

LIGO E-Document Number: **E1800210**

Sample Test:

Material under test:		Euclid			
units			1	assembly	
absorption	0.19479	±	0.063328199	ppm/yr	1 sigma
scatter	-1.37685	±	1.439786513	ppm/yr	1 sigma
max. normalized absorption			3.21E-01	ppm/yr/unit	2 sigma
max. normalized scatter			1.50E+00	ppm/yr/unit	2 sigma
test turbopump speed (liter/s)			24.39157403	torr/liter/sec	

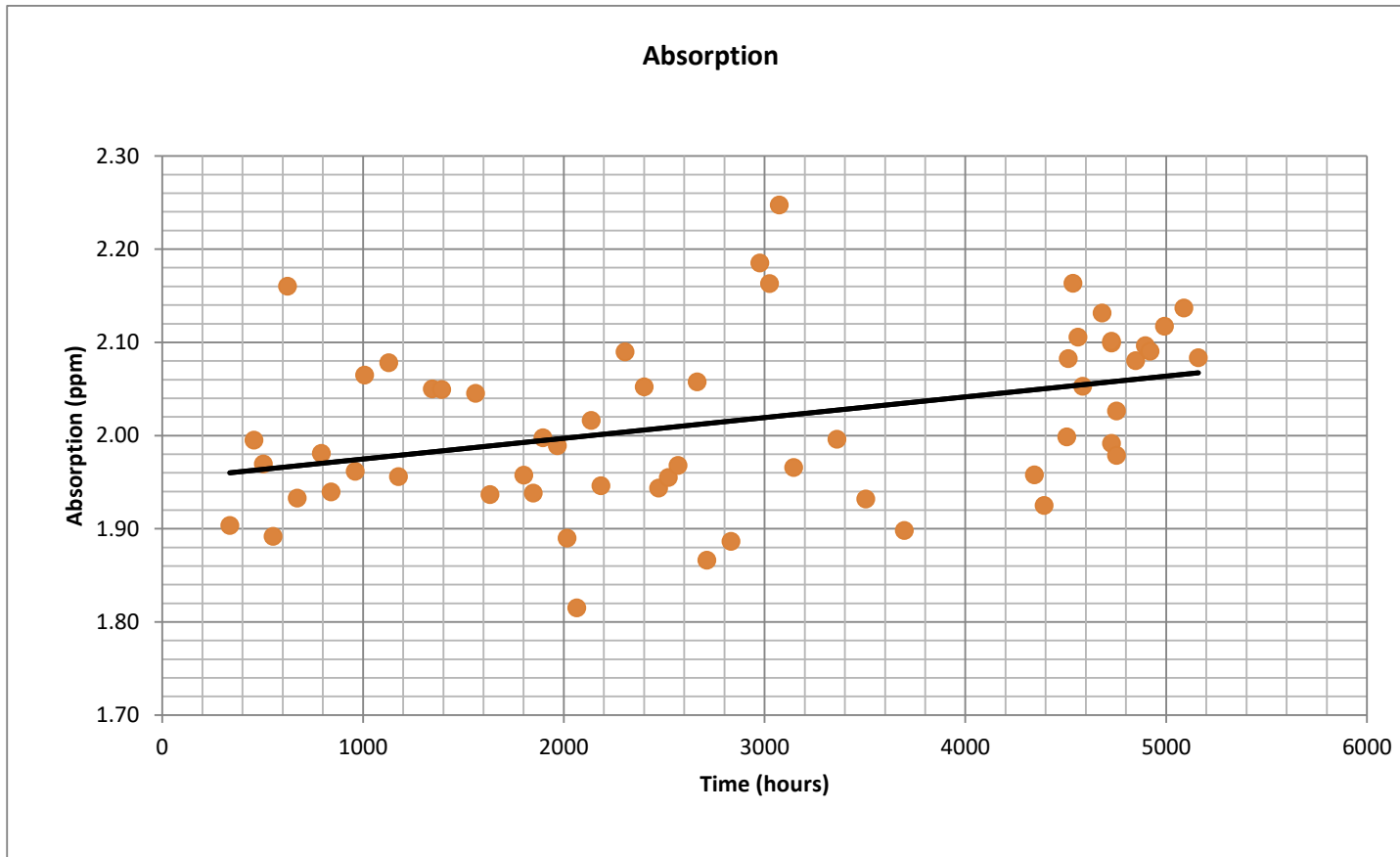
Scaled to LIGO:

LIGO Vacuum Volume	Vertex	LHO Diagonal	End	Comments
Quantity (units)	18		6	
LIGO ion pumping speed (liter/s)	6800	6800	1700	<a href="#">see E0900398 or PSI V049-1-078 for pump rates</a>
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)	0.021	0.000	0.028	* Limit is < 0.02 ppm/yr for a single source
max. scatter (ppm/yr)	0.097	0.000	0.129	* 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.](#)

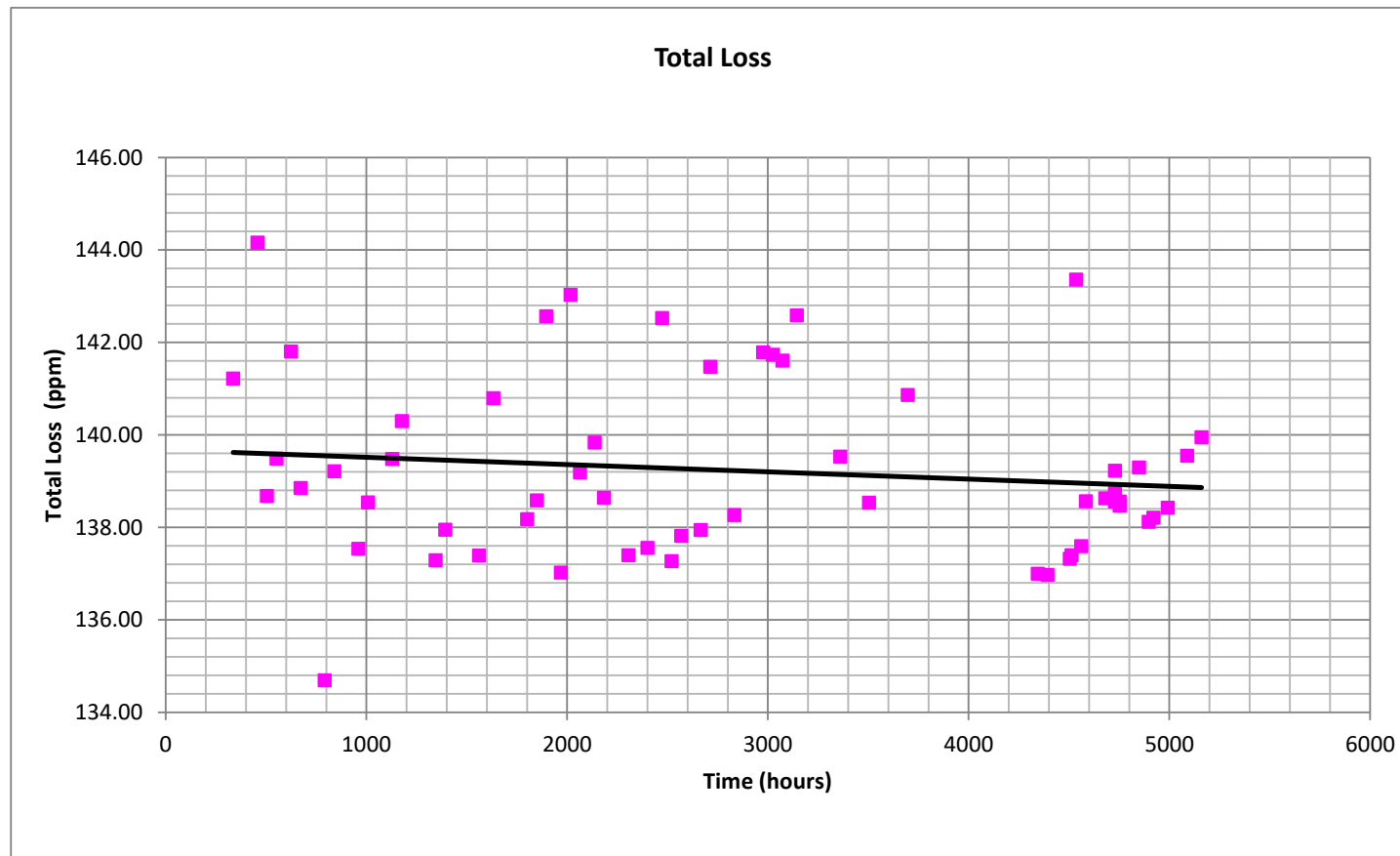
Test Material/Assy./Device: **Euclid**

Absorption fitting			
Slope	2.22363E-05	1.952532969	Y-intercept
Standard Error	7.22925E-06	0.023251118	Standard error
$r_2$	0.144529615	0.084624303	sey
F	9.461062094	56	$d_f$
$SS_{reg}$	0.067753246	0.401031273	$SS_{resid}$
Absorption change rate (ppm/yr)		$\pm$ sigma (ppm/yr)	
0.2		0.1	



Test Material/Assy./Device: **Euclid**

Total loss fitting			
Slope	-0.000157175	139.6743068	Y-intercept
Standard Error	0.000164359	0.528621466	Standard error
$r_2$	0.016067758	1.923960141	sey
F	0.914488231	56	$d_f$
$SS_{reg}$	3.385090325	207.290867	$SS_{resid}$
Total loss change rate (ppm/yr)		$\pm$ sigma (ppm/yr)	
-1.4		1.4	



	Time (hr)	Absorption (ppm)	Total Loss (ppm)	Euclid
1	336.375	1.90	141.22	
2	456.4375	2.00	144.16	
3	504.3125	1.97	138.68	
4	552.3125	1.89	139.49	
5	624.34375	2.16	141.80	
6	672.34375	1.93	138.85	
7	792.3333333	1.98	134.70	
8	840.3333333	1.94	139.21	
9	960.34375	1.96	137.54	
10	1008.34375	2.06	138.54	
11	1128.333333	2.08	139.48	
12	1176.34375	1.96	140.30	
13	1344.416667	2.05	137.29	
14	1392.354167	2.05	137.95	
15	1560.333333	2.05	137.39	
16	1632.333333	1.94	140.79	
17	1800.395833	1.96	138.18	
18	1848.354167	1.94	138.59	
19	1896.333333	2.00	142.57	
20	1968.447917	1.99	137.02	
21	2016.34375	1.89	143.03	
22	2064.333333	1.82	139.19	
23	2136.354167	2.02	139.84	
24	2184.333333	1.95	138.64	
25	2304.333333	2.09	137.40	
26	2400.40625	2.05	137.56	
27	2472.4375	1.94	142.53	
28	2520.333333	1.96	137.27	
29	2568.375	1.97	137.82	
30	2664.385417	2.06	137.95	
31	2712.375	1.87	141.48	
32	2832.354167	1.89	138.27	
33	2976.333333	2.19	141.79	
34	3024.354167	2.16	141.74	
35	3072.333333	2.25	141.61	
36	3144.354167	1.97	142.58	
37	3360.395833	2.00	139.53	
38	3504.416667	1.93	138.53	
39	3696.375	1.90	140.86	
40	4344.427083	1.96	137.00	
41	4392.458333	1.92	136.97	
42	4504.5	2.00	137.32	
43	4512.359722	2.08	137.40	
44	4536.3125	2.16	143.36	
45	4560.354167	2.11	137.60	
46	4584.385417	2.05	138.57	

47	4680.34375	2.13	138.63
48	4728.354167	2.10	138.74
49	4728.511806	1.99	139.23
50	4728.541667	2.10	138.56
51	4752.399306	2.03	138.47
52	4752.655556	1.98	138.56
53	4848.354167	2.08	139.30
54	4896.404861	2.10	138.12
55	4920.483333	2.09	138.21
56	4992.333333	2.12	138.43
57	5088.375	2.14	139.55
58	5160.333333	2.08	139.95
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60	#N/A	#N/A	#N/A
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