

1. Stability Test:

1.1 CPU Function Test:

Test Purpose	Test CPU functions work normally under Windows Operating System
Test Procedure	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 / 3.70GHz	Core i7-8700K (Coffeelake / SR3QR) / 95W / LGA1151	38°C	66°C	Pass
2	Intel / 3.20GHz	Core i7-8700 (Coffeelake / QNML) / 65W / LGA1151	37°C	62°C	Pass
3	Intel / 2.40GHz	Core i7-8700T (Coffeelake / QP4P) / 35W / LGA1151	36°C	60°C	Pass
4	Intel / 3.00GHz	Core i5-8500 (Coffeelake / QP5J) / 65W / LGA1151	36°C	60°C	Pass
5	Intel / 2.10GHz	Core i5-8500T (Coffeelake / QP5H) / 35W / LGA1151	37°C	59°C	Pass
6	Intel / 3.60GHz	Core i3-8100 (Coffeelake / QP5K) / 65W / LGA1151	38°C	60°C	Pass
7	Intel / 3.10GHz	Core i3-8100T (Coffeelake / QP5Q) / 35W / LGA1151	39°C	59°C	Pass
8	Intel / 3.70GHz	Pentium G5400 (Coffeelake /SR3X9) / 58W / LGA1151	38°C	61°C	Pass
9	Intel / 3.10GHz	Celeron G4900 (Coffeelake /SR3W4) / 54W / LGA1151	36°C	59°C	Pass
10	Intel / 3.40GHz	Xeon E-2124G (Coffeelake /SR3WL) / 71W / LGA1151	36°C	59°C	Pass
11	Intel / 3.70GHz	Xeon E-2176G (Coffeelake /QNT8) / 80W / LGA1151	38°C	61°C	Pass

1.1.1 Application Test:

No.	Software	Test Keypoint	Result
1	CPU-Z Ver.1.86	1. Check all information.	Pass

1.1.2 Intel Processor Diagnostic Tool:

Test Environment

DUT: DUT#1
M/B: CS331-Q370NRM Rev.2 (021) (BSJ041500004)
M/B BIOS: B193.15A (AMI-Aptio)
ME FW Rev.: 12.0.30.1406 / CORPORATE
M/B Driver: Driver_CS331_643-CS3311-000G_180905_01.iso
CPU: Intel(R) Core(TM) i7-8700K CPU @ 3.70GHz (SR3QR) (CP0139)
DDR4: DDR4-2400/Transcend-TS2GLH64V4B/SEC-K4A8G085WB-BCRC/16GB*4/DR041-1/2/3/4 DUAL CHANNEL
SSD: Transcend/TS128GSSD420K 128GB
Display: ASUS DVD-E818A9T
DVD-ROM: Onboard (DP)
Monitor: AOC U2868PQU
Power: Sea Sonic SS-400ET
O.S.: Windows 10 IOT Enterprise LTSC 64Bit (Version 1809 Build 17763.379) RS5-UEFI

Intel® Processor Diagnostic Tool 64Bit 4.1.1.33.W.MP

File Tools View About
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System Info | CPU Features

Processors Detected: 1
Processor Name: [Intel\(R\) Core\(TM\) i7-8700K CPU @ 3.70GHz](#)
Processor Information: Family 6 Model 158 Stepping 10
Processor Usage: [Click to launch Task Manager](#)
Number of Physical Cores: 1
Number of Logical Cores: 2
CPU Temperature: [Stopped. Click here to Start Monitoring](#)
Max/Min CPU Temps Detected: Max= 69C, Min= 45C
Max CPU Temperature: 105C
Graphics Information: Intel(R) UHD Graphics 630
OpenCL Support: Yes
Operating System: Microsoft Windows 10 Enterprise LTSC 64-bit
System BIOS: B193.15A
System Serial Number: Default string

Results | Config

Test Module	Enable	CPU1
Genuine Intel	<input checked="" type="checkbox"/>	Pass
BrandString	<input checked="" type="checkbox"/>	Pass
Cache	<input checked="" type="checkbox"/>	Pass
MMXSSE	<input checked="" type="checkbox"/>	Pass
IMC	<input checked="" type="checkbox"/>	Pass
Prime Number	<input checked="" type="checkbox"/>	Pass
Floating Point	<input checked="" type="checkbox"/>	Pass
Math	<input checked="" type="checkbox"/>	Pass
GPUStressW	<input checked="" type="checkbox"/>	Pass
CPUload	<input checked="" type="checkbox"/>	Pass
CPUFreq	<input checked="" type="checkbox"/>	Pass
PCH	<input checked="" type="checkbox"/>	Pass
SPBC	<input checked="" type="checkbox"/>	Pass

Testing Completed

Test Summary | CPU Temperature Monitor

```

IPDT04 PASSEU
--- IPDT64 - Revision: 4.1.1.33
--- IPDT64 - End Time: 4/1/2019 10:27:25 AM

PASS
                    
```

CPU1

```

...
..Retrieved Processor Manufacturer
GenuineIntel
..Retrieved Processor Brand String
IntelR CoreTM i7-8700K CPU 3.70GHz
IntelR spbc Module Test -- Pass --
                    
```

Stop Test

Start Test

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 Build1023 1 time 5. Run 3DMark for Windows Ver.2.4.4264 BenchMark 3 times 6. S3/Hibernate Test 3 times
Test Criteria	It should be no problem for the test

Test Environment	
DUT:	DUT#1
M/B:	CS331-Q370NRM Rev.2 (021) (BSJ041500004)
M/B BIOS:	B193.15A (AMI-Aptio)
ME FW Rev.:	12.0.30.1406 / CORPORATE
M/B Driver:	Driver_CS331_643-CS3311-000G_180905_01.iso
CPU:	Intel(R) Core(TM) i7-8700K CPU @ 3.70GHz (SR3QR) (CP0139)
SSD:	Transcend/TS128GSSD420K 128GB
Display:	Onboard (DVI)
DVD-ROM:	ASUS DVD-E818A9T
Monitor:	AOC U2868PQU
Power:	Sea Sonic SS-400ET
O.S.:	Windows 10 IOT Enterprise LTSC 64Bit (Version 1809 Build 17763.379) RS5-UEFI
DUT:	DUT#2
M/B:	CS331-C246NRM Rev.2 (021) (BSJ041400010)
M/B BIOS:	B193.15B (AMI-Aptio)
ME FW Rev.:	12.0.30.1406 / CORPORATE
M/B Driver:	Driver_CS331_643-CS3311-000G_180905_01.iso
CPU:	Intel Xeon E-2124G CPU @ 3.40GHz (SR3WL)
SSD:	Transcend/TS128GSSD420K 128GB
Display:	On Board (HDMI)
DVD-ROM:	ASUS DVD-E818A9
Monitor:	LENOVO L2232wD
Power:	Silver Stone / SST-ST1000-PT
O.S.:	Windows 10 IOT Enterprise LTSC 64Bit (Version 1809 Build 17763.379) RS5-UEFI

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 V8.1 Pro	1. Burn-In test 12 hours.	DUT: DUT#1 DDR4: DDR4-2400/Transcend-TS2GLH64V4B/SEC-K4A86085WB-BCRC /16GB*4/DR04-1/2/3/4 O.S.: DOS	Pass
2	PassMark MemTest86 V8.1 Pro	1. Burn-In test 12 hours.	DUT: DUT#2 DDR4: DDR4-2666 (ECC)/ADATA-AD4E2666316G19-BSSC/SEC-K4A8G085WC-BCT0/16GB*4/DR066-1/2/3/4 DUAL CHANNEL 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	16GB	DDR4-2666	K4A8G085WC-BCTD	TS2GLH64V6B	Pass
2	Transcend	SEC	8GB	DDR4-2666	K4A8G085WC-BCTD	TS1GLH64V6B	Pass
3	Apacer	SEC	8GB	DDR4-2666	K4A8G085WB-BCTD	78.C1GS7.40F0B	Pass
4	Apacer	SEC	4GB	DDR4-2666	K4A4G085WE-BCTD	78.B1GS6.40F0B	Pass
5	Innodisk	SEC	8GB	DDR4-2666	K4A8G085WC-BCTD	M4U0-8GS1JCIK	Pass
6	Innodisk	SEC	4GB	DDR4-2666	K4A4G085WE-BTCD	M4U0-4GSSJCIK	Pass
7	Transcend	SEC	16GB	DDR4-2400	K4A8G085WB-BCRC	TS2GLH64V4B	Pass
8	Transcend	SEC	8GB	DDR4-2400	K4A4G085WE-BCRC	TS1GLH64V4H	Pass
9	ADATA	SEC	16GB	DDR4-2666(ECC)	K4A8G085WC-BCT0	AD4E2666316G19-BSSC	Pass
10	Innodisk	SEC	4GB	DDR4-2666 (ECC)	K4A4G085WE-BCT0	M4C0-4GSSLCIK	Pass
11	Transcend	SEC	8GB	DDR4-2133(ECC)	K4A4G085WE-BCRC	TS1GLH72V1H	Pass

1.2.4 DDR4 Test Procedures:

No.	DDR4 Module	Test Environment	Result
1	DDR4-2400/Transcend-TS2GLH64V4B/ SEC-K4A8G085WB-BCRC/16GB*4	<p>CPU: Intel Core i7-8700K CPU @ 3.70GHz DIMM Slot: DIMM-1/2 Dual Channel Test Summary: AIDA64 Cache and Memory Benchmark(V5.97.4600) DUAL CHANNEL(DIMM-1/2) READ:35092 MB/s WRITE:37113 MB/s COPY:35552 MB/s</p> <p>Passmark PerformanceTest 9.0 Build 1029 CPU Mark:3569.7 Memory Mark:2921.4</p> <p>3DMark for Windows(V 2.6.6238)3times Cloud Gate:11965 Ice Storm:50415 Sky diver:5292 Fire Strike:654</p>	Pass
2	DDR4-2666/Transcend-TS2GLH64V6B / SEC-K4A8G085WC-BCTD/16GB*2	<p>CPU: Intel Core i7-8700 CPU @ 3.20GHz (QNML) DIMM Slot: DIMM-1/3 Dual Channel Test Summary: AIDA64 Cache and Memory Benchmark(V5.97.4600) DUAL CHANNEL(DIMM-1/3) READ:39054 MB/s WRITE:40317 MB/s COPY:37952 MB/s</p> <p>Passmark PerformanceTest 9.0 Build 1029 CPU Mark:3092.8 Memory Mark:2612.1</p> <p>3DMark for Windows(V 2.6.6238)3times Cloud Gate:5770 Ice Storm:43128 Sky diver:4537 Fire Strike:1312</p>	Pass

3	DDR4-2400/Transcend-TS2GLH64V4B/SEC-K4A8G085WB-BCRC/16GB*	<p>CPU: Intel Core i5-8500T CPU @ 2.10GHz (QP5H) DIMM Slot: DIMM-2 Single Channel Test Summary: AIDA64 Cache and Memory Benchmark(V5.97.4600) SINGLE CHANNEL(DIMM-2) READ:14727 MB/s WRITE:17897 MB/s COPY:17796 MB/s</p> <p>Passmark PerformanceTest 9.0 Build 1029 CPU Mark:2519.3 Memory Mark:2304.6</p> <p>3DMark for Windows(V 2.6.6238)3times Cloud Gate:4277 Ice Storm:29630 Sky diver:3754 Fire Strike:488</p>	Pass
4	DDR4-2666/Apacer-78.C1GS7.40F0B/SEC- K4A8G085WB-BCTD/8GB*2	<p>CPU: Intel Core i7-8700T CPU @ 2.40GHz (QP4P) DIMM Slot: DIMM-2/4 Dual Channel Test Summary: AIDA64 Cache and Memory Benchmark(V5.97.4600) DUAL CHANNEL(DIMM-2/4) READ:38277 MB/s WRITE:38489 MB/s COPY:33499 MB/s</p> <p>Passmark PerformanceTest 9.0 Build 1029 CPU Mark:14014 Memory Mark:3061.5</p> <p>3DMark for Windows(V 2.6.6238)3times Cloud Gate:4714 Ice Storm:37889 Sky diver:4276 Fire Strike:1249</p>	Pass
5	DDR4-2400/ Transcend-TS1GLH64V4H /SEC-K4A4G085WE-BCRC/8GB*	<p>CPU: Intel Core i3-8100 CPU @ 3.60GHz (QP5K) DIMM Slot: DIMM-3 Single Channel Test Summary: AIDA64 Cache and Memory Benchmark(V5.97.4600) SINGLE CHANNEL(DIMM-3) READ:18473 MB/s WRITE:18322 MB/s COPY:18570 MB/s</p> <p>Passmark PerformanceTest 9.0 Build 1029 CPU Mark:8403.7 Memory Mark:2282.3</p> <p>3DMark for Windows(V 2.6.6238)3times Cloud Gate:8134 Ice Storm:46027 Sky diver:4334 Fire Strike:1055</p>	Pass
6	DDR4-2666/ Innodisk- M4U0-8GS1JCIK /SEC- K4A8G085WC-BCTD/8GB*	<p>CPU: Intel Core i3-8100T CPU @ 3.10GHz (QP5Q) DIMM Slot: DIMM-4 Single Channel Test Summary: AIDA64 Cache and Memory Benchmark(V5.97.4600) SINGLE CHANNEL(DIMM-4) READ:17945 MB/s WRITE:17874 MB/s COPY:17568 MB/s</p> <p>Passmark PerformanceTest 9.0 Build 1029 CPU Mark:5722.2 Memory Mark:1824.7</p> <p>3DMark for Windows(V 2.6.6238)3times Cloud Gate:4799 Ice Storm:30374 Sky diver:2719 Fire Strike:676</p>	Pass

7	DDR4-2400/ADATA-AD4U240038G17-BHYA/SK hynix-H5AN8G8NAFR-UHC/8GB* 4	<p>CPU: Intel Core i7-8700 CPU @ 3.20GHz DIMM Slot: DIMM-1/2/3/4 Dual Channel Test Summary: AIDA64 Cache and Memory Benchmark(V5.97.4600) DUAL CHANNEL(DIMM-1/2/3/4) READ:35372 MB/s WRITE:37165 MB/s COPY:34663 MB/s</p> <p>Passmark PerformanceTest 9.0 Build 1029 CPU Mark:14854.4 Memory Mark:3347.3</p> <p>3DMark for Windows(V 2.6.6238)3times Cloud Gate:10571 Ice Storm:44072 Sky diver:4911 Fire Strike:630</p>	Pass
8	DDR4-2666/ Transcend-TS1GLH64V6B/SEC- K4A8G085WC-BCTD/8GB*2	<p>CPU: Intel Pentium Gold G5400 CPU @ 3.70GHz (SR3X9) DIMM Slot: DIMM-3/4 Single Channel Test Summary: AIDA64 Cache and Memory Benchmark(V5.97.4600) SINGLE CHANNEL(DIMM-3/4) READ:17782 MB/s WRITE:18288 MB/s COPY:18194 MB/s</p> <p>Passmark PerformanceTest 9.0 Build 1029 CPU Mark:5334.8 Memory Mark:2391.5</p> <p>3DMark for Windows(V 2.6.6238)3times Cloud Gate:5815 Ice Storm:28417 Sky diver:2725 Fire Strike:687</p>	Pass
9	DDR4-2666/ Apacer-78.B1GS6.40F0B/SEC- K4A4G085WE-BCTD/4GB*2	<p>CPU: Intel Celeron G4900 CPU @ 3.10GHz (SR3W4) DIMM Slot: DIMM-1/2 Single Channel Test Summary: AIDA64 Cache and Memory Benchmark(V5.97.4600) SINGLE CHANNEL(DIMM-1/2) READ:17727 MB/s WRITE:18184 MB/s COPY:17786 MB/s</p> <p>Passmark PerformanceTest 9.0 Build 1029 CPU Mark:3442.2 Memory Mark:2106.2</p> <p>3DMark for Windows(V 2.6.6238)3times Cloud Gate:4619 Ice Storm:24741 Sky diver:2562 Fire Strike:667</p>	Pass
10	DDR4-2666/Innodisk-M4U0-4GSSJCIK /SEC-K4A4G085WE-BTCD/4GB*	<p>CPU: Intel Core i5-8500 CPU @ 3.00GHz (QP5J) DIMM Slot: DIMM-1 Single Channel Test Summary: AIDA64 Cache and Memory Benchmark(V5.97.4600) SINGLE CHANNEL(DIMM-1) READ:20505 MB/s WRITE:19193 MB/s COPY:18220 MB/s</p> <p>Passmark PerformanceTest 9.0 Build 1029 CPU Mark:2179.2 Memory Mark:1708.2</p> <p>3DMark for Windows(V 2.6.6238)3times Cloud Gate:3862 Ice Storm:27761 Sky diver:3649 Fire Strike:994</p>	Pass

11	DDR4-2666 (ECC)/ADATA-AD4E2666316G19-BSSC/SEC-K4A8G085WC-BCT0/16GB*4	<p>CPU: Intel Xeon E-2124G CPU @ 3.40GHz (SR3WL) DIMM Slot: DIMM-1/2/3/4 Dual Channel Test Summary: AIDA64 Cache and Memory Benchmark(V5.97.4600) DUAL CHANNEL(DIMM-1/2/3/4) READ:36171 MB/s WRITE:40663 MB/s COPY:37304 MB/s</p> <p>Passmark PerformanceTest 9.0 Build 1029 CPU Mark:8535.1 Memory Mark:2903.5</p> <p>3DMark for Windows(V 2.6.6238)3times Cloud Gate:9251 Ice Storm:54507 Sky diver:4824 Fire Strike:1282</p>	Pass
12	DDR4-2133 (ECC) /Transcend-TS1GLH72V1H /SEC-K4A4G085WE-BCRC / 8GB*2	<p>CPU: Intel Xeon E-2176G CPU @ 3.70GHz (QNT8) DIMM Slot: DIMM-1/3 Dual Channel Test Summary: AIDA64 Cache and Memory Benchmark(V5.97.4600) DUAL CHANNEL(DIMM-1/3) READ:32763 MB/s WRITE:33239 MB/s COPY:32009 MB/s</p> <p>Passmark PerformanceTest 9.0 Build 1029 CPU Mark:16246.7 Memory Mark:3191.4</p> <p>3DMark for Windows(V 2.6.6238)3times Cloud Gate:11976 Ice Storm:53351 Sky diver:5125 Fire Strike:1317</p>	Pass
13	DDR4-2666 (ECC)/Innodisk-M4C0-4GSSLCIK/SEC-K4A4G085WE-BCT0/4GB*2	<p>CPU: Intel Xeon E-2176G CPU @ 3.70GHz (QNT8) DIMM Slot: DIMM-2/4 Dual Channel Test Summary: AIDA64 Cache and Memory Benchmark(V5.97.4600) DUAL CHANNEL(DIMM-2/4) READ:38866 MB/s WRITE:39967 MB/s COPY:33815 MB/s</p> <p>Passmark PerformanceTest 9.0 Build 1029 CPU Mark:16259.1 Memory Mark:3037.9</p> <p>3DMark for Windows(V 2.6.6238)3times Cloud Gate:11953 Ice Storm:53608 Sky diver:5159 Fire Strike:1311</p>	Pass
14	DDR4-2666 (ECC)/ADATA-AD4E2666316G19-BSSC/SEC-K4A8G085WC-BCT0/16GB*4	<p>CPU: Intel Xeon E-2176G CPU @ 3.70GHz (QNT8) DIMM Slot: DIMM-1/2/3/4 Dual Channel Test Summary: AIDA64 Cache and Memory Benchmark(V5.97.4600) DUAL CHANNEL(DIMM-1/2/3/4) READ:37572 MB/s WRITE:41720 MB/s COPY:38093 MB/s</p> <p>Passmark PerformanceTest 9.0 Build 1029 CPU Mark:14621.9 Memory Mark:3064.6</p> <p>3DMark for Windows(V 2.6.6238)3times Cloud Gate:11942 Ice Storm:56875 Sky diver:5240 Fire Strike:1364</p>	Pass