

# 1. Qualification Test: Rev.011

## 1.1 CPU Function Test:

<b>Test Purpose</b>	Test CPU functions work normally under Windows Operating System
<b>Test Procedure</b>	<ol style="list-style-type: none"> <li>1. Install Windows Operating System</li> <li>2. Install M/B Device Driver</li> <li>3. CPU-Z check CPU info</li> <li>4. Run AIDA64 Cache and Memory Benchmark Ver.5.60.3700 1 time</li> <li>5. Run Passmark Performance Test 8.0 Build1053 1 time</li> <li>6. Run 3DMark for Windows Ver.1.5.915 BenchMark 3 times</li> <li>7. S3/Hibernate Test 3 times</li> </ol>
<b>Test Criteria</b>	It should be no problem for all tests

No.	CPU	Type	CPU Temp.	Result
1	Intel / 3.40GHz	Core i7-6700 (Skylake-S/R0-SR2BT) / 65W / LGA1151	45.5 °C	Pass

## 1.2 Memory Function Test:

<b>Test Purpose</b>	Test Memory functions work normally under Windows Operating System
<b>Test Procedure</b>	<ol style="list-style-type: none"> <li>1. Install Windows Operating System</li> <li>2. Install M/B Device Driver</li> <li>3. Run AIDA64 Cache and Memory Benchmark Ver.5.60.3700 1 time</li> <li>4. Run Passmark Performance Test 8.0 Build1053 1 time</li> <li>5. Run 3DMark for Windows Ver.1.5.915 BenchMark 3 times</li> <li>6. S3/Hibernate Test 3 times</li> </ol>
<b>Test Criteria</b>	It should be no problem for the test

### 1.2.1 DDRIII:

No.	Function	Result
1	Single Channel mode	Pass
2	DIMM Slot1	Pass
3	DIMM Slot2	Pass

### 1.2.2 Application Test:

No.	Software	Test Keypoint	Test Environment	Result
1	MemTest86 Ver. 6.2.0	1. Burn-In test 12 hours.	System: RM641-SD Rev.011 (R30-1050520-1 #1/3 ) M/B: SD631-Q170CRM Rev.A (021) M/B BIOS: Mar/03/2016 (Insyde) M/B Driver: Demo ver.0.2.1604.0 CPU: Intel / Core i7-6700 (Skylake-S/R0-SR2BT) / 3.40GHz DDR4: Transcend (TS1GLH64V1H 1.2V) [512Mx8b 1066MHz,CL=15,Trcd=15,Trp=15] / SEC (K4A4G085WD-BCPB) / PC4-17000 (DDR4-2133) / 8GB *2 SATA HDD: WD / WD3200LPCX-22VHAT0 SATA 320GB. Display: On Board (using VGA) DVD-ROM: ASUS / DVD-E818A9T SATA 2.0 Power: Sea Sonic / SS-500ES (500W) O.S.: DOS	Pass

### 1.2.3 DDR4 Approved List:

No.	Brand	Chip	Size	Type	Chip Model No.	Vendor Part No.	Result
1	Transcend	SEC	8GB	PC4-17000 (DDR4-2133)	K4A4G085WD-BCPB	TS1GLH64V1H 1.2V [512Mx8b 1066MHz,CL=15 tRCD=15,tRP=15]	Pass

### 1.2.4 DDR4 Module Test Procedures:

No.	DDR4 Module	Test Environment	Result
1	Transcend (TS1GLH64V1H 1.2V) [512Mx8b 1066MHz,CL=15,Trcd=15,Trp=15] / SEC (K4A4G085WD-BCPB) / PC4-17000 (DDR4-2133) / 8GB *2	System: RM641-SD Rev.011 (R30-1050520-1 #1/3 ) M/B: SD631-Q170CRM Rev.A (021) M/B BIOS: Mar/03/2016 (Insyde) M/B Driver: Demo ver.0.2.1604.0 CPU: Intel / Core i7-6700 (Skylake-S/R0-SR2BT) / 3.40GHz DIMM Slot: DIMM-1/2 (Single channel) SATA HDD: WD / WD3200LPCX-22VHAT0 SATA 320GB. Display: On Board (using VGA) DVD-ROM: ASUS / DVD-E818A9T SATA 2.0 Power: Sea Sonic / SS-500ES (500W) O.S.: Windows 7 Ultimate 64Bit (with XHCI) (English) & SP1 Test summary: Environment Temp.:22.4 °C CPU Temp.: 36.5°C CPU Temp. after 3DMark: 45.5°C 1.AIDA64 Cache and Memory Benchmark Ver.5.60.3700 READ:16470 MB/s WRITE:16179 MB/s COPY:17370 MB/s 2.PassMark PerformanceTest 8.0 build 1053 CPU Mark:9288 Memory Mark:967 3.3DMark for Windows Ver.1.5.915 Cloud Gate:7922 Ice Storm:42758 Sky Diver:4039 Strike Test:835	Pass

### 1.3 HDD (SATA) Function Test:

<b>Test Purpose</b>	Test whether Hard disk devices functions work normally under Windows Operating System
<b>Test Procedure</b>	<ol style="list-style-type: none"> <li>1. Install Windows Operating System</li> <li>2. Install M/B Device Driver</li> <li>3. Check the performance by using application AIDA64 Extreme Edition or CrystalDiskMark</li> <li>4. Read/Write 4GB File Test</li> <li>5. S3/Hibernate Test 3 times</li> </ol>
<b>Test Criteria</b>	It should be no problem for hard disk device

#### 1.3.1 File Copy Test:

No.	Function	Result
1	SATA HDD To SATA HDD File Copy Test (Every M/B SATA connector File Size=4GB)	Pass

#### 1.3.2 SATA:

No.	Function	Result
1	SATA Port 0	Pass
2	SATA Port 1	Pass

### 1.3.3 HDD (SATA):

No.	Device	Test Keypoint	Test Environment	Result
1	WD / WD2500HHTZ (3.5",250GB,10000RPM, 64MB Cache)	1. Check device detect. 2. Install O.S. 3. Check HDD information & specification under Windows Device Manager. 4. Check performance and the transfer rate should be 300MB/s ~ 600MB/s. 5. Run S3/S4/S5 - 3 times.	System: RM641-SD Rev.011 (R30-1050520-01 #3/3) M/B: SD631-Q170CRM Rev.A (021) M/B BIOS: Mar/03/2016 (Insyde) M/B Driver: Demo ver.0.2.1604.0 CPU: Intel / Core i7-6700 (Skylake-S/R0-SR2BT) / 3.40GHz DDR4: Transcend (TS1GLH64V1H 1.2V) [512Mx8b 1066MHz,CL=15,Trcd=15,Trp=15] / SEC (K4A4G085WD-BCPB) / PC4-17000 (DDR4-2133) / 8GB *2 SATA HDD: WD / WD2500HHTZ-04N21 / 10000RPM 3.5" 250GB (port SATA3_0) Display: On Board DVD-ROM: Buffalo / DVSM-PC58U2V 8X / USB2.0 USB Pen Drive: Transcend / TS16GJF370 16GB / USB2.0 Power: Delta / GPS-500BB (500W) O.S.: Windows 7 Ultimate 64Bit (with XHCI) (English) & SP1 Test Summary: (port SATA3_0) 1.AIDA64 Extreme Edition Ver.5.60.3700 Buffered Read: 476.3MB/s 2.CrystalDiskMark Ver.5.0.3 Read(MB/s) Write(MB/s) SEQ Q32T1 - 158.4 165.5 4K Q32T1 - 2.702 3.045 SEQ - 168.0 163.0 4k - 0.855 3.036	Pass

<p><b>2</b></p>	<p>WD / WD3200LPCX SATA 6.0Gb/s NCQ (320GB,Blue MN500S-2 Series,5400RPM,2.5" ,Buffer Size:16MB, Internal Notebook Hard Drive Bare Drive,Data Transfer Rate: (HOST From/ To Drive) 147MB/s</p>	<ol style="list-style-type: none"> <li>1. Check device detect.</li> <li>2. Install O.S.</li> <li>3. Check SSD information &amp; specification under Windows.</li> <li>4. Check performance and the transfer rate should be 300MB/s ~ 600MB/s.</li> <li>5. Run S3/S4/S5 - 3 times.</li> </ol>	<p>System: RM641-SD Rev.011 (R30-1050520-1 #1/3 ) M/B: SD631-Q170CRM Rev.A (021) M/B BIOS: Mar/03/2016 (Insyde) M/B Driver: Demo ver.0.2.1604.0 CPU: Intel / Core i7-6700 (Skylake-S/R0-SR2BT) / 3.40GHz DDR4: Transcend (TS1GLH64V1H 1.2V) [512Mx8b 1066MHz,CL=15,Trcd=15,Trp=15] / SEC (K4A4G085WD-BCPB) / PC4-17000 (DDR4-2133) / 8GB *2 SATA HDD: WD / WD3200LPCX-22VHAT0 SATA 320GB (port SATA3_1) Display: On Board DVD-ROM: Buffalo / DVSM-PC58U2V USB2.0 / 8X USB Pen Drive: Transcend / TS16GJF370 16GB / USB2.0 Power: Sea Sonic / SS-500ES (500W) O.S.: Windows 7 Ultimate 64Bit (with XHCI) (English) &amp; SP1 Test Summary: (port SATA3_1) 1.AIDA64 Extreme Edition Ver.5.60.3700 Buffered Read: 403.4MB/s 2.CrystalDiskMark Ver.5.0.3</p> <table border="0" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;">Read(MB/s)</th> <th style="text-align: center;">Write(MB/s)</th> </tr> </thead> <tbody> <tr> <td>SEQ Q32T1 -</td> <td style="text-align: center;">84.21</td> <td style="text-align: center;">84.70</td> </tr> <tr> <td>4K Q32T1 -</td> <td style="text-align: center;">1.048</td> <td style="text-align: center;">1.164</td> </tr> <tr> <td>SEQ -</td> <td style="text-align: center;">76.13</td> <td style="text-align: center;">80.53</td> </tr> <tr> <td>4k -</td> <td style="text-align: center;">0.373</td> <td style="text-align: center;">1.174</td> </tr> </tbody> </table>		Read(MB/s)	Write(MB/s)	SEQ Q32T1 -	84.21	84.70	4K Q32T1 -	1.048	1.164	SEQ -	76.13	80.53	4k -	0.373	1.174	<p><b>Pass</b></p>
	Read(MB/s)	Write(MB/s)																	
SEQ Q32T1 -	84.21	84.70																	
4K Q32T1 -	1.048	1.164																	
SEQ -	76.13	80.53																	
4k -	0.373	1.174																	

### 1.3.4 Solid State Drive (SATA):

No.	Device	Test Keypoint	Test Environment	Result
1	WD / WD3200LPCX 320GB 2.5 " SATA 6Gb/s Cache:16MB, Speed:5,400RPM, Operating Temperature:0°C to 60°C	<ol style="list-style-type: none"> <li>1. Check device detect.</li> <li>2. Install O.S.</li> <li>3. Check SSD information &amp; specification under Windows.</li> <li>4. Check performance and the transfer rate should be 300MB/s ~ 600MB/s.</li> <li>5. Run S3/S4/S5 - 3 times.</li> </ol>	System: RM641-SD Rev.011 (R30-1050520-1 #1/3 ) M/B: SD631-Q170CRM Rev.A (021) M/B BIOS: Mar/03/2016 (Insyde) M/B Driver: Demo ver.0.2.1604.0 CPU: Intel / Core i7-6700 (Skylake-S/R0-SR2BT) / 3.40GHz DDR4: Transcend (TS1GLH64V1H 1.2V) [512Mx8b 1066MHz,CL=15,Trcd=15,Trp=15] / SEC (K4A4G085WD-BCPB) / PC4-17000 (DDR4-2133) / 8GB *2 SATA HDD: WD / WD3200LPCX-22VHAT0 SATA 320GB. Display: On Board (using VGA) DVD-ROM: ASUS / DVD-E818A9T SATA 2.0 Power: Sea Sonic / SS-500ES (500W) O.S.: Windows 7 Ultimate 64Bit (with XHCI) (English) & SP1	Pass

### 1.4 DVD-ROM (SATA) Function Test:

<b>Test Purpose</b>	Test whether DVD devices functions work normally under Windows 8 Enterprise
<b>Test Procedure</b>	1. Install Windows Operating System 2. Install M/B Device Driver 3. Copy 4GB File to HDD Test (Read Test)
<b>Test Criteria</b>	It should be no problem for each DVD-RW device

No.	Device	Test Keypoint	Test Environment	Result
1	Asus / DVD-E818A9T b/BLK/G/AS DVD-ROM (Serial ATA Revision 2.0, Read Speed:DVD-/+R(16x), DVD-/+R DL(8x))	1. Check device detect. 2. Install O.S. 3. Check DVD-ROM information & specification under Windows Device Manager. 4. Read data.	System: RM641-SD Rev.011 (R30-1050520-1 #1/3 ) M/B: SD631-Q170CRM Rev.A (021) M/B BIOS: Mar/03/2016 (Insyde) M/B Driver: Demo ver.0.2.1604.0 CPU: Intel / Core i7-6700 (Skylake-S/R0-SR2BT) / 3.40GHz DDR4: Transcend (TS1GLH64V1H 1.2V) [512Mx8b 1066MHz,CL=15,Trcd=15,Trp=15] / SEC (K4A4G085WD-BCPB) / PC4-17000 (DDR4-2133) / 8GB *2 SATA HDD: WD / WD3200LPCX-22VHAT0 SATA 320GB. Display: On Board (using VGA) DVD-ROM: ASUS / DVD-E818A9T SATA 2.0 Power: Sea Sonic / SS-500ES (500W) O.S.: Windows 7 Ultimate 64Bit (with XHCI) (English) & SP1	Pass