

HJ

INDUSTRY STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

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Method for monitoring electromagnetic radiation environment of shortwave broadcasting transmitting station

短波广播发射台电磁辐射环境监测方法

(English Translation)

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1 Scope of application

This standard specifies the technical requirements for the content and methods of electromagnetic radiation environmental monitoring for shortwave broadcasting transmitters.

This standard applies to electromagnetic radiation environment monitoring of shortwave broadcasting transmitters.

2 Normative references

This standard refers to the following documents or clauses thereof. For dated references, only the dated version applies to this standard.

For undated references, the latest edition (including all amendments) applies to this standard.

HJ 1112 Environmental Impact Assessment Technical Guidelines for Radio and Television

HJ 1152 Construction Project Completion Environmental Protection Acceptance Technical Specifications Radio and Television

3 Terms and Definitions

The following terms and definitions apply to this standard.

short-wave broadcasting Sound broadcasting and digital broadcasting working in the short-wave frequency band (2.3 MHz ~ 26.1 MHz).

transmitting station A radio station consisting of one or more transmitters and an antenna feeder system.

electromagnetic radiation environment-sensitive target Electromagnetic radiation environmental impact assessment and monitoring should focus on the objects. Including residences, schools, hospitals, office buildings, factories, etc.

A building for living, working or studying.

4.1 Environmental conditions

The environmental conditions during monitoring should meet the requirements for the use of monitoring instruments.

4.2.1 Basic requirements

The working performance of the monitoring instrument should meet the requirements of the electromagnetic field to be measured, and the working frequency can cover the transmitting frequency of the monitored short-wave broadcasting transmitter.

Rate.

The monitoring instrument should use a frequency-selective electromagnetic radiation monitor, and the monitoring frequency and bandwidth should be selected from the emission frequency of the measured object in the normal working state.

and bandwidth.

The monitoring instrument should use a probe (antenna) with isotropic response, and the monitoring instrument bracket should be made of non-conductive material that is not easily affected by moisture.

The detection method of the monitoring instrument shall be the root mean square value detection method, and the reading of the monitoring instrument shall be the average value within any continuous 6 minutes.

4.2.2 Frequency Selective Electromagnetic Radiation Monitor

Frequency selective electromagnetic radiation monitor refers to the ability to receive and process the spectral components of a specific emission within the response frequency range of the instrument.

The basic requirements of its electrical performance are shown in Table 1.

4.3 Monitoring conditions

The monitoring of shortwave broadcasting transmitting station shall be carried out under normal operating conditions of the transmitting antenna.

5.1 Basic requirements

5.1.1

The monitoring scope is the same as the electromagnetic radiation environmental impact assessment scope in HJ 1112 or HJ 1152.

5.1.2

The monitoring location and frequency should be based on the representativeness of monitoring data, environmental quality characteristics, changes and environmental impact assessment, and environmental protection after completion.

The requirements for nursing acceptance are determined.

5.1.3

When monitoring the short-wave broadcasting transmitting station, the cross-section monitoring path should select the direction of the maximum radiation field strength of the antenna under test, and the maximum Field strength; the direction of the maximum radiated field strength is given and positioned by the construction unit or the antenna design unit.

5.2 Data collection

5.2.1

Before monitoring, the basic information of the shortwave broadcasting transmitting station under test should be collected, including. name of the shortwave broadcasting transmitting station, construction location, radio frequency, transmit power, transmit bandwidth, antenna type and number, operating status, etc.

5.2.2

According to the nature and purpose of monitoring, the collected information also includes. antenna distribution, emission direction, modulation method, transmitter operation safety, etc.

wait.

5.3 Monitoring factors

The electromagnetic radiation environment monitoring factor of shortwave broadcasting transmitter is radio frequency electromagnetic field, and the monitoring parameters are electric field intensity (or power density), magnetic field strength. In the far-field area, the monitoring parameters are electric field strength, power density or magnetic field strength; in the near-field area, the electric field strength, magnetic field strength and strength.

See HJ 1112 for the division of far and near fields.

5.4.1 General provisions

The monitoring points shall be implemented in accordance with the relevant regulations of HJ 1112 or HJ 1152.

5.4.2 Monitoring of Environmentally Sensitive Targets of Electromagnetic Radiation

When monitoring outside the building, the points should be preferentially arranged at the place closest to the antenna in the daily life or work of the public.

(e.g. ladders) or by special means (e.g. climbing).

When monitoring in a building, the point is preferentially arranged at the window (balcony) position facing the short-wave antenna, and the probe (antenna) should be placed on the window frame (at the sun).

You can also select the central position of the room within the interface of the station. The distance between the probe (antenna) and household appliances and other equipment is not less than 1 m.

The layout of monitoring points should consider the electromagnetic field distribution on different floors facing the transmitting antenna side.

When the emission direction of the short-wave antenna is variable, the electromagnetic radiation environment-sensitive targets within the evaluation range of different emission directions should be monitored.

5.4.3 Section Monitoring

Omnidirectional antenna. Starting from the geometric center point of the ground projection of the antenna, the monitoring path is carried out along the direction of the maximum radiation field strength of the antenna. Monitoring point the distance is generally 10 m, and the distance between monitoring points can also be set according to the site conditions, and the monitoring is carried out sequentially to the evaluation range.

Directional antenna. starting from the geometric center point of the ground projection of the antenna, monitoring the maximum radiation along the antenna lobe (main lobe, side lobe or back lobe).

The direction of the field strength is carried out. The distance between monitoring points is generally 10 m, and the distance between monitoring points can also be set according to site conditions, and the monitoring to evaluation is performed in sequence.

scope.

The monitoring point should be selected in a flat and open place, and avoid buildings, trees,