



Aalto University
School of Electrical
Engineering

Simultaneous three-band mm- wavelength receiving system for the Aalto University Metsähovi Radio Observatory (MRO)

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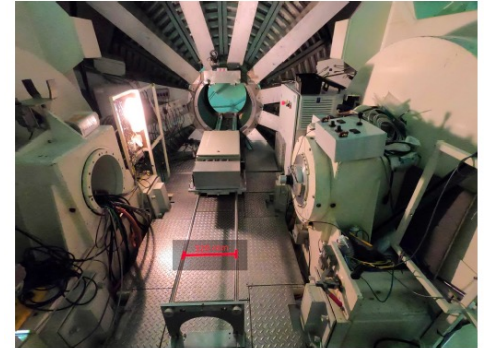
EVN - Triple-Band Receiver Meeting, 2022

Project timeline

- The project is ongoing
- Funding from the university (1.2 million euros)
- Open call for tenders was opened June 1st 2022, and it is open until October 31st
(<https://tarjouspalvelu.fi/hanki/?tpg=02b7b822-2ce7-4fff-be76-2cc74785ba8c>)
- Contract signing by end of December (estimation and hope)
- The project total duration (from the signing) is 36 months
 - Operational receiver in spring 2026.

Receiver

- **Main requirements: simultaneous operation at the frequencies of 22 (18-26), 43 (34-50) and 86 GHz (80-116) in all three observing modes (VLBI, continuum, solar)**
 - A beam-switching (or a continuous comparison)
 - A wide dynamic range (for solar observations)
- **The biggest technical challenge (expected): the limited space (also weight limitation) in the receiver platform and cabin**
- **Wide temperature range: -30...+40 °C**



The receiver platform and cabin in MRO-14 radiotelescope

Back-ends and recording space

- **dBBC3 (delivered on May 2022) – tested in laboratory**
- **A digital polarimeter backend ("RFSoc"-based design) for continuum and solar observations**
 - The first (simplified) prototype is under construction (PoC).
 - *The project is led by Dr. Talvikki Hovatta (Univ. Turku / FINCA)*
- **Currently two Flexbuffs in use**
 - luckyluke = 576 TB
 - watt = 128 TB