

## Mining the Wireless Gold Rush *without Getting Shafted*



**What you Should Know about Licensed Microwave versus License-Free Wireless**  
by David Theodore

As with any hot market, point-to-point wireless is bait for the pathologically opportunistic. Scrambling for market share, they plunge headlong into uncharted waters dragging customers to the murky depths. Those standing on the shores are left to ford a sea of marketing hype that obscures the pitfalls and generally dumbs down the knowledge base.

You can't even rely on industry pillars to be careful with their facts. Examples abound. For instance, the Web based "Learning Center" of a Fortune 500 telco lists microwave as *sometimes* achieving data rates from fractional T1 to 10 megabits. Antenna sizes are said to range from 30 cm to a meter. Actually, microwave can push a gigabit of bandwidth and dish size can be anywhere from one to twelve feet. *Am I splitting hairs?*

In this atmosphere - so often termed "anarchy", trust can't be a matter of faith. To capitalize on the wireless opportunity and avoid getting shafted, you'll need to know a few basic and incontrovertible facts concerning the difference between licensed and license-free wireless. A successful outcome depends on a well reasoned choice between these categories.

First, it doesn't come down to one solution being better than another. Radios in the unlicensed bands ("unlicensed, license-free, license-exempt", et al) are very different from radios that are licensed. It's like comparing a motorcycle to an automobile. They each have particular merits, depending on your purpose. So let us consider the facts, stripped from their protective techno-layers.

**FACT #1: There is a difference between licensed microwave and unlicensed wireless.** It's reckless for anyone to try to tell you otherwise. For starters, an unlicensed connection may be installed for under a thousand dollars, but licensed microwave runs from ten times that to upwards of \$50,000 per radio. How is it that sophisticated buyers account for billions in licensed hardware when they might wring the same performance from a relatively miniscule investment? I would rather submit that they know something, than imagine that they're under the spell of a mass hysteria.

**FACT #2:** Forget that vendors are slapping "carrier-class" labels on everything. **Licensed microwave is "carrier-class" and unlicensed is not.** Applying the term in such a fast and loose manner blurs key distinctions that tell whether a product is suited for general or critical use. Simply put, a product is "carrier-class" if it meets the exacting standards of a carrier (e.g., Verizon, MCI, etc.) for its own network infrastructure.

Licensed microwave is the unanimous choice of major telcos worldwide and that's because nothing else matches the bandwidth and (guaranteed) interference protection. Central office and co-location sites are lined with the stuff - deep, drum-shape dishes attached to heavy-duty mounts. Last time I stood on the roof of 60 Hudson (NYC), I didn't see a single license-free system.

**FACT #3: Licensed microwave is inherently interference-free. Unlicensed is not.** Licensed radios have to meet stringent FCC specs concerning transmit power, channel spacing, bandwidth utilization, receiver discrimination, antenna size and even the width of the radio beam. All this maximizes efficiency of the licensed spectrum, enabling a multitude of users to enjoy their own clear slice of radio heaven. No such provisions or design attributes are built into unlicensed radios.

Cost of building products to licensed specs is high, accounting for the difference in price. As the buyer, the main thing you get for the premium is the assurance that licensed microwave will deliver peak performance, whether you deploy it in Manhattan or Madagascar. Unlicensed wireless lacks that consistency as its performance depends on the extent to which your neighbors may have adopted the same solution.

These points lay out the chief differences between wireless in the licensed and unlicensed spectrums and I hope that knowing this gives you greater confidence in your decision process. Less consequential and more subjective comparisons may be made, but they shouldn't obscure the crux of the matter.

Licensed and unlicensed radios (microwave) are in distinctive categories, each excelling in their own right. For instance, for the cost of a good laptop, you can't beat license-free as a corporate crash kit. No other means affords the speed and flexibility in redeploying communications after a disaster or a fiber break. Anyone with line of sight to a remote building should spend the couple of grand to have a link at the ready, even if it's kept in a box until needed. The low cost and relative high reliability also makes unlicensed a perfect choice for secondary or mixed media backup and remote connections that are not mission critical.

As a rule, if your job depends on it, it's licensed microwave or bust. There's nothing wrong with saying this - even though we sell unlicensed, because it should come as no shock to know that a \$3,000 wireless solution has certain limitations. Telco executives can breathe a sigh of relief - for now.

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