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FCC Seeks New Spectrum for Unlicensed Use

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Noting the tremendous success of unlicensed devices such as Wi-Fi and Bluetooth, the FCC has launched a search for spectrum to house new unlicensed operations. The unlicensed regime authorizes the equipment, not the user. Once approved as complying with the FCC's technical rules, an unlicensed device can be used by anyone in the U.S. jurisdiction for any purpose. (Some in the industry call their operations "license exempt" rather than "unlicensed," to emphasize their lawfulness under appropriate conditions.)

Any proposals for unlicensed use of the TV spectrum are expected to meet strong opposition from the broadcast industry.

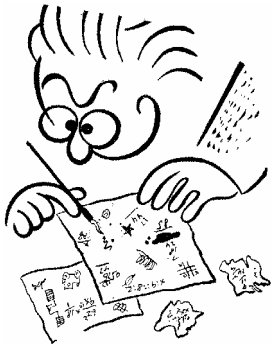
The current Notice of Inquiry asks for comment on two possible bands for unlicensed use. Where most bands permit unlicensed devices at only a very small fraction of a watt, the FCC hopes to find room for new operations at the relatively high power of a full watt, or possibly more.

One band under consideration is the TV broadcast channels, but only at geographic locations where a particular TV channel is unused. Because TV stations operating on the same channel, or even adjacent channels, must be spaced tens to hundreds of miles apart to avoid interference, every location necessarily has many vacant channels. The FCC now asks whether an unlicensed device, transmitting at far lower power than a TV station, can operate safely in places where a TV station cannot. To avoid the TV frequencies actually used in a given area, the unlicensed device might be required to monitor the channel before using it, or to ascertain its own position with a built-in GPS locator and consult a database. The FCC seeks comment on whether such approaches can feasibly prevent interference to local TV reception, and on the exact degree of protection TV stations would require. Also up for discussion is whether TV channels 2, 3, and 4 may need special protection because they are used for (or are adjacent to) the output from VCRs and other set-top boxes, and how to protect radio astronomy operations on channel 37. But any proposals for unlicensed use of the TV spectrum are expected to meet strong opposition from the broadcast industry.

The other band of interest is at 3650-3700 MHz. Recently transferred from the federal government, it is largely vacant except for some fixed-satellite international downlink earth stations and just three government sites. The FCC seeks comment on how these sites might be protected from interference, and on what power levels and antenna gains are appropriate for unlicensed operation.

The FCC is also open to suggestions for other bands that might be appropriate for unlicensed operation, without causing interference to licensed services.

Due dates for filings in FCC proceedings are subject to last-minute change. Please call us for current information.



Task Force Proposes New Spectrum Policies

By: Paul J. Feldman
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The FCC's Spectrum Policy Task Force has issued a report offering comprehensive and detailed suggestions for revising U.S. spectrum policy. The report generally advocates increased flexibility and efficiency in spectrum use, primarily to promote new wireless technologies. While the resulting benefits could be great, the impact on incumbent licensees and users is unclear. The only certain outcome of the report is a long and heated debate.

The Task Force found that increased opportunities for technologically innovative and economically efficient wireless devices will require shifting spectrum policy toward more flexible and market-oriented regulatory models. No single model should be applied to all spectrum bands, says the report, but the FCC should pursue a balanced spectrum policy that includes:

1. *exclusive spectrum usage rights* at certain frequencies in defined geographic areas, in which an auction would award an exclusive user transferable and flexible rights;

2. creation of *spectrum* "*commons*," in which unlimited numbers of unlicensed users may operate in compliance with technical standards or etiquettes, but with no right to interference protection (similar to the present spread spectrum bands); and

3. continued use of the traditional regulation, here called "*command-and-control,*" for a limited number of services such as public safety and broadcasting.

The report suggests that the FCC implement these policies in both newly allocated bands and occupied spectrum, with transitional mechanisms for the latter case to avoid degradation of existing services.

Any move to increase either the uses or the users of a given band will require improved interference protection criteria. The report proposes a metric based on "interference temperature," analogous to widely used measures of noise temperature. Limits on interference temperature would establish maximum permissible levels of interference, thus characterizing the "worst case" environment in which a receiver must operate. Different levels could be set for each band, geographic region, or service, based on applicable RF environments. To that end, the Task Force recommends a systematic study of the RF noise floor, and suggests that the FCC consider imposing performance requirements on some receivers.

The Report has already generated one Notice of Inquiry (see *FCC Seeks New Spectrum for Unlicensed Use* on page 1), and more are expected. Given the large potential impact of some proposed policies, manufacturers and spectrum users may wish to join the debate early.

Comments on the Report are due on January 27, and reply comments on February 28.

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FCC Proposes "3G" Use and Auction Rules

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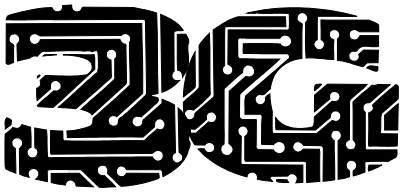

Having allocated 90 MHz of spectrum for "advanced wireless services," better known as 3G for (3rd Generation), the FCC proposes to auction the spectrum for any fixed or mobile use, but has not yet suggested geographic or block sizes for the licenses. With all options open, one likely outcome is a large chunk of spectrum allocated for major regional licenses, and smaller blocks allocated for more localized BTA or MSA operations. The Commission will probably auction off the spectrum for 10 year license terms. It has not yet decided whether to impose pre-renewal service requirements to discourage warehousing.

Would-be bidders will have to account for incumbent federal users in the 1710-1755 MHz portion of the band. Precision guided munitions operations at 1710-1720 MHz will have priority until the stock of weapons is exhausted, or 2008. Tactical relay stations in Yuma, AZ and Cherry Point, NC must be protected indefinitely, while 14 other military bases will be allowed to operate indefinitely on a secondary basis. Under current law, the winning bidder must pay to relocate government users with whom they would otherwise interfere. But NTIA has proposed legislation to pay the costs of relocation from the auction proceeds rather than the winning bidders themselves. Existing private microwave operators in the 2110-2155 MHz band must also have their relocation paid for.

Comments on all of these proposals are due February 7, 2003, and reply comments on March 14.

The deal is done . . .

3G Allocations Final

After years of intense wrangling between the Defense Department and private industry, the final allocation of 90 MHz of spectrum for 3G wireless services came not with a bang but a whimper. The FCC took 45 MHz from the 1710-1755 MHz band currently used for Federal operations but earmarked for private use. Another 40 MHz comes from the 2110-2150 MHz band now used by point-to-point microwave operators, but long identified as potentially suitable for emerging technologies. The final 5 MHz (2150-2155 MHz) comes from the current Multipoint Distribution Service (MDS). The new spectrum is expected to provide advanced wireless services such as high speed data transfers, video applications, enhanced interoperability, and Internet access.

Soon they'll be going, going, gone . . .

Also On the Auction Block

The FCC has scheduled the following auctions:

March 26, 2003 : Narrowband PCS licenses. 54 small trading area PCS licenses, which encompass very slender bands of spectrum. Starting prices range from $500 to $8,000.

April 16, 2003 : 700 MHz licenses. 25 licenses for new communications services that are anticipated to eventually replace UHF television frequencies at 710-716 and 740-746 MHz. Staring prices range from $1,000 to $250,000 per license.

April 30, 2003 : 1670 - 1675 MHz. A single nationwide license to provide service in this frequency will be auctioned off starting at $12,628,000.

May 13, 2003 : Paging licenses. Nearly 9000 paging licenses for various frequencies and locations throughout the nation will be auctioned. Nearly all licenses will start at $500. A few will open higher, up to $5,400.

August 6, 2003 : 12.2 GHz - 12.7 GHz. The FCC is still in the planning stages for this upcoming auction, but has selected August 6 as the starting date.

FCC Office Proposes Radical Spectrum Transition

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The Commission's Office of Plans and Policy released a proposal to overhaul the system for allocating spectrum in the United States. Sharing the widespread conviction that the current system is inefficient, the study proposes that the Commission conduct a large scale auction to better allocate the scare resource. The release of the study follows on the heels of the Spectrum Task Force Report, (see page 2), reinforcing the growing recognition that the FCC must take bold steps to usher in the next wave of technological innovation.

The study proposes (1) reallocating a large amount of presently restricted spectrum to flexible use; (2) conducting large-scale, two-sided "band restructuring" auctions of spectrum voluntarily offered by incumbents, together with any unassigned spectrum; and (3) offering incumbents incentives to participate in those auctions by immediately granting them flexibility in spectrum use, and allowing them to keep the proceeds. Incumbents who win back their own spectrum at auction would receive immediate rights to flexible use. Those who choose not to participate would be allowed to continue to operate under the terms of their current licenses, and would receive full flexibility after five years. Participation would enable an incumbent licensee to learn how the market values its spectrum, and hence to make a rational decision on whether to accept the highest bid for the spectrum, or to place the highest bid itself and thus maintain control of the license.

The study notes that an ideal auction would involve the entire 300-3,000 MHz spectral band, but acknowledges the insurmountable technical and political obstacles.

The study notes that an ideal auction would involve the entire 300-3,000 MHz spectral band, but acknowledges the insurmountable technical and political obstacles. As a fallback, the study identifies 438 MHz for a first round of auction:

(1) 698-746, 747-762, and 777-792 MHz (formerly licensed for TV);

(Continued on page 5)

FCC Reviews 911 Requirements

By: R.J. Quianzon
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Americans have used 911 as their emergency telephone number for nearly forty years. Today, 98% of landline phones have access to 911 service. States and localities generally provide the rules for wireline 911 service, while the FCC regulates 911 for wireless phones. A new rulemaking seeks to determine whether changes are needed to keep up with technology.

Most of the concerns focus on the newest wireless retail offerings, particularly resold and pre-paid wireless service, disposable wireless phones, and personal data assistants (Palm organizers and the like) that access wireless voice service. These are generally novel ways of marketing the services of an underlying carrier, and so may be adequately covered by existing rules. But the FCC also asks whether 911 obligations should apply to Telematics service, which provides vehicles with built-in direction, concierge, and emergency services, and to Mobile Satellite Services and Maritime Telecommunications Systems.

In the wireline environment, many large buildings and organizations use in-house, multi-line phone systems called PBXs. Some PBX systems cannot report the location of the handset making a 911 call to the emergency services provider, but instead identify only the location of the central PBX unit. This problem can hinder a prompt emergency response. The FCC seeks comment on whether it calls for new regulations.

Comments are due on February 3, and reply comments on February 28.

Plans Advance for Dedicated Short-Range Communications Services

By: Mitchell Lazarus
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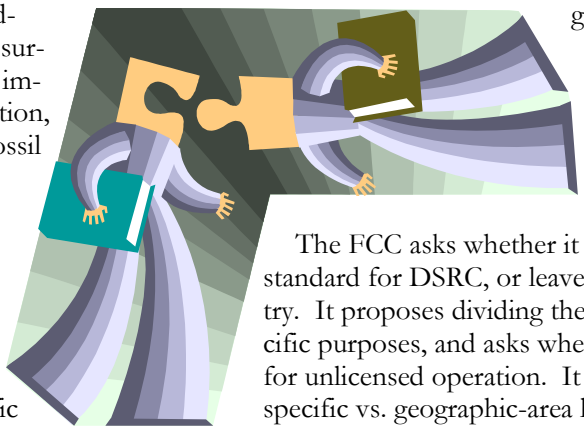
The FCC has proposed technical and licensing rules for the Dedicated Short-Range Communications Services (DSRC) at 5.85-5.925 GHz. A low-power radio component of the Intelligent Transportation System (ITS), DSRC seeks to incorporate advanced technology into the nation's surface transportation infrastructure to improve safety, decrease traffic congestion, reduce air pollution, and conserve fossil fuels.



The FCC sees DSRC as a short-range, non-voice radio technology for limited-duration communications between roadside and mobile units, or between mobile or portable units, primarily to advance traffic flow and promote safety. Roadside units (RSUs) would either be fixed in place or mounted on vehicles, but could operate only when stationary. On-board units (OBUs) could be mounted in vehicles or be hand-carried.

Proposed eligible users include traditional public safety agencies such as police, fire, and emergency medical services, and not-for-profit providers of radio service to state and local governments, utilities, railroads, metropolitan transit systems, pipelines, private ambulances, and volunteer fire departments. In addition, the FCC seeks comment on whether to allow private operation, either directly for profit or in support of other business activities. One potential benefit of private use might be a greater incentive for manufacturers to develop equipment, which would then become available to public safety agencies at economies of scale.

The FCC asks whether it should adopt a technical standard for DSRC, or leave those decisions to the industry. It proposes dividing the band into channels for specific purposes, and asks whether part should be set aside for unlicensed operation. It seeks comment on site-specific vs. geographic-area licensing, and raises the possibility of licensing RSUs "by rule," and of authorizing OBUs by rule or on an unlicensed basis, to eliminate the need for cumbersome individual licensing.

Short-range vehicle communications have already shown great success in niche applications such as automatic toll-taking. It remains to be seen whether the FCC's ongoing efforts to expand of these capabilities will amount to something more than a clever solution in search of a problem.

(Continued from page 4)

(2) 1710-1755 MHz (government transfer band);

(3) 1990-2025 and 2165-2200 MHz (2 GHz mobile satellite band);

(4) 2110-2165 MHz (general fixed and mobile band); and

(5) 2500-2690 MHz (ITFS/MMDS).

Each band would require technical rules for protecting in-band and adjacent-band services.

So far this approach represents only the views of its authors. Formal adoption by the Commission is not expected any time soon. The authors acknowledge their proposals will generate substantial debate, and might require congressional action. Of special concern would be the financial payments to the incumbent licensees that lose their spectrum to other bidders.

Nonetheless, the study reflects a growing recognition that the FCC and Congress must do a better job of allocating spectrum. While the current policies have served the telecommunications industry adequately for most of the past 90 years, the next 90 years will likely be focused on seeking full utilization of all the spectrum, all the time.

FCC Announces Interim Changes to Universal Service Fund

By: Liliana E. Ward
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The FCC has modified the system of contributions to the universal service fund (USF), which supports telecommunications in rural, insular, and high cost areas to ensure high quality, affordable service for all Americans. The USF rules generally require contributions from every carrier providing interstate telecommunications service. While long-term changes to those rules are pending (see below), the FCC adopted interim measures to promote near-term sustainability:

Increasing to 28.5 percent (from 15 percent) the fraction of revenues assumed to come from interstate wireless (cellular telephone) traffic. This will increase the amount of contributions, which depend only on interstate revenues.

Basing contributions on projected, collected end-user interstate revenues, instead of on historical, gross-billed revenues, as at present. This change is intended to spread the load more fairly among contributing carriers. It will probably reduce the contributions by wireline interexchange carriers, whose revenues have been declining.

Prohibiting carriers from including a mark-up on the USF contribution if that contribution appears as a line item on the customer's bill. A carrier can alternatively recover the contribution through a flat rate imposed equally on all users, or by increasing rates for all users.

The contribution factor changes go into effect with the filing of the Form 499 on February 1, 2003. The limit on line-item recovery goes into effect on April 1, 2003.

For the longer term, the FCC seeks comment on three connection-based contributions systems:

(1) A minimum contribution from all interstate telecommunications carriers, plus a flat charge for each end-user connection, depending on its nature or capacity.

(2) Contributions based purely on capacity. Under this proposal, the obligations for each end-user connection would be shared between access and transport providers.

(3) A proposal to assess providers of switched connections based on the quantity of their working telephone numbers.

The deadlines for comments and reply comments had not been established at press time.

MDS/ITFS Industry Seeks to Reshuffle Spectrum

By: Donald J. Evans
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Leading players in Multipoint Distribution Service (MDS) and Instructional Television Fixed Service (ITFS) have presented the FCC with a White Paper outlining a dramatic reorganization of their spectrum and licensing rules. Both services originally carried one-way video using interleaved channels at 2500-2690 MHz: commercial "wireless cable" in MDS, and instructional and teacher-training materials in ITFS. Rule changes since then have enabled two-way data transmission, including Internet access, but the industry has not advanced as quickly as proponents had hoped.

Several industry groups have now collaborated on a detailed plan that would separate out the various MDS and ITFS channels, thus aggregating larger blocks of contiguous spectrum that could be used more readily in cellular configurations. The middle portion of the joint spectrum would be reserved for traditional high power, tall antenna operations. A good deal of regulatory underbrush would also be cleared away, including some current operating and build-out requirements.

As often happens in spectrum reorganizations, much of the controversy centers on who will pay to replace or retune equipment presently in use. Under the industry plan, the cost of reconfiguring ITFS equipment would fall on the party first seeking rearrangement of the spectrum in that market. But incumbent MDS licensees would have to bear their own costs, a sore point with many such operators, who together serve about a million receivers.

The FCC is expected to set out these ideas in a notice of proposed rulemaking early in 2003.

Expanded Wi-Fi in Doubt

By: Mitchell Lazarus
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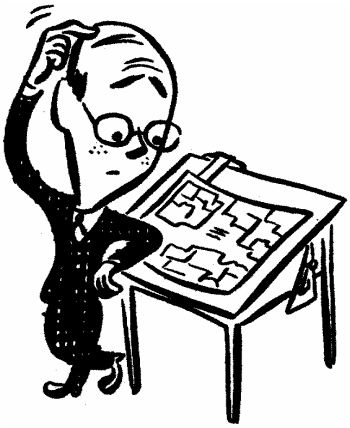
Efforts to triple the size of the Wi-Fi band at 5.8 GHz are meeting stiff opposition from the U.S. military.



Most Wi-Fi systems now in use -- most home and office wireless networks, and all systems offering wireless Internet access at coffee shops and airports -- use frequencies at 2.4-2.4835 GHz, a band shared with millions of microwave ovens and countless other consumer devices. Another form of Wi-Fi, less commonly available (and incompatible with the first), resides in the higher, less crowded frequencies at 5.725-5.85 GHz. Neither of these bands is in dispute, contrary to some press reports. All current systems are safe. But efforts to add new frequencies are not.

The controversy began when the Wi-Fi Alliance, which certifies wireless products for compatibility, asked the FCC to expand the upper band to include 5.47-5.725 GHz. That would add 255 MHz to the current 125 MHz, more than tripling the band.

The military objected because it operates radar units at those frequencies -- approximately eight to ten units nationwide, according to some reports. The power limits the military would impose on civilian users to protect those radars are too low for a commercially useful device, say industry representatives. Industry countered with an offer to deploy equipment similar to that used in Europe, which "sniffs" for radar units nearby and shuts down if it senses one. But that is not good enough for the military, which may not want the locations of its radars known to millions of laptop users.

Both proponents and opponents will pursue their respective positions at the World Radio Conference (WRC) that convenes in Geneva in June. The FCC is under no obligation to follow a WRC allocation, especially for a short-range service that does not require international coordination. But both sides believe that a favorable outcome in Geneva will ultimately help their case at the FCC.

Site-by-Site Licensing Favored for Millimeter Waves

A proceeding to authorize 13 GHz of spectrum raises the key issue whether to auction off this huge amount of bandwidth -- equivalent to 13,000 MHz, or over 2,100 TV channels -- in geographic-area licenses, or instead to license users on a site-by-site basis. The frequencies are among the highest available for commercial use, at 71-76, 81-86, and 92-95 GHz.

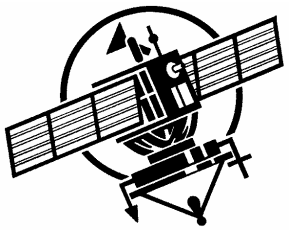
Showing startling unanimity (for an FCC proceeding), virtually all of the commenting parties favor site-by-site licensing. At these frequencies, they argue, radio waves form into tight, pencil shaped beams that can operate very close to each other without causing interference. As a result, there should be no mutually exclusive applications, which are the legal prerequisite for auctions; and market forces will produce more users in a given area, and hence more efficient spectrum use, than would geographic licensing.

In response to the FCC's concerns about administrative burdens of site-by-site licensing, some parties suggest either blanket licensing or licensing by rule, both being subject to frequency coordination.

The only issue generating significant controversy is whether unlicensed users can share the band with licensed operations, or should be segregated into a subband of their own.

Radio astronomers and earth exploration satellites also use parts of these bands. None of the commenting parties disputed the need to protect their operations.

Reply comments are due on February 3.



Anik F2 Satellite Added to Permitted Space Station List

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In response to a request from Telesat Canada, the FCC has added the Canadian satellite Anik F2, located at 111.1 degrees W.L., to its Permitted Space Station List. All U.S. earth stations authorized with "routine" technical parameters (*i.e.*, authorized for ALSAT) may now access Anik F2 in the conventional C-band (3,700-4,200 MHz uplink/5,925-6,425 MHz downlink) and conventional Ku-band (11.7-12.2 GHz uplink/14.0-14.5 GHz downlink), without a license modification specifying Anik F2. The satellite may be used for the provision of analog television, and point-to-point and point-to-multipoint wideband and narrowband digital services, including voice, data and Internet services, plus VSAT services in the Ku-band. But Anik F2 is not authorized to provide direct-to-home, direct broadcast satellite ("DBS") or digital audio radio service ("DARS") services in the United States.

Additionally, the FCC authorized Telesat Canada to use the Ka-band capacity of Anik F2 (29.5-30.0 GHz uplink/19.7-20.2 GHz downlink) to provide two-way broadband communications services in the United States. The FCC observed that this action should stimulate competition in the United States and expand the provision of broadband service in rural areas. But this service is not covered by the ALSAT designation. Earth station operators seeking to access Anik F2 for Ka-band must first obtain a license that specifies the satellite.

18 GHz Band Revisited -- Yet Again

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In a second reconsideration order, the FCC has further fine-tuned its division of the 17.7-19.7 GHz band between satellite and fixed microwave point-to-point users.

Originally the band was allocated coequally to fixed and satellite users, until the first Report and Order concluded the two could not share and divided most of the band between them. Satellite operations had not yet begun, but there were many fixed point-to-point users operating throughout the band. To protect them, the FCC required incoming satellite providers to pay the expenses of relocating incumbent users from the satellite portions of the band to the newly allocated point-to-point frequencies.

An earlier reconsideration order, late in 2001, adjusted those relocation payment rules, and some technical rules as well. A few weeks later, the U.S. Court of Appeals upheld the relocation payment rules over a satellite party's objections.

The FCC's new order grants another satellite party's request to reallocate one of the two remaining shared segments, 18.3-18.58 GHz, for exclusive satellite use. The displaced fixed microwave point-to-point users are mostly private cable operators (PCOs), which until recently were barred from most other spectrum suitable for carrying video. But in May 2002, the FCC opened the CARS bands, previously limited to franchised cable operators, to PCOs as well. With that spectrum now available, the FCC reasoned, the PCOs should be able to manage without 18.3-18.58 GHz.

The new order also permits blanket licensing of satellite receive stations in this band, along with the corresponding uplink facilities at 29.25-29.5 GHz.

FCC Adopts Rules to Ease Digital Migration

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Broadcast Auxiliary Service (BAS) licensees may now migrate into the digital realm hand-in-hand with their broadcast counterparts. Rules recently adopted by the FCC conform certain technical rules so that broadcasters may operate end-to-end digital broadcasting systems. Both TV and aural BAS stations may use any available digital modulation techniques in all BAS frequency bands.