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

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Classification for solar proton event intensity

太阳质子事件强度分级

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Standardization Administration of the PRC**

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Foreword

This standard was drafted in accordance with GB/T 1.1-2009 given rules. The standard proposed by the China Meteorological Administration. This standard by the national meteorological satellites and space weather Standardization Technical Committee on Space Weather Monitoring and Warning Technical Committee (SAC/TC347/SC3) centralized. This standard was drafted. National Satellite Meteorological Center (National Space Weather Monitoring and Warning Center). The main drafters of this standard. your music out, Zhaohai Juan, Chen Po.

Solar Proton Events sun outbreak of severe space weather events caused by the activities of astronauts and other satellites and pose a threat, different intensities Different solar proton event harmful levels. With the rapid development of China's aerospace industry, satellite and astronaut safety issues have become an increasing weight Depending on the order in Monitoring and Early Warning solar proton event in quantitative description of solar proton event intensity standard is formulated. Solar Proton Events strength rating

1 Scope

China's national standard for classifying the intensity of solar proton events. It specifies the intensity levels of solar proton events, and it applies to solar proton event monitoring and warning operations. A solar proton event is defined here precisely: an event caused by solar activity in which the flux of protons with energy greater than 10 MeV, measured at geostationary orbit, reaches or exceeds 10 particle flux units continuously for 15 minutes, one particle flux unit being one proton per square centimetre per steradian per second. The classification divides events into four levels by the peak proton flux reached, each level spanning a factor of ten: level 1, weak, from 10 to 100 units; level 2, moderate, from 100 to 1000; level 3, strong, from 1000 to 10000; and level 4, extreme, above 10000. These events are the most directly hazardous of all space weather phenomena, because they consist of matter rather than of fields. Protons accelerated at the Sun arrive within tens of minutes to hours of the flare and continue for days, and they penetrate spacecraft shielding, deposit charge in electronics and pass through the human body. Their consequences are

correspondingly concrete: single event upsets and latch-ups in satellite electronics, degradation of solar arrays and star trackers, polar cap absorption that blacks out high-frequency radio over the polar regions and diverts transpolar aviation, increased radiation dose to aircrew on polar routes, and a direct radiation hazard to astronauts, particularly during extravehicular activity. The standard was written as China's space programme grew and the safety of satellites and crew became a more pressing concern. Issued on 3 September 2014 and in force since 1 January 2015.

This standard specifies the intensity level of solar proton events. This standard applies to the monitoring and early warning service solar proton events.

2 Terms and definitions

The following terms and definitions apply to this document.

2.1 Geostationary orbit geostationaryorbit Earth's equatorial plane satellites around the earth during its operation period equal to the Earth's rotation period, consistent with the direction of movement of the Earth's rotation And remains unchanged circular orbit relative position of the ground.

2.2 Solar Proton Events solarproton event Solar activity leads to the geostationary orbit at energies greater than 10MeV proton flux intensity continuous 15min meet or exceed the 10pfu event. NOTE. proton flux intensity with I_p , in units of pfu, $1\text{pfu} = 1\text{proton} \cdot \text{cm}^{-2} \cdot \text{sr}^{-1} \cdot \text{s}^{-1}$.

3 Classification of Solar Proton Events Strength

3.1 based on solar proton event proton flux intensity peak ($I_{p\text{max}}$) division of solar proton event intensity level.

3.2 Solar Proton Events intensity level is divided into four, respectively, with Level 1, Level 2, 3 and 4 represent, see Table 1. Table 1 solar proton event intensity level division Ratings categories range Level

1 Weak $10\text{pfu} \leq I_{p\text{max}} < 102\text{pfu}$ Level 2 $102\text{pfu} \leq I_{p\text{max}} < 103\text{pfu}$ Level 3 strong $103\text{pfu} \leq I_{p\text{max}} < 104\text{pfu}$