Proton magnetometer comparison case study

The following field tests were done in Jul. 2014 and in Mar. 2015 in the suburb of Beijing, China, by a third party company.

1. **Field testing results (2014-07-23 13:40-16:30)**
   EREV-1: 3017 samples recorded; PMG & GSM19T: 2050 samples recorded

Figure 1, magnetic field was recorded with 3 types of proton magnetometers:

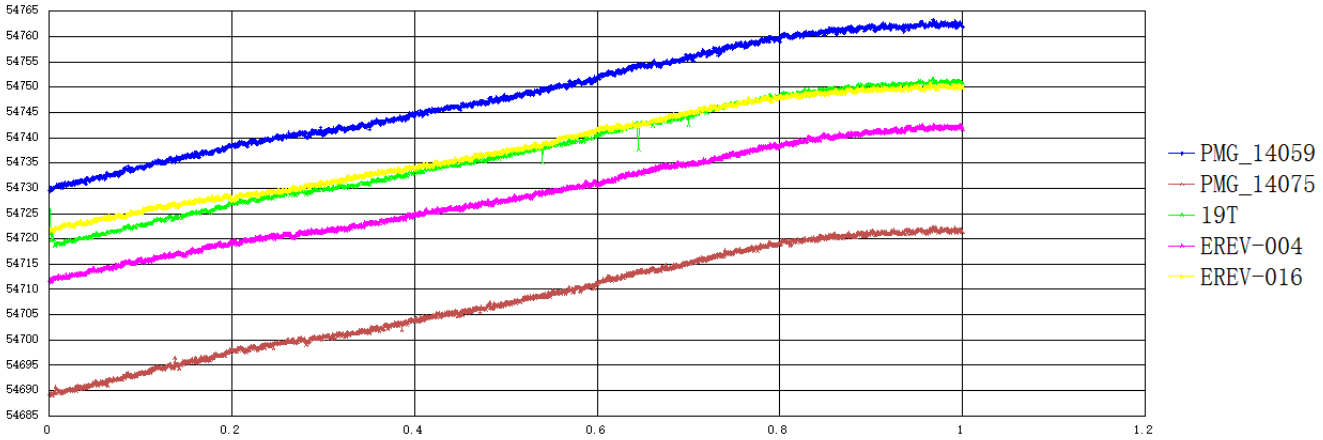
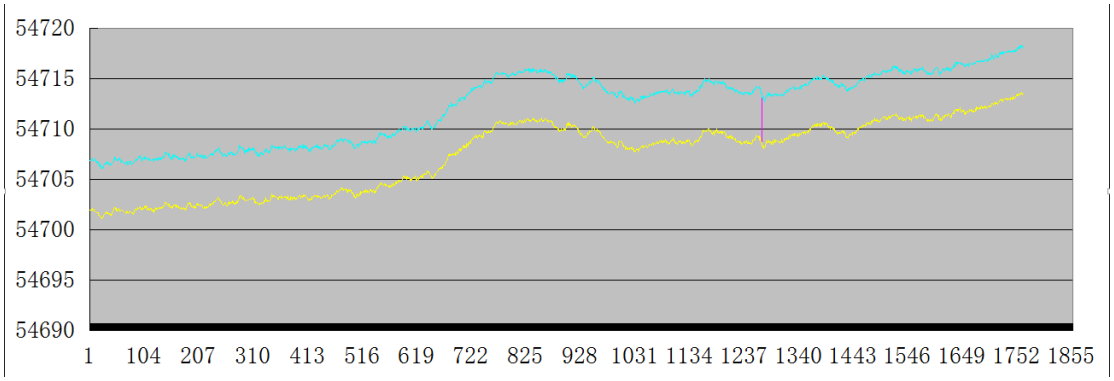


Table 1, field test noise comparison

Brand	EREV-1 （004）	EREV-1 （016）	PMG-2 （14059）	PMG-2 （14071）	GSM-19T
Noise	0.08 nT	0.09 nT	0.22 nT	0.21 nT	0.19 nT

Figure 2, noise measurement of Erev-I in gradient measurement mode:



The above curves were recorded with Erev-I in gradient mode in which both channels are enabled; the blue curve is channel 1 and the yellow curve is channel 2. The sampling rate is 3S in continuous mode. To test the consistency between channels and sensors, the two sensors and channels were swapped during the test, as shown in above curves where it is marked with red vertical line. From above field data, the noise (standard deviation) of gradient measurement less than 0.1nT.

2. Field tests results (2015-03-02)

The magnetic field data were recorded with Unit A and B of each type of magnetometers, and Unit 1 reference station.

Figure 3, the magnetic field reading of Unit A,B and Unit 1 reference station

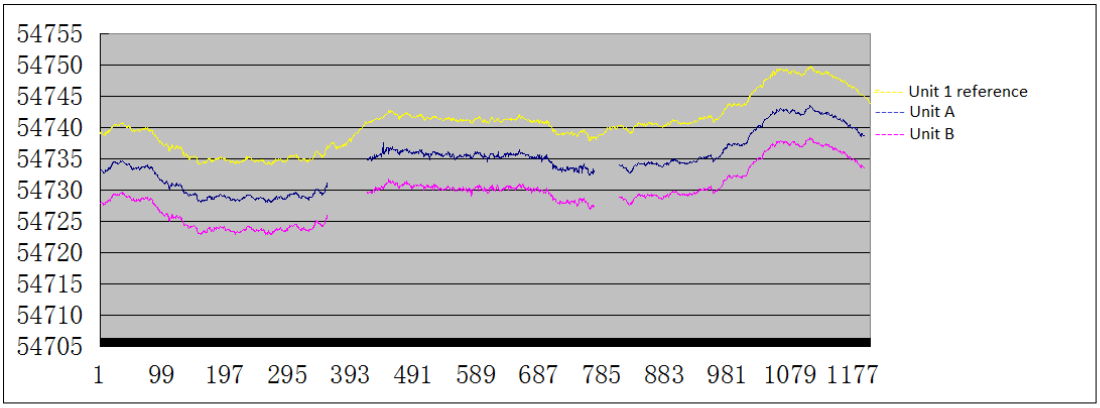


Table 2, noise comparison after removing Earth magnetic fluctuation using reference station with different magnetometers

Brand	EREV-1	PMG-2	GSM-19T
Unit A noise	0.062 nT	0.23 nT	0.11 nT
Unit B noise	0.083 nT	0.19 nT	0.11 nT