Shirane Lab.

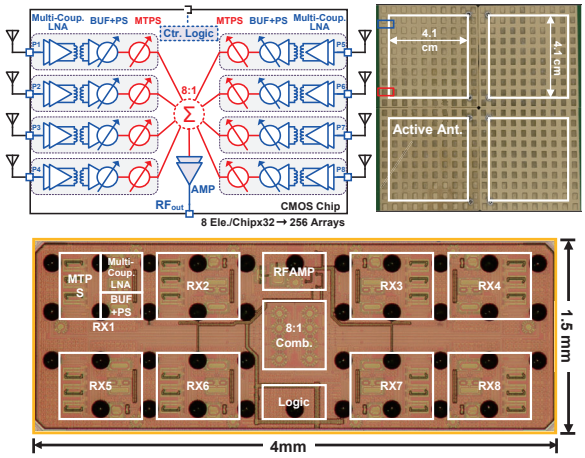
Study on Integrated Circuits Wireless Communication to be Deployed in Space and Wireless Power Transfer

Laboratory for Future Interdisciplinary Research of Science and Technology

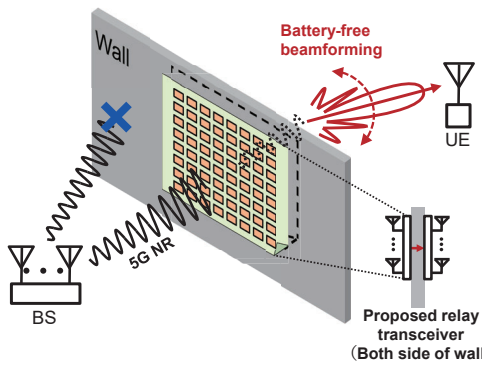
https://shirane-lab.ee.e.titech.ac.jp/index-e.html

- Wireless transceivers for future 6G small satellite constellation
- Radiation-hardened RF integrated circuits
- Battery-free millimeter wave 5G relay wireless transceiver

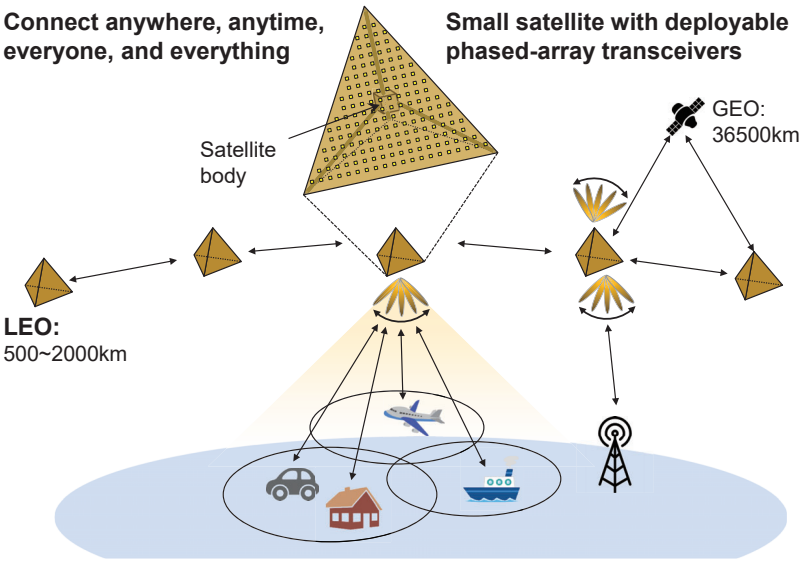
This laboratory conducts research and development on "Integrated Circuits for Wireless Communications and Wireless Power Transfer". We aim to realize integrated circuits for wireless communication to extend the coverage area further than the current level and to expand it to space, and wireless transceivers that do not require a power source using wireless power transfer technology to open up the carbon-neutral era.



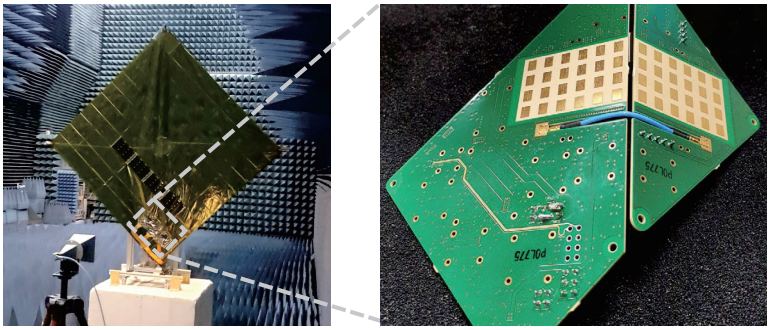
Radiation hardened & ultra-low-power Ka-band RF IC and phased-array transceiver for small satellite



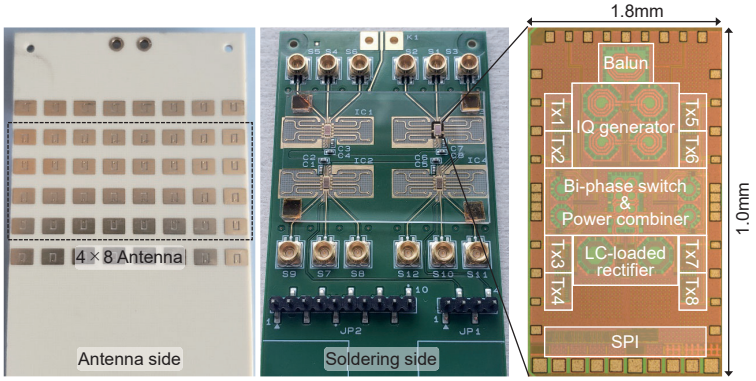
Concept of battery-free millimeter-wave 5G relay transceiver using wireless power transfer



Concept of small satellite constellation for future 6G networks



Left figure: space deployable non-planar phased-array transceiver.
Right figure: non-planar phased-array transceiver board



Fabricated 5G phased-array relay transceiver with wireless power and LO transfer