

Year in Review and Looking Forward at 2008 – Industry Perspective

By Chris Morton, CEO, SkyCross



The existing wireless device market continued to grow in 2007, and we also started to see new device categories develop for the future. According to ABI research, 2007 closed with approximately 1.15 billion

mobile handsets, a 15.8 percent increase on 2006. Mobile video uptake in Asia-Pacific grew to 24 million devices in 2007, and we expect this service to become more widespread in other regions. PC cards shrunk to Express34 or USB dongle form factors and continue to be the platform of choice for introducing new data and video services. Wireless audio and personal navigation devices are younger product categories that also expanded. For example, SkyCross developed antenna technology for wireless earphones that offer stereo sound for any audio source. The applications for this technology are expanding into the home theater space and beyond.

We expect these industry trends to continue in 2008. In terms of antenna technology, this year is a turning point. SkyCross recently announced its iMAT solution, which enables the benefits of optimized multiple antenna systems—higher link gain leading to faster data rates, increased network capacity, and better reliability—in one small antenna. Multiple feedpoints on this single structure each access the antenna as if it consisted of multiple antennas with high isolation, low correlation and high per-feed antenna efficiency.

This is an important development for today's networks, and is essential for next generation protocols including HSxPA, 802.11x, WiMAX and LTE, which require multiple antennas for diversity or MIMO. The 700 MHz auction is also interesting for antenna design. Lower frequencies physically demand a larger antenna, and iMAT helps to deliver the performance necessary for these bands without sacrificing sleek device design.

SkyCross continues to see success with many high volume projects spanning a variety of wireless devices. Our versatile antenna technology provides the freedom to design sleek, feature-rich devices that operate on many frequency bands often with a single, small antenna. SkyCross antennas are designed to conserve battery life as features are added, offering optimal radio-frequency systems performance. It is also increasingly important to offer device manufacturers local support. At SkyCross we look forward to leveraging our complete, one-source solution to help enable advanced wireless services in markets worldwide.

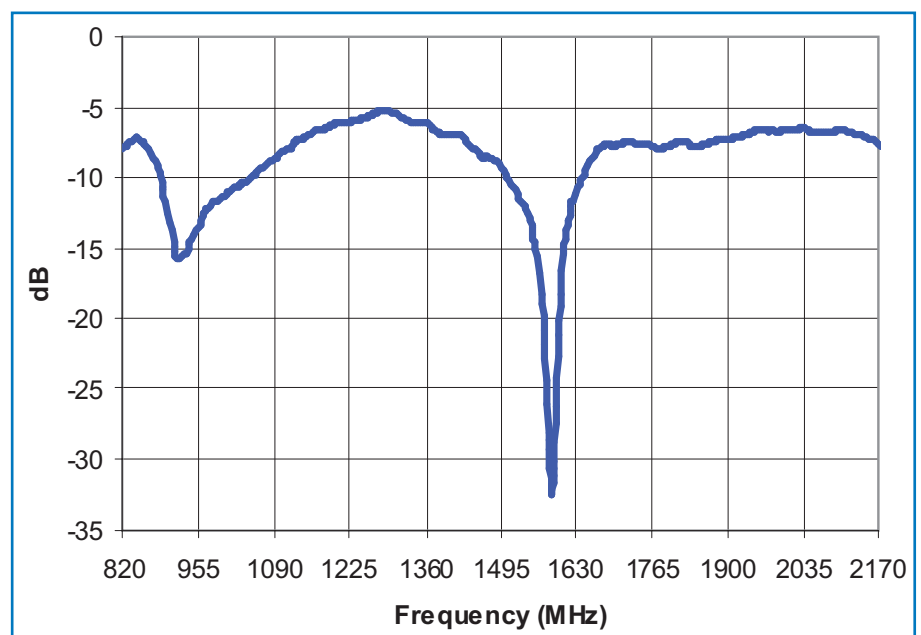


Figure 7. Combined HSPA/GPS express 34 card diversity antenna with high isolation to GPS band. See www.skycross.com/products/pdfs/iMAT-1030-a.pdf for details.

The azimuthal plane far-field radiation pattern for this configuration is shown in Figure 6a for two of the three elements. Each feed of the antenna produces a cardioid pattern that is rotated by 120° from the pattern produced by the adjacent feed. The net result is a low computed correlation coefficient using Equation 1. Values less than 0.2 are achievable as shown in Figure 6b over the operating band where computations were performed on both the two- and three-dimensional far-field patterns produced by the antenna. In both cases these are more than sufficient for diversity or MIMO application.

With iMAT it is not necessary to use dielectric loading to achieve high isolation and consequently, antennas may be constructed with less expensive, common materials including metal stampings, plastic carriers, and thin films. In addition, the isolation is achievable in-band where MIMO and diversity systems must operate. SkyCross has however, implemented this technology for multi-band operation in HSPA notebook card format. An example is shown in Figure 7 for a combined HSPA and GPS antenna having two feedpoints. High isolation is achieved at 1575 MHz for GPS at the diversity branch, while also maintaining over 10 dB isolation between the 869 to 894 MHz receive bands.

In summary, these examples illustrate the benefits of using a single element iMAT antenna for diversity or MIMO applications. Currently, iMAT supports legacy networks and is essential for next generation protocols that require diversity or MIMO such as HSxPA, WiMAX, 802.11x and LTE. iMAT introduces a new way to think about creating a diversity or MIMO system. Ultimately, by using the advantages derived from better performing MIMO systems, end users will be able to realize the full potential of their wireless services and demand faster connections at an increasing rate.

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