



HORUS430-X3

GPU-Accelerated Computer Reliability/Environment Test Report

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Test Report

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Version History			
Document Release	Date	Change Item	Remarks
V1.0	11/25/2020	Preliminary Released	

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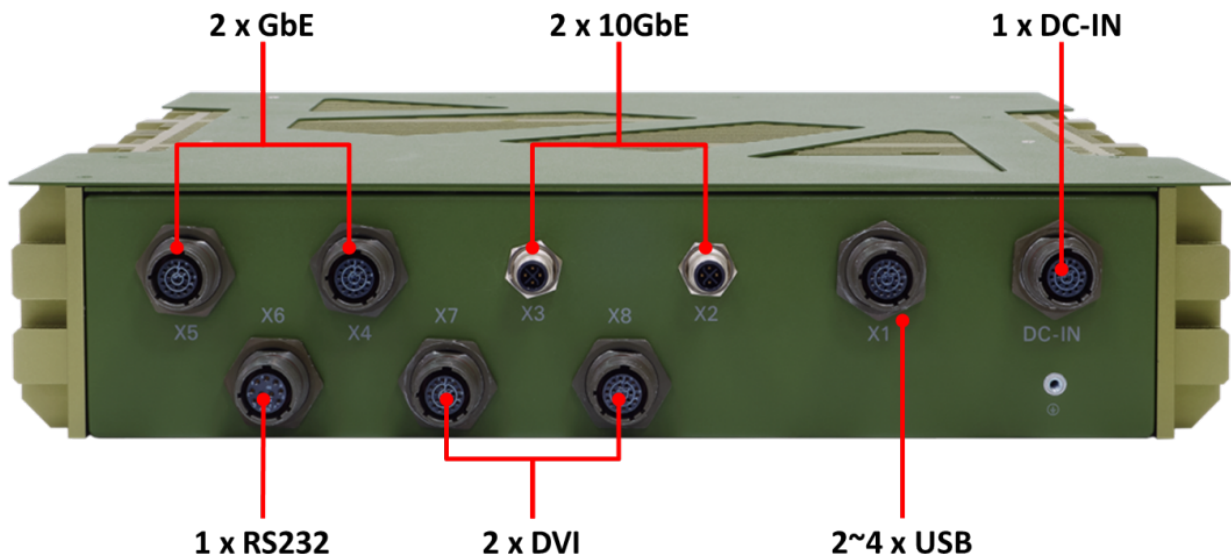
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1. SYSTEM I/O DESCRIPTION

a. Horus430-X3 Front Panel



b. Horus430-X3 Back I/O



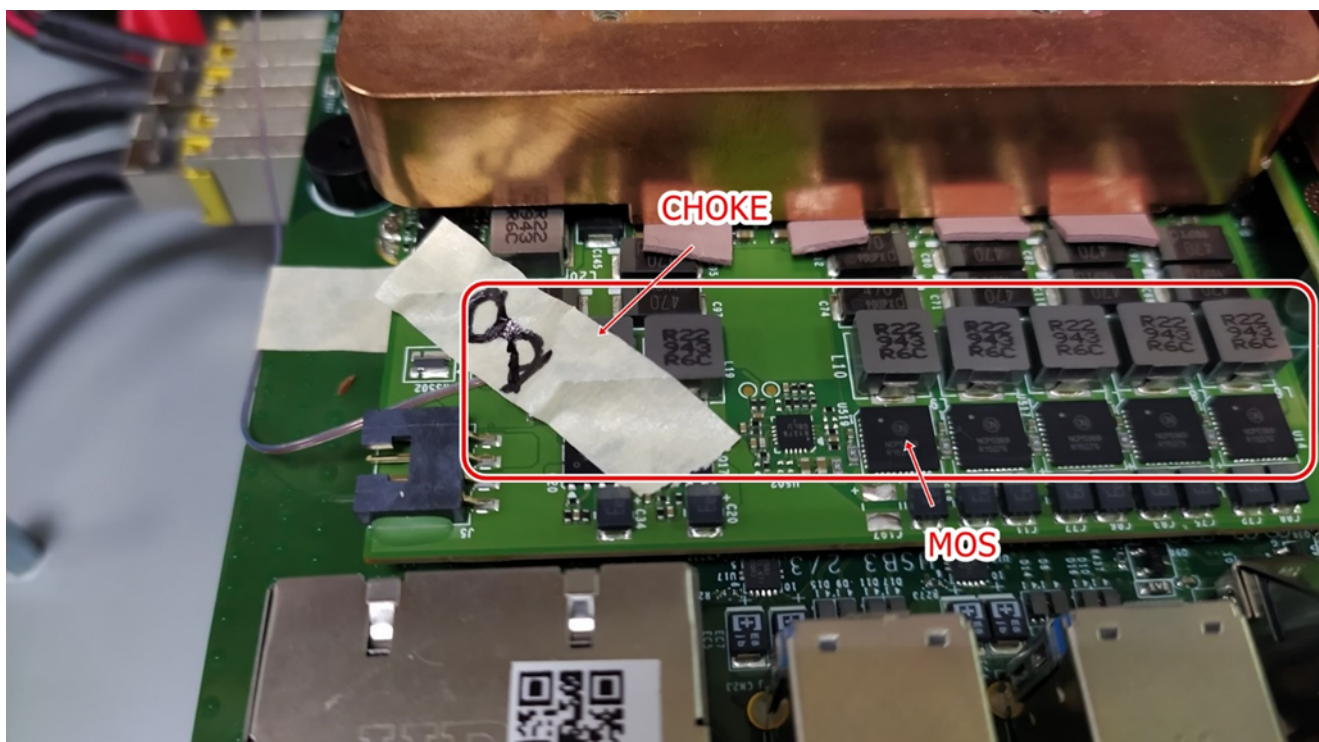
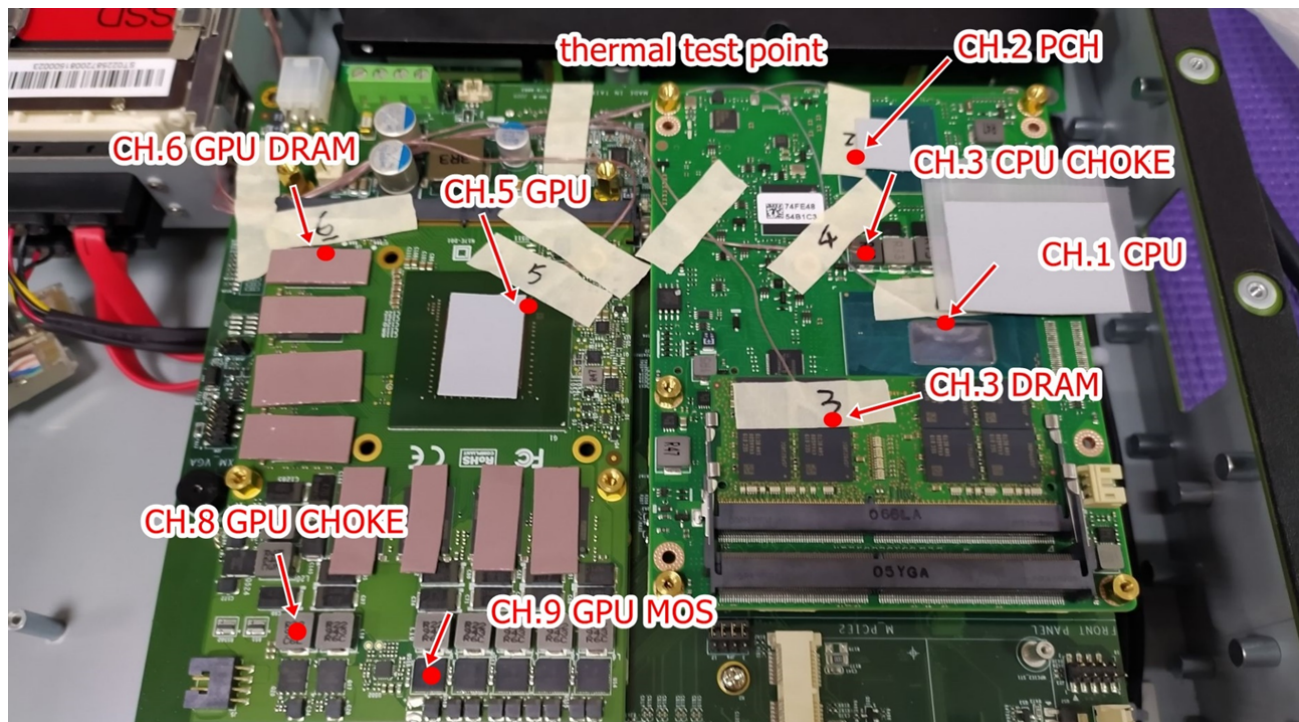
2. System Configuration

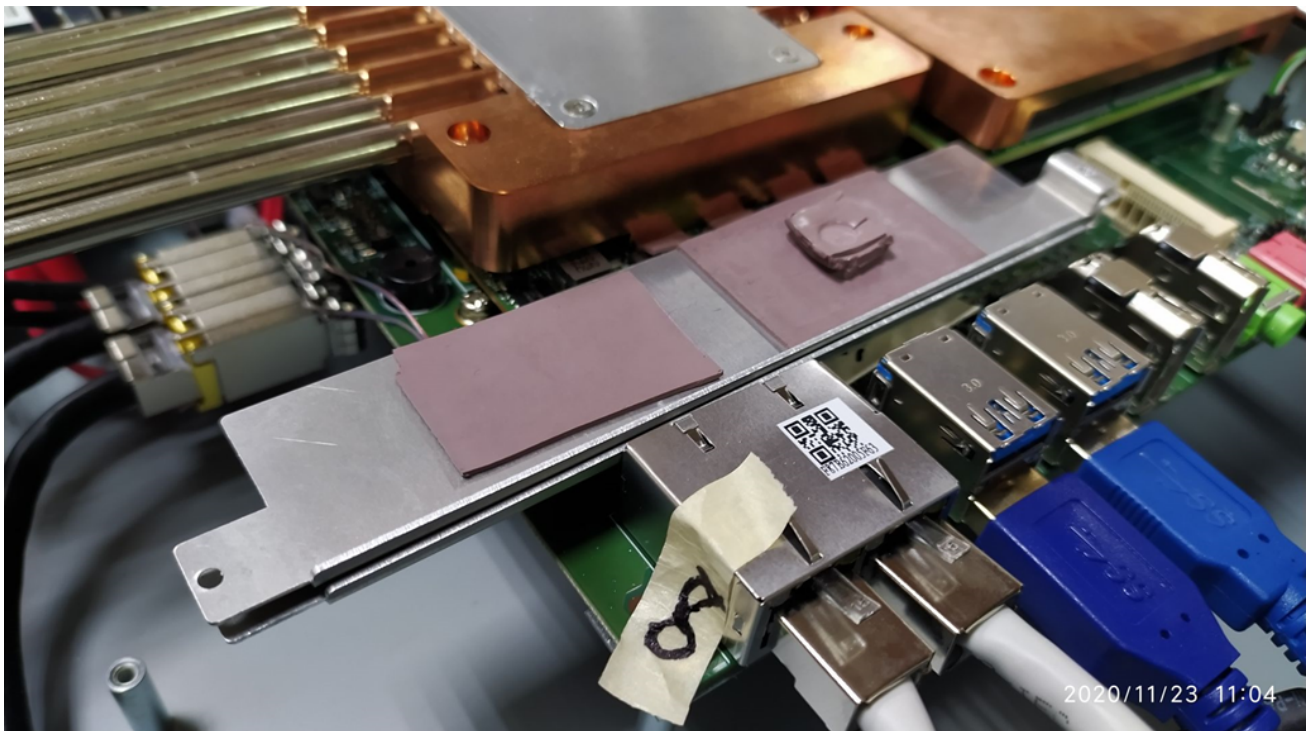
System Configuration	
Motherboard	Perfectron SK513+COM Express Type6 CPU board
CPU	Intel® Core™ i7-9850HE Processor 2.7 GHz
PCH	Intel QM370
GPU	NVIDIA GTX1080 MXM
Memory	SAMSUNG 64GB SOD DDR4 2666
SATA port1	7SLSSB1K9GTLE9 SATA III- 2TB SSD
SATA port2	7SLSSB1K9GTLE9 SATA III- 2TB SSD
LAN1	Intel®i219 LM GbE LAN
LAN2	Intel® i210 GbE LAN
LAN3	Intel®X710 10GbE LAN
LAN4	Intel®X710 10GbE LAN

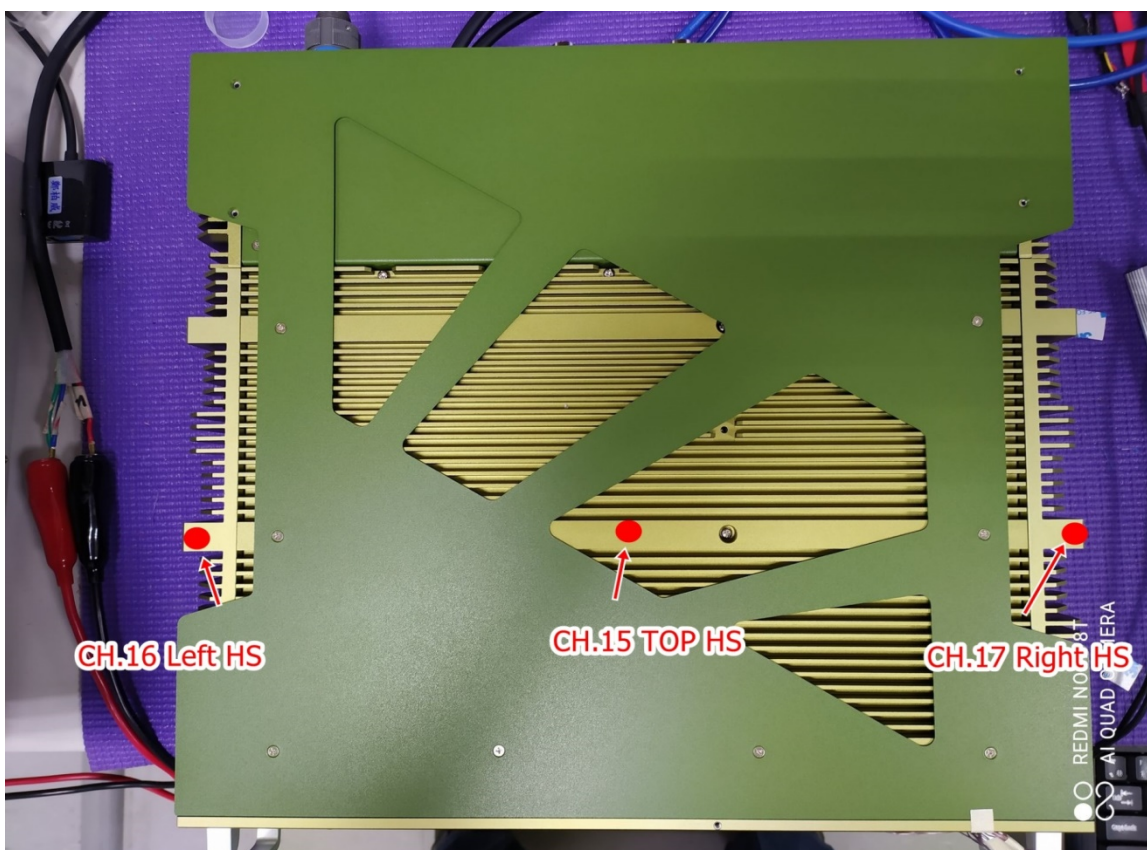
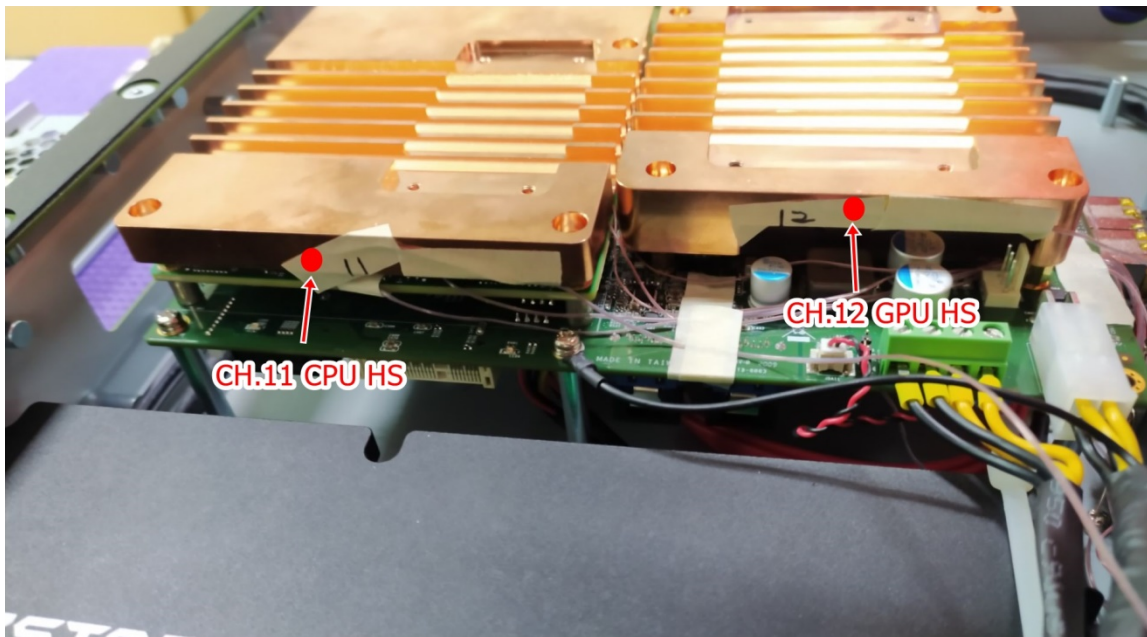
1-2. Thermal Measurement Plan -20/60°C

Test Purpose	The purpose of performing thermal profile test is to identify potential thermal problem of the EUT. And it is to aid products in reliability assessment considering that semiconductor failure rates rise rapidly with increasing junction temperature In case of systems cooling, patterns will vary with stacking choices, temperature/thermal mapping can aid in the development of optimum tacking arrangements
Test Equipment	1. KSON THS-B4T-150 Chamber 2. YOKOGAWA MV1000, Thermometer (FLUKE50D K/J) 3. Infrared thermal imaging camera Model TVS-200EX
Quantity Tested	Minimum 1 Set
Test Software	Passmark Burn-In Test under Windows 10
Test Procedure	- Thermal pre-scan measurement: Temperature: 24~26°C/40~60%RH Capture thermal IR photo for whole boards after the EUT execute passmark burn-in test with 100% lading during 1 hour at least. - Thermal actual measurement: - Select the test points according to the IR photo and attach thermocouples to the hot points - Put the EUT in thermal chamber and set the temperature profile of as test specification - Turn on the thermal chamber and power on the EUT to enter windows environment to run Max Power Test + 3DMARK 2003 application program - After the EUT executing the test software for 4 hours, record thermal maximum value for each thermocouples point. - Turn off the thermal chamber and EUT - Verify and check recorded figure of each components to its' operating temperature range listed in specification/approval sheet of each measured component
Test diagram of curves	Environment defines for 8 hours Temp (°C) 70 60 55 50 40 25 -10 -20 1.5 3 4.5 5 6.5 8 9.5 10 11.5 12 13.5 14 15.5 16 — testing period
Test picture	

Thermal point







Test Result -20/60°C

Point		-20°C	-10°C	0°C	50°C	55°C	60°C
CPU Frequency(GHz)		3.4	3.7	3.5	2.8	2.8	2.5
CPU T-J (°C)		47	53	64	99	100	100
GPU Frequency(GHz)		1.9	1.9	1.9	1.6	1.5	1.2
GPU T-J (°C)		28	34	45	90	90	90
1	CPU	21	27	35.8	80.1	82.8	85
2	PCH	11.5	17.4	26.5	73	76.2	79.3
3	DRAM	29.8	35.9	44.9	94.1	96.5	98.4
4	CPU CHOKE	24.7	30.7	39.6	85	87.3	89.6
5	GPU	24.9	30.9	40.9	87.7	87.9	88.1
6	GPU RAM	19	25.1	35.4	82.3	83.5	84.4
7	X710	28.9	38	49.2	102.1	102.5	103.1
8	GPU CHOKE L18	44.2	52.1	64.1	108.9	106	104
9	GPU MOS U519	49.8	57.7	70.4	117.2	112	108.7
10	SK711 CHIP	26.1	35.2	46.2	91.3	91.7	92.6
11	CPU HS	9.5	15.6	24.5	71	74.3	77.5
12	GPU HS	17.1	23	32.7	78.9	80.4	81.8
13	SSD1	6.1	15.8	26.3	78.3	82.1	85.5
14	SSD2	5.7	15.7	26.4	79.2	83.4	85.6
15	TOP Heatsink	0.6	8.3	18	66.4	70	73.1
16	Left Heatsink	-12.8	-2.1	8.2	57.7	62.2	66.7
17	Right Heatsink	-6	4	14.8	64.1	67.9	71.1