

LIGO E-Document Number: **E1000170-v1**

Sample Test:

Material under test:		Vishay TSTS7100 IR-LED		
units		100	each	
absorption	0.620203	±	0.231848724	ppm/yr
scatter	5.916686	±	5.55435307	ppm/yr
max. normalized absorption			1.08E-02	ppm/yr/unit
max. normalized scatter			1.70E-01	ppm/yr/unit
test turbopump speed (liter/s)			24.39157403	torr/liter/sec

1 sigma
1 sigma
2 sigma
2 sigma

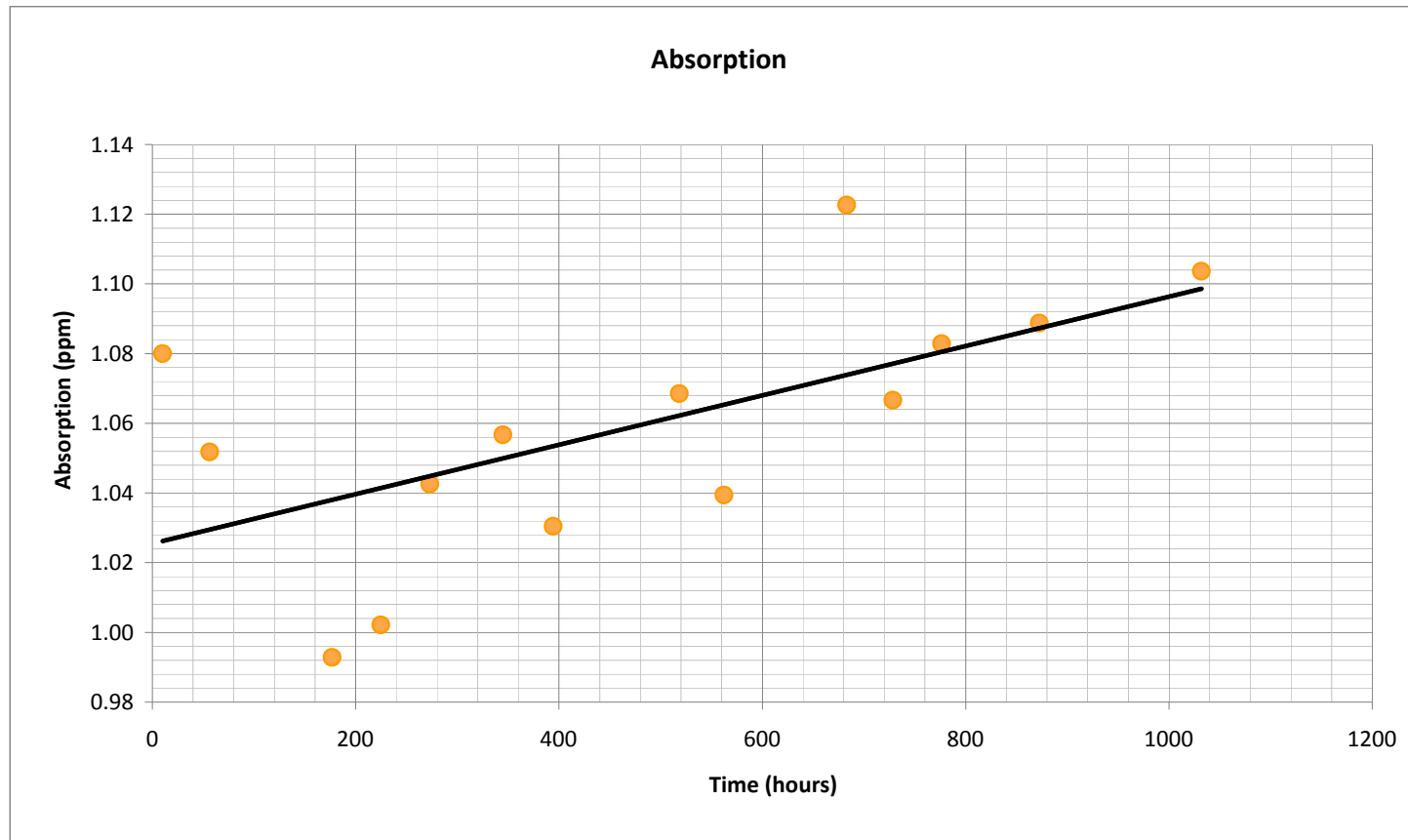
Scaled to LIGO:

LIGO Vacuum Volume	Vertex	LHO Diagonal	End	Comments
Quantity (units)	96	116	22	see E1000042 for B-OSEM counts; one IR-LED per B-OSEM
LIGO ion pumping speed (liter/s)	6800	6800	1700	see E0900398 or PSI V049-1-078 for pump rates
pumping speed ratio (test/LIGO)	0.0036	0.0036	0.0143	does not include cryo-pump and effective pumping from the Beam Tube
max. absorption (ppm/yr)	0.004	0.005	0.003	* Limit is < 0.02 ppm/yr for a single source
max. scatter (ppm/yr)	0.059	0.071	0.054	* Limit is < 0.2 ppm/yr for a single source

* The overall limit on contamination loss on optics for AdL is < 0.5 ppm/yr absorption and < 4 ppm/yr scatter from all sources, per Table 4 of the COC Design Requirements Document (T000127-v1). It is assumed that ~20 sources could contribute.

Test Material/Assy./Device: **Vishay TSTS7100 IR-LED**

Absorption fitting			
Slope	7.07994E-05	1.02553289	Y-intercept
Standard Error	2.64667E-05	0.014914934	Standard error
r_2	0.373557885	0.02998125	sey
F	7.155800219	12	d_f
ss_{reg}	0.006432172	0.010786504	ss_{resid}
Absorption change rate (ppm/yr)		\pm sigma (ppm/yr)	
0.6		0.2	



Test Material/Assy./Device: **Vishay TSTS7100 IR-LED**

Total loss fitting			
Slope	0.000675421	144.6231661	Y-intercept
Standard Error	0.000634059	0.357314058	Standard error
r_2	0.086391114	0.718254742	sey
F	1.134723391	12	d_f
ss_{reg}	0.585392308	6.190678494	ss_{resid}
Total loss change rate (ppm/yr)		\pm sigma (ppm/yr)	
5.9		5.6	

