

What's News...

5G-Immune Radar Altimeters Appear

Avionics manufacturer FreeFlight Systems' Terrain series of radar altimeters has received FAA certification to meet performance standards for airborne low-range radar altimeters free from interference by 5G cellular telephone networks. They are a response to the recent frenzy over potential interference with existing radar when C-band base stations are located near airports. The issue pitted wireless carriers against the airline industry and even wound up in Congress. The problem is essentially that many radar altimeters and service of insufficient bandpass filtering to reject signals nearby, although the controversy focused on whether this was the case considering there is considerable guard band in place to prevent interference.



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A Word from Sam Benzacar

It's Official: DSRC is Dead

By Sam Benzacar

We can now safely say that Dedicated Short-Range Communications (DSRC), for which the federal government in 1999 designated 75 MHz of spectrum around 5.9 GHz for "intelligent transportation systems, is dead. And the



winner is? You guessed it, the wireless carriers with its "Cellular to Everything (C-V2X). This could come as no surprise, as DSRC was conceived more than two decades ago, when Nokia introduced the first mobile phone with an internal antenna, Wi-Fi was at IEEE 802.11b, Intel introduced the "blazingly fast" 400-MHz Celeron processor, and Microsoft released Windows 95 SE.

Technology has obviously moved on since 1999, but in the government's defense, if it had not allocated this band when it did it would long ago have been gobbled up by wireless carriers and Wi-Fi to meet their demands to exceptionally high speeds. That is, with so little spectrum available at mid-band frequencies for use by 5G, 75 MHz at 5.9 GHz is a prime spot to for reallocation. And DSRC unused, it was inevitable that the wireless industry would move in for the kill, and it did.

The DSRC allocation is from 5850 to 5925 MHz and sits squarely between the U-NII-3 band at 5725 to 5850 MHz used by Wi-Fi and the U-NII-5 band between 5925 to 6425 MHz. The FCC in 2013 proposed Wi-Fi sharing in the 5.9 GHz band and designated it as the U-NII-4 band. Automakers, assuming that DSRC would be the de facto solution for meeting the needs of vehicle autonomy when the time came to deploy it, spent a reported \$800 million on DSRC, conducted many trials based on its basic architecture, and were adamant that their work should not go to waste.

NYU Wireless Gets \$3 Million for Terahertz Development

The NYU Wireless research center at the NYU Tandon School of Engineering has received \$3 million from the National Science Foundation to lay the groundwork for terahertz mobile wireless communication and to launch a new terahertz measurement facility. The award will help NYU and its collaborators, the University of Colorado at Boulder, University of Nebraska–Lincoln, and Florida International University, pioneer basic measurements of devices, circuits, materials, and radio propagation channels at the highest reaches of the radio spectrum. Terahertz radio spectrum presents possibilities and challenges for mobile communications from see-in-the-dark sensors and revolutionary imaging and communications technologies to Tricorder-like medical devices.



HawkEye 360 to Develop RF-sensing Capabilities for U.S. Army

HawkEye 360 has received a Cooperative Research and Development Agreement (CRADA) with the U.S. Army Space and Missile Defense Command (SMDC) to develop Satellite-based RF-sensing capabilities to provide tactical support for warfighters. The program will support the Army's initiative to develop more effective systems that strengthen how it mobilizes, protects, and sustains expeditionary forces leveraging tactically relevant commercial RF information. And until this day, some in the auto industry stand behind DSRC but even before 5G arrived it became evident that cellular had the potential to make DSRC obsolete. While DSRC requires dedicated roadside infrastructure, cellular already has it nearly everywhere, and it can be used for every purpose that will be required for full vehicle autonomy. Speed is no problem either because even 4G LTE has the necessary data rates that is far faster than what would be achievable with DSRC. Sensors from radar to lidar, cameras, and mapping have made dramatic advances, all of which would work with existing cellular networks and others in development.

In the hopes of placating everyone, the FCC took the "bold" step of mandating the phaseout of DSRC, and Congress chimed by offering incentives for the auto industry to stop fighting the inevitable and join the C-V2X party. The FCC voted to shift 30 MHz of the 75 MHz reserved for DSRC to C-V2X on an exclusive basis and allocated 45 MHz for Wi-Fi use. While 30 MHz isn't much spectrum, the modulation techniques used by the wireless industry are very efficient, so the full band wasn't necessary.

So, has this debacle finally been concluded? For practical purposes, DSRC is dead because the momentum behind C-V2X is unstoppable and there is no longer any time left for dithering. Except for a few outliers, automakers have already shifted gears toward C-V2x and suppliers such as Qualcomm and others are making chipsets and other hardware available.

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