

Product Test Report



Product Name	LE-37M
Product Version	A
Issued Date	2019.10.25
Report Edition	1.0
BIOS Version	1.0
Testing Engineer	Perry
Check Engineer	Daniel

REVISION HISTORY

DATE	REVISION NO.	PAGE	DESCRIPTONS
2019.10.25	Ver. 1.0	44	Initial Release

Index

1. Function test	4
1.1 Hardware functions.....	4
1.2 BIOS function	5
1.3 Driver	6
2. Compatibility test	7
2.1 CPU Test.....	7
2.2 Memory Test	7
2.3 HDMI Graphic Quality Test	8
2.4 Display Port Graphic Quality Test	9
2.5 CRT Graphic Quality Test.....	10
2.6 Audio	11
2.7 HDD Test	11
2.8 DVD-ROM Test	12
2.9 USB Test.....	13
2.10 Serial Port Test	14
2.11 PS2 Keyboard 、 Mouse Test.....	14
2.12 LAN Test.....	15
2.13 Power Supply Test	15
2.14 OS Install	16
2.15 PCI Express Mini Card.....	16
2.16 M2(Key E) Expansion slot	16
3. Environmental test	17
3.1 Temperature Test.....	17
3.2 Thermal measurements at various points on the board	20
4. Reliability Test	21
4.1 Power Consumption Test	21
5. Performance Test	23
5.1 3D MARK VANTAGE.....	23

5.2 3D MARK 11	25
5.3 3D MARK	27
5.4 PC MARK 7 & 8	29
5.5 PC MARK10.....	31
5.6 PerformanceTest 9.0	34
5.7 Geekbench 4.....	37
5.8 CINEBENCH R15	40
5.9 Storage Performance.....	43

1. Function test

1.1 Hardware functions

Base Function Test

Item	Description	Result
1	Power Button	PASS
2	Reset	PASS
3	Power LED	PASS
4	HDD LED	PASS
5	CPUFAN	PASS
6	SYSFAN	PASS
7	CN_AUDIO	PASS
8	LAN1(I219)	PASS
9	LAN2(I210)	PASS
10	DDR4_A/B	PASS
11	CN_SATA3-1/2	PASS
12	USB3 - 1/2/3/4	PASS
13	CN_USB2 - 1/2	PASS
14	CN_COM 1/2/3/4	PASS
15	PS2	PASS
16	CRT	PASS
17	HDMI	PASS
18	Display Port	PASS
19	LVDS	PASS
20	MINI_CRAD	PASS
21	M2	PASS

Jumper

Item	Description	Result
1	JRTC	PASS
2	JAT	PASS
3	JMSATA	PASS
4	JVLCD	PASS

1.2 BIOS function

Item	Description	Result	Remark
1	Press 'Del' to run Setup Utility	PASS	
2	Ctrl-Alt-Del – Soft-Reboot	PASS	
3	Save & Exit Setup	PASS	
4	Date & Time Setting	PASS	
5	Selection Language	PASS	
6	Numlock	PASS	
7	Active Processor Cores	PASS	
8	Hyper-Threading	PASS	
9	Channel A&B DIMM Control	PASS	
10	LCD Control	PASS	
11	HD Audio	PASS	
12	Wake On LAN	PASS	
13	LVDS Configuration	PASS	
14	COM Port 1~4	PASS	
15	Keyboard Controller	PASS	
16	Power Loss	PASS	
17	Watch Dog Timer	PASS	

Item	Description	Result	Remark
18	Auto Wake on S5	PASS	
19	iAMT	PASS	

1.3 Driver

CD edition : IPCI2-1.0

1. Windows 10 64 bit Driver Test

Item	Description	Result	Version
1	Chipset Driver	PASS	
2	VGA Driver	PASS	24.20.100.6194
3	Audio Driver	PASS	6.0.1.8036
4	LAN Driver	PASS	I219LM:12.17.10.7 I210: 12.15.184.0

2. Compatibility test

2.1 CPU Test

Test environment:

OS: Windows 10 64bit

Test program : BurnIn Test8.1 & AIDA64

Spec	CPU Speed	Family	Processor	TDP	Smart Cache	Result
SR3YZ	2.6GHz	CORE	i7-8850H	45W	9 MB	PASS
SR3Z1	2.5GHz	CORE	i5-8400H	45W	8 MB	PASS

2.2 Memory Test

Test environment:

OS: Windows 10 64bit

Test program : BurnIn Test8.1 & MemTest64 & MemTest86+

Manufacturer	Chip	Frequency	Capacity Mbytes	Memory test Source
Kingston KVR24S17D8/16	SKhynix H5AN8G8NCJR -VKC	DDR4 2400	16 GB	PASS
Kingston KVR24S17S8/8	Micron 7WE75D9VPP	DDR4 2400	8 GB	PASS
Kingston KVR24S17S6/4	Micron 7UE75D9WFH	DDR4 2400	4 GB	PASS

2.3 HDMI Graphic Quality Test

Test environment:

OS Windows 10 64bit

Driver version : 24.20.100.6194

Resolution	Color	Result	Remark
800 x 600	32bit	PASS	
1024 x 768	32bit	PASS	
1152 x 864	32bit	PASS	
1280 x 600	32bit	PASS	
1280 x 720	32bit	PASS	
1280 x 768	32bit	PASS	
1280 x 800	32bit	PASS	
1280 x 960	32bit	PASS	
1280 x 1024	32bit	PASS	
1360 x 768	32bit	PASS	
1366 x 768	32bit	PASS	
1400 x 1050	32bit	PASS	
1440 x 900	32bit	PASS	
1600 x 900	32bit	PASS	
1680 x 1050	32bit	PASS	
1920 x 1080	32bit	PASS	
3840 x 2160	32bit	PASS	

2.4 Display Port Graphic Quality Test

Test environment:

OS Windows 10 64bit

Driver version : 24.20.100.6194

Resolution	Color	Result	Remark
800 x 600	32bit	PASS	
1024 x 768	32bit	PASS	
1152 x 864	32bit	PASS	
1280 x 600	32bit	PASS	
1280 x 720	32bit	PASS	
1280 x 768	32bit	PASS	
1280 x 800	32bit	PASS	
1280 x 960	32bit	PASS	
1280 x 1024	32bit	PASS	
1360 x 768	32bit	PASS	
1366 x 768	32bit	PASS	
1400 x 1050	32bit	PASS	
1440 x 900	32bit	PASS	
1600 x 900	32bit	PASS	
1600 x 1050	32bit	PASS	
1920 x 1080	32bit	PASS	
3840 x 2160	32bit	PASS	

2.5 CRT Graphic Quality Test

Test environment:

OS Windows 10 64bit

Driver version : 24.20.100.6194

Resolution	Color	Result	Remark
800 x 600	32bit	PASS	
1024 x 768	32bit	PASS	
1152 x 864	32bit	PASS	
1280 x 600	32bit	PASS	
1280 x 720	32bit	PASS	
1280 x 768	32bit	PASS	
1280 x 800	32bit	PASS	
1280 x 960	32bit	PASS	
1280 x 1024	32bit	PASS	
1360 x 768	32bit	PASS	
1366 x 768	32bit	PASS	
1400 x 1050	32bit	PASS	
1440 x 900	32bit	PASS	
1600 x 900	32bit	PASS	
1600 x 1200	32bit	PASS	
1680 x 1050	32bit	PASS	
1920 x 1080	32bit	PASS	

2.6 Audio

Test environment:

OS Windows 10 64-bit

Driver version : 6.0.1.8036

Item	Description	Result	Remark
1	2.1CH	PASS	
2	Microphone	PASS	

OS Ubuntu 16.04 / 18.04

Item	Description	Result	Remark
1	2.1CH	PASS	

OS Fedoro 28 Workstation

Item	Description	Result	Remark
1	2.1CH	PASS	

2.7 HDD Test

Test environment:

OS Windows 10 64bit

Test program : BurnIn Test8.1 & CrystalDiskMark

HDD Model	Interface	Capacity	HDD Size Detect	HDD Data Transfer	HDD LED Check
INTEL SSDSC2BW240A4	SSD	240 GB	PASS	PASS	PASS
SPCC Solid State disk(S55)	SSD	120 GB	PASS	PASS	PASS
CT120 BX500	SSD	120 GB	PASS	PASS	PASS
WD 10EZEX	HDD	1 TB	PASS	PASS	PASS

Kingston DT100G3/32G	USB	32 GB	PASS	PASS	PASS
Kingston DT Hyper X 3.0	USB	63 GB	PASS	PASS	PASS
Crucial_CT 120M500SSD	mSATA	120 GB	PASS	PASS	PASS
Innodisk 3MV2-P DVMSR-64GD81BC 1QC	mSATA	64 GB	PASS	PASS	PASS
ACPI MSS4F-M SATA III	mSATA	64 GB	PASS	PASS	PASS

2.8 DVD-ROM Test

Test environment:

OS Windows 10 64bit

DVD-ROM Model	Interface	DVD-ROM Detect	DVD-ROM Data Transfer	Play DVD
Transcend DVD TS8XDVDS-K	USB	PASS	PASS	PASS
LITEON DVD eTAU108	USB	PASS	PASS	PASS
PIONEER DVD DVR-XD11T	USB	PASS	PASS	PASS
ZYNET GT32N A201	USB	PASS	PASS	PASS

2.9 USB Test

1. Windows 10 64-bit

Item	Result	Remark
External USB Keyboard Test	PASS	
External USB Mouse Test	PASS	
Hot plugging test	PASS	
DVD-ROM	PASS	
USB Mass storage	PASS	

2. Ubuntu 16.04 / 18.04

Item	Result	Remark
External USB Keyboard Test	PASS	
External USB Mouse Test	PASS	
Hot plugging test	PASS	
DVD-ROM	PASS	
USB Mass storage	PASS	

3. Fedora 28 Workstation

Item	Result	Remark
External USB Keyboard Test	PASS	
External USB Mouse Test	PASS	
Hot plugging test	PASS	
DVD-ROM	PASS	
USB Mass storage	PASS	

2.10 Serial Port Test

1. Windows 10 64-bit

Item	Description	Result	Remark
1	Device Manager Check	PASS	
2	RS-232 Mouse Test	PASS	

2.11 PS2 Keyboard 、 Mouse Test

1. Windows 10 64-bit

Item	Description	Result	Remark
1	Device Manager Check	PASS	
2	Keyboard Typing Test	PASS	
3	Mouse Detect Test	PASS	

2. Ubuntu 16.04 / 18.04

Item	Description	Result	Remark
1	Device Manager Check	PASS	
2	Keyboard Typing Test	PASS	
3	Mouse Detect Test	PASS	

3. Fedora 28 Workstation

Item	Description	Result	Remark
1	Device Manager Check	PASS	
2	Keyboard Typing Test	PASS	
3	Mouse Detect Test	PASS	

2.12 LAN Test

Data Transfer Test environment:

-CAT 6 UTP 100M

-8 HR. continuous

1. Windows 10 64-bit

Item	Description	Result	Remark
1	Device Manager Check	PASS	(IPERF)
2	Data Transfer Test	PASS	(IPERF)

2. Ubuntu 16.04 / 18.04

Item	Description	Result	Remark
1	Device Manager Check	PASS	

3. Fedora 28 Workstation

Item	Description	Result	Remark
1	Device Manager Check	PASS	

2.13 Power Supply Test

Item	Type	Description	Result	Remark
1	ATX Power	Thermaltake TR2-450AH2NCB	PASS	
2	ATX Power	SEED BS400	PASS	
3	ATX Power	Seasonic SS-520GB 520W	PASS	
4	ATX Power	AcBel PC7008 430W	PASS	

2.14 OS Install

Item	Description	Result	Remark
1	Windows 10 64 bit	PASS	
2	Ubuntu16.04 (ubuntu-16.04.5-desktop-amd64)	PASS	
3	Ubuntu18.04 (ubuntu-18.04.1-desktop-amd64)	PASS	
4	Fedora 28 (Fedora-Workstation-Live-x86_64-28-1.1)	PASS	

2.15 PCI Express Mini Card

Motherboard	PCI Express mini card	Result	Remark
LE-37M	MPX-M2E+M2-210	PASS	
	MPX-210D	PASS	
	MPX-210D2	PASS	
	MPX-574D	PASS	
	MPX-574D2	PASS	
	MPX-350	PASS	

2.16 M2(Key E) Expansion slot

Motherboard	PCI Express mini card	Result	Remark
LE-37M	M2-210	PASS	

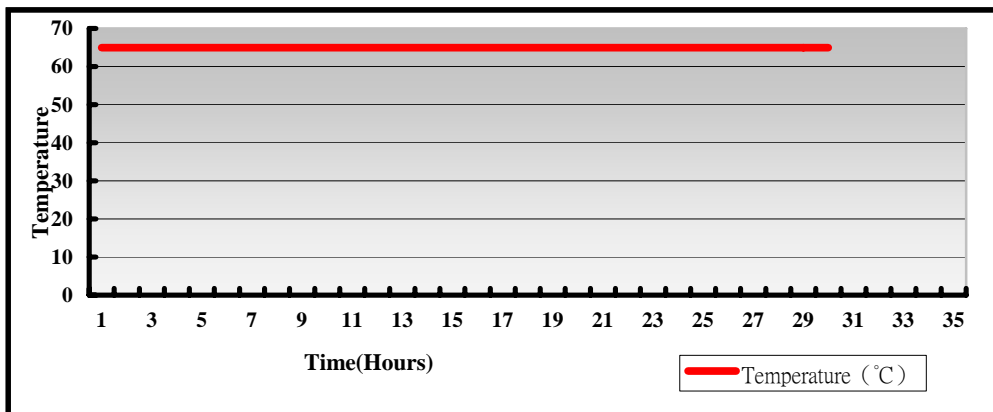
3. Environmental test

3.1 Temperature Test

Hardware Device list:

System Board	LE-37M
CPU	Intel(R) Core(TM) i7-8850H 2.6GHz
Memory	Kingston KVR24S17D8/16 16GBx2 (SKhynix H5AN8G8NCJR-VKC)
HDD	Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)
Operating OS	Windows 10 64bit
Test Equipment	GIANT FORCE GTH-150-60-SP-AR LCD-9530 Programmer/Controller
Test Program	BurnIn 8.1

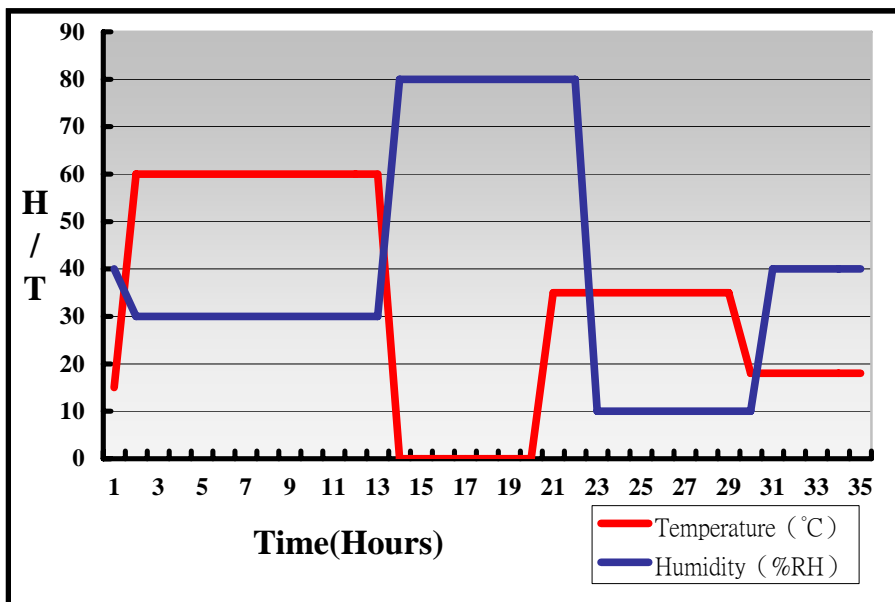
Test Result:



Hardware Device list:

System Board	LE-37M
CPU	Intel(R) Core(TM) i7-8850H 2.6GHz
Memory	Kingston KVR24S17D8/16 16GBx2 (SKhynix H5AN8G8NCJR-VKC)
HDD	Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)
Operating OS	Windows 10 64bit
Test Equipment	GIANT FORCE GTH-150-60-SP-AR LCD-9530 Programmer/Controller
Test Program	BurnIn 8.1

Test Result:



Boot up Test:

Hardware Device list:

System Board	LE-37M
CPU	Intel(R) Core(TM) i7-8850H 2.6GHz
Memory	Kingston KVR24S17D8/16 16GBx2 (SKhynix H5AN8G8NCJR-VKC)
HDD	Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)

Temperature	Result	Remark
-20°C	PASS	50 Times
80°C	PASS	50 Times

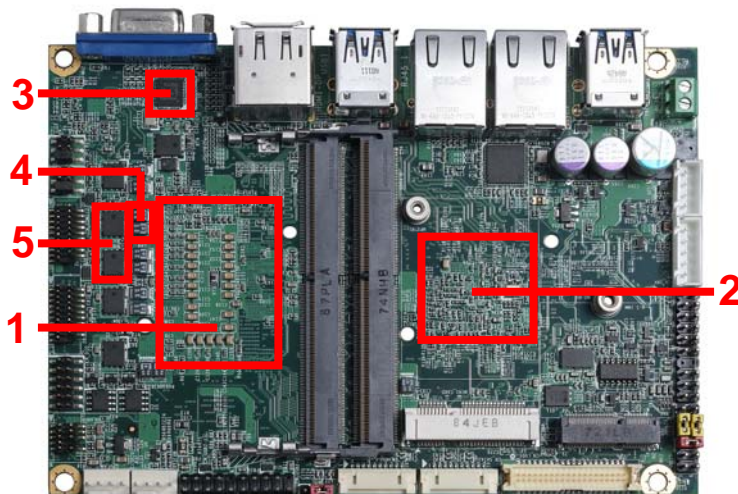
3.2 Thermal measurements at various points on the board

Test Environment:

CPU	Intel(R) Core(TM) i7-8850H 2.6GHz
Memory	Kingston KVR24S17D8/16 16GBx2 (SKhynix H5AN8G8NCJR-VKC)
HDD	Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)
Power	Thermaltake TR2-450AH2NCB
Operating System	Windows 10 64-bit
Test Program	3DMARK+Prime95

Test Result:

Item	Environmental temperature	26°C
1	CPU(Bottom)	82.5°C
2	PCH(Bottom)	62.5°C
3	U6	56.3°C
4	C38&C39	68.4°C
5	Q5&Q6	72.4°C



4. Reliability Test

4.1 Power Consumption Test

1. Test Environment:

Motherboard	LE-37M
CPU	Intel(R) Core(TM) i7-8850H 2.6GHz
Memory	Kingston KVR24S17D8/16 16GBx2 (SKhynix H5AN8G8NCJR-VKC)
HDD	Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)

Power Supply: GW INSTEK SPS-3610(DC Power Supply)

Voltage	MS-DOS Boot up		Windows 10 64bit 3DMARK + Prime95	
	Current (A)	Power (W)	Current (A)	Power (W)
12V	2.57	30.84	5.90	70.8
19V	1.65	31.35	3.89	73.91
24V	1.42	34.08	3.23	77.52

1. a. Test Environment:

The same as above but with LCD

Display Panel	AUO M215HW03 V1 21.5”LCD
----------------------	---------------------------------

Power Supply: GW INSTEK SPS-3610(DC Power Supply)

Voltage	MS-DOS Boot up		Windows 10 64bit 3DMARK + Prime95	
	Current (A)	Power (W)	Current (A)	Power (W)
12V	3.02	36.24	7.85	94.2
19V	1.97	37.43	4.85	92.15
24V	1.63	39.12	3.78	90.72

2. Test Environment:

Motherboard	LE-37M
CPU	Intel(R) Core(TM) i5-8400H 2.5GHz
Memory	Kingston KVR24S17D8/16 16GBx2 (SKhynix H5AN8G8NCJR-VKC)
HDD	Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)

Power Supply: GW INSTEK SPS-3610(DC Power Supply)

Voltage	MS-DOS Boot up		Windows 10 64bit 3DMARK + Prime95	
	Current (A)	Power (W)	Current (A)	Power (W)
12V	2.14	25.68	5.62	67.44
19V	1.41	26.79	3.55	67.45
24V	1.17	28.08	2.87	68.88

2. a. Test Environment:

The same as above but with LCD

Display Panel	AUO M215HW03 V1 21.5”LCD
----------------------	---------------------------------

Power Supply: GW INSTEK SPS-3610(DC Power Supply)

Voltage	MS-DOS Boot up		Windows 10 64bit 3DMARK + Prime95	
	Current (A)	Power (W)	Current (A)	Power (W)
12V	2.97	35.64	7.02	84.24
19V	1.95	37.05	4.48	85.12
24V	1.59	38.16	3.64	87.36

5. Performance Test

5.1 3D MARK VANTAGE

Windows 10 64-bit

Item	Weighted Suite	Test Environment	Result	Remark
1	3DMARK SCORE	Intel(R) Core(TM) i7-8850H 2.6GHz Kingston KVR24S17D8/16 16GBx2 (SKhynix H5AN8G8NCJR-VKC) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)	PASS	P7927
2	GPU SCORE		PASS	6268
3	CPU SCORE		PASS	38561

Windows 10 64-bit

Item	Weighted Suite	Test Environment	Result	Remark
1	3DMARK SCORE	Intel(R) Core(TM) i7-8850H 2.6GHz Kingston KVR24S17S8/8 8GB (Micron 7WE75D9VPP) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)	PASS	P6820
2	GPU SCORE		PASS	5365
3	CPU SCORE		PASS	36571

Windows 10 64-bit

Item	Weighted Suite	Test Environment	Result	Remark
1	3DMARK SCORE	Intel(R) Core(TM) i7-8850H 2.6GHz Kingston KVR24S17S6/4 4GB (Micron 7UE75D9WFH) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)	PASS	P6267
2	GPU SCORE		PASS	4923
3	CPU SCORE		PASS	34666

Windows 10 64-bit

Item	Weighted Suite	Test Environment	Result	Remark
1	3DMARK SCORE	Intel(R) Core(TM) i5-8400H 2.5GHz Kingston KVR24S17D8/16 16GBx2 (SKhynix H5AN8G8NCJR-VKC) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)	PASS	P7608
2	GPU SCORE		PASS	6115
3	CPU SCORE		PASS	28441

Windows 10 64-bit

Item	Weighted Suite	Test Environment	Result	Remark
1	3DMARK SCORE	Intel(R) Core(TM) i5-8400H 2.5GHz Kingston KVR24S17S8/8 8GB (Micron 7WE75D9VPP) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)	PASS	P6526
2	GPU SCORE		PASS	5204
3	CPU SCORE		PASS	27433

Windows 10 64-bit

Item	Weighted Suite	Test Environment	Result	Remark
1	3DMARK SCORE	Intel(R) Core(TM) i5-8400H 2.5GHz Kingston KVR24S17S6/4 4GB (Micron 7UE75D9WFH) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)	PASS	P6153
2	GPU SCORE		PASS	4897
3	CPU SCORE		PASS	26657

5.2 3D MARK 11

Windows 10 64-bit

Item	Weighted Suite	Test Environment	Result	Remark
1	3DMARK SCORE	Intel(R) Core(TM) i7-8850H 2.6GHz Kingston KVR24S17D8/16 16GBx2 (SKhynix H5AN8G8NCJR-VKC) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)	PASS	P2156
2	Graphics SCORE		PASS	1883
3	Physics SCORE		PASS	9400
4	Combined SCORE		PASS	2025

Windows 10 64-bit

Item	Weighted Suite	Test Environment	Result	Remark
1	3DMARK SCORE	Intel(R) Core(TM) i7-8850H 2.6GHz Kingston KVR24S17S8/8 8GB (Micron 7WE75D9VPP) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)	PASS	P1922
2	Graphics SCORE		PASS	1752
3	Physics SCORE		PASS	6096
4	Combined SCORE		PASS	1482

Windows 10 64-bit

Item	Weighted Suite	Test Environment	Result	Remark
1	3DMARK SCORE	Intel(R) Core(TM) i7-8850H 2.6GHz Kingston KVR24S17S6/4 4GB (Micron 7UE75D9WFH) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)	PASS	P1763
2	Graphics SCORE		PASS	1658
3	Physics SCORE		PASS	4859
4	Combined SCORE		PASS	1195

Windows 10 64-bit

Item	Weighted Suite	Test Environment	Result	Remark
1	3DMARK SCORE	Intel(R) Core(TM) i5-8400H 2.5GHz Kingston KVR24S17D8/16 16GBx2 (SKhynix H5AN8G8NCJR-VKC) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)	PASS	P2109
2	Graphics SCORE		PASS	1846
3	Physics SCORE		PASS	9209
4	Combined SCORE		PASS	1941

Windows 10 64-bit

Item	Weighted Suite	Test Environment	Result	Remark
1	3DMARK SCORE	Intel(R) Core(TM) i5-8400H 2.5GHz Kingston KVR24S17S8/8 8GB (Micron 7WE75D9VPP) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)	PASS	P1869
2	Graphics SCORE		PASS	1710
3	Physics SCORE		PASS	6383
4	Combined SCORE		PASS	1375

Windows 10 64-bit

Item	Weighted Suite	Test Environment	Result	Remark
1	3DMARK SCORE	Intel(R) Core(TM) i5-8400H 2.5GHz Kingston KVR24S17S6/4 4GB (Micron 7UE75D9WFH) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)	PASS	P1645
2	Graphics SCORE		PASS	1553
3	Physics SCORE		PASS	4868
4	Combined SCORE		PASS	1064

5.3 3D MARK

Windows 10 64-bit

Item	Weighted Suite	Test Environment	Result	Remark
1	Time Spy	Intel(R) Core(TM) i7-8850H 2.6GHz Kingston KVR24S17D8/16 16GBx2 (SKhynix H5AN8G8NCJR-VKC) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)	PASS	474
2	Graphics SCORE		PASS	409
3	CPU SCORE		PASS	5123

Windows 10 64-bit

Item	Weighted Suite	Test Environment	Result	Remark
1	Time Spy	Intel(R) Core(TM) i7-8850H 2.6GHz Kingston KVR24S17S8/8 8GB (Micron 7WE75D9VPP) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)	PASS	405
2	Graphics SCORE		PASS	351
3	CPU SCORE		PASS	3276

Windows 10 64-bit

Item	Weighted Suite	Test Environment	Result	Remark
1	Time Spy	Intel(R) Core(TM) i7-8850H 2.6GHz Kingston KVR24S17S6/4 4GB (Micron 7UE75D9WFH) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)	PASS	367
2	Graphics SCORE		PASS	319
3	CPU SCORE		PASS	2600

Windows 10 64-bit

Item	Weighted Suite	Test Environment	Result	Remark
1	Time Spy	Intel(R) Core(TM) i5-8400H 2.5GHz Kingston KVR24S17D8/16 16GBx2 (SKhynix H5AN8G8NCJR-VKC) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)	PASS	455
2	Graphics SCORE		PASS	394
3	CPU SCORE		PASS	4092

Windows 10 64-bit

Item	Weighted Suite	Test Environment	Result	Remark
1	Time Spy	Intel(R) Core(TM) i5-8400H 2.5GHz Kingston KVR24S17S8/8 8GB (Micron 7WE75D9VPP) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)	PASS	390
2	Graphics SCORE		PASS	339
3	CPU SCORE		PASS	2956

Windows 10 64-bit

Item	Weighted Suite	Test Environment	Result	Remark
1	Time Spy	Intel(R) Core(TM) i5-8400H 2.5GHz Kingston KVR24S17S6/4 4GB (Micron 7UE75D9WFH) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)	PASS	359
2	Graphics SCORE		PASS	313
3	CPU SCORE		PASS	2318

5.4 PC MARK 7 & 8

Windows 10 64-bit

Weighted Suite	Test Environment	Result	Remark
PCMARK 7 Scores	Intel(R) Core(TM) i7-8850H 2.6GHz Kingston KVR24S17D8/16 16GBx2	PASS	6379
PCMARK 8 Scores	(SKhynix H5AN8G8NCJR-VKC) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)	PASS	5187

Windows 10 64-bit

Weighted Suite	Test Environment	Result	Remark
PCMARK 7 Scores	Intel(R) Core(TM) i7-8850H 2.6GHz Kingston KVR24S17S8/8 8GB (Micron 7WE75D9VPP)	PASS	6023
PCMARK 8 Scores	Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)	PASS	5179

Windows 10 64-bit

Weighted Suite	Test Environment	Result	Remark
PCMARK 7 Scores	Intel(R) Core(TM) i7-8850H 2.6GHz Kingston KVR24S17S6/4 4GB (Micron 7UE75D9WFH)	PASS	5834
PCMARK 8 Scores	Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)	PASS	5187

Windows 10 64-bit

Weighted Suite	Test Environment	Result	Remark
PCMARK 7 Scores	Intel(R) Core(TM) i5-8400H 2.5GHz	PASS	6487
PCMARK 8 Scores	Kingston KVR24S17D8/16 16GBx2 (SKhynix H5AN8G8NCJR-VKC) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)	PASS	5421

Windows 10 64-bit

Weighted Suite	Test Environment	Result	Remark
PCMARK 7 Scores	Intel(R) Core(TM) i5-8400H 2.5GHz	PASS	6068
PCMARK 8 Scores	Kingston KVR24S17S8/8 8GB (Micron 7WE75D9VPP) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)	PASS	5102

Windows 10 64-bit

Weighted Suite	Test Environment	Result	Remark
PCMARK 7 Scores	Intel(R) Core(TM) i5-8400H 2.5GHz	PASS	5907
PCMARK 8 Scores	Kingston KVR24S17S6/4 4GB (Micron 7UE75D9WFH) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)	PASS	5117

5.5 PC MARK10

Test Environment
Intel(R) Core(TM) i7-8850H 2.6GHz Kingston KVR24S17D8/16 16GBx2 (SKhynix H5AN8G8NCJR-VKC) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)

Windows 10 64-bit

Item	Weighted Suite	Result	Remark
1	PCMark Scores	PASS	4141
2	Essentials	PASS	8799
3	Productivity	PASS	6852
4	Digital Content Creation	PASS	3197

Test Environment
Intel(R) Core(TM) i7-8850H 2.6GHz Kingston KVR24S17S8/8 8GB (Micron 7WE75D9VPP) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)

Windows 10 64-bit

Item	Weighted Suite	Result	Remark
1	PCMark Scores	PASS	3998
2	Essentials	PASS	8328
3	Productivity	PASS	6726
4	Digital Content Creation	PASS	3097

Test Environment
Intel(R) Core(TM) i7-8850H 2.6GHz Kingston KVR24S17S6/4 4GB (Micron 7UE75D9WFH) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)

Windows 10 64-bit

Item	Weighted Suite	Result	Remark
1	PCMark Scores	PASS	3934
2	Essentials	PASS	8219
3	Productivity	PASS	6645
4	Digital Content Creation	PASS	3028

Test Environment
Intel(R) Core(TM) i5-8400H 2.5GHz Kingston KVR24S17D8/16 16GBx2 (SKhynix H5AN8G8NCJR-VKC) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)

Windows 10 64-bit

Item	Weighted Suite	Result	Remark
1	PCMark Scores	PASS	4109
2	Essentials	PASS	8593
3	Productivity	PASS	7166
4	Digital Content Creation	PASS	3060

Test Environment
Intel(R) Core(TM) i5-8400H 2.5GHz Kingston KVR24S17S8/8 8GB (Micron 7WE75D9VPP) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)

Windows 10 64-bit

Item	Weighted Suite	Result	Remark
1	PCMark Scores	PASS	3936
2	Essentials	PASS	8277
3	Productivity	PASS	6795
4	Digital Content Creation	PASS	2943

Test Environment
Intel(R) Core(TM) i5-8400H 2.5GHz Kingston KVR24S17S6/4 4GB (Micron 7UE75D9WFH) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)

Windows 10 64-bit

Item	Weighted Suite	Result	Remark
1	PCMark Scores	PASS	3813
2	Essentials	PASS	7849
3	Productivity	PASS	6616
4	Digital Content Creation	PASS	2897

5.6 PerformanceTest 9.0

Windows 10 64-bit

Item	Weighted Suite	Test Environment	Result	Remark
1	PassMark Rating	Intel(R) Core(TM) i7-8850H 2.6GHz Kingston KVR24S17D8/16 16GBx2 (SKhynix H5AN8G8NCJR-VKC) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)	PASS	4093.1
2	CPU Mark		PASS	13534.3
3	2D Graphics Mark		PASS	827.3
4	3D Graphics Mark		PASS	1299.4
5	Memory Mark		PASS	2992.4
6	Disk Mark		PASS	3745.9

Windows 10 64-bit

Item	Weighted Suite	Test Environment	Result	Remark
1	PassMark Rating	Intel(R) Core(TM) i7-8850H 2.6GHz Kingston KVR24S17S8/8 8GB (Micron 7WE75D9VPP) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)	PASS	3546.7
2	CPU Mark		PASS	10901.4
3	2D Graphics Mark		PASS	826.5
4	3D Graphics Mark		PASS	1068.1
5	Memory Mark		PASS	2182.2
6	Disk Mark		PASS	3605.4

Windows 10 64-bit

Item	Weighted Suite	Test Environment	Result	Remark
1	PassMark Rating	Intel(R) Core(TM) i7-8850H 2.6GHz Kingston KVR24S17S6/4 4GB (Micron 7UE75D9WFH) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)	PASS	3196.4
2	CPU Mark		PASS	9302.8
3	2D Graphics Mark		PASS	824.0
4	3D Graphics Mark		PASS	969.0
5	Memory Mark		PASS	1702.4
6	Disk Mark		PASS	3559.2

Windows 10 64-bit

Item	Weighted Suite	Test Environment	Result	Remark
1	PassMark Rating	Intel(R) Core(TM) i5-8400H 2.5GHz Kingston KVR24S17D8/16 16GBx2 (SKhynix H5AN8G8NCJR-VKC) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)	PASS	3942.1
2	CPU Mark		PASS	11411.4
3	2D Graphics Mark		PASS	839.9
4	3D Graphics Mark		PASS	1251.2
5	Memory Mark		PASS	2949.3
6	Disk Mark		PASS	3669.7

Windows 10 64-bit

Item	Weighted Suite	Test Environment	Result	Remark
1	PassMark Rating	Intel(R) Core(TM) i5-8400H 2.5GHz Kingston KVR24S17S8/8 8GB (Micron 7WE75D9VPP) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)	PASS	3415.5
2	CPU Mark		PASS	9772.1
3	2D Graphics Mark		PASS	818.3
4	3D Graphics Mark		PASS	1010.9
5	Memory Mark		PASS	2117.9
6	Disk Mark		PASS	3723.9

Windows 10 64-bit

Item	Weighted Suite	Test Environment	Result	Remark
1	PassMark Rating	Intel(R) Core(TM) i5-8400H 2.5GHz Kingston KVR24S17S6/4 4GB (Micron 7UE75D9WFH) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)	PASS	3169.0
2	CPU Mark		PASS	8640.2
3	2D Graphics Mark		PASS	827.7
4	3D Graphics Mark		PASS	956.0
5	Memory Mark		PASS	1732.4
6	Disk Mark		PASS	3675.5

5.7 Geekbench 4

Test Environment
Intel(R) Core(TM) i7-8850H 2.6GHz Kingston KVR24S17D8/16 16GBx2 (SKhynix H5AN8G8NCJR-VKC) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)

Windows 10 64-bit

Item	Weighted Suite		Result	Remark
1	Run CPU Benchmark Score	Single-core	PASS	4988
		Multi-core		19797
2	Run Compute Benchmark (OpenCL Score)		PASS	25759

Test Environment
Intel(R) Core(TM) i7-8850H 2.6GHz Kingston KVR24S17S8/8 8GB (Micron 7WE75D9VPP) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)

Windows 10 64-bit

Item	Weighted Suite		Result	Remark
1	Run CPU Benchmark Score	Single-core	PASS	4804
		Multi-core		14848
2	Run Compute Benchmark (OpenCL Score)		PASS	19235

Test Environment
Intel(R) Core(TM) i7-8850H 2.6GHz Kingston KVR24S17S6/4 4GB (Micron 7UE75D9WFH) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)

Windows 10 64-bit

Item	Weighted Suite		Result	Remark
1	Run CPU Benchmark Score	Single-core	PASS	4244
		Multi-core		14243
2	Run Compute Benchmark (OpenCL Score)		PASS	16303

Test Environment
Intel(R) Core(TM) i5-8400H 2.5GHz Kingston KVR24S17D8/16 16GBx2 (SKhynix H5AN8G8NCJR-VKC) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)

Windows 10 64-bit

Item	Weighted Suite		Result	Remark
1	Run CPU Benchmark Score	Single-core	PASS	5030
		Multi-core		16510
2	Run Compute Benchmark (OpenCL Score)		PASS	24340

Test Environment
Intel(R) Core(TM) i5-8400H 2.5GHz Kingston KVR24S17S8/8 8GB (Micron 7WE75D9VPP) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)

Windows 10 64-bit

Item	Weighted Suite		Result	Remark
1	Run CPU Benchmark Score	Single-core	PASS	4568
		Multi-core		14019
2	Run Compute Benchmark (OpenCL Score)		PASS	19022

Test Environment
Intel(R) Core(TM) i5-8400H 2.5GHz Kingston KVR24S17S6/4 4GB (Micron 7UE75D9WFH) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)

Windows 10 64-bit

Item	Weighted Suite		Result	Remark
1	Run CPU Benchmark Score	Single-core	PASS	4347
		Multi-core		12702
2	Run Compute Benchmark (OpenCL Score)		PASS	17228

5.8 CINEBENCH R15

Test Environment
Intel(R) Core(TM) i7-8850H 2.6GHz Kingston KVR24S17D8/16 16GBx2 (SKhynix H5AN8G8NCJR-VKC) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)

Windows 10 64-bit

Item	Weighted Suite	Result	Remark
1	OpenGL	PASS	58.86 fps
2	CPU	PASS	1029 cb

Test Environment
Intel(R) Core(TM) i7-8850H 2.6GHz Kingston KVR24S17S8/8 8GB (Micron 7WE75D9VPP) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)

Windows 10 64-bit

Item	Weighted Suite	Result	Remark
1	OpenGL	PASS	47.10 fps
2	CPU	PASS	1023 cb

Test Environment
Intel(R) Core(TM) i7-8850H 2.6GHz Kingston KVR24S17S6/4 4GB (Micron 7UE75D9WFH) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)

Windows 10 64-bit

Item	Weighted Suite	Result	Remark
1	OpenGL	PASS	42.88 fps
2	CPU	PASS	1010 cb

Test Environment
Intel(R) Core(TM) i5-8400H 2.5GHz Kingston KVR24S17D8/16 16GBx2 (SKhynix H5AN8G8NCJR-VKC) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)

Windows 10 64-bit

Item	Weighted Suite	Result	Remark
1	OpenGL	PASS	58.39 fps
2	CPU	PASS	746 cb

Test Environment
Intel(R) Core(TM) i5-8400H 2.5GHz Kingston KVR24S17S8/8 8GB (Micron 7WE75D9VPP) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)

Windows 10 64-bit

Item	Weighted Suite	Result	Remark
1	OpenGL	PASS	46.01 fps
2	CPU	PASS	757 cb

Test Environment
Intel(R) Core(TM) i5-8400H 2.5GHz Kingston KVR24S17S6/4 4GB (Micron 7UE75D9WFH) Micron Crucial BX500 SSD 120GB(CT120BX500SSD1)

Windows 10 64-bit

Item	Weighted Suite	Result	Remark
1	OpenGL	PASS	42.25 fps
2	CPU	PASS	749 cb

5.9 Storage Performance

5.9.1 HDD

Test environment:

OS Windows 10 64bit

Program: HD Tune

HDD Model	Interface	Capacity	Average	Burst Rate	Access Time
INTEL SSDSC2BW240A4	SSD	240 GB	315.3 MB/sec	293.3 MB/sec	0.213 ms
SPCC Solid State disk(S55)	SSD	120 GB	179.6 MB/sec	95.0 MB/sec	0.054 ms
CT120 BX500	SSD	120 GB	395.8 MB/sec	239.7 MB/sec	0.093 ms
WDS250G2B0A	SSD	250 GB	422.3 MB/sec	38.6 MB/sec	0.085 ms
Kingston SV300S37A	SSD	240 GB	241.2 MB/sec	138.6 MB/sec	0.155 ms
Kingston DT100G3/32G	USB	32 GB	91.0 MB/sec	54.3 MB/sec	0.343 ms
ADATA UV128/16GB	USB	16 GB	109.9 MB/sec	44.6 MB/sec	1.42 ms
Acpi CSC064GR5-G710A00D	mSATA	64 GB	396.0 MB/sec	93.7 MB/sec	0.068 ms

5.9.2 DVD-ROM

Test environment:

OS Windows 10 64bit

Program (NERO)

DVD-ROM Model	Interface	Average Speed	Full Read	Burst Rate	DVD
Transcend DVD TS8XDVDS-K	USB	7.56 x	298 ms	16 MB/s	1 - 16 x
LITEON DVD eTAU108	USB	7.57 x	208 ms	18 MB/s	1 – 16 x
PIONEER DVD DVR-XD11T	USB	7.80 x	181 ms	20 MB/s	1 - 16 x
ZYNET GT32N A201	USB	7.70 x	213 ms	20 MB/s	1 - 16 x