

Adnacom S31 PCIe Gen3 Extension: Performance Test Results

GPU bandwidth (up to 500 m) was measured with a GeForce GTX 760 and the CUDA bandwidth test (32 MB transfers); see Table 1 and Table 2. SSD throughput (up to 1 km) was measured with CrystalDiskMark on a Samsung 970 EVO Plus 500 GB SSD; see Table 3. R34 is the Adnacom remote backplane in the S31 system; two cables form an x8 link and one cable an x4 link.

Summary: Two cables (x8) up to 100 m match a direct slot connection (about 51 Gbit/s); one cable (x4) delivers about half (25.8 Gbit/s). Over single-mode fiber, two cables reach about 37 Gbit/s at 150 m; one cable holds about 25.8 Gbit/s to 200 m, then falls to about 12 Gbit/s at 500 m and 6.3 Gbit/s (SSD read) at 1 km.

Table 1. Adnacom-S31 GPU Bandwidth with QSFP Active Optical Cable (AOC).

GTX 760	Device to Host	Host to Device
Direct (no extension), computer PCIe Gen3 x8 slot	51.39 Gbit/s	50.53 Gbit/s
Two 10 m cables , R34 PCIe Gen3 x8 slot	51.39 Gbit/s	50.77 Gbit/s
Two 100 m cables , R34 PCIe Gen3 x8 slot	50.84 Gbit/s	50.58 Gbit/s
One 10 m cable , R34 PCIe Gen3 x8 slot	25.79 Gbit/s	25.77 Gbit/s
One 100 m cable , R34 PCIe Gen3 x8 slot	25.79 Gbit/s	25.77 Gbit/s

Table 2. Adnacom-S31 GPU Bandwidth with Single-Mode QSFP and LC-LC Fiber Cable.

GTX 760	Device to Host	Host to Device
Two LC-LC 150 m cables , R34 PCIe Gen3 x8 slot	36.77 Gbit/s	32.28 Gbit/s
One LC-LC 150 m cable , R34 PCIe Gen3 x8 slot	25.79 Gbit/s	25.77 Gbit/s
One LC-LC 200 m cable , R34 PCIe Gen3 x8 slot	25.79 Gbit/s	22.83 Gbit/s
One LC-LC 250 m cable , R34 PCIe Gen3 x8 slot	23.58 Gbit/s	19.89 Gbit/s
One LC-LC 500 m cable , R34 PCIe Gen3 x8 slot	12.24 Gbit/s	11.84 Gbit/s

Table 3. Adnacom-S31 SSD Throughput with Single-Mode QSFP and LC-LC Fiber Cable.

Samsung 970 EVO Plus 500 GB SSD	Read	Write
One LC-LC 10 m cable , R34 PCIe Gen3 x4 slot	28.96 Gbit/s	24.88 Gbit/s
One LC-LC 100 m cable , R34 PCIe Gen3 x4 slot	28.61 Gbit/s	24.10 Gbit/s
One LC-LC 500 m cable , R34 PCIe Gen3 x4 slot	12.35 Gbit/s	9.52 Gbit/s
One LC-LC 750 m cable , R34 PCIe Gen3 x4 slot	8.40 Gbit/s	6.94 Gbit/s
One LC-LC 1 km cable , R34 PCIe Gen3 x4 slot	6.30 Gbit/s	5.42 Gbit/s

Test system information:

Gigabyte GA-Z170MX-Gaming5 (Intel Z170), Intel Core i3-6100 @ 3.70 GHz, 8 GB RAM, Windows 10, 256-byte PCIe payload.