

Method	SLINGRAM	
Principle	Inductive electromagnetic method, in which two horizontal loops are used. The transmitter loop gives primary electromagnetic field in the frequency band 0.1 – 50 kHz, and the receiver loop measures the generated total field.	
Other information		
Devices	Monofrequency devices	Multifrequency devices
Devices in use	Model GTK - normal frequency device (3600 Hz) and - high frequency device (14 kHz)	- Maxmin II (222, 444, 888, 1777 and 3555 Hz) - Maxmin I-8S (440 - 56320 Hz) - Maxmin I-10 (110 - 56320 Hz)
Measured components or/and quantities	Electromagnetic total field (primary + secondary) In-phase and out-of-phase component of the field (real and imaginary component)	
Units	% of the strength of the primary field	
Reading accuracy	0.1 %	0.1 %
Measurement accuracy	In-phase: 0.5 % Out-of-phase :0.1 %	In-phase: 0.5 % Out-of-phase :0.1 %
Other information		
Measurement		
General		
Measured quantities	In-phase and out-of-phase components of the field (real and imaginary part)	
Measuring parameters	Coil separation, frequency	
Quality requirement of reading accuracy	Mean error of in-phase component $\leq 1\%$, Mean error of out-of-phase component $\leq 0.5\%$	
Control of reading accuracy	Checking of results in the field and in the office	
Mean error of measurements	In-phase: $< 1\%$ Out-of-phase: $< 0.5\%$	
Positioning	Error of XY: (GPS) $< 5\text{ m}$, $< 2\text{ m}$ (Focus-GPS), $< 0.5\text{ m}$ (VRS-GPS) Z: not usually measured Typical mean error for station coordinate, 2 m (after correction) Typical mean error for line coordinate, 5 m (after correction)	
Repeat criteria	Measurements are repeated when lateral deviation is greater than half line interval or closure error is greater than point interval.	
Other information	Measurements can be done with several equipments. Coil separation is normally 60 or 100 m, but with multifrequency devices it can be 10 – 320 m. NB. Levels of the measurements can be different with different devices.	