

## **Five Easy Pieces**

### **Quick hits from around the FCC**

*By Mitchell Lazarus  
lazarus@fhhlaw.com  
703-812-0440*

#### **FCC REQUIRES 3650-3700 MHZ LICENSEES TO PLAY NICELY TOGETHER**

The FCC has rejected most petitions for reconsideration of its novel rules in the 3650-3700 MHz band.

#### ***Background***

This band is licensed on a shared, nationwide, non-exclusive basis. Licensees must register the locations of their fixed and base stations in the FCC's ULS licensing system. Licensees planning new stations are expected to consult the database to avoid causing interference to existing stations. All operations must use a "contention-based protocol," defined as one that allows multiple users to operate when two or more try to access the same channel at the same time. If interference does occur, the interferor and the victim are expected to cooperate in resolving it.

Mobile and portable units may operate only if they can receive an enabling signal from a base station. Mobile units can communicate with one another, so long as each receives an enabling signal from a base station (not necessarily the same one).

Fixed and base stations may not be located within 150 km of 86 grandfathered earth stations without consent, or within 80 km of three federal radar facilities without successful coordination. The rules give the locations of these facilities.

#### ***Reconsideration Petitions***

The FCC turned down several petitions seeking conversion of all or part of the band to conventional licensing, and rejected other proposals generally aimed at giving users better interference protection. It also refused to change the emissions limits, or to increase the protection for satellite earth stations that share the band.

The FCC did, however, refine its rules on contention-based protocols. It separated those into two categories. An "unrestricted" protocol is one that prevents interference even with signals using different protocols. "Listen-before-talk" is one example. A "restricted" protocol, in contrast, works only with other devices using the same protocol –e.g., the Wi-Max scheduling protocol. The newly amended rules confine restricted-protocol devices to the lower half of the band, while allowing unrestricted protocols to operate anywhere in the band.

#### **HIGH FREQUENCY, HIGH POWER**

The FCC has proposed to increase the power levels permitted for unlicensed point-to-point communications in the 57-64 GHz band by a factor of 16,000. Even before the proposed change, the unlicensed power limits and available bandwidths in this band are the highest anywhere in the spectrum. Yet use of the band to date has been relatively sparse. In part this is because atmospheric oxygen absorbs energy at these frequencies, so that communicating in the band is somewhat like shining a flashlight

through a fog. The proposed power increase should help to make use of the band more practical. The change in power limits applies only to transmitters located outdoors or whose beam is directed outdoors, as through a glass, darkly.

In addition, the FCC proposes to drop its transmitter identification requirement for indoor transmitters with outdoor-directed beams. The requirement was eliminated as to outdoor transmitters several years ago.

### **FCC FINALLY CONFORMS MODULAR CERTIFICATION RULES TO ESTABLISHED PRACTICE**

Since 2000, the FCC has permitted “modular certification,” under which it approves a transmitter module for use in multiple host devices. That option originated with a unilateral public notice from the FCC, rather than a rulemaking in which the public participated. The FCC has now released a “Second Report and Order” that codifies and extends the 2000 public notice. (The First Report and Order in this docket made other changes to the Part 15 rules without addressing modular certification.)

The new order carries over most elements of the 2000 public notice almost intact, with two significant changes. First, devices incorporating modular transmitters may now display the FCC ID in electronic form. Electronic FCC ID display has previously been allowed only in software-defined radios. Second, the FCC adopted new rules to govern “split modular transmitters.” In these, the radio front end and controlling firmware are separate, possibly located in different components. Manufacturers must ensure that only components that have been certified together are capable of operating together.

A handy escape clause allows a manufacturer to bypass any of the modular requirements if it can persuade the FCC that the device will nonetheless comply in all of the end products in which it is used.

### **ARE YOU SMARTER THAN YOUR RADIO?**

The FCC has clarified the rules that govern software-defined radios (SDRs) and cognitive radios. In FCC-speak, an SDR is a radio whose regulated characteristics (such as frequency range, bandwidth, modulation, and maximum power) are under software control. The FCC established special procedures in 2001 for lawfully modifying SDRs through software changes. A cognitive radio is one step beyond — an SDR that adjusts its own operating parameters by interacting with the radio-frequency environment. The FCC amended the SDR rules in 2005 to facilitate the development of cognitive radios.

The FCC did the following:

- clarified that an SDR must be certified under the SDR rules only if its software is designed or expected to be modified by parties other than the manufacturer; otherwise (at the manufacturer’s option) it can be certified as an ordinary radio;

- stated as policy that manufacturers should not make public the security software that prevents unauthorized persons from modifying an SDR (which seems obvious to us);

- declined to adopt a rule requiring confidential treatment of SDR software submitted to the FCC, noting that it expects to request such submissions only infrequently;

- declined to launch a rulemaking on the separate regulation of digital-to-analog (D/A) converters, despite a party’s assertions that a D/A converter with appropriate software can act like a radio transmitter; and

clarified that the rules exempting most amateur radio transmitters from FCC certification remain unchanged, even if the transmitters incorporate SDR capability.

#### **COMMENTS SOUGHT ON TANK LEVEL PROBING RADAR WAIVER REQUEST**

The FCC has asked for comment on a waiver request for certification of a “tank level probing radar” in the 77-81 GHz band. The device would comply with the general emissions limits in Section 15.209. The band is allocated for radio astronomy, space research, radar, and amateur use. A waiver is necessary because 77-81 GHz falls within the “restricted bands” in which the FCC ordinarily prohibits intentional emissions from unlicensed devices. When the restricted bands were first identified, there was little activity above 38.6 GHz, so as a precaution the FCC declared everything above 38.6 GHz to be restricted. That includes this device’s proposed operating frequencies. As the FCC continues to promote use of the millimeter-wave spectrum above 38.6 GHz, a reexamination of the restricted bands in that region is becoming increasingly urgent.

Comments on the waiver request are due on July 12, and reply comments in July 27.