

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 BurnInTest and check CPU temperature 5. Using CPU-Z check CPU info 6. S3(Sleep)/S4(Hibernate)/S5(Shutdown) test - 3 times
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-S/P0-SRELS) / 95W / LGA1151	35°C	56°C	Pass
2	Intel / 3.6GHz	Core i7-9700K (CoffeeLake-S/P0-QQPK) / 95W / LGA1151	37°C	60°C	Pass
3	Intel / 2.6GHz	Core i7-9700E (CoffeeLake-S/R0-QSJM) / 65W / LGA1151	37°C	59°C	Pass
4	Intel / 1.8GHz	Core i7-9700TE (CoffeeLake-S/R0-QSJM) / 35W / LGA1151	33°C	54°C	Pass
5	Intel / 3.7GHz	Core i7-8700K (CoffeeLake-S/U0-SR3QR) / 95W / LGA1151	36°C	58°C	Pass
6	Intel / 3.2GHz	Core i7-8700 (CoffeeLake-S/U0-QNML) / 65W / LGA1151	35°C	56°C	Pass
7	Intel / 2.4GHz	Core i7-8700T (CoffeeLake-S/U0-QP4P) / 35W / LGA1151	37°C	58°C	Pass
8	Intel / 3.0GHz	Core i5-8500 (CoffeeLake-S/U0-QP5J) / 65W / LGA1151	38°C	60°C	Pass
9	Intel / 2.1GHz	Core i5-8500T (CoffeeLake-S/QP5H) / 35W / LGA1151	36°C	57°C	Pass
10	Intel / 3.1GHz	Core i3-9100E (CoffeeLake-S/R0-QSKA) / 65W / LGA1151	36°C	58°C	Pass
11	Intel / 3.6GHz	Core i3-8100 (CoffeeLake-S/B0-QP5K) / 65W / LGA1151	37°C	60°C	Pass
12	Intel / 3.1GHz	Core i3-8100T (CoffeeLake-S/B0-QP5Q) / 35W / LGA1151	35°C	56°C	Pass
13	Intel / 3.3GHz	Xeon E-2278GE (CoffeeLake-S/R0-QSJK) / 80W / LGA1151	34°C	55°C	Pass
14	Intel / 2.0GHz	Xeon E-2278GEL (CoffeeLake-S/R0-QSJK) / 35W / LGA1151	31°C	54°C	Pass
15	Intel / 3.7GHz	Xeon E-2176G (CoffeeLake-S/U0-QNT8) / 80W / LGA1151	29°C	42°C	Pass
16	Intel / 3.4GHz	Xeon E-2124G (CoffeeLake-S/U0-SR3WL) / 71W / LGA1151	36°C	57°C	Pass
17	Intel / 3.7GHz	Pentium-G5400 (CoffeeLake-S/U0-SR3X9) / 58W / LGA1151	38°C	60°C	Pass
18	Intel / 3.1GHz	Celeron G4900 (CoffeeLake-S/B0-SR3W4) / 54W / LGA1151	36°C	58°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.6.00.5100 - 1 time 4. Run Passmark Performance Test 9.0 Build1031 1 time 5. Run 3DMark for Windows Ver.2.10.6771 BenchMark 3 times 6. Run Memtest86 Stress test 12 hours 7. S3(Sleep)/S4(Hibernate)/S5(Shutdown) test - 3 times
Test Criteria	It should be no problem for the test

1.2.1 DDR4:

No.	Function	Result
1	Single Channel mode	Pass
2	Dual channel mode	Pass
3	DIMM Slot1	Pass
4	DIMM Slot2	Pass
5	DIMM Slot3	Pass
6	DIMM Slot4	Pass

1.2.2 Application Test:

No.	Software	Test Keypoint	Test Environment	Result
1	MemTest86 Ver.8.2 Pro	1. Stress test 12 hours.	DUT: DUT #1 DIMM Slot: DIMM-1/2/3/4, Dual channel O.S.: UEFI Shell DUT: DUT #2 DIMM Slot: DIMM-1/2/3/4, 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	DSL	SEC	32GB	PC4-21300 (DDR4-2666)	K4AAG085WA-BCTD	D4US2G082SH6A-C	Pass
2	Apacer	SEC	16GB	PC4-21300 (DDR4-2666)	K4A8G085WB-BCTD	78.D1GS7.4010B 1.2V	Pass
3	Transcend	SEC	16GB	PC4-21300 (DDR4-2666)	K4A8G085WC-BCTD	TS2GLH64V6B 1.2V) [2Rx8]	Pass
4	ADATA	SEC	16GB	PC4-21300 (DDR4-2666)/ECC	K4A8G085WC-BCTD	AD4E2666316G19-BSSC 1.2V [16GX18]	Pass
5	Transcend	SEC	16GB	PC4-19200 (DDR4-2400)	K4A8G085WB-BCRC	TS2GLH64V4B [2Rx8]	Pass
6	ADATA	SKhynix	16GB	PC4-19200 (DDR4-2400)/ECC	H5AN8G8NAFR-UHC	AD4E2400316G17-BHYA 1.2V	Pass
7	Apacer	SEC	8GB	PC4-21300 (DDR4-2666)	K4A8G085WB-BCTD	78.C1GS7.40F0B	Pass
8	Innodisk	SEC	8GB	PC4-21300 (DDR4-2666)	K4A4G085WE-BCTD	M4U0-8GSSKCIK	Pass
9	Innodisk	SEC	8GB	PC4-21300 (DDR4-2666)	K4A8G085WC-BCTD	M4U0-8GS1JCIK	Pass

10	Transcend	SEC	8GB	PC4-21300 (DDR4-2666)	K4A8G085WC-BCTD	TS1GLH64V6B 1.2V [1Rx8]	Pass
11	Transcend	SEC	8GB	PC4-21300 (DDR4-2666)	K4A8G085WC-BCTD	TS1GLH64V6B 1.2V [1Rx8]	Pass
12	Innodisk	SEC	8GB	PC4-21300 (DDR4-2666)/ECC	K4A4G085WE-BCTD	M4C0-4GSSLCIK	Pass
13	Transcend	SEC	8GB	PC4-21300 (DDR4-2666)/ECC	K4A8G085WC-BCTD	TS1GLH72V6B 1.2V [1Rx8]	Pass
14	Transcend	SEC	8GB	PC4-19200 (DDR4-2400)	K4A4G085WE-BCRC	TS1GLH64V4H [2Rx8]	Pass
15	Transcend	SEC	8GB	PC4-17000 (DDR4-2133)/ECC	K4A4G085WE-BCRC	TS1GLH72V1H	Pass
16	Apacer	SEC	4GB	PC4-21300 (DDR4-2666)	K4A4G085WE-BCTD	78.B1GS6.40F0B	Pass
17	Innodisk	SEC	4GB	PC4-21300 (DDR4-2666)	K4A4G05WE-BCTD	M4U0-4GSSJCIK	Pass

1.2.4 DDR4 Module Test Procedures:

No.	DDR4 Module	Test Procedures	Result
1	DSL (D4US2G082SH6A-C) / SEC (K4AAG085WA-BCTD) / PC4-21300 (DDR4-2666) / 32GB *4	<p>DUT: DUT#2 M/B: CS332-Q370NRM Rev.2 (021) [774-CS3321-100G/BMJ361000005] CPU: Intel / Core i7-8700K (CoffeeLake-S/U0-SR3QR,95W) / 3.7GHz DIMM Slot: DIMM-1/2/3/4, Dual channel Test Summary: AIDA64 Cache and Memory Benchmark ver.6.00.5100 READ:34456 MB/s WRITE:19658 MB/s COPY:35917 MB/s</p> <p>Passmark PerformanceTest 9.0 Build1031 CPU Mark:16807.6 Memory Mark:3455.6</p> <p>3DMark for Windows ver.2.10.6771 Cloud Gate:12032 Ice Storm:55600 Sky diver:5558 Fire Strike:1366</p> <p>DUT: DUT#2 M/B: CS332-Q370NRM Rev.2 (021) [774-CS3321-100G/BMJ361000005] CPU: Intel / Core i9-9900K (CoffeeLake-S/P0-SRELS,95W) / 3.6GHz DIMM Slot: DIMM-1/2/3/4, Dual channel Test Summary: AIDA64 Cache and Memory Benchmark ver.6.00.5100 READ:37001 MB/s WRITE:40715 MB/s COPY:38238 MB/s</p> <p>Passmark PerformanceTest 9.0 Build1031 CPU Mark:16840.5 Memory Mark:2948.2</p> <p>3DMark for Windows ver.2.10.6771 Cloud Gate:12955 Ice Storm:55726 Sky diver:5592 Fire Strike:1399</p>	Pass

2	Apacer (78.D1GS7.4010B 1.2V) / SEC (K4A8G085WB-BCTD) / PC4-21300 (DDR4-2666) / 16GB *2	DUT: DUT#2 M/B: CS332-Q370NRM Rev.2 (021) [774-CS3321-100G/BMJ361000005] CPU: Intel / Core i7-8700T (CoffeeLake-S/U0-QP4P,35W) / 2.4GHz DIMM Slot: DIMM-3/4, Single channel Test Summary: AIDA64 Cache and Memory Benchmark ver.6.00.5100 READ:21362 MB/s WRITE:20507 MB/s COPY:22076 MB/s Passmark PerformanceTest 9.0 Build1031 CPU Mark:9144.6 Memory Mark:2094.3 3DMark for Windows ver.2.10.6771 Cloud Gate:9835 Ice Storm:47136 Sky diver:5092 Fire Strike:1216	Pass
3	Transcend (TS2GLH64V6B 1.2V) [2Rx8] / SEC (K4A8G085WC-BCTD) / PC4-21300 (DDR4-2666) / 16GB *2	DUT: DUT#2 M/B: CS332-Q370NRM Rev.2 (021) [774-CS3321-100G/BMJ361000005] CPU: Intel / Core i7-9700TE (CoffeeLake-S/R0-QSJM,35W) / 1.8GHz DIMM Slot: DIMM-1/3, Dual channel Test Summary: AIDA64 Cache and Memory Benchmark ver.6.00.5100 READ:38421 MB/s WRITE:40459 MB/s COPY:36915 MB/s Passmark PerformanceTest 9.0 Build1031 CPU Mark:7862.3 Memory Mark:1768.5 3DMark for Windows ver.2.10.6771 Cloud Gate:9408 Ice Storm:46350 Sky diver:5219 Fire Strike:1342	Pass
4	ADATA (AD4E2666316G19-BSSC 1.2V) [16GX18] / SEC (K4A8G085WC-BCTD) / PC4-21300 (DDR4-2666)/ECC / 16GB *2	DUT: DUT#3 M/B: CS332-C246NRM Rev.2 (021) [774-CS3321-000G/BMJ360900003] CPU: Intel / Xeon E-2124G (CoffeeLake-S/U0-SR3WL,71W) / 3.4GHz DIMM Slot: DIMM-1/2, Single channel Test Summary: AIDA64 Cache and Memory Benchmark ver.6.00.5100 READ:20719 MB/s WRITE:20160 MB/s COPY:20953 MB/s Passmark PerformanceTest 9.0 Build1031 CPU Mark:8261 Memory Mark:2529.2 3DMark for Windows ver.2.10.6771 Cloud Gate:8522 Ice Storm:49230 Sky diver:4712 Fire Strike:1124	Pass
5	Transcend (TS2GLH64V4B) [2Rx8] / SEC (K4A8G085WB-BCRC) / PC4-19200 (DDR4-2400) / 16GB *2	DUT: DUT#2 M/B: CS332-Q370NRM Rev.2 (021) [774-CS3321-100G/BMJ361000005] CPU: Intel / Core i7-8700 (CoffeeLake-S/U0-QNML,65W) / 3.2GHz DIMM Slot: DIMM-1/2, Single channel Test Summary: AIDA64 Cache and Memory Benchmark ver.6.00.5100 READ:19357 MB/s WRITE:18521 MB/s COPY:20512 MB/s Passmark PerformanceTest 9.0 Build1031 CPU Mark:11136.9 Memory Mark:2360.7 3DMark for Windows ver.2.10.6771 Cloud Gate:10960 Ice Storm:48617 Sky diver:5078 Fire Strike:1188	Pass

		DUT: M/B: CPU: DIMM Slot: Test Summary:	DUT#2 CS332-Q370NRM Rev.2 (021) [774-CS3321-100G/BMJ361000005] Intel / Core i7-9700E (CoffeeLake-S/R0-QSJM,65W) / 2.6GHz DIMM-2/4, Dual channel AIDA64 Cache and Memory Benchmark ver.6.00.5100 READ:35521 MB/s WRITE:36354 MB/s COPY:34291 MB/s Passmark PerformanceTest 9.0 Build1031 CPU Mark:11122.6 Memory Mark:2383 3DMark for Windows ver.2.10.6771 Cloud Gate:10823 Ice Storm:51409 Sky diver:5310 Fire Strike:1339	
6	ADATA (AD4E2400316G17-BHYA 1.2V) / SKhynix (H5AN8G8NAFR-UHC) / PC4-19200 (DDR4-2400)/ECC / 16GB *4	DUT: M/B: CPU: DIMM Slot: Test Summary:	DUT#3 CS332-C246NRM Rev.2 (021) [774-CS3321-000G/BMJ360900003] Intel / Xeon E-2278GE (CoffeeLake-S/R0-QSJK,80W) / 3.3GHz DIMM-1/2/3/4, Dual channel AIDA64 Cache and Memory Benchmark ver.6.00.5100 READ:34827 MB/s WRITE:37472 MB/s COPY:35287 MB/s Passmark PerformanceTest 9.0 Build1031 CPU Mark:15604.3 Memory Mark:2816.3 3DMark for Windows ver.2.10.6771 Cloud Gate:12733 Ice Storm:54718 Sky diver:5641 Fire Strike:1416	Pass
7	Apacer (78.C1GS7.40F0B) / SEC (K4A8G085WB-BCTD) / PC4-21300 (DDR4-2666) / 8GB *1	DUT: M/B: CPU: DIMM Slot: Test Summary:	DUT#2 CS332-Q370NRM Rev.2 (021) [774-CS3321-100G/BMJ361000005] Intel / Core i5-8500 (CoffeeLake-S/U0-QP5J,65W) / 3.0GHz DIMM-1, Single channel AIDA64 Cache and Memory Benchmark ver.6.00.5100 READ:20006 MB/s WRITE:19275 MB/s COPY:19870 MB/s Passmark PerformanceTest 9.0 Build1031 CPU Mark:9263.9 Memory Mark:2138.1 3DMark for Windows ver.2.10.6771 Cloud Gate:8637 Ice Storm:45851 Sky diver:4633 Fire Strike:1075	Pass
8	Innodisk (M4U0-8GSSKCIK) / SEC (K4A4G085WE-BCTD) / PC4-21300 (DDR4-2666) / 8GB *1	DUT: M/B: CPU: DIMM Slot: Test Summary:	DUT#2 CS332-Q370NRM Rev.2 (021) [774-CS3321-100G/BMJ361000005] Intel / Core i5-8500T (CoffeeLake-S/QP5H,35W) / 2.1GHz DIMM-2, Single channel AIDA64 Cache and Memory Benchmark ver.6.00.5100 READ:20909 MB/s WRITE:20297 MB/s COPY:21062 MB/s Passmark PerformanceTest 9.0 Build1031 CPU Mark:7098.3 Memory Mark:1791.1 3DMark for Windows ver.2.10.6771 Cloud Gate:7952 Ice Storm:44262 Sky diver:4664 Fire Strike:1129	Pass

9	Innodisk (M4U0-8GS1JCIK) / SEC (K4A8G085WC-BCTD) / PC4-21300 (DDR4-2666) / 8GB *1	DUT: DUT#2 M/B: CS332-Q370NRM Rev.2 (021) [774-CS3321-100G/BMJ361000005] CPU: Intel / Core i3-8100 (CoffeeLake-S/B0-QP5K,65W) / 3.6GHz DIMM Slot: DIMM-3, Single channel Test Summary: AIDA64 Cache and Memory Benchmark ver.6.00.5100 READ:17996 MB/s WRITE:17815 MB/s COPY:17648 MB/s Passmark PerformanceTest 9.0 Build1031 CPU Mark:7179.4 Memory Mark:2032.1 3DMark for Windows ver.2.10.6771 Cloud Gate:7163 Ice Storm:32850 Sky diver:4307 Fire Strike:1004	Pass
10	Transcend (TS1GLH64V6B 1.2V) [1Rx8] / SEC (K4A8G085WC-BCTD) / PC4-21300 (DDR4-2666) / 8GB *1	DUT: DUT#2 M/B: CS332-Q370NRM Rev.2 (021) [774-CS3321-100G/BMJ361000005] CPU: Intel / Core i3-8100T (CoffeeLake-S/B0-QP5Q,35W) / 3.1GHz DIMM Slot: DIMM-4, Single channel Test Summary: AIDA64 Cache and Memory Benchmark ver.6.00.5100 READ:18053 MB/s WRITE:17712 MB/s COPY:17488 MB/s Passmark PerformanceTest 9.0 Build1031 CPU Mark:6396.6 Memory Mark:1947.5 3DMark for Windows ver.2.10.6771 Cloud Gate:6605 Ice Storm:30886 Sky diver:4219 Fire Strike:996	Pass
11	Transcend (TS1GLH64V6B 1.2V) [1Rx8] / SEC (K4A8G085WC-BCTD) / PC4-21300 (DDR4-2666) / 8GB *2	DUT: DUT#2 M/B: CS332-Q370NRM Rev.2 (021) [774-CS3321-100G/BMJ361000005] CPU: Intel / Core i7-9700K (CoffeeLake-S/P0-QQPK,95W) / 3.6GHz DIMM Slot: DIMM-2/3, Dual channel Test Summary: AIDA64 Cache and Memory Benchmark ver.6.00.5100 READ:37942 MB/s WRITE:39446 MB/s COPY:33995 MB/s Passmark PerformanceTest 9.0 Build1031 CPU Mark:13937.3 Memory Mark:2349.9 3DMark for Windows ver.2.10.6771 Cloud Gate:11022 Ice Storm:75265 Sky diver:5503 Fire Strike:1358	Pass
12	Innodisk (M4C0-4GSSLCIK) / SEC (K4A4G085WE-BCTD) / PC4-21300 (DDR4-2666) / ECC / 8GB *2	DUT: DUT#3 M/B: CS332-C246NRM Rev.2 (021) [774-CS3321-000G/BMJ360900003] CPU: Intel / Xeon E-2278GE (CoffeeLake-S/R0-QSJK,80W) / 3.3GHz DIMM Slot: DIMM-3/4, Single channel Test Summary: AIDA64 Cache and Memory Benchmark ver.6.00.5100 READ:21271 MB/s WRITE:20390 MB/s COPY:22049 MB/s Passmark PerformanceTest 9.0 Build1031 CPU Mark:15829 Memory Mark:2557.3 3DMark for Windows ver.2.10.6771 Cloud Gate:11862 Ice Storm:50977 Sky diver:5241 Fire Strike:1252	Pass

13	Transcend (TS1GLH72V6B 1.2V) [1Rx8] / SEC (K4A8G085WC-BCTD) / PC4-21300 (DDR4-2666)/ECC / 8GB *2	DUT: DUT#3 M/B: CS332-C246NRM Rev.2 (021) [774-CS3321-000G/BMJ360900003] CPU: Intel / Xeon E-2176G (CoffeeLake-S/U0-QNT8,80W) / 3.7GHz DIMM Slot: DIMM-2/4, Dual channel Test Summary: AIDA64 Cache and Memory Benchmark ver.6.00.5100 READ:32284 MB/s WRITE:38672 MB/s COPY:32457 MB/s Passmark PerformanceTest 9.0 Build1031 CPU Mark:7272.8 Memory Mark:2185.5 3DMark for Windows ver.2.10.6771 Cloud Gate:6595 Ice Storm:35878 Sky diver:3090 Fire Strike:862	Pass
14	Transcend (TS1GLH64V4H) [2Rx8] / SEC (K4A4G085WE-BCRC) / PC4-19200 (DDR4-2400) / 8GB *2	DUT: DUT#2 M/B: CS332-Q370NRM Rev.2 (021) [774-CS3321-100G/BMJ361000005] CPU: Intel / Core i3-9100E (CoffeeLake-S/R0-QSKA,65W) / 3.1GHz DIMM Slot: DIMM-1/2, Single channel Test Summary: AIDA64 Cache and Memory Benchmark ver.6.00.5100 READ:18008 MB/s WRITE:19607 MB/s COPY:18732 MB/s Passmark PerformanceTest 9.0 Build1031 CPU Mark:7254.7 Memory Mark:2305.7 3DMark for Windows ver.2.10.6771 Cloud Gate:7639 Ice Storm:43943 Sky diver:4291 Fire Strike:1019	Pass
15	Transcend (TS1GLH72V1H) / SEC (K4A4GO85WE-BCRC) / PC4-17000 (DDR4-2133)/ECC / 8GB *2	DUT: DUT#3 M/B: CS332-C246NRM Rev.2 (021) [774-CS3321-000G/BMJ360900003] CPU: Intel / Xeon E-2278GEL (CoffeeLake-S/R0-QS JL,35W) / 2.0GHz DIMM-1/3, Dual channel DIMM Slot: DIMM-1/3, Dual channel Test Summary: AIDA64 Cache and Memory Benchmark ver.6.00.5100 READ:30407 MB/s WRITE:33068 MB/s COPY:30964 MB/s Passmark PerformanceTest 9.0 Build1031 CPU Mark:10134 Memory Mark:1914.3 3DMark for Windows ver.2.10.6771 Cloud Gate:11015 Ice Storm:47576 Sky diver:5354 Fire Strike:1347	Pass
16	Apacer (78.B1GS6.40F0B) / SEC (K4A4G085WE-BCTD) / PC4-21300 (DDR4-2666) / 4GB *2	DUT: DUT#2 M/B: CS332-Q370NRM Rev.2 (021) [774-CS3321-100G/BMJ361000005] CPU: Intel / Pentium-G5400 (CoffeeLake-S/U0-SR3X9,58W) / 3.7GHz DIMM Slot: DIMM-1/4, Dual channel Test Summary: AIDA64 Cache and Memory Benchmark ver.6.00.5100 READ:30943 MB/s WRITE:35503 MB/s COPY:29439 MB/s Passmark PerformanceTest 9.0 Build1031 CPU Mark:4985.5 Memory Mark:1980.1 3DMark for Windows ver.2.10.6771 Cloud Gate:5719 Ice Storm:27674 Sky diver:2980 Fire Strike:748	Pass

<p>17</p>	<p>Innodisk (M4U0-4GSSJCIK) / SEC (K4A4G05WE-BCTD) / PC4-21300 (DDR4-2666) / 4GB *2</p>	<p>DUT: DUT#2 M/B: CS332-Q370NRM Rev.2 (021) [774-CS3321-100G/BMJ361000005] CPU: Intel / Celeron G4900 (Coffeelake-S/B0-SR3W4,54W) / 3.1GHz DIMM Slot: DIMM-2/3, Dual channel Test Summary: AIDA64 Cache and Memory Benchmark ver.6.00.5100 READ:31311 MB/s WRITE:35794 MB/s COPY:30026 MB/s Passmark PerformanceTest 9.0 Build1031 CPU Mark:3471.4 Memory Mark:2393.9 3DMark for Windows ver.2.10.6771 Cloud Gate:4941 Ice Storm:28387 Sky diver:2862 Fire Strike:730</p>	<p>Pass</p>
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