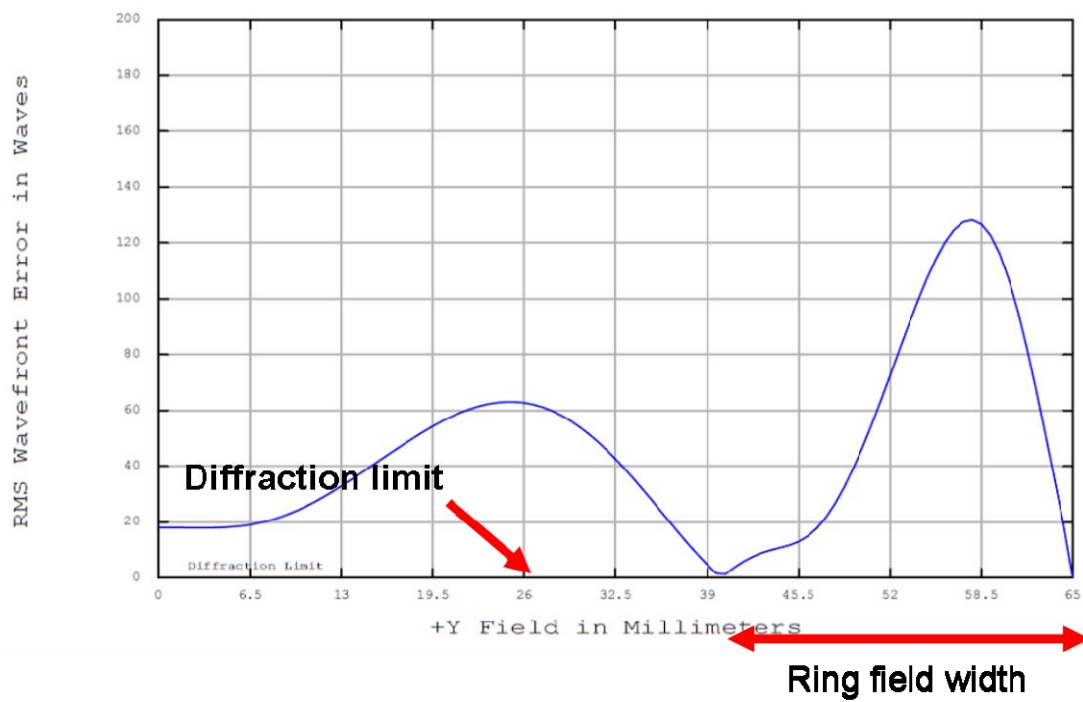
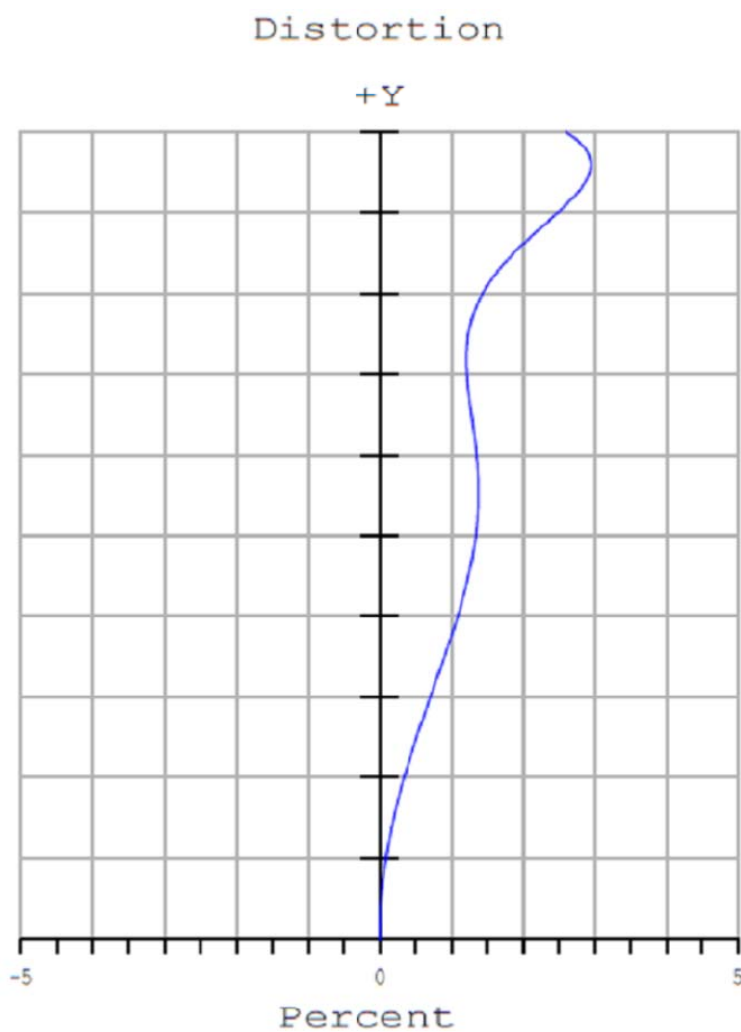


Exhibit 1047



RMS wavefront error (157 nm waves) for exhibit 1047

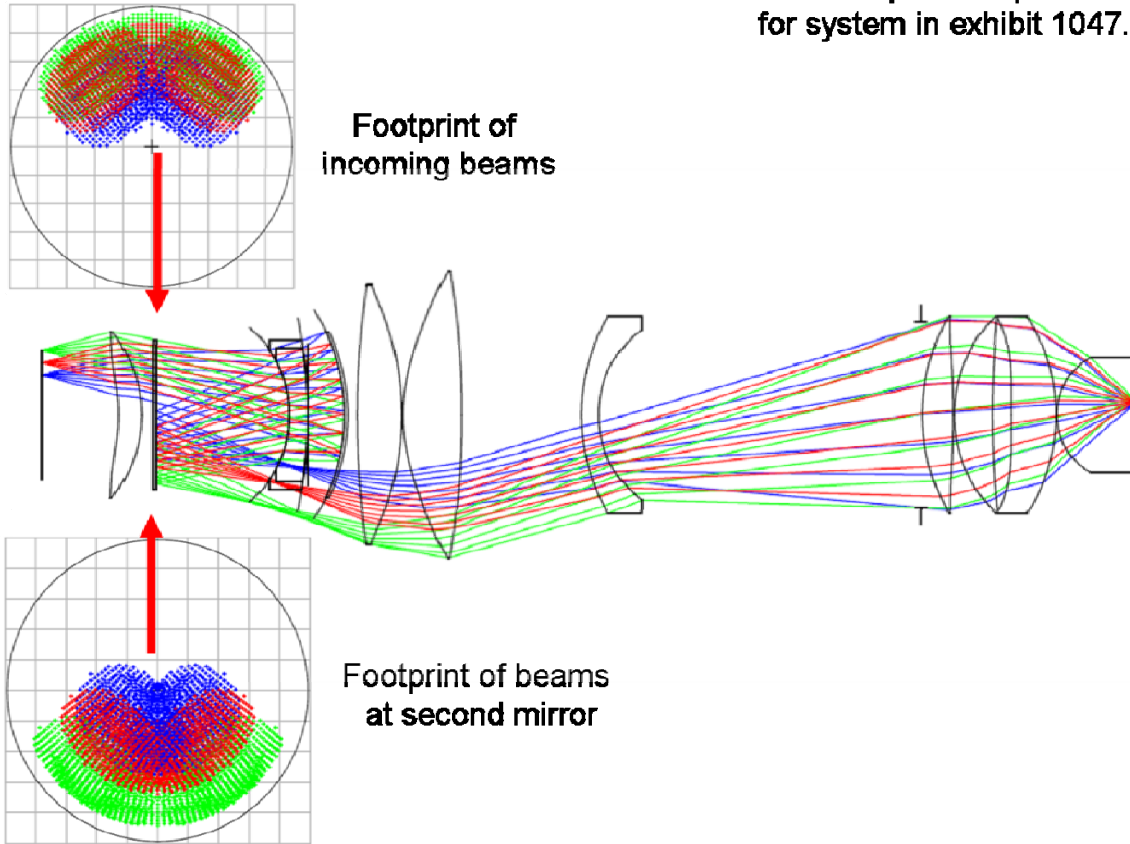
Exhibit 1047



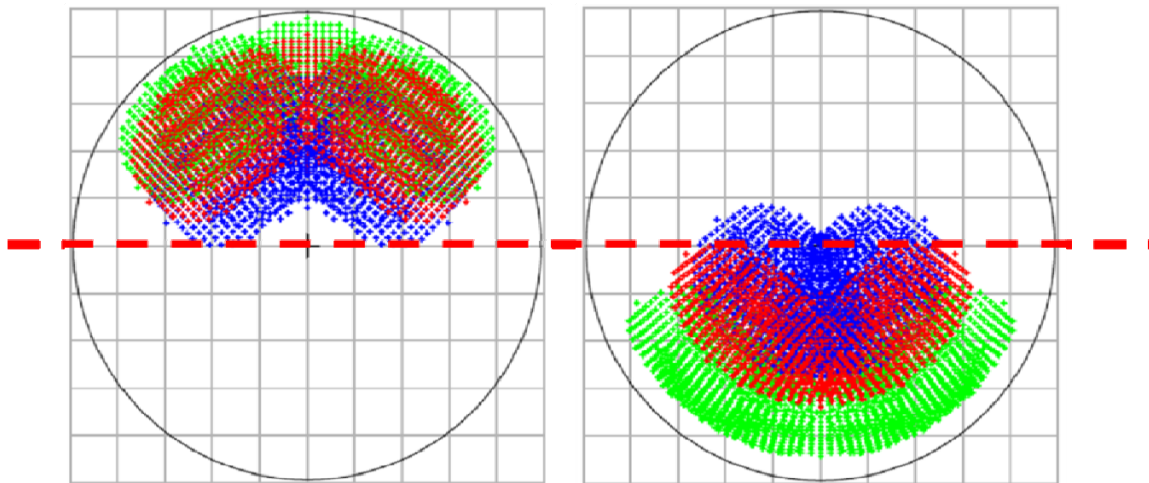
Distortion plot for system in exhibit 1047.
Maximum scale is 5%

Exhibit 1047

Beam separation problem
for system in exhibit 1047.



Beam separation problem
Incoming blue beams are obstructed by flat second mirror

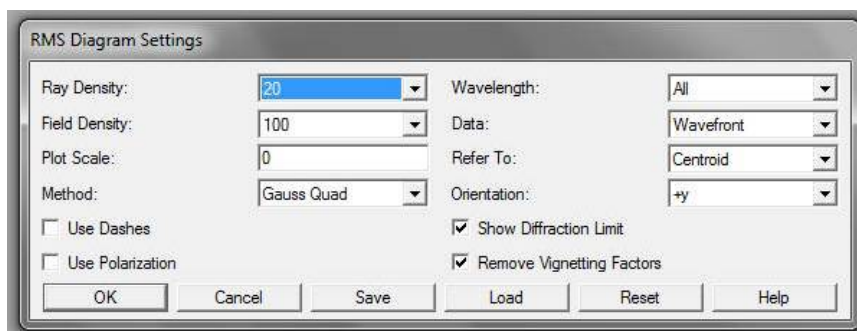


Footprint of incoming beams

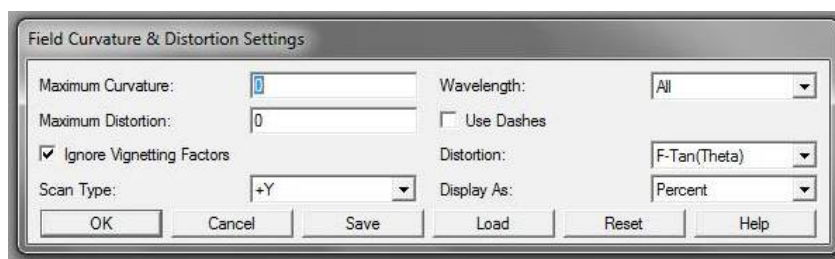
Footprint of beams at second mirror

Analysis of Exhibit 1047

- 1) Analysis performed with Zemax 13 Release 2 SP1 Professional.
- 2) The lens prescription as input in Zemax is given below.
- 3) $NAO = 0.255$
- 4) Ray aiming to the aperture stop was used.
- 5) RMS wavefront error was generated with the settings:



- 6) Distortion plot was generated with the settings:



- 7) Foot print diagram analysis was produced with fields 40 mm, 52.5 mm, and 62.5 mm, and for cross sections at -45, -30, 0, 30, and 45 degrees in azimuth and at the plane of the second mirror.

SURFACE DATA SUMMARY:

Surf Comment	Type	Radius	Thickness	Glass	Diameter	Conic
OBJ STANDARD		Infinity	77.71728		130	0
1	EVENASPH	-156.8994	22.82591	1.560000, 0.000000	166.1415	0
2	EVENASPH	-129.5284	15		166.4718	0
3	EVENASPH	Infinity	134.2715		150	0
4	EVENASPH	-114.6819	18	1.560000, 0.000000	130.3683	0
5	EVENASPH	-502.8081	37.80548		149.0368	0
6	EVENASPH	-190.6268	-37.80548	MIRROR	166.0333	0
7	STANDARD	Infinity	0		140.1094	0
8	EVENASPH	-502.8081	-18	1.560000, 0.000000	133.7796	0
9	EVENASPH	-114.6819	-134.2715		108.4014	0
10	EVENASPH	Infinity	134.2715	MIRROR	150	0
11	EVENASPH	-114.6819	18		174.5503	0
12	EVENASPH	-502.8081	37.80548		194.3468	0
13	EVENASPH	-190.6268	12		209.2644	0
14	EVENASPH	866.815	45	1.560000, 0.000000	258.6567	0
15	EVENASPH	-311.9878	1		260.9245	0
16	EVENASPH	168.8606	60.02651	1.560000, 0.000000	288.0668	0
17	EVENASPH	-872.2497	120.149		287.607	0
18	EVENASPH	190.0465	18	1.560000, 0.000000	197.7989	0
19	EVENASPH	123.0113	325.385		171.2636	0
STO STANDARD		Infinity	1		186.5019	0
21	EVENASPH	194.5141	30.95637	1.560000, 0.000000	197.5057	0
22	EVENASPH	-651.1728	1		197.4844	0
23	EVENASPH	136.0577	38.34687	1.560000, 0.000000	198.0717	0
24	EVENASPH	893.5049	19.80467		197.3614	0
25	EVENASPH	5707.356	44.93247	1.560000, 0.000000	198.0623	0
26	EVENASPH	-179.5748	1		195.1913	0
27	EVENASPH	70.61113	76.61678	1.560000, 0.000000	115.4912	0
28	EVENASPH	Infinity	0.05	1.370000, 0.000000	33.46615	0
IMA STANDARD		Infinity	1.370000, 0.000000		33.34479	0

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