



TDtv

Use Your 3G Spectrum. Stay in Control. Keep More Revenue.

The Mobile TV Solution Designed for UMTS Operators

Mobile TV is one of the highest priority markets for mobile operators. Many, if not most, have announced initiatives to offer some sort of Mobile TV services. But all are very clear that a successful Mobile TV offering over WCDMA would completely consume the networks, even with HSDPA upgrades, and is a very inefficient use of paired spectrum. And other Mobile TV technology choices have drawbacks for operators, presenting significant business model, frequency, and technology problems for UMTS operators.

But an all UMTS option is available that better positions operators to capitalize on the Mobile TV opportunity. Called TDtv, a multimedia broadcast and multicast service (MBMS) implemented over UMTS TD-CDMA, it allows UMTS operators to fully utilize their existing spectrum and base stations to offer subscribers attractive mobile TV and multimedia packages without impacting other voice and data 3G services. Advantages include:

The Business Model Advantage

TDtv is designed to be a very low cost overlay network over existing spectrum. With a very low cost base station, and only a single base station controller required for up to 100 Node Bs, the low capital expenditure needed to deploy TDtv presents an attractive long-term business case. By using their own network, UMTS operators do not have to share revenues with the broadcasters.

The Performance Advantage

TDtv delivers similar spectral efficiency — 1 bit per second per hertz — and number of channels as other broadcasting technologies. With TDtv, UMTS operators can deliver up to 50 channels of TV for standard cell phone screens, or 15 higher quality QVGA channels, all in their existing 5MHz of unpaired 3G spectrum. And unlike current unicast mobile TV services that take additional network bandwidth for every subscriber using the service, TDtv leverages MBMS to allow an infinite number of customers to watch the same channel or use the same network bandwidth. Operators can also deliver digital audio or other IP data cast services to enhance their service offerings.



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The Spectrum Advantage

Only TDtv allows UMTS operators to utilize existing unused spectrum to address the Mobile TV market. TDtv operates in the universal unpaired 3G spectrum bands that are available across Europe and Asia at 1900MHz and 2010MHz, which better enables roaming and creates a larger ecosystem for infrastructure equipment and end user devices. And only TDtv allows operators to show regulators and investors that they are using and getting a return on their 3G spectrum assets. The solution will also be made available to operators in the other frequency bands that IPWireless supports globally, including the 2.5GHz band. For operators that have 10MHz of spectrum in any of these bands, the solution can deliver twice the number of channels.

The Control Advantage

Competitive solutions mean that the UMTS operators will have to partner with broadcasters for the actual delivery of the content. This would result in deeply diminished revenues and loss of control of the end user experience. TDtv allows operators to keep full control of end user experience and maximize revenue.

The WCDMA Integration Advantage

Being part of the 3GPP family of standards also means that TDtv has far better integration with WCDMA systems than other Mobile TV technologies. TDtv architecture is designed to seamlessly integrate with WCDMA on both the network and device side. This has cost, power, and size benefits over other broadcasting technologies. At the cell site, TDtv base stations can easily be co-sited. In the device, the technology can reuse the WCDMA RF chain. A TDtv chipset can be integrated into the WCDMA chipset, adding a very minimal cost to the device - estimated at less than \$5 -- and resulting in smaller devices than other Mobile TV technology devices. At the core network level, the solution integrates with WCDMA resulting in easier billing and other back office integration.

The Mobility Advantage

Mobility is an important factor for adoption of Mobile TV, and there are serious questions as to whether mobile broadcasting technologies can support vehicular mobility. As a 3GPP standard, TDtv inherently supports handover and high mobility. UMTS TD-CDMA has recently demonstrated its ability to support mobility at speeds up to 200 kmph, and will support up to 400 kmph in 2006, ensuring uninterrupted programming even on the majority of Europe's high-speed rail systems.

TDtv Can Deliver up to 50 Channels in a UMTS Operator's Existing 5 MHz of Unpaired Spectrum

Distance Between Sites	1km	2km
Throughput per Timeslot	380 kbps	350 kbps
Total Throughput	5.32 Mbps	4.9 Mbps
Spectral Efficiency	1.064 b/s/Hz	.98 b/s/Hz
#CIF Channels	17	16
#QCIF Channels	53	49



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