The GOOSE v2 platform is an FPGA based GNSS receiver.

GNSS RECEIVER WITH OPEN SOFTWARE INTERFACE (GOOSE v2)

The GOOSE v2 platform is an FPGA based GNSS receiver. It is therefore flexible in processing new or proprietary signals. It comprises 60 hardware channels in real time and provides an open software interface for customer applications. It grants deep access to the hardware interface, down to e.g. integrate and dump value levels. Additionally, the intermediate frequency signals can be recorded, processed, and replayed with the platform. GOOSE v2 is meant as a rapid prototyping solution for the development of state-of-the-art GNSS receivers. The platform is dedicated to software developers and mobile communication operators. It is characterized by three main parts: an analog-frontend, a baseband, and the processor system. The baseband provides an adaptable automatic anti-jamming filter.

Features

- 60 hardware channels
- Up to 25 Hz Raw data output (code, carrier, navigation data)
- Supported signals:
- GPS L1CA, L2C (M+L), L5
- Galileo E1BC, E5a/E5b, E5 AltBOC, (E6BC*)
- Optional SBAS (EGNOS)
- GLONASS G1, G2
- BeiDou B1I, B2I
- NavIC L5, (S*)
- Open GNSS Receiver Protocol (OGRP), fully documented with parsing tool using CONVBIN from RTKLIB as RINEX converter
- C++-API to access the tracking I&D values and to close the tracking loops

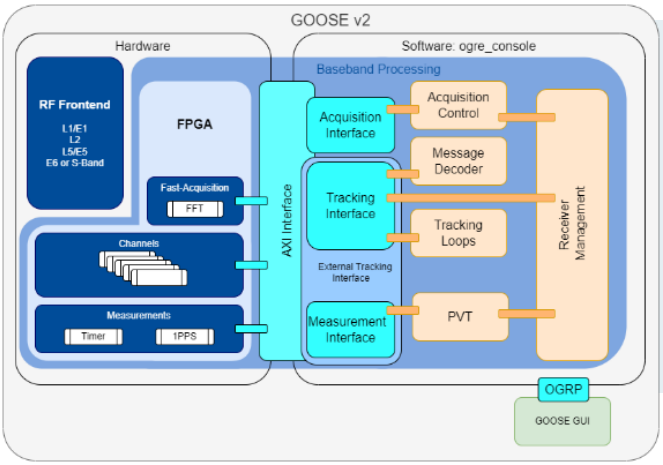
*Either NavIC S-Band or Galileo E6 as it is a quad frequency Rx

Main benefits

- Flexible development platform with multi-system and multi-signal real-time processing
- Digital recording of intermediate frequency (IF) signals for SDR algorithm evaluation (post-processing)
- Analytic preprocessing of recorded IF-signals for replay with insertion of Jamming and Spoofing
- Digital Replay of IF-signals for easy and real-time repeatable tests
- Deep coupling and vector tracking in real time
- Mitigation of wide-band interference
- Mitigation of up to 3 narrow-band continuous-wave interferers using Notch filters
- Fast processing of AI on integrated tensor processor
- Extendable for meta signals
- Access to correlation values

GOOSE Receiver Platform © Fraunhofer IIS

GOOSE Unser Interface © Fraunhofer IIS



GOOSE HW-SW Architecture © Matthias Overbeck | Fraunhofer IIS

Logging of tracking I&D values

- 10 MHz clock reference input
- 10 MHz clock reference output
- x PPS output (1 Hz - max. 25 Hz)
- 1 Ethernet port
- 1 USB 3.0 port
- Digital recording and playback of intermediate frequency over separate USB interface

Performance

- 1 PPS out jitter: 12 ns
- 1 PPS out rise time: ~ 3 ns
- Cold start: 32 s, without boot time
- Warm start: 20 s, without boot time
- Re-acquisition: 1 - 2 s until satellite is again used in position solution
- Tracking: down to 30 dB-Hz
- Acquisition: from 32 dB-Hz (60% detection probability)

Logging of tracking I&D values

- Dimensions housing (HxWxD): 6,35 x 11,6 x 21,4 cm
- Weight: 1.1 kg
- Power: Input voltage: 6 - 36 V
- Power consumption: ~ 18 W
- Antenna LNA power output: output voltage 3.3 V, maximum current 100 mA
- Processor and OS:
  - Quad Core Arm Cortex-A53
  - Up to 1.5 GHz
  - 256 KB on-chip memory RAM
  - 4 GB DDR external memory
  - E.g. 16 GB SD card
  - Linux Yocto 4.1
- Google Edge Tensor Processing Unit (TPU) (from Coral) (optional)
  - Up to 4 TOPS
- Connectors:
  - Antenna: SMA
  - REF IN: SMA
  - REF OUT: SMA
  - PPS OUT: SMA
  - Power: 3.5''
  - 1x USB 2.0 micro B (console access)
  - 1x USB 3.0 Type A
  - 1x USB 3.0 Type B for record/replay
  - Ethernet RJ45

GOOSE is distributed by TeleOrbit GmbH

Contact

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