

# **Comments on the Frost and Sullivan White Paper: “Satellite Phone Comparison Iridium and Inmarsat”**

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TelAstra, Inc. is an international telecommunications consulting firm that primarily provides consultation to investors in satellite communications. The firm was established in 1985 and has a broad background in engineering, business, and commercial aspects of satellite communications. The principal commentators on the Frost and Sullivan white paper have experience in satellite communications stretching back to the mid 1960s. Roger Rusch was involved with producing the first generation of satellite facilities for mobile communications and holds several early patents in non-geostationary mobile satellite designs. Mr. Rusch was the founder of the TRW Odyssey system that was adopted by ICO. Charles (Chuck) Emmert also has nearly 50 years of experience in satellite communications. He is a pioneering expert on satellite business services that have become known as VSAT or private networks.

## *Background and Comments*

Inmarsat commissioned TelAstra, Inc. to undertake an independent study of three satphones, IsatPhone Pro, Iridium 9555 and Thuraya XT, to assess their performance against Inmarsat's criteria of what made the "Ultimate Combination" in a satphone.

Our evaluation of the three satphones: IsatPhone Pro, Iridium 9555 and Thuraya XT covered a period of two months, documenting more than 195 calls from 16 locations worldwide. The Frost and Sullivan white paper was published shortly after TelAstra, Inc. had begun its study, and the following comments describe what we found during our evaluation. There are many specific areas where our experience directly conflicts with the conclusions of the Frost and Sullivan white paper.

We started the TelAstra, Inc. satellite phone evaluation in early September, two weeks before the release of the Frost and Sullivan white paper. We began to receive rumors of that white paper as early as 13 September, the day before we traveled to Alaska for testing.

After reading the white paper, we were surprised by the tone of the Frost and Sullivan white paper and its conclusions. We felt that the white paper sounded as if it had been written by the Iridium marketing department rather than an objective consulting firm.

The Frost and Sullivan white paper presented an assessment that praised the Iridium satphone and was highly critical of the IsatPhone Pro. Although the white paper was sponsored by Iridium, the authors did not disclose this fact until questioned by members of the press after the white paper was published. We do not know the effort put into the paper but we conclude from the comments in the white paper that the authors leapt to hasty conclusions without the benefit of careful measurements or deliberation.

1. The Iridium 9555 is physically longer than the IsatPhone Pro when the antennas are in the stowed position (**Figure 1**). Neither phone will fit conveniently in a suit coat pocket. It is true that the IsatPhone Pro has a somewhat deeper profile, but, from a working point of view, there does not seem to be much difference. We found carrying them and working with them to be essentially equivalent.



**Figure 1 Size Comparison of Inmarsat, Iridium, and Cellular Phone**

2. Frost and Sullivan states that Iridium is the only true global network but ignores the fact that coverage is often denied or disconnected near partial foliage and buildings. In reality, the Iridium system probably provides less coverage of the Earth at any time because the Iridium satellites are typically at a low elevation angle and transmission is blocked. Our experience is that longer calls on Iridium 9555 typically suffer disconnects, probably because the satellites are moving. We obtained strong connections for IsatPhone Pro in Anchorage and Fairbanks, Alaska, and northern Finland near the Arctic Circle. The reality is that no satellite phone system provides universal service. For example, service is seldom available inside buildings unless there is a window, without a metallic coating, that has an appropriate sky view.
3. The Iridium phone in its plastic case is actually heavier than the IsatPhone Pro. The Iridium 9555 phone that we rented was shipped in an artificial leather / plastic protective cover that that was designed for phone operation or could be discarded. We imagine that many people would remove it immediately. We wonder if the sleeve is provided for shock or water protection. When the sleeve is removed, the two phones differ in weight by  $\frac{1}{2}$  ounce or about 14 grams, only about 5% difference. This is not a significant difference.
4. It was easy to use the keyboards on both phones with or without gloves. There was no difference whatsoever.

5. Neither phone has a great display in bright sunlight. We felt that the Iridium phone is more difficult to use in dim light or at night because the black and white LCD display is not lit up except when turning on or keying in numbers. The number keys are effectively backlit on the IsatPhone Pro and it has a full color screen with menus displayed in contrasting colors, so it is easier to see what you are doing in dim light.
6. We measured the standby and talk time of two Inmarsat phones on battery power. The IsatPhone Pro has significantly more capacity than the Iridium 9555. We measured the total time from fully charged to fully discharged to measure capacity. According to the white paper Frost and Sullivan observed the apparent discharge rates on the satellite phone battery gauges, which are highly misleading. Gauges indicate almost empty when the battery is 50% full.
7. Frost and Sullivan concluded that IsatPhone Pro cannot provide service in Alaska. We did not know their conclusion until just before we left on our trip, so we were very nervous about what to expect. However, we found that the Inmarsat service is great from multiple locations in both Anchorage and Fairbanks, Alaska. We sometimes got 4 bars of signal strength, typically 2 bars. It was simple to acquire the signal and to maintain lock. We had several 7 to 9 minute long conversations while walking through Anchorage. We were often able to get Iridium service in Alaska but not all of the time. Sometimes we had to wait for several minutes before a satellite signal was available. We sat at a picnic table for 45 minutes in an open area and recorded four periods of "searching for network" that lasted for a total of 9 minutes. We were surprised that the quality of service was relatively poor for the Iridium system in northern latitudes since the concentration of satellites is highest near the poles.
8. The Inmarsat engineers have developed a control system that maintains signal lock for a long time when passing through obstructions or if the user moves around. It is pretty amazing to walk through undergrowth and keep the connection. The Frost and Sullivan white paper says that the phone would lose lock if put down on a bench rather than remaining in sight of the satellite. This might be the case if left on a bench for an extended period for both Inmarsat and Iridium phones. However, what we have observed is that Inmarsat calls are not disconnected if there is a momentary blockage, but we found that Iridium calls disconnect immediately if there is blockage. These are different ways of saying the same thing, but the experience is remarkably different.
9. The white paper says that "While testing in multiple locations in North America, Frost and Sullivan was always able to make a call in less than sixty seconds." This statement is entirely inconsistent with our experience. We found that the Iridium network was not always immediately available and had network drop outs every few minutes. We assume that these dropouts are often due to terrain obstructions, but some of the disconnects happened in what seemed to be wide-open areas.

10. The white paper also says “One small difference is that, with the IsatPhone Pro, you must dial 001 to make a call, whereas, with the Iridium device, you can just dial 1 if you are calling an American phone number since the international access number is automatically added.” In fact, our Iridium phone was rented and our experience was that the number series 698 was required to precede each telephone call. An Inmarsat call could begin with a + and the international phone number. Therefore, each dialed number on Iridium was 16 digits compared to 14 digits on the Inmarsat system. Either way, we are arguing about 2 digits – hardly a big deal.

11. The white paper implies that the Iridium system has great sensitivity. The Frost and Sullivan white paper says:

*“We were able to access Iridium’s network in every test location and on nearly every attempt to make or receive a call.”*

*“The Iridium phone worked even when the antenna was not deployed”*

These statements would reflect extraordinarily good fortune in our experience. We believe that this is not typical behavior of an Iridium 9555 phone or the Iridium system. We talked to other Iridium satphone users and dealers who expressed the same view. Our experience more closely matches a report<sup>1</sup> by Raytheon that says

*“Iridium behavior ... must be programmed to handle:*

- First attempt call connection rate varies – 80% is a good day*
- There is no such thing as a nailed-up connection – call drops are to be expected”*

## ***Summary***

The TelAstra, Inc. experience was completely inconsistent with the Frost and Sullivan descriptions, and it is hard to understand why this should be the case. Our view is that the Frost and Sullivan white paper is trying to justify a phone that costs twice as much to purchase and costs more to operate. Perhaps there will always be buyers who believe that the highest priced item is better, no matter what real experience shows.

TelAstra’s full report, “Satellite Phone Comparison Study: IsatPhone Pro, Iridium 9555 and Thuraya XT”, dated November 2010 and commissioned by Inmarsat is available from TelAstra ([www.telastra.com](http://www.telastra.com)) and Inmarsat ([www.inmarsat.com](http://www.inmarsat.com)).

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<sup>1</sup> Gary Ferentchak, Raytheon Polar Service Company, Polar Technology Conference, March 25 & 26, 2010