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You can't bring your 52" plasma on the bus: the allure of handheld TV's

Although we have been focusing recently on the business of selling larger and larger TV's, we are increasingly excited by opportunities at the opposite end of the size spectrum, notably mobile televisions on cell phones. We believe that this market is teed up for dramatic growth and likely represents the next "big thing" in cellular handset technology. Mobile handset TV has, until recently, largely flown under the radar screens of most investors while the various players jockey for position and transmission standards remain a toss-up. While the field remains wide open, we think investment opportunities are emerging as some companies take an early lead in the development of mobile handset TV market. We will be examining the market and its players over the next several months in conjunction with our technology consulting partners in hopes of finding interesting investment opportunities.

One company in this space that has caught our attention is Microtune Inc. (NASDAQ: TUNE). Microtune makes a broad array of silicon radio-frequency integrated circuits and modules for a wide range of consumer and transportation electronics applications. Their products are used in digital TV's, set-top boxes, cable modems, in-car audio/video systems and mobile telephone applications. The company's core business is healthy and has substantial investment merit in its own right. However, Microtune showed up on our radar screen when it announced the development the MT2260 tuner (and the subsequent MT2262 tuner), designed for use in cell phone handsets. These tuners have, in our view, positioned Microtune to take advantage of developments in the US and European mobile handset TV market and have the potential to substantially increase the company's revenue and profitability over the next few years. The investment case for Microtune includes:

- The mobile handset video market is potentially very large, with estimates ranging from 250-500 million units worldwide per year by 2008
- Microtune's tuners support the DVB-H standard transmission format in both the US and Europe; we think DVB-H will emerge as the dominant standard in these markets
- Microtune has substantial experience with silicon-based tuners as the leading supplier of silicon tuners – it should be able to gain meaningful market share in the mobile handset TV space
- Solid core business provides a backstop if the mobile handset TV market grows more slowly than expected

Microtune's tuner is designed to work on the fledgling DVB-H standard for handheld video transmission. Already the emerging standard in Europe (it is a cousin of DVB-T), the standard has jumped to the US via Crown Castle International's (NYSE: CCI) mobile media subsidiary, Crown Castle Mobile Media, which has announced it will roll out DVB-H on its nationwide network of cell towers. DVB-H eliminates many of the problems of transmitting via cell phone networks, notably poor video quality, clogged bandwidth and excessive handset power consumption. The technology is expected to ramp in both the US and Europe through 2006 (Asian countries appear likely to adopt

different standards). Crown Castle Mobile Media and Nokia recently completed successful testing of the system in Pittsburg, PA and momentum continues to build to make DVB-H the dominant standard for mobile handset TV broadcasts. Crown Castle owns holds a nationwide spectrum license and owns over 10,000 cell towers in the US, making it relatively easy to deploy the DVB-H network. Handset makers Nokia (NYSE: NOK) and Samsung (KSE: 005930) have both shown handsets using DVB-H technology, providing further momentum to the standard.

Of course, DVB-H is not the only mobile video solution in the works. Notably, Qualcomm MediaFLO subsidiary is developing a service based on existing UHF frequencies (700MHz spectrum) that could become a serious contender for the mobile video delivery standard. There is little consensus over which offers better technology or strategic position. Qualcomm claims that its MediaFLO technology consumes less power, has a greater transmission range and eliminates channel selection time versus DVB-H. Other delivery methods are under development as well. For instance Korea is developing a satellite based system, and others are looking at the option of downloading and recording content on the phone to bypass live transmission totally. With Korea slightly ahead of the curve, it will act as a valuable leading indicator for the potential of mobile handset TV in the US and Europe.

It remains unclear what the eventual dominant transmission standard will be. While the consumer wins either way, Microtune has clearly thrown its hat in with the DVB-H crowd. We are increasingly drawn to DVB-H as it has significant momentum behind it from major industry players, early testing has been encouraging, and it is the clear leader in Europe, due to existing standards there. We believe that DVB-H has a strong chance of adoption here in the States. The market could probably support multiple standards, in our opinion – perhaps with Qualcomm’s MediaFLO supporting the CDMA carriers and DVB-H supporting GSM carriers.

Microtune is not alone in the mobile handset video receiver space, with notable competitors such as Texas Instruments (NYSE: TXN), privately-owned DiBcom, Freescale (NYSE: FSL) and Philips (NTSE: PHG), among others, jockeying for position. Intel (NASDAQ: INTC) has also indicated its support of the DVB-H standard. However, the presence of industry heavyweights like Texas Instruments bodes well for the rapid adoption of the DVB-H standard and the accelerated roll-out of video enabled handsets, in our view.

We like Microtune’s solution because the MT2260 is suitable for both US and international DVB-H standards (Crown Castle in the US will operate using L-band while European Systems use the UHF 700 MHz frequency). The MT2262 is aimed solely at the L-Band, which will allow Microtune to keep costs down, a key consideration as the market evolves. The MT2260 receiver will initially be priced at around \$5.00 for lots of 10,000, while the MT2262 is priced at \$4.00 for lots of 10,000. We anticipate that prices will drive closer to \$2.00 per receiver over time, a level at which Microtune still believes it can make money. Various analysts, including a report written by our technology consulting partner Jon Peddie Research, suggest that the annual global mobile handset TV market could be upwards of 500 million units by 2008. Assuming even a more modest 250 million (as estimated internally by Microtune) the market remains large. If Microtune can capture 5% market share (lower than its current share in most products but reasonable, as the market for its DVB-H receivers likely encompasses only the US and Europe for now), that could grow to a \$25 million annual revenue opportunity for the company by 2008, with substantial room for upside. This

compares to Microtune's 2004 revenue of \$56 million, this represents significant top-line growth. We believe Microtune could generate gross margins in the 35-45% range on the tuners.

We are encouraged by the high quality of Microtune's solution and the company's deep history of making silicon-based digital tuners, and think that they can compete for a meaningful share of the DVB-H market. Microtune is the #1 supplier of RF silicon tuners and has more practical experience with silicon tuners than most of its competitors in our view. Given the company's relatively small size, it stands to benefit the growth in the mobile handset video market more than much larger players like Texas Instruments or Crown Castle. Further, given Microtune's solid core business, this is not an "all or nothing" proposition for the company. As the mobile handset TV market evolves, we think Microtune will be a name to watch.