KAUNAS UNIVERSITY OF TECHNOLOGY

FACULTY OF ELECTRICAL AND ELECTRONICS ENGINEERING

DEPARTMENT OF ELECTRONICS ENGINEERING

APPLIED ELECTRODYNAMICS

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Electromagnetic Wave Properties

Measurements With Different Mediums

Angle(º)	Free space (air)	Angle(º)	Lens (mV)	Angle(º)	Double slit plate (mV)
0	140	0	250	0	8
5	110	5	200	5	2
10	100	10	120	10	1
15	70	15	30	15	6
20	40	20	11	20	11
25	22	25	4	25	7
30	12	30	0.2	30	0.7
35	5.5	35	4	35	0.8
40	4	40	6	40	7.5
45	1.6	45	5.8	45	5
50	1.7	50	5.5	50	8
55	0.6	55	4.4	55	1.2
60	0.25	60	2	60	2.8
65	0.05	65	0.5	65	0.3
70	0.03	70	0.3	70	0.1
75	0.01	75	0.35	75	0.7
80	0.01	80	0.45	80	0.2
85	0.01	85	0.1	85	0.9
90	0.01	90	0.55	90	0.2

Measurement on Single Angle

Materials	mV
Horizontal polarized lens	155
Vertical polarized lens	2.8
Metal plate	0.5
Dielectric	70

Measurements with Prism

Peak	Voltage peaks Distance with origin (cm)
1º	2
2º	3.45
3º	5.2
4º	7.7
5º	8.1
6º	9.7
7º	11
8º	12.7

Distance between peaks (cm)	
(1-2)	1.45
(2-3)	1.75
(3-4)	2.5
(4-5)	0.4
(5-6)	1.6
(6-7)	1.3
(7-8)	1.7

Defraction Angle = 8º

Prism Angle = 22º

λ

3.43

Conclusion:

The objective of this lab to examine experimentally the phenomena of electromagnetic wave attenuaton, reflection,refraction and interferance of waves
firstly, we have measured free space attenuation using by turning horn antenna by 5 degree angle from 0 to 90 degree in order and we have examined a lineer loss after that we used lens on every angle, the voltage we get was highly increased because of the bending of the waves through horn antenna moreover we have used double slit plate on every angle and the voltages we get was very low and does not decrease or increase on a lineer scale it has a non lineer decrease and increase like we expected because of the differaction of the subwaves therefore we have used metal plate and dielectric plate on a single angle in order to see how electric,magnetic and conducting permeability effects the wave attenuation the results on metal plate was very low compared to dielectric medium like we expected because of the permaability differences, there are losses on metal plate like heat so it cause power losses furthermore we have used a prism on every 5 degree angle and examine the voltage peaks the distance difference are non lineerly changing between peaks