### RAMMon v2.4 Build: 1000 built with SysInfo v2.3 Build: 1002PassMark (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  |