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

GB 31222-2014

**Specifications for observing environs protection of upper-air
meteorological station**

气象探测环境保护规范 高空气象观测站

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Foreword

All technical contents of this standard is mandatory. This standard was drafted in accordance with rules GB/T 1.1-2009 given. The standard proposed by the China Meteorological Administration. This standard by the national meteorological Standardization Technical Committee (SAC/TC507) instruments and methods of observation. This standard was drafted. CMA Meteorological Observation Center, China Meteorological Administration, Shanghai Materials Management Office of Shandong Provincial Meteorological Bureau, Qinghai gas Bureau of Meteorology. The main drafters. the king of Burma, Sun Yijun, Liu Fengqin, Li Wei, Chen Yiling, Xuzheng Xu, Guo Qiyun, Zhao Peitao, Huch, Yang Xiaowu.

Altitude weather stations can be a major structural features of the vertical place of atmospheric information, weather analysis, weather prediction, and prediction NWP Business plays an irreplaceable role in the foundation. To ensure a good representation of observational data, the accuracy and comparability, as weather proof Disaster mitigation and climate change provide a scientific basis, formulated standards. Environmental specifications altitude weather meteorological stations

1 Scope

GB 31222-2014 is the Chinese national standard on specifications for observing environs protection of upper-air meteorological station, in the field of natural and applied sciences. It carries no /T suffix, which in the Chinese system means compliance is mandatory: a product or a practice within its scope has to meet it to be lawfully made, sold or carried out in China. It was issued on 30 September 2014 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 January 2015. Classification: ICS 07.060, CCS A47. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This standard specifies the requirements and the scope altitude weather stations sounding environment. This standard applies to protective altitude weather stations sounding environment.

2 Normative references

The following documents for the application of this document is essential. For dated references, only applies to the version dated paper Pieces. For undated references, the latest edition (including any amendments) applies to this document. GB air intelligence radar station on the electromagnetic environment protection requirements 13618-1992 Hydrogen station design specifications

GB 50177-2005 QX/T 8-2002 term meteorological instrument

3 Terms and Definitions

GB 50177-2005, QX/T 8-2002 define the following terms and definitions apply to this document.

3.1 Altitude weather stations upper-air meteorological station Balloons or meteorological weather balloons carried by the sonde to the free atmosphere and other equipment to observe and track the use of ground equipment, receiving Meteorological stations and processing elements aerological. NOTE. altitude weather factors include pressure, temperature, humidity, wind speed and wind direction.

3.2 Obstacle obstacle Blocking object can affect weather balloon launch or acquire accurate observations.

Note. Common obstacles including tall trees, buildings, structures, mountain, overhead wires, reflectors and other electromagnetic radiation.

3.3 Blocking elevation block elevation angle Antenna feed connection and the center point of the highest obstacle radiosonde ground receiving system or a satellite navigation system with its center in the feed Where the vertical projection of the angle formed by the horizontal plane.

3.4 Interference source interference source Effect radiosonde signal transmitted or received by the source body in general. NOTE. Common sources of interference, including radar, radio, television, mobile communications and other radio transmitting apparatus with the frequency harmonic interference and spurious emission, industrial, scientific, Electromagnetic radiation interference produced by the device. And the scope of claims 4

4.1.1 ball away from the release point within 50m range, should not affect the balloon cast an obstacle.

4.1.2 civil buildings, structures and rail, road and hydrogen production rooms, storage (with)

fire spacing hydrogen chamber shall be not less than 25m, important buildings, Structures and hydrogen source and the fire chamber, a reservoir (with) a hydrogen chamber fire spacing not less than 50m.

4.1.3 hydrogen chamber and the overhead power line, a reservoir (with) a hydrogen compartment fire spacing should not be less than

1.5 times the height of the pole.

4.1.4 altitude satellite navigation system using weather stations, which received four weeks ground 100m from the apparatus, anti-electromagnetic wave should not have Qiang Lie shot object and reservoirs, lakes, etc. HOHAI water.

4.2 blocked elevation

4.2.1 detection system using directional antenna (radar, radio theodolite) high altitude weather stations prevailing wind downwind orientation of $\pm 60^\circ$ Blocking obstacle elevation range of the detection system formed of the antenna should not exceed 2° , is formed around the obstacle detection system of the antenna Occlusion elevation should not exceed 5° .

4.2.2 altitude weather stations using a satellite navigation system, which is an obstacle around the satellite navigation system receiver antenna formed occlusion Yang Angle should not exceed 10° .

5 Calculation Method

5.1 distance Using the measurement range of 5m ~ 5000m, the measurement error of ± 1 m laser range finder distance measurements.

5.2 blocked elevation Measurement Appendix A.

5.3 Electromagnetic Interference Jamming calculated, see GB 13618-1992.

Appendix A

(Normative) Elevation Measurement Method obstructions Method A.1 theodolite A.1.1 Use the tilt measuring range of $0^\circ \sim 90^\circ$, the angle measurement error of $\pm 0.1^\circ$, the azimuth measuring range of $0^\circ \sim 360^\circ$, an angle measurement error It is $\pm 0.3^\circ$ of the theodolite.

A.1.2 The theodolite erected in the venue where the altitude weather observation equipment, shown in Figure A.1, so that the objective lens O 'feed in the observation equipment Heart O at the same level. Figure A.1 obstructions elevation A.1.3 angle using the theodolite highest point P of the obstacle, the obstacle here is the orientation angle of the theodolite occlusion Yang Angle θ . A.1.4 ensure theodolite position unchanged since the start position, with 1° intervals, in order to adjust the azimuth theodolite until you find the observation equipment feed Center of the source, namely the azimuth and

observation theodolite devices obtained at this time the center of the feed angle α in the horizontal plane. A.1.5 theodolite measuring the level of the objective lens and the observation apparatus with an obstacle from the center of feed x' and l . A.1.6 calculation obstacle to occlusion of the elevation angle θ center feed observation apparatus shown in Figure A.1, by the formula (A.1) and the formula (A.2), according to equation (A.3) Occlusion calculated elevation angle θ . $y = x' \tan \theta$ (A.1) $x = l^2 x'^2 - 2lx' \cos \alpha$ (A.2) $\theta = \arctan$ (A.3) The results to one decimal place. A.2 radar sight measurement A.2.1 Use the tilt measuring range of $0^\circ \sim 90^\circ$, the angle measurement error of $\pm 0.1^\circ$, the azimuth measuring range of $0^\circ \sim 360^\circ$, an angle measurement error Difference of $\pm 0.3^\circ$ sight radar. A.2.2 adjust the orientation of the radar scopes until it finds an obstacle. A.2.3 radar sight position after adjustment in place, raising the radar scopes, making it the highest point of the alignment obstacle, this time the radar elevation readings That obstacle blocking the elevation for this position. references [1] WMO No.8, World Meteorological Organization, Guide to Meteorological Instruments and Methods of Observation, 7th edition, 2008