# 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

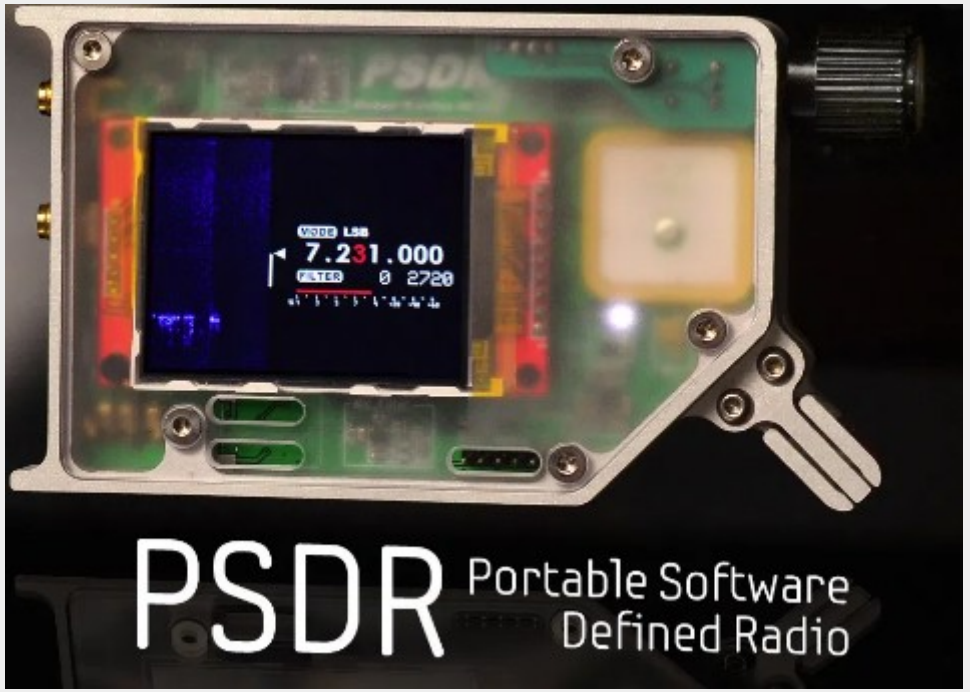
cubesats

Satellite comms

# PORTABLE QO-100 SDR TRANSCEIVER

## THE STORY

RESEARCHES



# THE STORY

# PORTABLE QO-100 SDR TRANSCEIVER


**M0NKA mcHF**

# THE STORY

# 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








# THE STORY

# PORTABLE QO-100 SDR TRANSCEIVER







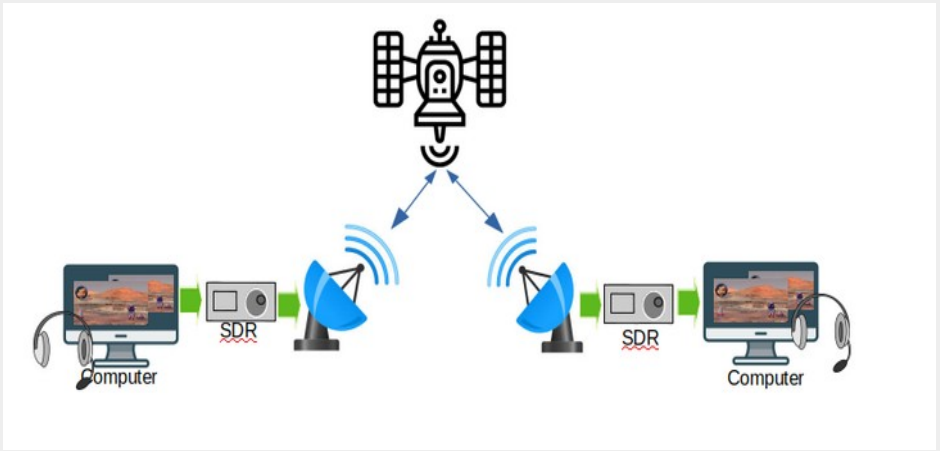

- Arduino (Atmel 328p) MCU
- Very Simple Hardware
- Compact Design

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



Up Converter


Power Amplifier

2.4 GHz Antenna

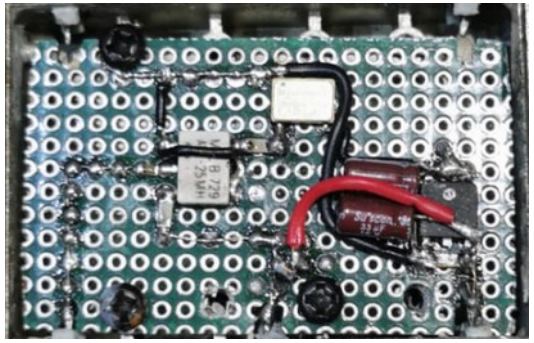
A Commercial QO-100 Satellite Setup

# SOLUTION OVERVIEW

# PORTABLE QO-100 SDR TRANSCEIVER

Dish+LNB

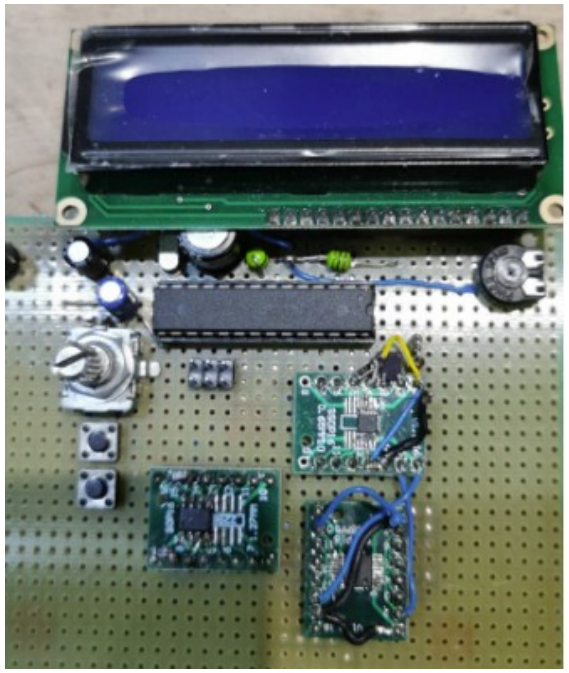
10GHz → 739 MHz



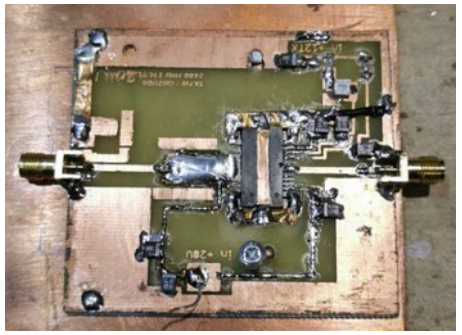
Down Converter

144 or 28 MHz

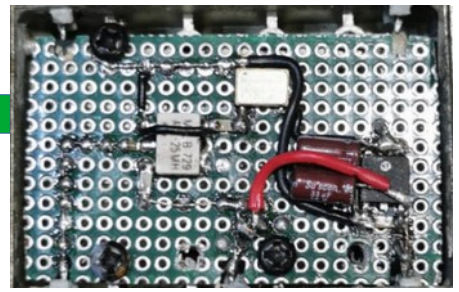
IF SSB Radio X2



2.4 GHz Antenna



Power Amplifier



Up Converter

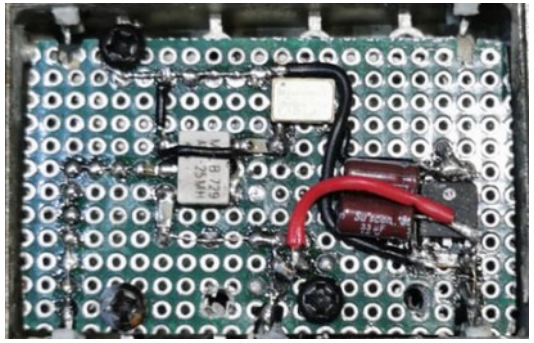
## Our QO-100 Satellite Setup

# SOLUTION OVERVIEW

# PORTABLE QO-100 SDR TRANSCEIVER

Dish+LNB

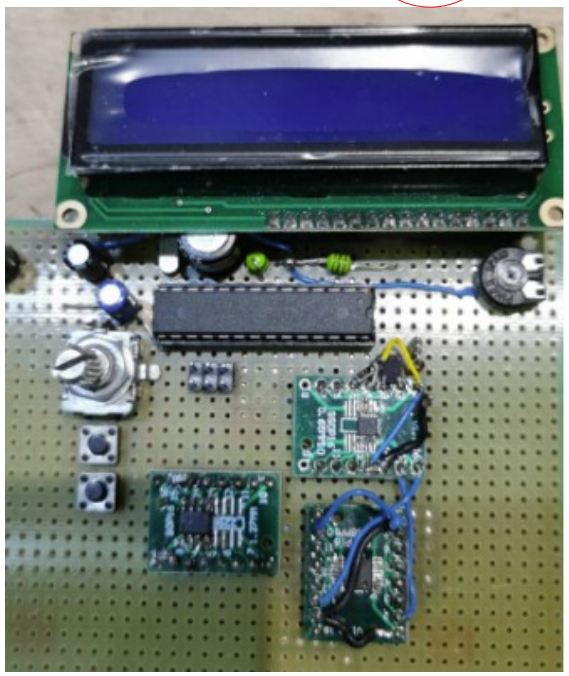
10GHz → 739 MHz



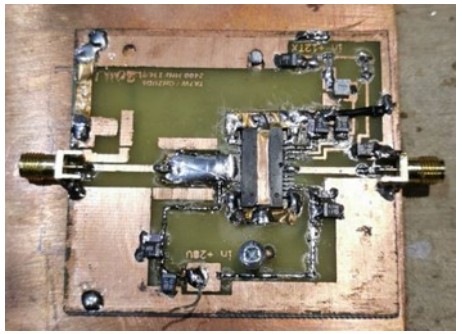
Down Converter

144 or 28 MHz

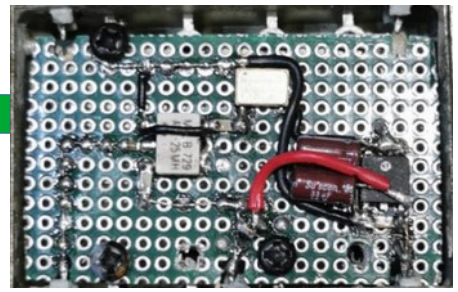
IF SSB Radio X2



2.4 GHz Antenna



Power Amplifier



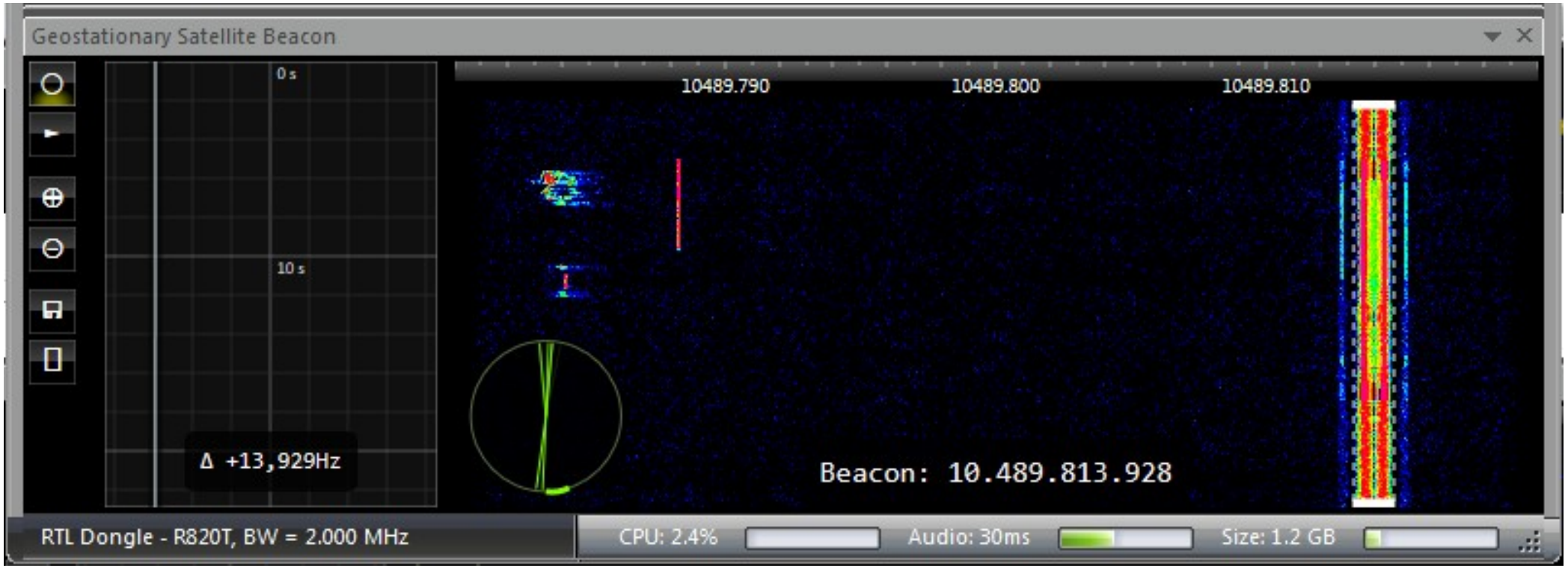
Up Converter

## Our QO-100 Satellite Setup

# FREQ. STABILITY

# PORTABLE QO-100 SDR TRANSCEIVER

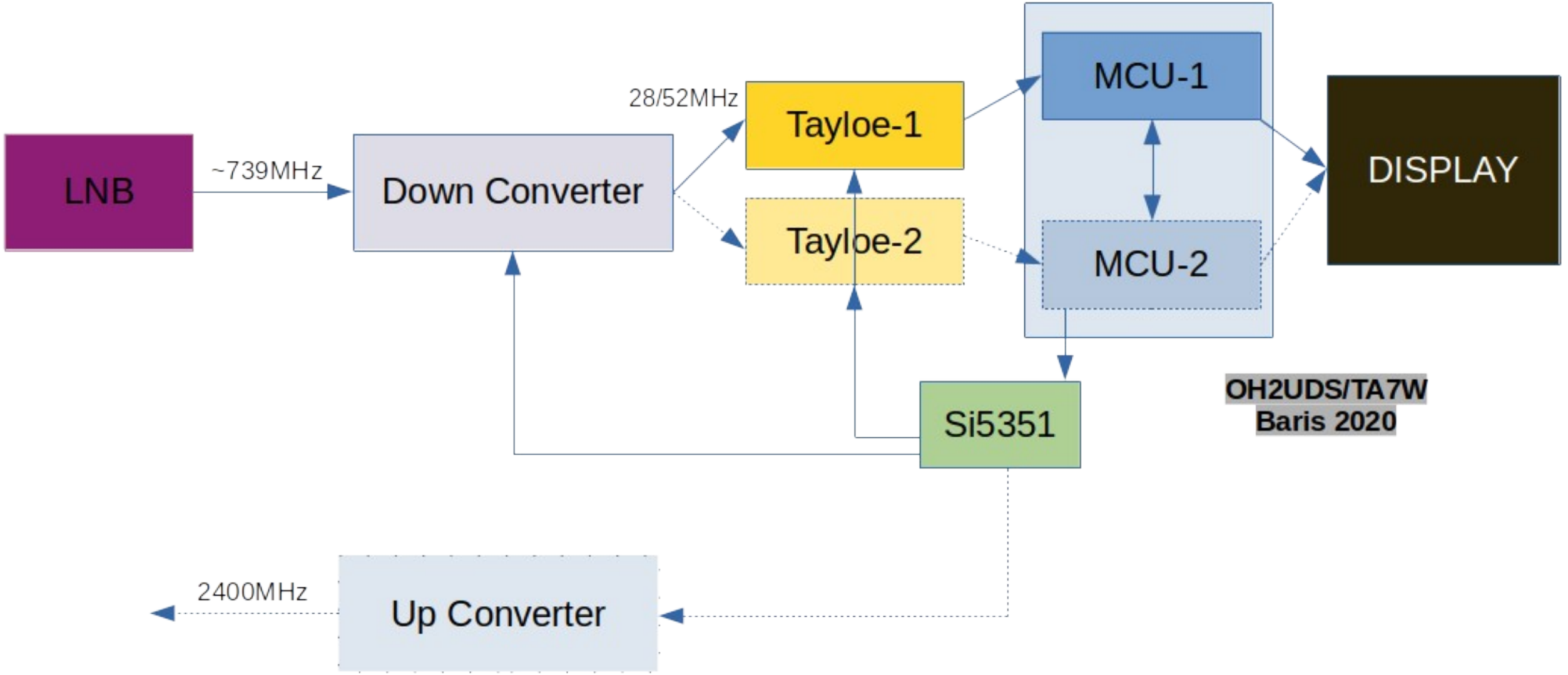
## SDR Console GEO Satellite Beacon Follower




Similar capability will be achieved using an independent secondary IF receiver

# SOLUTION OVERVIEW

# PORTABLE QO-100 SDR TRANSCEIVER

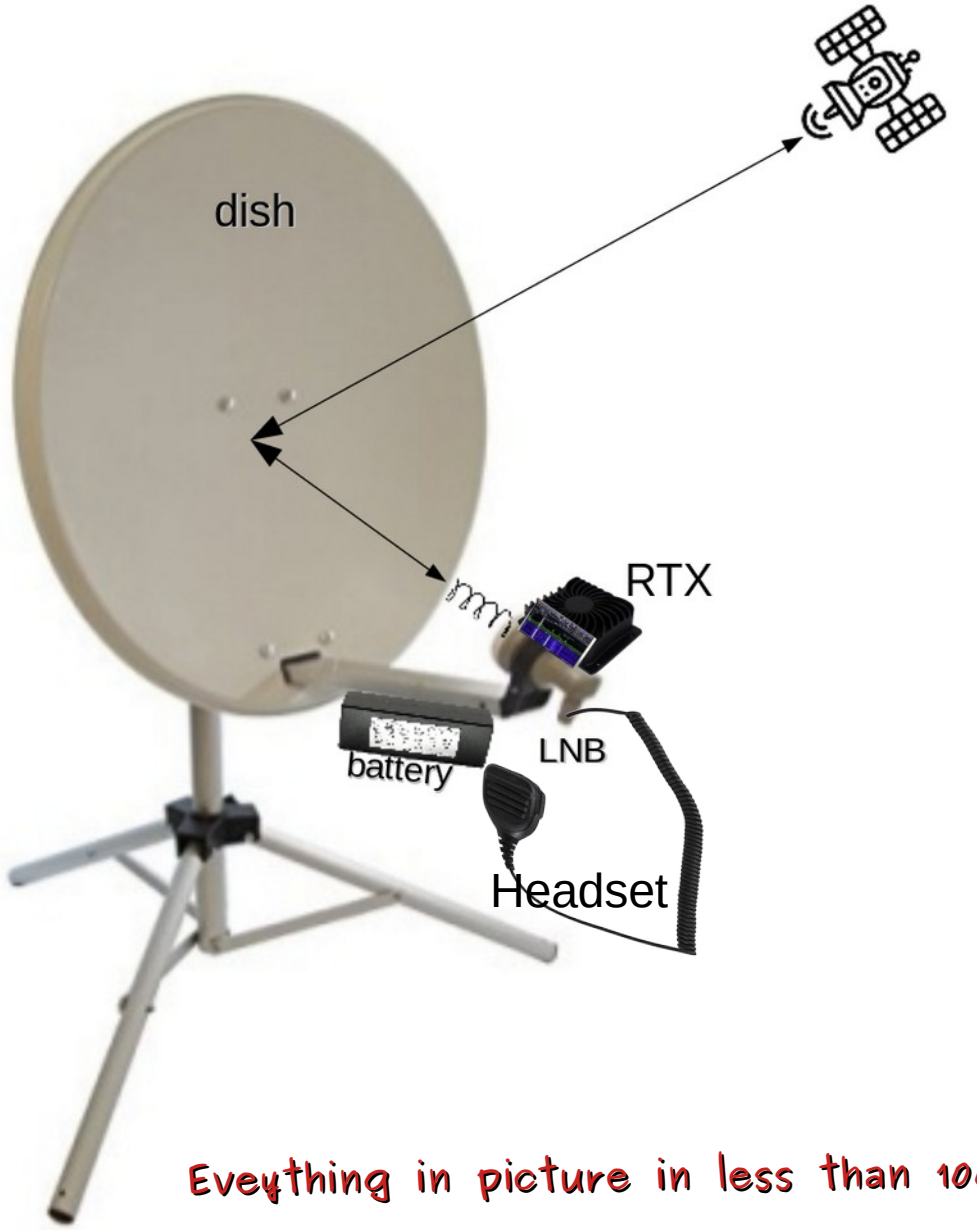



OH2UDS/TA7W
Baris 2020

# THE GOAL

# PORTABLE QO-100 SDR TRANSCEIVER

Fits in a BackPack




## Specification

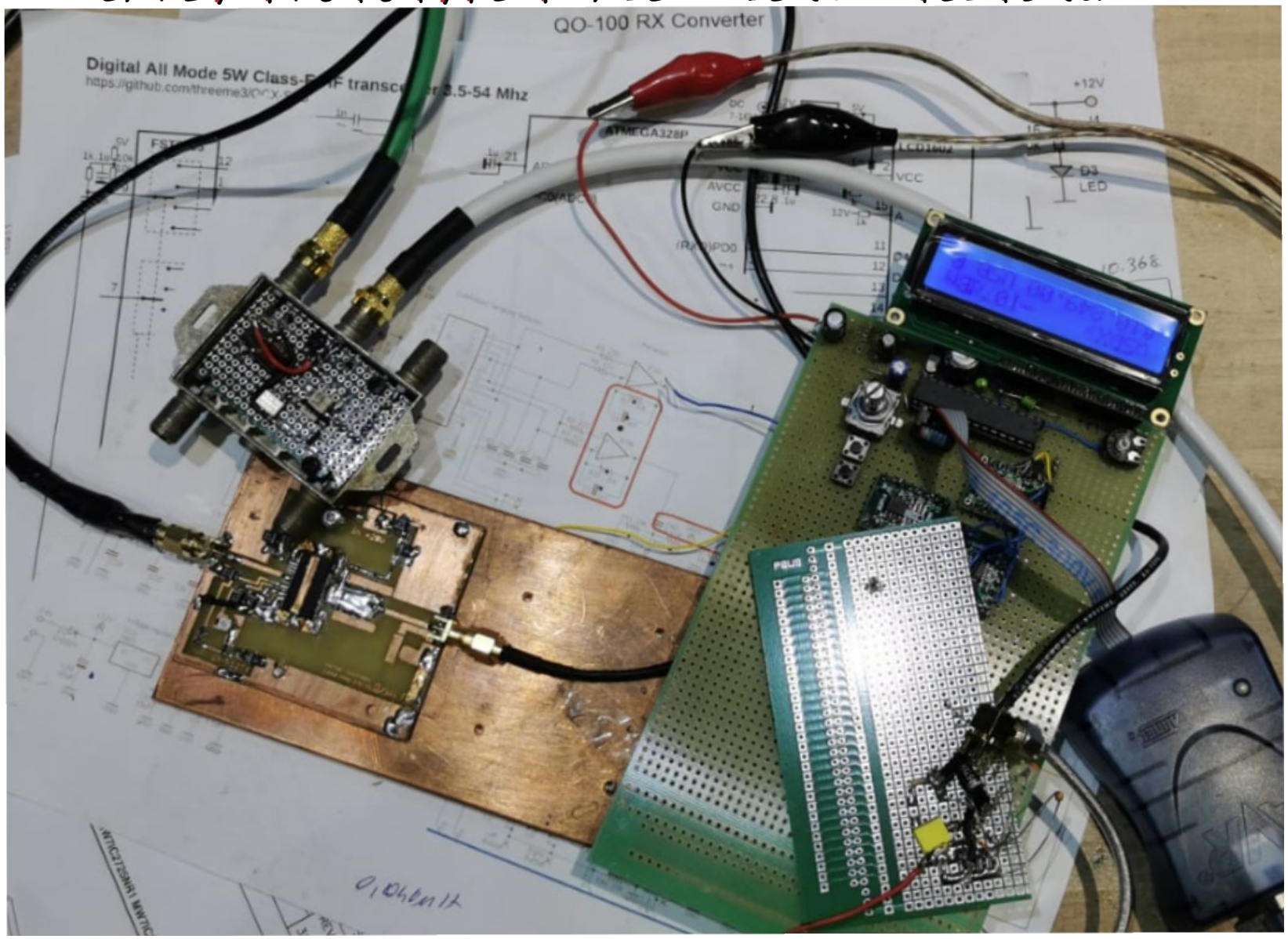
- 10 GHz Downlink
- 2.4 GHz Uplink
- 1–10 Watts RF Power
- 10 Hz steps
- 50 MHz IF
- CW/AM/SSB Modulation
- FT8, SSTV, KG-STV…
- ~5Kg

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


“OPENSOURCE” does not mean sharing something that you don’t need anymore...
“OPENSOURCE” is to start sharing at the beginning and allowing everybody to “collaborate”…

baris@marsonearthproject.org

http://www.marsonearthproject.org

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