

# Hanging up? The decline of dual mode satellite phones

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In the late 1990s, both Wall Street investors and telecom operators poured money into Mobile Satellite Services (MSS) operators such as Iridium, Globalstar and ICO, lured by the promise of dual mode satellite phones that would operate “anytime, anywhere”. With the ability to use both terrestrial cellular networks in cities and satellite in rural areas, it was expected that these new systems would see high levels of demand, allowing investment in reducing the size and price of the handset, with satellite capability ultimately becoming a standard feature of the cellular phones used by tens of millions of customers.

In reality there was no mass market for mobile satellite services, as MSS operators such as ICO realized by 2001, due “largely...to problems with signal coverage. First and foremost, MSS handsets generally do not work indoors, and generally are unable to receive signals in urban ‘canyons’”. These coverage limitations make “demand for the phones so low that it is impossible to achieve scale economies anything like those achieved for terrestrial wireless networks. And the long product development cycles typical of satellite projects leads to rapid obsolescence of the high-priced handsets. Small wonder, then, that there has been such faint demand”<sup>1</sup>.

Iridium and Globalstar learned this lesson the hard way during their bankruptcies. Iridium’s handsets were designed to operate with cellular “cassettes” which could be switched as users moved between different cellular standards, such as GSM, AMPS and CDMA. Globalstar’s handsets were dual mode, operating on satellite and either CDMA/AMPS or GSM. However, both companies stopped selling cellular subscriptions (and cassettes in the case of Iridium) and Globalstar’s second generation GSP-1700 handset, launched in late 2006, is satellite-only. Iridium is expected to launch a new handset later in 2008, which will also operate just in satellite mode. Only their geostationary rivals, Thuraya and ACeS, which launched service in 2001, continued to sell dual mode phones, operating on both satellite and GSM networks. Thuraya’s handset (developed by HNS) was considerably smaller than Iridium and Globalstar’s first generation phones, and became widely used in countries such as Iraq and Afghanistan with very limited terrestrial GSM coverage. However, the gap in both price and attractiveness between these satellite handsets and terrestrial GSM phones increased significantly

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<sup>1</sup> ICO letter to the FCC, March 8, 2001, requesting the ability to use an Ancillary Terrestrial Component in its satellite system. See [http://fjallfoss.fcc.gov/prod/ecfs/retrieve.cgi?native\\_or\\_pdf=pdf&id\\_document=6513077949](http://fjallfoss.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6513077949) at page 5

after Thuraya's launch in 2001, and increasing terrestrial coverage led more customers to carry a separate GSM phone for everyday use.

Thuraya tried to close this gap by developing its new SG-2520 phone, which was launched in Spring 2007. While a great leap forward in terms of capability for a satellite phone, if compared instead to the latest terrestrial handsets such as the iPhone, it is still inconceivable that any significant number of customers would use it as their "everyday" phone, when today the lifecycle of most popular GSM phones is no more than a year. Indeed, Thuraya also brought out a smaller satellite-only SO-2510 handset, with a sales price which is between \$200 and \$300 less (albeit for a device with less features), and has significantly undermined the opportunity for the dual mode phone. We understand from MSS distributors that currently the SO-2510 is outselling the dual mode SG-2520 phone by at least three or four to one. Thuraya has also seen a continuing fall off in revenues during 2007, generating \$84M through the first nine months of the year compared to \$102M during the comparable period in 2006. From this standpoint, it may be plausible to regard Thuraya's July 2007 deal with Atlantique Telecom to sell 30,000 dual mode phones for 'coverage extension'<sup>2</sup> as a way for Eutelsat (the 50% owner of Atlantique Telecom and major backer of Thuraya) to support Thuraya by buying handsets that might otherwise go unsold. It certainly does not merit the view of some analysts that the "mobile satellite phone business is now speaking volumes...much like its terrestrial counterparts". It will now be interesting to see if Thuraya continues to order additional dual mode phones or ends up focusing primarily on its single mode satellite phone for entry into the Asian markets (including Australia) covered by the recently launched Thuraya 3 satellite.

In this context, it is perhaps somewhat surprising that Inmarsat is developing a dual mode next generation ISatPhone handset for launch in 2009. Since Inmarsat has made much of its ambition to offer the "lowest cost MSS handset in the business", we would expect that manufacturing and selling a single mode phone might be a better option for the company. For example, Globalstar's single mode GSP-1700 handset costs about 25% less to manufacture (and is far smaller) than its original GSP-1600 phone (which includes AMPS and CDMA connectivity), although this to some extent reflects general reductions in the cost of technology between 1999 and 2006. Inmarsat is investing a considerable amount in development of its new satellite phone services, with the handset development contract with EMS Satcom valued at \$26M and the network/gateway development

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<sup>2</sup> See <http://www.ameinfo.com/128011.html>

contract with Lockheed Martin valued at \$36.5M<sup>3</sup>. However, Inmarsat expects that the dual mode capability will add no more than 10% to the manufacturing cost of the handset<sup>4</sup>, and claims it will have no impact on either the handset size or the overall development expenditures for handheld services. Inmarsat does not expect dual-mode to be a major competitive differentiator compared to rivals such as Iridium, but believes the capability may benefit some potential users. A secondary issue may be that EMS intends to develop other MSS products based on this Inmarsat platform, and some of these (particularly low data rate mobile terminals for fleet management) may have more of a need for dual mode capability.

Even more importantly, the plans of Ancillary Terrestrial Component (ATC) proponents such as MSV and TerreStar have been formulated with dual mode handsets in mind, and TerreStar has recently (April 2008) shown a multi mode “reference handset” developed by Elektrobit<sup>5</sup>, which supports WCDMA in two terrestrial and one satellite frequency band and GSM in four terrestrial frequency bands, as well as offering a GMR-3G satellite mode. TerreStar’s handset does not suffer from the “handset penalty” of the large antenna and battery that Iridium, Globalstar, Thuraya and Inmarsat’s satellite phones need, but TerreStar may still find it hard to break into a wider consumer market, simply because their handsets will not be made in the volumes and come in the wide range of form factors available on most terrestrial networks. In addition, outside the coverage of any terrestrial ATC network that they deploy, MSV and TerreStar’s satellite-based services will not be any more capable than those of Iridium and Globalstar in terms of penetration into buildings and urban ‘canyons’<sup>6</sup>, and therefore may struggle to meet the expectations of terrestrial cellphone users. It also seems unlikely that existing MSS users will provide a substantial boost to TerreStar’s sales, since it appears that most of these users are perfectly happy with single mode satellite phones, and in any case represent a relatively small market.

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<sup>3</sup> See <http://biz.yahoo.com/pz/070822/125417.html> and <http://www.cellular-news.com/story/21405.php>

<sup>4</sup> Since Inmarsat has stated that it does not plan to subsidize the hardware, and could sell it for \$500, we assume the manufacturing cost for its dual-mode handset is expected to be around \$450

<sup>5</sup> See <http://www.elektrobit.com/file.php?961>

<sup>6</sup> Indeed Inmarsat and Globalstar have argued in the past that without an antenna that extends above the user’s head, performance of TerreStar and MSV handsets may be impaired in some other locations if the user’s head happens to be between the phone and the satellite (a claim disputed by MSV and TerreStar)

Thus as ICO highlighted back in 2001, if TerreStar is only able to achieve limited volumes of handset sales, it may struggle to keep up with the development cycles of terrestrial handsets, and will risk handheld satellite phones continuing to see only “faint demand”. Even today, ICO seems to believe that it is not worth venturing into the market for handheld MSS, and is focusing its attention on mobile video services for cars. As a result, TerreStar and MSV now appear to be even more dependent on securing a major terrestrial partner in the near future, who can commit to the large order volumes necessary to accelerate the development cycles of their dual mode satellite-terrestrial handsets.

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*Contact Tim Farrar by phone on (650) 839 0376 or by email at [tim.farrar@tmfassociates.com](mailto:tim.farrar@tmfassociates.com)*

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