| Author/Company/University | Tao Han, Ruchuan Shi, Chenrui Zhang  
Shanghai Jiaotong University, Shanghai, China |
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<td>Title</td>
<td>Application of SAW RFID in the Inspection Management of Aerodrome Lights</td>
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**Abstract:**

1. **Background, Motivation and Objective:**
   To improve the intelligent level of the equipment management for modern international airports is increasingly urgent. According to the General Administration of Civil Aviation of China (CAAC), the case that three neighboring aerodrome lights worked abnormally is identified as a serious accident; and thus the status of every light has to be inspected and recorded manually every day. The amount of manual work will be greatly reduced if radio frequency identification (RFID) technology is used in the inspection management of the aerodrome lights.

   The RFID tags must be placed inside the aerodrome lights, otherwise the separated tags will become exotic objects invading the airports and threaten the safety of aircrafts. However, it is difficult for IC tags to withstand heat up to 300°C inside the light and for the reflected signals to penetrate the thick metal case. Fortunately, SAW based RFID can overcome the above shortcomings.

2. **Statement of the Contribution/Methods:**
   The application of SAW RFID in aerodrome lights has never been studied before. SAW RFID with temperature compensation, and anti-metal patched antennas are designed. The positions of the tag fixed in different kinds of lights such as the runway light and the taxiway light are demonstrated. The possibility of failure diagnosis of the aerodrome lights using the temperature information is also discussed. Meanwhile, two kinds of SAW RFID reader have been developed: a vehicle-mounted long distance reader for inspection management, and a miniaturized handheld reader for inventory management.

3. **Results/Discussion:**
   SAW tags in aerodrome lights can be steadily read at temperature as high as 300°C. The range of handheld reader is more than 30cm, and the range of vehicle-mounted reader is more than 3m. The experimental results show that SAW RFID has been successfully applied to the inspection management of aerodrome light.