ANATECH ELECTRONICS INC

AT THE CENTER FREQUENCY

An e-Newsletter from Anatech Electronics

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What's News...

Samsung Breaks 28 GHz Distance Record

Samsung Networks has achieved record average download speeds of 1.75 Gb/s at a distance of 10 km using its mmWave 5G networking equipment in collaboration in a recent field trial. Peak download speed was 2.75 Gb/s and average upload speed was 61.5 Mb/s. The fixed wireless access (FWA) connection used Samsung's 28 GHz Compact Macro device that includes the base station radio and antenna in a single form factor. Network carriers are already using it in Japan, South Korea, and the U.S. Beamforming allows carrier aggregation of 5G bands, and the test used eight component carriers (8CC) that delivered an aggregated 800 MHz of spectrum. The goal was to determine if mmWave frequencies are suitable for dense urban as well as rural areas.

ONR Program Protects Military Spectrum Assets

The Office of Naval Research has awarded a $24.5 million contract to Systems Engineering Associates to develop the Electromagnetic Maneuver Warfare Modular Suite (EMWMS). Its mission is to help

A Word from Sam Benzacar

Face Reality: Level 5 Vehicle Autonomy Won't Be Here Anytime Soon

By Sam Benzacar

While vehicle autonomy is likely to be achieved sometime in the future – – possibly the very distant future – – we may find that the capabilities delivered by ADAS are more than good enough, don't require reliance on connectivity that presents its own problems (of which hacking comes to mind), and go a long way toward reducing crashes and fatalities all by themselves. Or at least that's what I'm thinking, because to achieve full (Level 5) autonomy a vehicle would have to react correctly in every possible scenario. And as the number of these scenarios is infinite, that's a tall order.

Even some of the most ardent supporters of vehicle autonomy have admitted that Level 5 is at least a decade and possibly even decades from being realized because AI is unlikely to entirely replicate what humans can do anytime soon. Phil Koopman, an engineering professor at Carnegie Mellon University who has worked on autonomous technology for more than 25 years, has noted that the limitations of machine learning will inevitably lead to mistakes that human drivers wouldn't make.

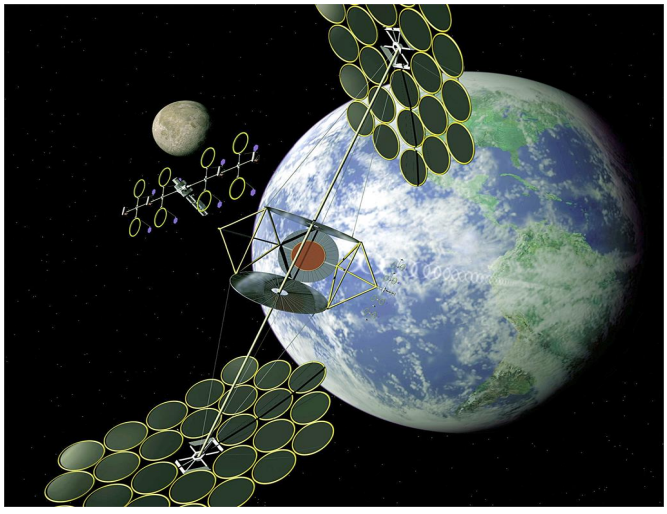
For example, he recalled a self-driving system a few years ago that struggled to identify the color yellow. "The system was missing bicyclists in yellow coats and construction workers in yellow jackets," he says. "The system was 99 percent accurate — and it still missed them."

In my view, a vehicle is fully autonomous, or its not much of a benefit because we still have to play the role of driver, even if we don't have our hands on the wheel. Even GM's Cruise, which is arguably one of the most advanced "semi-autonomous" technologies, keeps close watch to make sure you're still there and ready for action. So, what's the point? It might do well on straight, open highways with little traffic, no pedestrians, and clearly defined exists, but in an urban environment, such a system would face orders of magnitude greater

military forces manage and protect their use of RF, microwave, and lightwave spectrum. The mobile EMWMS spectrum warfare system will be used by command, control, communications, and intelligence users. It employs sensors, digital signal processing, and advanced computing technologies to monitor the nearby electromagnetic spectrum and jam or spoof enemy communications, sensors, and surveillance systems.

Beaming Energy from Space Back in Focus

The European Space Agency (ESA) plans to beam power to Earth from space using microwave energy and wants more money to fund the program. ESA's space-based solar power (SBSP) SOLARIS platform wants to investigate technologies needed to realize the concept and the feasibility of using it. Thus far, ESA has found SBSP to be a feasible power source after Airbus demonstrated that it could use microwaves to transmit power at 118 ft., which it used to light up a miniature city. Using orbital solar panels to beam energy to Earth using microwaves isn't new, as NASA, Japan's space agency, the U.S. Navy, UK Space Energy, universities, and private companies have been toying with the idea for years. China appears to be the current leader as it has tested a ground-based receiver and balloons at up to 300 m.



challenges, and that will require more than what the industry currently has to offer.

Self-driving cars are actually already on the road, but they operate only at lower speeds within small geofenced areas, such as the Waymo One shuttle service in Chandler, AZ. It took years for Waymo to achieve this feat on Chandler's broad, straight, sun-drenched boulevards. But when do you suspect it will be possible before we allow a vehicle to take us to work from our homes at rush hour in a snowstorm? Not soon.

For the foreseeable future, I believe we'll be relying on ADAS systems that are already extremely helpful, such as front and rear collision detection, automatic braking, lane departure warning, to name a few. These systems will surely become even better over the years and deliver tangible benefits—without forcing us to rely on an unseen presence whose actions we'll be forced to accept. In short, by the time autonomous vehicles become a reality, these emerging features will have already solved much of what autonomous vehicles are conceived of accomplishing.

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IEEE MTT Changes Its Names - By One World

The IEEE society focused on advancing microwave theory and its applications is changing its name from the IEEE Microwave Theory and Techniques Society to the IEEE Microwave Theory and Technology Society. It takes effect in January. This isn't the first time this 70-year-old group has changed its name: The American Institute of Electrical Engineers and the Institute of Radio Engineers, the IEEE's predecessors, approved the formation of the Professional Group for Microwave Electronics in March 1952. Three months later it was renamed the Professional Group on Microwave Theory and Techniques, and in 1974 the group became the IEEE Microwave Theory and Techniques Society. The IEEE has been working to expand its reach in recent years to accommodate diversity in the microwave field.

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