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

GY/T 196-2003

**Technical specifications for coverage networks of FM sound
broadcasting
(English Translation)**

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Foreword

This standard is based on the original 1991 administrative document "Planning Methods for FM Broadcasting Coverage Network" of the Science and Technology Department of the Ministry of Radio, Film, and Television, and China's current legislation.

The stereo FM broadcasting plan is based on the recommendations of ITU-R P.370-7 and ITU-R BS.412-9. If necessary, you can also consider participating Plan adjustments according to relevant ITU Recommendations.

This standard is under the jurisdiction of the National Radio and Television Standardization Technical Committee.

Drafting organizations of this standard. Institute of Standardization Planning of the State Administration of Radio, Film and Television, Administration of Radio Stations of the State Administration of Radio, Film, and Television Bureau, State Radio, Film and Television Administration Monitoring Center.

1 Scope

This standard specifies the main technical requirements for FM broadcasting coverage networks on the ground meter wave (VHF) segment, the service area and transmission of FM broadcasting transmitters.

Method for estimating the interference between machines. This standard does not include the relevant technical regulations related to FM synchronous broadcast coverage networks.

This standard is applicable to the preparation of FM broadcasting coverage network planning and the assignment and management of FM broadcasting frequencies.

2 Normative references

The clauses in the following documents have become the clauses of this standard after being referenced. For dated references, all subsequent Neither amendments (excluding errata) or revised versions are applicable to this standard, however, parties who have reached an agreement under this standard are encouraged to study is the latest version of these files available? For undated references, the latest version applies to this standard.

GB/T 4311-2000 meter wave FM broadcasting technical specifications GB 6364-1986 electromagnetic environment requirements for aeronautical radio navigation stations GB/T 7400.1 General part of radio and television terminology GB/T 7400.2 Radio and television terminology radio broadcasting GB/T 14433-1993 Technical Regulations for Color TV Broadcast Coverage Network GJB 2081-1994 Compatibility between broadcast services in the 87MHz ~ 108MHz frequency band and aviation services in the 108MHz ~ 137MHz frequency band GJBz.20093-1992 VHF/UHF aeronautical radio communication station electromagnetic environment requirements ITU-R BS.412-9 Planning standards for terrestrial FM sound broadcasting in the VHF band ITU-R BS.704 planning reference receiver characteristics for stereo FM sound broadcasting ITU-R IS.1009 The sound broadcasting service in the frequency band of about 87MHz to 108MHz is the same as the aviation service in the frequency band of 108MHz to 137MHz.

Compatibility

ITU-R P.370-7 VHF/UHF radio wave propagation curve in the range of 30MHz to 1000MHz

3 Terms and definitions

The following terms and definitions apply to this standard.

Service field strength E (50, 50) the radio wave field strength for direct public reception refers to the radio wave field when the probability of the transmitter to be received is 50% at the location and time.

Strong.

Normalized service field strength E_1 (50, 50) Service field strength when effective radiated power is 1kW.

Interfering field strength E_i (50, T) the field strength of a non-receiving transmitter that interferes with the desired transmitter.

For stable interference, the time probability T is 50%; for tropospheric interference, T is 10%.

Normalized interfering field strength E_{i1} (50, T) the interference field strength when the effective radiated power is 1kW.

Stable interference, T equals 50%; tropospheric interference, T equals 10%.

Minimum usable field strength E_{min} in the case of natural and artificial noise without interference from other transmitters, the field strength necessary to satisfy the reception under specified conditions the minimum value.

Usable field strength E_u when there is natural noise, artificial noise, and interference in the actual situation (such as co-channel adjacent frequency interference caused by the frequency planning results), Minimum field strength required to satisfy reception under specified conditions.

Nominal usable field strength E_{nom} in the case of natural noise, artificial noise and other transmitter interference, the quotient of the field strength necessary for satisfactory reception under specified conditions Fixed minimum.

Harmful field

The sum of the interference field strength of the non-receiving transmitter and the dB value of the protection rate required by the receiving transmitter to resist the interference.

Field strength for rebroadcasting the service field strength at which the transmitting source reaches the receiving antenna of the relay station.

3.10

Effective height of the transmitting antenna h_1 the difference between the average altitude of the center of the transmitting antenna element and the average altitude between the distance of 3km to 15km from the antenna along the receiving direction. It is equal to the sum of the height of the transmitting antenna (h_a) and the relative height of the transmitting antenna site (h_r).

3.10.1

Height of transmitting antenna h_a the center of the transmitting antenna is higher than the ground level.

3.10.2

Relative height of transmitting antenna field h_r the difference between the altitude of the location where the transmitting antenna is located and the average altitude between the distance of 3km to 15km from the antenna along the receiving direction.

3.11

Degree of terrain irregularity Δh Draw a horizontal line cluster on the topographic profile within the range of 10km to 50km from the transmitting point along the receiving direction, and first find out the length of the section cut off from the profile.

The sum is a 4km horizontal line, and then the horizontal line whose cross-section length is 36km is found, and the height difference between the two horizontal lines.

3.12

Effective radiated power P_e the sum of the power fed to an antenna (taking into account feeder loss) and the dB value of the gain of the antenna in the receiving direction. The expression is shown in equation (1).

$P_e = P_G - L$ (1) in the formula.

P --the nominal power of the transmitter, that is, the rated output power of the transmitter when it is calibrated at the factory;

G --the power gain of the transmitting antenna relative to the half-wave oscillator in the transmitting direction;

L --Feeder loss.

3.13

RF protection ratio

Under specified conditions, in order to achieve the required reception quality, the required signal field strength and interference signal field strength at the receiver input the minimum difference between dB values.

For other terms and definitions, see GB 7400.1 and GB 7400.2.

Note 1: In this standard, the unit of height is m and the unit of distance is km.

Note 2: The field strength E is expressed in dB relative to $1\mu\text{V/m}$, that is, E (dB $\mu\text{V/m}$) is equal to $20\lg E$ ($\mu\text{V/m}$); the power P is expressed in dB relative to 1kW, that is, P (dBkW) is equal to $10\lg P$ (kW). When it comes to field strength, it generally means that the height of the receiving antenna (h_2) is 10m, which is no longer specified one by one.

4.1 FM broadcasting band

87.0MHz to 108.0MHz.