

FHH Telecom Law

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Ultra-Wideband Affirmed

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The FCC has affirmed its year-old rules permitting operation of ultra-wideband (UWB) communications systems, vehicular radar devices, and "imaging systems," a category that includes ground-penetrating radar and in-the-wall and through-the-wall radars.

Unlike most radio technologies, whose signals are confined within pre-established frequency bands, UWB spreads its energy over other people's spectrum. The FCC requires a *minimum* bandwidth of either 500 MHz or 1/5 the center frequency. One communications implementation takes up fully 7.5 GHz. Because there are no vacant frequency bands nearly this wide, UWB necessarily shares spectrum, albeit at very low power levels. The maximum UWB power at any frequency is the same level permitted for stray radio-frequency emissions from a laptop or other digital device: *75 billionths* of a watt. At some frequencies the UWB maximum is thousands of times lower -- indeed, barely measurable.

Opposition to last year's authorization of UWB came from a variety of spectrum incumbents, including the GPS industry, the wireless telephone industry, the satellite industry, the amateur radio community, satellite radio providers, and elements of the United States Government, including Department of Defense, FAA, and NASA. After the FCC adopted rules over their objections, many of the non-Government parties formally requested reconsideration. The FCC's recent action denied all such requests, holding that UWB at the permitted power levels will not interfere with any other service. Some pro-UWB interests also challenged the rules, and they generally fared better. At their request the FCC eliminated certain technical rules that had hindered development of ground-penetrating radars, and clarified the operating rules for ground-penetrating radars and other imaging devices. The FCC also clarified a technical rule on the digital chips that support UWB operation. Those chips are permitted "laptop level" emissions even at frequencies where the intentional UWB emissions must be far lower. This means a UWB applicant may have to show whether a particular emission is digital or UWB. Spectrum incumbents argued that one early UWB applicant had mishandled this issue. The FCC has now dismissed the challenge and clarified the requirement.

Finally, the FCC requested comment on suggested rule changes applicable primarily to vehicular radars, and proposed to alter or drop the minimum bandwidth now required of devices that operate under UWB rules.