

WE ARE A COMPANY OF “FIRSTS”

*Did you know?*

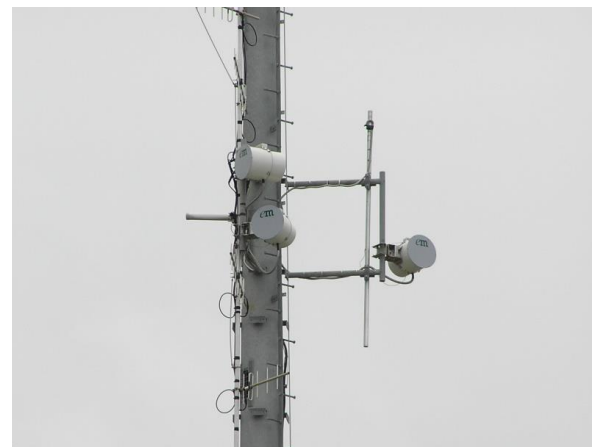
Commercial-in-Confidence



# EM SOLUTIONS HAS A LONG, PROUD HISTORY OF TECHNOLOGICAL INNOVATION.

**Our first major order for microwave video links received from the Australian Border Force in 1999.**

**The links were to be used for security and surveillance purposes with an emphasis on low power, high reliability, easy installation, and rapid response support. Following the success of that project, EMS decided to adopt the then new idea of a 10Mbps (Ethernet) standard.**

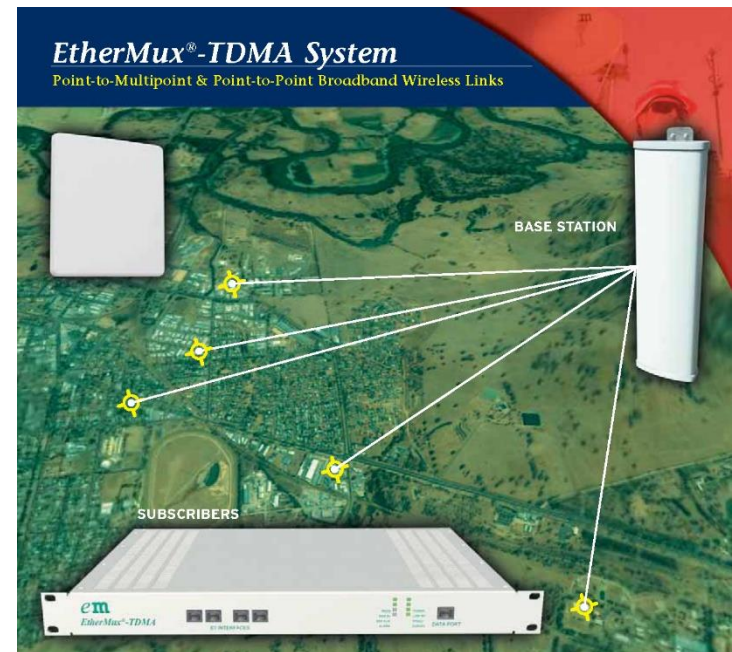


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By 2001, EM Solutions was the first company worldwide to develop a microwave link with native ethernet interface.

At that time, the race was on and the 10Mbps standard quickly increased to 100Mbps, then 200Mbps, then 1Gbps.

EM Solutions competed as far the 200Mbps link (around 2009) until it was realised that we didn't have the sufficient internal resources to continue to compete at higher data rates.



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**Our first “on-the-move” terminal was used on the Brisbane to Cairns Tilt Train in 2005?**

**EM Solutions developed a receive only on the move Ku-band terminal for receiving satellite TV services on the Cairns Tilt Train.**

**Reception was difficult travelling out of Brisbane due to the overhead structures, but the system worked well between Gympie and Cairns. On one of the first trips, travellers enjoyed live State of Origin courtesy of EM Solutions and satellite TV.**



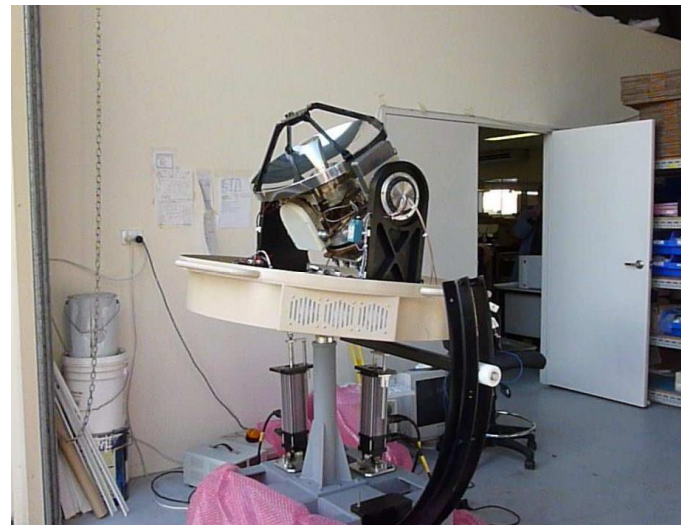
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Our first CTD contract to develop a SATCOM land “on-the-move” terminal, from the Australian Army, in 2008.

The Australian Army realised that a “command & control” vehicle could operate much more successfully and be relative immune to detection of its communications if the vehicle could communicate directly with satellites. Furthermore, this should be possible while the vehicle was in motion.

EMS won the contract to supply the Australian Army with a small Ka band tracking terminal that could rapidly acquire and track a WGS satellite with data rates up to ~ 4Mbps.

EMS took on the full design and manufacturing from the mechanics and software of the antenna mount and tracking motors through to the RF modules, the antenna and the robust but RF transparent radome.





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**In 2011, EM Solutions was the first company to win a contract with JEPICO and supply tracking terminals to use with the Japanese WINDS satellite.**

**EM Solutions was in direct competition with Mitsubishi and NEC Japanese companies. This satellite operated at somewhat different Ka band frequencies to WGS satellites and the Japanese required considerably higher data rates, up to 100Mbps on the down link than had been achieved with the WGS Ka band Terminal. The terminal also had to operate in TDMA as well as FDMA mode.**

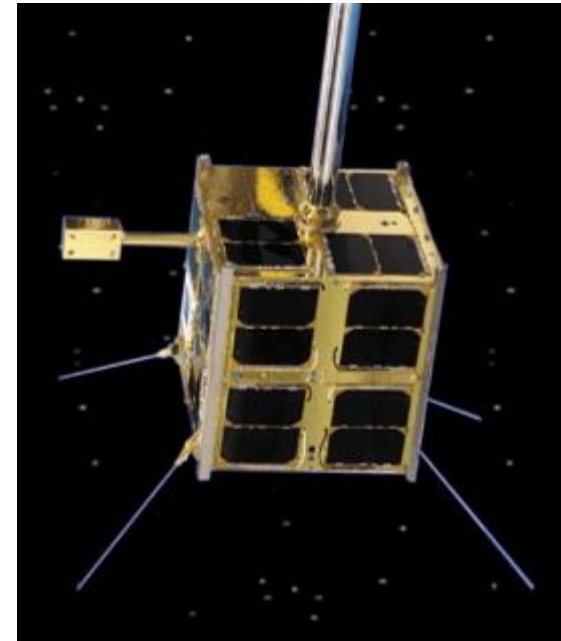


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**In 2011, EM Solutions took the first steps into space qualified hardware by winning a contract to develop a Ka Band bent-pipe transponder for satellite communications within Antarctica.**

**Targeting a southern hemisphere Molniya type orbit this design was very power conscience.**

**EM Solutions worked with an international nano satellite spacecraft integrator to develop a small form factor frequency shifting network that consumed a miserly 10W of DC power. The unit used a clever system architecture which saved on the number of required oscillator circuits, drastically reducing the DC budget and design complexity.**



# EM SOLUTIONS HAS A LONG, PROUD HISTORY OF TECHNOLOGICAL INNOVATION.

**Our first wideband maritime terminal installed on the Australian Border Force Cape Class Fleet in 2015.**

**EM Solutions was first to develop a dual Ka-band maritime terminal that could operate on the Inmarsat GX commercial network and on the US Military WGS constellation. This allowed greater satellite coverage for the vessel while at sea.**





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**Our first Cobra terminal installed on a Royal Australian Navy vessel and certified for operation on both military and commercial SATCOM constellations in 2016.**

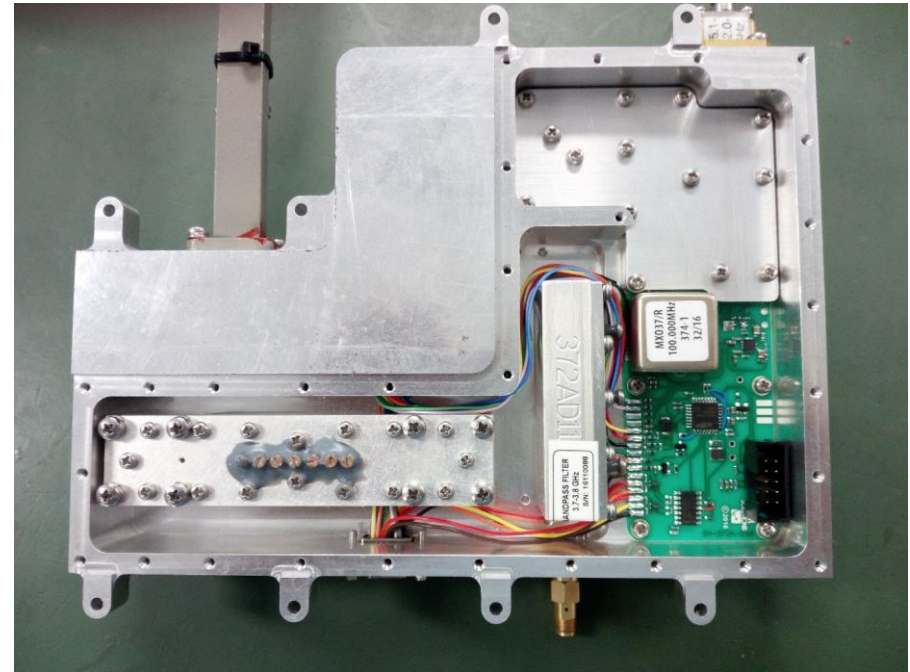
**The Cobra M3 X/Ka Triband terminal enables both WGS and Inmarsat GX operation with the addition of X-band. The terminal acquires and tracks satellites in GPS denied environments and shows exceptional tracking with monopulse technology.**



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**EM Solutions was the first Australian company to design a Ka-band space qualified transceiver for low earth orbit satellite in 2017.**

**Building on its earlier Ka satellite partnership EM Solutions has since gone on to develop other space hardware. These designs include a Ka band receiver and transmitter, an X-band transmitter and just recently a Q/V-Band transponder. All these designs focus on reliability, low power consumption and fast development time.**



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EM Solutions was the first in 2021 to offer a trusted choice to Government and Military SATCOM “On-the-move” options on sea or land.

Cobra terminal – Maritime

Salamander terminal – Littoral

Taipan terminal - Land

If you communicate via satellites in space while moving on land or sea, **EM Solutions** has the answer.

