Table 2. Foldscope Analytical Model Parameter Summary Table.

Parameter	Functional Form in Optimized System	Parameter Values at Select Combinations of r,n					
		r = 1200	r = 500	r = 400	r = 150	r = 150	r = 100
		n = 1.517	n = 1.517	n = 1.517	n = 1.517	n = 1.77	n = 1.77
MAG	$MAG = \frac{2.5e5\mu m}{EFL} = (5e5\mu m)\cdot\frac{n-1}{n\cdot r}$	140	340	430	1140	1450	2180
BFL	$BFL = EFL - r = \frac{1}{2}\cdot\frac{r\cdot(2-n)}{n-1}$	561	234	187	70	22	15
RES	$RES = k_2\cdot f\cdot\left(\lambda^3\cdot\lvert s\rvert\right)^{1/4} = k_2\cdot\left(\frac{\lambda^3\cdot r\cdot n\cdot[n+(2-n)\cdot(2n-1)]}{128(n-1)^3}\right)^{1/4}$	1.90	1.52	1.44	1.13	0.86	0.77
nOAR	$nOAR = \frac{a}{r} = \frac{k_1}{r}\cdot\left(\frac{\lambda}{\lvert s\rvert}\right)^{1/4} = k_1\cdot\left(\frac{8\lambda\cdot n^3}{r\cdot(n-1)\cdot[n+(2-n)\cdot(2n-1)]}\right)^{1/4}$	0.294	0.366	0.387	0.495	0.510	0.565
OAR	$OAR = nOAR\cdot r = k_1\cdot\left(\frac{\lambda}{\lvert s\rvert}\right)^{1/4} = k_1\cdot\left(\frac{8\lambda\cdot n^3\cdot r^3}{(n-1)\cdot[n+(2-n)\cdot(2n-1)]}\right)^{1/4}$	353	183	155	74	77	56
EFL	$EFL = \frac{1}{2}\cdot\frac{n\cdot r}{(n-1)}$	1761	734	587	220	172	115
NA	$NA = \frac{2a\cdot(n-1)}{r\cdot n} = k_1\cdot\left(\frac{128\,\lambda\cdot(n-1)^3}{r\cdot n\cdot[n+(2-n)\cdot(2n-1)]}\right)^{1/4}$	0.200	0.249	0.264	0.337	0.444	0.491
FOV	$FOV = \frac{n\cdot a}{2(n-1)} = k_1\cdot\left(\frac{\lambda\cdot r^3\cdot n^7}{2(n-1)^5\cdot[n+(2-n)\cdot(2n-1)]}\right)^{1/4}$	518	268	227	109	88	65
DOF	$DOF = \frac{\lambda}{NA^2} = \frac{1}{k_1^2}\cdot\sqrt{\frac{\lambda\cdot r\cdot n\cdot[n+(2-n)\cdot(2n-1)]}{128(n-1)^3}}$	13.7	8.8	7.9	4.8	2.8	2.3
SR	$SR = e^{-1/8}$	0.8825	0.8825	0.8825	0.8825	0.8825	0.8825

Functional form and select numerical values for the following dependent parameters: Magnification (MAG), Back Focal Length (BFL), Resolution (RES), nOAR (Normalized Optimal Aperture Radius), OAR (Optimal Aperture Radius), Effective Focal Length (EFL), Numerical Aperture (NA), Field of View (FOV), Depth of Field (DOF), Strehl Ratio (SR). These are calculated for infinite "object" distance per analytical model RM2, with aperture radius $a = OAR = k_1(\lambda/s)^{1/4}$, $k_1 \cong 0.9321$, $k_2 \cong 0.7415$, and with aberration coefficient $s = -(n-1)[n+(2-n)(2n-1)]\big/(2rn)^3$. All calculations assume an incident wavelength of $\lambda = 0.55$ μm, and all specified distances are in units of μm. The indices of refraction n = 1.517 and n = 1.77 correspond to borosilicate glass and sapphire, respectively.

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