

1. Stability Test:

1.1 CPU Function Test:

Test Purpose	Test CPU functions work normally under Windows operating system
Test Procedure	<ol style="list-style-type: none"> 1. Install Windows operating system 2. Install M/B device drivers 3. Check CPU temperature in BIOS setup menu 4. Run PassMark BurnIn Test and check CPU Temp. 5. Using CPU-Z check CPU info
Test Criteria	It should be correct for each test step

No.	CPU	Type	Idle CPU Temp.	Full Loading CPU Temp.	Result
1	Intel / 3.6GHz	Core i9-9900K (CoffeeLake/ SRELS) / 95W / LGA1151	36.0°C	58.0°C	Pass
2	Intel / 3.6GHz	Core i7-9700K (CoffeeLake/ QPK) / 95W / LGA1151	35.0°C	56.0°C	Pass
3	Intel / 1.8GHz	Core i7-9700TE (CoffeeLake/ QSJN) / 35W / LGA1151	34.0°C	56.0°C	Pass
4	Intel / 2.6GHz	Core i7-9700E (CoffeeLake/ QSJM) / 65W / LGA1151	36.0°C	58.0°C	Pass
5	Intel / 3.7GHz	Core i7-8700K (CoffeeLake/SR3QR) / 95W / LGA1151	36.0°C	58.0°C	Pass
6	Intel / 2.4GHz	Core i7-8700T (CoffeeLake / QP4P) / 35W / LGA1151	37.0°C	59.0°C	Pass
7	Intel / 3.2GHz	Core i7-8700 (CoffeeLake / QNML) / 65W / LGA1151	36.0°C	58.0°C	Pass
8	Intel / 3.0GHz	Core i5-8500 (CoffeeLake / QP5J) / 65W / LGA1151	36.0°C	58.0°C	Pass
9	Intel / 2.1GHz	Core i5-8500T (CoffeeLake/QP5H) / 35W / LGA1151	36.0°C	58.0°C	Pass
10	Intel / 3.1GHz	Core i3-8100T (CoffeeLake/QP5Q) / 35W / LGA1151	35.0°C	56.0°C	Pass
11	Intel / 3.6GHz	Core i3-8100 (CoffeeLake/QP5K) / 65W / LGA1151	36.0°C	59.0°C	Pass
12	Intel / 3.1GHz	Core i3-9100E (CoffeeLake/ QSKA) / 65W / LGA1151	37.0°C	60.0°C	Pass
13	Intel / 3.7GHz	Pentium G5400 (CoffeeLake /SR3X9) / 58W / LGA1151	36.0°C	59.0°C	Pass
14	Intel / 3.1GHz	Celeron G4900(CoffeeLake /SR3W4) / 54W / LGA1151	37.0°C	60.0°C	Pass
15	Intel / 3.3GHz	Xeon E-2278GE (CoffeeLake/QSJK) / 80W / LGA1151	36.0°C	58.0°C	Pass
16	Intel / 2.0GHz	Xeon E-2278GEL (CoffeeLake/ QSJL) / 35W / LGA1151	35.0°C	57.0°C	Pass
17	Intel / 3.4GHz	Xeon E-2124G (CoffeeLake /SR3WL) / 71W / LGA1151	36.0°C	58.0°C	Pass
18	Intel / 3.7GHz	Xeon E-2176G (CoffeeLake /QNT8) / 80W / LGA1151	35.0°C	56.0°C	Pass

1.1.1 Application Test:

No.	Software	Test Keypoint	Result
1	CPU-Z Ver.1.89.0	1. Check all information.	Pass

1.2 Memory Function Test:

Test Purpose	Test Memory functions work normally under Windows Operating System
Test Procedure	<ol style="list-style-type: none"> 1. Install Windows Operating System 2. Install M/B Device Driver 3. Run AIDA64 Cache and Memory Benchmark Ver.5.97.4600 1 time 4. Run Passmark Performance Test 9.0 Build1029 1 time 5. Run 3DMark for Windows Ver.2.6.6238 BenchMark 3 times 6. S3/Hibernate Test 3 times
Test Criteria	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
5	DIMM Slot1	Pass
6	DIMM Slot2	Pass
7	DIMM Slot3	Pass
8	DIMM Slot4	Pass

1.2.2 Application Test:

No.	Software	Test Keypoint	Test Environment	Result
1	PassMark MemTest86 V8.3 Pro	1. Running test 12 hours.	DDR4: DDR4-2666/Apacer-78.D1GS7.4010B/SEC-K4A8G085WB BCTD/16GB*4/DR050-1/2/3/4 (DIMM-1/2/3/4) O.S.: DUAL CHANNEL DDR4-2666(ECC)/ADATA-AD4E2666316G19-BSSC/SEC-K4A8G085WC BCTD/16GB*4/DR066-1/2/3/4 (DIMM-1/2/3/4) DUAL CHANNEL UEFI Shell Memtest86 V8.3	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.D1GS7.4010B	Pass
2	Transcend	SEC	16GB	DDR4-2666	K4A8G085WC-BCTD	TS2GLH64V6B	Pass
3	Transcend	SEC	16GB	DDR4-2400	K4A8G085WB-BCRC	TS2GLH64V4B	Pass
4	Apacer	SEC	8GB	DDR4-2666	K4A8G085WB-BCTD	78.C1GS7.40F0B	Pass
5	Transcend	SEC	8GB	DDR4-2666	K4A8G085WC BCTD	TS1GLH64V6B	Pass
6	Transcend	SEC	8GB	DDR4-2666	K4A8G085WC-BCTD	TS1GLH64V6B	Pass
7	Innodisk	SEC	8GB	DDR4-2666	K4A4G085WE-BCTD	M4U0-8GSSKCIK	Pass
8	Innodisk	SEC	8GB	DDR4-2666	K4A8G085WC-BCTD	M4U0-8GS1JCIK	Pass
9	Apacer	SEC	8GB	DDR4-2666	K4A8G085WB-BCTD	78.C1GS7.40F0B	Pass
10	Transcend	SEC	8GB	DDR4-2666	K4A8G085WC-BCTD	TS1GLH64V6B	Pass

11	Apacer	SEC	4GB	DDR4-2666	K4A4G085WE-BCTD	78.B1GS6.40F0B	Pass
12	Innodisk	SEC	4GB	DDR4-2666	K4A4G05WE-BCTD	M4U0-4GSSJCIK	Pass
13	ADATA	SEC	16GB	DDR4-2666 (ECC)	K4A8G085WC BCTD	AD4E2666316G19-BSSC	Pass
14	ADATA	SK hynix	16GB	DDR4-2400 (ECC)	H5AN8G8NAFR-UHC	AD4E240031617-BHYA	Pass
15	Transcend	SEC	8GB	DDR4-2666 (ECC)	K4A8G085WC BCTD	TS1GLH72V6B	Pass
16	Transcend	SEC	8GB	DDR4-2133 (ECC)	K4A4G085WE-BCRC	TS1GLH72V1H	Pass
17	Innodisk	SEC	4GB	DDR4-2666 (ECC)	K4A4G085WE BCTD	M4C0-4GSSLCIK	Pass
18	Transcend	SEC	4GB	DDR4-2133 (ECC)	K4A4G085WD-BCPB	TS8AAEESD	Pass

1.2.4 DDR4 Module Test Procedures:

No.	DDR4 Module	Test Procedures	Result
1	DDR4-2666/ Apacer-78.D1GS7.4010B/ SEC-K4A8G085WB-BCTD/16GB*4	CPU: Intel Core i9-9900K 3.60GHz (SRELS) DIMM Slot: DIMM-1/2/3/4 Dual Channel Test Summary: AIDA64 Cache and Memory Benchmark(V6.00.5100) DUAL CHANNEL(DIMM-1/2/3/4) READ:37956 MB/s WRITE:41245 MB/s COPY:39726 MB/s Passmark PerformanceTest 9.0 Build 1031 CPU Mark:16650.9 Memory Mark:3009.8 3DMark for Windows(V 2.10.6771)3times Cloud Gate:13072 Ice Storm:56192 Sky diver:5709 Fire Strike:1433	Pass
2	DDR4-2666/Transcend-TS2GLH64V6B/ SEC-K4A8G085WC BCTD/16GB*2	CPU: Intel Core i7-9700K 3.60GHz (QQPK) DIMM Slot: DIMM-1/3 Dual Channel Test Summary: AIDA64 Cache and Memory Benchmark(V6.00.5100) DUAL CHANNEL(DIMM-1/3) READ:38930 MB/s WRITE:39804 MB/s COPY:37923 MB/s Passmark PerformanceTest 9.0 Build 1031 CPU Mark:14502.8 Memory Mark:2999.1 3DMark for Windows(V 2.10.6771)3times Cloud Gate:12021 Ice Storm:55960 Sky diver:5621 Fire Strike:1409	Pass
3	DDR4-2400/Transcend-TS2GLH64V4B/ SEC-K4A8G085WB-BCRC/16GB*2	CPU: Intel Core i7-87100k 3.70GHz (SR3QR) DIMM Slot: DIMM-1/4 Dual Channel Test Summary: AIDA64 Cache and Memory Benchmark(V6.00.5100) DUAL CHANNEL(DIMM-1/4) READ:36051 MB/s WRITE:37354 MB/s COPY:35277 MB/s Passmark PerformanceTest 9.0 Build 1031 CPU Mark:14254.9 Memory Mark:2996 3DMark for Windows(V 2.10.6771)3times Cloud Gate:11946 Ice Storm:55253 Sky diver:5582 Fire Strike:1380	Pass

4	DDR4-2666/ Apacer-78.C1GS7.40F0B/ SEC-K4A8G085WB-BCTD/8GB*2	CPU: Intel Core i7-9700TE 1.80GHz (QSJN) DIMM Slot: DIMM-1/4 Dual Channel Test Summary: AIDA64 Cache and Memory Benchmark(V6.00.5100) DUAL CHANNEL(DIMM-1/4) READ:37640 MB/s WRITE:38158 MB/s COPY:33599 MB/s Passmark PerformanceTest 9.0 Build 1031 CPU Mark:7546.7 Memory Mark:1706 3DMark for Windows(V 2.10.6771)3times Cloud Gate:9345 Ice Storm:46057 Sky diver:5158 Fire Strike:1299	Pass
5	DDR4-2666/ Transcend-TS1GLH64V6B/SEC-K4A8G085WC BCTD/8GB*2	CPU: Intel Core i7-8700T 2.40GHz (QP4P) DIMM Slot: DIMM-2/4 Dual Channel Test Summary: AIDA64 Cache and Memory Benchmark(V6.00.5100) DUAL CHANNEL(DIMM-2/4) READ:37758 MB/s WRITE:39212 MB/s COPY:33958 MB/s Passmark PerformanceTest 9.0 Build 1031 CPU Mark:9609.7 Memory Mark:2214.1 3DMark for Windows(V 2.10.6771)3times Cloud Gate:10500 Ice Storm:49597 Sky diver:5420 Fire Strike:1349	Pass
6	DDR4-2666/Transcend-TS1GLH64V6B/SEC-K4A8G085WC-BCTD/8GB*2	CPU: Intel Core i7-8700 3.20GHz (QNML) DIMM Slot: DIMM-1/2 Single Channel Test Summary: AIDA64 Cache and Memory Benchmark(V6.00.5100) SINGLE CHANNEL(DIMM-1/2) READ:21213 MB/s WRITE:20052 MB/s COPY:20844 MB/s Passmark PerformanceTest 9.0 Build 1031 CPU Mark:10921.4 Memory Mark:2377.7 3DMark for Windows(V 2.10.6771)3times Cloud Gate:11100 Ice Storm:49853 Sky diver:5160 Fire Strike:1218	Pass
7	DDR4-2666/ Innodisk- M4U0-8GSSKCIK/ SEC- K4A4G085WE-BCTD/8GB*	CPU: Intel Core i7-9700E 2.60GHz (QSJM) DIMM Slot: DIMM-4 Single Channel Test Summary: AIDA64 Cache and Memory Benchmark(V6.00.5100) SINGLE CHANNEL(DIMM-4) READ:21541 MB/s WRITE:20345 MB/s COPY:21910 MB/s Passmark PerformanceTest 9.0 Build 1031 CPU Mark:10012.2 Memory Mark:1987.3 3DMark for Windows(V 2.10.6771)3times Cloud Gate:9930 Ice Storm:49434 Sky diver:4999 Fire Strike:1193	Pass
8	DDR4-2666/ Innodisk- M4U0-8GS1JCIK/ SEC- K4A8G085WC-BCTD/8GB*2	CPU: Intel Core i3-9100E 3.10GHz (QSKA) DIMM Slot: DIMM-2/3 Dual Channel Test Summary: AIDA64 Cache and Memory Benchmark(V6.00.5100) DUAL CHANNEL(DIMM-2/3) READ:33863 MB/s WRITE:35382 MB/s COPY:30593 MB/s Passmark PerformanceTest 9.0 Build 1031 CPU Mark:7448.7 Memory Mark:2607.4 3DMark for Windows(V 2.10.6771)3times Cloud Gate:8350 Ice Storm:47940 Sky diver:4615 Fire Strike:1138	Pass

9	DDR4-2666/ Transcend-TS1GLH64V6B/SEC-K4A8G085WC-BCTD/8GB*	CPU: Intel Celeron G4900 3.10GHz (SR3W4) DIMM Slot: DIMM-2 Single Channel Test Summary: AIDA64 Cache and Memory Benchmark(V6.00.5100) SINGLE CHANNEL(DIMM-2) READ:17508 MB/s WRITE:17725 MB/s COPY:16521 MB/s Passmark PerformanceTest 9.0 Build 1031 CPU Mark:3191 Memory Mark:2011.1 3DMark for Windows(V 2.10.6771)3times Cloud Gate:4584 Ice Storm:24502 Sky diver:2636 Fire Strike:664	Pass
10	DDR4-2666/ Apacer-78.C1GS7.40F0B/SEC-K4A8G085WB-BCTD/8GB*	CPU: Intel Core i5-8500T 2.10GHz (QP5H) DIMM Slot: DIMM-1 Single Channel Test Summary: AIDA64 Cache and Memory Benchmark(V6.00.5100) SINGLE CHANNEL(DIMM-1) READ:20127 MB/s WRITE:19712 MB/s COPY:19050 MB/s Passmark PerformanceTest 9.0 Build 1031 CPU Mark:6820.4 Memory Mark:1760.1 3DMark for Windows(V 2.10.6771)3times Cloud Gate:7630 Ice Storm:42161 Sky diver:4510 Fire Strike:1066	Pass
11	DDR4-2666/Transcend-TS1GLH64V6B/SEC-K4A8G085WC-BCTD/8GB*	CPU: Intel Core i3-8100T 3.10GHz (QP5Q) DIMM Slot: DIMM-2 Single Channel Test Summary: AIDA64 Cache and Memory Benchmark(V6.00.5100) SINGLE CHANNEL(DIMM-2) READ:17974 MB/s WRITE:17689 MB/s COPY:17556 MB/s Passmark PerformanceTest 9.0 Build 1031 CPU Mark:7072.6 Memory Mark:2100.8 3DMark for Windows(V 2.10.6771)3times Cloud Gate:7499 Ice Storm:42021 Sky diver:4358 Fire Strike:1010	Pass
12	DDR4-2666/ Apacer-78.B1GS6.40F0B/SEC- K4A4G085WE-BCTD/4GB*	CPU: Intel Core i3-8100 3.60GHz (QP5K) DIMM Slot: DIMM-3 Single Channel Test Summary: AIDA64 Cache and Memory Benchmark(V6.00.5100) SINGLE CHANNEL(DIMM-3) READ:18262 MB/s WRITE:18086 MB/s COPY:17961 MB/s Passmark PerformanceTest 9.0 Build 1031 CPU Mark:7952.1 Memory Mark:1902.5 3DMark for Windows(V 2.10.6771)3times Cloud Gate:7934 Ice Storm:42898 Sky diver:4403 Fire Strike:1017	Pass
13	DDR4-2666/ Apacer-78.B1GS6.40F0B/SEC- K4A4G085WE-BCTD/4GB*4	CPU: Intel Pentium G5400 3.70GHz (SR3X9) DIMM Slot: DIMM-1/2/3/4 Dual Channel Test Summary: AIDA64 Cache and Memory Benchmark(V6.00.5100) DUAL CHANNEL(DIMM-1/2/3/4) READ:33236 MB/s WRITE:36493 MB/s COPY:33926 MB/s Passmark PerformanceTest 9.0 Build 1031 CPU Mark:5482.2 Memory Mark:2895.2 3DMark for Windows(V 2.10.6771)3times Cloud Gate:6153 Ice Storm:31099 Sky diver:2968 Fire Strike:757	Pass

14	DDR4-2666/ Innodisk- M4U0-4GSSJCIK/ SEC- K4A4G05WE-BCTD/4GB*2	CPU: Intel Core i5-8500 3.00GHz (QP5J) DIMM Slot: DIMM-3/4 Single Channel Test Summary: AIDA64 Cache and Memory Benchmark(V6.00.5100) SINGLE CHANNEL(DIMM-3/4) READ:20076 MB/s WRITE:20439 MB/s COPY:21310 MB/s Passmark PerformanceTest 9.0 Build 1031 CPU Mark:9251.1 Memory Mark:2158 3DMark for Windows(V 2.10.6771)3times Cloud Gate:9011 Ice Storm:48223 Sky diver:4793 Fire Strike:1139	Pass
15	DDR4-2666 (ECC)/ ADATA-AD4E2666316G19-BSSC/SEC-K4A8G085WC BCTD/16GB*4	CPU: Intel Xeon E-2278GE 3.30GHz (QSJK) DIMM Slot: DIMM-1/2/3/4 Dual Channel Test Summary: AIDA64 Cache and Memory Benchmark(V6.00.5100) DUAL CHANNEL(DIMM-1/2/3/4) READ:37122 MB/s WRITE:41174 MB/s COPY:38632 MB/s Passmark PerformanceTest 9.0 Build 1031 CPU Mark:15412.5 Memory Mark:2844.5 3DMark for Windows(V 2.10.6771)3times Cloud Gate:12857 Ice Storm:55053 Sky diver:5686 Fire Strike:1429	Pass
16	DDR4-2400 (ECC)/ ADATA-AD4E240031617-BHYA / SK Hynix-H5AN8G8NAFR-UHC / 16GB*2	CPU: Intel Xeon E-2124G 3.40GHz (SR3WL) DIMM Slot: DIMM-1/3 Dual Channel Test Summary: AIDA64 Cache and Memory Benchmark(V6.00.5100) DUAL CHANNEL(DIMM-1/3) READ:34686 MB/s WRITE:36352 MB/s COPY:33653 MB/s Passmark PerformanceTest 9.0 Build 1031 CPU Mark:8226.2 Memory Mark:2845.7 3DMark for Windows(V 2.10.6771)3times Cloud Gate:9177 Ice Storm:53287 Sky diver:5024 Fire Strike:1265	Pass
17	DDR4-2666 (ECC)/ Transcend-TS1GLH72V6B/SEC- K4A8G085WC-BCTD/8GB*2	CPU: Intel Xeon E-2176G 3.70GHz (QNT8) DIMM Slot: DIMM-2/4 Dual Channel Test Summary: AIDA64 Cache and Memory Benchmark(V6.00.5100) DUAL CHANNEL(DIMM-2/4) READ:38067 MB/s WRITE:38377 MB/s COPY:31858 MB/s Passmark PerformanceTest 9.0 Build 1031 CPU Mark:13887.8 Memory Mark:2953.1 3DMark for Windows(V 2.10.6771)3times Cloud Gate:11736 Ice Storm:55344 Sky diver:5452 Fire Strike:1324	Pass
18	DDR4-2133 (ECC)/Transcend-TS1GLH72V1H /SEC-K4A4G085WE-BCRC /8GB*2	CPU: Intel Xeon E-2278GE 3.30GHz (QSJK) DIMM Slot: DIMM-3/4 Single Channel Test Summary: AIDA64 Cache and Memory Benchmark(V6.00.5100) SINGLE CHANNEL(DIMM-3/4) READ:17638 MB/s WRITE:16597 MB/s COPY:18479 MB/s Passmark PerformanceTest 9.0 Build 1031 CPU Mark:14519.7 Memory Mark:2502.8 3DMark for Windows(V 2.10.6771)3times Cloud Gate:11378 Ice Storm:49262 Sky diver:5035 Fire Strike:1180	Pass

19	DDR4-2666(ECC)/Innodisk-M4C0-4GSSLCIK/SEC-K4A4G085WE BCTD/4GB*2	CPU: Intel Xeon E-2278GE 3.30GHz (QSJK) DIMM Slot: DIMM-1/2 Single Channel Test Summary: AIDA64 Cache and Memory Benchmark(V6.00.5100) SINGLE CHANNEL(DIMM-1/2) READ:21029 MB/s WRITE:20306 MB/s COPY:21812 MB/s Passmark PerformanceTest 9.0 Build 1031 CPU Mark:15271.4 Memory Mark:2424.5 3DMark for Windows(V 2.10.6771)3times Cloud Gate:12140 Ice Storm:52262 Sky diver:5298 Fire Strike:1265	Pass
20	DDR2-2133 (ECC)/Transcend-TS8AAEESD/SEC-K4A4G085WD-BCPB/4GB*2	CPU: Intel Xeon E-2278GEL 2.00GHz (QSJL) DIMM Slot: DIMM-3/4 Single Channel Test Summary: AIDA64 Cache and Memory Benchmark(V6.00.5100) SINGLE CHANNEL(DIMM-3/4) READ:17479 MB/s WRITE:16307 MB/s COPY:17332 MB/s Passmark PerformanceTest 9.0 Build 1031 CPU Mark:8668.3 Memory Mark:1628.1 3DMark for Windows(V 2.10.6771)3times Cloud Gate:9954 Ice Storm:44828 Sky diver:4855 Fire Strike:1147	Pass