ANATECH ELECTRONICS INC

AT THE CENTER FREQUENCY

An e-Newsletter from Anatech Electronics

February 2024

What's News...

Raytheon Completes Directed-Energy Weapon Test

Raytheon's Counter-Electronic High-Power Microwave Extended-Range Air Base Defense (CHIMERA) high-power directed energy system successfully engaged multiple static targets, demonstrating its ability to acquire and track aerial targets throughout their flight paths. The tests were performed for the Air Force Research Laboratory and conducted at the White Sands Missile Range in New Mexico. The CHIMERA program is part of the Directed Energy Front-line Electromagnetic Neutralization and Defeat (DEFEND) program that plans for prototypes by 2026. The company is also developing a transportable directed-energy system for the Army, for which it has been awarded a three-year, $31.3 million contract from the Naval Surface Warfare Center.

A Word from Sam Benzacar

Satellitles Join Terrestrial 5G

By Sam Benzacar

While cellular networks have since their inception been terrestrial, Low Earth Orbit satellites (LEOs) are rapidly emerging as complementary. This integration has the potential to be an equalizer, ushering in a new era of communication that doesn't leave anyone behind.

Traditionally, satellite communication has existed as a separate entity, offering limited data capabilities and higher latency compared to terrestrial networks. However, 5G allows earth-to-satellite communication to seamlessly integrate with the 5G ecosystem using its advanced technologies and protocols. These Non-Terrestrial Networks (NTNs) allow seamless connectivity even when users travel internationally between regions with different terrestrial network specifications.

Unlike traditional geostationary satellites orbiting at high altitudes, LEO satellites operate much closer to Earth, significantly reducing latency crucial for enabling real-time applications like video conferencing and autonomous vehicles, even in remote locations. NTNs also offer inherent advantages like resilience and security. Unlike terrestrial networks susceptible to natural disasters or infrastructure damage, satellite networks can provide backup connectivity to users, potentially bypassing terrestrial infrastructure.

In addition, rural communities can avail themselves of e-commerce, distance learning, telehealth services, and the many other services that most of us take for granted. It will also significantly benefit first responders fighting natural disasters such as wildfires, floods, earthquakes, coastal storms and hurricanes. The far-reaching coverage of satellite networks also enables large-scale Internet of Things (IoT) deployments. This helps applications like global asset tracking, remote monitoring of infrastructure and equipment, and data collection in agriculture and environmental sectors.

Satellites excel at broadcasting information to many users within their footprint. This is important for services like emergency alerts, news updates, or live event transmissions to widely dispersed audiences. Satellite networks provide a crucial backup layer in critical sectors like energy grids, financial institutions, or transportation infrastructure. Any disruption to terrestrial systems can have cascading effects, making satellite communication a safety net for continued operations.

FCC Tightens Rules for Emergency Notifications

The Federal Communications Commission updated rules to improve communications network reliability, resiliency, and transparency during disasters and outages. Certain types of communications providers must report network outages to the FCC's Network Outage Reporting System (NORS). During disasters, the FCC can activate DIRS to gain greater situational awareness and keep public safety officials and the public informed about service outages and service restoration. However, as industry participation in DIRS is voluntary, the result has been gaps in information that impair emergency response times.

Korea Ramps Up 6G Research Spending

The Ministry of Science and ICT of South Korea will invest more than $130 billion to advance capabilities that will allow the country to implement 6G. In August 2023, South Korea announced it had finished preliminary studies on 6G and will begin developing commercial 6G technology later this year to secure 6G patents throughout the program. The country intends to develop low-power design and signal processing technology for core components of base stations to improve energy efficiency by advancing core network management technology and increasing the use of software.

Beginning with the iPhone 14 and now the iPhone 15 series, Apple already offers satellite connectivity for emergency SOS via a partnership with Globalstar. Currently, this feature primarily focuses on sending short emergency text messages and location data when out of cellular range, but it will likely expand to include voice and data within a year or two. In addition, T-Mobile and SpaceX have struck a deal to directly connect new smartphones to Starlink satellites, mainly targeting areas without traditional cell coverage.

Integrating non-terrestrial satellite communications into the 5G ecosystem is still in its initial stages, but the potential benefits are already apparent. As the technology evolves, we can expect even broader and more innovative use cases, further shrinking the digital divide and transforming how we connect with the world.

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Microsoft to Begin Terahertz Testing

The FCC has approved Microsoft's request to research communications in the sub-terahertz region in the U.S. The company's experiments will be performed at its facilities in Redmond, WA, and will focus on frequencies between 246 and 275 GHz. While there are existing sub-terahertz testbeds at academic labs, this testbed will evaluate the use of multi-hop RF links to mitigate the obstacles present in data centers and focus on topologies suitable for a typical structure and layout of large-scale data centers.

Japan Puts First Ham Station on the Moon

When Japan's Smart Lander for Investigating Moon (SLIM) touched down on the Moon it released two tiny robots, LEV-1 and LEV-2, the former holding the title of

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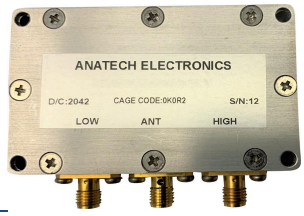

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the Moon's first amateur radio station, sporting its own license, JS1YMG. This little rover receives data from LEV-2, then sends it Earthward using Morse code via a 1-W UHF amplifier and gain antenna. The JAXA Ham Radio Club orchestrated the feat, which secured the license and has kept the Morse code flowing since January 19.

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(973) 772-4242

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