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# (SD2021-331): Syncscatter introduces a low power WiFi compatible backscatter communication system for IoT devices.

Tech ID: 32375

## FULL DESCRIPTION

Background. WiFi backscattering can enable direct connectivity of IoT devices with commodity WiFi hardware at low power. However, most existing work in this area has overlooked the importance of synchronization and, as a result, accepted either limited range between the transmitter and the IoT device, reduced throughput via bit repetition, or both.

In response to this limitation, researchers from UC San Diego developed SyncScatter, the first fully-WiFi-compatible symbol-level synchronized, longdistance, extremely low-powered backscatter system.  SyncScatter is the integrated circuit-based backscattering platform that can enable symbol-level synchronization through a hierarchical wakeup and synchronization protocol, which works up to theoretical sensitivity levels.

Syncscatter encodes the IoT device data on the incident wifi signals and backscatters them as valid Wi-Fi signals. It detects and synchronizes to the incident signals using a novel wake-up receiver architecture that is compatible with the Wi-Fi standards. The developed IC can work with commercial off the shelf devices.

Furthermore, SyncScatter can support multiple IoT devices to co-exist without interfering with each other. SyncScatter is designed on a custom ASIC, enabling ultra-low-power consumption.

## SUGGESTED USES

Internet of Things.

## RELATED MATERIALS

▶ Manideep Dunna and Miao Meng and Po-Han Wang and Chi Zhang and Patrick Mercier and Dinesh Bharadia. SyncScatter: Enabling WiFi like synchronization and range for WiFi backscatter Communication. 18th USENIX Symposium on Networked Systems Design and Implementation (NSDI 21) - 04/11/2021

## STATE OF DEVELOPMENT

UC San Diego is seeking partnerships to commercialize this technology.

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## OTHER INFORMATION

### KEYWORDS

IoT, Internet of Things

### CATEGORIZED AS

▶ Communications

▶ Wireless