**Key features**

- Both, synthetically generated and/or recorded real-world GNSS data can be replayed either as digital IF GNSS signals or as analog RF multi-band data in real-time to receivers / components under test.
- The MGSE© Replay Unit includes a flexible multi-band, USB3.0 digital and analog RF replay device, that can stream the GIPSIE®-IFS generated and MGSE© recorded raw IF data to a digital baseband output or to an analog RF signal.
- Up to four independent analog replay signals per GNSS band (e.g. GPS L1, Galileo E1, Beidou B1, GLONASS G1).
- The MGSE© Replaying Unit supports up to two different RF channels simultaneously.

**Application examples**

- GNSS multi-system dual frequency receiver performance testing.
- Testing of software defined radios / receivers (SDR).

**Application examples (cont.)**

- GNSS receiver performance analysis (e.g. testing of multipath, jamming, spoofing mitigation and resistance).
- Validation and certification of GNSS receivers. Thanks to its possibility to exactly replay both synthetically generated as well as real-world recorded scenarios.
- Testing signal processing algorithms. Simulation of special signals (e.g., static Doppler, single satellite, noise-free, etc.).
- Testing extreme environmental conditions. Simulation of extreme but well-defined multi-path, atmospheric conditions, interference, etc.
- Comparison of receiver variants (e.g. different settings, configurations, and firmware) under same realistic conditions.
- Repeatability testing by exact replay of realistic scenarios of live sky signals for assessing the performance under same real conditions.
- Regression tests (assess firmware or software changes) and self-jamming tests.
### Performance characteristics

- **GNSS replay signals:**
  - GPS L1, L2, L2c, L5
  - Galileo E1, E5a, E5b, E5, E6
  - GLONASS G1, G2
  - BeiDou B1, B2, B3
  - IRNSS L5, S-Band
  - QZSS

- **Output frequency:** 1.100 to 2.500 MHz
- **Nominal power:** -130 dBm to -90 dBm
- **Dynamic range:** > 45 dB
- **RF bandwidth:** up to 71 MHz
- **Sampling rate:** up to 81 MHz
- **DAC resolution:** 2 x 8 bit I/Q
- **Support of independent analog replay signals per GNSS band:** Up to four

### Technical details

- **Dimensions (L/W/H):** 19” 4U rackmount system (482*480*177 [mm])
- **Weight:** 11.8kg
- **Power supply:** 230 VAC
- **Internal OCXO**
- **IPC CPU:** Intel® i7 Quad Core
- **Super speed USB 3.0** (up to 1,296 Mbit/s)
- **Operating system:** Linux
- **USB driver with application programming interface (API)**
- **Visualization and recording software included**
- **Drivers for Windows 7, Linux**

### Interfaces

- **Antenna connector:** TNC
- **External reference clock input**
- **Reference clock output**