5961-H/HK2017313K-A02

建设项目环境影响报告表

220kV

2017 12

建设项目环境影响评价资质证书

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评价范围：环境影响报告书甲级类别 — 建材火电、输变电及广电通讯***
环境影响报告书乙级类别 — 社会服务、核工业***
环境影响报告表类别 — 一般项目、核与辐射项目***

2017 年 07 月 07 日

220kV

220kV

			0003566	A190503210		
	1		0003566	A190503210		
	2		0012506	A19050241200		

13600381411

025-89663075

1 —— 30

2 ——

3 ——

4 ——

5 ——

6 ——

7 ——

8 ——

1

1

	220kV				
	50				
	18918388138		0759-2528615		524000
				/	
	√			D442	
m^2	27500		$/m^2$	—	
	25340.88		95		0.37%

1

1. 220kV

2 180MVA 220kV 6

110kV 5 1.2149hm^2 0.7405hm^2

2.110kV

1 110kV

2

1 220kV

220kV 11km

2×JL/LB1A-400/35

2 220kV

220kV

1×6.0km 220kV 1×1.0km 220kV

1×4.5km 2×JL/LB1A-630/45

2×JL/LB1A-300/40

3 110kV

1 110kV

110kV 2×6.5km

1×JL/LB1A-300/40

2 110kV Ⅰ

1 110kV

110kV 1×1.3km

1×4.7km 110kV 1×19.3 km

11.5 km +7.8 km 110kV #43 1×JL/LB1A-300/40

3 110kV Ⅱ

1×11.5km 110kV 1×1.6km 110kV 1×1.6km

1×JL/LB1A-300/40 YJLW03-Z 64 110 1×800

	—		—
	—	m^3	—
	—		—

□ □√

220kV 5

2

2.1

1

2015

116.04 kWh 2048.6MW 6.0 16.1

110kV 110kV

2

“ ” 220kV 500kV

220kV

220kV

220kV

220kV

220kV

220kV

220kV

220kV 220kV 110kV

220kV

2.2

2.2.1

1 2014 4 24 2015 1 1

2 1997 3 1

3 2016 2016 11

7

4 2016 7 2 2016 9 1

5 2011 3 1

6 2011 2013
2013 5 1
7 44
2017 9 1
8 682 2017 10 1
9 2008 35

10
[2012]131 2012 10 29
11
[2012]77 2012 7 3
12
[2013]103 2014 1 1
13 [2012]134
2012 10 31
14
[2012]98 2012 8 7
15 2015 7 1
16 2012 7 26
17 2010 7 23

18 2017 6 27
2.2.2
1
① GB8702-2014
② GB3096-2008
③ GB12348-2008
④ GB3838-2002
GB8978-1996
GB12523-2011

HJ607-2011

HJ681-2013

2

HJ2.1-2016

HJ2.2-2008

HJ/T2.3-93

HJ2.4-2009

HJ19-2011

HJ24-2014

110kV~750kV GB 50545-2010

220kV 750kV DL/T 5218-2012

2.2.3

2.2.4

1

2

3

4

5

2.3

2.3.1

HJ24-2014

2.1

2.1

		Leq	dB(A)	Leq	dB(A)
			kV/m		kV/m
			μT		μT
		Leq	dB(A)	Leq	dB(A)

2.3.2

GB 8702-2014 “ ”

4kV/m

10kV/m 100μT

220kV 110kV

GB12348-2008 2 60dB A 50dB A

GB3096-2008 2 60dB A

50dB A

220kV 110kV

GB3096-2008 1 55dB A 45dB A

2.2

		GB8702-2014	4kV/m
			10kV/m
			100μT
		(GB3096-2008)2	60dB A 50dB A
		(GB3096-2008) 1	55dB A 45dB A
		(GB12348-2008)2	60dB A 50dB A
		GB12523-2011	70dB A 55dB A

2.3.3

HJ/T2.1-2016

HJ24-2014 HJ2.4-2009

HJ19 2011

•

HJ24-2014

220kV 110kV

220kV 15m

220kV 110kV

10m 110kV

•

— HJ2.4-2009

GB3096 1 2

3dB(A)~5dB(A) 5dB(A)

1 2 4a 220kV

110kV 2

•

HJ19-2011 “

” 1-3

1-3

	≥100km ≥20km^2	50~100km 2~20km^2	≤50km ≤2km^2

2km^2

HJ19-2011

•

220kV 5

110kV

HJ/T2.3-93

2.3.4

HJ24-2014

HJ2.4-2009 HJ19-2011

- HJ24-2014
  220kV 40m 110kV
  30m 220kV
  40m 110kV 30m
  5m
- HJ24-2014 220kV
  40m 110kV
  30m 220kV
  200m 110kV 200m
- HJ24-2014
220kV 300m 110kV
300m
300m 220kV 500m

2.4

220kV

2.5

220kV 110kV

1

1. 220kV

2 180MVA 220kV

6 110kV 5 1.2149hm^2 0.7405hm^2

2.110kV

1 110kV

2

1 220kV

220kV 11km

2×JL/LB1A-400/35

2 220kV

220kV

1×6.0km 220kV 1×1.0km

220kV 1×4.5km 2×JL/LB1A-630/45

2×JL/LB1A-300/40

3 110kV

1 110kV

110kV 2×6.5km

1×JL/LB1A-300/40

2 110kV Ⅰ

1 110kV

110kV

1×1.3km 1×4.7km 110kV

1×19.3 km 11.5 km +7.8 km 110kV #43

1×JL/LB1A-300/40

3 110kV Ⅱ

1×11.5km 110kV 1×1.6km 110kV

1×1.6km 1×JL/LB1A-300/40 YJLW03-Z64

110 1×800

2.5.1 220kV

1

220kV

2

2 180MVA

220kV 6 110kV 5 1 60m^3

3

4 180MVA 220kV

8 110kV 14

4

GIS

10kV 110kV GIS

10kV 220kV GIS

1

5

1.2149hm^2 0.7405hm^2

6

220kV

2.5.2 110kV

1

110kV

2

2 40MVA

110kV 3 1 45m^3

3

1 110kV

4

5

8800m^2

6

2.5.3 220kV

1

220kV

(DK23+736

783)

220kV 11km

0.4km 2×JL/LB1A-400/35

41

2

220kV

1 110kV 1 1

1 110kV 1 1

3

2×JL/LB1A-400/35

4

41 2040m^2

2.5.4 220kV

1

G15

(220kV 193#

) 220kV

G15

(220kV 198#)

220kV 1×6.0km

220kV 1×1.0km 220kV

1×4.5km 220kV 1.7km 42

2

220kV

G15 1 G15 1

3

2×JL/LB1A-630/45

2×JL/LB1A-300/40

4

42 2080m^2

2.5.5 110kV

1

220kV

220kV

110kV

110kV ~ 110kV ~

110kV 2×6.5km

1×JL/LB1A-300/40

2

110kV 220kV 2

3

3

1×JL/LB1A-300/40

4

21 1050m^2

2.5.6 110kV Ⅰ

1 110kV

1

220kV

110kV

110kV 43# 110kV ~

1

220kV

220kV 220kV

220kV

110kV 110kV M2 110kV

~ 1

110kV

1×1.3km 1×4.7km 110kV

1×19.3 km 11.5 km +7.8 km 110kV #43

1×JL/LB1A-300/40

2

110kV 1 1

1

3

1×JL/LB1A-300/40

4

68 3400m^2

2.5.7 110kV Ⅰ

1 110kV

1

220kV 110kV

110kV

110kV

1×11.5km 110kV 1×1.6km 110kV

1×1.6km 1×JL/LB1A-300/40 YJLW03-Z 64

110 1×800

2

1 1 1 220kV 2

110kV 1

3

1×JL/LB1A-300/40 YJLW03-Z 64 110

1×800

4

68 3400m^2

110kV 80

45m^3

110kV 0.001~0.008kV/m

0.029~0.038μT

0.001~0.003kV/m 0.019~0.032μT

4kV/m 100μT

110kV 45.7~49.5dB(A)

43.1~44.2dB(A) (GB12348-2008)2

38.5~48.5dB(A)

36.1~44.1dB(A) GB3096-2008 2

3

3.1

848.5 118.9130 5 (
) 10 (
)
325
20km
— “ ” 900
48km

3.2

30% 20-30m
172m 65m 56m
0.86m 10-20m
3 ( )
172m 1m
( )
56m “
” 3 56m
53m 10
30m 5 10

3.3

(4 11)

1815mm 2333mm 996mm

(4 9) 80%

0.2 0.3 24h 361mm

3d 398mm 22.9

7 28.5 1 15.3 37.4 (1968

7 27) 2.7 (1967 1 17) 81.7%

2052.9h 1703mm

7 9

1996 2003

4 41m/s 57m/s 46.3m/s 33m/s 37m/s

3.4

20 109

110

60km

53km 45 km 848.5 km2

770 km2

90% 15

3.1

1		
2		1 2
3		
4		
5		
6		
7		
8		
9		
9		

4

2015100215D

1

A Leq

2

HJ681-2013

A Leq GB3096-2008

GB12348-2008

3

110kV 5m

220kV

A Leq 10kV 1m

220kV

2017 10 17 ~18

4

110kV 0.001~0.008kV/m

0.029~0.038μT

0.001~0.003kV/m 0.019~0.032μT 220kV

0.001~0.002kV/m 0.019~0.025μT 220kV

0.001~0.003kV/m 0.023~0.027μT

110kV 0.001~0.003kV/m

0.020~0.026μT 110kV 0.002kV/m

0.023μT 4kV/m 100μT

110kV 45.7~49.5dB(A)

43.1~44.2dB(A)

(GB12348-2008)2

38.5~48.5dB(A) 36.1~44.1dB(A)

GB3096-2008 2 220kV

35.7~36.5dB(A) 35.1~35.7dB(A)

GB3096-2008 2 220kV

37.5~38.8dB(A) 36.8~37.9dB(A)

GB3096-2008 1 110kV

37.3~38.3dB(A) 36.7~37.8dB(A)

GB3096-2008 1

5

HJ24-2014

5.1

5.2

5.1

1	110kV 110kV		2m~50m	1~4		
			20m	1~5		
			5m	1		
			0m	1~3		
2	220kV		20m	2		
			20m	2		
3	220kV		25m	2		
			20m	3		
4	110kV		10m	2		
			30m	2		
5	110kV		5m	1~5		

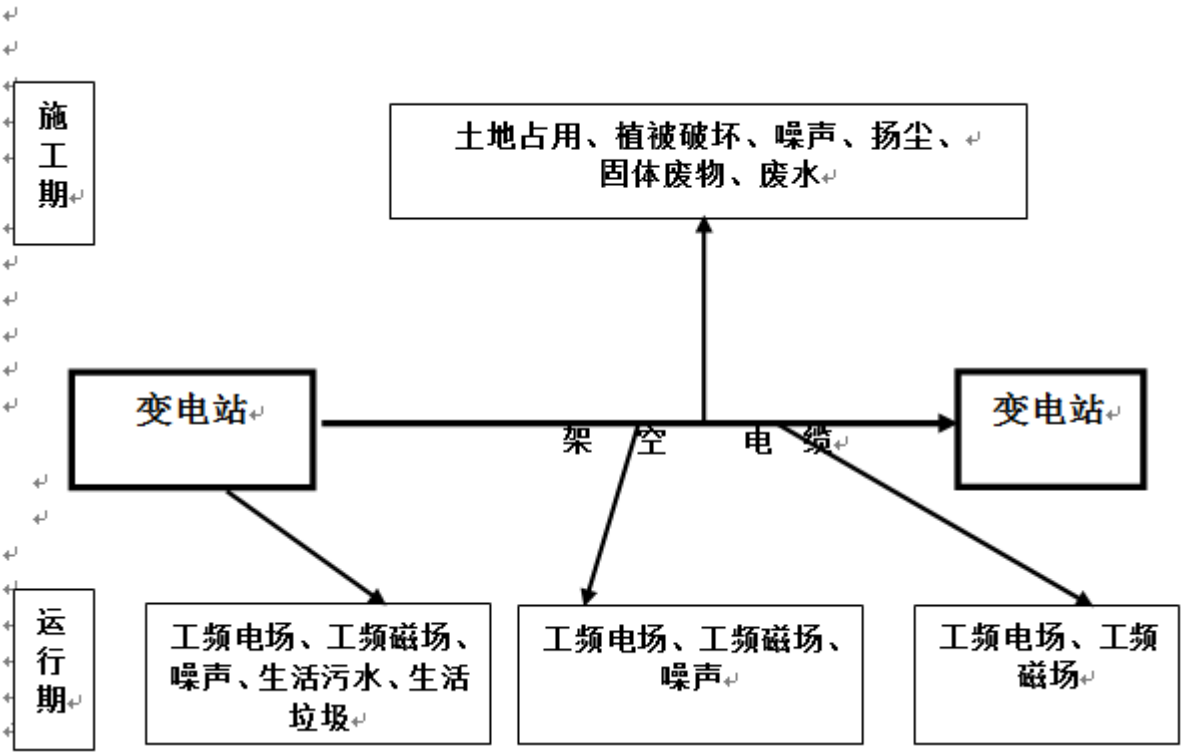
5.2

1		600m	4.2km

6

6.1

6.1



6.1

6.2

6.2.1

1

4.65hm^2 2.75hm^2 1.90hm^2

43451m^3 43451m³

8750m^3 43451m^3

15~30cm

2

80 dB A

100dB A

3

COD

4

5

6

6.2.2

1

2

110kV

220kV

(GB12348-2008)2

3

110kV

220kV

4

5

6.3

1

110kV 750kV GB50545-2010

6.1 6.2

6.1 220kV

		m		
1		7.5		
2		6.5		
3		6.0		——
3		5.5		
		4.0		
4		5.5		
5			8.5	70 ℃
			12.5	
6			8.0	+40 200m +70

7			4.0	+40 ℃
8		4.0		+40 ℃
9		4.5		

6.2 110kV

		m	
		7.0	
		6.0	
		5.0	
		5.0	
		3.0	
		3.0	
		3.0	
		7.5	
		3.0	
		7.0	
		5.0	
		4.0	
		3.0	

2

-
-
-
-
-

3

-
-

-
-

1m

-
-
-

4

-
-
-

7

		TSP		
		SS BOD_5 COD	-	
			-	4kV/m 10kV/m 100μT
		—	-	
	110kV 220kV GB12348-2008 2			

110kV

220kV

8

8.1

8.1.1

15m

TSP

-
-
-
-
-
-
-
-
- “ ”

8.1.2

①

②

③

-
-
-

GB12523-2011

8.1.3

-
-
-
-
-

8.1.4

1m

8.1.5

8.1.6

8.1.7

1m

8.1.8

1

600m

4.2km

2

5000

3

4.2km

8.2

8.2.1

4kV/m 100uT

220kV 11m 220kV

9m 110kV 7m

110kV~750kV

10kV/m

110kV 0.001~0.008kV/m

0.029~0.038μT

0.001~0.003kV/m 0.019~0.032μT 110kV

110kV

110kV

8.2.2

1 220kV

1

2.0m 70dB(A)

8.1 220kV

	dB A
2m	70

2

HJ2.4-2009

A

A_{div} A_{atm} A_{gr}

A_{bar} A_{misc}

●

$$L_P(\mathrm{r})=L_P(r_0)-(A_{div}+A_{atm}+A_{bar}+A_{gr}+A_{misc}) \quad 1$$

$L_p(r)$—— r A dB

$L_p(r_0)$—— r_0 A dB

A_{div}—— A dB 20lg r/r_0

A_{atm}—— A dB

A_{bar}—— A dB 110kVGIS 220kV

13

A_{gr}—— A dB

A_{misc}—— A dB

●

$$L_P = 10\lg\left[\sum_{i=1}^{n} 10^{L_A/10}\right]$$

L_P—— dB

L_A—— A dB

8.2

	dB(A)
GIS	13
	6
	2

3

HJ2.4-2009

220kV

36.7dB(A)~47.8dB(A)

39.2dB(A)~47.8dB(A) 38.8dB(A)~47.8dB(A)

2

200m

2 110kV

110kV 45.7~49.5dB(A) 43.1~44.2dB(A)

(GB12348-2008)2

45.2~48.5dB(A) 42.1~44.1dB(A)

GB3096-2008 2

110kV

(GB12348-2008)2

3

8.2.3

8.2.4

220kV

110kV

8.2.5

8.2.6

8.2.7

220kV 750kV

DL/T 5218-2012

1

2

9

		TSP		TSP 0.3mg/Nm^3
		SS/pH BOD_5 COD		
		SS BOD_5 COD		
				4000V/m 10kV/m 100μT
			—	GB12523-2011
			70dB(A) 2m	GB12348-2008 2

10

25340.88 95

0.37%

10.1

1.	15
2	45
1.	20
2.	15
	95
	25340.88
	0.37

11

1

2

1

2

3

4

5

6

7

8

9

3

“ ”

1

2

3

4

5

4

( ) 1

1

2

3

4

5

6

5

11.1

11.1

		1. 2. 3. 4.
		1. 2. 3. 4.

1

11.2

11.2

2

12

12.1

220kV

220kV

220kV 220kV

220kV 110kV

220kV

12.2

1

1. 220kV

2 180MVA 220kV

6 110kV 5 1.2149hm^2 0.7405hm^2

2.110kV

1 110kV

2

1 220kV

220kV 11km

2×JL/LB1A-400/35

2 220kV

220kV

1×6.0km 220kV 1×1.0km

220kV 1×4.5km 2×JL/LB1A-630/45

2×JL/LB1A-300/40

3 110kV

1 110kV

110kV 2×6.5km

1×JL/LB1A-300/40

2 110kV Ⅰ

1 110kV

110kV

1×1.3km 1×4.7km 110kV

1×19.3 km 11.5 km +7.8 km 110kV #43

1×JL/LB1A-300/40

3 110kV Ⅱ

1×11.5km 110kV 1×1.6km 110kV

1×1.6km 1×JL/LB1A-300/40 YJLW03-Z 64 110

1×800

12.3

HJ24-2014

4.2km

12.4

12.4.1

GB8702-2014 4kV/m

100μT

12.4.2

110kV

(GB12348-2008)2

GB3096-2008 2

220kV

2

GB3096-2008 1

12.5

12.5.1

1

2

3

4

1m

5

6

12.5.2

1

4kV/m 100uT

220kV 11m 220kV

9m 110kV 7m

110kV~750kV

10kV/m

110kV 0.001~0.008kV/m

0.029~0.038μT

0.001~0.003kV/m 0.019~0.032μT 110kV

110kV

110kV

2

220kV

2

110kV

(GB12348-2008)2

GB3096-2008 2

3

4

220kV

110kV

5

6

7

220kV 750kV DL/T 5218-2012

1

2

12.6

1

220kV 6.5m

110kV 6m 220kV

11m 220kV

9m 110kV 7m

2

3

4

5

1m

6

12.7 “ ”

“ ”

12.1 “ ”

	GB8072-2014 4kV/m 100uT	
	2 ≤60dB A ≤50dB A 1 ≤55dB A ≤45dB A	

220kV

“ ”

220kV

220kV

1

1.1

1 2015 1 1

2 2016 9 1

3 682 2017 10 1

4 44

2017 9 1

5 18 1997 3 25

6 1987 9 15

1998 1 7

2011 1 8

7 10 1999 3

18 8 2011 6 30

10

8 2012 131

1.2

1 2015 7 1

2 2012 7 26

1.3

1 HJ2.1-2016

2 — HJ24-2014

3 GB8072-2014

4 DL/T988-2005

5 ( ) HJ681-2013

2

2.1

1

1

			kV/m		kV/m
			μT		μT

2.2

GB 8702-2014 “ ”

4kV/m

10kV/m 100μT 2

2

		GB8702-2014	4kV/m
			10kV/m
			100μT

2.3

HJ24-2014

220kV 110kV

220kV 15m

110kV 10m

2.4

HJ24-2014 220kV

40m 110kV

30m 220kV 40m

110kV 30m

5m

3

3.1

GB8702-2014 1 “ ”

4000V/m

100μT

3.1.1

220kV

0.001~0.002kV/m 0.019~0.025μT 110kV

0.001~0.008kV/m 0.029~0.038μT

0.001~0.003kV/m 0.019~0.032μT

4kV/m 100μT

110kV

110kV 110kV

3.1.2

220kV

1

220kV 220kV

2015 12

220kV 220kV

220kV 220kV

2

3

HJ681-2013

4

PMM8053B

5

2015 5 13 24~32 70% 1~2m/s

3.1.2

220 kV 10.2 257V/m 4kV/m

0.032 0.245μT 100μT

257V/m 5m

0.245μT 5m

220kV 220kV

GB8702-2014 “ ” 4000V/m

100μT

3.2

3.2.1

220kV 110kV

220kV 110kV

3.2.1.1

1

-

-

DL/T988-2005

HJ681-2013

-

2m 50m 220kV

30m 110kV 1.5m

1m

5m 1.5m

2

2012001750U

2012100224D 2013100360U

3

PMM8053B NBM550

HI-3604 PMM8053B

0.01V/m~100kV/m 1nT~10mT NBM550

0.01V/m~100kV/m 1nT~10mT HI-3604

1V/m~199kV/m 1×10^{-5}mT~2mT

3.2.1.2

1

3.4

220kV ~	2×LGJ-400/35		226.3~228.3/226.4~228.4kV 364.0~455.0/414~517.5A	HI-3604	220kV 6 2013 C51
220kV ~	2×JNRLH60/LB1A-400/50		225.78kV 113.65A	PMM8053B	220kV ~ NICE/P/2013-13088-DC
~ “T” 110kV	LGJ-300/25		112.7~114.3/113.4~115.7kV 8.3~21.5/5.3~19.2A	PMM8053B	110kV 6 2015 705
~ 110kV	LGJ-300/25		110.79~116.59kV 33.41~343.26A	NBM550	220kV 2 2015 1584
110kV	—		117.9~118.4kV/117.9~118.4kV 29.1~30.3A/ 21.4 23.5A	HI-3604	110kV 13 2014 111

3.5

220kV	2×JL/LB1A-400/35	
220kV	2×JL/LB1A-300/40	

110kV	JL/LB1A-300/40	
110kV Ⅰ 1 110kV	JL/LB1A-300/40	
110kV Ⅱ	1×JL/LB1A-300/40	
	YJLW03-Z 64 110 1×800	

2

220kV 110kV

220kV 110kV

110kV

220kV ~

3.2.1.3

1 220kV ~

220kV ~ 0.002kV/m~1.257kV/m

0.037μT 0.779μT 4kV/m 100μT

2 ~ “ T ” 110kV

~ “ T ” 110kV

7.89×10^{-1}~9.16×10^{-1}kV/m 0.142~0.276μT 4kV/m 100μT

3 ~ 110kV

~ 110kV 2.18×10^{-1}~5.29×10^{-1}kV/m

0.142~0.276μT 4kV/m 100μT

4 110kV

110kV <1.00×10^{-3}~2.22×10^{-3}kV/m

1.56×10^{-2}~4.36×10^{-2}μT 4kV/m 100μT

4kV/m

100μT

3.2.2

HJ 24-2014

1

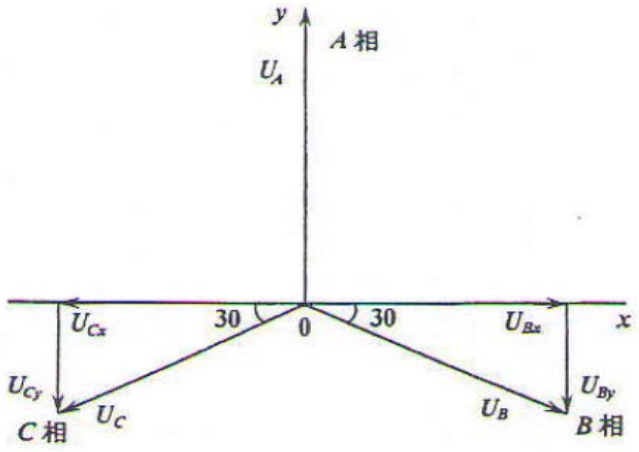
0 $\begin{bmatrix} \lambda_{11} & \lambda_{12} & \cdots & \lambda_{1n} \\ \lambda_{21} & \lambda_{22} & \cdots & \lambda_{2n} \\ \vdots & \vdots & \cdots & \vdots \\ \lambda_{n1} & \lambda_{n2} & \cdots & \lambda_{nn} \end{bmatrix} \begin{bmatrix} Q_1 \\ Q_2 \\ \vdots \\ Q_n \end{bmatrix}$

[U]

[Q]

[λ] n (n)

[U] 1.05



3.1

220kV

$$|U_A| = |U_B| = |U_C| = 220 \times 1.05/\sqrt{3} = 133.4\text{kV}$$

220kV

UA= 133.4+j0 kV

UB= -66.7+j115.5 kV

UC= -66.7-j115.5 kV

110kV

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

110kV

UA= 66.7+j0 kV

UB= -33.4+j57.8 kV

UC= -33.4-j57.8 kV

[λ]

i j … i’ j’ …

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

$$\lambda_{ij} = \frac{1}{2\pi\varepsilon_0} \ln \frac{L'_{ij}}{L_{ij}}$$

$\lambda_{ij} = \lambda_{ji}$

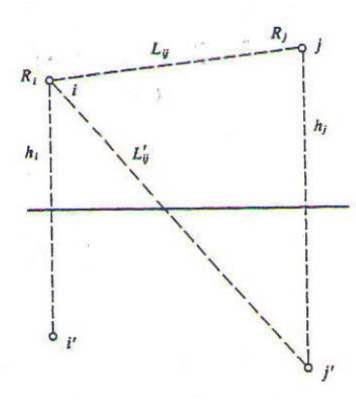
ε_0 $\varepsilon_0 = \frac{1}{36\pi} a \times 10^{-9} F/m$

h_i

L_{ij} i j

L'_{ij} i j

R_i



3.2

[U] [λ] [Q]

(x y) Ex Ey

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

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

x_i y_i i (i=1 2 …m)

m

L_i L_i' i

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

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

E_{xR}

E_{xI}

E_{yR}

E_{yI}

$$\vec{E} = (E_{xR} + jE_{xI})\vec{x}_0 + (E_{yR} + jE_{yI})\vec{y}_0 = E_x\vec{x}_0 + E_y\vec{y}_0$$

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

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

2

$$B = \mu_0 H = \frac{\mu_0 I}{2\pi r}$$

B T

H A/m

μ_0 ($\mu=4\pi\times10^{-7}$A/m)

I i A

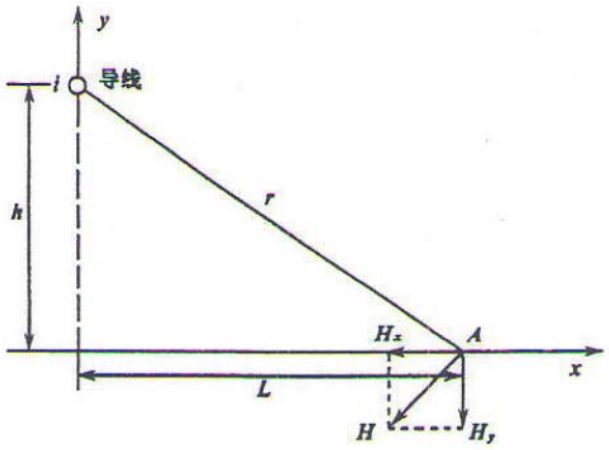
r i m

3.3 i A

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

I i

,



3.3

3 220kV

a 220kV

220kV 6.5m

1.5m 6.908kV/m 10kV/m

7.5m 1.5m

5.668kV/m 4kV/m 11m 1.5m

3.623kV/m 4kV/m

6.5m 7.5m 11m 220kV 1.5m

23.851μT 21.433μT 18.949μT 100μT

b 220kV

220kV 6.5m 1.5m

6.918kV/m 10kV/m

7.5m 1.5m 5.502kV/m

4kV/m 9m 1.5m

3.714kV/m 4kV/m

6.5m 7.5m 9m 220kV 1.5m

13.756μT 12.837μT 11.547μT 100μT

5 110kV

a 110kV

110kV 110kV~750kV

GB 50545-2010

b 110kV

110kV 110kV~750kV

GB 50545-2010

6

220kV 11m 220kV

9m 110kV

7m

4kV/m 100μT

220kV

6.5m 110kV

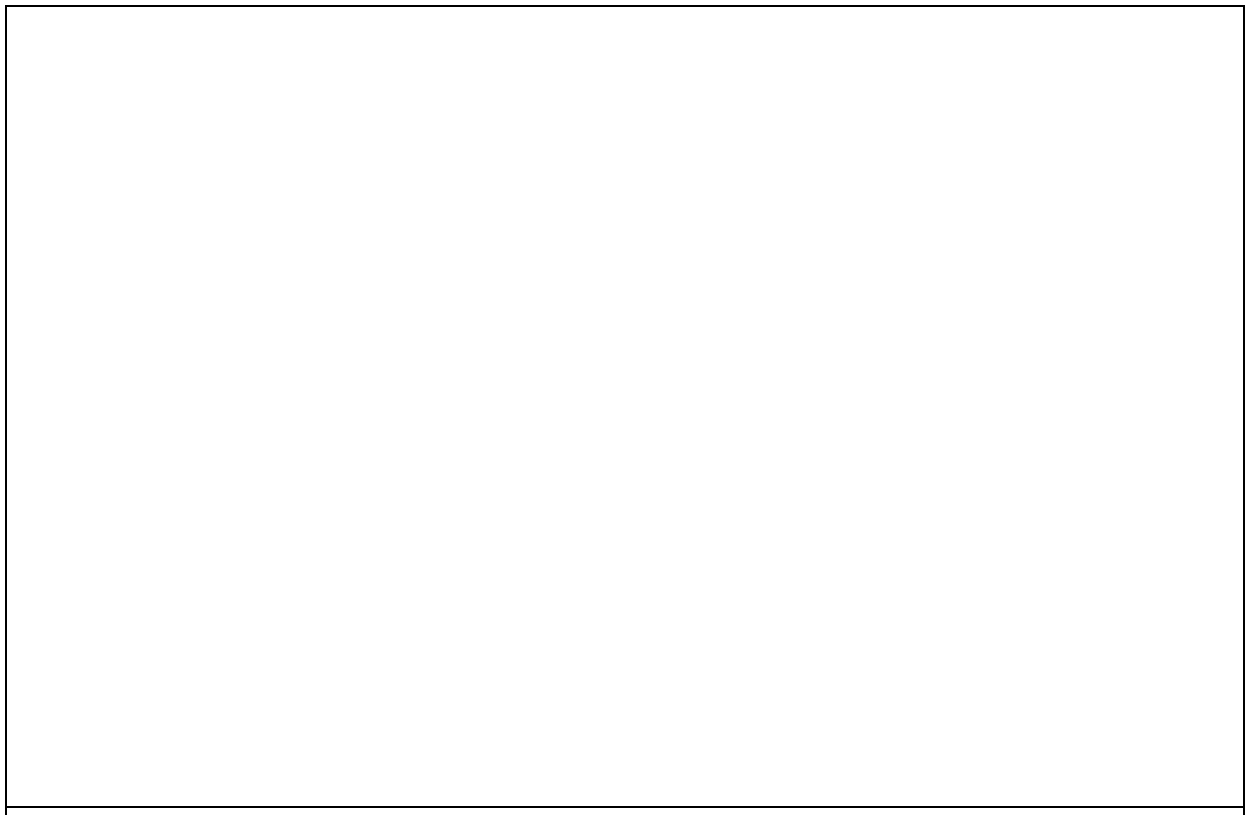
6m 10kV/m

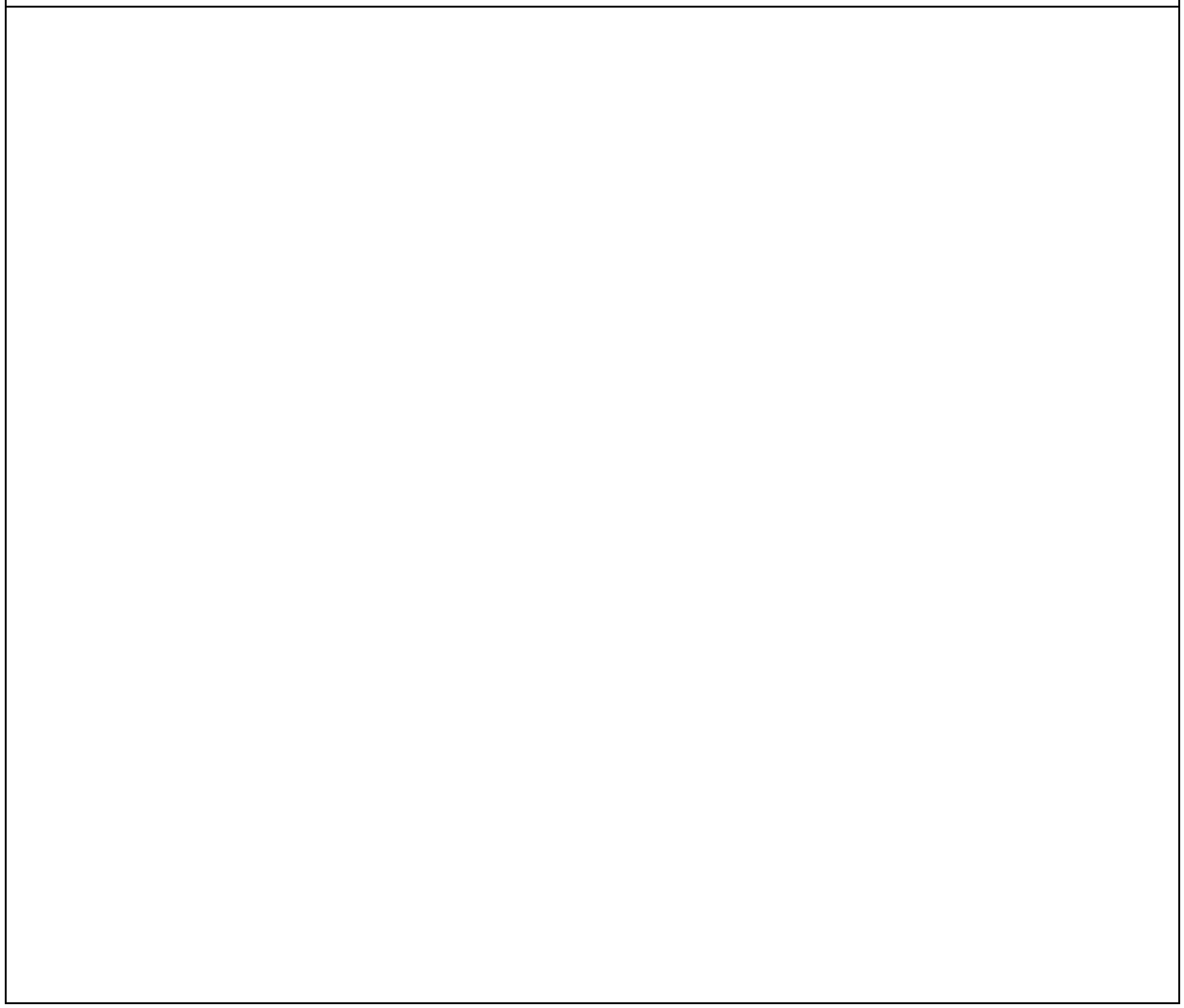
7

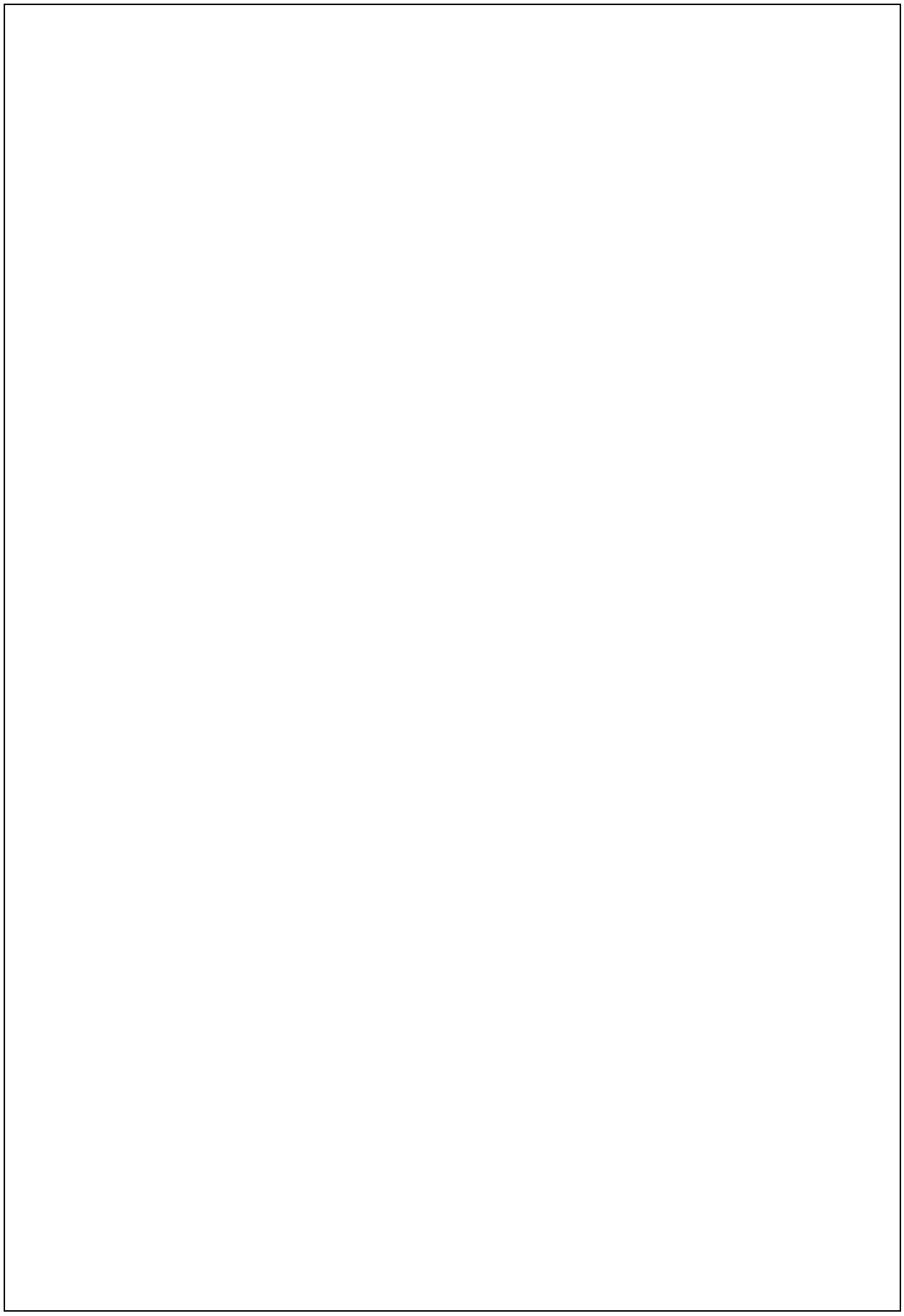
220kV

11m 220kV 9m 110kV

7m







附图1 本工程地理位置图