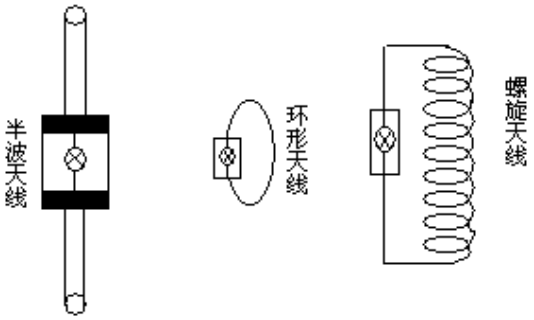


2

$\lambda/4$

$$\boldsymbol{L=\lambda/4}$$

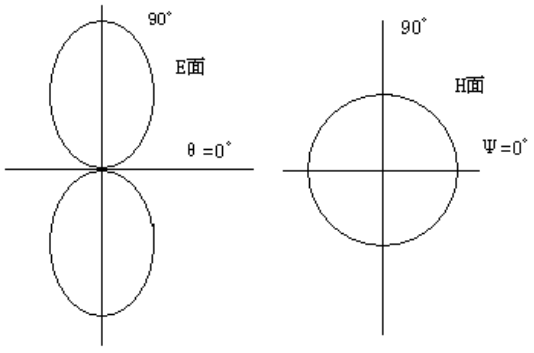
$$|\boldsymbol{E}|=\frac{\boldsymbol{60I}}{\boldsymbol{r}}\frac{\cos(\frac{\pi}{2}\cos\boldsymbol{\theta})}{\sin\boldsymbol{\theta}}=\frac{\boldsymbol{60I}}{\boldsymbol{r}}\,\boldsymbol{f}_{(\boldsymbol{\theta})}$$

$\boldsymbol{f}_{(\boldsymbol{\theta})}$

$$|\boldsymbol{F}_{(\boldsymbol{\theta})}|=\frac{|\boldsymbol{f}_{(\boldsymbol{\theta})}|}{\boldsymbol{f}_{\max}}=\frac{\cos(\frac{\pi}{2}\cos\boldsymbol{\theta})}{\sin\boldsymbol{\theta}}$$

$\boldsymbol{f}_{\max}$ $\boldsymbol{f}_{(\boldsymbol{\theta})}$

3



3

$\boldsymbol{\phi}$ H

E 8 $\boldsymbol{\theta=\pi/2}$

$\boldsymbol{0.625\lambda}$ $\boldsymbol{\theta=\pi/2}$ L $\boldsymbol{\theta=\pi/2}$

1 Signal Tx

Standby

2

Tx

3

4

1			
2			
3			
4			

1 Tx Alarm

Output

2 20cm

3 Tx

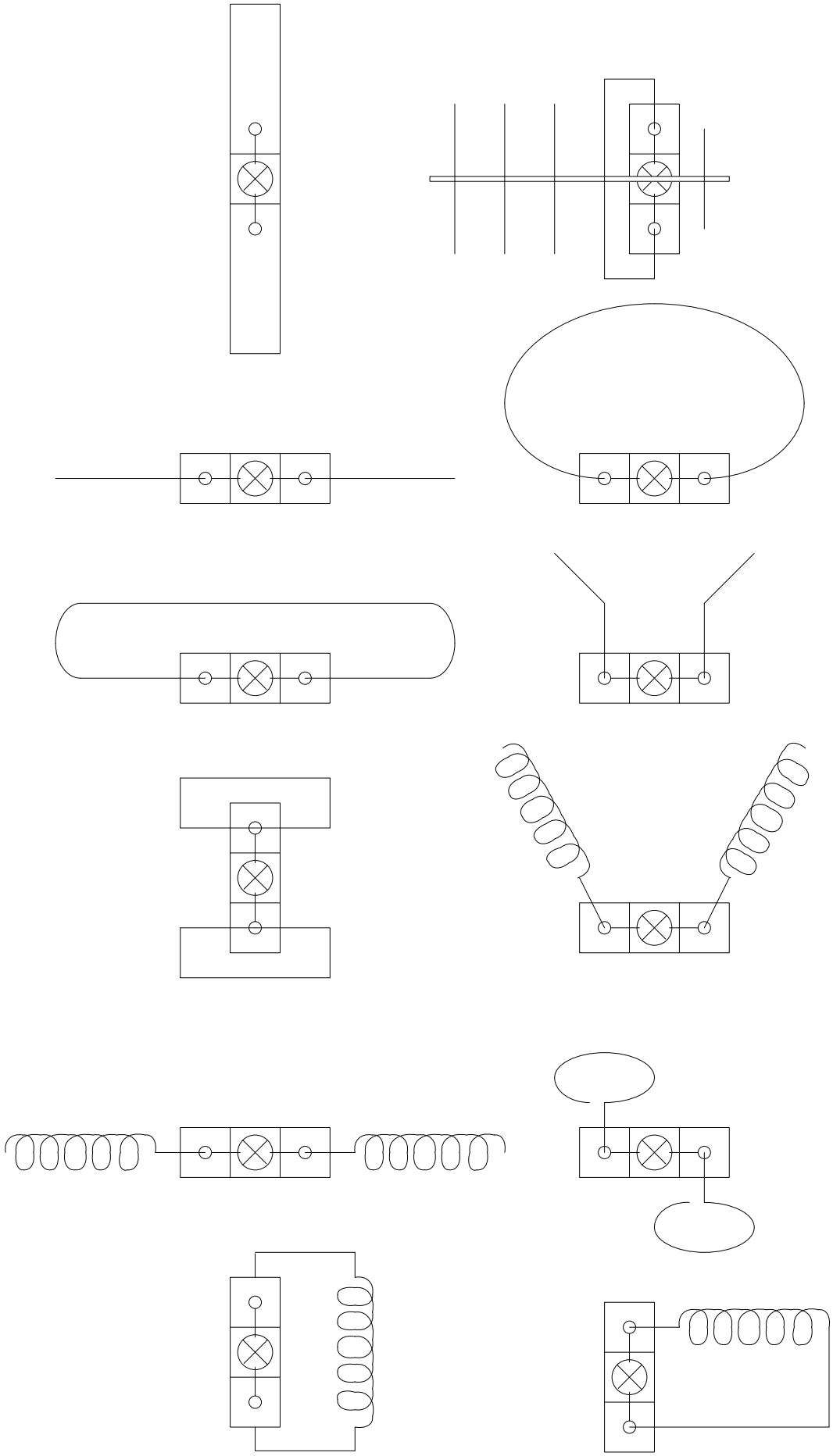
4

1

2

3

4



1

2

1

2

$$E_x = E_m \cos(\omega t - kz)$$

$$E_y = E_m \cos(\omega t + kz + \delta)$$

$\delta = \beta z$

$\delta = \beta z_1 = n\pi \quad (n = 0, 1, 2\cdots\cdots)$ z_1

$\delta = \beta z_2 = (2n+1)\pi/2 \quad (n = 0, 1, 2\cdots\cdots)$ z_2

$$z_1 = n\pi/\beta = n\lambda/2$$

$$z_2 = (n+1/2)\pi/\beta = (2n+1)\lambda/4$$

$\lambda/4$

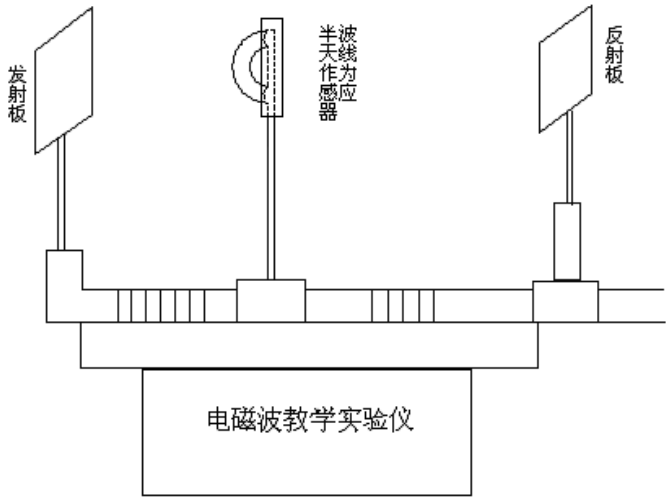
ΔL

$$\Delta L = \lambda/4$$

$$\lambda = 4\Delta L$$

ΔL

4



4

1

30 cm 35cm 40cm

2 Power Tx

3

4

1

$\lambda/2$ 2

3

	cm	1 cm	2 cm	cm	cm	Hz
1						
2						
3						

1 Tx Alarm

Output

2 20cm

3 Tx

4

1

2

3

4

1

2

3

1

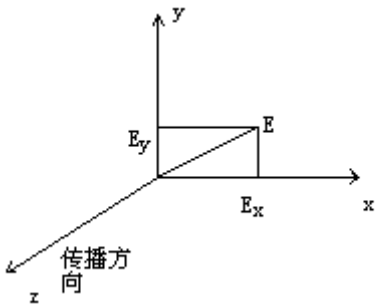
2

3

E

5 Z X

Y X Y



5

$$E_x = E_{xm}\sin(\omega t - kz)$$

$$E_y = E_{ym}\sin(\omega t - kz + \delta)$$

E_{xm} E_{ym} δ E_y E_x

$z = 0$

$$E_x = E_{xm}\sin(\omega t)$$

$$E_y = E_{ym}\sin(\omega t + \delta)$$

$$aE_x^2 - bE_xE_y + cE_y^2 = 1$$

a b c E_{xm} E_{ym} δ

E_x E_y

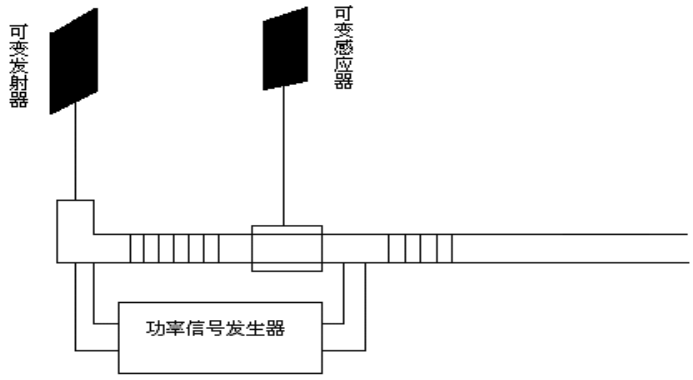
1

2 $\pi/2$

3 $\pi/2$

N

6



6

1

Power Output

2 45

Tx

3

	cm			
			45	

1 Tx Alarm

Output

2 20cm

3 Tx Tx

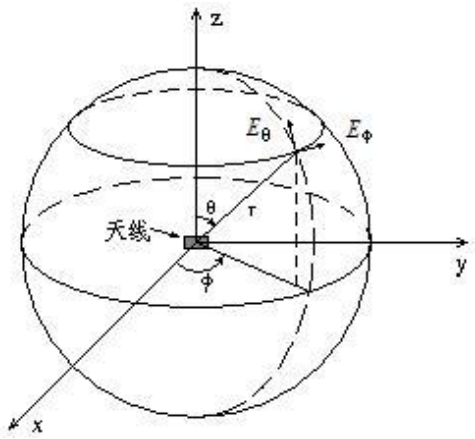
4

1

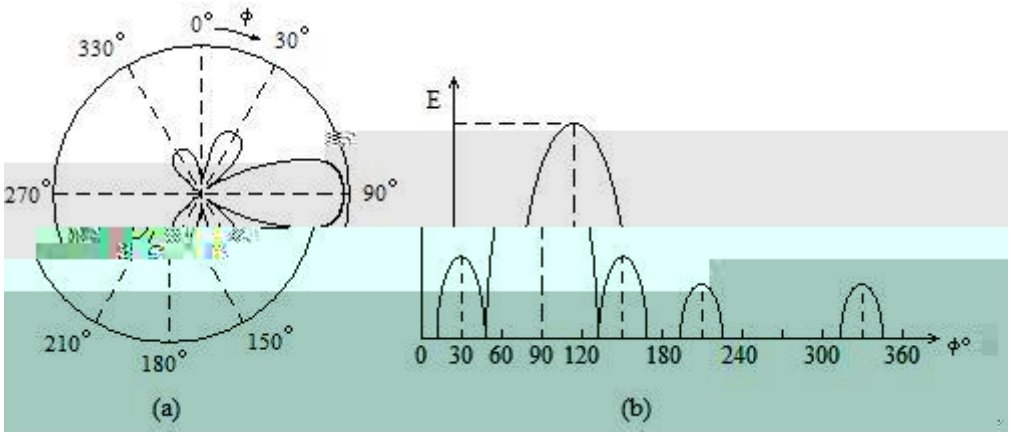
2

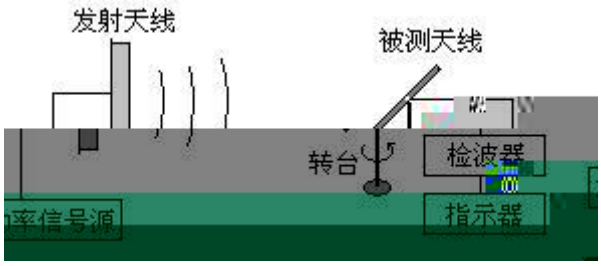
3

4



$E(\theta,\varphi)/E_{max}$ $E(\theta,\varphi)$ E_{max}


0°
Φ
30°
330°
270°
90°
210°
150°
180°
(a)
E
0 30 60 90 120 180 240 300 360 φ°
(b)


发射天线
被测天线
转台
检波器
指示器

Signal

Alarm