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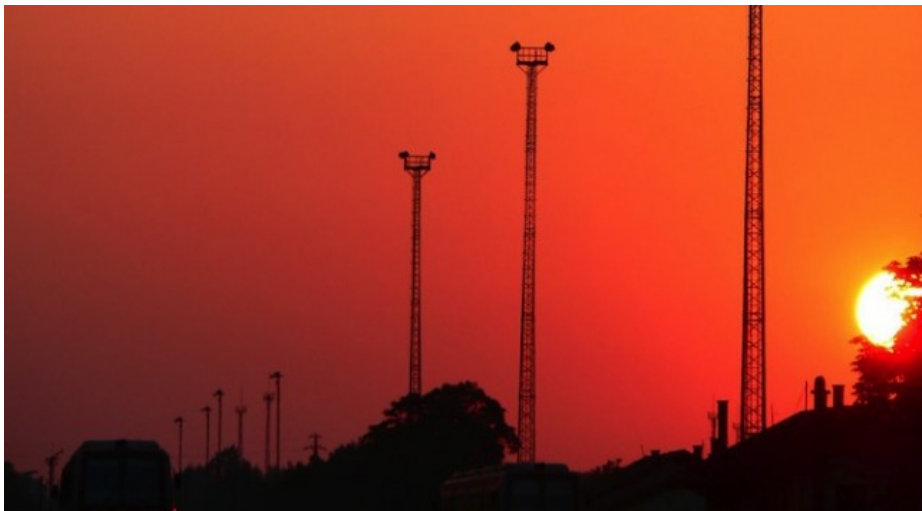
ELECTRONICS A NEW SOLUTION FOR THE SPECTRUM CRUNCH: SPECTRUM SHARING

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A new solution for the spectrum crunch: Spectrum sharing

By Neal Gomba on June 4, 2013 at 10:36 am | 2 Comments



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Spectrum is a finite resource. There are only so many radio frequencies that can be allocated exclusively for mobile services. Given how compressed most non-cellular frequencies are, it becomes increasingly unlikely for more

spectrum to be freed up for operators to use exclusively for cellular service. Enter spectrum sharing.

Spectrum sharing is the principle of allowing multiple users to utilize the same block without providing exclusivity to either of them. One user may have “priority” over the other, but generally all users assigned to those frequencies can use them. This way, more spectrum can be made available to those who need it faster than it would normally be possible.

The government loves this idea

The government likes this because it does not have to repack federal usage of radio waves even tighter than before. For the AWS-1 spectrum (which T-Mobile uses for UMTS/HSPA+ and LTE service), government users had to clear out of the band entirely before T-Mobile could use even a portion of it. The problem with that lies in how efficiently they can move out. By [design](#), the government is a large bureaucracy that moves very slowly to implement change. Furthermore, military users on the band in some areas were being less than cooperative. This forced T-Mobile to delay UMTS deployment in many areas several times.

With spectrum sharing, the government could have cleared out from the band in stages, allowing T-Mobile to roll out UMTS service faster by prioritizing to move out of T-Mobile's

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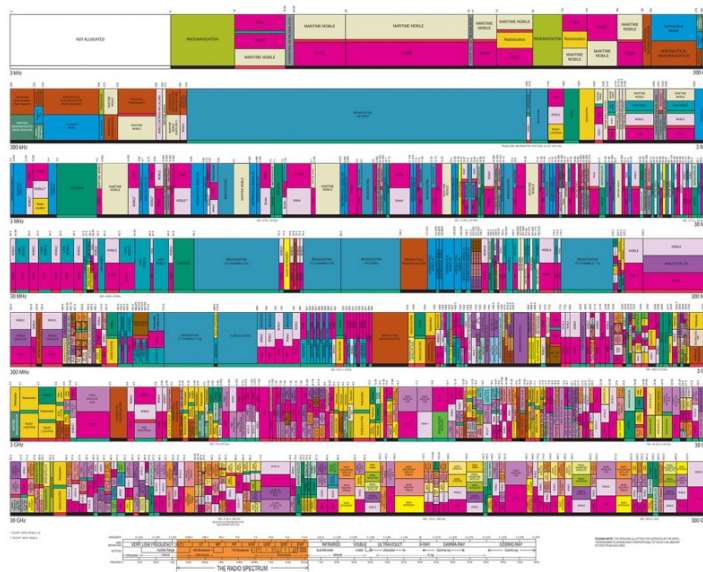


A silver HP ENVY TouchSmart laptop is shown from a front-three-quarter view. The screen displays the HP logo, the text "ENVY™ TouchSmart", and a blue banner at the bottom with the text "TouchScreens" and a white touch icon.



UNITED STATES FREQUENCY ALLOCATIONS

THE RADIO SPECTRUM



2/5

The FCC is **required to auction several more frequencies by mid-2015**, thanks to the “The Middle Class Tax Relief and Job Creation Act of 2012” passed by Congress. One band in particular that FCC is required to auction is the 2155-2180 MHz (unpaired AWS-3 band) frequency range. By itself, AWS-3 is not a problem. But the FCC (and mobile operators) wish to have AWS-3 become a paired band. 2155-2180MHz would be paired with 1755-1780 MHz, extending the paired AWS band with an 25MHz channel. It is **slated to be auctioned by the end of next year**.



However, 1755-1780 MHz has not been cleared of government users yet. Consequently, if a paired AWS-3 band is to be auctioned by the time that Congress mandated to the FCC, spectrum sharing will be required. **T-Mobile is already conducting trials** to prove that spectrum sharing is doable for the frequency range.

There is a lot of skepticism in spectrum sharing on a national basis, but perhaps this is the solution that will allow mobile operators to have access to greater radio bandwidths as the demand for data and greater speeds rises.

Now read: **The wireless spectrum crunch, illustrated**

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Maventwo • 4 months ago

On eetimes .com they have written an article in 2011 I think it was that described that in UK they discuss to force Radar uses by military instead using ordinary radio spectrum waves from Terrestrial digital radio communication and smart algoritmes recognise echo waves when objects in air or on Sea be detected.
So traditional Radar spectrum waves can be reused for mobile communication.
Another possibility is to make all types of radio waves using MIMO with man antennas for both sending and recieving digital radio transmitting.
Both IEEE 802.11n and 802.11ac is using MIMO and 4G-standard LTE is prepared for 2x2 and 4x4 MIMO and LTE Advanced-standard supports up to 8x8 MIMO.

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