

Chapter 1

Chapter Title

Everyone has their little faults. Mine is in California.

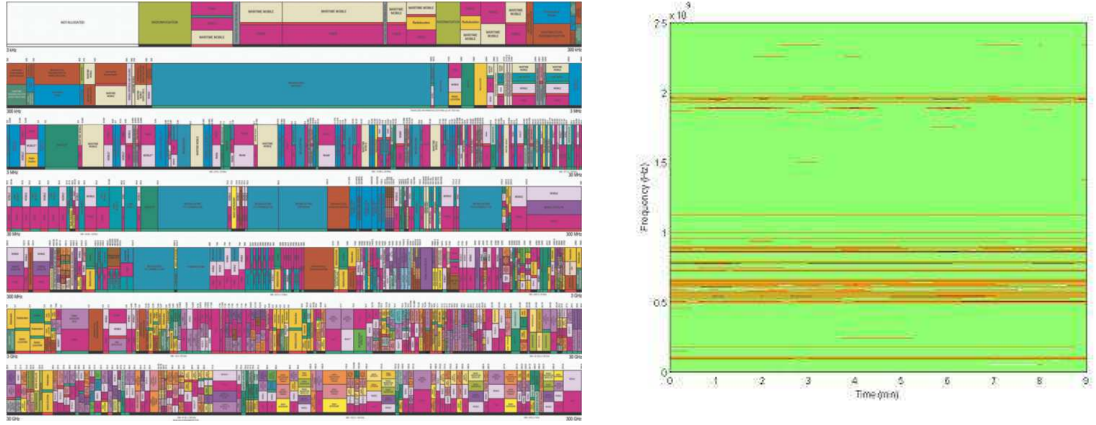
– Lex Luther

1.1 Spectrum allocation vs. usage

Traditionally, the FCC has allocated spectrum bands to a single use, issued exclusive licenses to a single entity within a geographical area, and prohibited other devices from transmitting significant power within these bands. Looking at the NTIA's chart of these frequency allocations (Figure 1.1a), it appears that we are in danger of running out of spectrum [1]. However, allocation is only half the story. Contrary to popular belief, actual measurements (taken in downtown Berkeley, CA) show that most of the allocated spectrum is vastly underutilized (Figure 1.1b) [2].

blah blah blah...

Examining solely the 402 MHz allocated to broadcast TV (Appendix ??), if we assume 70% of the spectrum is available, we can fit two of these systems operating simultaneously inside the broadcast TV spectrum. The available spectrum up to 3 GHz would fit 20 systems, blanketing an area with 20 DVD-quality video streams from low-powered wireless transmitters.



(a) The NTIA's spectrum allocation chart makes available spectrum look scarce. (b) Measurements from the Berkeley Wireless Research Center show the allocated spectrum is vastly underutilized.

Figure 1.1. There is a great discrepancy between spectrum allocation and spectrum usage.

1.2 The policy debate

Clearly, the spectrum is far from fully utilized. As a result, the FCC's exclusive-use allocation policy is being increasingly viewed as outdated. Opinions on the appropriate solution, however, vary.

Some economists argue that the development of a secondary market in spectrum would eliminate or greatly reduce the inefficiencies in spectrum usage [3], [4].

References

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