



FCC Addressing Wireless Interference In Multi-Tenant Environments

By Jason Kerben ■ *Shulman, Rogers, Gandal, Pordy & Ecker*

Over the past several years the Federal Communications Commission ("Commission") has reevaluated and subsequently altered its spectrum usage policies in response to regulatory, technological, and marketplace changes. Altered spectrum policies aside, the Commission has sought to grant increased flexibility to its licensees to enable them to put spectrum to its

"Two Commission proceedings have recently been released that attempt to address the ever growing problem of interference."

highest and best uses, consistent with preventing unacceptable interference.

The rapid deployment of WiFi and other unlicensed systems has created an environment where it is not unexpected for multiple wireless systems to exist in an urban or multi-tenant environment. As a result, the issue of interference has become more prevalent in the minds of end users, providers, and especially the Commission.

Two Commission proceedings have recently been released that attempt to address the ever growing problem of interference. The first proceeding, the outgrowth of technological developments, involves a technology known as cognitive or software defined radios ("SDR"). SDRs have the ability to sense whether spectrum is being used and then program themselves to be used when it is available. The second proceeding, concerning an interference temperature model, was prompted by the difficulties posed by interference management because of the greater density, mobility, and variability of radio frequency transmitters.

Software Defined Radios

Long touted by communications techies as the next evolution of communication, SDRs have often been dismissed as technologically infeasible. However, due to recent advances, the future implementation of SDRs is in the not so distant future. To further spur its growth, the Commission has recently commenced a Notice of Proposed Rule-

making that seeks comment on specific applications of SDRs and proposes changes to the Commission's equipment authorization process to better accommodate SDR technology.

In the most general sense, a SDR system monitors and adapts to operate without causing interference. One system may monitor the radio-frequency environment and use the information to determine the optimal frequencies and transmit powers to use, while avoiding harmful interference. Another system

"The first proceeding, the outgrowth of technological developments, involves a technology known as cognitive or software defined radios ("SDR")."

could use location information to determine whether certain transmissions are permissible.

The Commission is seeking comment on rules that permit additional technical flexibility for SDRs. As an example, allowing unlicensed devices in limited bands to use higher than currently per-

mitted transmit powers or allowing for communications between two different radio services, otherwise known as interoperability. The result would allow emergency responders from one jurisdiction to seamlessly communicate with emergency responders from another jurisdiction utilizing radios on an entirely different frequency band.

In the words of Commission Jonathan Adelstein, "Cognitive radio will play an important role in "spectrum facilitation" by stripping away barriers- regulatory, economic, or technical - to get spectrum into the hands of operators serving consumers at the most local levels."

Interference Temperature

In instances where the technology of SDR is not available or not capable, the Commission has begun Notice of Inquiry / Notice of Proposed Rulemaking concerning "interference temperature." Traditionally, the Commission has managed interference by controlling the emissions and locations of transmitters and the frequencies used by specific types of radio operations. The proposed interference temperature model would take into account the cumulative effects

of all undesired radio frequency ("RF") energy. As an example, energy that may result from both transmitters and noise sources would now be considered.

The Commission noted, that "in the simplest case, the entire process [of interference temperature] would take place within an individual device. That is, the

device would measure the interference temperature at its location and make a

of interference immunity. The two proceedings represent a determined effort

ence temperature proceedings, an environment may soon exist where a multi-tenant environment exists where each tenant is served by a different wireless provider operating carefree of interference concerns. The building owners / landlords that protect themselves by entering into leases or vendor agreements that ensure the greatest return on investment, protection from liability and promote maximum tenancy stand to benefit in this not so distant future. ■

"The second proceeding, concerning an interference temperature model, was prompted by the difficulties posed by interference management because of the greater density, mobility, and variability of radio frequency transmitters."

transmit/not transmit decision based on this measurement plus the device's own contribution of RF energy." Conveniently, the depiction is very similar to the type of service contemplated in the SDR proceeding.

In a related Commission proceeding that commenced in March of 2003, the Commission is seeking information concerning interference immunity performance capabilities of existing receivers and possibilities for improving the level

by the Commission to retool its spectrum management policies while maintaining its interference principles.

The positive ramifications of this proceeding include greater certainty and greater protections against harmful interference. Further, in instances where an interference temperature is not reached, opportunities would exist for other transmitters, whether licensed or unlicensed to increase one's power.

As a result of the SDR and interfer-

About the Author

Jason Kerben is an attorney with the telecommunications group of the law firm of Shulman, Rogers, Gandal, Pordy & Ecker. Mr. Kerben represents a number of communications providers and tower owners before the Federal Communications Commission and local state public utility commissions. Contact Jason Kerben at 301-230-5200 or jkerben@srgpe.com.



BUILT TO LAST

There's a sense of certainty when you can count on the permanence of something great. At 4COM, our unwavering commitment is to provide cable operators access to satellite programming services. Experience is our foundation. Enduring customer service is what you can depend on!

4COM

1-800-737-0852 • www.4com.com