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## 附 录 一

### JZXC-480型轨道电路的调整

#### (一) JZXC-480型轨道电路调整表的使用说明

1. 本调整表仅限于JZXC-480型轨道电路的站内到发线或与之相似的无岔区段使用。

2. 在使用本调整表之前应该确认:

(1) 轨道电路的供电电压应该符合规定, 其波动范围允许在 $220 \pm 10\% V$ 以内;

(2) 所使用的中继变压器 $BZ_4$ , 其空载电流应在 $200 \sim 300mA$ 之间。

3. 核准轨道区段的长度 $L(m)$ ; 测定送电端总电阻 $R_s(\Omega)$  (包括引接线电阻) 及受电端引接线电阻 $R_e(\Omega)$ , 使它们分别达到本调整表所规定的档值。

4. 根据轨道区段实际最小道碴电阻 $R_{sm}(\Omega \cdot km)$ 及钢轨阻抗核定值 $Z_g(\Omega/km)$ 的大小, 按照下述原则选靠各自的档别:

(1) 在最大允许使用长度以内者 (调整表中粗黑线以下部分), 一律就近选靠档别;

(2) 在技术极限长度范围内的区段 (调整表中粗黑线以上部分), 最小道碴电阻允许就近选靠档别; 钢轨阻抗不允许向大靠档。

一个轨道区段钢轨阻抗的核定值是指, 该区段在正常维修条件下, 其钢轨阻抗实际变化范围的中值。

5. 本调整表所给出的应调电压值 $U_T(V)$ , 是对应于信号楼向轨道电路供电的电压为额定值 $220V$ 时, 各轨道区

段发送变压器应该输出的端压。如果信号楼向轨道电路供电的电压不是额定值220 V，则按下式核算出应调电压值。

$$U_T' = \frac{T_T \cdot U_{\text{实}}}{220} \quad (\text{V})$$

式中  $U_{\text{实}}$ ——信号楼实际供电电压；

$U_T$ ——信号楼供电电压为220 V时应调电压；

$U_T'$ ——对应于 $U_{\text{实}}$ 时应调电压。

6. 轨道区段的实际长度若介于本调整表所给出的档别之间时，可用下式估算出对应的应调电压值：

$$U_{T\text{实}} = U_{T\text{小}} + (U_{T\text{大}} - U_{T\text{小}}) \times \frac{L_{\text{实}} - L_{\text{小}}}{50} \quad (\text{V})$$

式中  $L_{\text{实}}$ ——轨道区段的实际长度 (m)；

$U_{T\text{实}}$ ——对应于 $L_{\text{实}}$ 时的应调电压；

$L_{\text{小}}$ ——调整表中所给出的小于且邻近 $L_{\text{实}}$ 的档别长度 (m)；

$U_{T\text{小}}$ ——对应于 $L_{\text{小}}$ 时的应调电压；

$U_{T\text{大}}$ ——调整表中大于且邻近 $L_{\text{实}}$ 的档别长度下的应调电压值。

7. 由于轨道变压器的输出端子有限，因此当实测输出端压不等于应调电压时，可按如下规定选定端子：

(1) 在最大允许使用长度范围内，对于采用BG<sub>5</sub>型轨道变压器的轨道区段，允许选定实际输出端压不小于(应调电压 $U_T - 0.1 \text{ V}$ )、或不大于(应调电压 $U_T + 0.35 \text{ V}$ )的相应端子；对于采用BG<sub>1</sub>型轨道变压器的轨道区段，允许选定实际输出端压不小于 $U_T - 0.1 \text{ V}$ 、或不大于 $U_T + 0.3 \text{ V}$ 的相应端子。

(2) 在技术极限长度范围内的区段，只允许选定实际输出端压不大于应调电压值的端子。

8. 本调整表中所给的继电器最高参考端压  $U_{JM}(V)$ , 仅作为平时维修、监测轨道电路的参考。

判别轨道电路区段是否达到调整标准的根本标志是, 区别轨道区段的基本参数, 严格按照上述规定, 选配好轨道变压器的输出端压。

9. 在轨道区段的最小道碴电阻  $R_{dm}$  或钢轨阻抗核定值  $Z_p$  暂未核准的情况下, 不妨先按  $R_{dm}$  稍大,  $Z_p$  稍小处理 (这样是安全的)。待雨时, 视其满足调整状态的程度, 再适当进行调整。需要注意的是, 凡雨时提高了发送电压的轨道区段, 均要在晴天及时复查分路性能。

10. 如本调整表所示, 对应于不同的条件, 其最大允许长度是不同的。这点, 在使用时应予注意。当轨道区段的实际长度超过本表所允许的最大限度时, (除依照区段的具体条件另行核算应调电压外), 其调整电压应以本表相近条件下所给出的最高允许电压为限。

本办法的实施过程请参见下例:

(1) 确认供电电压的波动范围是在  $220 \pm 10\% V$  以内; 所用  $BZ$  的空载电流在  $200 \sim 300 mA$  之间。

(2) 实测核准送端总阻  $R_s = 2.0 \Omega$ , (或  $1.2 \Omega$ ); 受端引接线电阻  $R_y = 0.06 \sim 0.1 \Omega$ , (或  $0.25 \sim 0.3 \Omega$ ); 区段长度  $L$ , 假设  $L = 891 m$ 。

(3) 假设已知轨道区段的最小道碴电阻  $R_{dm}$  和钢轨阻抗的核定值  $Z_p$  分别为:  $R_{dm} = 0.63 \Omega \cdot km$ , 及  $Z_p = 0.87 e^{j66^\circ} \Omega / km$ 。依照本办法 4 所规定的原则, 最小道碴电阻可选定  $R_{dm} = 0.65 \Omega \cdot km$  档, 钢轨阻抗可选定  $Z_p = 0.9 e^{j62^\circ} \Omega / km$  档。

(4) 根据  $R_{dm} = 0.65 \Omega \cdot km$ ,  $Z_p = 0.9 e^{j62^\circ} \Omega / km$ ,  $R_s = 2.0 \Omega$ ,  $R_y = 0.06 \sim 0.1 \Omega$  诸参量查表并估算出对应于

$L=891\text{m}$ 时的应调电压值。

$\because L_{\text{小}}=850\text{m}$ 时,  $U_{\text{r小}}=4.71\text{V}$ ;

$L_{\text{大}}=900\text{m}$ 时,  $U_{\text{r大}}=4.98\text{V}$ 。

$\therefore$  依照本办法 6 所给的估算公式得知  $L=891\text{m}$  时,

$$U_{\text{r实}}=4.71+(4.98-4.71)\times\frac{891-850}{50}=4.93\text{V}。$$

(5) 根据当时信号楼实际供电电压的大小进一步核算应调电压值:

假设当时信号楼向轨道电路供电的电压为  $230\text{V}$ , 则依照本办法 5 所给的核算公式求得应调电压为:

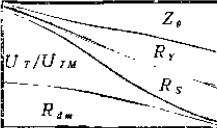
$$U_{\text{r}}'=\frac{4.93\times230}{220}=5.15\text{V}。$$

(6) 最后, 根据实测选定轨道变压器的输出端子。依照本办法 7 的规定, 对于采用  $\text{BG}_5$  型轨道变压器者, 允许选定其实际输出电压在  $5.05\sim5.5\text{V}$  之内的相应端子。

## (二) JZXC-480型轨道电路调整表

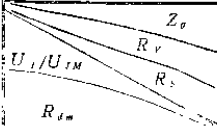
 $L = 400\text{m}$ 

附表1—1

|  |          | $0.65e^{j\pi/4}$ |      |      |      |                 |      |      |      |
|-----------------------------------------------------------------------------------|----------|------------------|------|------|------|-----------------|------|------|------|
|                                                                                   |          | $0.06 \sim 0.1$  |      |      |      | $0.25 \sim 0.3$ |      |      |      |
|                                                                                   |          | 1.2              |      | 2.0  |      | 1.2             |      | 2.0  |      |
| $U_T/U_{TM}$                                                                      | $R_{dm}$ | 2.26             | 19.7 | 3.23 | 20.2 | 2.49            | 19.7 | 3.55 | 20.7 |
|                                                                                   | 0.4      | 2.16             | 18.5 | 3.07 | 19.7 | 2.37            | 19.1 | 3.36 | 20.2 |
|                                                                                   | 0.45     | 2.08             | 17.9 | 2.94 | 19.1 | 2.28            | 18.5 | 3.21 | 19.1 |
|                                                                                   | 0.5      | 2.01             | 17.9 | 2.83 | 18.5 | 2.21            | 17.9 | 3.09 | 18.5 |
|                                                                                   | 0.55     | 1.96             | 17.3 | 2.74 | 17.9 | 2.15            | 17.3 | 2.99 | 18.5 |
|                                                                                   | 0.6      | 1.91             | 17.3 | 2.67 | 17.3 | 2.09            | 17.3 | 2.90 | 17.9 |
|                                                                                   | 0.65     | 1.87             | 16.6 | 2.60 | 17.3 | 2.05            | 16.6 | 2.83 | 17.3 |
|                                                                                   | 0.7      | 1.84             | 16.6 | 2.55 | 16.6 | 2.01            | 16.6 | 2.77 | 17.3 |
|                                                                                   | 0.75     | 1.81             | 15.9 | 2.50 | 16.6 | 1.98            | 16.6 | 2.71 | 17.3 |
|                                                                                   | 0.8      | 1.76             | 15.9 | 2.42 | 15.9 | 1.92            | 15.9 | 2.62 | 16.6 |
|                                                                                   | 0.9      | 1.72             | 15.2 | 2.36 | 15.9 | 1.88            | 15.9 | 2.55 | 15.9 |
|                                                                                   | 1.0      | 1.66             | 15.2 | 2.26 | 15.2 | 1.81            | 15.2 | 2.44 | 15.2 |
|                                                                                   | 1.2      | 1.60             | 14.4 | 2.17 | 14.4 | 1.74            | 14.4 | 2.33 | 15.2 |
|                                                                                   | 1.5      | 1.55             | 14.4 | 2.07 | 14.4 | 1.67            | 14.4 | 2.22 | 14.4 |
|                                                                                   | 2.0      |                  |      |      |      |                 |      |      |      |

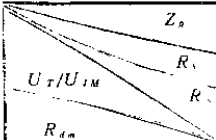
 $L = 400\text{m}$ 

附表1—2

|  |          | $0.7e^{j\pi/4}$ |      |      |      |                 |      |      |      |
|-----------------------------------------------------------------------------------|----------|-----------------|------|------|------|-----------------|------|------|------|
|                                                                                   |          | $0.06 \sim 0.1$ |      |      |      | $0.25 \sim 0.3$ |      |      |      |
|                                                                                   |          | 1.2             |      | 2.0  |      | 1.2             |      | 2.0  |      |
| $U_I/U_{TM}$                                                                      | $R_{dm}$ | 2.30            | 19.7 | 3.28 | 20.2 | 2.53            | 19.7 | 3.59 | 20.7 |
|                                                                                   | 0.4      | 2.19            | 18.5 | 3.11 | 19.7 | 2.41            | 19.1 | 3.40 | 20.2 |
|                                                                                   | 0.45     | 2.11            | 18.5 | 2.98 | 19.1 | 2.32            | 18.5 | 3.25 | 19.7 |
|                                                                                   | 0.5      | 2.04            | 17.9 | 2.87 | 18.5 | 2.24            | 17.9 | 3.13 | 19.1 |
|                                                                                   | 0.55     | 1.99            | 17.3 | 2.78 | 17.9 | 2.18            | 17.9 | 3.02 | 18.5 |
|                                                                                   | 0.6      | 1.94            | 17.3 | 2.71 | 17.9 | 2.12            | 17.3 | 2.93 | 17.9 |
|                                                                                   | 0.65     | 1.90            | 16.6 | 2.63 | 17.3 | 2.08            | 16.6 | 2.86 | 17.9 |
|                                                                                   | 0.7      | 1.87            | 16.6 | 2.58 | 17.3 | 2.04            | 16.6 | 2.80 | 17.3 |
|                                                                                   | 0.75     | 1.84            | 15.9 | 2.53 | 16.6 | 2.00            | 16.6 | 2.74 | 17.3 |
|                                                                                   | 0.8      | 1.78            | 15.9 | 2.45 | 15.9 | 1.94            | 15.9 | 2.65 | 16.6 |
|                                                                                   | 0.9      | 1.74            | 15.2 | 2.38 | 15.9 | 1.90            | 15.9 | 2.57 | 15.9 |
|                                                                                   | 1.0      | 1.68            | 15.2 | 2.28 | 15.2 | 1.83            | 15.2 | 2.46 | 15.2 |
|                                                                                   | 1.2      | 1.62            | 14.4 | 2.19 | 14.4 | 1.76            | 14.4 | 2.35 | 15.2 |
|                                                                                   | 1.5      | 1.57            | 14.4 | 2.09 | 14.4 | 1.69            | 14.4 | 2.24 | 14.4 |
|                                                                                   | 2.0      |                 |      |      |      |                 |      |      |      |

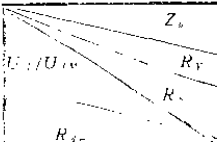
$L = 400 \text{ m}$ 

附表1-3

|  | $0.8e^{100}$ |      |          |      |
|-----------------------------------------------------------------------------------|--------------|------|----------|------|
|                                                                                   | 0.06~0.1     |      | 0.25~0.3 |      |
|                                                                                   | 1.2          | 2.0  | 1.2      | 2.0  |
| 0.4                                                                               | 2.37         | 19.7 | 3.36     | 20.7 |
| 0.45                                                                              | 2.26         | 19.1 | 3.19     | 19.7 |
| 0.5                                                                               | 2.17         | 18.5 | 3.05     | 19.1 |
| 0.55                                                                              | 2.10         | 17.9 | 2.93     | 18.5 |
| 0.6                                                                               | 2.04         | 17.3 | 2.84     | 17.9 |
| 0.65                                                                              | 1.99         | 17.3 | 2.76     | 17.9 |
| 0.7                                                                               | 1.95         | 16.6 | 2.69     | 17.3 |
| 0.75                                                                              | 1.91         | 16.6 | 2.63     | 17.3 |
| 0.8                                                                               | 1.88         | 16.6 | 2.58     | 16.6 |
| 0.9                                                                               | 1.83         | 15.9 | 2.50     | 16.6 |
| 1.0                                                                               | 1.79         | 15.2 | 2.43     | 15.9 |
| 1.2                                                                               | 1.72         | 15.2 | 2.33     | 15.2 |
| 1.5                                                                               | 1.66         | 14.4 | 2.23     | 14.4 |
| 2.0                                                                               | 1.60         | 14.4 | 2.13     | 14.4 |

 $L = 400 \text{ m}$ 

附表1-4

|  | $0.9e^{100}$ |      |          |      |
|-----------------------------------------------------------------------------------|--------------|------|----------|------|
|                                                                                   | 0.06~0.1     |      | 0.25~0.3 |      |
|                                                                                   | 1.2          | 2.0  | 1.2      | 2.0  |
| 0.4                                                                               | 2.45         | 19.7 | 3.17     | 20.7 |
| 0.45                                                                              | 2.33         | 19.1 | 3.28     | 19.7 |
| 0.5                                                                               | 2.21         | 18.5 | 3.13     | 19.1 |
| 0.55                                                                              | 2.17         | 17.9 | 3.01     | 18.5 |
| 0.6                                                                               | 2.11         | 17.3 | 2.91     | 17.9 |
| 0.65                                                                              | 2.05         | 17.3 | 2.83     | 17.9 |
| 0.7                                                                               | 2.01         | 16.6 | 2.76     | 17.3 |
| 0.75                                                                              | 1.97         | 16.6 | 2.70     | 17.3 |
| 0.8                                                                               | 1.91         | 16.6 | 2.64     | 16.6 |
| 0.9                                                                               | 1.88         | 15.9 | 2.56     | 16.6 |
| 1.0                                                                               | 1.84         | 15.9 | 2.49     | 15.9 |
| 1.2                                                                               | 1.77         | 15.2 | 2.38     | 15.2 |
| 1.5                                                                               | 1.71         | 14.4 | 2.28     | 14.4 |
| 2.0                                                                               | 1.64         | 14.4 | 2.17     | 14.4 |

$L = 400 \text{ m}$ 

附表1—5

| $\begin{array}{c} Z_0 \\ U_T/U_{TM} \\ R_{dm} \end{array}$ |  | $1.0e^{-10}$ |      |          |      |      |      |
|------------------------------------------------------------|--|--------------|------|----------|------|------|------|
|                                                            |  | $R_V$        |      | $R_S$    |      |      |      |
|                                                            |  | 0.06~0.1     |      | 0.25~0.3 |      |      |      |
|                                                            |  | 1.2          | 2.0  | 1.2      | 2.0  |      |      |
| 0.4                                                        |  | 2.53         | 19.7 | 3.56     | 20.7 | 2.77 | 20.2 |
| 0.45                                                       |  | 2.40         | 19.1 | 3.37     | 20.2 | 2.63 | 19.7 |
| 0.5                                                        |  | 2.31         | 18.5 | 3.21     | 19.1 | 2.52 | 18.5 |
| 0.55                                                       |  | 2.23         | 17.9 | 3.09     | 18.5 | 2.43 | 18.5 |
| 0.6                                                        |  | 2.16         | 17.9 | 2.98     | 18.5 | 2.36 | 17.9 |
| 0.65                                                       |  | 2.11         | 17.3 | 2.90     | 17.9 | 2.30 | 17.3 |
| 0.7                                                        |  | 2.06         | 16.6 | 2.82     | 17.3 | 2.25 | 17.3 |
| 0.75                                                       |  | 2.02         | 16.0 | 2.76     | 17.3 | 2.20 | 16.6 |
| 0.8                                                        |  | 1.99         | 16.6 | 2.70     | 16.6 | 2.18 | 16.6 |
| 0.9                                                        |  | 1.93         | 15.9 | 2.61     | 16.6 | 2.10 | 15.9 |
| 1.0                                                        |  | 1.88         | 15.9 | 2.54     | 15.9 | 2.04 | 15.9 |
| 1.2                                                        |  | 1.82         | 15.2 | 2.43     | 15.2 | 1.96 | 15.2 |
| 1.5                                                        |  | 1.75         | 14.4 | 2.32     | 15.2 | 1.89 | 14.4 |
| 2.0                                                        |  | 1.68         | 14.4 | 2.21     | 14.4 | 1.81 | 14.4 |

 $L = 400 \text{ m}$ 

附表1—6

| $\begin{array}{c} Z_0 \\ U_T/U_{TM} \\ R_{dm} \end{array}$ |  | $1.3e^{-14.5}$ |      |          |      |      |      |
|------------------------------------------------------------|--|----------------|------|----------|------|------|------|
|                                                            |  | $R_V$          |      | $R_S$    |      |      |      |
|                                                            |  | 0.06~0.1       |      | 0.25~0.3 |      |      |      |
|                                                            |  | 1.2            | 2.0  | 1.2      | 2.0  |      |      |
| 0.4                                                        |  | 2.58           | 19.7 | 3.63     | 20.7 | 2.83 | 20.2 |
| 0.45                                                       |  | 2.46           | 19.1 | 3.43     | 20.2 | 2.69 | 19.7 |
| 0.5                                                        |  | 2.36           | 18.5 | 3.27     | 19.1 | 2.57 | 18.5 |
| 0.55                                                       |  | 2.28           | 17.9 | 3.14     | 18.5 | 2.48 | 18.5 |
| 0.6                                                        |  | 2.21           | 17.9 | 3.03     | 18.5 | 2.41 | 17.9 |
| 0.65                                                       |  | 2.15           | 17.3 | 2.95     | 17.9 | 2.34 | 17.3 |
| 0.7                                                        |  | 2.10           | 17.3 | 2.87     | 17.3 | 2.29 | 17.3 |
| 0.75                                                       |  | 2.06           | 16.6 | 2.80     | 17.3 | 2.24 | 16.6 |
| 0.8                                                        |  | 2.03           | 16.6 | 2.73     | 16.6 | 2.20 | 16.6 |
| 0.9                                                        |  | 1.97           | 15.9 | 2.63     | 16.6 | 2.13 | 15.9 |
| 1.0                                                        |  | 1.92           | 15.9 | 2.58     | 15.9 | 2.08 | 15.9 |
| 1.2                                                        |  | 1.85           | 15.2 | 2.46     | 15.2 | 2.00 | 15.2 |
| 1.5                                                        |  | 1.78           | 14.4 | 2.35     | 15.2 | 1.92 | 14.4 |
| 2.0                                                        |  | 1.71           | 14.4 | 2.24     | 14.4 | 1.84 | 14.4 |

$L = 450 \text{ m}$ 

附表1-7

| $\begin{array}{c} Z_v \\ U_T/U_{JM} \\ R_{dm} \end{array}$ |  | $0.65e^{170}$   |      |      |      |                 |      |      |      |
|------------------------------------------------------------|--|-----------------|------|------|------|-----------------|------|------|------|
|                                                            |  | $R_v$           |      |      |      | $R_s$           |      |      |      |
|                                                            |  | $0.06 \sim 0.1$ |      |      |      | $0.25 \sim 0.3$ |      |      |      |
|                                                            |  | 1.2             |      | 2.0  |      | 1.2             |      | 2.0  |      |
| 0.4                                                        |  | 2.40            | 20.2 | 3.45 | 21.1 | 2.65            | 20.7 | 3.79 | 21.6 |
| 0.45                                                       |  | 2.29            | 19.7 | 3.26 | 20.2 | 2.52            | 19.7 | 3.58 | 20.7 |
| 0.5                                                        |  | 2.19            | 19.1 | 3.11 | 19.7 | 2.41            | 19.1 | 3.41 | 20.2 |
| 0.55                                                       |  | 2.12            | 18.5 | 2.99 | 19.1 | 2.32            | 18.5 | 3.27 | 19.7 |
| 0.6                                                        |  | 2.06            | 17.9 | 2.89 | 18.5 | 2.25            | 17.9 | 3.15 | 19.1 |
| 0.65                                                       |  | 2.00            | 17.3 | 2.80 | 17.9 | 2.19            | 17.9 | 3.05 | 18.5 |
| 0.7                                                        |  | 1.96            | 17.3 | 2.73 | 17.9 | 2.14            | 17.3 | 2.97 | 17.9 |
| 0.75                                                       |  | 1.92            | 16.6 | 2.67 | 17.3 | 2.10            | 17.3 | 2.90 | 17.9 |
| 0.8                                                        |  | 1.89            | 16.6 | 2.61 | 17.3 | 2.06            | 16.6 | 2.83 | 17.3 |
| 0.9                                                        |  | 1.83            | 15.9 | 2.52 | 16.6 | 1.99            | 16.6 | 2.73 | 17.3 |
| 1.0                                                        |  | 1.78            | 15.9 | 2.45 | 15.9 | 1.94            | 15.9 | 2.65 | 16.6 |
| 1.2                                                        |  | 1.72            | 15.2 | 2.34 | 15.9 | 1.87            | 15.2 | 2.52 | 15.9 |
| 1.5                                                        |  | 1.65            | 14.4 | 2.23 | 15.2 | 1.79            | 15.2 | 2.40 | 15.2 |
| 2.0                                                        |  | 1.58            | 14.4 | 2.12 | 14.4 | 1.71            | 14.4 | 2.27 | 14.4 |

 $L = 450 \text{ m}$ 

附表1-8

| $\begin{array}{c} Z_v \\ U_T/U_{JM} \\ R_{dm} \end{array}$ |  | $0.7e^{180}$    |      |      |      |                 |      |      |      |
|------------------------------------------------------------|--|-----------------|------|------|------|-----------------|------|------|------|
|                                                            |  | $R_v$           |      |      |      | $R_s$           |      |      |      |
|                                                            |  | $0.06 \sim 0.1$ |      |      |      | $0.25 \sim 0.3$ |      |      |      |
|                                                            |  | 1.2             |      | 2.0  |      | 1.2             |      | 2.0  |      |
| 0.4                                                        |  | 2.45            | 20.2 | 3.51 | 21.1 | 2.69            | 20.7 | 3.85 | 21.6 |
| 0.45                                                       |  | 2.33            | 19.7 | 3.32 | 20.2 | 2.56            | 19.7 | 3.63 | 20.7 |
| 0.5                                                        |  | 2.23            | 19.1 | 3.16 | 19.7 | 2.45            | 19.1 | 3.46 | 20.2 |
| 0.55                                                       |  | 2.16            | 18.5 | 3.03 | 19.1 | 2.36            | 18.5 | 3.31 | 19.7 |
| 0.6                                                        |  | 2.09            | 17.9 | 2.93 | 18.5 | 2.29            | 17.9 | 3.19 | 19.1 |
| 0.65                                                       |  | 2.04            | 17.3 | 2.84 | 17.9 | 2.23            | 17.9 | 3.09 | 18.5 |
| 0.7                                                        |  | 1.99            | 17.3 | 2.77 | 17.9 | 2.17            | 17.3 | 3.01 | 17.9 |
| 0.75                                                       |  | 1.95            | 16.6 | 2.70 | 17.3 | 2.13            | 17.3 | 2.93 | 17.9 |
| 0.8                                                        |  | 1.92            | 16.6 | 2.65 | 17.3 | 2.09            | 16.6 | 2.87 | 17.3 |
| 0.9                                                        |  | 1.86            | 15.9 | 2.55 | 16.6 | 2.02            | 15.9 | 2.76 | 17.3 |
| 1.0                                                        |  | 1.81            | 15.9 | 2.48 | 16.6 | 1.97            | 15.9 | 2.68 | 16.6 |
| 1.2                                                        |  | 1.74            | 15.2 | 2.36 | 15.9 | 1.89            | 15.2 | 2.55 | 15.9 |
| 1.5                                                        |  | 1.67            | 14.4 | 2.25 | 15.2 | 1.81            | 15.2 | 2.42 | 15.2 |
| 2.0                                                        |  | 1.60            | 14.4 | 2.14 | 14.4 | 1.74            | 14.4 | 2.30 | 14.4 |

$L = 450 \text{ m}$ 

附表 1—9

| $\begin{array}{c} Z_0 \\ U_T/U_{JM} \\ R_v \\ R_s \\ R_{dm} \end{array}$ |  | $0.8e^{1.00}$   |      |                 |      |
|--------------------------------------------------------------------------|--|-----------------|------|-----------------|------|
|                                                                          |  | $0.05 \sim 0.1$ |      | $0.25 \sim 0.3$ |      |
|                                                                          |  | 1.2             | 2.0  | 1.2             | 2.0  |
| 0.4                                                                      |  | 2.53            | 20.2 | 3.61            | 21.1 |
| 0.45                                                                     |  | 2.41            | 19.7 | 3.41            | 20.7 |
| 0.5                                                                      |  | 2.30            | 19.1 | 3.25            | 19.7 |
| 0.55                                                                     |  | 2.22            | 18.5 | 3.11            | 19.1 |
| 0.6                                                                      |  | 2.15            | 17.9 | 3.01            | 18.5 |
| 0.65                                                                     |  | 2.10            | 17.3 | 2.91            | 18.5 |
| 0.7                                                                      |  | 2.05            | 17.3 | 2.83            | 17.9 |
| 0.75                                                                     |  | 2.01            | 17.3 | 2.77            | 17.3 |
| 0.8                                                                      |  | 1.97            | 16.6 | 2.71            | 17.3 |
| 0.9                                                                      |  | 1.91            | 16.6 | 2.61            | 16.6 |
| 1.0                                                                      |  | 1.86            | 15.9 | 2.53            | 16.6 |
| 1.2                                                                      |  | 1.79            | 15.2 | 2.42            | 15.9 |
| 1.5                                                                      |  | 1.72            | 15.2 | 2.30            | 15.2 |
| 2.0                                                                      |  | 1.64            | 14.4 | 2.19            | 14.4 |

 $L = 450 \text{ m}$ 

附表 1—10

| $\begin{array}{c} Z_0 \\ U_T/U_{JM} \\ R_v \\ R_s \\ R_{dm} \end{array}$ |  | $0.9e^{1.00}$   |      |                 |      |
|--------------------------------------------------------------------------|--|-----------------|------|-----------------|------|
|                                                                          |  | $0.05 \sim 0.1$ |      | $0.25 \sim 0.3$ |      |
|                                                                          |  | 1.2             | 2.0  | 1.2             | 2.0  |
| 0.4                                                                      |  | 2.64            | 20.7 | 3.74            | 21.6 |
| 0.45                                                                     |  | 2.50            | 19.7 | 3.53            | 20.7 |
| 0.5                                                                      |  | 2.39            | 19.1 | 3.35            | 20.2 |
| 0.55                                                                     |  | 2.31            | 18.5 | 3.21            | 19.7 |
| 0.6                                                                      |  | 2.23            | 17.9 | 3.10            | 19.1 |
| 0.65                                                                     |  | 2.17            | 17.3 | 3.00            | 18.5 |
| 0.7                                                                      |  | 2.12            | 17.3 | 2.92            | 17.9 |
| 0.75                                                                     |  | 2.08            | 17.3 | 2.85            | 17.9 |
| 0.8                                                                      |  | 2.04            | 16.6 | 2.79            | 17.3 |
| 0.9                                                                      |  | 1.97            | 16.6 | 2.68            | 16.6 |
| 1.0                                                                      |  | 1.92            | 15.9 | 2.60            | 16.6 |
| 1.2                                                                      |  | 1.84            | 15.2 | 2.48            | 15.9 |
| 1.5                                                                      |  | 1.77            | 15.2 | 2.36            | 15.2 |
| 2.0                                                                      |  | 1.69            | 14.4 | 2.24            | 14.4 |

$L = 450 \text{ m}$ 

附表1—11

| $U_T/U_H$ | $Z_0$<br>$R_T$<br>$R_S$<br>$R_{dm}$ | $1.0e^{+4.6}$   |       |                 |      |
|-----------|-------------------------------------|-----------------|-------|-----------------|------|
|           |                                     | $0.06 \sim 0.1$ |       | $0.25 \sim 0.3$ |      |
|           |                                     | 1.2             | 2.0   | 1.2             | 2.0  |
|           |                                     |                 |       |                 |      |
| 0.4       |                                     | 2.73            | 20.73 | 2.86            | 21.6 |
| 0.45      |                                     | 2.59            | 19.73 | 2.83            | 20.2 |
| 0.5       |                                     | 2.47            | 19.13 | 2.79            | 19.7 |
| 0.55      |                                     | 2.38            | 18.53 | 2.66            | 19.1 |
| 0.6       |                                     | 2.30            | 18.53 | 2.51            | 18.5 |
| 0.65      |                                     | 2.24            | 17.93 | 2.41            | 17.9 |
| 0.7       |                                     | 2.19            | 17.33 | 2.32            | 17.3 |
| 0.75      |                                     | 2.14            | 16.73 | 2.23            | 16.7 |
| 0.8       |                                     | 2.10            | 16.63 | 2.25            | 16.6 |
| 0.9       |                                     | 2.03            | 16.63 | 2.20            | 16.6 |
| 1.0       |                                     | 1.98            | 15.83 | 2.17            | 15.9 |
| 1.2       |                                     | 1.90            | 15.23 | 2.03            | 15.9 |
| 1.5       |                                     | 1.82            | 15.23 | 1.96            | 15.2 |
| 2.0       |                                     | 1.74            | 14.43 | 1.87            | 14.4 |

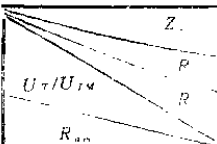
 $L = 450 \text{ m}$ 

附表1—12

| $U_T/U_H$ | $Z_0$<br>$R_T$<br>$R_S$<br>$R_{dm}$ | $1.1e^{+4.6}$   |       |                 |      |
|-----------|-------------------------------------|-----------------|-------|-----------------|------|
|           |                                     | $0.06 \sim 0.1$ |       | $0.25 \sim 0.3$ |      |
|           |                                     | 1.2             | 2.0   | 1.2             | 2.0  |
|           |                                     |                 |       |                 |      |
| 0.4       |                                     | 2.80            | 21.13 | 2.95            | 22.0 |
| 0.45      |                                     | 2.65            | 20.23 | 2.91            | 21.1 |
| 0.5       |                                     | 2.53            | 19.13 | 2.87            | 20.2 |
| 0.55      |                                     | 2.44            | 18.53 | 2.66            | 19.1 |
| 0.6       |                                     | 2.36            | 18.53 | 2.57            | 18.5 |
| 0.65      |                                     | 2.29            | 17.93 | 2.49            | 17.9 |
| 0.7       |                                     | 2.23            | 17.33 | 2.43            | 17.3 |
| 0.75      |                                     | 2.19            | 16.73 | 2.37            | 16.7 |
| 0.8       |                                     | 2.14            | 16.63 | 2.33            | 16.6 |
| 0.9       |                                     | 2.07            | 16.63 | 2.25            | 16.6 |
| 1.0       |                                     | 2.02            | 15.93 | 2.18            | 15.9 |
| 1.2       |                                     | 1.93            | 15.23 | 2.09            | 15.9 |
| 1.5       |                                     | 1.85            | 15.23 | 2.00            | 15.2 |
| 2.0       |                                     | 1.77            | 14.43 | 1.90            | 14.4 |

$L = 500\text{m}$ 

附表1-13

|  | 0.65 $\beta$ |      |          |      |      |      |      |
|-----------------------------------------------------------------------------------|--------------|------|----------|------|------|------|------|
|                                                                                   | 0.05~0.1     |      | 0.25~0.3 |      |      |      |      |
|                                                                                   | 1.2          | 2.0  | 1.2      | 2.0  | 1.2  | 2.0  |      |
| 0.4                                                                               | 2.55         | 21.1 | 3.68     | 22.1 | 2.81 | 21.1 | 4.05 |
| 0.45                                                                              | 2.42         | 20.2 | 3.47     | 21.1 | 2.66 | 20.2 | 3.80 |
| 0.5                                                                               | 2.31         | 19.7 | 3.30     | 20.2 | 2.54 | 19.7 | 3.61 |
| 0.55                                                                              | 2.23         | 19.1 | 3.16     | 19.7 | 2.44 | 19.1 | 3.45 |
| 0.60                                                                              | 2.16         | 18.5 | 3.04     | 19.1 | 2.36 | 18.5 | 3.32 |
| 0.65                                                                              | 2.10         | 17.9 | 2.94     | 18.5 | 2.30 | 18.5 | 3.21 |
| 0.7                                                                               | 2.05         | 17.9 | 2.86     | 18.5 | 2.24 | 17.9 | 3.12 |
| 0.75                                                                              | 2.00         | 17.3 | 2.79     | 17.9 | 2.19 | 17.3 | 3.03 |
| 0.8                                                                               | 1.96         | 17.3 | 2.73     | 17.9 | 2.14 | 17.3 | 2.96 |
| 0.9                                                                               | 1.90         | 16.6 | 2.62     | 17.3 | 2.07 | 16.6 | 2.84 |
| 1.0                                                                               | 1.86         | 15.9 | 2.54     | 16.6 | 2.01 | 16.6 | 2.75 |
| 1.2                                                                               | 1.77         | 15.9 | 2.42     | 15.9 | 1.93 | 15.9 | 2.61 |
| 1.5                                                                               | 1.70         | 15.2 | 2.29     | 15.2 | 1.84 | 15.2 | 2.47 |
| 2.0                                                                               | 1.62         | 14.1 | 2.17     | 14.4 | 1.75 | 14.4 | 2.33 |

 $L = 500\text{m}$ 

附表1-14

|  | 0.7 $\beta$ |      |          |      |      |      |      |
|-----------------------------------------------------------------------------------|-------------|------|----------|------|------|------|------|
|                                                                                   | 0.05~0.1    |      | 0.25~0.3 |      |      |      |      |
|                                                                                   | 1.2         | 2.0  | 1.2      | 2.0  | 1.2  | 2.0  |      |
| 0.4                                                                               | 2.61        | 21.1 | 3.75     | 22.0 | 2.87 | 21.1 | 4.12 |
| 0.45                                                                              | 2.47        | 20.2 | 3.53     | 21.1 | 2.71 | 20.2 | 3.87 |
| 0.5                                                                               | 2.36        | 19.7 | 3.35     | 20.2 | 2.59 | 19.7 | 3.67 |
| 0.55                                                                              | 2.27        | 19.1 | 3.21     | 19.7 | 2.49 | 19.1 | 3.51 |
| 0.60                                                                              | 2.20        | 18.5 | 3.09     | 19.1 | 2.41 | 18.5 | 3.37 |
| 0.65                                                                              | 2.14        | 17.9 | 2.99     | 19.1 | 2.34 | 18.5 | 3.26 |
| 0.7                                                                               | 2.08        | 17.9 | 2.90     | 18.5 | 2.28 | 17.9 | 3.16 |
| 0.75                                                                              | 2.04        | 17.3 | 2.83     | 17.9 | 2.22 | 17.9 | 3.08 |
| 0.8                                                                               | 2.00        | 17.3 | 2.77     | 17.9 | 2.18 | 17.3 | 3.00 |
| 0.9                                                                               | 1.93        | 16.6 | 2.66     | 17.3 | 2.10 | 16.6 | 2.88 |
| 1.0                                                                               | 1.88        | 15.9 | 2.57     | 16.6 | 2.05 | 16.6 | 2.79 |
| 1.2                                                                               | 1.80        | 15.9 | 2.45     | 15.9 | 1.96 | 15.9 | 2.64 |
| 1.5                                                                               | 1.72        | 15.2 | 2.32     | 15.2 | 1.87 | 15.2 | 2.50 |
| 2.0                                                                               | 1.65        | 14.4 | 2.20     | 14.4 | 1.78 | 14.4 | 2.36 |

$L = 500 \text{ m}$ 

附表1-15

|      | $0.8e^{100}$    |      |                 |      |
|------|-----------------|------|-----------------|------|
|      | $0.06 \sim 0.1$ |      | $0.25 \sim 0.3$ |      |
|      | 1.2             | 2.0  | 1.2             | 2.0  |
|      |                 |      |                 |      |
| 0.4  | 2.71            | 21.1 | 3.88            | 22.0 |
| 0.45 | 2.56            | 20.2 | 3.64            | 21.1 |
| 0.5  | 2.45            | 19.7 | 3.46            | 20.7 |
| 0.55 | 2.35            | 19.1 | 3.31            | 20.2 |
| 0.60 | 2.27            | 18.5 | 3.18            | 19.7 |
| 0.65 | 2.21            | 17.9 | 3.08            | 19.1 |
| 0.7  | 2.15            | 17.3 | 2.99            | 18.5 |
| 0.75 | 2.10            | 16.8 | 2.91            | 17.9 |
| 0.8  | 2.06            | 16.3 | 2.84            | 17.3 |
| 0.9  | 1.99            | 15.6 | 2.73            | 16.6 |
| 1.0  | 1.94            | 15.0 | 2.64            | 15.9 |
| 1.2  | 1.85            | 13.9 | 2.51            | 15.2 |
| 1.5  | 1.77            | 12.2 | 2.38            | 14.4 |
| 2.0  | 1.68            | 10.4 | 2.25            | 13.4 |

 $L = 500 \text{ m}$ 

附表1-16

|      | $0.9e^{100}$    |      |                 |      |
|------|-----------------|------|-----------------|------|
|      | $0.06 \sim 0.1$ |      | $0.25 \sim 0.3$ |      |
|      | 1.2             | 2.0  | 1.2             | 2.0  |
|      |                 |      |                 |      |
| 0.4  | 2.83            | 21.6 | 4.04            | 22.5 |
| 0.45 | 2.68            | 20.7 | 3.79            | 21.3 |
| 0.5  | 2.55            | 19.7 | 3.59            | 20.7 |
| 0.55 | 2.45            | 19.1 | 3.43            | 20.2 |
| 0.6  | 2.37            | 18.5 | 3.29            | 19.7 |
| 0.65 | 2.30            | 17.9 | 3.18            | 19.1 |
| 0.7  | 2.24            | 17.3 | 3.09            | 18.5 |
| 0.75 | 2.19            | 16.8 | 3.00            | 17.9 |
| 0.8  | 2.14            | 16.3 | 2.93            | 17.3 |
| 0.9  | 2.07            | 15.6 | 2.82            | 16.6 |
| 1.0  | 2.01            | 15.0 | 2.72            | 15.9 |
| 1.2  | 1.92            | 13.9 | 2.58            | 15.2 |
| 1.5  | 1.83            | 12.2 | 2.44            | 14.4 |
| 2.0  | 1.75            | 10.4 | 2.31            | 13.4 |

$L = 500\text{m}$ 

附表1-17

| $Z_0$<br>$R_1$<br>$R_2$<br>$R_{dm}$ |  | $1.0e^{+4.0}$ |      |      |      |          |      |      |      |
|-------------------------------------|--|---------------|------|------|------|----------|------|------|------|
|                                     |  | 0.06~0.1      |      |      |      | 0.25~0.3 |      |      |      |
|                                     |  | 1.2           |      | 2.0  |      | 1.2      |      | 2.0  |      |
| 0.4                                 |  | 2.95          | 21.6 | 4.18 | 22.5 | 3.24     | 22.0 | 4.58 | 23.3 |
| 0.45                                |  | 2.78          | 20.7 | 3.92 | 21.6 | 3.05     | 21.1 | 4.28 | 22.0 |
| 0.5                                 |  | 2.63          | 20.2 | 3.71 | 20.7 | 2.90     | 20.2 | 4.04 | 21.6 |
| 0.55                                |  | 2.54          | 19.1 | 3.54 | 20.2 | 2.78     | 19.7 | 3.85 | 20.7 |
| 0.6                                 |  | 2.45          | 19.1 | 3.40 | 19.7 | 2.68     | 19.1 | 3.69 | 20.2 |
| 0.65                                |  | 2.38          | 18.5 | 3.28 | 19.1 | 2.59     | 18.5 | 3.56 | 19.7 |
| 0.7                                 |  | 2.31          | 17.9 | 3.18 | 18.5 | 2.52     | 18.5 | 3.45 | 19.1 |
| 0.75                                |  | 2.26          | 17.9 | 3.09 | 18.5 | 2.46     | 17.9 | 3.35 | 18.5 |
| 0.8                                 |  | 2.21          | 17.3 | 3.02 | 17.9 | 2.40     | 17.9 | 3.27 | 18.5 |
| 0.9                                 |  | 2.13          | 16.6 | 2.89 | 17.3 | 2.32     | 17.3 | 3.13 | 17.9 |
| 1.0                                 |  | 2.07          | 16.6 | 2.80 | 17.3 | 2.25     | 16.6 | 3.02 | 17.3 |
| 1.2                                 |  | 1.93          | 15.9 | 2.65 | 15.9 | 2.14     | 15.9 | 2.85 | 16.6 |
| 1.5                                 |  | 1.79          | 15.2 | 2.51 | 15.2 | 2.04     | 15.2 | 2.69 | 15.9 |
| 2.0                                 |  | 1.60          | 14.4 | 2.36 | 14.4 | 1.93     | 14.4 | 2.53 | 15.2 |

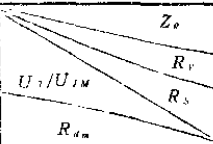
 $L = 500\text{m}$ 

附表1-18

| $\begin{array}{c} Z_0 \\ U_T/U_{TM} \\ R_{dm} \end{array}$ |  | $1.1e^{+4.0}$ |      |          |      |      |      |      |      |
|------------------------------------------------------------|--|---------------|------|----------|------|------|------|------|------|
|                                                            |  | 0.06~0.1      |      | 0.25~0.3 |      |      |      |      |      |
|                                                            |  | 1.2           | 2.0  | 1.2      | 2.0  |      |      |      |      |
| 0.4                                                        |  | 3.04          | 22.0 | 4.29     | 22.9 | 3.33 | 22.0 | 4.69 | 23.3 |
| 0.45                                                       |  | 2.86          | 20.7 | 4.01     | 21.6 | 3.13 | 21.1 | 4.38 | 22.5 |
| 0.5                                                        |  | 2.72          | 20.2 | 3.79     | 21.1 | 2.97 | 20.2 | 4.14 | 21.6 |
| 0.55                                                       |  | 2.61          | 19.7 | 3.62     | 20.2 | 2.85 | 19.7 | 3.94 | 20.7 |
| 0.6                                                        |  | 2.52          | 19.1 | 3.47     | 19.7 | 2.74 | 19.1 | 3.77 | 20.2 |
| 0.65                                                       |  | 2.44          | 18.5 | 3.35     | 19.1 | 2.65 | 18.5 | 3.64 | 19.7 |
| 0.7                                                        |  | 2.37          | 17.9 | 3.25     | 19.1 | 2.58 | 18.5 | 3.52 | 19.1 |
| 0.75                                                       |  | 2.32          | 17.9 | 3.16     | 18.5 | 2.52 | 17.9 | 3.42 | 19.1 |
| 0.8                                                        |  | 2.27          | 17.3 | 3.08     | 17.9 | 2.46 | 17.9 | 3.33 | 18.5 |
| 0.9                                                        |  | 2.18          | 16.6 | 2.95     | 17.3 | 2.37 | 17.3 | 3.19 | 17.9 |
| 1.0                                                        |  | 2.12          | 16.6 | 2.85     | 17.3 | 2.29 | 16.6 | 3.07 | 17.3 |
| 1.2                                                        |  | 2.02          | 15.9 | 2.70     | 15.6 | 2.19 | 15.9 | 2.90 | 16.6 |
| 1.5                                                        |  | 1.93          | 15.2 | 2.55     | 15.2 | 2.08 | 15.2 | 2.73 | 15.9 |
| 2.0                                                        |  | 1.83          | 14.4 | 2.40     | 14.4 | 1.97 | 14.4 | 2.57 | 15.2 |

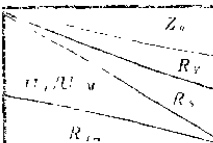
$L = 550 \text{ m}$ 

附表1-19

|  |  | $0.65c^{70}$ |      |      |      |          |      |      |      |
|-----------------------------------------------------------------------------------|--|--------------|------|------|------|----------|------|------|------|
|                                                                                   |  | 0.06~0.1     |      |      |      | 0.25~0.3 |      |      |      |
|                                                                                   |  | 1.2          |      | 2.0  |      | 1.2      |      | 2.0  |      |
|                                                                                   |  | 1.2          | 2.0  | 1.2  | 2.0  | 1.2      | 2.0  | 1.2  | 2.0  |
| 0.4                                                                               |  | 2.71         | 21.6 | 3.92 | 22.9 | 2.98     | 22.0 | 4.31 | 23.3 |
| 0.45                                                                              |  | 2.56         | 20.7 | 3.68 | 22.0 | 2.81     | 21.1 | 4.04 | 22.5 |
| 0.5                                                                               |  | 2.44         | 20.2 | 3.48 | 21.1 | 2.68     | 20.2 | 3.82 | 21.6 |
| 0.55                                                                              |  | 2.34         | 19.7 | 3.33 | 20.2 | 2.57     | 19.7 | 3.64 | 20.7 |
| 0.6                                                                               |  | 2.26         | 19.1 | 3.20 | 19.7 | 2.48     | 19.1 | 3.49 | 20.2 |
| 0.65                                                                              |  | 2.19         | 18.5 | 3.09 | 19.1 | 2.40     | 18.5 | 3.37 | 19.7 |
| 0.7                                                                               |  | 2.14         | 17.9 | 2.99 | 19.1 | 2.34     | 18.8 | 3.26 | 19.1 |
| 0.75                                                                              |  | 2.09         | 17.9 | 2.91 | 18.5 | 2.28     | 17.9 | 3.17 | 19.1 |
| 0.8                                                                               |  | 2.04         | 17.3 | 2.84 | 17.9 | 2.23     | 17.9 | 3.09 | 18.5 |
| 0.9                                                                               |  | 1.97         | 17.3 | 2.73 | 17.3 | 2.15     | 17.3 | 2.96 | 17.9 |
| 1.0                                                                               |  | 1.91         | 16.6 | 2.63 | 17.3 | 2.08     | 16.6 | 2.80 | 17.3 |
| 1.2                                                                               |  | 1.83         | 15.9 | 2.50 | 16.6 | 1.99     | 15.9 | 2.70 | 16.6 |
| 1.5                                                                               |  | 1.74         | 15.2 | 2.36 | 15.9 | 1.89     | 15.2 | 2.54 | 15.9 |
| 2.0                                                                               |  | 1.66         | 14.4 | 2.22 | 14.4 | 1.80     | 14.4 | 2.39 | 15.2 |

 $L = 550 \text{ m}$ 

附表1-20

|  |  | $0.7c^{70}$ |      |      |      |          |      |      |      |
|-----------------------------------------------------------------------------------|--|-------------|------|------|------|----------|------|------|------|
|                                                                                   |  | 0.06~0.1    |      |      |      | 0.25~0.3 |      |      |      |
|                                                                                   |  | 1.2         |      | 2.0  |      | 1.2      |      | 2.0  |      |
|                                                                                   |  | 1.2         | 2.0  | 1.2  | 2.0  | 1.2      | 2.0  | 1.2  | 2.0  |
| 0.4                                                                               |  | 2.77        | 21.6 | 4.00 | 22.9 | 3.05     | 22.0 | 4.40 | 23.3 |
| 0.45                                                                              |  | 2.62        | 21.1 | 3.75 | 22.0 | 2.88     | 21.1 | 4.12 | 22.5 |
| 0.5                                                                               |  | 2.49        | 20.2 | 3.55 | 21.1 | 2.74     | 20.7 | 3.89 | 21.6 |
| 0.55                                                                              |  | 2.39        | 19.7 | 3.39 | 20.7 | 2.62     | 19.7 | 3.71 | 21.1 |
| 0.6                                                                               |  | 2.31        | 19.1 | 3.25 | 19.7 | 2.53     | 19.1 | 3.55 | 20.2 |
| 0.65                                                                              |  | 2.24        | 18.5 | 3.14 | 19.7 | 2.46     | 19.1 | 3.43 | 19.7 |
| 0.7                                                                               |  | 2.18        | 17.9 | 3.05 | 19.1 | 2.38     | 18.5 | 3.32 | 19.7 |
| 0.75                                                                              |  | 2.13        | 17.9 | 2.96 | 18.5 | 2.32     | 17.9 | 3.22 | 19.1 |
| 0.8                                                                               |  | 2.08        | 17.3 | 2.89 | 18.5 | 2.27     | 17.9 | 3.14 | 18.5 |
| 0.9                                                                               |  | 2.01        | 17.3 | 2.77 | 17.9 | 2.19     | 17.3 | 3.01 | 17.9 |
| 1.0                                                                               |  | 1.95        | 16.6 | 2.68 | 17.3 | 2.12     | 16.6 | 2.90 | 17.3 |
| 1.2                                                                               |  | 1.86        | 15.9 | 2.53 | 16.6 | 2.02     | 15.9 | 2.74 | 16.6 |
| 1.5                                                                               |  | 1.77        | 15.2 | 2.39 | 15.9 | 1.92     | 15.2 | 2.58 | 15.9 |
| 2.0                                                                               |  | 1.69        | 14.4 | 2.25 | 15.2 | 1.82     | 14.4 | 2.42 | 15.2 |

$L = 550 \text{ m}$ 

附表1-21

| $U_T/U_{IM}$<br>$R_{dm}$ | $Z_g$<br>$R_v$<br>$R_s$ | $0.8e^{j90^\circ}$ |      |      |      |          |      |      |      |
|--------------------------|-------------------------|--------------------|------|------|------|----------|------|------|------|
|                          |                         | 0.06~0.1           |      |      |      | 0.25~0.3 |      |      |      |
|                          |                         | 1.2                |      | 2.0  |      | 1.2      |      | 2.0  |      |
|                          |                         | 1.2                | 2.0  | 1.2  | 2.0  | 1.2      | 2.0  | 1.2  | 2.0  |
| 0.4                      |                         | 2.89               | 23.0 | 4.16 | 22.9 | 3.18     | 23.7 | 4.58 | 22.5 |
| 0.45                     |                         | 2.73               | 21.1 | 3.85 | 22.0 | 2.99     | 22.5 | 4.28 | 21.6 |
| 0.5                      |                         | 2.59               | 20.2 | 3.68 | 21.1 | 2.84     | 21.6 | 4.02 | 20.7 |
| 0.55                     |                         | 2.49               | 19.7 | 3.50 | 20.7 | 2.72     | 21.1 | 3.83 | 20.2 |
| 0.6                      |                         | 2.40               | 19.1 | 3.36 | 20.2 | 2.62     | 20.7 | 3.67 | 19.7 |
| 0.65                     |                         | 2.32               | 18.5 | 3.24 | 19.7 | 2.54     | 20.2 | 3.53 | 19.1 |
| 0.7                      |                         | 2.26               | 18.0 | 3.14 | 19.1 | 2.47     | 19.7 | 3.41 | 18.5 |
| 0.75                     |                         | 2.21               | 17.5 | 3.05 | 18.5 | 2.41     | 19.1 | 3.32 | 17.9 |
| 0.8                      |                         | 2.16               | 17.0 | 2.98 | 18.0 | 2.35     | 18.5 | 3.23 | 17.4 |
| 0.9                      |                         | 2.08               | 17.3 | 2.85 | 17.9 | 2.26     | 17.9 | 3.09 | 17.3 |
| 1.0                      |                         | 2.02               | 16.6 | 2.75 | 17.3 | 2.19     | 17.3 | 2.98 | 16.6 |
| 1.2                      |                         | 1.93               | 15.9 | 2.60 | 16.6 | 2.09     | 16.6 | 2.81 | 15.9 |
| 1.5                      |                         | 1.83               | 15.2 | 2.46 | 15.9 | 1.98     | 15.9 | 2.64 | 15.2 |
| 2.0                      |                         | 1.74               | 14.4 | 2.31 | 15.2 | 1.88     | 15.2 | 2.48 | 14.4 |

 $L = 550 \text{ m}$ 

附表1-22

| $U_T/U_{IM}$<br>$R_{dm}$ | $Z_g$<br>$R_v$<br>$R_s$ | $0.9e^{j90^\circ}$ |      |      |      |          |      |      |      |
|--------------------------|-------------------------|--------------------|------|------|------|----------|------|------|------|
|                          |                         | 0.06~0.1           |      |      |      | 0.25~0.3 |      |      |      |
|                          |                         | 1.2                |      | 2.0  |      | 1.2      |      | 2.0  |      |
|                          |                         | 1.2                | 2.0  | 1.2  | 2.0  | 1.2      | 2.0  | 1.2  | 2.0  |
| 0.4                      |                         | 3.04               | 22.0 | 4.35 | 23.3 | 3.34     | 22.5 | 4.77 | 23.7 |
| 0.45                     |                         | 2.86               | 21.1 | 4.06 | 22.5 | 3.14     | 21.6 | 4.44 | 22.9 |
| 0.5                      |                         | 2.72               | 20.7 | 3.83 | 21.6 | 2.98     | 20.7 | 4.19 | 22.0 |
| 0.55                     |                         | 2.60               | 19.7 | 3.65 | 20.7 | 2.85     | 20.2 | 3.98 | 21.1 |
| 0.6                      |                         | 2.51               | 19.1 | 3.50 | 20.2 | 2.74     | 19.7 | 3.81 | 20.7 |
| 0.65                     |                         | 2.43               | 18.5 | 3.37 | 19.7 | 2.65     | 19.1 | 3.67 | 20.2 |
| 0.7                      |                         | 2.36               | 18.0 | 3.26 | 19.1 | 2.57     | 18.5 | 3.54 | 19.7 |
| 0.75                     |                         | 2.30               | 17.5 | 3.17 | 18.5 | 2.50     | 18.0 | 3.44 | 19.1 |
| 0.8                      |                         | 2.25               | 17.0 | 3.09 | 18.0 | 2.45     | 17.9 | 3.35 | 18.5 |
| 0.9                      |                         | 2.16               | 17.3 | 2.95 | 17.9 | 2.35     | 17.3 | 3.20 | 17.9 |
| 1.0                      |                         | 2.10               | 16.6 | 2.85 | 17.3 | 2.28     | 17.3 | 3.08 | 17.3 |
| 1.2                      |                         | 2.00               | 15.9 | 2.69 | 16.6 | 2.16     | 16.6 | 2.90 | 16.6 |
| 1.5                      |                         | 1.90               | 15.2 | 2.53 | 15.9 | 2.05     | 15.2 | 2.72 | 15.9 |
| 2.0                      |                         | 1.80               | 14.4 | 2.38 | 15.2 | 1.94     | 14.4 | 2.55 | 15.2 |

$L = 550\text{m}$

附表 1—23

|      |  | $10C^{1.4}$     |      |       |      |                 |      |       |      |
|------|--|-----------------|------|-------|------|-----------------|------|-------|------|
|      |  | $0.06 \sim 0.1$ |      |       |      | $0.25 \sim 0.3$ |      |       |      |
|      |  | $R_v$           |      | $R_s$ |      | $R_v$           |      | $R_s$ |      |
|      |  | 1.2             | 20   | 1.2   | 20   | 1.2             | 20   | 1.2   | 20   |
| 0.4  |  | 3.18            | 22.5 | 4.53  | 23.7 | 3.49            | 22.9 | 4.96  | 24.0 |
| 0.45 |  | 2.99            | 21.6 | 4.22  | 22.5 | 3.27            | 21.6 | 4.61  | 22.9 |
| 0.5  |  | 2.84            | 20.7 | 3.98  | 21.6 | 3.10            | 21.1 | 4.34  | 22.0 |
| 0.55 |  | 2.71            | 20.2 | 3.78  | 21.1 | 2.96            | 20.2 | 4.12  | 21.6 |
| 0.6  |  | 2.61            | 19.7 | 3.68  | 20.2 | 2.85            | 19.7 | 3.94  | 20.7 |
| 0.65 |  | 2.52            | 19.1 | 3.49  | 19.7 | 2.75            | 19.1 | 3.79  | 20.2 |
| 0.7  |  | 2.45            | 18.5 | 3.37  | 19.7 | 2.67            | 19.1 | 3.66  | 19.7 |
| 0.75 |  | 2.39            | 17.9 | 3.27  | 19.1 | 2.60            | 18.5 | 3.55  | 19.1 |
| 0.8  |  | 2.33            | 17.3 | 3.19  | 18.5 | 2.54            | 17.9 | 3.45  | 19.1 |
| 0.9  |  | 2.24            | 17.3 | 3.05  | 17.9 | 2.43            | 17.3 | 3.29  | 18.5 |
| 1.0  |  | 2.17            | 16.6 | 2.93  | 17.3 | 2.35            | 17.3 | 3.17  | 17.9 |
| 1.2  |  | 2.06            | 15.9 | 2.77  | 16.6 | 2.23            | 16.6 | 2.98  | 16.6 |
| 1.5  |  | 1.96            | 15.2 | 2.60  | 15.9 | 2.12            | 15.9 | 2.79  | 15.9 |
| 2.0  |  | 1.86            | 14.4 | 2.44  | 15.2 | 2.00            | 15.2 | 2.61  | 15.2 |

$L = 550\text{m}$

附表 1—24

|      |  | $1.18^{1.4}$    |      |       |      |                 |      |       |      |
|------|--|-----------------|------|-------|------|-----------------|------|-------|------|
|      |  | $0.06 \sim 0.1$ |      |       |      | $0.25 \sim 0.3$ |      |       |      |
|      |  | $R_v$           |      | $R_s$ |      | $R_v$           |      | $R_s$ |      |
|      |  | 1.2             | 20   | 1.2   | 20   | 1.2             | 20   | 1.2   | 20   |
| 0.4  |  | 3.29            | 22.9 | 4.66  | 23.7 | 3.60            | 22.9 | 5.10  | 24.0 |
| 0.45 |  | 3.08            | 21.6 | 4.34  | 22.9 | 3.37            | 22.0 | 4.74  | 23.3 |
| 0.5  |  | 2.92            | 20.7 | 4.08  | 22.0 | 3.19            | 21.1 | 4.45  | 22.5 |
| 0.55 |  | 2.79            | 20.2 | 3.88  | 21.1 | 3.04            | 20.7 | 4.22  | 21.6 |
| 0.6  |  | 2.68            | 19.7 | 3.71  | 20.7 | 2.92            | 19.7 | 4.03  | 21.1 |
| 0.65 |  | 2.59            | 19.1 | 3.57  | 20.2 | 2.82            | 19.1 | 3.88  | 20.2 |
| 0.7  |  | 2.52            | 18.5 | 3.45  | 19.7 | 2.74            | 19.1 | 3.74  | 19.7 |
| 0.75 |  | 2.45            | 18.5 | 3.35  | 19.1 | 2.66            | 18.5 | 3.63  | 19.7 |
| 0.8  |  | 2.40            | 17.9 | 3.26  | 18.5 | 2.60            | 17.9 | 3.53  | 19.1 |
| 0.9  |  | 2.30            | 17.3 | 3.11  | 17.9 | 2.49            | 17.9 | 3.36  | 18.5 |
| 1.0  |  | 2.23            | 16.6 | 3.00  | 17.3 | 2.41            | 17.3 | 3.23  | 17.9 |
| 1.2  |  | 2.12            | 15.9 | 2.82  | 16.6 | 2.29            | 16.6 | 3.04  | 17.3 |
| 1.5  |  | 2.01            | 15.2 | 2.65  | 15.9 | 2.16            | 15.9 | 2.85  | 15.9 |
| 2.0  |  | 1.90            | 14.4 | 2.49  | 15.2 | 2.04            | 15.2 | 2.66  | 15.2 |