PORTABLE QO-100 SDR TRANSCEIVER

Get the freedom of using satellites wherever you go.....

"Future is in the sky..!"
M.K.Ataturk

Manpack Satellite KIT

+

+

Open Source Cubesat Workshop 2020

Baris Dinc, OH2UDS
Mars on Earth Project
www.marsonearthproject.org

THE STORY

PORTABLE QO-100 SDR TRANSCEIVER

Ultra Stable

Durable

HighPower

Ultra Reliable

OPENSOURCE

SDR V/UHF Transceiver

moonbounce

Meteor scatter

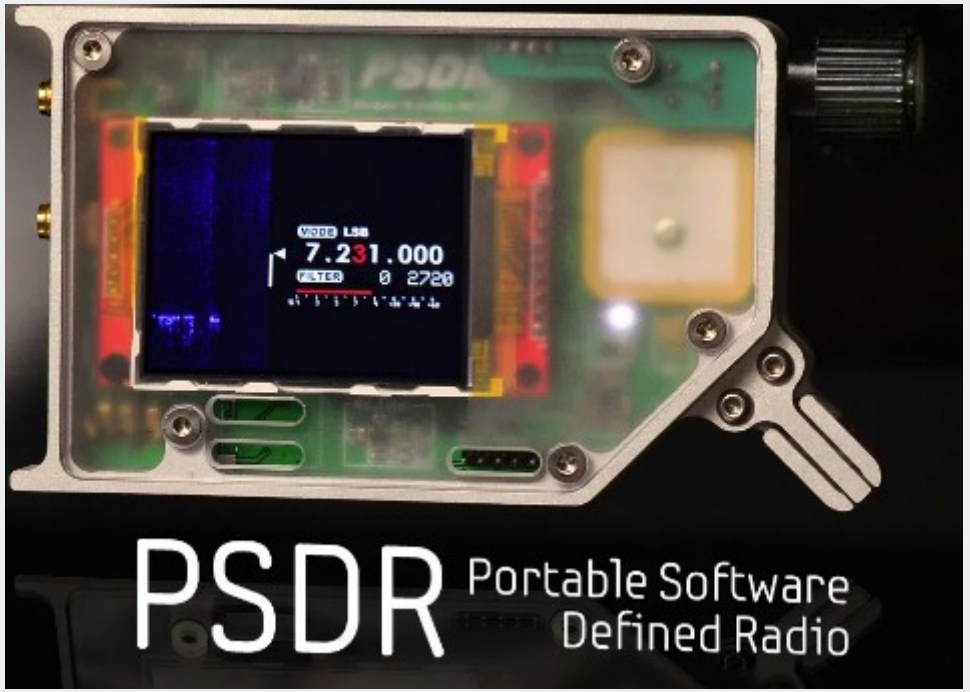
cubesats

Satellite comms

PORTABLE QO-100 SDR TRANSCEIVER

THE STORY

RESEARCHES



THE STORY

PORTABLE QO-100 SDR TRANSCEIVER

M0NKA mcHF

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PORTABLE QO-100 SDR TRANSCEIVER

M0NKA mcHF

STM32
Source Available
Simple (!) Hardware
Good Performance

THE STORY

PORTABLE QO-100 SDR TRANSCEIVER

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THE STORY

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PORTABLE QO-100 SDR TRANSCEIVER

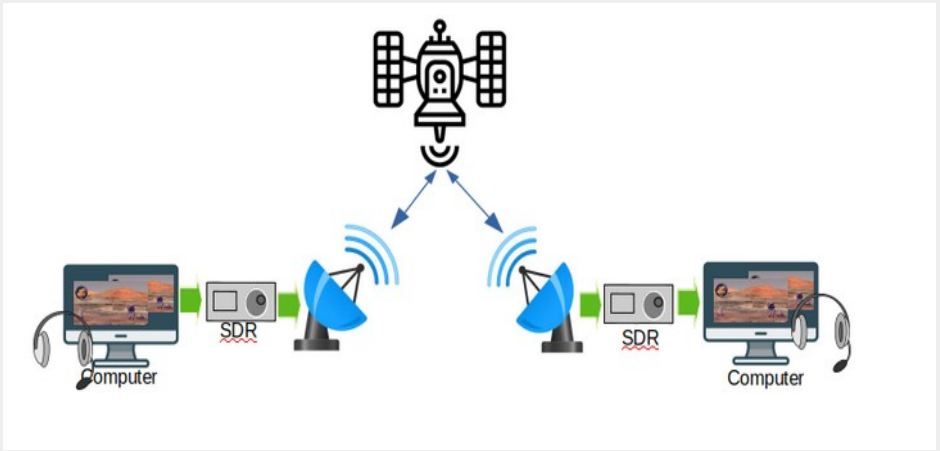
- Arduino (Atmel 328p) MCU
- Very Simple Hardware
- Compact Design

TNX
PE1NZZ Guido

THE PROJECT

PORTABLE QO-100 SDR TRANSCEIVER

OPENSOURCE



QO-100 Transceiver

THE PROJECT

PORTABLE QO-100 SDR TRANSCEIVER

- Learn details of "Software Defined Radio"
- Should be **portable**, preferably ManPACK
- Should be as **CHEAP** as possible
- Should be very **simple**
- Should be **expandable** (HW&SW)
- Should be **battery powered**
- Should be **STABLE**

OPEN SOURCE, COLLABORATIVE, NON-PROFIT

COMMERCIAL SETUP

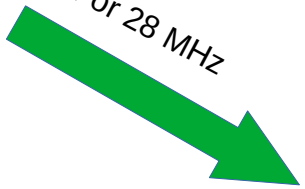
PORTABLE QO-100 SDR TRANSCEIVER

Dish+LNB

10GHz → 739 MHz

Down Converter

144 or 28 MHz



IF SSB Radio

2.4 GHz Antenna

Power Amplifier

Up Converter

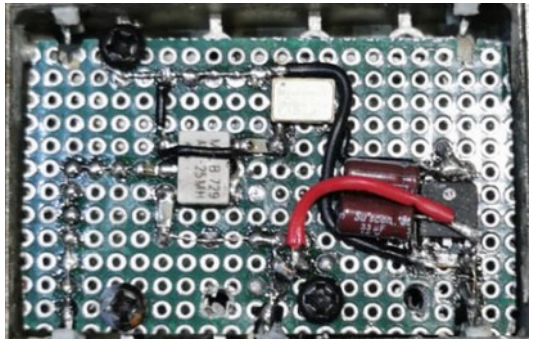
A Commercial QO-100 Satellite Setup

SOLUTION OVERVIEW

PORTABLE QO-100 SDR TRANSCEIVER

Dish+LNB

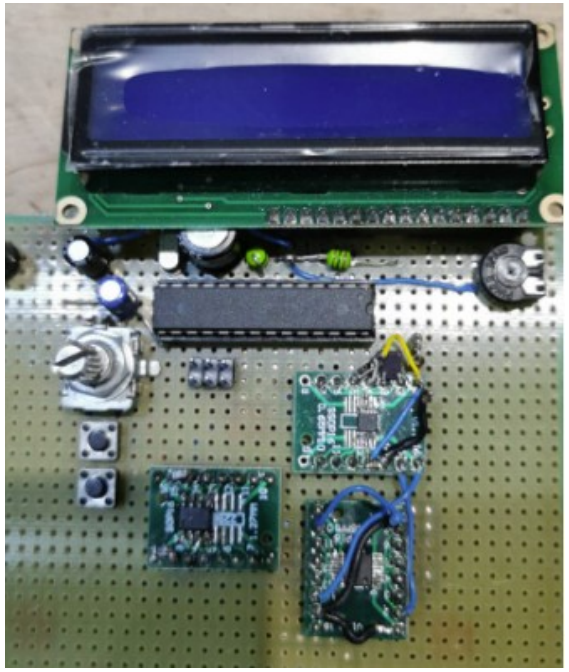
10GHz → 739 MHz



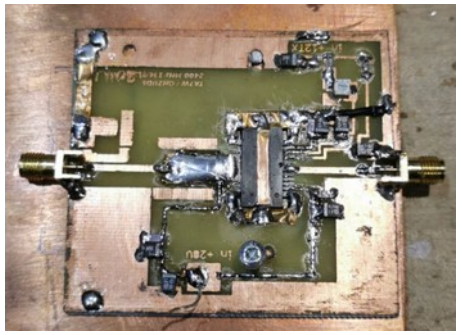
Down Converter

144 or 28 MHz

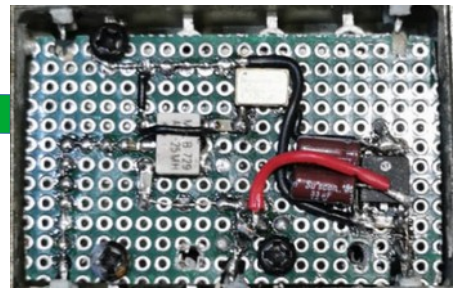
IF SSB Radio X2



2.4 GHz Antenna



Power Amplifier



Up Converter

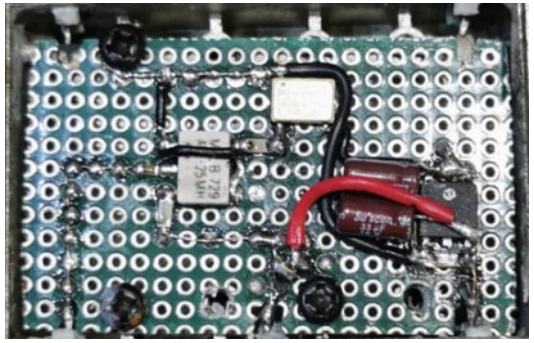
Our QO-100 Satellite Setup

SOLUTION OVERVIEW

PORTABLE QO-100 SDR TRANSCEIVER

Dish+LNB

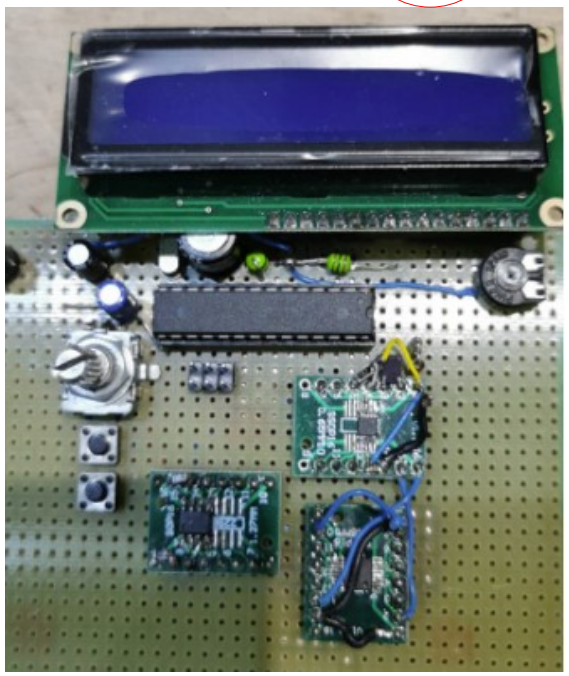
10GHz → 739 MHz



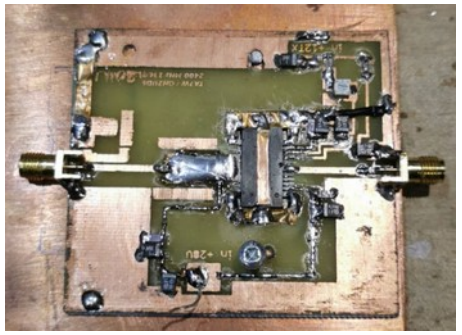
Down Converter

144 or 28 MHz

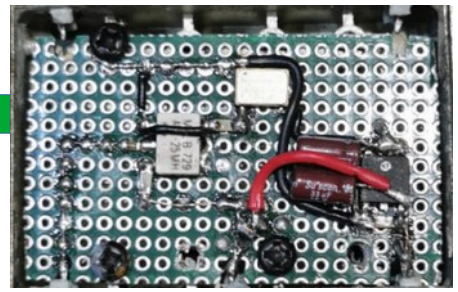
IF SSB Radio X2



2.4 GHz Antenna



Power Amplifier



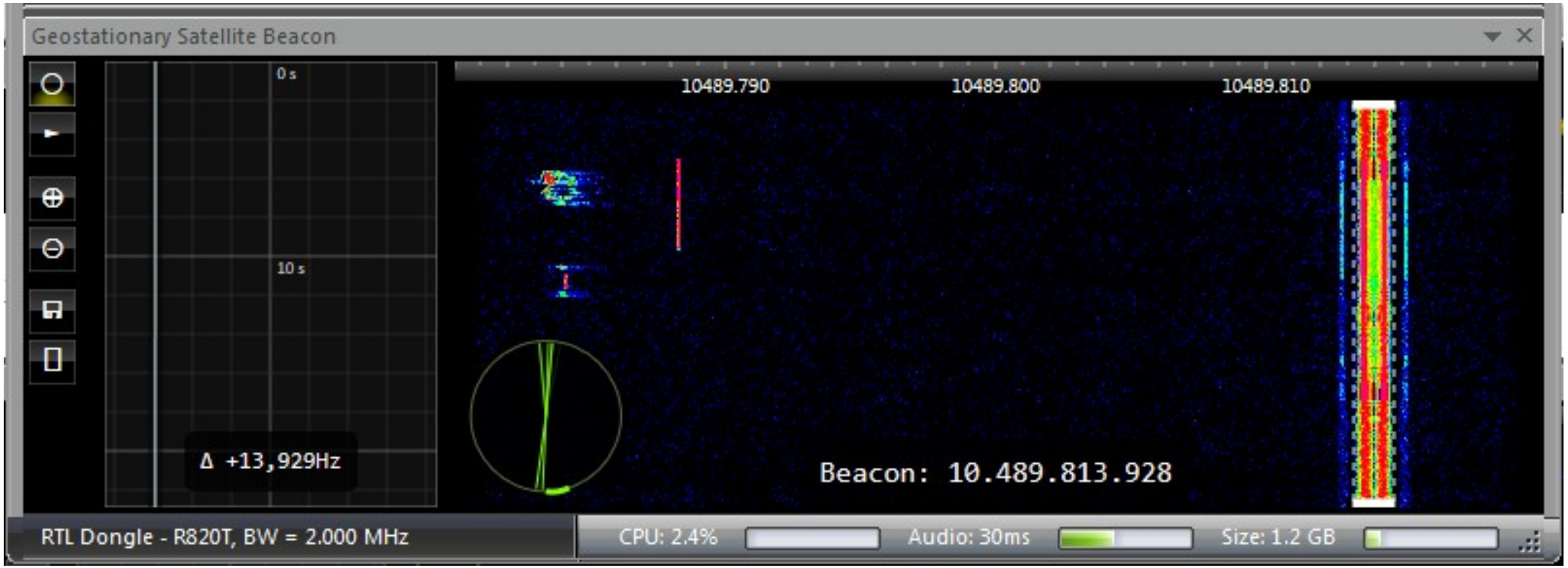
Up Converter

Our QO-100 Satellite Setup

FREQ. STABILITY

PORTABLE QO-100 SDR TRANSCEIVER

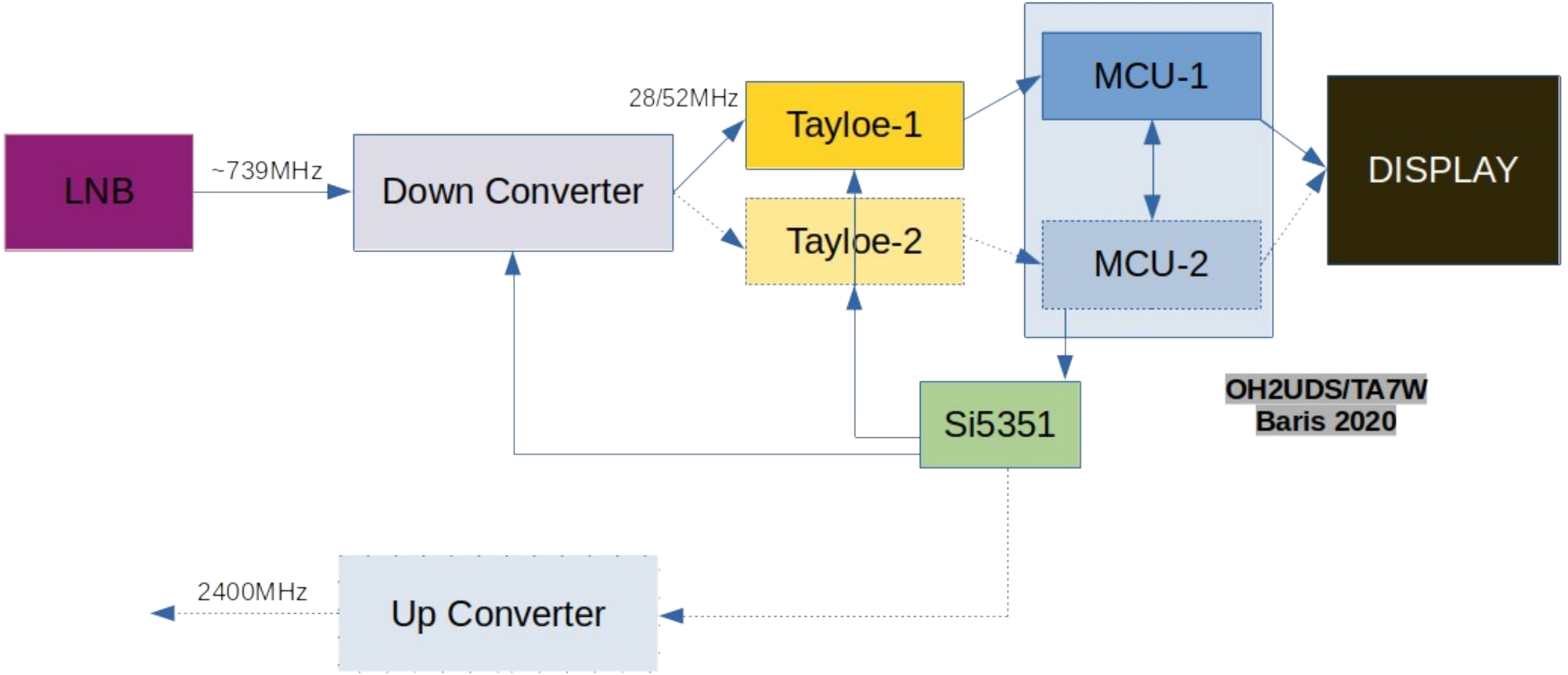
SDR Console GEO Satellite Beacon Follower



Similar capability will be achieved using an independent secondary IF receiver

SOLUTION OVERVIEW

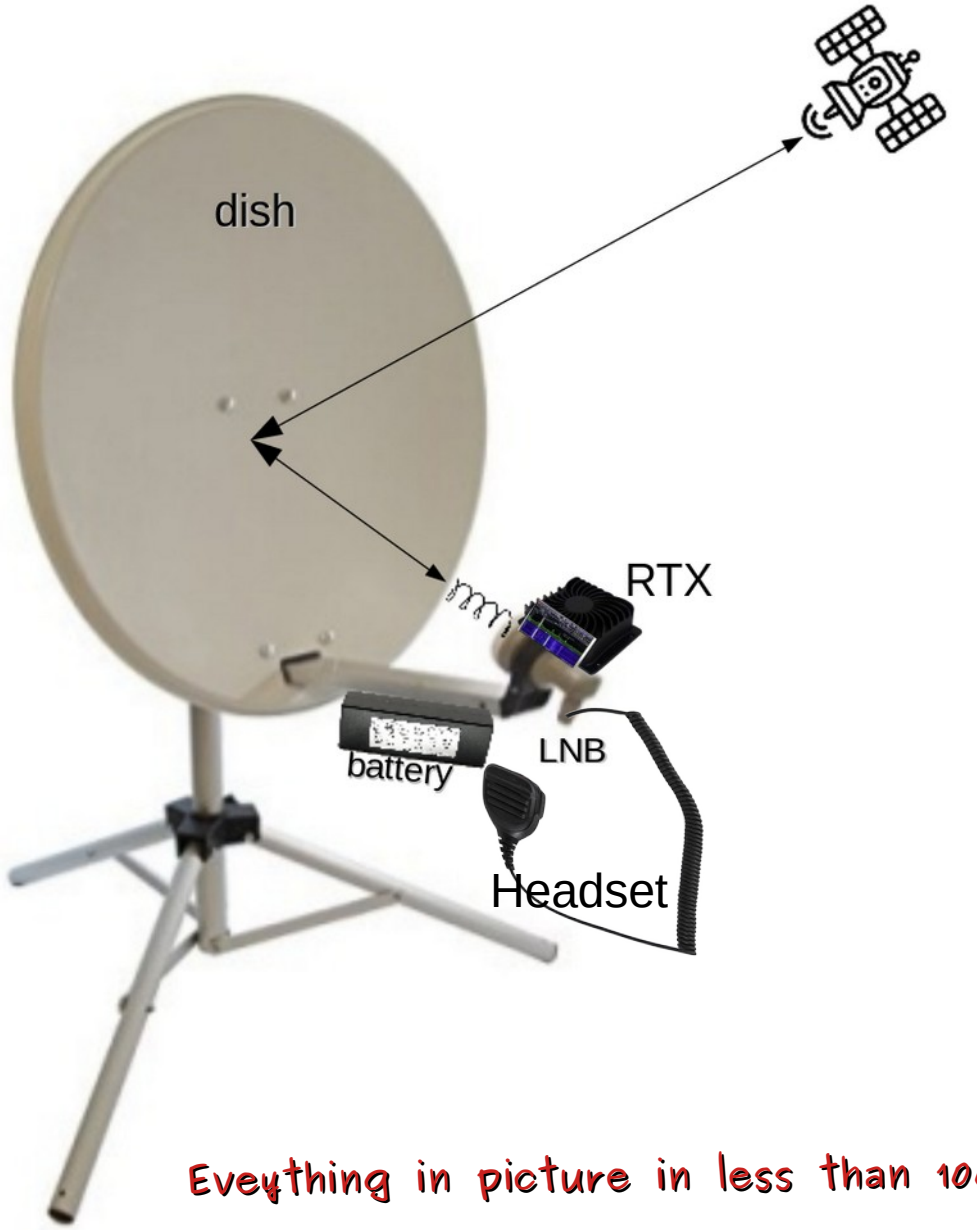
PORTABLE QO-100 SDR TRANSCEIVER



THE GOAL

PORTABLE QO-100 SDR TRANSCEIVER

Fits in a BackPack



Specification

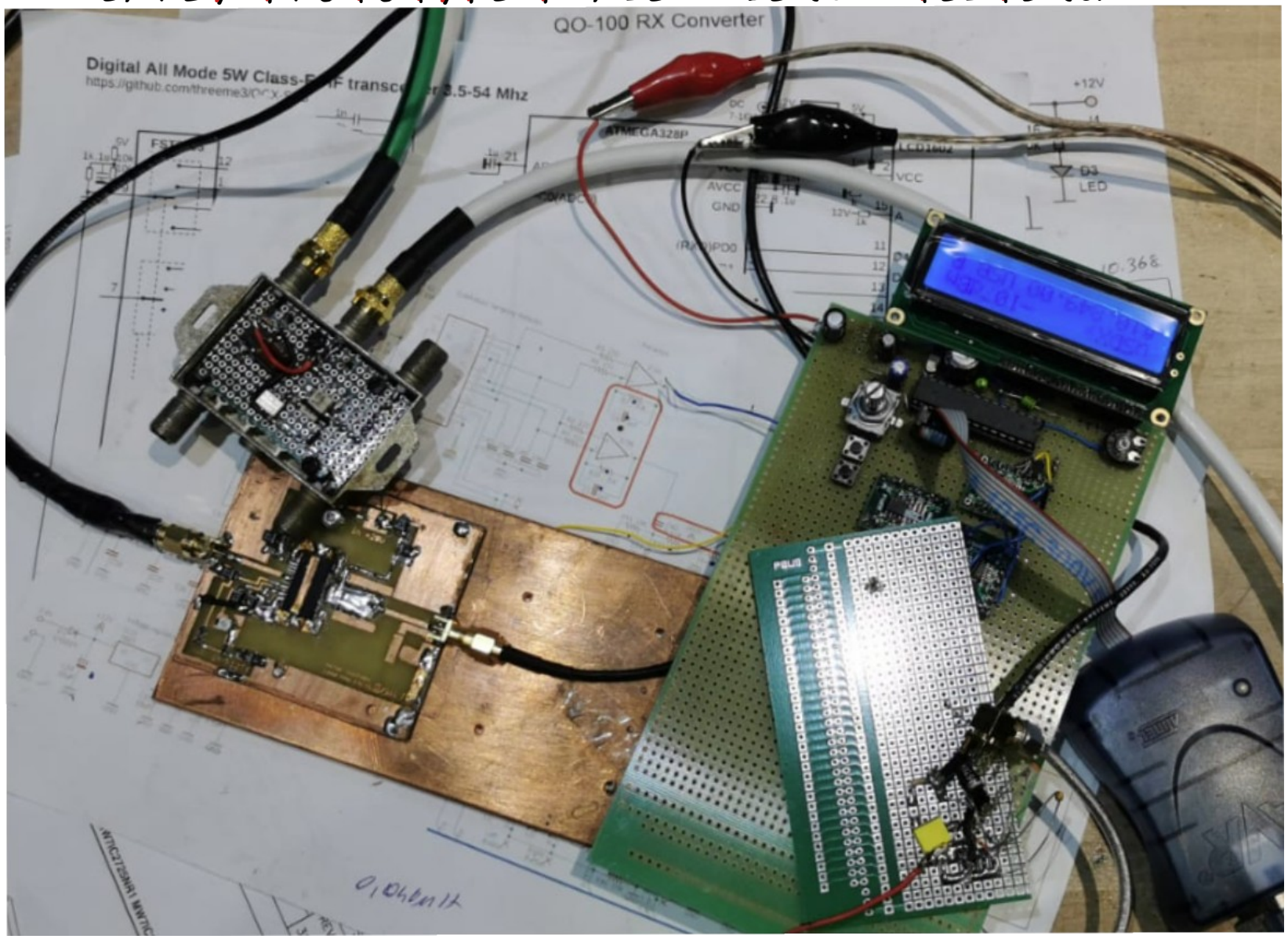
- 10 GHz Downlink
- 2.4 GHz Uplink
- 1–10 Watts RF Power
- 10 Hz steps
- 50 MHz IF
- CW/AM/SSB Modulation
- FT8, SSTV, KG-STV…
- ~5Kg

Eveything in picture in less than 100 Euros budget

PROJECT STATE

PORTABLE QO-100 SDR TRANSCEIVER

EARLY PROTOTYPE PHASE - BENCH TESTING



WHAT ARE WE LOOKING FOR ?

Contributors of any kind to make the project alive

- Arduino or Embedded C/C++ Developers
- PCB designers
- Makers/Builder to build and test the HW/SW
- Testers/Users for experience feedback
- Mechanical designers for achieving the best

"We have tasks for everybody to collaborate"

PORTABLE QO-100 SDR TRANSCEIVER

THANKS...

baris@marsonearthproject.org

https://www.marsonearthproject.org

https://github.com/barisdinc/QO100-Portable