

LIGO E-Document Number: **E1000198-v1**

Sample Test:

Material under test:		BOSEM Optek OP232 & Centronics BPX65		
units		40	pairs	40 emitters and 40 receivers; a pair are used in each BOSEM assemb
absorption	-0.11781 ±	0.168598898	ppm/yr	1 sigma
scatter	0.261424 ±	0.492510494	ppm/yr	1 sigma
max. normalized absorption		5.48E-03	ppm/yr/unit	2 sigma
max. normalized scatter		3.12E-02	ppm/yr/unit	2 sigma
test turbopump speed (liter/s)		8	torr/liter/sec	small ion pump

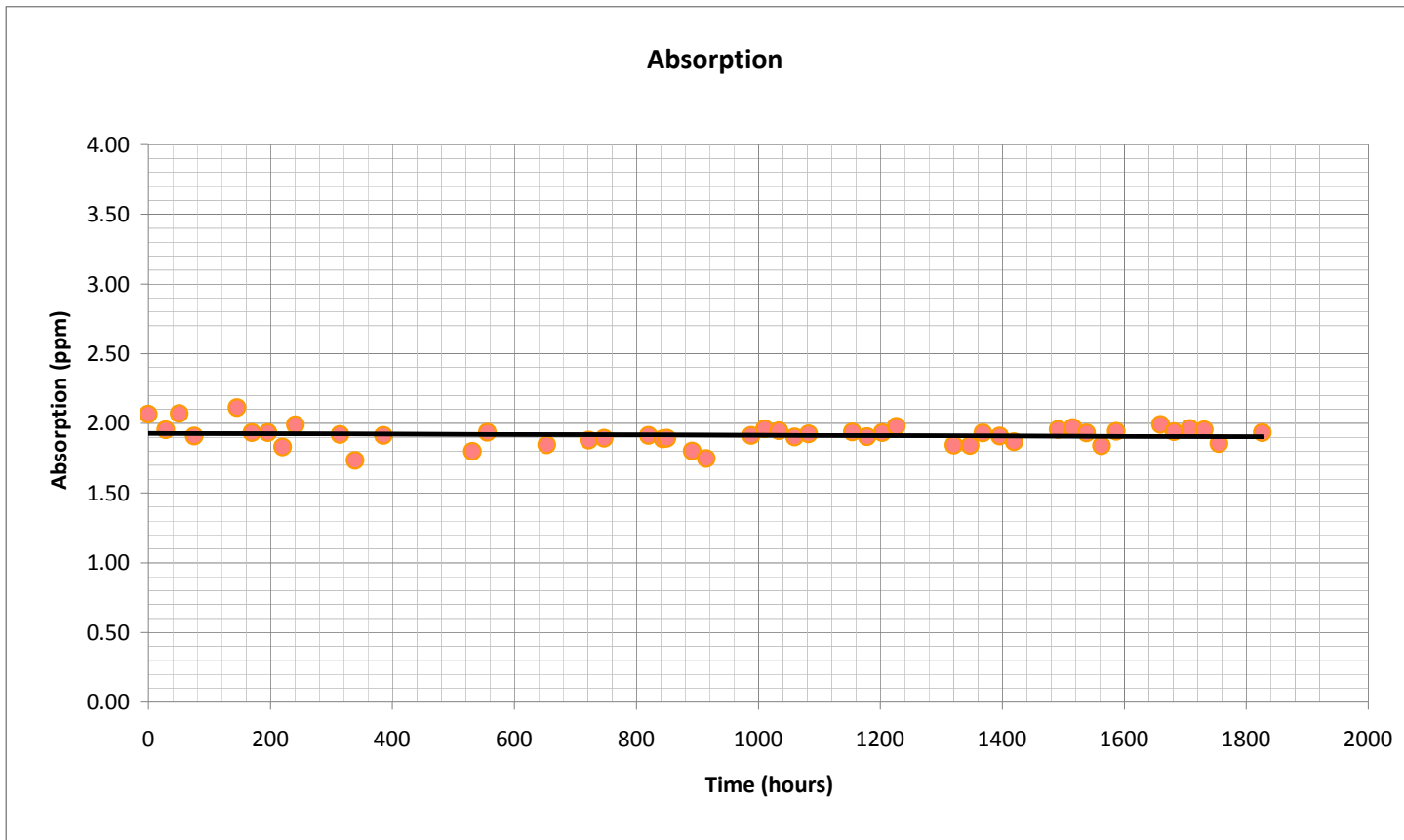
Scaled to LIGO:

LIGO Vacuum Volume	Vertex	LHO Diagonal	End	Comments
Quantity (units)	134	154	22	see E1000042 for B-OSEM counts
LIGO ion pumping speed (liter/s)	6800	6800	1700	see E0900398 or PSI V049-1-078 for pump rates
pumping speed ratio (test/LIGO)	0.0012	0.0012	0.0047	does not include cryo-pump and effective pumping from the Beam Tube
max. absorption (ppm/yr)	0.001	0.001	0.001	* Limit is < 0.02 ppm/yr for a single source
max. scatter (ppm/yr)	0.005	0.006	0.003	* 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 significant sources could contribute.](#)

Test Material/Assy./Device: **BOSEM Optek OP232 & Centronics BPX65**

Absorption fitting			
Slope	-1.34483E-05	1.927608951	Y-intercept
Standard Error	1.92464E-05	0.021120796	Standard error
r_2	0.010733328	0.072988333	sey
F	0.488240217	45	d_f
ss_{reg}	0.002601001	0.239728357	ss_{resid}
Absorption change rate (ppm/yr)		\pm sigma (ppm/yr)	
-0.12		0.17	



Test Material/Assy./Device: **BOSEM Optek OP232 & Centronics BPX65**

Total loss fitting			
Slope	2.98429E-05	149.4869226	Y-intercept
Standard Error	5.62227E-05	0.06218918	Standard error
r_2	0.006362603	0.213667632	sey
F	0.281747158	44	d_f
SS_{reg}	0.012862844	2.008769715	SS_{resid}
Total loss change rate (ppm/yr)		\pm sigma (ppm/yr)	
0.26		0.49	

