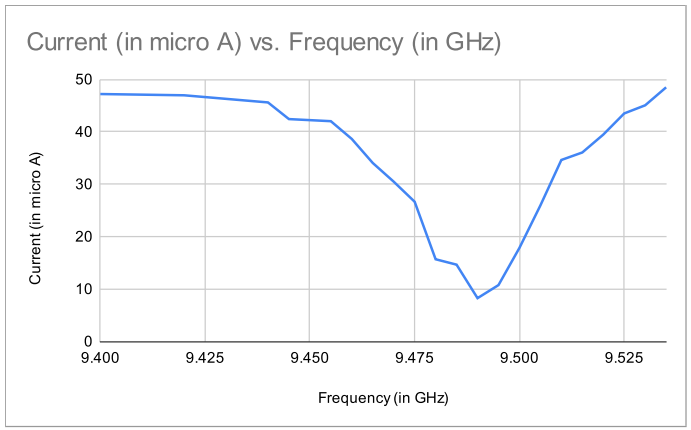
Experiment 1

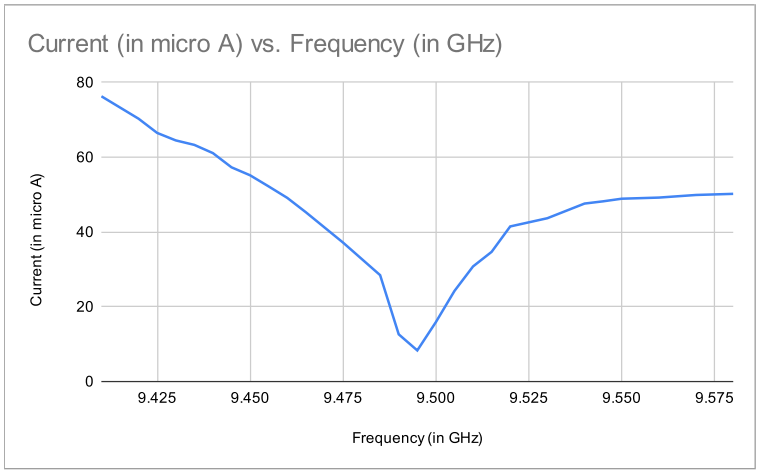
Reflector Voltage (in V)	Frequency (in GHz)	Current (in micro A)
164	9.4	47.2
	9.42	46.96
	9.44	45.6
	9.445	42.42
	9.455	42.02
	9.46	38.63
	9.465	34.05
	9.47	30.48
	9.475	26.65
	9.48	15.68
	9.485	14.65
	9.49	8.26
	9.495	10.75
	9.5	17.85
	9.505	25.95
	9.51	34.62
	9.515	36.05
	9.52	39.46
	9.525	43.5
	9.53	45.05
	9.535	48.48



Reflector Voltage (in V)	Frequency (in GHz)	Current (in micro A)
167	9.41	76.3
	9.42	70.3
	9.425	66.5
	9.43	64.5
	9.435	63.3
	9.44	61.1
	9.445	57.3
	9.45	55.17
	9.455	52.19
	9.46	49.13
	9.465	45.29
	9.475	37.18
	9.485	28.45
	9.49	12.62
	9.495	8.31
	9.5	15.89
	9.505	24.22
	9.51	30.78
	9.515	34.68
	9.52	41.48
	9.53	43.68
	9.54	47.6
	9.545	48.2
	9.55	48.9
	9.56	49.2
	9.57	49.9
	9.58	50.2

Reflector Voltage	Current (in micro A)	Frequency
167	33.52	9.49
166	37.77	9.485
165	78.7	9.485

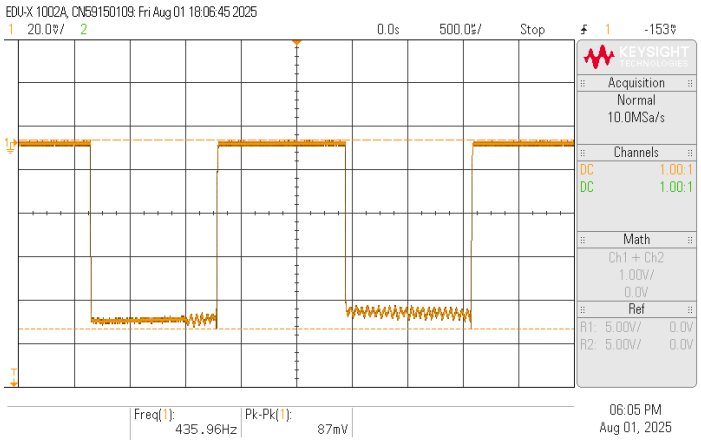
Reflector Voltage	Current (in micro A)	Frequency
190	32.08	9.495
180	23.89	9.46
136	25.2	9.5

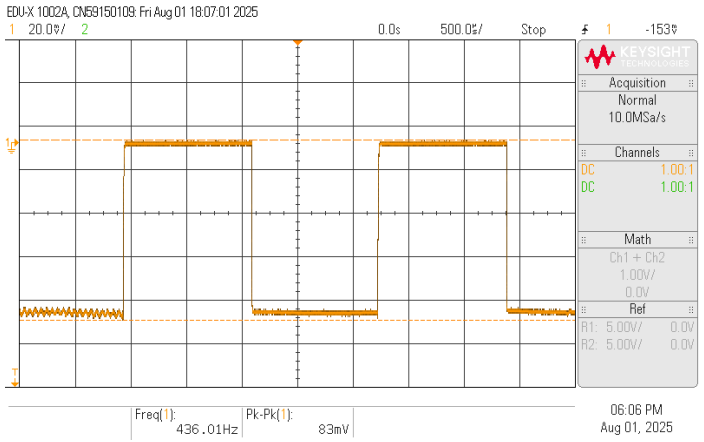


Experiment 2

Rep. Voltage	-250 V
Beam Current	18 mA
Beam Voltage	300 V
Frequency Meter	9.5 GHz
speed of light	3.00E+08

$$f = \frac{c}{\lambda_0} = c\sqrt{\frac{1}{\lambda_g^2} + \frac{1}{\lambda_c^2}}$$





d1 (in cm)	d2 (in cm)	lambda_g (in m)	lambda_c (in m)
11.55	13.91	0.0472	0.04572
13.91	16.3	0.0478	0.04572
16.3	18.5	0.044	0.04572
18.5	21.05	0.051	0.04572
		0.0475	0.04572
		Calculated frequency	Calculated Wavelength
		9.11E+09	3.29E-02

Error (in %)

4.105263158

Experiment 3

		Without Sample				
	No of minima	Total reading (R to L)	distance between two minima	Total Reading (L to R)	distance between two minima	
	1	9.04		9.17		9.105
	2	11.17	2.13	11.45	2.28	
	3	13.52	2.35	13.75	2.3	
	4	15.81	2.29	15.87	2.12	
			2.256666667		2.233333333	
Average distance between two consecutive minima		2.245				
	lambda_g	4.49		Wave length in vaccum is lam_0 = 3.202 cm		

1. Backelite Sample

No of minima	Total reading (R to L)	distance between two minima	Total Reading (L to R)	distance between two minima
1	8.37		8.33	
2	10.57	2.2	10.51	2.18
3	12.85	2.28	12.83	2.32
4	15.12	2.27	15.13	2.3
		2.25		2.266666667

Avg of first Min
8.35

epsilon_r = 4.49

2. Nylon Sample

No of minima	Total reading (R to L)	distance between two minima	Total Reading (L to R)	distance between two minima
1	8.25		8.17	
2	10.51	2.26	10.49	2.32

Avg of first Min
8.21

epsilon_r = 3.659

3. Teflon Sample

No of minima	Total reading (R to L)	distance between two minima	Total Reading (L to R)	distance between two minima
1	8.49		8.51	
2	10.75	2.26	10.61	2.1

Avg of first Min
8.5

epsilon_r = 5.12