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**INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

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**Calculation method of audible noise from high voltage
overhead**

高压交流架空输电线路可听噪声计算方法

(English Translation)

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Foreword

Appendix A, Appendix B and Appendix C of this standard are informative appendices.

This standard was proposed by the Standardization Management Center of the China Electricity Council.

This standard is under the jurisdiction and interpretation of the National Electromagnetic Compatibility Standardization Technical Committee (SAC/TC 246).

The organization responsible for drafting this standard. China Electric Power Research Institute Co., Ltd., North China Electric Power University, State Grid Co., Ltd., Power Regulation Planning Design Institute, State Grid Shandong Electric Power Company Electric Power Research Institute.

1 Scope

This standard recommends the calculation method for audible noise of high voltage AC overhead transmission lines.

This standard is applicable to the calculation of the audible noise level of high-voltage AC overhead transmission lines operating normally from 110kV to 1000kV.

The audible noise generated by transmission lines at altitudes above 500m needs to be corrected.

2 Normative references

The following documents are indispensable for the application of this document. For dated reference documents, only the dated version applies to this document.

For undated references, the latest version (including all amendments) applies to this document.

GB 3096-2008 Acoustic Environmental Quality Standard

3 Terms and definitions

The following terms and definitions defined in GB 3096-2008 apply to this document.

Audible noise of transmission lines the audible noise produced by the corona discharge of the transmission line is called the audible noise of the transmission line.

Sound power

Sound energy passing through a certain area per unit time.

Sound power level

The base 10 logarithm of the ratio of sound power to reference sound power, usually in dB, and the reference sound power must be specified. Common base the quasi-sound power is 1pW (10-12W).

Note: The frequency weighting or bandwidth used must be indicated, such as A-weighted sound power level (LWA).

Cumulative sound level an index used to evaluate the temporal statistical distribution characteristics of noise intensity during the measurement period, which refers to a certain percentage of the cumulative time in the measurement period the minimum value of A sound level, expressed in LN, in dB(A). The meanings of L5 and L50 in this standard are as follows.

Rainy day L5 value. the value that the sound level A exceeds 5% of the time on a rainy day, which is equivalent to the value of the audible noise of transmission lines under heavy rain conditions.

Rainy day L50 value. The value that A sound level exceeds 50% of the time in a rainy day, which is equivalent to the average median value of the audible noise of a transmission line in a rainy day.

4.1 Calculation formula of audible noise A-weighted sound power level of single-phase conductor

Audible noise generated by transmission lines under heavy rain conditions.

4.2 Calculation formula for L5 value of audible noise of transmission line in rainy day

For the A-weighted sound level of audible noise generated by polyphase lines, the L5 value in rainy days can be calculated according to formula (2).

4.3 Calculation formula of L50 value of audible noise of transmission line in rainy day

The L50 value of the audible noise of transmission lines in rainy weather can be calculated by formula (3).

Appendix B

(Informative appendix) BPA (Bonwell Electric Power Agency, USA) audible noise sound power calculation formula Appendix C (Informative appendix) Examples of audible noise calculation for transmission lines

Figure C.1 Schematic diagram of the distance between the traverse and the observation point