

# A filter that enhances the power of communications satellites

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Researchers at the Public University of Navarre are designing and developing a filter that enhances the power of communications satellites for the European Space Agency. The filter enables the reduction, by a factor of a million, interference produced by what is known as the “Field Emission Effect”.

The work developed by the Navarre researchers is in its final stages and its results have been satisfactory, given that the filter devised enables the reduction of interference produced by a factor of a million and avoids the possible destruction of components. These results may form a new standard for the aerospace industry given the significant saving in size and weight - vital factors in the sector.

The project entitled “ESTEC contract High Power Filter” has been concluded successfully after nearly two years of work.

## Patent application

More precisely, the European Space Agency was trying to resolve the problems produced in communications satellites by what is known as the “Field Emission Effect”. Communications satellites need to emit with more power both for signal quality reasons as well as because of the need to cover wider geographical zones. The problem is when a satellite emitter goes beyond the power threshold, an effect that deteriorates the components and the aeriels arises. This is what we technically know as

the Corona and Multipactor Effect. Its origin lies in the fact that high power levels produce very intense electromagnetic fields. These very intense fields in very low-pressure conditions generate an avalanche of electrons on to metals that can become destructive and cause losses in heavy investment.

The project developed by researchers at Public University of Navarre has worked on the design of a filter that eliminates this effect, enabling work at the desired power levels.

The results have been so positive that the research team, together with the ESA, have applied for an international patent for the filter for its commercialisation.

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