



Australian Government
National Measurement Institute

WG on GNSS Report 2013



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Working Group on GNSS



Mission

To support time and frequency applications of Global Navigation Satellite Systems (GNSS) in APMP



Objectives

- Coordinate GNSS time and frequency comparisons within APMP
- Develop support for new GNSS techniques and applications
- Support research into GNSS time and frequency transfer



Coordinator: Michael Wouters (NMIA)

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GNSS receiver calibration

Background

It had been agreed previously within the APMP TCTF that it was desirable to conduct a receiver calibration campaign.

Progress

A draft protocol for conduct of the campaign was being developed for approval by the CCTF WG on GNSS so that its results would be accepted by the BIPM. Part of this was submitted to the WG on GNSS earlier this year.

BIPM in consultation with the CCTF WG GNSS has decided to change the way that GPS receiver calibrations are run

Development of our own protocol is no longer necessary

New receiver calibration protocol

- BIPM will circulate their travelling receiver to only 10 or so laboratories ('Group 1')
- Within each RMO there will be 2 or 3 'Group 1' laboratories
- A travelling receiver operated by a 'Group 1' laboratory will need to be calibrated, either directly during a BIPM campaign, or by transfer.
- This travelling receiver then circulates to other labs within the RMO ('Group 2')
- The RMO processes the data from their calibration campaign for 'Group 2' laboratories and reports to the BIPM, who validate the data and assign a final uncertainty.

Summary: we are now responsible for the majority of receiver calibrations (14 labs contributing to UTC) within our region.

Support needed from NMIs

Equipment

- At least 2 systems, comprising a geodetic receiver+ antenna + data logging computer are desirable

Labour

- Initial setup of travelling systems
- Planning and coordination : estimate 1-2 weeks/campaign
- Data processing and reporting to BIPM : estimate 2-3 weeks/campaign
- Training ?

Financial

- Operate on the same basis as before, with each lab responsible for its own import costs and then shipping costs to the next lab

Actions

We need to decide:

Which labs should be nominated as 'Group 1'

- These labs will presumably have a smaller uncertainty u_B than the 'Group 2' labs so how can UTC get the best benefit from this ?
- What will the responsibilities of the 'Group 1' labs be ?

How many travelling systems are required?

Who plans and co-ordinates the calibration campaigns ?

Who should process the data – it's desirable that there should be centralized processing but also that this should be checked

- Is training needed by some labs so that they can process their own data?

We need to actively participate in discussion of the draft guidelines when they become available.