

# 1. Stability Test:

## 1.1 CPU Function Test:

<b>Test Purpose</b>	Test CPU functions work normally under Windows Operating System
<b>Test Procedure</b>	1. Install Windows operating system 2. Install M/B device drivers 3. Check CPU temperature in BIOS setup menu 4. Run PassMark BurnInTest and check CPU Temp. 5. Using CPU-Z check CPU info
<b>Test Criteria</b>	It should be correct for each test step

No.	CPU	Type	Idle CPU Temp.	Full Loading CPU Temp.	Result
1	Intel / 3.70GHz	Core i7-8700K (Coffeelake / SR3QR) / 95W / LGA1151	41.5 °C	62.5°C	Pass
2	Intel / 3.20GHz	Core i7-8700 (Coffeelake / QNML) / 65W / LGA1151	39.0 °C	60.0°C	Pass
3	Intel / 2.40GHz	Core i7-8700T (Coffeelake / QP4P) / 35W / LGA1151	38.0 °C	57.8°C	Pass
4	Intel / 3.00GHz	Core i5-8500 (Coffeelake / QP5J) / 65W / LGA1151	39.0 °C	58.0°C	Pass
5	Intel / 2.10GHz	Core i5-8500T (Coffeelake / QP5H) / 35W / LGA1151	39.0 °C	57.0°C	Pass
6	Intel / 3.60GHz	Core i3-8100 (Coffeelake / QP5K) / 65W / LGA1151	36.5 °C	59.0°C	Pass
7	Intel / 3.10GHz	Core i3-8100T (Coffeelake / QP5Q) / 35W / LGA1151	32.5 °C	56.0°C	Pass
8	Intel / 3.70GHz	Pentium G5400 (Coffeelake /SR3X9) / 58W / LGA1151	40.0 °C	60.5°C	Pass
9	Intel / 3.10GHz	Celeron G4900 (Coffeelake /SR3W4) / 54W / LGA1151	38.5 °C	59.5°C	Pass
10	Intel / 3.6GHz	Core i7-9700K (Coffeelake / QQPK) / 95W / LGA1151	41.5 °C	62.0°C	Pass
11	Intel / 3.40GHz	Xeon E-2124G (Coffeelake /SR3WL) / 71W / LGA1151	40.5 °C	60.0°C	Pass
12	Intel / 3.70GHz	Xeon E-2176G (Coffeelake /QNT8) / 80W / LGA1151	41.0 °C	61.0°C	Pass

### 1.1.1 Application Test:

No.	Software	Test Keypoint	Result
1	CPU-Z Ver.1.86.0	1. Check all information.	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.5.80.4000 1 time</li> <li>4. Run Passmark Performance Test 9.0 Build1004 1 time</li> <li>5. Run 3DMark for Windows Ver.2.0.2809 BenchMark - 3 times</li> <li>5. S3(Sleep)/S4(Hibernate)/S5(Shutdown) test - 3 times</li> </ol>
<b>Test Criteria</b>	It should be no problem for the test

### 1.2.1 DDR4:

No.	Function	Result
1	DDR4 DIMM Slot Examine	Pass
2	Single Channel mode	Pass
3	Dual channel mode	Pass
4	Warning beep sound when no memory install	Pass

### 1.2.2 Application Test:

No.	Software	Test Keypoint	Test Environment	Result
1	PassMark MemTest86 Ver.8.1 Pro	1. Stress test 24 hours.	DUT: DUT#2 DDR4: DDR4-2666 (Non-ECC)/Apacer-78.D2GG7.4010B/ SEC-K4A8G085WB-BCTD/16GB*2/DR051-1/2 (DIMM-1/2) DUAL CHANNEL O.S.: UEFI Shell	Pass
2	PassMark MemTest86 Ver.8.1 Pro	1. Stress test 12 hours.	DUT: DUT#3 DDR4: DDR4-2666 (ECC)/ADATA-AD4B2666316G19-BSSC/ SEC-K4A8G085WC-BCTD/16GB*2/DR067-1/2 (DIMM-1/2) DUAL CHANNEL O.S.: UEFI Shell	Pass

### 1.2.3 DDR4 Approved List:

No.	Brand	Chip	Size	Type	Chip Model No.	Vendor Part No.	Result
1	Apacer	SEC	16GB	DDR4-2666	K4A8G085WB-BCTD	78.D2GG7.4010B	Pass
2	Kingston	Micron	16GB	DDR4-2666	8PE75-D9VPP	CBD26D4S9D8ME-16	Pass
3	Apacer	SEC	16GB	DDR4-2400	K4A8G085WB-BCRC	78.D2GF2.4010B	Pass
4	Apacer	SEC	16GB	DDR4-2666	K4A8G085WB-BCTD	78.D2GG7.4010B	Pass
5	Transcend	SEC	8GB	DDR4-2666	K4A8G085WC-BCTD	TS1GSH64V6B/	Pass
6	Innodisk	SEC	8GB	DDR4-2666	K4A4G085WE-BCTD	M450-8GSSOICK	Pass
7	Kingston	Micron	4GB	DDR4-2666	8KE77-D9WFH	CBD26D4S9S1ME-4	Pass
8	Transcend	SEC	4GB	DDR4-2666	K4A4G085WE-BCRC	TS512MSH64V4H	Pass
9	Innodisk	SEC	4GB	DDR4-2666	K4A4G085WE-BCTD	M450-4GSSNICK	Pass
10	ADATA	SEC	16GB	DDR4-2666 (ECC)	K4A8G085WC-BCTD	AD4B2666316G19-BSSC	Pass
11	Transcend	SEC	8GB*	DDR4-2133 (ECC)	K4A4G085WE-BCRC	TS1GSH72V1H	Pass
12	Transcend	SEC	8GB*	DDR4-2133	K4A4G085WD	TS8D411G21SES1	Pass

## 1.2.4 DDR4 Module Test Procedures:

No.	DDR4 Module	Test Procedures		Result
1	DDR4-2666 (Non-ECC)/Apacer-78.D2GG7.4010B/SEC-K4A8G085WB-BCTD/16GB*2	DUT: CPU: DIMM Slot: Test Summary:	DUT#2 Intel Core i7-8700K CPU @ 3.70GHz (SR3QR) DIMM-1/2 Dual Channel AIDA64 Cache and Memory Benchmark(V5.97.4600) DUAL CHANNEL(DIMM-1/2) READ:38641 MB/s WRITE:38631 MB/s COPY:36818 MB/s  Passmark PerformanceTest 9.0 Build 1029 CPU Mark:14614.7 Memory Mark:3067.8  3DMark for Windows(V 2.8.6546)3times Cloud Gate:12138 Ice Storm:56367 Sky diver:5595 Fire Strike:1397	Pass
2	DDR4-2666 (Non-ECC)/Kingston-CBD26D459D8ME-16/Micron-8PE75-D9VPP/16GB*	DUT: CPU: DIMM Slot: Test Summary:	DUT#2 Intel Core i7-8700 CPU @ 3.20GHz (QNML) DIMM-1 Single Channel AIDA64 Cache and Memory Benchmark(V5.97.4600) SINGLE CHANNEL(DIMM-1) READ:20583 MB/s WRITE:19095 MB/s COPY:20864 MB/s  Passmark PerformanceTest 9.0 Build 1029 CPU Mark:11155.9 Memory Mark:2337  3DMark for Windows(V 2.8.6546)3times Cloud Gate:10448 Ice Storm:51620 Sky diver:5077 Fire Strike:1189	Pass
3	DDR4-2400 (Non-ECC)/Apacer-78.D2GF2.4010B/SECK4A8G085WB-BCRC/16GB*	DUT: CPU: DIMM Slot: Test Summary:	DUT#2 Intel Core i5-8500T CPU @ 2.10GHz (QP5H) DIMM-2 Single Channel AIDA64 Cache and Memory Benchmark(V5.97.4600) SINGLE CHANNEL(DIMM-2) READ:18050 MB/s WRITE:16927 MB/s COPY:17900 MB/s  Passmark PerformanceTest 9.0 Build 1029 CPU Mark:7034.6 Memory Mark:1790.7  3DMark for Windows(V 2.8.6546)3times Cloud Gate:7720 Ice Storm:43618 Sky diver:4619 Fire Strike:1154	Pass
4	DDR4-2666 (Non-ECC)/Apacer-78.D2GG7.4010B/SEC-K4A8G085WB-BCTD/16GB*	DUT: CPU: DIMM Slot: Test Summary:	DUT#1 Intel Core i7-8700 CPU @ 2.40GHz (QP4P) DIMM-2 Single Channel AIDA64 Cache and Memory Benchmark(V5.97.4600) SINGLE CHANNEL(DIMM-2) READ:20564 MB/s WRITE:19157 MB/s COPY:21201 MB/s  Passmark PerformanceTest 9.0 Build 1029 CPU Mark:8931.9 Memory Mark:2004.3  3DMark for Windows(V 2.8.6546)3times Cloud Gate:9728 Ice Storm:47941 Sky diver:4992 Fire Strike:1177	Pass

5	DDR4-2666 (Non-ECC)/Transcend-TS1GSH64V6B/SEC-K4A8G085WC-BCTD/8GB*	DUT: DUT#1 CPU: Intel Core i5-8500 CPU @ 3.00GHz (QP5J) DIMM Slot: DIMM-1/2 Dual Channel Test Summary: AIDA64 Cache and Memory Benchmark(V5.97.4600) DUAL CHANNEL(DIMM-1/2) READ:35754 MB/s WRITE:36955 MB/s COPY:31581 MB/s  Passmark PerformanceTest 9.0 Build 1029 CPU Mark:8069.3 Memory Mark:2306.8  3DMark for Windows(V 2.8.6546)3times Cloud Gate:5695 Ice Storm:31889 Sky diver:3199 Fire Strike:898	Pass
6	DDR4-2666 (Non-ECC)/Innodisk-M4S0-8GSSOIC/SEC-K4A4G085WE- BCTD/8GB*2	DUT: DUT#2 CPU: Intel Core i7-9700K CPU @ 3.60GHz (QQPK) DIMM Slot: DIMM-1/2 Dual Channel Test Summary: AIDA64 Cache and Memory Benchmark(V5.97.4600) DUAL CHANNEL(DIMM-1/2) READ:38754 MB/s WRITE:40442 MB/s COPY:35371 MB/s  Passmark PerformanceTest 9.0 Build 1029 CPU Mark:14820.9 Memory Mark:2901.8  3DMark for Windows(V 2.8.6546)3times Cloud Gate:12172 Ice Storm:56759 Sky diver:5591 Fire Strike:1413	Pass
7	DDR4-2666 (Non-ECC)/Kingston-CBD26D4S9S1ME-4/Micron-8KE77-D9WFH/4GB*2	DUT: DUT#2 CPU: Intel Pentium Gold G5400 CPU @ 3.70GHz (SR3X9) DIMM Slot: DIMM-1/2 Dual Channel Test Summary: AIDA64 Cache and Memory Benchmark(V5.97.4600) DUAL CHANNEL(DIMM-1/2) READ:30540 MB/s WRITE:33184 MB/s COPY:28031 MB/s  Passmark PerformanceTest 9.0 Build 1029 CPU Mark:5403.2 Memory Mark:2576.7  3DMark for Windows(V 2.8.6546)3times Cloud Gate:6092 Ice Storm:30442 Sky diver:2912 Fire Strike:718	Pass
8	DDR4-2666 (Non-ECC)/Transcend-TS512MSH64V4H/SEC-K4A4G085WE-BCRC/4GB*	DUT: DUT#1 CPU: Intel Core i3-8100T CPU @ 3.10GHz (QP5Q) DIMM Slot: DIMM-1/2 Dual Channel Test Summary: AIDA64 Cache and Memory Benchmark(V5.97.4600) DUAL CHANNEL(DIMM-1/2) READ:16752 MB/s WRITE:15978 MB/s COPY:15743 MB/s  Passmark PerformanceTest 9.0 Build 1029 CPU Mark:7006.7 Memory Mark:1701.1  3DMark for Windows(V 2.8.6546)3times Cloud Gate:7072 Ice Storm:33079 Sky diver:3966 Fire Strike:961	Pass

9	DDR4-2666 (Non-ECC)/Innodisk-M4S0-4GSSNCIK/SEC-K4A4G085WE- BCTD/4GB*2	DUT: DUT#1 CPU: Intel Celeron G4900 CPU @ 3.10GHz (SR3W4) DIMM Slot: DIMM-1/2 Dual Channel Test Summary: AIDA64 Cache and Memory Benchmark(V5.97.4600) DUAL CHANNEL(DIMM-1/2) READ:30555 MB/s WRITE:33698 MB/s COPY:28464 MB/s  Passmark PerformanceTest 9.0 Build 1029 CPU Mark:3483.1 Memory Mark:2357  3DMark for Windows(V 2.8.6546)3times Cloud Gate:4738 Ice Storm:23494 Sky diver:2677 Fire Strike:715	Pass
10	DDR4-2666 (Non-ECC)/Innodisk-M4S0-4GSSNCIK/SEC-K4A4G085WE- BCTD/4GB*	DUT: DUT#1 CPU: Intel Core i3-8100 CPU @ 3.60GHz (QP5K) DIMM Slot: DIMM-1 Single Channel Test Summary: AIDA64 Cache and Memory Benchmark(V5.97.4600) SINGLE CHANNEL(DIMM-1) READ:16880 MB/s WRITE:16308 MB/s COPY:16613 MB/s  Passmark PerformanceTest 9.0 Build 1029 CPU Mark:3966.8 Memory Mark:1788.7  3DMark for Windows(V 2.8.6546)3times Cloud Gate:6469 Ice Storm:33660 Sky diver:4008 Fire Strike:964	Pass
11	DDR4-2666 (ECC)/ADATA-AD4B2666316G19-BSSC/SEC-K4A8G085WC-BCTD/16GB*2	DUT: DUT#3 CPU: Intel Xeon E-2124G CPU @ 3.40GHz (SR3WL) DIMM Slot: DIMM-1/2 Dual Channel Test Summary: AIDA64 Cache and Memory Benchmark(V5.97.4600) DUAL CHANNEL(DIMM-1/2) READ:36784 MB/s WRITE:37866 MB/s COPY:35222 MB/s  Passmark PerformanceTest 9.0 Build 1029 CPU Mark:8472.1 Memory Mark:2857.5  3DMark for Windows(V 2.8.6546)3times Cloud Gate:8790 Ice Storm:46550 Sky diver:4758 Fire Strike:1261	Pass
12	DDR4-2666 (ECC)/ADATA-AD4B2666316G19-BSSC/SEC-K4A8G085WC-BCTD/16GB*2	DUT: DUT#3 CPU: Intel Xeon E-2176G CPU @ 3.70GHz (QNT8) DIMM Slot: DIMM-1/2 Dual Channel Test Summary: AIDA64 Cache and Memory Benchmark(V5.97.4600) DUAL CHANNEL(DIMM-1/2) READ:37961 MB/s WRITE:38559 MB/s COPY:36294 MB/s  Passmark PerformanceTest 9.0 Build 1029 CPU Mark:14583.1 Memory Mark:3037.3  3DMark for Windows(V 2.8.6546)3times Cloud Gate:10820 Ice Storm:47541 Sky diver:5153 Fire Strike:1336	Pass

<b>13</b>	DDR4-2133 (ECC)/ Transcend-TS1GSH72V1H/ SEC- K4A4G085WE-BCRC/8GB*	DUT: DUT#3 CPU: Intel Xeon E-2176G CPU @ 3.70GHz (QNT8) DIMM Slot: DIMM-1/2 Dual Channel Test Summary: AIDA64 Cache and Memory Benchmark(V5.97.4600) DUAL CHANNEL(DIMM-1/2) READ:31909 MB/s WRITE:32350 MB/s COPY:30966 MB/s  Passmark PerformanceTest 9.0 Build 1029 CPU Mark:16124 Memory Mark:3149.8  3DMark for Windows(V 2.8.6546)3times Cloud Gate:10757 Ice Storm:44613 Sky diver:5052 Fire Strike:1293	<b>Pass</b>
<b>14</b>	DDR4-2133 (ECC)/Transcend-TS1GSH72V1H/SEC-K4A4G085WE-BCRC/8GB*	DUT: DUT#3 CPU: Intel Xeon E-2176G CPU @ 3.70GHz (QNT8) DIMM Slot: DIMM-1 Single Channel Test Summary: AIDA64 Cache and Memory Benchmark(V5.97.4600) SINGLE CHANNEL(DIMM-1) READ:16091 MB/s WRITE:15004 MB/s COPY:16789 MB/s  Passmark PerformanceTest 9.0 Build 1029 CPU Mark:12186.4 Memory Mark:2044  3DMark for Windows(V 2.8.6546)3times Cloud Gate:9340 Ice Storm:36557 Sky diver:4332 Fire Strike:1031	<b>Pass</b>
<b>15</b>	DDR4-2133 (ECC)/Transcend-TS8D41IG21SE51/SEC-K4A4G085WD/8GB*	DUT: DUT#3 CPU: Intel Xeon E-2176G CPU @ 3.70GHz (QNT8) DIMM Slot: DIMM-2 Single Channel Test Summary: AIDA64 Cache and Memory Benchmark(V5.97.4600) SINGLE CHANNEL(DIMM-2) READ:16577 MB/s WRITE:15109 MB/s COPY:17161 MB/s  Passmark PerformanceTest 9.0 Build 1029 CPU Mark:12458.9 Memory Mark:2188.1  3DMark for Windows(V 2.8.6546)3times Cloud Gate:8953 Ice Storm:34518 Sky diver:4385 Fire Strike:1031	<b>Pass</b>