



US 20220368172A1

(19) **United States**(12) **Patent Application Publication**  
**LI et al.**(10) **Pub. No.: US 2022/0368172 A1**(43) **Pub. Date: Nov. 17, 2022**(54) **SMART HUB****H04W 4/80** (2006.01)**H04W 4/38** (2006.01)(71) Applicant: **TAMKANG UNIVERSITY, NEW**  
**TAIPEI CITY (TW)**(52) **U.S. Cl.**CPC ..... **H02J 50/80** (2016.02); **H02J 50/005**  
(2020.01); **H04W 4/80** (2018.02); **H04W 4/38**  
(2018.02)(72) Inventors: **Ching-Lieh LI**, New Taipei City (TW);  
**Yu-Jen CHI**, New Taipei City (TW);  
**Hsiu-Ping LIN**, New Taipei City (TW)

(57)

**ABSTRACT**

A smart hub is provided, which includes a control circuit and an antenna array (the functions thereof include transmitting/receiving scanning signals and transmitting wireless power transfer signals). The antenna array is connected to the control circuit and transmits a scanning signal to scan within an effective scanning range thereof. When the antenna array receives the reflected signal of the scanning signal, the control circuit controls the antenna array to keep transmitting a wireless power transfer signal, within a predetermined time interval, in the direction of receiving the reflected signal, and simultaneously receives the device information from a sensor which may exist via the antenna array within the predetermined time interval. The device information is generated by the sensor by backscattering.

(21) Appl. No.: **17/368,876**(22) Filed: **Jul. 7, 2021**(30) **Foreign Application Priority Data**

May 17, 2021 (TW) ..... 110117693

**Publication Classification**(51) **Int. Cl.****H02J 50/80** (2006.01)**H02J 50/00** (2006.01)1