

## **Spotwave Backgrounder 3G Dataspeeds Need a Strong Signal**

### **Got Data? Get Coverage**

Third Generation wireless technologies like EVDO, UMTS, and HSDPA promise the likes of wireless applications and the internet at broadband speeds, including over-the-air streaming audio and video. In addition to increasing capacity for more users, new 3G wireless broadband networks offer fast and secure wireless connections to the Internet and exciting new data applications for mobile devices like position location and mapping, audio and video content, application downloading over the airwaves, multimedia messaging and video conferencing. 3G services offer subscribers and enterprises the high-speed access they've come to enjoy from their connected computer, while providing wireless carriers with the opportunity to offer enterprises next generation business applications via a wireless infrastructure.

However the same indoor wireless coverage problems that plague first and second generation technologies also affect 3G because a strong signal is required for wireless voice and data applications to work reliably indoors.

### **The Issue**

A common axiom from radio communications called Shannon's Law impacts wireless networks, and is of particular importance to 3G networks. Shannon's Law predicts the useful capacity of any communications channel based on signal and noise: the more information you try to get through a channel, the better the signal-to-noise ratio has to be.

Even in areas and buildings close to cell sites, signal is impaired by factors as common as building materials like steel, concrete and tinted glass. The throughput in many buildings is diminished since the proportion of signal to noise is lower than it needs to be, yet the places where wireless broadband is used the most are indoor locations.

While spotty voice coverage where signal quality is marginal is often tolerated – dropped calls, missed calls etc. – users and customers paying for broadband data services will not be satisfied with severely diminished throughput.

### **A Simple Solution**

This is where Spotwave's intelligent indoor wireless coverage products come into play. Unlike a traditional repeater or bi-directional amplifier (BDA), which creates additional noise and can corrupt the wireless wave form, Spotwave technology ensures the wave is perfectly maintained and that the signal-to-noise ratio is at its highest possible level.

### **Data Throughput Measurement Examples**

The chart on the following page shows EVDO (Evolution Data Only/Optimized) data speed measurements taken in 5 different locations of a coverage-impaired building. The red indicates the throughput before a Spotwave product was installed, the blue indicates the performance improvement after Spotwave's product (SpotCell Enterprise version) was installed.

\* Note these measurements are based on EVDO version 1X, not EVDO Rev A.

### EVDO Data Throughput (Kb/s)

