

Report NO: 18E010016

EPIC-KBS9

Intel® 6th Skylake / 7th Kabylake S Series EPIC Board

Board / System Level Product Bulletin 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	QE Manager	Test Engineer
2018-07-16	KJ Wang	Danny Chen

Version Released Records

Date	Version	Change History	Note
5/26/2015	C0	1. Add UEFI,GPS,CANBUS,POE, Cold boot test item	
3/22/2016	C1	1. Add issue status 2. Update CTOS devices. 3. Add HDMI 5M cable compatibility test. 4. Modified boot up without display test. 5. Add Touch Function test. 6. Add DC adapter compatibility test 7. Add Windows10 compatibility test. 8. Update Benchmark tool. 9. Update DOS / Windows on/off test rule. 10. Add DDR4 SO-DIMM. 11. Update Linux to Ubuntu16.04 12. Add Stability Test \ Memory test.	
10/21/2016	C2	1. Remove Smartbits test item. 2. Update chapter7.2 \ LVDS type support. 3. Add chapter9.6. System stability after S3 / S4 / S5 cycles	
01/15/2018	C3	1. Modified PWB test item. 2. Update Benchmark test tool 3. Modified wide voltage test item. 4. Add Iperf for LAN performance test. 5. Defined USB3.0 power status. 6. Update POE LAN test item. 7. Add PCIe bear card test. 8. Define booting time test criteria. 9. Add TPM test item. 10. Update CTOS compatibility devices.	

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	
Form Factor	EPIC Board	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Processor	Skylake & Kabylake S	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
System Memory	DDR4 x 2 slot, 2133MHz , Up to 32GB	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Chipset	H110/H170/Q170 (6W)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Super I/O	Fintek F81966D	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Network	I211 LAN x 4 (Rear IO)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Wake On LAN	Yes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
CRT / LCD controller	Intel® 6th/7th Generation Intel® Core™ i3/i5/i7/Celeron	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Video Output	CRT (Header) / HDMI (Rear IO)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Audio	ALC269, with Class D Amp	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
USB Port	USB3.0 x 2 (Real IO) USB2.0 x 2 (Internal)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Serial Port	COM x 2 (Internal) (All RS232/422/485)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
HDD Interface	SATAIII x 2, SATA Power (5V)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
SSD	Full Size mSATA x 1 (Default)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Expansion Slot	Mini-card x 1 -H110 share with mSATA by BOM -H170/Q170 share with mSATA by BIOS selection	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
WatchDog Timer	255 Levels	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
PCI Express	PCIe [x 4] x1 slot	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
FAN	4 pin x 2 (Including FAN_TAC/ FAN_CTL)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
DIO	8bit	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Power Requirement	+12V	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Power Supply Type	AT / ATX	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

O.S. Support

Item	Specification	Result			Note
		Pass	Fail	N/A	
Microsoft Windows	Windows 7 English 32/64 bit	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Windows8.1 English 64bit	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Windows10 English 64bit (1703)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Linux	Kernel 2.6 above	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Platform Information

Item	Device Information	Note
Product of department	ECD	
PCB Model / Version	EPIC-KBS9 A0.1	
BIOS / Version	EPIC-KBS9 R1.0 (EKS9AM10)(06/01/2018)	
Driver folder	EPIC-KBS9 20180205	
CPU Type	Intel® Core™ i7-7700 Processor 8M Cache, up to 4.20 GHz / 65W	
Memory Type	Transcend DDR4-2400 16GB(SEC 622 K4A8G085WB BCRC)	
SATA HDD	Innodisk 2.5" SSD 3MG2-P / 128GB	
SATA DVD-ROM	ITE-ON /Model :HAS124	
USB DVD-ROM	AOpen EDR8865U	
LCD Monitor	ViewSonic VP2770-LED	
LVDS	N/A	
Compact Flash	N/A	
Daughter Board	N/A	
Expansion Board	N/A	
	N/A	
Operating System	<input checked="" type="checkbox"/> English Ubuntu16.04 Kernel 4.4.0-21-generic x86_64	
	<input checked="" type="checkbox"/> Windows 7 Ultimate SP1 32/64Bit	
	<input checked="" type="checkbox"/> Windows 8.1 Enterprise English Version 64Bit	
	<input checked="" type="checkbox"/> Windows 10 Enterprise English Version 64Bit (1703)	
Power Supply	ATX Power Supply : FSP AURUM S SERIES / AS-550W	
	AT Power Supply: N/A	
	DC Adapter : N/A	
Chipset Information		
North Bridge	Intel PCH H110/H170/Q170	
Super IO Chipset	Fintek F81966D	
Audio Chipset	ALC269	
Ethernet Chipset	Intel I211	

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1. Hardware Compatibility

1.1. CPU Compatibility Test

CPU Information (Information and frequency should show correct value)	Result			Note
	Pass	Fail	N/A	
Intel® Core™ i7-6700 Processor 8M Cache, up to 4.00 GHz / 65W	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Intel® Core™ i5-6500 Processor 6M Cache, up to 3.60 GHz / 65W	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Intel® Core™ i3-6100 Processor 3M Cache, 3.70 GHz / 51W	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Intel® Pentium® Processor G4400 (3M Cache, 3.30 GHz) / 54W	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Intel® Core™ i7-6700TE Processor 8M Cache, up to 3.40 GHz / 35W	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Intel® Core™ i5-6500TE Processor 6M Cache, up to 3.30 GHz / 35W	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Intel® Core™ i3-6100TE Processor 4M Cache, 2.70 GHz 35W	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Intel® Core™ i7-7700 Processor 8M Cache, up to 4.20 GHz / 65W	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Intel® Core™ i5-7500 Processor 6M Cache, up to 3.80 GHz / 65W	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Intel® Core™ i3-7101E Processor 3M Cache, 3.90 GHz / 54W	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Intel® Core™ i7-7700T Processor 8M Cache, up to 3.80 GHz / 35W	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Intel® Core™ i5-7500T Processor 6M Cache, up to 3.30 GHz / 35W	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Intel® Core™ i3-7101TE Processor 3M Cache, 3.40 GHz / 35W	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

1.2. Memory Compatibility Test

Memory Information (a. Information and frequency should show correct value. b. System should boot up and into OS normally.)	AAEON P/N	Result			Note
		Pass	Fail	N/A	
DDR4 SO-DIMM					
Transcend DDR4-2400 16GB(SEC 622 K4A8G085WB BCRC)	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Transcend DDR4-2400 8GB(SEC 616 K4A4G085WE BCRC)	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Transcend DDR4-2400 4GB(SEC 616 K4A4G085WE BCRC)	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Transcend DDR4 2133 8GB TS9AASESD00AA SEC K4A4G085WD	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Transcend DDR4 2133 4GB TS8AASESD00AA SEC K4A4G085WD	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
DSL DDR4-2133 8GB (SEC K4A4G085WD / E)	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
DSL DDR4-2133 4GB (SEC K4A4G085WD)	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Micro MTA16ATF2G64HZ-2G1A1 DDR4 2133 16GB Micro 6BA77 D9SRJ	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Innodisk DDR4 2133 16GB SEC K4A8G085WB	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

InnoDisk DDR4-2133 8GB(SEC 446 BCPB K4A4G085WD)	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
InnoDisk DDR4-2133 4GB(SEC 446 BCPB K4A4G085WD)	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
ADATA DDR4-2133 4GB (SEC K4A4G085WD)	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

1.3. SATA Compatibility Test

1.3.1 Onboard SATA(AHCI) Test

SATA Device Information (Information and size should show correct value with AHCI mode)		AAEON P/N	Result			Note
			Pass	Fail	N/A	
Main Board project test with 80~100cm SATA cable , typical #1709070800						
SATAII	Seagate 2.5" SATAII ST9120823AS 120GB 5400rpm	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
SATAII	Toshiba 2.5" SATAII MK1676GSX 160GB 5400rpm	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
SATAIII	TOSHIBA 3.5" SATAIII HDS721010DLE630 1TB 7200rpm	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
SATAIII	WD 3.5" SATAIII WD20EZR 2TB 7200rpm	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
SATAIII	Seagate 3.5" SATAIII ST3000DM001 3TB 7200rpm	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
DVD	LITE-ON /Model :HAS124		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
SSD	Transcend ,TS512GSSD420K-AA 512GB MLC	968C512G06	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
SSD	Phison SSBP064GTB3C0-S11 64GB ,3D TLC	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
SSD	Intel SSD 540s Series 120GB	AP-SS968C120G08	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
SSD	Transcend TS32GSSD370 2.5".32GB.SATA III SSD MLC.	968C032G2D	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
SSD	Innodisk 3MG2-P MLC 16GB DGS25-16GD81BC3SC-26	AP-SS968C016G3K	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
SSD	Innodisk 3MG2-P MLC 32GB DGS25-32GD81BC3DC-26	AP-SS968C032G1P	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
SSD	Innodisk 3MG2-P MLC 64GB DGS25-64GD81BC3QC-26	968C064G39	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
SSD	Innodisk 3MG2-P MLC 128GB DGS25-A28D81BC3QC-26	AP-SS968C128G1P	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
SSD	Innodisk 3MG2-P MLC 256GB DGS25-B56D81BC3QC-26	AP-SS968C256G16	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

1.3.2 Onboard SATA (RAID) Test

SATA RAID Test (RAID function should work properly)		Result			Note
		Pass	Fail	N/A	
RAID-0 (HDDx2) Striping/Span Test	1 WD 3.5" SATAIII WD20EZR 2TB 7200rpm	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	2 WD 3.5" SATAIII WD20EZR 2TB 7200rpm	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
RAID-1 (HDDx2) Mirror Test	1 WD 3.5" SATAIII WD20EZR 2TB 7200rpm	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

2 WD 3.5" SATAIII WD20EZRX 2TB 7200rpm	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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1.4. Flash Card Compatibility Test

m-SATA Information (a. Information and size should show correct value (b. R/W and HDD LED should work properly)	AAEON P/N	Result			Note
		Pass	Fail	N/A	
Full Size					
Transcend.TS16GMSA370 Full-size mSATA.16GB.MLC.	AP-SS968C016G2Z	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Transcend.TS32GMSA370 Full-size mSATA.32GB.MLC.	968C032G32	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Transcend.TS64GMSA370 (TF)Full-size.64GB.mSATA.MLC	968C064G2K	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Innodisk full size mSATA.8GB 3ME3	CTOS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Innodisk full size mSATA.16GB 3ME3	CTOS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Innodisk full size mSATA.32GB 3ME3	CTOS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Innodisk full size mSATA.64GB 3ME3	CTOS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Innodisk full size mSATA.128GB 3ME3	CTOS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Install OS
Phison Full size mSATA 64GB, 3D TLC 64 layer, Phison SSEP064GTB3C0-S11	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Full size mSATA 128GB, 3D TLC 64 layer, Phison SSEP128GTB3C0-S11	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Note : Mini-card x 1

-H110 share with mSATA by BOM

-H170/Q170 share with mSATA by BIOS selection

1.5. Power Supply Compatibility Test

Power Supply Information a. System boot to OS should work properly. b. System OS shutdown function should work properly.	Result			Note
	Pass	Fail	N/A	
SeaSonic SSR-450RM 450W 80plus Gold	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	*Must
FSP AS550 550W 80plus Gold	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Cooler Master RS-750-AMAA-G1 750W 80plus Gold	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

1.6. Monitor Compatibility Test

Monitor Information a. Monitor should display under DOS and OS environment. b. Monitor should not appear ghost or ripples.	Result			Note
	Pass	Fail	N/A	
VGA				
ASUS VP247H	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
ViewSonic VP2770	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
DELL U2713HM-LED	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
HDMI (Test with 5M HDMI cable/ Bravo-u)				
Samsung LU28D	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
ASUS VE228	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
ASUS VP247H	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
ViewSonic VP2770	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

2. Basic Function Test

2.1. Video Function Test

2.1.1. Single Output Function Test

Configuration													
CPU	Intel® Core™ i7-7700 CPU @3.60GHz												
Memory	Transcend DDR4 2400 SO-DIMM 16GB x 2												
SATA HDD	SanDisk 2.5" SSD SDSSDA / 120GB												
VGA	ViewSonic VP2770-LED												
HDMI	Samsung LU28D												
Operating system	Windows 10 Enterprise English 64bit (1703)												
Color Quality	<input checked="" type="checkbox"/> 16bit <input type="checkbox"/> 24bit <input checked="" type="checkbox"/> 32bit												
Resolution	VGA			HDMI			DVI			LVDS			Note
	Pass	Fail	N/A	Pass	Fail	N/A	Pass	Fail	N/A	Pass	Fail	N/A	
800X600	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
1024X768	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
1280X600	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
1280X720	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
1280X768	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
1280X800	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
1280X1024	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
1360X768	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
1366X768	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
1600X900	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
1600X1200	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
1680X1050	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
1920X1080	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
1920X1200	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
2048X1152	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
2560X1440	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
3840 X 2160	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
EDID check	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Hot plug	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Rotation(0/90/180/270)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
DOS Display	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Note: Pay attention to Full Screen under POST screen and Text Mode.

2.1.2. Multi-Display Output Test

Selection	Output	Result			Note
		Pass	Fail	N/A	
Dual Display Clone	VGA + HDMI	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Extended Desktop		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

2.1.3. Boot up Without Display Test

Process step:

1. Power on without inserting any VGA/HDMI connector until system reaches Windows desktop
2. Plug VGA connector into test machine while system reaches Windows then check Graphics driver and display.
3. Check VGA output Brightness is normal and it shows "Ghost Image" / "Flicker" or not
4. Repeat step2~4 for VGA / HDMI testing.

Test item	Result			Note
	Pass	Fail	N/A	

Display should working normal in Windows Desktop	VGA	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	HDMI	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

2.2. Audio Function Test

[] No Support

Function Test	Result			Note
	Pass	Fail	N/A	
L (Left) Channel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
R (Right) Channel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Line In	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
MICROPHONE	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
HDMI Audio	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

2.3. LAN Function Test

[] No Support

Connect two computers via different speed LAN HUB by using "Ping" instruction (1000 times)									
Command: ping xxx.xxx.xx.xx -l 65500 -n 1000									
1000Mbps LAN HUB		D-Link DGS-1008D							
100Mbps LAN HUB		Accton Desktop-3005							
10Mbps LAN HUB		SVEC FD916H							
OnBoard LAN1	Intel I211 Gigabit Network						MAC Address	00-0B-51-40-00-69	
OnBoard LAN2	Intel I211 Gigabit Network						MAC Address	00-0B-51-40-00-70	
OnBoard LAN3	Intel I211 Gigabit Network						MAC Address	00-0B-51-40-00-71	
OnBoard LAN4	Intel I211 Gigabit Network						MAC Address	00-0B-51-40-00-72	
LAN Speed	Link / Speed LED	Active LED	LAN 1/2			LAN 3/4			Note
			Pass	Fail	N/A	Pass	Fail	N/A	
1000Mbps Ping loss ≤ 1			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
100Mbps Ping loss ≤ 1			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10Mbps Ping loss ≤ 1			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Wake On LAN (WOL should work properly when resume from S3/S4/S5)	S3		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	S4		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	S5		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
LAN Boot (PXE) (Boot from LAN should work properly)			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Legacy
Internet Browser (DHCP Server) (Visit the website should work properly)			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Access 1GB file from ftp. (Access file should not stop or error.)			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Iperf (Ubuntu) \$sudo iperf3 -c xx.xx.xx.xx -w 100M -i 1 -t 60 (Gigabit LAN bandwidth should > 900Mbps)			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

2.4. COM Ports Test

Test Item	Result			Note
	Pass	Fail	N/A	
Serial Modem Dial Out	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Serial Modem Ring In	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Test by Modem
Serial Modem +12V	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Test by Multimeter
Serial Modem +5V	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Test by Multimeter
Transmission Test <115200bps / 15M>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	COM1 / COM2

2.5. RS-422 / RS-485 Test

Test Item	Result			Note
	Pass	Fail	N/A	
RS-422 for COM1 / COM2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Use loopback and WINSSD.exe to test RS-422 in Windows
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1. The communication between the RS-422 port of two boards is linked by one 1.2km cable on Windows Terminal. 2. Confirm RS422 can work properly from G3 status 3. Test baud rate is 115200bps
RS-485 for COM1 / COM2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Use ICP CON I-7044D D/IO Module in Windows(Support Auto flow control)
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1. The communication between the RS-485 port of two boards is linked by one 1.2km cable on Windows Terminal 2. Confirm RS485 can work properly from G3 status 3. Test baud rate is 115200bps.

2.6. Digital I/O Test

Test item	Result			Note
	Pass	Fail	N/A	
DIO VCC +5V	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

2.7. USB Port Integration Test

Item	USB Port	USB2.0 ports (under OS)			USB3.0 ports (under OS)			Note
		Pass	Fail	N/A	Pass	Fail	N/A	
USB HDD:	Transcend TS500GSJ25D3 500GB	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	USB 3.0 x2 (Rear IO) USB 2.0 x2 (Intenal)
USB2.0 Flash:	Kingston 512M	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
USB3.0 Flash	Transcend 8G	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Transcend 32G	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Transcend 128G	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
USB DVD ROM:	AOpen EDR8865U	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
USB keyboard:	Logitech K200	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
USB mouse:	Logitech M-U0026	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
USB3.0 HUB:	Transcend HUB	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Test item	Result			Note
	Pass	Fail	N/A	
USB3.0 ports with power in S3 mode	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
USB3.0 ports with power in S5 mode	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

2.8. Jumper and Connector Function Test

[] No Support

Test item	Result			Note	
	Pass	Fail	N/A		
Clear CMOS will clear CMOS date , time , setting , password.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Buzzer and 4 pin Speaker test	System boot: one short beep.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	No memory found: One long beep, two short beep, pause a period of time, and loop.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Power button	One touch for power on.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	One touch for power off in BIOS manual.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	One touch for system shutdown in Windows environment. (power manager need to set "press PWB for shutdown.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	> 4sec for H/W shutdown in Windows environment. (power manager need to set "press PWB do nothing.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Reset button, system reset under Windows environment.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Power LED behavior	S1(boot up): Power LED on	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	S3: Power LED off	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	S4: Power LED off	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	S5: Power LED off	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
HDD LED, active when SATA / mSATA access	SATA: Active	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	mSATA: Active	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
CPU FAN	full speed can meet FAN specification	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
CHA FAN	full speed can meet FAN specification	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
AAFP, line out / microphone work properly.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
AMP_CON, AMP left / right channel work properly	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	AMP should mute when audio jack plug-in.	
PS/2 KBMS, keyboard / mouse work properly under DOS and OS .	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		

3. Expansion card and Application Test

3.1. PCI Express Bear Card Test

Test point: Make sure PCIe power, wake# and MLW are correct.

Test item	Result			Note	
	Pass	Fail	N/A		
PCIe x4 bear card	12V, 3.3V, STB 3.3V Power LED	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Wake #	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Max Link Width test result GEN3 / x4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
PCIe x1 bear card	12V, 3.3V, Reset Power LED	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Wake #	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Max Link Width test result GEN3 / x1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Mini PCIe bear card	3.3V,1.5, Reset Power LED	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Wake #	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Max Link Width test result GEN3 / x1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

3.2. Expansion Slot Compatibility Test

Test point: Make sure expansion slots are compatible with expansion cards.

PCI-Express x1 card (Test on PCIe x4 slots)	Result			Note
	Pass	Fail	N/A	
Intel GIGABIT CT DESKTOP ADAPTER	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
DigiFusion PCIe GIGA LAN (Realtek RTL8111F)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Broadcom GIGA LAN card / NIC-1020TIB2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Uptech UTB242 USB3.0 4 port (TI TUSB7340)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
DigiFusion PCI-e USB3.0 PTU302A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Moxa multi serial card	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
SFPX84 A8.2 PCI-e x1 Graphics card	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
PCI-Express x4 card (Test on PCIe x4 slots)	Result			Note
Pass	Fail	N/A		
High Poing RocketRAID 640L PCI-e2.0 RAID card	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Intel Pro/1000 PF Dual port	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Intel GIGABIT ET2 Quad Port Svr Adptr	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Plextor PCIe SSD M6e 128GB	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Install OS
Full Size Mini PCI Express Card (Test on full size slot)	Result			Note
Pass	Fail	N/A		
Full size AAEON PER-C11L Gigabit LAN card	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Full size AAEON PER-C41C-A10 4 port RS-232	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Full size AzureWave AW-NB159H 802.11b/g/n RTL8723BE combo module	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Half size AzureWave AW-CB161H 802.11a/b/g/n/ac(PCI-e Wireless+ USB Bluetooth) Realtek RTL8821AE	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Full size Bointec DPE909-AA WIFI	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Note : Mini-card x 1

-H110 share with mSATA by BOM

-H170/Q170 share with mSATA by BIOS selection

4. Power Consumption Test

Configuration	
CPU	Intel @ Core™ i7-7700 CPU @3.60GHz
Memory	Transcend DDR4 2400 SO-DIMM 16GB x 2
Storage	SanDisk 2.5" SSD SDSSDA / 120GB
O.S	Windows 10 Enterprise English 64bit (1703)

4.1. Power Consumption

Test Equipment						
DC source	Chroma Model 62012P					
USB Keyboard	Logitech K200					
USB Mouse	Logitech M-U0026					
SSD	SanDisk 2.5" SSD SDSSDA / 120GB					
Note	Power consumption is included SSD					
Power Supply	Current		P		Note	
(Full Loading Mode) Windows with Prime 95 Full Loading Test	+12 V	7.2 A	86 W			
Full Loading Total Watt	86 (W)					
S3 mode: Measure the current value when system in S3 mode of windows and without running any	+12 V	0.05 A	0.6 W			
Suspend Total Watt	0.6(W)					
Win. Idle mode: Measure the current value when system in windows mode and without running any program	+12 V	1.1 A	13.2 W	CPU utilization must< 2% while idle mode		
Idle Total Watt	13.2(W)					
S5 mode: Measure the current value when system in S5 mode of windows and without running any	+12 V	0.02 A	0.2 W			
Suspend Total Watt	0.2(W)					

4.2. PC Health Status

Test Point:

Voltage deviation: ±5%.

Fan speed deviation: ±10%

CPU DTS Temp deviation: ±15°C

System Temp deviation: ±5°C

H/W monitor	Result			BIOS	Actual	Note
	Pass	Fail	N/A			
VCORE Actual and monitor must be ±5%	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.088 V	1.08 V	
(+) 12V Actual and monitor must be ±5%	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11.968 V	11.97 V	

(+) 5V Actual and monitor must be ±5%	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.087	V	5.08	V	
VMEM Actual and monitor must be ±5%	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.216	V	1.21	V	
System Fan1 Speed Actual and monitor must be ±10%	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5576	rpm	5481	rpm	
System Fan2 Speed Actual and monitor must be ±10%	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5515	rpm	5463	rpm	
CPU DTS Temp Actual and monitor must be ±15°C	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	41	°C	48	°C	
System Temp1 Actual and monitor must be ±5°C	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	35	°C	38	°C	
System Temp2 Actual and monitor must be ±5°C	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	43	°C	41	°C	

4.3. CMOS Battery Test

Test Point: Calculated result should be > 5 years.

Battery: CR2032

Capacity 225mAh

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.	3.05	V	2.7	uA	9.5	years	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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

5. Time Accuracy Test

5.1. System Clock & RTC Clock Test

Under Room Temperature:

Function	Item	Time Interval	Criteria	Actual		Result			Note
						Pass	Fail	N/A	
RTC Clock in Power On Mode		24 hrs	+/-2 sec	+1	Sec	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
RTC Clock in Power Off Mode		24 hrs	+/-2 sec	0	Sec	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

5.2. Booting Time Test

Installation	Criteria	Actual		Note
System Booting Time < Press the Power Button till "Beep" Sound or display appears >	Booting time ≤ 12sec, Pass Booting time 13~20 sec, Enhancement Booting time > 20sec, Fail	10	Sec	

5.3. Watchdog Timer Test

Use Function as below: Hi-Safe 2018.06.13

[] No Support.

Time-Out Interval	Criteria	Actual		Result			Note
				Pass	Fail	N/A	
10 sec	+/- 10%	11	Sec	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
60 sec	+/- 10%	61	Sec	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
255 sec	+/- 10%	256	Sec	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

6. O.S. Compatibility Test

6.1. English Ubuntu16.04.2 Kernel 4.8.0-36-generic x86_64

Driver Information:

Chipset Software	System default
Graphics Media	System default
Audio Driver	System default
LAN Driver	lgb 5.3.5.4

Install OS to SATA HDD/ mSATA Card:

Installation	Result			Note
	Pass	Fail	N/A	
English Ubuntu16.04.2 Kernel 4.8.0-36-generic x86_64	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Type uname -a

Test Result:

Test Item	Result			Note
	Pass	Fail	N/A	
Display Function Test				
VGA – Full Screen	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
HDMI – Full Screen	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
VGA + HDMI	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Network Function Test				
Connect to Internet – LAN 1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Connect to Internet – LAN 2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Connect to Internet – LAN 3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Connect to Internet – LAN 4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Audio Function Test				
Play Audio Function Test	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Play Audio Test
HDMI audio function Test	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Base Function Test				
Mouse Test	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Keyboard Test	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Console Redirection	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
DVD-ROM Test	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ISATA / USB >
USB 2.0/3.0 Removable Devices	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
X Windows Application				
Start Button Office	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Office function
X-Window	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Startx – Desktop in Linux
Command Test On Text Mode: Attention Delay Phenomenon				
uname -a	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Show information
Shutdown	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Init 0 or shutdown -h now
Restart the Computer	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Init 6 or shutdown -r now
Suspend	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Suspend icon
ls / clear; cd /dev /ls -l	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Command instruction

6.2. Windows 7 Ultimate English Version 32/64Bit

32bit Driver Information	
Chipset Software	Intel @ Chipset Device Software 10.1.1 (2015-06-03)
Graphics Media	Intel @ HD Graphics 530 20.19.15.4454 (05-04-2016)
Audio Driver	Realtek High Definition Audio 6.0.1.7541 (6-18-2015) Intel @ Display Audio 6.16.0.3196 (3-24-2016)
LAN Driver	Intel @ I211 Gigabit Network connection 12.13.27.0 (6-05-2015)
64bit Driver Information	
Chipset Software	Intel @ Chipset Device Software 10.1.1 (2015-06-03)
Graphics Media	Intel @ HD Graphics 530 20.19.15.4454 (05-04-2016)
Audio Driver	Realtek High Definition Audio 6.0.1.7541 (6-18-2015) Intel @ Display Audio 6.16.0.3196 (3-24-2016)
LAN Driver	Intel @ I211 Gigabit Network connection 12.13.27.0 (6-05-2015)

Install OS to SATA HDD:

Installation	Result			Note
	Pass	Fail	N/A	
English Windows 7 Ultimate ACPI Mode 32bit	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
English Windows 7 Ultimate ACPI Mode 64bit	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Test Results:

Test Item	Result			Note		
	Pass	Fail	N/A			
Single Display						
VGA -- Full Screen	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
HDMI -- Full Screen	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Multi display	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Basic Function Test						
Usable memory	32bit:	2.19GB	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	64bit:	32GB	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
PS/2 Mouse and Keyboard	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
USB Mouse and Keyboard	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
COM Port Mouse detect	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
LPT1	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
USB Removable Devices	USB2.0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	USB3.0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	Safe to remove icon	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Touch Function	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
TPM 1.2/2.0 detection.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
LAN Function Test						
LAN1 --- Auto	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
LAN2 --- Auto	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
LAN3 --- Auto	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
LAN4 --- Auto	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Audio Function Test						
Line Out Test	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Line In Test	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Microphone Test	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
S/P DIF Test	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Start Menu						
Log off User	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Shut down (S5)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Sleep (S3)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Restart	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Hibernate (S4)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			

6.3. Windows 8.1 Enterprise English Version 64Bit

64bit Driver Information	
Chipset Software	Intel @ Chipset Device Software 10.1.1 (2015-06-03)
Graphics Media	Intel @ HD Graphics 530 20.19.15.4454 (05-04-2016)
Audio Driver	Realtek High Definition Audio 6.0.1.7541 (6-18-2015) Intel @ Display Audio 8.20.0.922 (4-16-2016)
LAN Driver	Intel @ I211 Gigabit Network connection 12.14.7.0 (6-18-2015)

Install OS to mSATA Card:

Installation	Result			Note
	Pass	Fail	N/A	
English Windows8.1 Enterprise 32bit	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
English Windows8.1 Enterprise 64bit UEFI mode	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Test Results:

Test Item	Result			Note
	Pass	Fail	N/A	
Single Display				
VGA -- Full Screen	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
HDMI -- Full Screen	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Multi display	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Basic Function Test				
Usable memory	32bit: MB	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	64bit: 32GB	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PS/2 Mouse and Keyboard	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
USB Mouse and Keyboard	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
COM Port Mouse detect	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
LPT1	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
USB Removable Devices	USB2.0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	USB3.0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Safe to remove icon	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Touch Function	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
TPM 1.2/2.0 detection.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
LAN Function Test				
LAN1 --- Auto	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
LAN2 --- Auto	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
LAN3 --- Auto	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
LAN4 --- Auto	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Audio Function Test				
Line Out Test	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Line In Test	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Microphone Test	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
S/P DIF Test	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Start Menu				
Log off User	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Shut down (S5)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Sleep (S3)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Restart	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Hibernate (S4)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

6.4. Windows 10 Enterprise English Version 64Bit

64bit Driver Information	
Chipset Software	Intel @ Chipset Device Software 10.1.1 (2015-06-03)
Graphics Media	Intel @ HD Graphics 630 21.20.16.4664 (4-21-2017)
Audio Driver	Realtek High Definition Audio 6.0.1.7541 (6-18-2015) Intel @ Display Audio 10.22.1.97 (12-1-2016)
LAN Driver	Intel @ I211 Gigabit Network connection 12.12.226.0 (5-4-2015)

Install OS to SATA HDD :

Installation	Result			Note
	Pass	Fail	N/A	
English Windows10 Enterprise 32bit	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
English Windows10 Enterprise 64bit UEFI	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Test Results:

Test Item	Result			Note
	Pass	Fail	N/A	
Single Display				
VGA -- Full Screen	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
HDMI-- Full Screen	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Multi display	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Basic Function Test				
Usable memory	32bit: MB	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	64bit: 32GB	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PS/2 Mouse and Keyboard	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
USB Mouse and Keyboard	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
COM Port Mouse detect	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
LPT1	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
USB 2.0	USB2.0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Removable Devices	USB3.0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Safe to remove icon	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Touch Function	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
TPM 1.2/2.0 detection.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
LAN Function Test				
LAN1 --- Auto	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
LAN2 --- Auto	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
LAN3 --- Auto	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
LAN4 --- Auto	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Audio Function Test				
Line Out Test	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Line In Test	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Microphone Test	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
S/P DIF Test	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Start Menu				
Log off User	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Shut down (S5)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Sleep (S3)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Restart	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Hibernate (S4)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

7. BIOS Function Test

Configuration	
CPU	Intel ® Core™ i7-7700 CPU @3.60GHz
Memory	Transcend DDR4 2400 SO-DIMM 16GB x 2
Storage	SanDisk 2.5" SSD SDSSDA / 120GB
O.S	Windows10 Enterprise English 64bit (1703)

Test Point:

Confirm BIOS control items are working correctly.

7.1. Advanced Test

Test Item (Following item should work properly)		Result			Note	
		Pass	Fail	N/A		
CPU Configuraton	Intel Virtualiaztion	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Enable/Disable	
	C State	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Enable/Disable	
SATA Configuration	SATA Controller	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Enable/Disable	
	SATA Mode	AHCI	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		Intel RST	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	SATA Port 0	Enabled	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	mSATA
		Hot Plug	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	SATA Port 1	Enabled	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		Hot Plug	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	SATA Port 2	Enabled	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Hot Plug		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
USB Configuration	Legacy USB Support	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
HW-Monitor	PC Health	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	Smart FAN	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Enable/Disable	
	Smart FAN1	Manual Duty Mode	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1-100
		Auto Duty-cycle Mode	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Smart FAN2	Manual Duty Mode	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1-100
		Auto Duty-cycle Mode	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
SIO Configuration	Serial Port 1	Enable/Disable	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		RS232	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		RS422	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Serial Port 2	RS485	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		Enable/Disable	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		RS232	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		RS422	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		RS485	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Power Management	AT	Auto power on	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		PWB no function	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		Disable S3/S4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

	PWR LED and FAN still running when S5 shutdown.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
		Support UEFI mode.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	ATX		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Restore AC Power loss	Last State	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		Always on	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Always off	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Dynamic Digital IO	DIO0~7	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
S5 RTC Wake up	Wake system with fixed time	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

7.2. Chipset Test

Test Item (Following item should work properly)		Result			Note	
		Pass	Fail	N/A		
North Bridge	Boot display	VBIOS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		CRT	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		HDMI	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	* Memory Configuration	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	Max TOLUD	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Dynamic 1G~3.25G	
South Bridge	HD Audio	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	mSATA / PCIe	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	PCIe Speed	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto / GEN1 / GNE2 /GNE3	

7.3. Boot Test

Test Item (Following item should work properly)		Result			Note
		Pass	Fail	N/A	
Quiet Boot		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Launch PXE OpROM		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Boot From Hard Disk		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Boot From CDROM		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Boot From USB HDD		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Boot From USB Floppy		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Boot From USB CD-ROM		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Boot from LAN		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Disable		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

7.4. Clear CMOS and Load Default Test

Test Item (Following item should work properly)		Result			Note
		Pass	Fail	N/A	
Clear CMOS by jumper (under G3 status)		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Clear date, time, setting, password
Clear CMOS by remove battery(under G3 status)		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Clear date, time, setting, password
Load default	Date, time, password should be kept	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	BIOS setting should be restored to	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

	default.				
	Boot option priorities should restore from disable to default.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

7.5. AAEON Tag Check Utility

Test Item (Following item should work properly)	Result			Note
	Pass	Fail	N/A	
Check AAEON BIOS OK	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	AONCHECK.EXE

7.6. Supervisor / User Password Test

Test Item (Following item should work properly)	Result			Note
	Pass	Fail	N/A	
Administrator Password	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
User Password	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

7.7. Hi-safe Test

Test Item (Following item should work properly)	Result			Note
	Pass	Fail	N/A	
VersionV2.2018.06.13	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
System Information	CPU Information	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Model Name	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Display Information	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	RAM Information	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H/W Monitor	Info	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Fan Speed	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Temperature	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Voltage	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DIO	DIO1~4 High	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	DIO1~4 Low	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	DIO5~8 High	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	DIO5~8 Low	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
WatchDog	10sec	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1min	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	255sec	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Auto Reload	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SmartFan	Fan0 manual	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Fan1 manual	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SMBus	Device Address	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Read Byte	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Read Word	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Result / Read	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7.8. Negative Test

7.8.1 USB Keyboard Negative Test

Methods	Result			Note
	Pass	Fail	N/A	
1. Boot into BIOS setup manual. 2. Press NumLock or ScrLk and press arrow key. 3. confirm arrow key function are normally	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

7.8.2 Suspend S3 Negative Test

Methods		Result			Note
		Pass	Fail	N/A	
1. Resume from S3. 2. Confirm com ports(RS232/422/485), DIO, smartfan, LVDS backlight control, USB ports, HDMI/DP audio can work properly.	RS232/422/485	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	DIO	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	SmartFan	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	LVDS Backlight control	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	USB ports	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	HDMI audio	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

7.8.3 UEFI Mode Negative Test

Methods		Result			Note
		Pass	Fail	N/A	
1. Install Windows with UEFI mode. 2. Clear CMOS. 3. Confirm BIOS\Boot device was not loss "Windows boot manager" and should boot into Windows properly.		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

8. Performance Test

Configuration	
CPU	Intel ® Core ™ i7-7700 CPU @3.60GHz
Memory	Transcend DDR4 2400 SO-DIMM 16GB x 2
Storage	SanDisk 2.5" SSD SDSSDA / 120GB
O.S	Windows10 Enterprise English 64bit (1703)

8.1. System Performance Test

Test Result: (Display set 1920*1080 test)

Testing Software	Criteria	Result		
		Pass	Fail	N/A
PCMark 8 Creative / Run Conventional	1. No error or hang during test. 2. To compare with reference score and the deviation should < -20%.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Score	Note		
PCMarks	3798	Reference score:		
Test duration	46min20s			
Web Browsing-Jungle Pin	0.30503s			
Web Browsing-Amazonia	0.13324s			
Video To Go part 1	4.95600s			
Video To Go part 2	6.72567s			
Music To Go	7.73533s			
Video Editing 4k part 1 conventional	9.72387s			
Video Editing 4k part 2 conventional	127.71735s			
Mainstream Gaming part 1	12.23FPS			
Mainstream Gaming part 2	6.29FPS			
Video Group Chat v2- Video Group Chat playback1 v2	30.01fps			
Video Group Chat v2- Video Group Chat playback2 v2	30.02fps			
Video Group Chat v2- Video Group Chat playback3 v2	30.01fps			
Video Group Chat encoding v2	50.00000ms			
Advanced Photo Editing1	0.37497s			
Advanced Photo Editing2	25.39159s			

<Remark: reference score is from AAEON benchmark score table.>

Testing Software	Criteria	Result		
		Pass	Fail	N/A
3DMark-v2-3-3693 \ Sky Diver	1. No error or hang during test. 2. To compare with reference score and the deviation should < -20%.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Score	Note		
Score	4980	Reference score:		
Graphics score	4522			
Graphics test 1	20.94FPS			
Graphics test 2	20.36FPS			
Physics score	110203			
8 threads	169.17FPS			
24 threads	109.54FPS			
48 threads	66.18FPS			

96 threads	37.65FPS	
Combined score	4643	
Combined test	19.11FPS	

Testing Software	Criteria	Result		
		Pass	Fail	N/A
3DMark-v2-3-3693 \ Fire Strike	1. No error or hang during test. 2. To compare with reference score and the deviation < -20%.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Score	Note		
Score	1171	Reference score:		
Graphics score	1267			
Graphics test 1	5.89FPS			
Graphics test 2	5.18FPS			
Physics score	12413			
Physics test	39.41FPS			
Combined score	401			
Combined test	1.87FPS			

Testing Software	Criteria	Result		
		Pass	Fail	N/A
Performance Test 8.0	1. No error or hang during test. 2. To compare with reference score and the deviation should < -20%.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Score	Note		
PassMark Rating	3729	Reference score:		
CPU Mark	11102	Reference score:		
2D Graphics Mark	725			
3D Graphics Mark	1400			
Memory Mark	2783			
Disk Mark	3350			

8.2. Performance of Storage Interface Test

SATA Performance				
SATA SSD	SanDisk 2.5" SSD SDSSDA / 120GB			
CPU	Intel @ Core™ i7-7700 CPU @3.60GHz			
Memory	Transcend DDR4 2400 SO-DIMM 16GB x 2			
OS	Windows 10 Enterprise English 64bit (1703)			
Item	Comment / (unit)	Software	Score	Note
SATAIII ports	Maximum Read	ATTO Disk Benchmark	471MB/s	SATAII 150~300MB SATAIII up 300M/B
	Maximum Write	ATTO Disk Benchmark	408MB/s	

USB3.0/2.0 Performance				
USB Flash	Transcend USB 3.0 32GB			
Item	Comment / (unit)	Software	Transfer Rate (MB/s)	Note
USB3.0 ports	Maximum Read	ATTO Disk Benchmark	110MB/s	
	Maximum Write	ATTO Disk Benchmark	74MB/s	
USB2.0 ports	Maximum Read	ATTO Disk Benchmark	39MB/s	

	Maximum Write	ATTO Disk Benchmark	34MB/s	
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mSATA performance				
mSATA	Transend mSATA 128GB			
Item	Comment / (unit)	Software	Transfer Rate (MB/s)	Note
mSATA	Maximum Read	ATTO Disk Benchmark	565MB/s	
	Maximum Write	ATTO Disk Benchmark	547MB/s	

9. Stability test

Configuration	
CPU	Intel ® Core ™ i7-7700 CPU @3.60GHz
Memory	Transcend DDR4 2400 SO-DIMM 16GB x 2
Storage	SanDisk 2.5" SSD SDSSDA / 120GB
OS	Windows10 Enterprise English 64bit (1703)
Environment	Under room temperature.

9.1. Run In Test

OS: Windows 10 Enterprise English 64bit

Test Item	Result			Note	
	Pass	Fail	N/A		
Burn In Test V8.1(1025 above) Duty: 100 Time: over 12 hours <System should not error or hang during testing.>	CPU	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	RAM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	COM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Speed Set "Cycle to 115200."
	GPU	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Video	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	2D	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	3D	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Disk	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Sound	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Network <Advanced>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Parallel	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	USB	2.0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.0		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

9.2. Reboot Test

OS: Windows 10 Enterprise English 64bit (1703)

Test Tool: Passmark rebooter.exe

Test item	Result			Note
	Pass	Fail	N/A	
Reboot test for 500 cycles <a. System should not error or hang during testing.> <b. Device manager should not loss any devices or yellow bang >	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

9.3. ACPI G3 Cold Boot Test

OS: DOS or UEFI shell

Test Point:

1. Make sure system boot up is stable.
2. Make sure boot function support AC power restored in short time.

Test item	Result			Note
	Pass	Fail	N/A	
G3(AC loss) cold boot over 1000 cycles Setting: Power on- 40sec ;	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> BIOS select " power on" or

Power off-- 20sec. <Criteria: a. loss rate: 0 /1000 times. b. RTC date and time should not loss.>				<input type="checkbox"/> Jumper setting auto power button
G3(AC loss) cold boot over 20 cycles Setting: Power on- 40sec ; Power off- 5sec. <Criteria: a. loss rate: 0 /20 times. b. RTC date and time should not loss.>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	H/W [auto power button] need to set enable..

9.4. ACPI S5 Cold Boot Test

OS: Windows 10 Enterprise English 64bit

Test item	Result			Note
	Pass	Fail	N/A	
S5(standby power) cold boot over 500 cycles < System should complete 500 cycles without any error or hang.>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1. "PassMark Rebooter" set 500 cycles ; delay 30sec and enable "auto load Rebooter at startup". 2. On/off fixture cycle time to set 150sec.

9.5. Memory Test

OS: UEFI

Tool: Passmark Memtest version7.0 UEFI

Memory information: Transcend DDR4 2133 16GB x 2

Test item	Result			Note
	Pass	Fail	N/A	
Memory Test for 4 loops. < Memtest result should not error or hang..>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

9.6. System stability after S3 / S4 / S5 cycles

OS: Windows 10 Enterprise English 64bit

Test item	Criteria	Result			Note
		Pass	Fail	N/A	
System stability after S3 cycles <Perform S3 cycles 3 times>	1.SUT boots to OS successfully. 2. No yellow bang observed if all the drivers are installed 3.SUT does S3-resume cycles successfully without any issues	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
System stability after S4 cycles <Perform S4 cycles 3 times>	1.SUT boots to OS successfully. 2. No yellow bang observed if all the drivers are installed 3.SUT does S4-resume cycles successfully without any issues	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
System stability after S5 cycles <Perform S5 cycles 3 times>	1.SUT boots to OS successfully. 2. No yellow bang observed if all the drivers are installed 3.SUT does S5-resume cycles successfully without any issues	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	