

HIGH FREQUENCY

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The Value of WiMAX and Other Broadband Wireless Formats

Gary Breed
Editorial Director



Broadband wireless services represent growth—in business for wireless providers, and in personal usage for those customers with a need for portable access to images, graphics, interactive content, etc. There is no question that the availability of wireless broadband is a hot item in business and technology development right now.

A wide range of services for consumers and business customers drives the push for mobile broadband: images such as photos, maps and documents; interactive services like directories, web pages and video conferencing; and, of course, entertainment such as games, videos and television programs. Whether necessary for business or purely recreational for consumers, these services have a market waiting for them. The numbers of subscribers to these “premium” high speed services will certainly be sufficient to make them commercially viable in the very near future, allowing them to become standard offerings in the future.

Among the various technologies that can deliver high bandwidth services, WiMAX continues to get the most attention. Industry support for WiMAX is led by chip-making giant Intel. Intel, like other major component firms, has had a wireless group actively following technology research and investigating potential product offerings to support them. To date, WiMAX has received Intel’s strongest support among wireless systems. When you add the support of other companies, plus the inherent potential for spectrum availability and transmission bandwidth, WiMAX has earned the high expectations that we are reading about in the business press.

In the U.S., the primary alternative to WiMAX is the developing LTE (long term evolution) technology. There are sufficient technical similarities between WiMAX and LTE that an industry push has begun to change LTE into an evolutionary version of WiMAX, resulting in a single standard. With a single standard, the number of equipment options is greater, which should both increase choices and lower prices for consumers.

Of course, there are other options for high speed mobile interconnection. Wi-Fi has been used in Apple’s iPhone for Internet access, and televi-

sion broadcasters are hard at work developing high speed video and data downlink applications that would ride along on their high power digital signals. On top of all this, there is the upcoming development of the 700 MHz spectrum with its flavor of broadband wireless access, which is likely to resemble one of the major transmission formats.

At the end of the day, mobile broadband wireless needs to be developed, evaluated and refined, since the public expectation of “wireless anywhere” has now escalated to the idea of “broadband everywhere.”

Inside This Issue

This edition of *High Frequency Electronics* has a lot of information on technologies like WiMAX. It's a little more of a big picture empha-

sis than specific design techniques, although the fourth installment of Alexander Chenakin's study of synthesizer design fills that role nicely.

We start with a review of RF MEMS technology from two researchers in India. This is a good overview of an important topic that is growing and changing on a daily basis.

Our WiMAX coverage includes the Technology Report and its collection of WiMAX industry news, followed by a technical article on WiMAX channel power testing by experts on measurements from Agilent Technologies.

EDA tools to assist with high speed digital design are the focus of this issue's tutorial. Bridging the chasm between the classic digital designer's realm and the world of RF/microwave design has not been easy or quick, but out of

necessity, there is significant progress underway.

Our High Frequency Applications column provides a few notes on activity in thermal analysis, a growing part of the designer's job. Even low power circuits increase their high power density as they shrink in size.

Finally, there is our regular coverage of new products. First, a new BAW switched filter bank from TriQuint is described by the engineers who developed it.

We also put a spotlight on some of the newest products for wireless system testing, microwave multi-function assemblies, and optical products. Finally, we include our usual mix of interesting new products of all types, so you can see what's new from many different companies.