### RAMMon v2.4 Build: 1000 built with SysInfo v2.3 Build: 1002 PassMark (R) Software - [**www.passmark.com**](http://www.passmark.com)

Memory Summary For SPEAROFFICEASUS

Number of Memory Devices: 4 Total Physical Memory: 32711 MB (32768 MB)

Total Available Physical Memory: 20646 MB

Memory Load: 36%

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Item** | **Module #1** | **Module #2** | **Module #3** | **Module #4** |
| Ram Type | DDR3 | DDR3 | DDR3 | DDR3 |
| Maximum Clock Speed (MHz) | 800 (JEDEC) | 800 (JEDEC) | 800 (JEDEC) | 800 (JEDEC) |
| Maximum Transfer Speed (MHz) | DDR3-1600 | DDR3-1600 | DDR3-1600 | DDR3-1600 |
| Maximum Bandwidth (MB/s) | PC3-12800 | PC3-12800 | PC3-12800 | PC3-12800 |
| Memory Capacity (MB) | 8192 | 8192 | 8192 | 8192 |
| DIMM Temperature | N/A | N/A | N/A | N/A |
| Jedec Manufacture Name | Crucial Technology | Crucial Technology | Samsung | Samsung |
| Search Amazon.com | Search! | Search! | Search! | Search! |
| SPD Revision | 1.1 | 1.1 | 1.3 | 1.3 |
| Registered | No | No | No | No |
| ECC | No | No | No | No |
| On-Die ECC | No | No | No | No |
| DIMM Slot # | 1 | 2 | 3 | 4 |
| Manufactured | Week 13 of Year 2019 | Week 13 of Year 2019 | Week 41 of Year 2014 | Week 41 of Year 2014 |
| Module Part # | CT102464BD160B.M16 | CT102464BD160B.M16 | M378B1G73DB0-CK0 | M378B1G73DB0-CK0 |
| Module Revision | 0x0 | 0x0 | 0x0 | 0x0 |
| Module Serial # | 0xE900000B | 0xE9000022 | 0x23DA187C | 0x23DA1879 |
| Module Manufacturing Location | 0 | 0 | 1 | 1 |
| # of Row Addressing Bits | 16 | 16 | 16 | 16 |
| # of Column Addressing Bits | 10 | 10 | 10 | 10 |
| # of Banks | 8 | 8 | 8 | 8 |
| # of Ranks | 2 | 2 | 2 | 2 |
| Device Width in Bits | 8 | 8 | 8 | 8 |
| Bus Width in Bits | 64 | 64 | 64 | 64 |
| Module Voltage | 1.5V, 1.35V | 1.5V, 1.35V | 1.5V | 1.5V |
| CAS Latencies Supported | 5 6 7 8 9 10 11 | 5 6 7 8 9 10 11 | 6 7 8 9 10 11 | 6 7 8 9 10 11 |
| Timings @ Max Frequency (JEDEC) | 11-11-11-28 | 11-11-11-28 | 11-11-11-28 | 11-11-11-28 |
| Maximum frequency (MHz) | 800 | 800 | 800 | 800 |
| Maximum Transfer Speed (MHz) | DDR3-1600 | DDR3-1600 | DDR3-1600 | DDR3-1600 |
| Maximum Bandwidth (MB/s) | PC3-12800 | PC3-12800 | PC3-12800 | PC3-12800 |
| Minimum Clock Cycle Time, tCK (ns) | 1.250 | 1.250 | 1.250 | 1.250 |
| Minimum CAS Latency Time, tAA (ns) | 13.125 | 13.125 | 13.125 | 13.125 |
| Minimum RAS to CAS Delay, tRCD (ns) | 13.125 | 13.125 | 13.125 | 13.125 |
| Minimum Row Precharge Time, tRP (ns) | 13.125 | 13.125 | 13.125 | 13.125 |
| Minimum Active to Precharge Time, tRAS (ns) | 35.000 | 35.000 | 35.000 | 35.000 |
| Minimum Row Active to Row Active Delay, tRRD (ns) | 6.000 | 6.000 | 6.000 | 6.000 |
| Minimum Auto-Refresh to Active/Auto-Refresh Time, tRC (ns) | 48.125 | 48.125 | 48.125 | 48.125 |
| Minimum Auto-Refresh to Active/Auto-Refresh Command Period, tRFC (ns) | 260.000 | 260.000 | 260.000 | 260.000 |
|  |  |  |  |  |
| DDR3 Specific SPD Attributes |  |  |  |  |
| Write Recovery Time, tWR (ns) | 15.000 | 15.000 | 15.000 | 15.000 |
| Internal Write to Read Command Delay, tWTR (ns) | 7.500 | 7.500 | 7.500 | 7.500 |
| Internal Read to Precharge Command Delay, tRTP (ns) | 7.500 | 7.500 | 7.500 | 7.500 |
| Minimum Four Activate Window Delay, tFAW (ns) | 30.000 | 30.000 | 30.000 | 30.000 |
| Maximum Activate Window in units of tREFI | 0 | 0 | 0 | 0 |
| RZQ / 6 Supported | Yes | Yes | Yes | Yes |
| RZQ / 7 Supported | Yes | Yes | Yes | Yes |
| DLL-Off Mode Supported | Yes | Yes | Yes | Yes |
| Maximum Operating Temperature Range (C) | 0-95 | 0-95 | 0-95 | 0-95 |
| Refresh Rate at Extended Operating Temperature Range | 2X | 2X | 2X | 2X |
| Auto-self Refresh Supported | No | No | No | No |
| On-die Thermal Sensor Readout Supported | No | No | No | No |
| Partial Array Self Refresh Supported | Yes | Yes | No | No |
| Thermal Sensor Present | No | No | No | No |
| Non-standard SDRAM Type | Standard Monolithic | Standard Monolithic | Standard Monolithic | Standard Monolithic |
| Maxium Activate Count (MAC) |  |  |  |  |
| Module Type | UDIMM | UDIMM | UDIMM | UDIMM |
| Module Height (mm) | 30 | 30 | 30 | 30 |
| Module Thickness (front), (mm) | 2 | 2 | 2 | 2 |
| Module Thickness (back), (mm) | 1 | 1 | 2 | 2 |
| Module Width (mm) | 133.5 | 133.5 | 133.5 | 133.5 |
| Reference Raw Card Used | Raw Card H Rev. 0 | Raw Card H Rev. 0 | Raw Card B Rev. 1 | Raw Card B Rev. 1 |
| DRAM Manufacture | Micron Technology | Micron Technology | Samsung | Samsung |