Off Test

2.01.01.01.1 Test Purpose :

The purpose of this test is to validate the stability of the DUT after Power On/Off cycling test.

2.01.01.01.2 Test Data :

Test Item	Description	Result	Remark
Power ON/OFF Test	ATX Mode. Power ON/OFF test. Motherboard ATX/AT Jumper setting at "ATX" Mode. PASS criteria >= 1000 loops, booting rate=100%	PASS	

2.02 Reboot Test

2.02.01.01.1 Test Purpose :

The purpose of this test is to validate the stability of the DUT after Power On/Off cycling test.

2.02.01.01.2 Test Data :

Test Item	Description	Result	Remark
Auto Reboot Test	ATX Mode. Power ON/OFF test. Motherboard ATX/AT Jumper setting at "ATX" Mode. PASS criteria >= 1000 loops, booting rate=100%	PASS	

2.03 IO Port Stress Test

2.03.01.01.1 Test Purpose :

The purpose of this test is to examine and validate the stability of the IO port.

2.03.01.01.2 Test Data :

Test Item	Description	Result	Remark
COM1,COM2	1. The platform must pass the Serial Port stress test over 12 hours. 2. The platform MUST maintain a stable condition after the test has been completed. *Test by burnin.sh program	PASS	
GPIO	1. The platform must pass the Serial Port stress test over 12 hours. 2. The platform MUST maintain a stable condition after the test has been completed. *Test by burnin.sh program	PASS	

2.04 Integrated Stress Test

2.04.01.01.1 Test Purpose :

The purpose of this test is to examine the Full Load performance and to ensure the quality and stability of the System.

2.04.01.01.2 Test Data :

Test Item	Description	Result	Remark
System Stress Test	CPU/GPU/Memory/LAN1: The platform must pass the stress test over 12 hours. And MUST maintain a stable condition after the test has been completed. *Test by burnin.sh program	PASS	
	CPU/GPU/Memory/LAN2: The platform must pass the stress test over 12 hours. And MUST maintain a stable condition after the test has been completed. *Test by burnin.sh program	PASS	
	uDisk/NVME The platform must pass the stress test over 12 hours. And MUST maintain a stable condition after the test has been completed. *Test by burnin.sh program	PASS	