110kV 13923 #33-#35

Zhejiang Wending Environmental Engineering Co.,Ltd

1.

	110kV 13923 #33-#35				
	680				
	15157326578		/		/
				2018-330402-44-02-025227-000	
				D442	
( )	/		(%)	/	
( )	267		7		2.62%
( )	/			2019	

1.1.

1.1.1.

[2017]18 4

64.5km 3

1#

12 / 1#

07

110kV

110kV 13923 #33-#35

2018-330402-44-02-025227-000 110kV

683.25m 4

682

44

2018

181.

HJ24 2014 110kV

13923 #33-#35

1.2.

1.2.1.

2014 2015.01.01

2018 24

2018.12.29

2018.01.01

2018 2018.10.26

(2018) 2018.12.29

2005.4.01 2016.11.07

2019.12.29

682 2017 10 1

44 2017

9 1 2018 4 28

364 2018

3 1

2016

1.2.2.

HJ2.1-2016

HJ2.4-2009

HJ19-2011

HJ24 2014

HJ681-2013

GB8702 2014

GB3096-2008

GB12523-2011

1.2.3.

1

4

1.2.4.

1-1

1-1

1	GB50545-2010	110kV~750kV	

1.2.5.

1-2

1-2

1	110kV 13923 #33-#35		2017 11

1.3.

1.3.1.

HJ24-2014

1-3

1-3

3

110kV 300m

1.4.

110kV 683.25m 4

1.4.1.

1

1.4.2.

110kV 13923 #33 30 #1

#2 #35 14 #3

0.345km 0.38km

0.240km 3 2 1

2

1-4

1-4 110kV

	683.25m
	LGJ-300/25

1.4.3.

4 #2 GJH31 #1 #3 #4

GJH34 30

1.5.

GB50545 2010

1-5 1-6

1-5

	( )	

	1	
	1	
	1	S07

1-6 110kV

		6.0m
		7.0m
		5.0m
		7.0m
		6.0m
		2.0 m
		3.0m
		6.0m

1.6.

110kV 13923

110kV 13923 #33-#35

35kV

2.

2.1.

2.1.1.

120 18

121 18 30 15 31 02 94 78

3915

1

3 **4**

2.1.2.

4.17m(

)

24

2.1.3.

15.9 1185.2mm

2.62m/s E - SE

NW 3 8 11 12

15.9 228 2126

1200 5-8 47%

3.4 /

2.1.4.

( ) ( )

13802.31km 268.93km^2

57 9590.1km^2 80

42.22km^2 311.15km^2 7.89%

3.5km/km^2

A

276.3 98

11d 23d 1990 2d 1987

10 50% 11.2m^3/s 90% 3.14m^3/s

42.6m^3/s 49.9m^3/s

2.1.5.

3.

3.1.

110kV

2018 4 3

AWA6228 **3**

3-1

3-1

			dB			
110kV 13923 #33-#35		4a	51.4		43.8	
		2	46.5		40.3	

3.1-1

(GB3096 2008)

3.2.

3-2

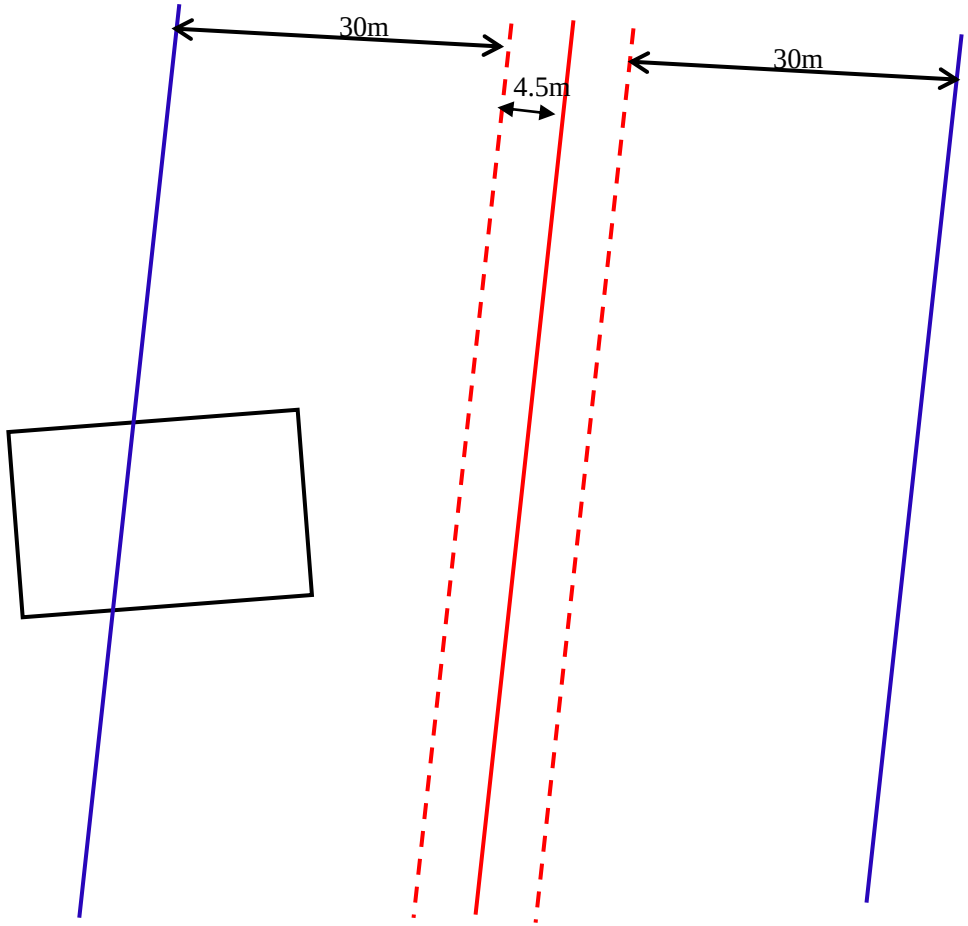
3-1

3-2

1		2m	1	1	E B Z2
2			1	1	E B Z4a
3			1	1	E B

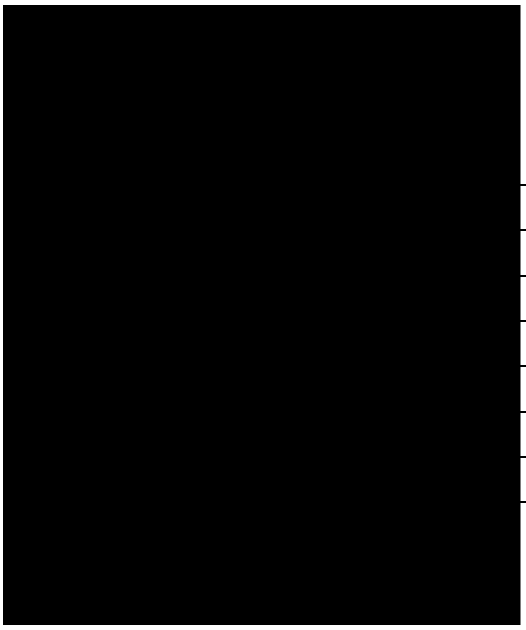
E 4kV/m
B 0.1mT
Z2 GB3096-2008 2
Z4a GB3096-2008 4a

30m
30m
N
4.5m
2m
3-1



3-2

4.



(GB3096 2008) 4-1

dB

	40
	45
	50
	55
	55
	60

35m 4a

70dB(A) 55dB(A) 2 60dB(A)

50dB(A)

:

GB3095 2012 4-2

4-2 **mg/m³**

1	TSP( )	0.30
2	PM_{10}( )	0.15

:

2015 146

GB3838-2002 4-3

4-3 **GB3838-2002** **mg/L** **pH**

pH	BOD_5	NH_3-N	TP	

：

GB8702-2014 50Hz

4kV/m

100 T

50Hz 10kV/m

GB12523-2011

4-4

4-4 **dB A**

70	55

GB16297-1996

4-5

4-5

	mg/m^3	m	kg/h		(mg/m^3)
	120	15	3.5		1.717 4

110kV	13923	#33-#35

300mg/m^3

110kV 4 4m^2

100m^2 250m^3

16m^2 400m^2 1000m^3

50cm

5.3.2.

50Hz

110kV

6.

				( )	( )
				/	/
				/	/
				/	/
				/	/

( )

110kV 13923 #33-#35

0400- -4-4

0402- -0-2 **5**

7.

7.1.

7.1.1.

TSP

C_XH_Y CO NO_X

7.1.2.

$2m^3$

7.1.3.

7.1.4.

7.1.5.

110kV 4 $16m^2$

1

30

110kV~750kV

GB50545-2010 4.5m

3

50cm

#33 #35

7.2.

7.2.1.

7.2.2.

110kV 13923 #33-#35

4a 2

7.2.3.

7.2.4.

7.2.5.

8.

	1.0	
	5.0	
	1.0	
	7	--

9.

9.1.

HJ24 2014

10m

30m

GB8702-2014

50Hz 4kV/m

100 T

9.2.

1.5m

HJ681-2013

HI-3604

SG2012-XJ04

2019 9 5 2020 9 4

2017F33-10-1216755001

9-1

9-1

2019 11 28	10	52	

5 5

2 9-2

9-2 110kV 0.133 2.424kV/m

0.025 0.093μT

4kV/m 100μT

9-2

		kV/m		
1		2.424	0.093	110kV
2		0.268	0.091	/
3		0.133	0.025	/

9.3.

110kV

9.3.1.

110kV 13923 #33-#35

9-3 110kV 13923

#34-#35 9-4

6

9-3

		110kV 13923 #34-#35
	110kV	110kV
	LGJ-300/25	LGJ-300/25
	7m	7m

9-4 110kV 13923 #34-#35

m	kV/m	T
0	1.357	1.995
2	1.427	2.434
4	1.530	2.665
6	1.482	2.626
8	1.357	2.175
10	1.192	1.684
15	0.786	0.866
20	0.513	0.492
25	0.346	0.309
30	0.246	0.210

110kV 13923 #34-#35

0.246~1.530 kV/m 0.210~2.665 T 4kV/m 100 T

9.3.2.

HJ24 2014 C D

1

r

h

$$\begin{bmatrix} U_1 \\ U_2 \\ \vdots \\ U_n \end{bmatrix} = \begin{bmatrix} \lambda_{11} & \lambda_{12} & \cdots & \lambda_{1n} \\ \lambda_{21} & \lambda_{22} & \cdots & \lambda_{2n} \\ \vdots & \vdots & \vdots & \vdots \\ \lambda_{n1} & \lambda_{n2} & \cdots & \lambda nn \end{bmatrix} \begin{bmatrix} Q_1 \\ Q_2 \\ \vdots \\ Q_n \end{bmatrix} \qquad 1$$

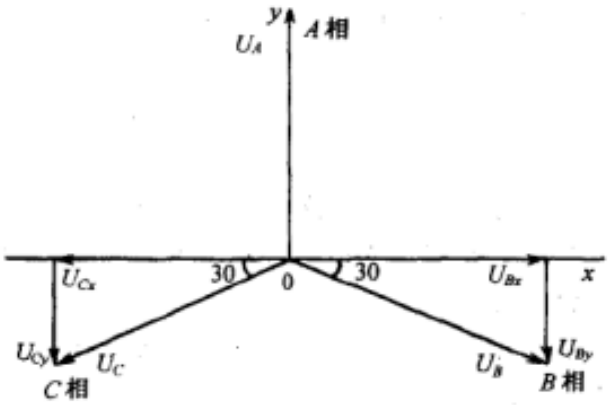
$[Q]$

$[\lambda]$ n n

$[U]$ 1.05

110kV

$U_A=U_B=U_C=110 \quad 1.05/\sqrt{3}=66.7\text{kV}$ 2



9 1

$$U_A = (66.7 + j0)\text{kV}$$

$$U_B = (-33.3 + j57.5)\text{kV}$$

$$U_C = (-33.3 - j57.5)\text{kV}$$

3

$[\lambda]$

i j

9-2 λ

$$\lambda_{ii} = \frac{1}{2\pi\varepsilon_0}\ln\frac{2h_i}{R_i}$$

$$\lambda_{ij} = \frac{1}{2\pi\varepsilon_0}\ln\frac{L_{ij}'}{L_{ij}} \qquad 4$$

$$\lambda_{ii} = \lambda_{ij}$$

ε_0 $\varepsilon_0 = \frac{1}{36\pi}\times 10^{-9}\ F/m$

R_i

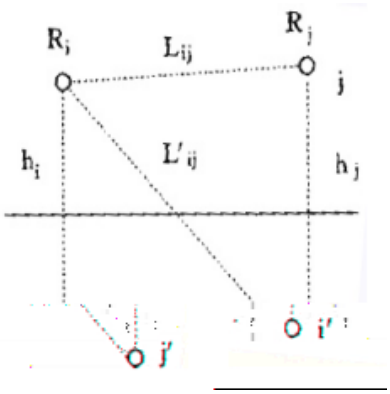
Ri $R_i = R\sqrt[n]{\frac{nr}{R}}$ 5

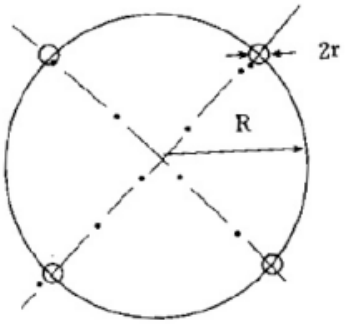
R m 9-3

n

r m

$[U]$ $[\lambda]$ 6-1 $[Q]$





9 2 9 3

$$\overline{U_i} = U_{iR} + jU_{iI} \qquad 6$$

$$\overline{Q_i} = Q_{iR} + jQ_{iI} \qquad 7$$

6

$$[U_R] = [\lambda][Q_R] \qquad 8$$

$$[U_I]=[\lambda][Q_I]$$

x y E_x E_y

$$E_x=\frac{1}{2\pi\varepsilon_0}\sum_{i=1}^{m}Q_i\left(\frac{x-x_i}{L_i^2}-\frac{x-x_i}{\left(L_i^{'}\right)^2}\right) \quad 9$$

$$E_y=\frac{1}{2\pi\varepsilon_0}\sum_{i=1}^{m}Q_i\left(\frac{y-y_i}{L_i^2}-\frac{y+y_i}{\left(L_i^{'}\right)^2}\right) \quad 10$$

x_i y_i i i=1 2 m

m

$L_i, L_i^{'}$ i m

6-8

$$\overline{E_x}=\sum_{i=1}^{m}E_{ixR}+j\sum_{i=1}^{m}E_{ixI}=E_{xR}+jE_{xI} \quad 11$$

$$\overline{E_y}=\sum_{i=1}^{m}E_{iyR}+j\sum_{i=1}^{m}E_{iyI}=E_{yR}+jE_{yI} \quad 12$$

E_{xR}

E_{xI}

E_{yR}

E_{yI}

$$\overline{E}=\left(E_{xR}+jE_{xI}\right)\overline{x}+\left(E_{yR}+jE_{yI}\right)\overline{y}=\overline{E_x}+\overline{E_y} \quad 13$$

$$E_x=\sqrt{E_{xR}^2+E_{xI}^2} \quad 14$$

$$E_y=\sqrt{E_{yR}^2+E_{yI}^2} \quad 15$$

2

$$H = \frac{I}{2\pi\sqrt{h^2 + L^2}} \qquad 16$$

I I

h

L

3

a. 110kV

b. 265A

c.

GJH34

4.5m 0m 4m

4.5m 4.5m

d. LGJ-300/25 23.76mm

333.31mm^2

e. ABC

110kV 9-5

9-5 110kV

	6m		7m	
	E kV/m	B	E kV/m	B
0m	1.90	5.24	1.42	3.89
2m	1.72	5.70	1.29	4.17
3m	1.72	5.53	1.27	4.07
4m	1.71	5.13	1.26	3.85
6m	1.41	3.95	1.09	3.14

8m	0.96	2.84	0.81	2.39
10m	0.65	2.03	0.58	1.79
12m	0.48	1.49	0.44	1.36
16m	0.31	0.87	0.29	0.82
20m	0.22	0.56	0.21	0.54
30m	0.11	0.24	0.10	0.24

9-3 6m

1.90kV/m 5.70 7m

1.42kV/m 4.17

(6m 7m)

9.3.3.

9-6

9-6

				kV/m	μT
	9m	2m	3m	1.15	2.43
	9m		4m	1.31	2.99
	9m	15m	4m	0.065	1.62

5m

9m

GB8702-2014 4kV/m 100 T

9.3.4.

110kV 13923

#33-#35

4kV/m 100μT 50Hz

10kV/m

10.

10.1.

10.1.1.

10.1.2.

10.2.

10.2.1.

10.2.2.

1.5m

A

10.2.3.

10-1

10-1

		1	
		1	

[2017]4

3

12 5

11.

11.1.

11-2

0402--0-2	47.25 50 - 50 50 50	71 2	1. 2. 3. 4. 5. 6.

#33

50cm

11.2.

11-3

	0400- -4-4 0402- -0-2	/
		/
	110kV	
	11-1~11-2	/

12.

12.1.

110kV 13923 #33-#35 110kV

683.25m 4

12.2.

1#

110kV 13923 #33-#35

12.3.

110kV 13923 #33-#35

12.4.

2011 2013

12.5.

110kV

(GB3096 2008)

110kV 0.091 2.424kV/m

0.025 0.268μT

4kV/m

( )

( )

( )

( )