TAOGLAS

Customer Success Story: EIRSAT-1

"We are delighted that Ireland's first satellite, EIRSAT-1, will have an Irish-made GPS (Global Positioning System) antenna on board. Taoglas is also supplying high-performance cabling for the internal interconnections on board the satellite itself and for systems testing on the ground. These valuable contributions to the overall project make Taoglas a strategic supporter in achieving our mission goals."

Dr Ronan Wall, Team Leader

About the EIRSAT-1 Mission

Ireland's first-ever satellite is due to launch this year. EIRSAT-1 is history in the making and is being carried out by a highly skilled team of researchers and students at UCD.

EIRSAT-1 will go into low orbit around the earth and will carry three payloads, including a gamma ray detector, a space materials characterisation experiment, and a spacecraft control testbed.

These payloads will need accurate measurements of their position in orbit and hence need a robust GPS antenna solution.

The Challenge

The challenging environment of Space is shaping an engineering revolution in antenna design. It takes careful planning, expertise, and consideration to design an antenna that will be equal parts functional, durable, and reliable in the severe conditions of Space. The antenna must withstand the strenuous launch/eject phase (shocks, acoustic vibrations, and sudden atmospheric pressure fall) while continuing to perform in the Space environment when exposed to high-temperature changes and solar radiation (to name a few).

The team at UCD needed a GPS antenna solution capable of addressing these out-of-this-world challenges while still being able to reliably locate where EIRSAT-1's scientific measurements are recorded in orbit.

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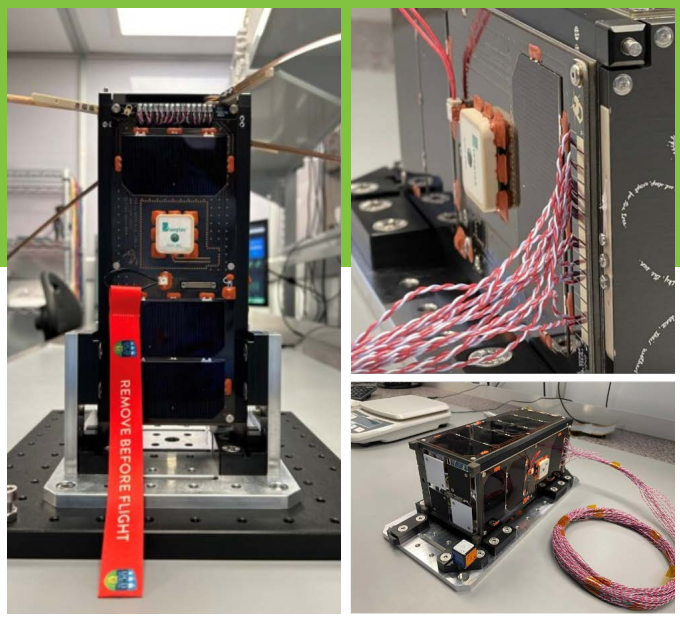
The Solution

EIRSAT-1 is no bigger than a shoebox, so space on board is at a premium. Working alongside AAC Clyde Space, a company that specialises in small satellite technologies, the UCD team chose a Taoglas direct solder mount GPS/GALILEO patch antenna for its lightweight and low-volume characteristics while providing high gain and wide bandwidth. As there's little room for error in Space, you want an antenna with the best quality materials to give you the best performance when you need to go small, and Taoglas can provide this. Additionally, there are multiple solder points for the best mechanical and RF contact with the PCB (Printed Circuit Boards) when put under the extreme launch conditions.. Taoglas also has the capabilities to scale connectivity solutions by providing high-performance cable assemblies that are Engineered to last in the harshest environments and provided the UCD team with world class custom cabling solutions. All of Taoglas' cabling solutions are 100% tested before leaving the Enniscorthy facility.



Featured Taoglas Product

DSGP.1575.25

GPS L1 & GALILEO E1 Ceramic Patch

Dimensions: 25*25*4mm
SMT Direct Mount Ceramic Patch Antenna

[DSGP.1575.25 Datasheet] [RF Cable Assemblies]

The Outcome

The capability to prepare, build, test, launch and operate a spacecraft has yet to exist in Ireland. EIRSAT-1 will launch in late 2023, making Ireland an independent spacefaring country.

TAOGLAS | EIRSAT-1 Educational Irish Research Satellite | CSPACE UCD Centre for Space Research | UCD Dublin

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