An e-Newsletter from Anatech Electronics

FREQUENCY

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CENTER

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What's News...

ANATECH ELECTRONICS INC

Survey: People Won't Pay More for Sat-to-Cell Service

A recent GSM Association (GSMA) report reveals that only two out of five mobile phone subscribers are willing to pay for direct-to-cell satellite services. While this suggests that 40% of users are hesitant to embrace the technology, it also indicates that 60% may be open to paying more for the added service. The data comes from the GSMA's Q3 Non-Terrestrial Network (NTN) & Satellite Tracker report, which outlines the growing collaboration between telecom operators and satellite providers.



Source: SpaceNews/Apple/Globalstar

Another Kia Exploit Has Been Exposed (and Fixed)

It's been about two years since the media first reported that some Kia and Hyundai vehicles could be stolen with a few simple tools, and the manufacturer began to issue software upgrades. Thieves exploited a vulnerability in some models that lacked an engine immobilizer, a standard anti-theft device in most modern cars. Thieves discovered they could break into these cars and start the engine using just a USB cable. According to a report in The Register, all thieves need is a smartphone and a license plate number. The problem has apparently been fixed, but the issue demonstrates that another will surely appear when one security problem is solved.

A Word from Sam Benzacar



WiLo Combines the Best of Wi-Fi and LoRA

By Sam Benzacar

If you've never heard of WiLo, you're in good company. It's just emerging, and very little about it is available on the Web. There's not even anything on Wikipedia yet. All this should soon change because WiLo has some very interesting potential capabilities.

WiLo, invented by a team of researchers from several countries, combines Wi-Fi and the Long Range (LoRa) protocol to extend the range of Wi-Fi while maintaining LoRa's advantages of low power consumption and long-range communication. While traditional methods for connecting Wi-Fi and LoRa devices require multi-radio gateways that add complexity and potential points of failure, offers a simpler, cost-effective solution.

They achieve this, in part, by creating an algorithm that manipulates the frequency of Wi-Fi's data transmission to match those used by LoRa. That is, they modify Wi-Fi's Orthogonal Frequency-Division Multiplexing (OFDM) modulation scheme to emulate the chirp signals employed in LoRa's Chirp Spread Spectrum (CSS) modulation. The result allows Wi-Fi's short range to be enhanced to cover long distances using LoRa without additional hardware, a concept called



Source: Kia

Sunspot Cycle Peaks, May Last Another Year

According to NASA and the National Oceanic and Atmospheric Administration (NOAA), the Sun has entered the solar maximum period of Solar cycle 25, which began in 2019. This is problematic for anyone operating in the HF region of the spectrum, as communications in this range can be significantly degraded or even rendered virtually impossible. The solar cycle is a natural process the Sun undergoes, shifting between periods of low and high magnetic activity every 11 years, where the Sun's magnetic poles reverse, and it transitions from a calm to a more active and stormy state. Unfortunately, NOAA predicts these conditions could persist for the next year.



Cross-Technology Communication (CTC).

The core of WiLo's innovation lies in its ability to manipulate Wi-Fi's Orthogonal Frequency-Division Multiplexing (OFDM) modulation scheme to match the Chirp Spread Spectrum (CSS) modulation used by LoRa. This allows Wi-Fi to transmit over much longer distances using LoRa's communication capabilities without requiring additional hardware.

The technology has been tested in various settings, including indoor labs, hallways, and outdoor locations, with transmission distances up to 500 meters where WiLo achieved an impressive 96% success rate. However, one challenge remains: increased power consumption for Wi-Fi devices when they perform both communication and signal emulation tasks. The research team is actively working on optimizing energy efficiency in future versions of the technology.



Source: LoRa



Please visit our website to get access to our large database of standard RF & MW filters, as well as the resources to get custom RF and Microwave filters.



Source: NOAA

Program Focuses on Small, Better Oscillators

DARPA's Generating RF with Photonic Oscillators for Low Noise (GRYPHON) program is developing compact microwave oscillators with exceptionally low phase noise that could transform sensing and communication. Leveraging advances in nonlinear photonics and photonic-electronic integration, the program aims to create microwave sources that outperform current discrete oscillators while being much smaller in size. By the program's end, these oscillators will also function as tunable synthesizers, covering frequencies from 1 to over 40 GHz, setting a new standard in radar and communication systems.



Source: DARPA

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