

## SCSI Harbor Thermal Testing

- **Purpose**

- characterize drive thermal performance in Harbor hardware
- determine flow requirements for drives in Harbor hardware
- enable simplified method for designing system-level Harbor drive cooling systems

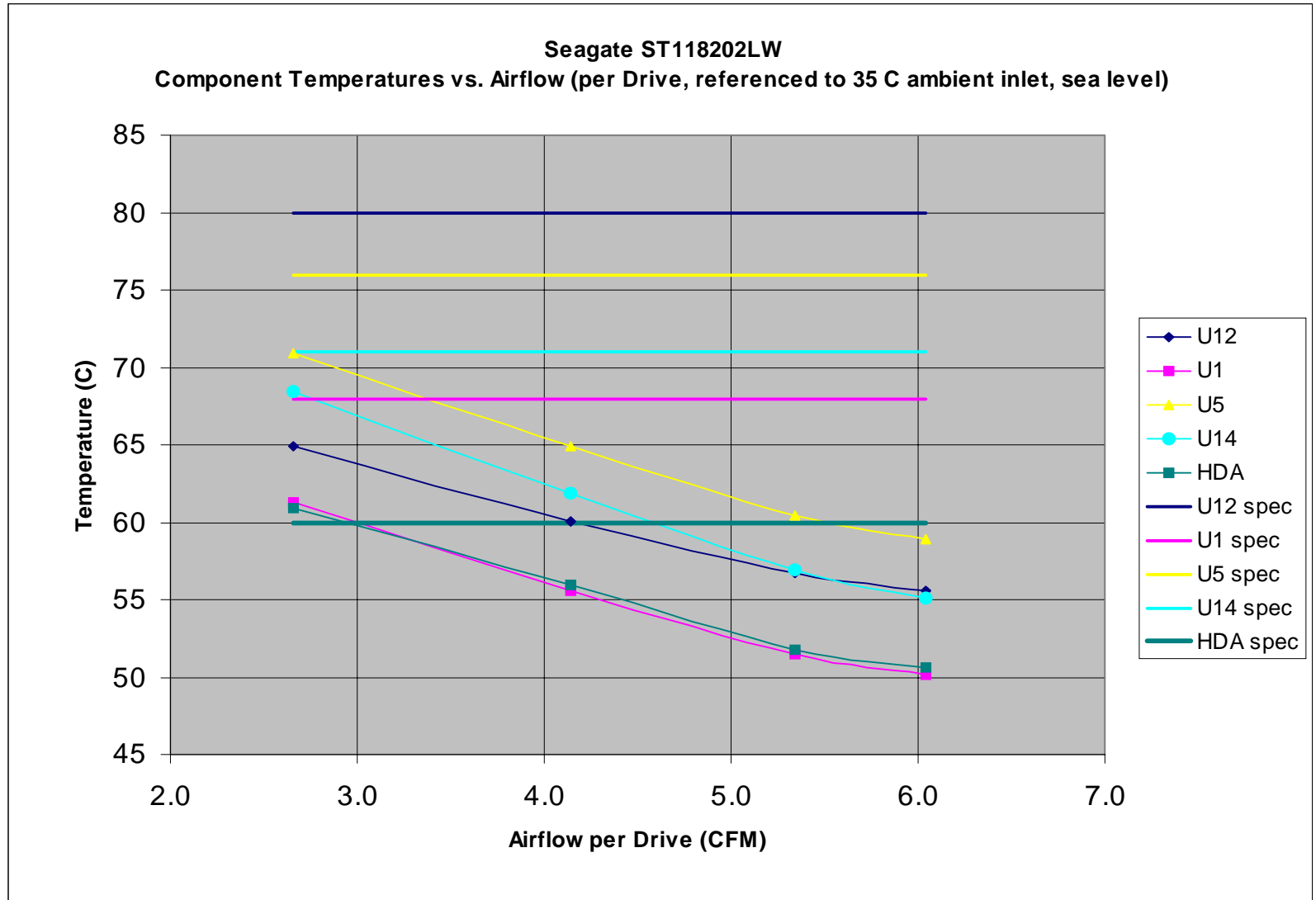
- **Method**

- see <ftp://ftp.scsita.org/pub/harbor/99s003r1.pdf>
- flow rates of 13, 23 and 30 CFM for 5 drives

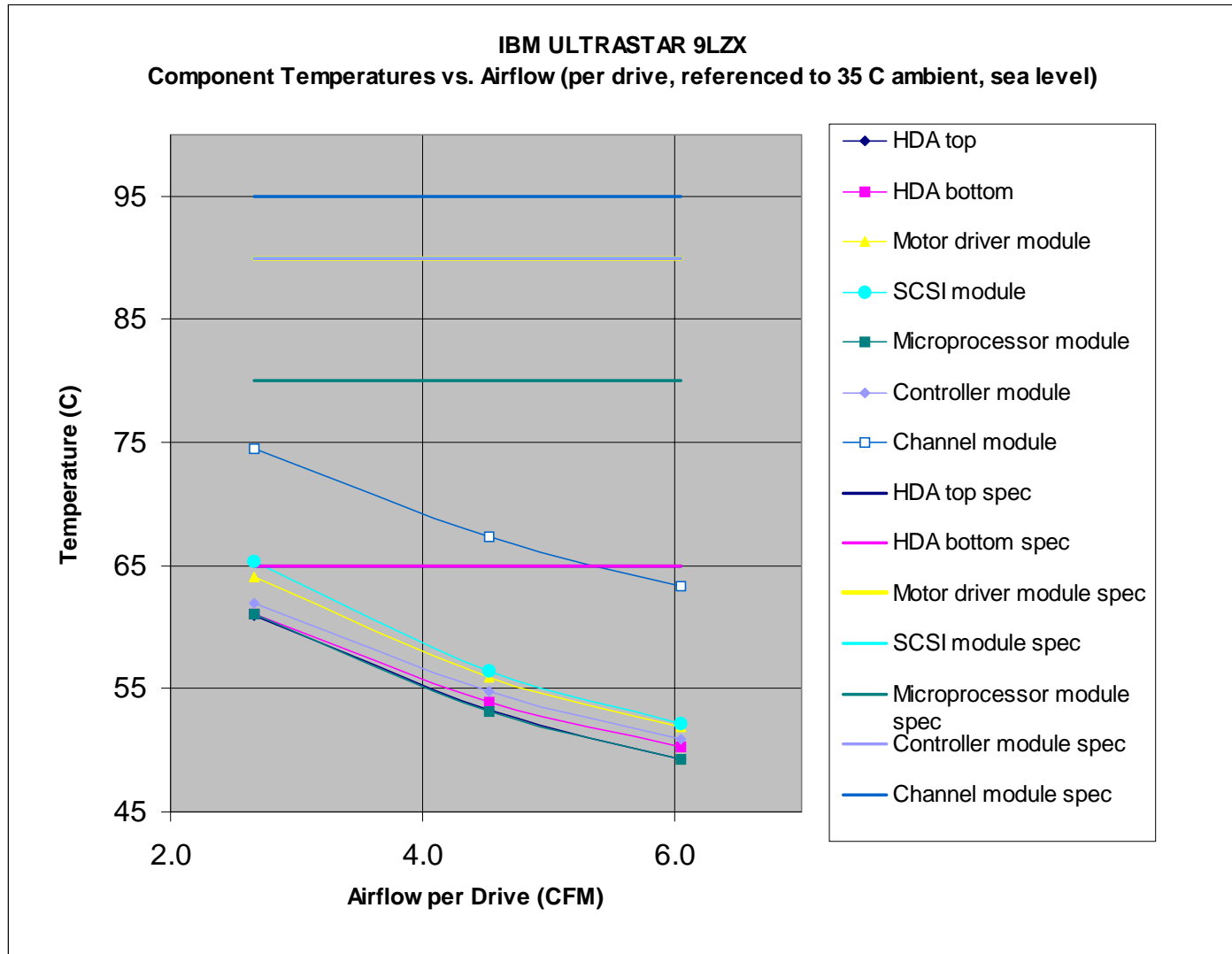
- **Drives tested thus far**

- Seagate ST118202LW (1.6")
- IBM ULTRASTAR 9LZX (1.6")
- Seagate ST318203LW (1.0")
- IBM ULTRASTAR 36XP (1.6")

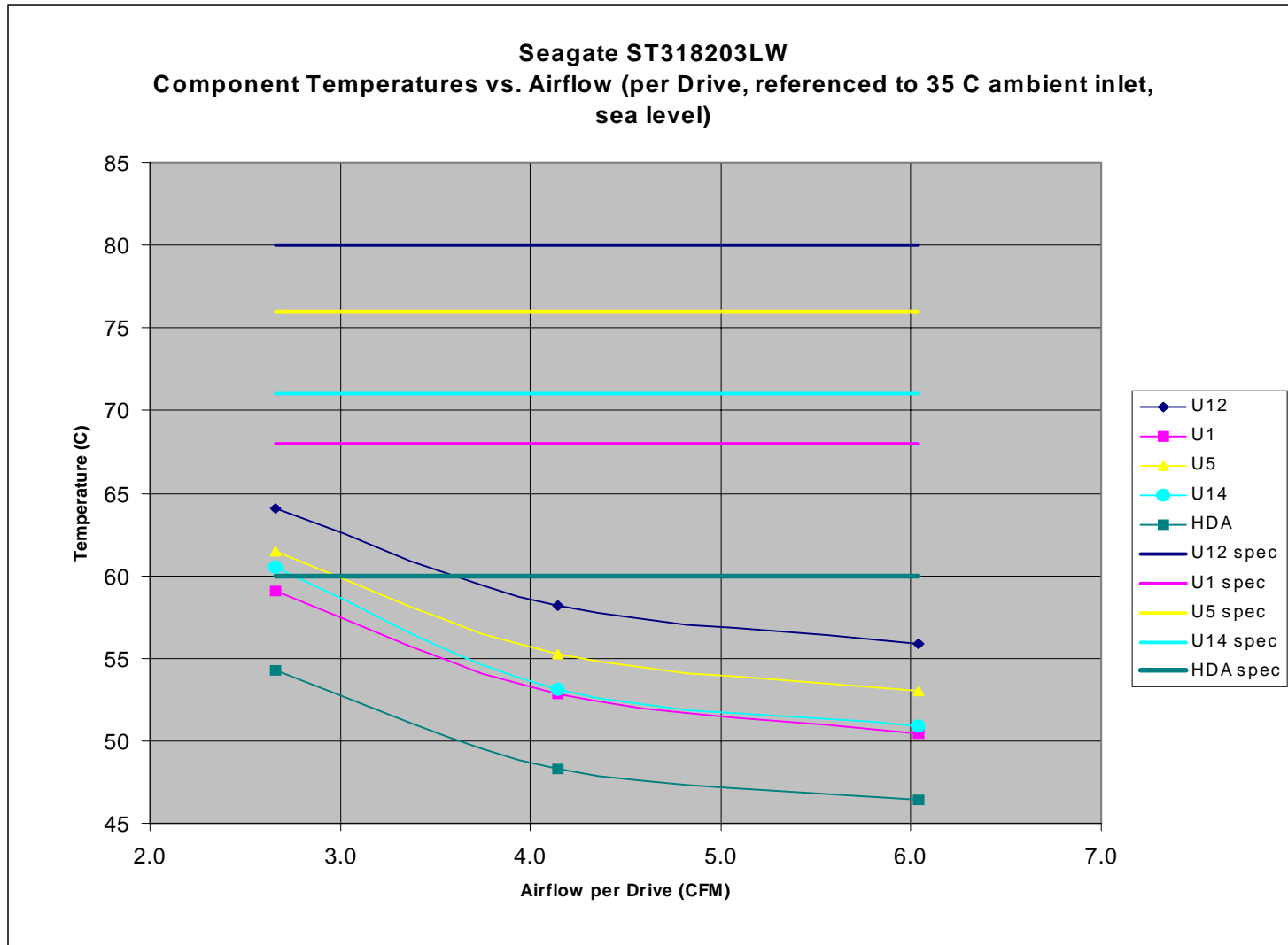
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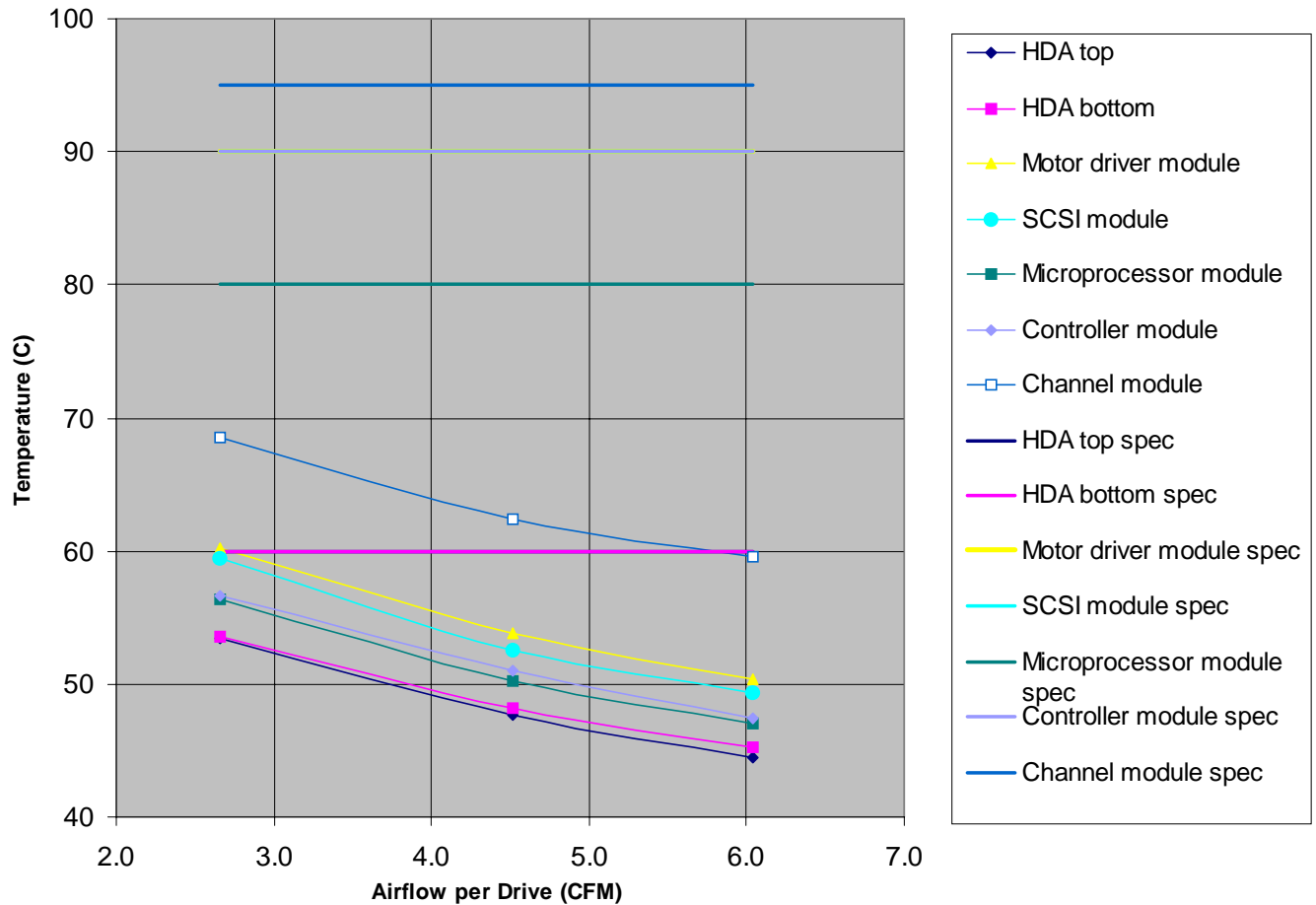


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IBM ULTRASTAR ULTRASTAR 36XP  
Component Temperatures vs. Airflow (per drive, referenced to 35 C ambient, sea level)



## SCSI Harbor Thermal Testing

- **Airflow required to cool tested drives**
  - based on component closest to specification
  - in all cases HDA temperature is driving component
  - 1.0” drive flow rates need verification on airflow measurement system

Vendor	Model	Size (in)	Ambient Temperature (°C)		
			35	40	45
Seagate	ST118202LW	1.6	3.0	4.4	>6.0
	ST318203LW	1.0	~2.0	~2.5	3.6
IBM	ULTRASTAR 9LZX	1.6	~2.0	2.8	4.1
	ULTRASTAR 36XP	1.6	<2.0	~2.3	3.8

## SCSI Harbor Thermal Testing

- **Plans**
  - **Collect and summarize data for remaining drives**
  - **Characterize thermal performance with mock backplane in place for select drives**
  - **Test airflow performance of 1” dock/wrappers**
  - **Characterize airflow impedance with reference backplane and Harbor hardware**
  - **Include component temperature variations in analysis**
- **Future usage of data**
  - **enable sizing of cooling systems for Harbor drives in docks**

# Backup



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