

Update of Guidelines for EPN Stations and Operational Centres

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Small Changes

- Real-time streams
 - Introduced concept of **multiple regional broadcasters** (Increasing the GNSS Stream Dissemination Capacity for IGS and EUREF, Söhne et al.)
 - Recommendation to **stream ephemerides** data
- Site pictures are mandatory
- Introduction of on-line site log submission tool
- IERS DOMES number in RINEX header
- Updated links

The “300 km rule”

The site must occupy a relevant location into the EUREF Permanent Network:

- For stations installed primarily to contribute to the maintenance of the ETRS89, a minimal distance of 300 km to already existing EPN stations is required, accepting the interest of each nation to have at least one EPN station.
- Exceptions to this rule are possible for stations submitting ~~hourly~~ real-time data, multi-GNSS data, contributing to EPN Special Projects or co-located with other instruments relevant to the purposes of the EPN (e.g. tide gauges, time laboratories).

Antenna+radome (1)

Simplification

- No difference between type and individual calibrations
- More in-line with IGS guidelines (Absolute calibrations since Sept 21, 2009!)
- Removal of transition phase:
 - New antenna+radome must have absolute calibrations → antenna+radome must have absolute calibrations
- Antenna+radome must be represented accurately in the EPN phase centre variation file [epn_05.atx](#) with zenith and azimuth-dependent absolute calibration values down to the horizon. If not, contact the EPN CB. An absolute calibration from an independent recognized laboratory will be required.

Antenna+radome (2)

New recommendations:

- If an antenna+radome is introduced in the EPN, either by introducing a new station or by replacing the antenna+radome at an existing station, then use a **multi-GNSS antenna+radome** capable of observing the new GPS, GLONASS and Galileo signals even if the receiver is not capable to track multi-GNSS (yet).
- If you remove an uncalibrated antenna/radome, please make it available to a calibration laboratory for calibration. (from IGS guidelines)

New requirement (from IGS guidelines):

Only radomes directly connected to the antenna are allowed

Antenna+radome (3)

New antenna requirement (IGS guidelines):

Have well-defined phase (and gain) pattern to allow mixing with other standard antennas (i.e. the Dorne Margolin choke ring) with negligible error. Antenna gain patterns must be reproducible, i.e. all antennas of the same type must have identical phase patterns. Absolute phase center stability must be within $\pm 2\text{mm}$ in the horizontal and $\pm 4\text{mm}$ in the vertical relative to a Dorne Margolin choke ring antenna. Antenna to antenna phase center repeatability (minimum 3 measurements, 1 sigma) must be $\pm 0.5\text{mm}$ in the horizontal and $\pm 1\text{mm}$ in the vertical.

Under review at IGS level. Proposal: wait for IGS.