

NGU Report 2000.064

Magnetic, VLF and Slingram measurements in
the Klinkenberg area, Røros, Norway, 2000

Report no.: 2000.064		ISSN 0800-3416	Grading: Åpen	
Title: Magnetic, VLF and Slingram measurements in Klinkenberg area, Røros, Norway, 2000				
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County: Sør-Trøndelag			Commune: Røros	
Map-sheet name (M=1:250.000) Røros			Map-sheet no. and -name (M=1:50.000) Røros 1720 III	
Deposit name and grid-reference: Klinkenberg 32V 63580 695870			Number of pages: 19	Price (NOK): Kr. 105,-
Fieldwork carried out: April 2000			Date of report: 10.05 2000	Project no. 2850.01
			Person responsible: <i>Jens S. Kvernøy</i>	
Summary:				
<p>On behalf of Crew Development Corporation the Geological Survey of Norway have executed a Magnetic, VLF and Slingram survey over Klinkenberg old Cu-Zn mine. The survey was a continuation of the survey in 1999. Klinkenberg is located north of the lake Aursunden at Røros in Sør-Trøndelag county.</p> <p>The purpose of the survey was to follow up the Helicopter EM survey done over the same area in 1999.</p>				
Keywords: Geofysikk		Elektromagnetisk måling		Magnetometri
Sulfid				
				Fagrapport

CONTENTS

1 INTRODUCTION..... 4

2 MEASUREMENTS.....4

3 RESULTS 5

4 REFERENCES.....6

FIGURES

Figure 1a – 14a: Slingram MaxMin profile 650 N – 1950 N

Figure 1b – 14b: Magnetic total field and VLF profile 650 N – 1950 N

MAPS

2000.064-01 Overview map of the investigated area

-02 Magnetic total field

-03 VLF Fraser-filtered tilt angle

-04 VLF Fraser-filtered quadrature

1. INTRODUCTION

On behalf of CREW DEVELOPMENT CORPORATION the Geological Survey of Norway have executed a Magnetic, VLF and Slingram survey over Klinkenberg old Cu-Zn mine. The survey was a continuation of the survey in 1999 (Dalsegg 1999). Klinkenberg is located north of the lake Aursunden at Røros in Sør-Trøndelag county. The investigated area are shown in the overview map 2000.064-01.

The purpose of the survey was to follow up the Helicopter EM survey done over the same area in 1999.

The survey was executed in April 2000. According to the agreements, no interpretation should be done within the project.

2. MEASUREMENTS

The VLF-measurements were carried out using NGUs homemade instrument. The transmitter used was JXZ (Norway) with the frequency 16.4 kHz. The direction of the magnetic field from the transmitter was 95° . Both tilt angle and quadrature were measured.

The magnetic survey was carried out using the Scintrex ENVI-MAG magnetometer (accuracy 1nT). The magnetic background level was adjusted to the level from the measurements in 1999.

The Slingram measurements were carried out using an APEX MAXMIN II Portable EM. All five frequencies (222, 444, 888, 1777 and 3555Hz) were used, and the coil separation was 100 metres. The sampling interval was normally 50 meters, but was 25 meters over anomalous areas.

To fix the profiles, all ends of the profiles in the grid were measured with differential GPS with accuracy better than +/- 1m. The UTM co-ordinates (WGS-84) are presented in the data-files.

3. RESULTS

The results of the Slingram measurements are presented as curves in figures 1a – 14a. The magnetic measurements (total field) are presented as curves in figures 1b – 14b, and as contoured colour-shaded map in scale 1: 5000 in map 2000.064-02. The VLF measurements are presented as curves in figures 1b – 14b, and as Fraser-filtered maps in scale 1 : 5000 in maps 2000-064 – 03 and –04. VLF and magnetic measurements at profile 650N to 1450N are from the measurements in 1999.

Colour maps were produced using Geosoft Montaj software version 4.1. The Grid cell size was 10 meter.

Digital data are available from NGU. The file format is Geosoft xyz-format, with the following content:

magdata.xyz	X	Y	UTM_E	UTM_N	MAG_TOT	GRADIENT
vlfdata.xyz	X	Y	UTM_E	UTM_N	REAL_K.	IMAG_K.
sldata.xyz	X	Y	UTM_E	UTM_N	RE_222	IM_222
			RE_444	IM_444	RE_888	IM_888
			RE_1777	IM_1777	RE_3555	IM_3555

4. REFERENCES

Dalsegg, E. 1999: Magnetic and VLF measurements in the Klinkenberg area, Røros, Norway, 1999. *NGU Report 99.109*.

KLINKENBERG
Slingram MaxMin
Profile 650 N

Tx ----- Rx 100m

—●— Reell komp.
- - * - - Imag. komp.

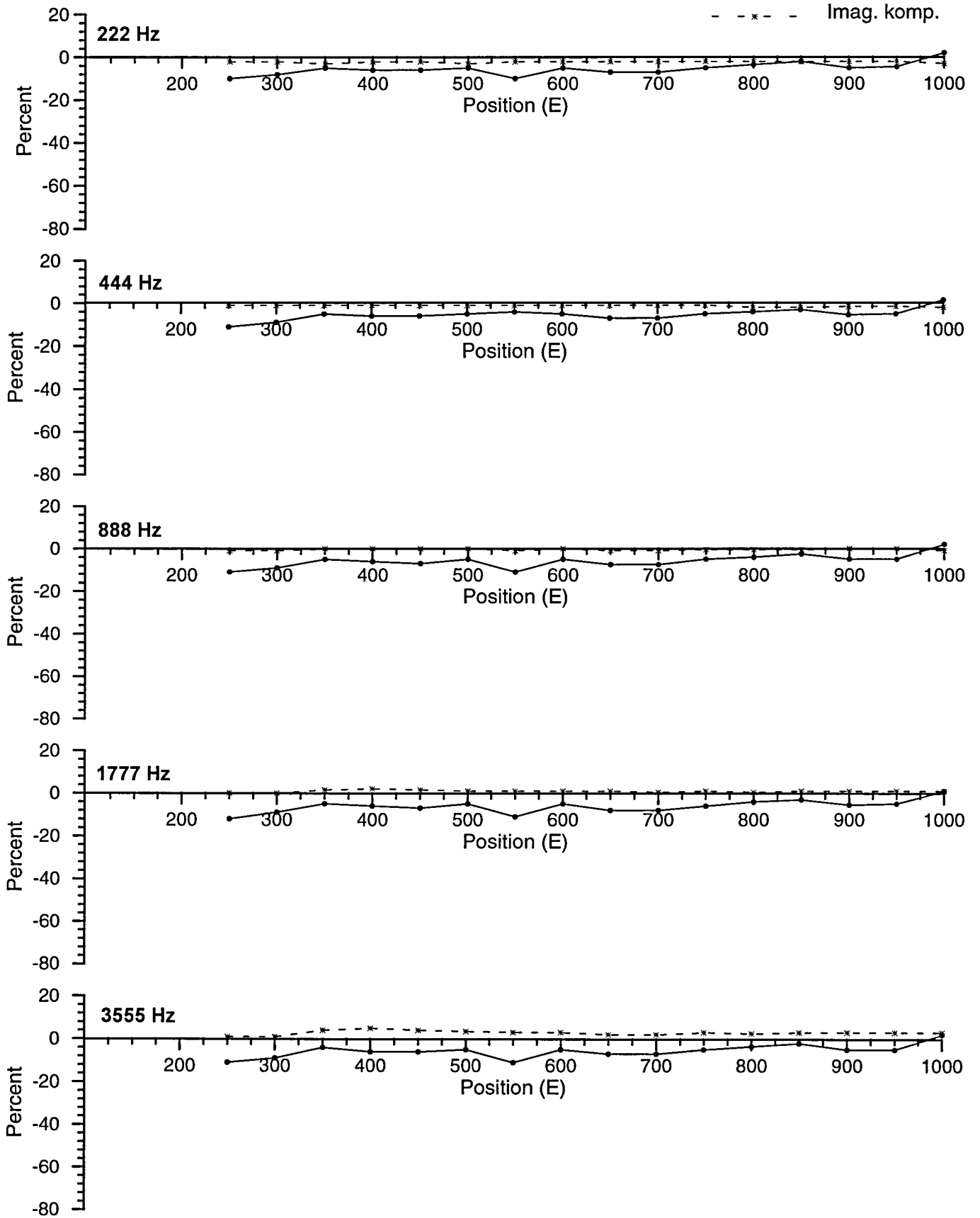
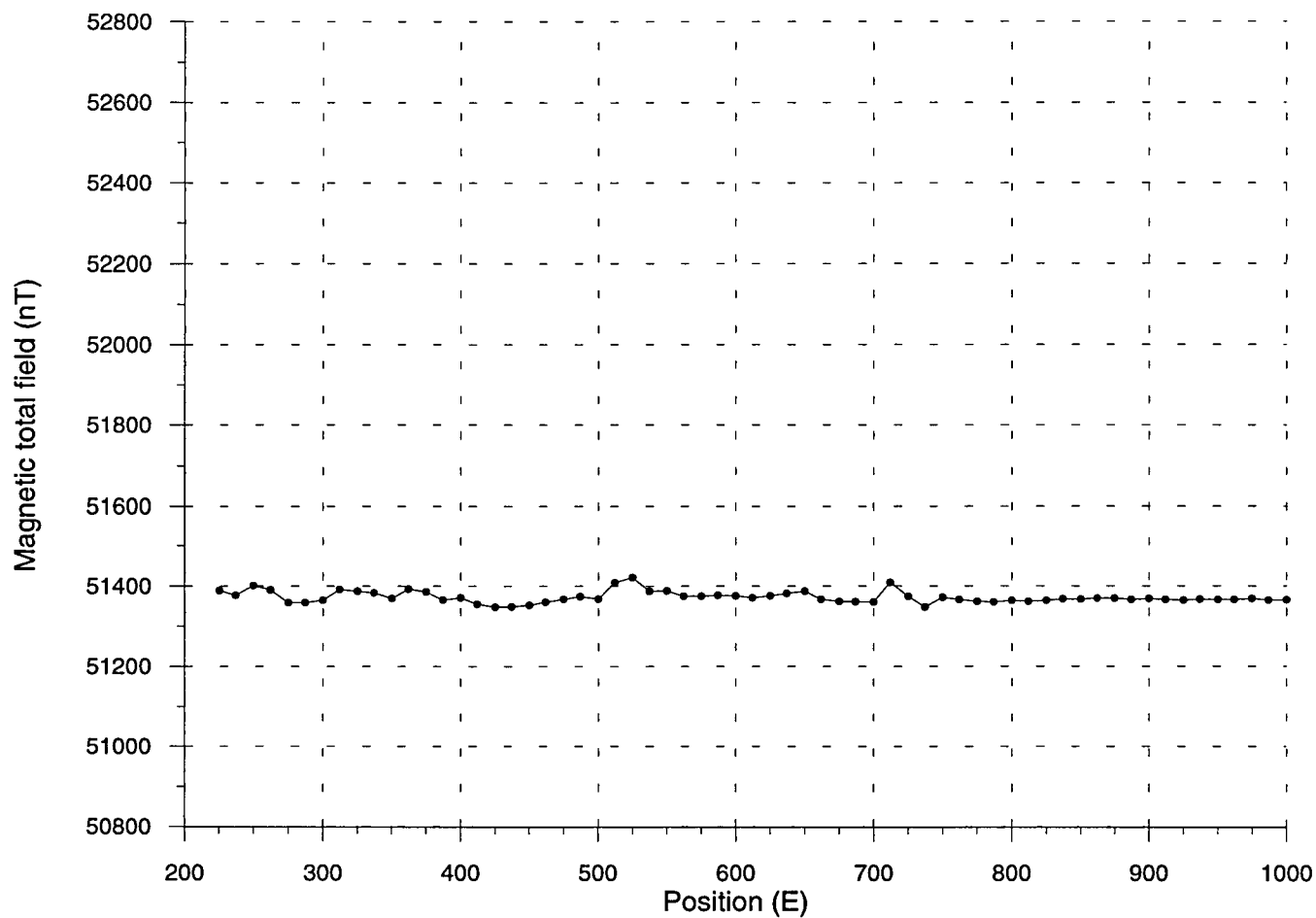


Figure 1a. Slingram MaxMin profile 650 N.

KLINKENBERG
Magnetic total field
Profile 650 N



KLINKENBERG
VLF
Profile 650 N

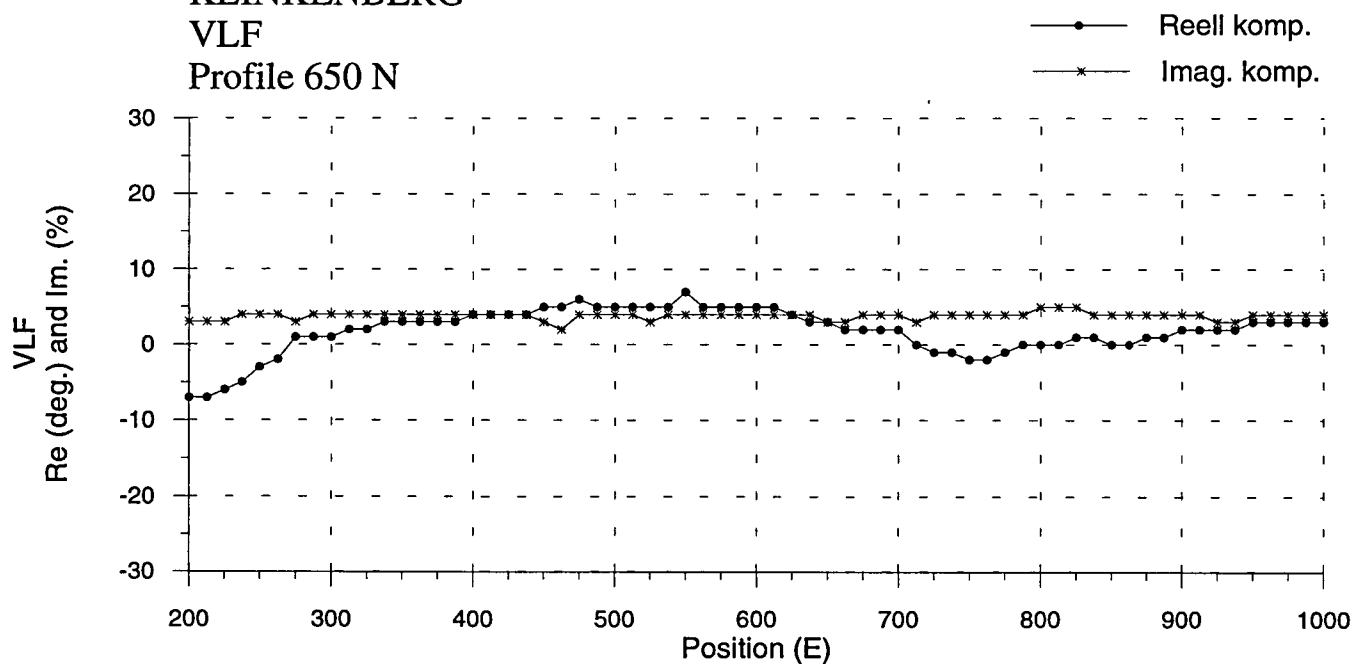


Figure 1b. Magnetic total field and VLF profile 650 N.

KLINKENBERG
Slingram MaxMin
Profile 750 N

Tx ----- Rx 100m

—●— Reell komp.
- - * - - Imag. komp.

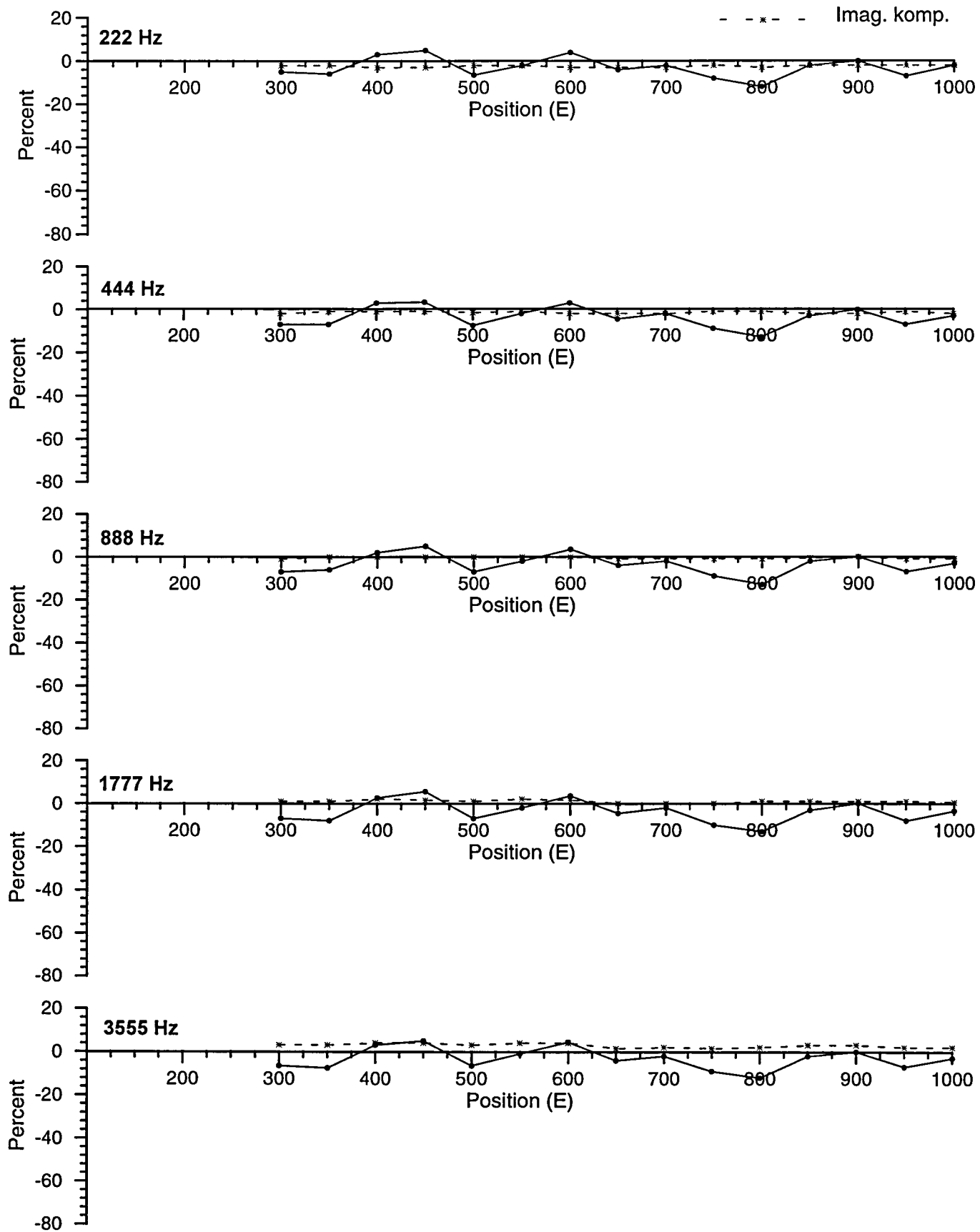
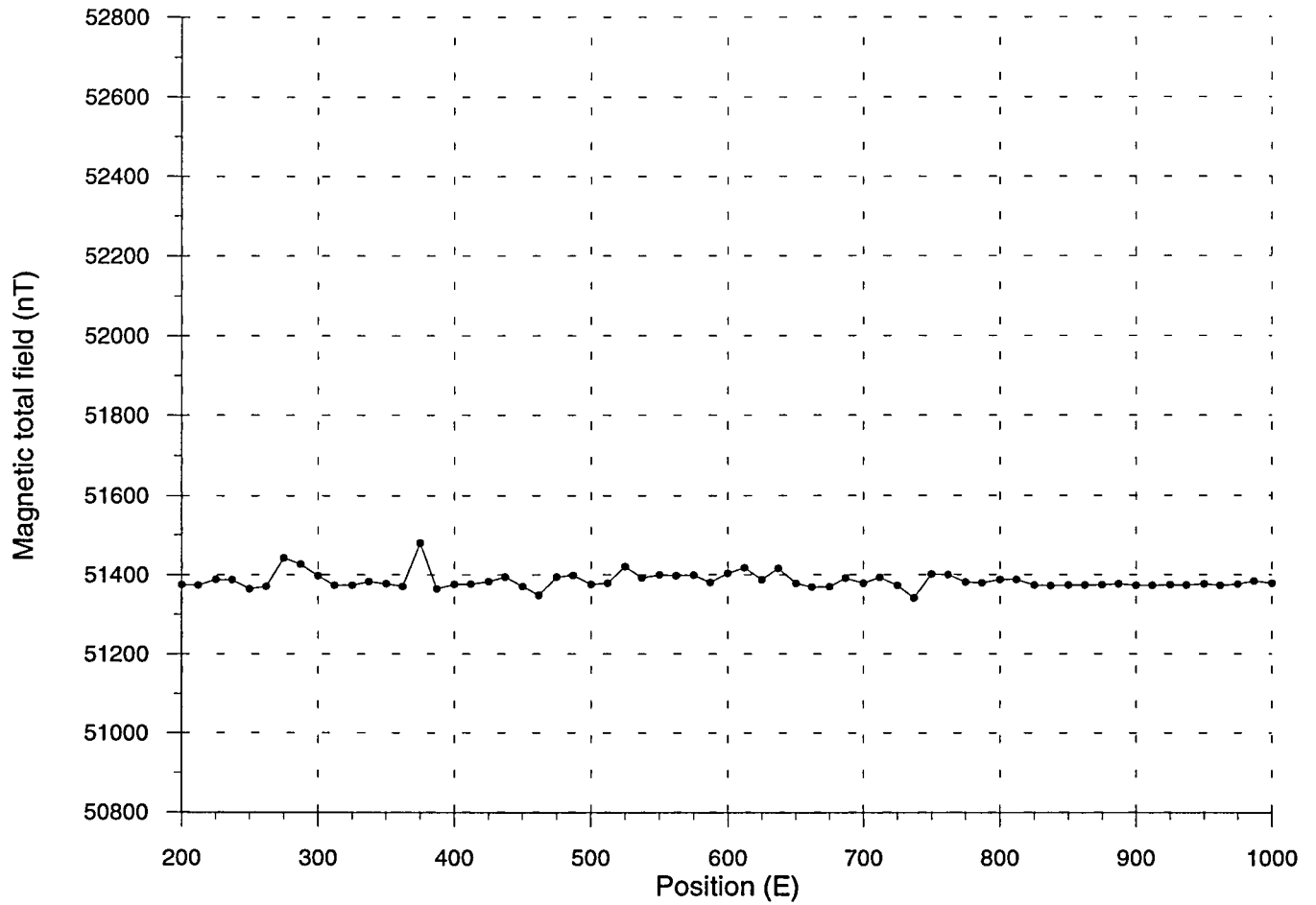


Figure 2a. Slingram MaxMin profile 750 N.

KLINKENBERG
Magnetic total field
Profile 750 N



KLINKENBERG
VLF
Profile 750 N

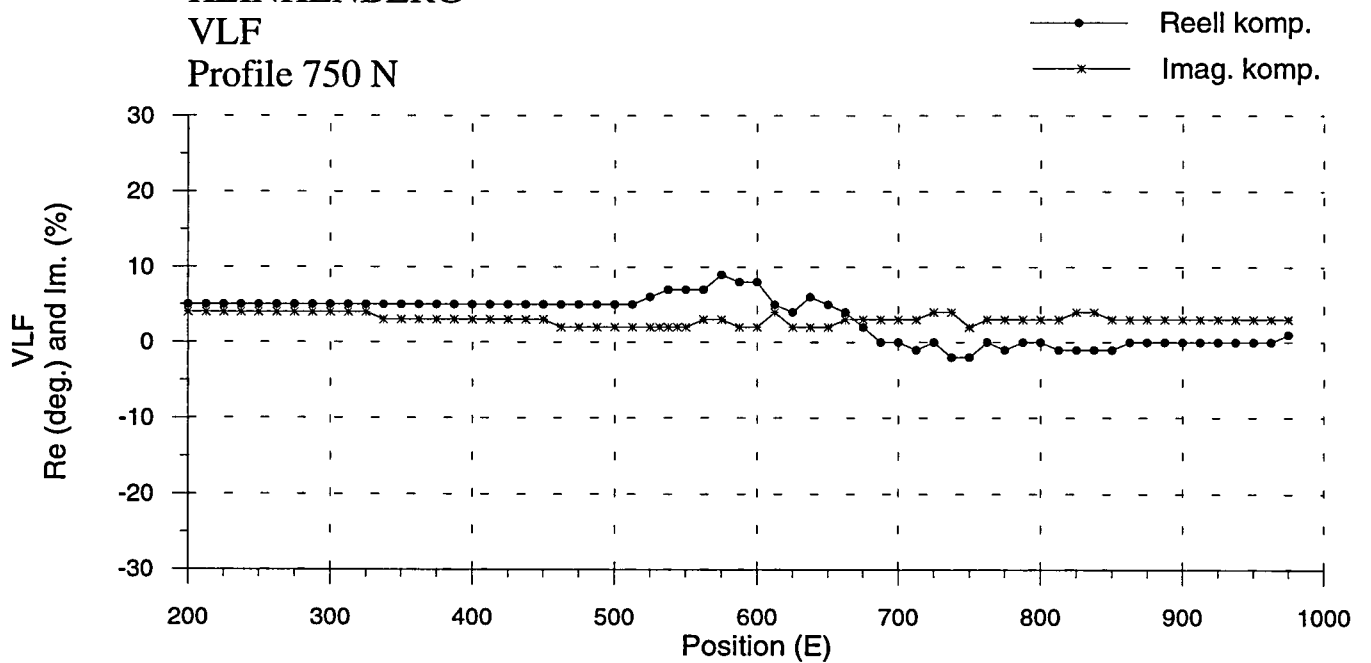


Figure 2b. Magnetic total field and VLF profile 750 N.

KLINKENBERG
Slingram MaxMin
Profile 850 N

Tx ----- Rx 100m

—●— Reell komp.
- - * - - Imag. komp.

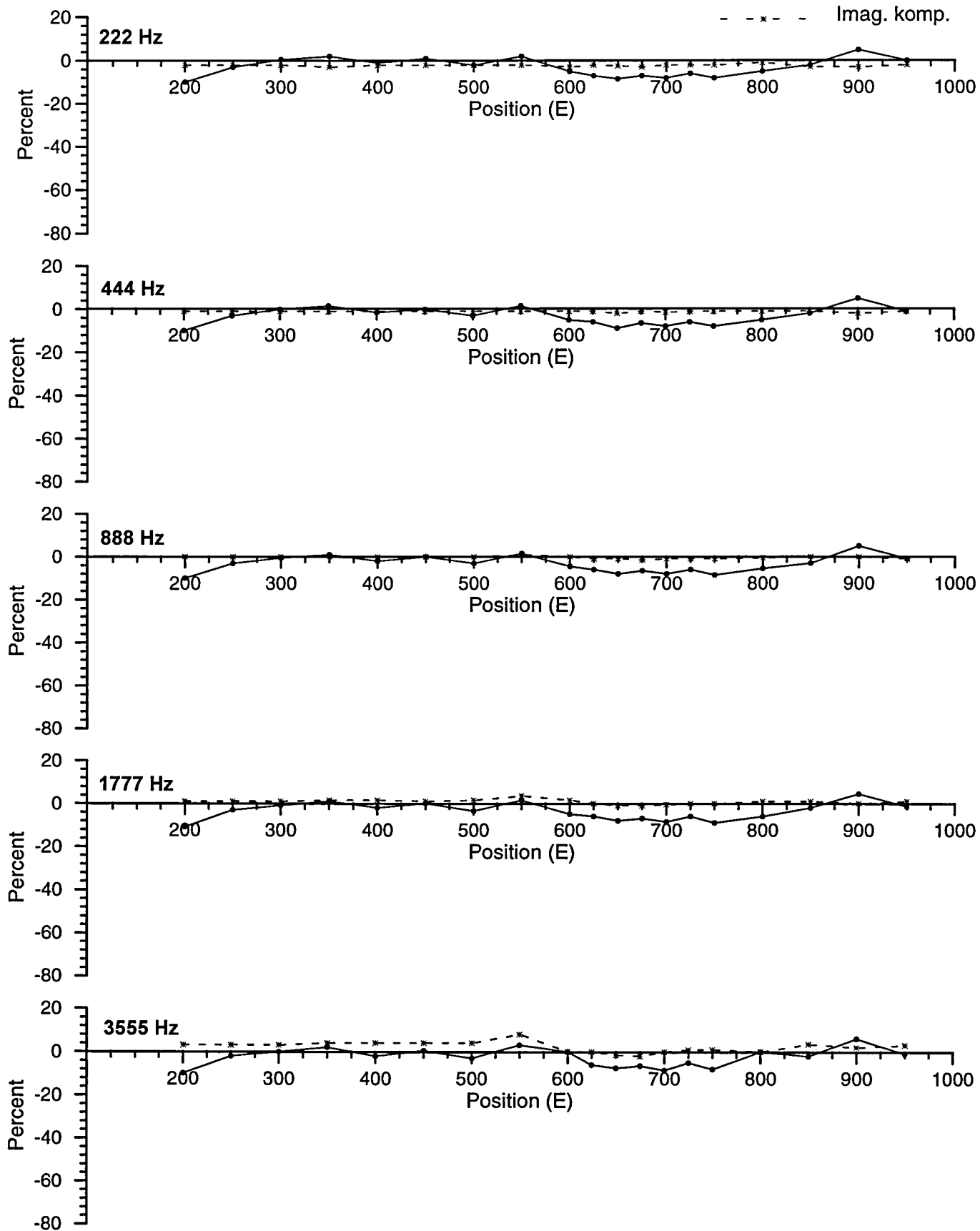
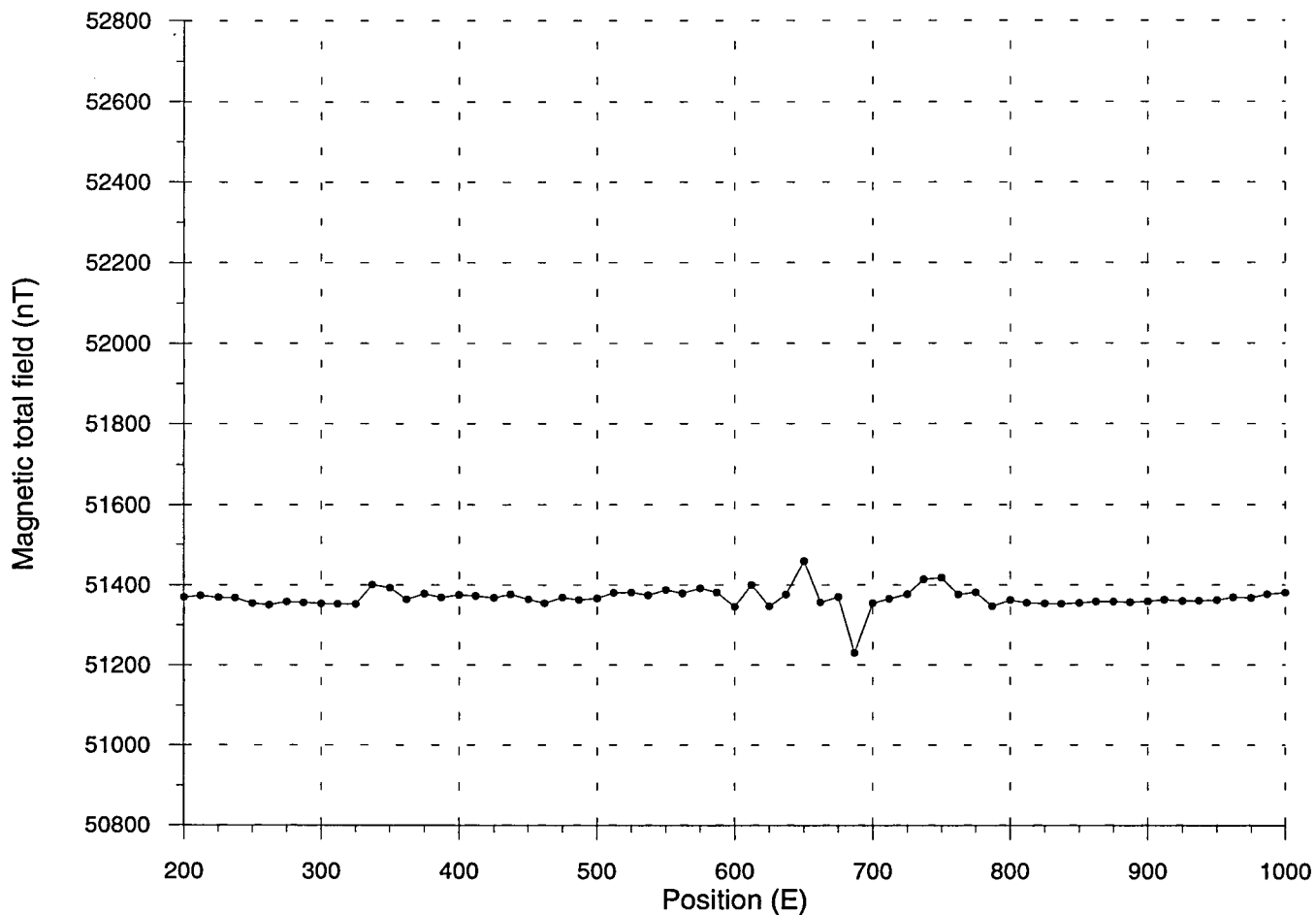


Figure 3a. Slingram MaxMin profile 850 N.

KLINKENBERG
Magnetic total field
Profile 850 N



KLINKENBERG
VLF
Profile 850 N

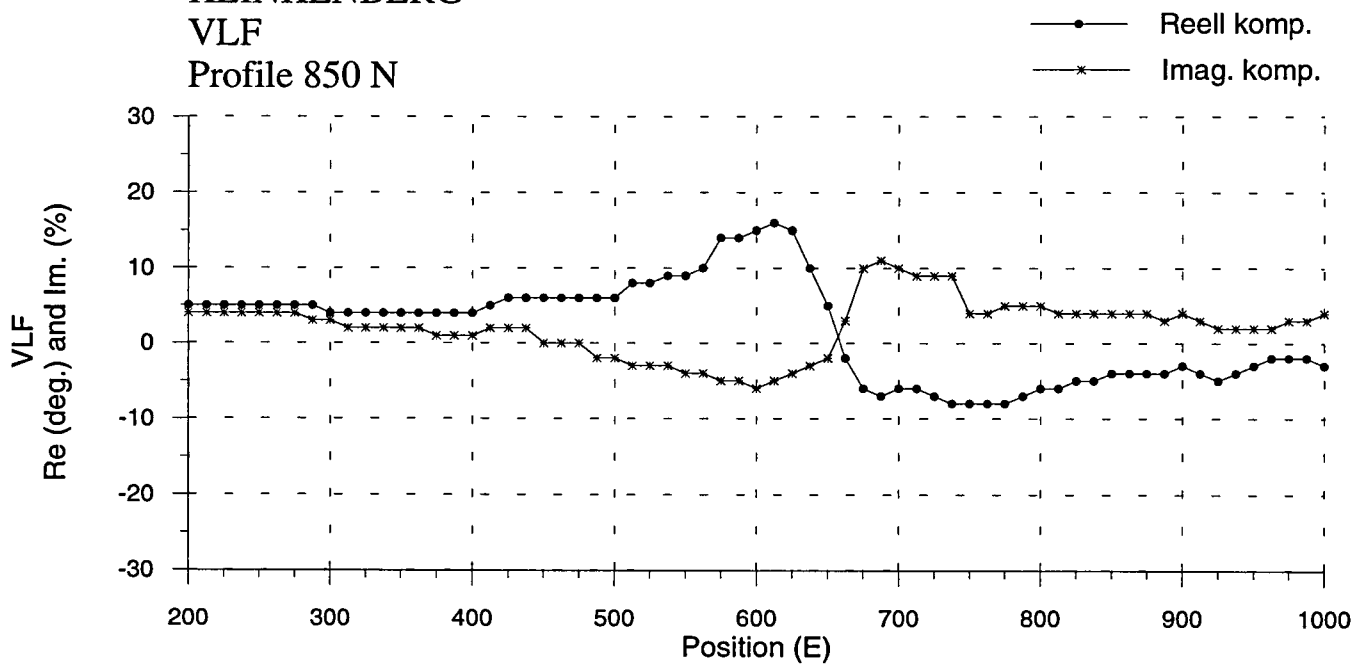


Figure 3b. Magnetic total field and VLF profile 850 N.

KLINKENBERG
Slingram MaxMin
Profile 950 N

Tx ----- Rx 100m

—●— Reell komp.
- - * - - Imag. komp.

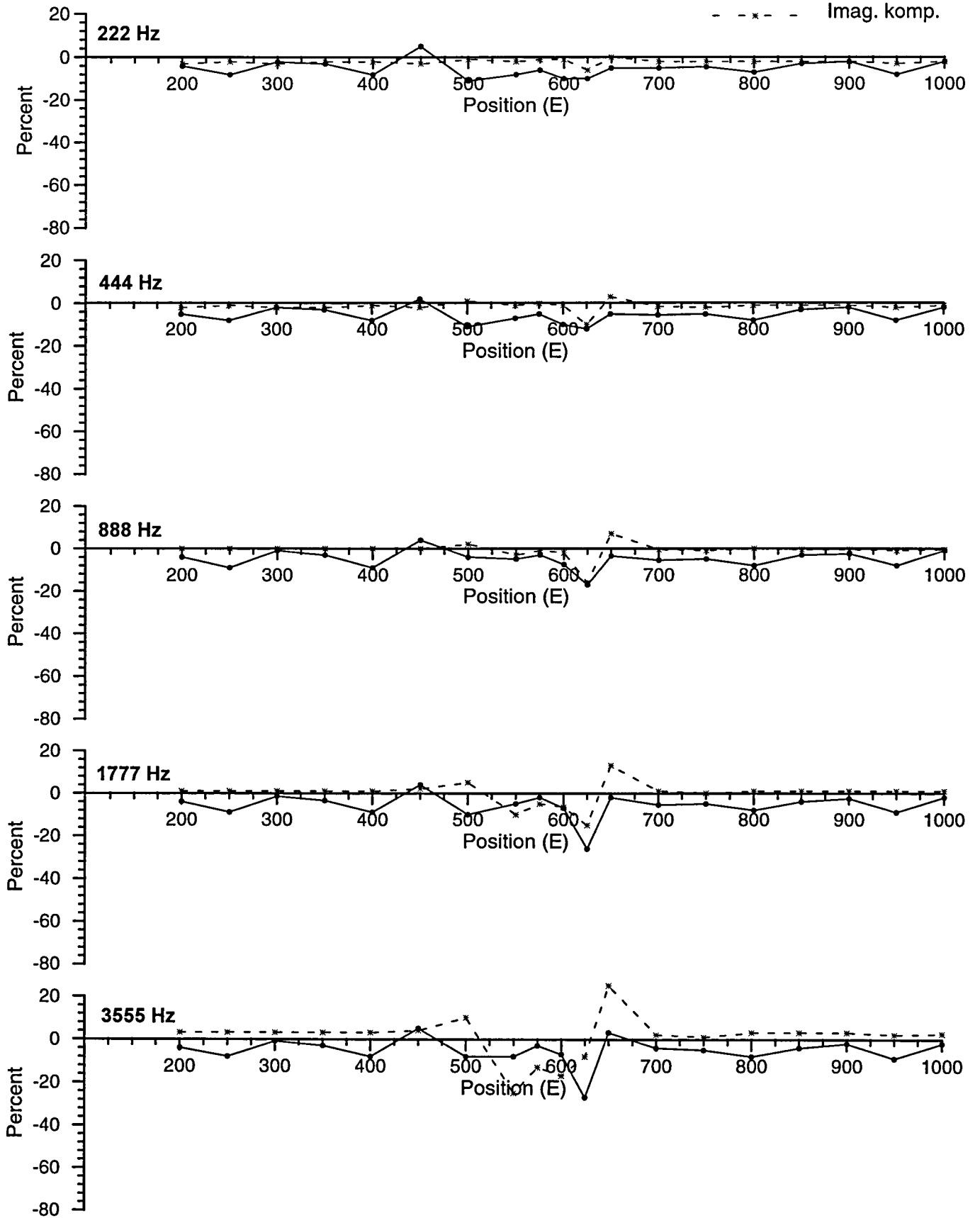


Figure 4a. Slingram MaxMin profile 950 N.

KLINKENBERG
Magnetic total field
Profile 950 N

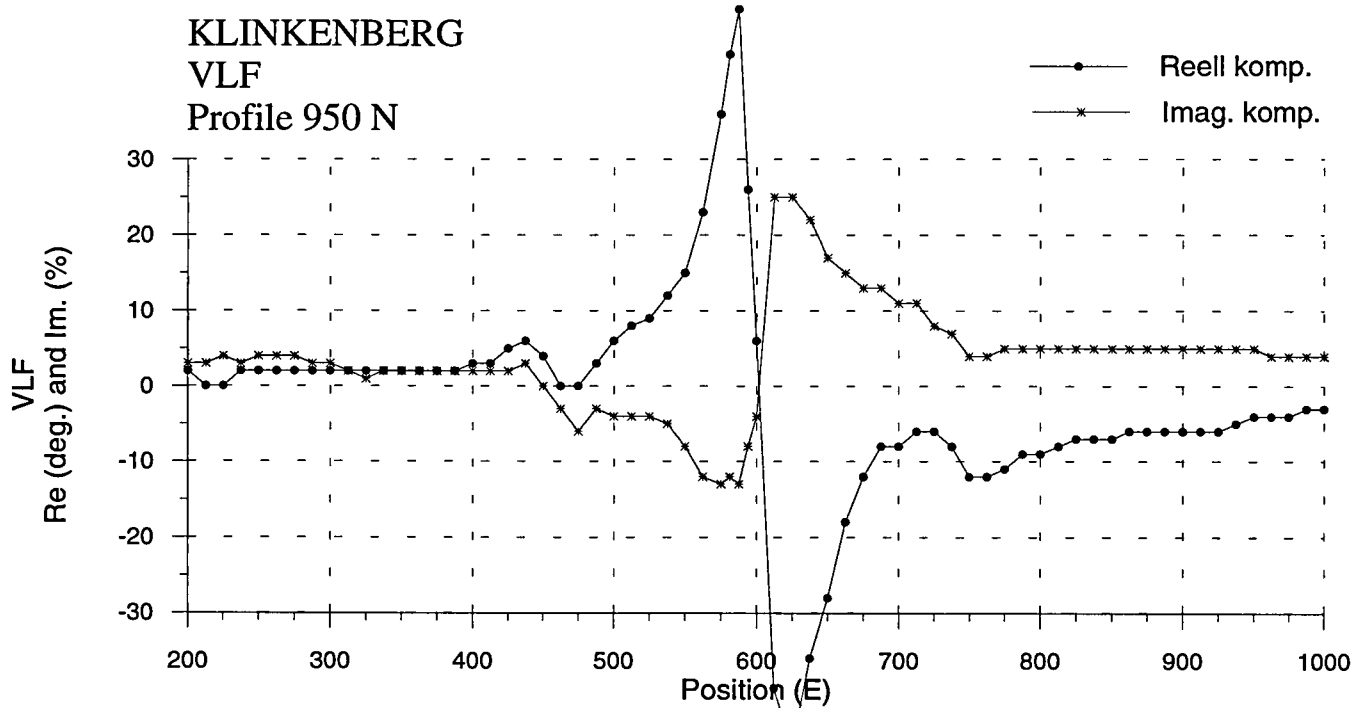
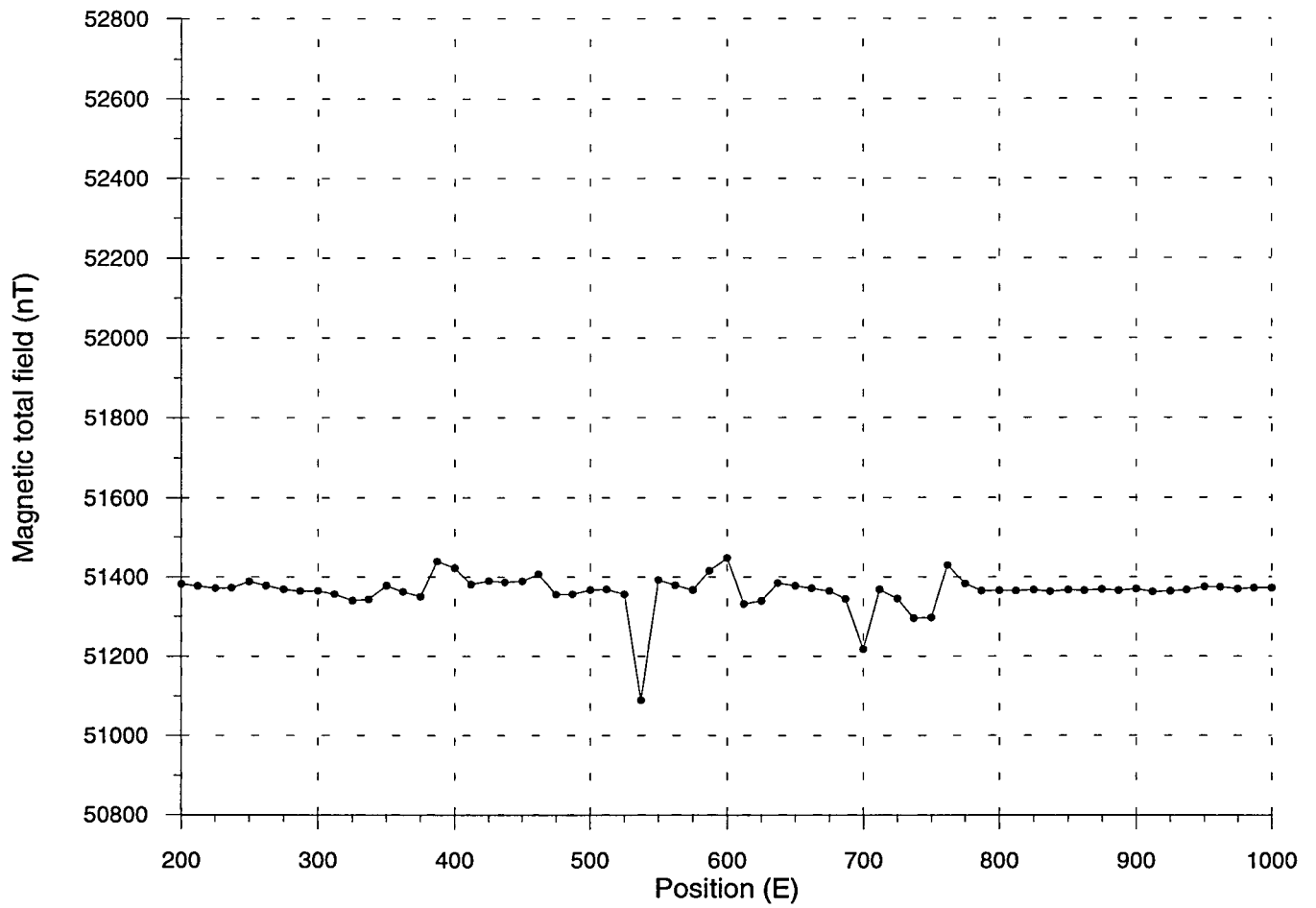


Figure 4b. Magnetic total field and VLF profile 950 N.

KLINKENBERG
Slingram MaxMin
Profile 1050 N

Tx ----- Rx 100m

—●— Reell komp.
- - * - - Imag. komp.

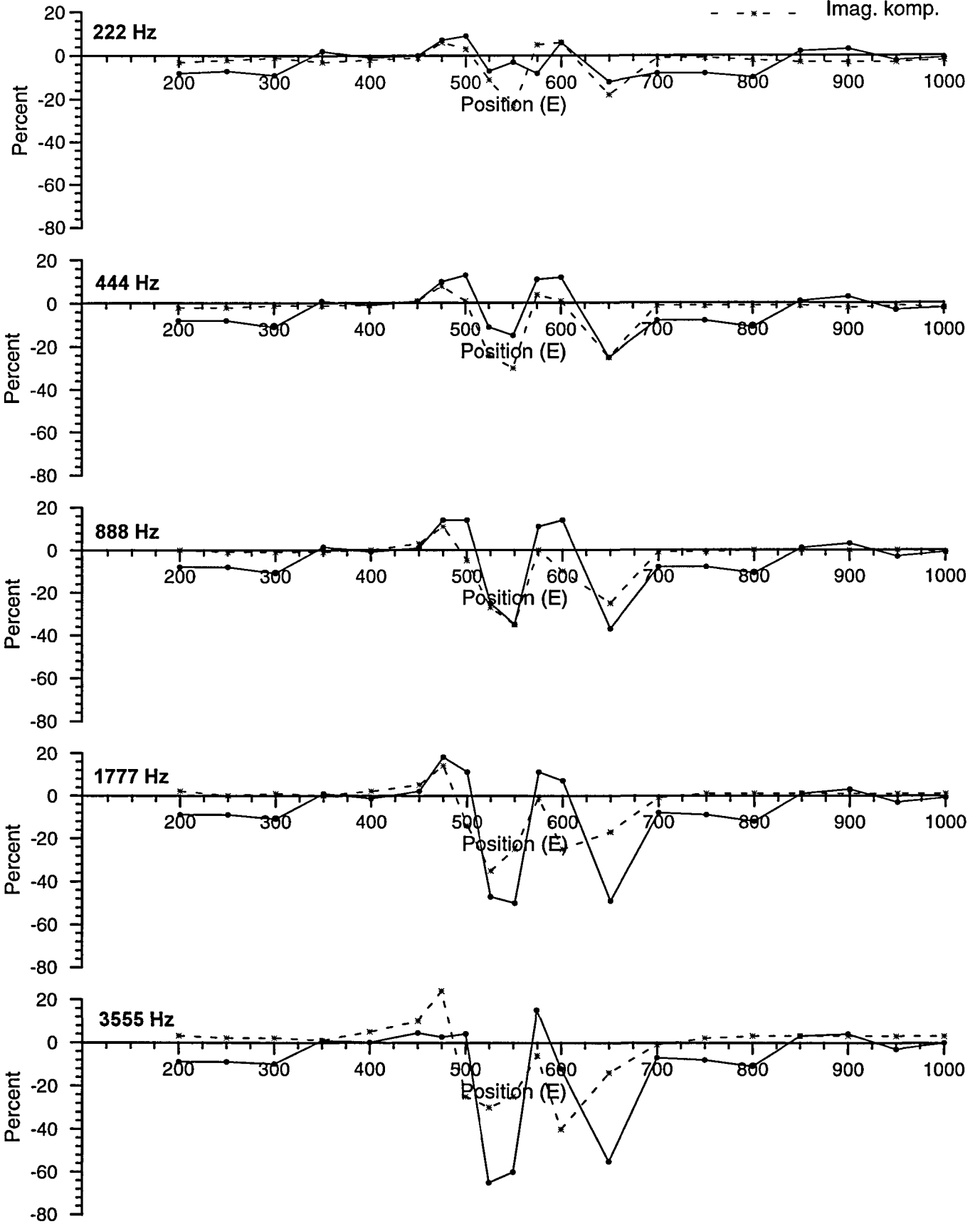


Figure 5a. Slingram MaxMin profile 1050 N.

KLINKENBERG
Magnetic total field
Profile 1050 N

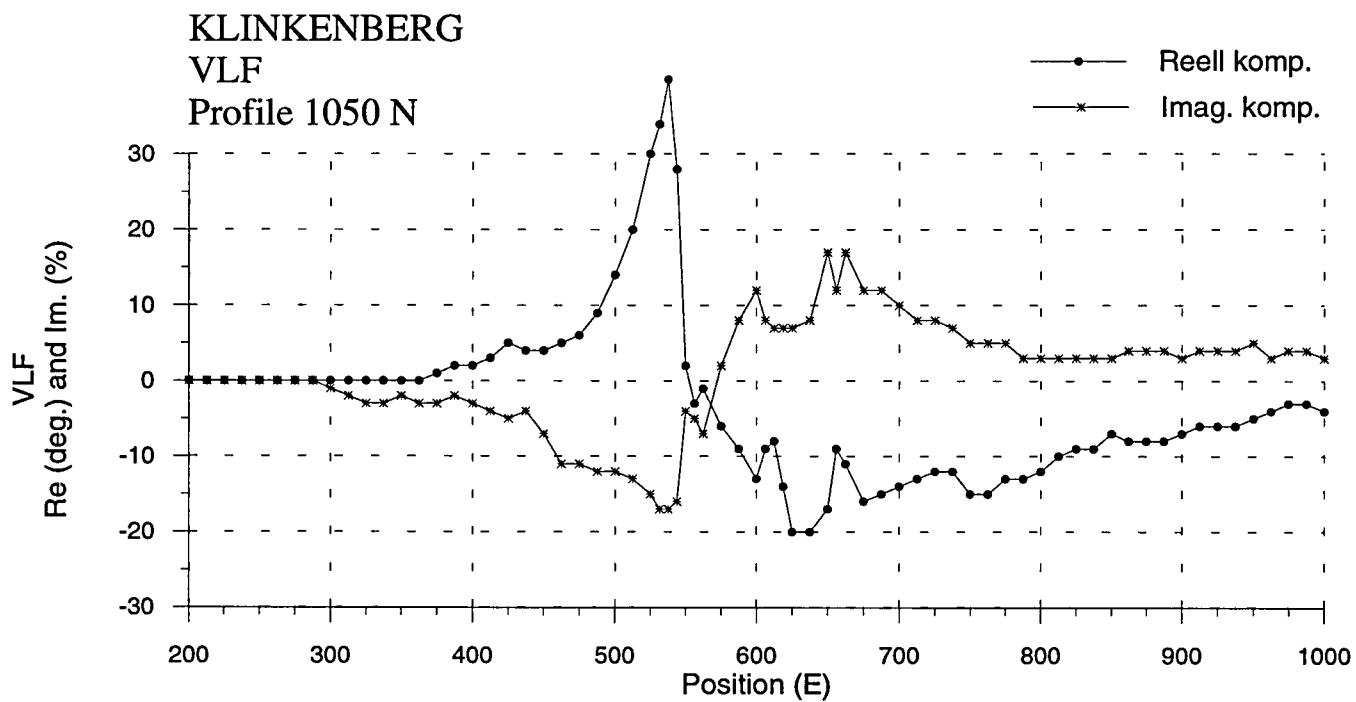
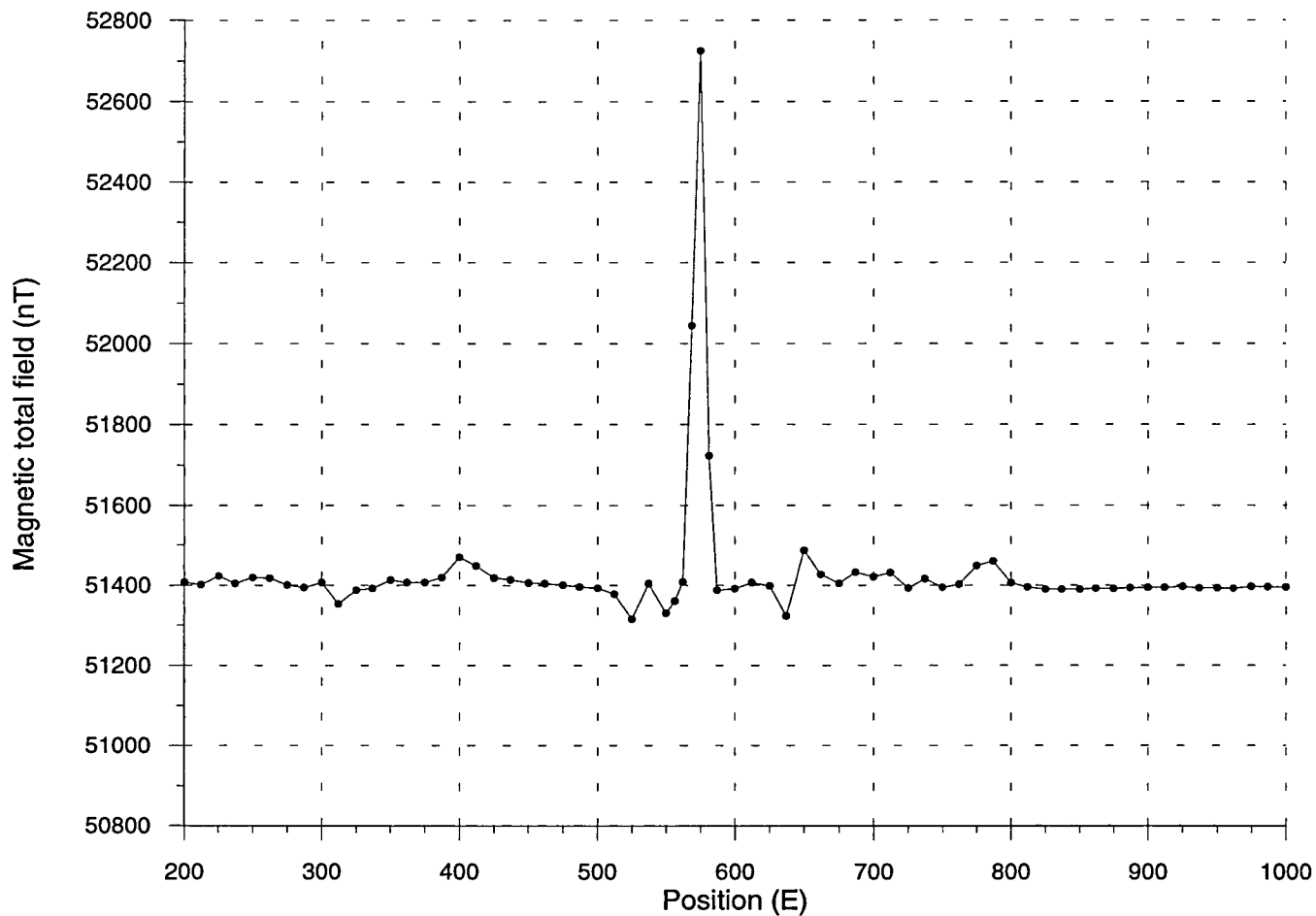


Figure 5b. Magnetic total field and VLF profile 1050 N.

KLINKENBERG
Slingram MaxMin
Profile 1150 N

Tx ----- Rx 100m

—●— Reell komp.
- - * - - Imag. komp.

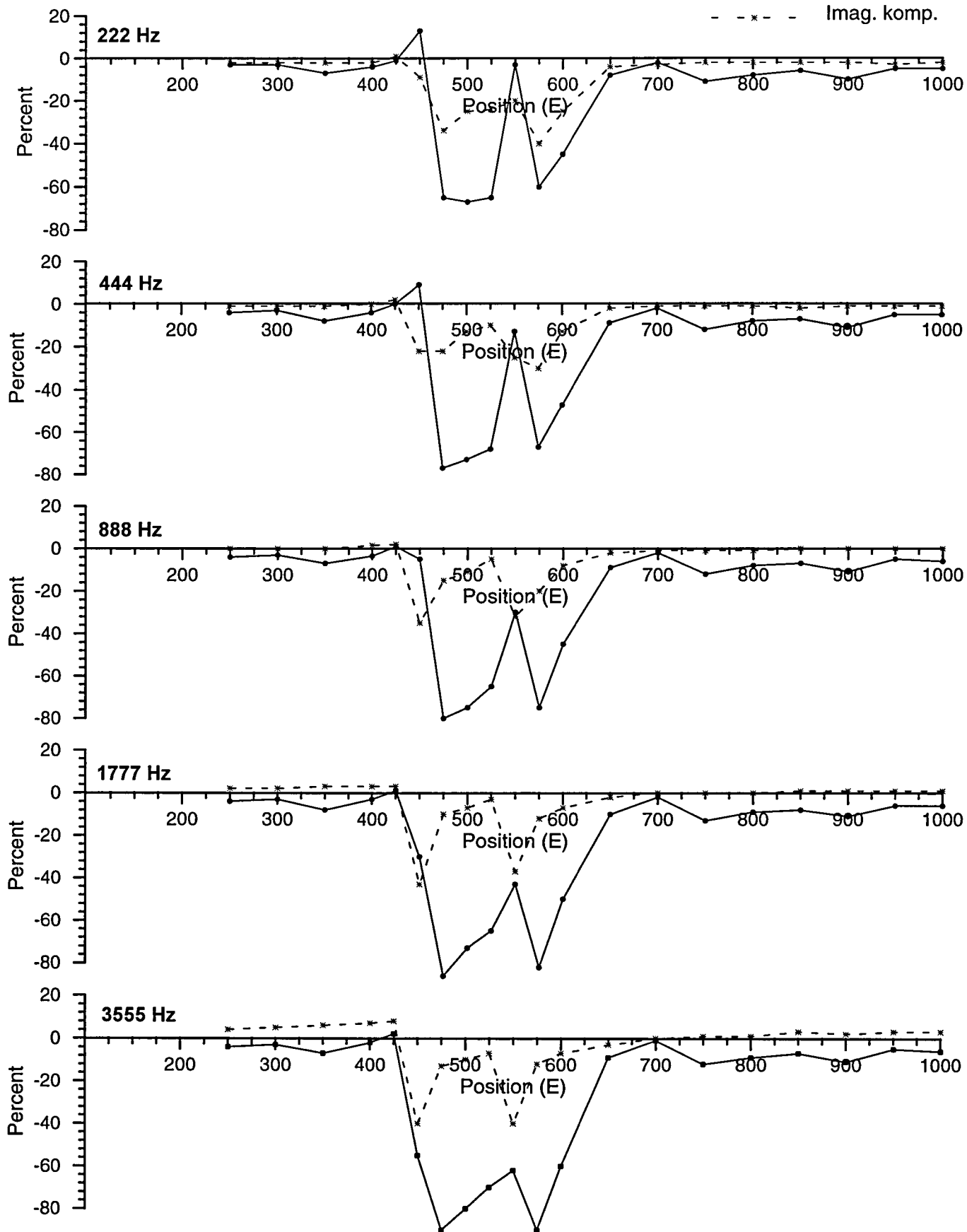
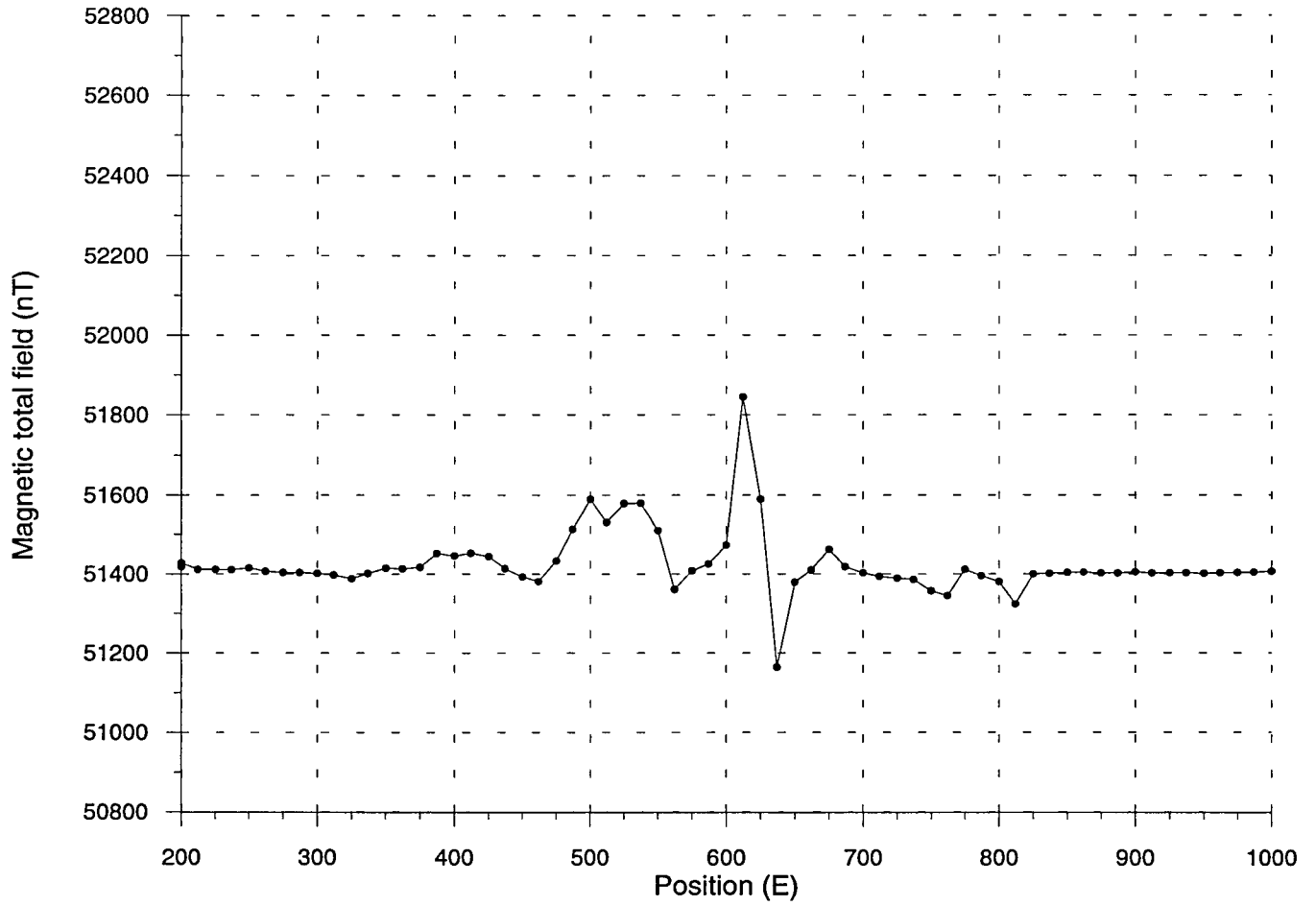


Figure 6a. Slingram MaxMin profile 1150 N.

KLINKENBERG
Magnetic total field
Profile 1150 N



KLINKENBERG
VLF
Profile 1150 N

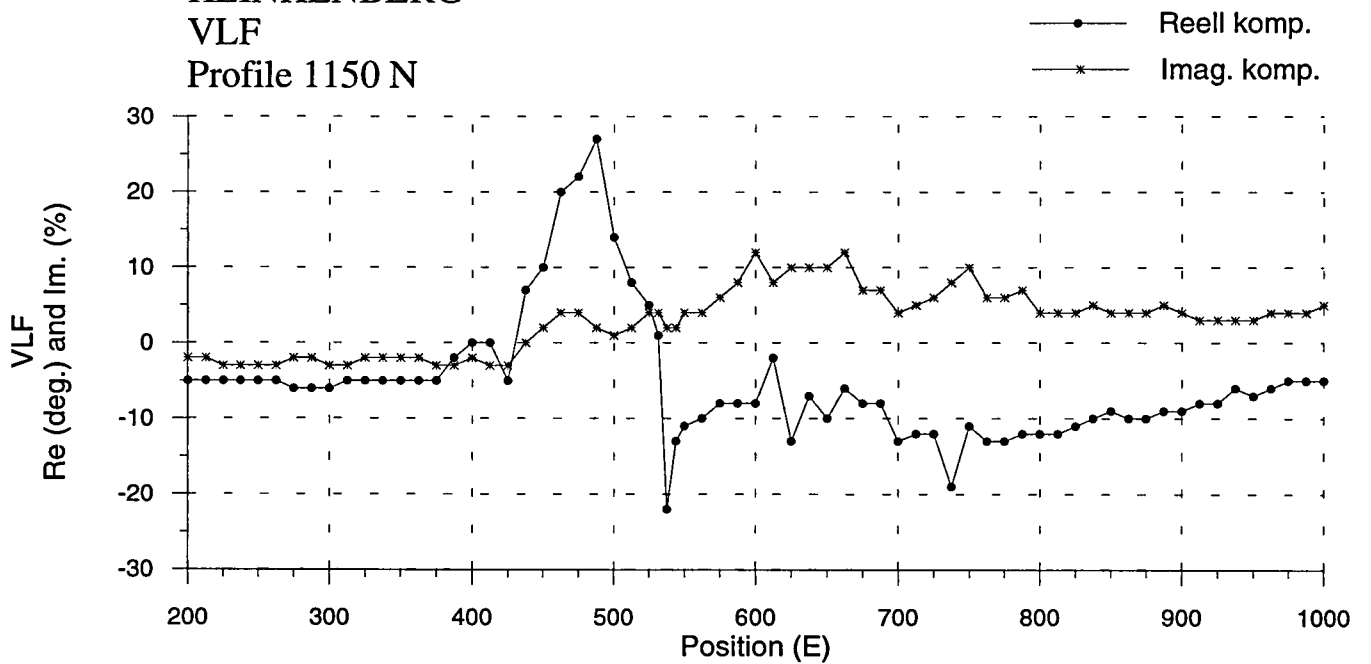


Figure 6b. Magnetic total field and VLF profile 1150 N.

KLINKENBERG
Slingram MaxMin
Profile 1250 N

Tx ----- Rx 100m

—●— Reell komp.
- - * - - Imag. komp.

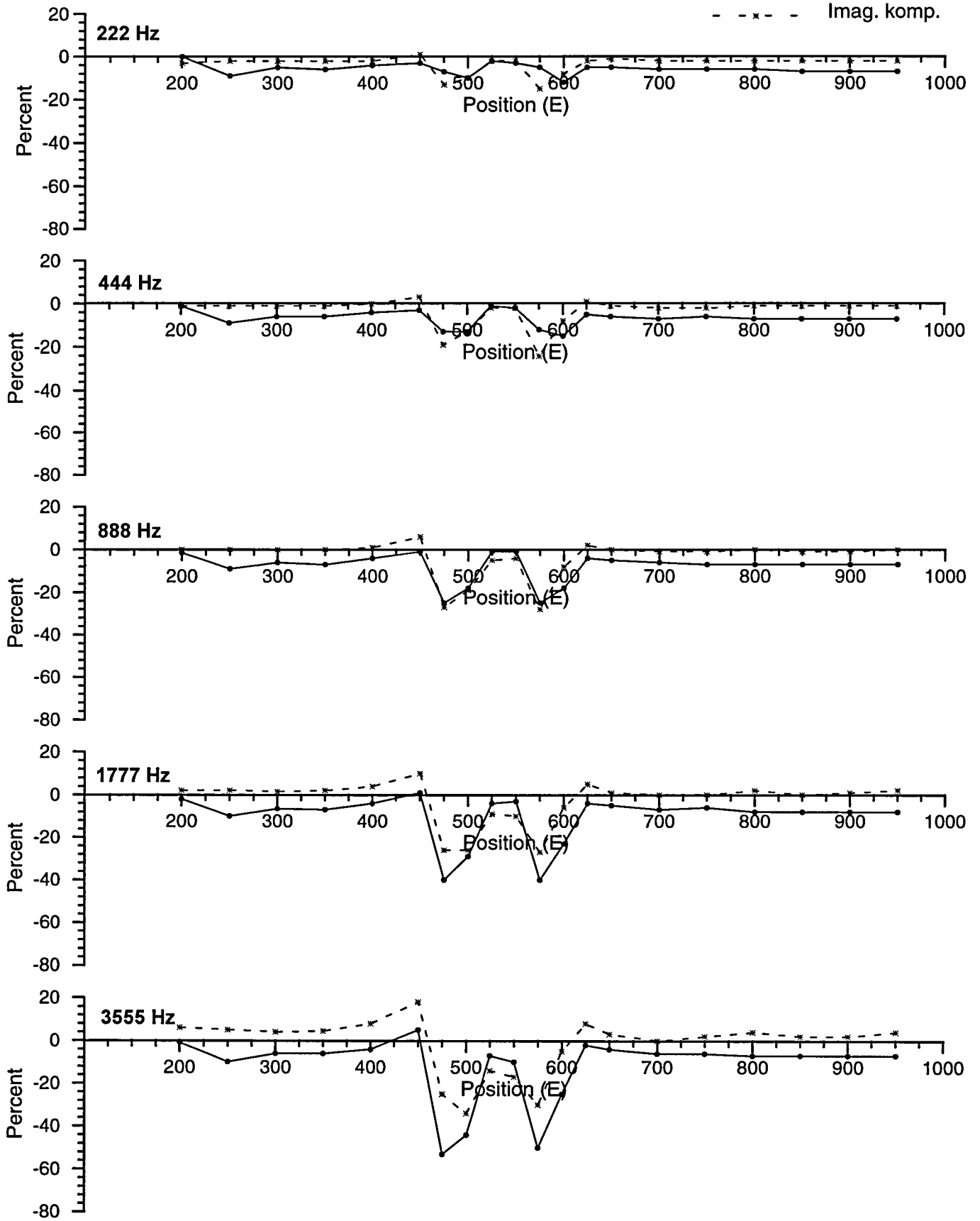
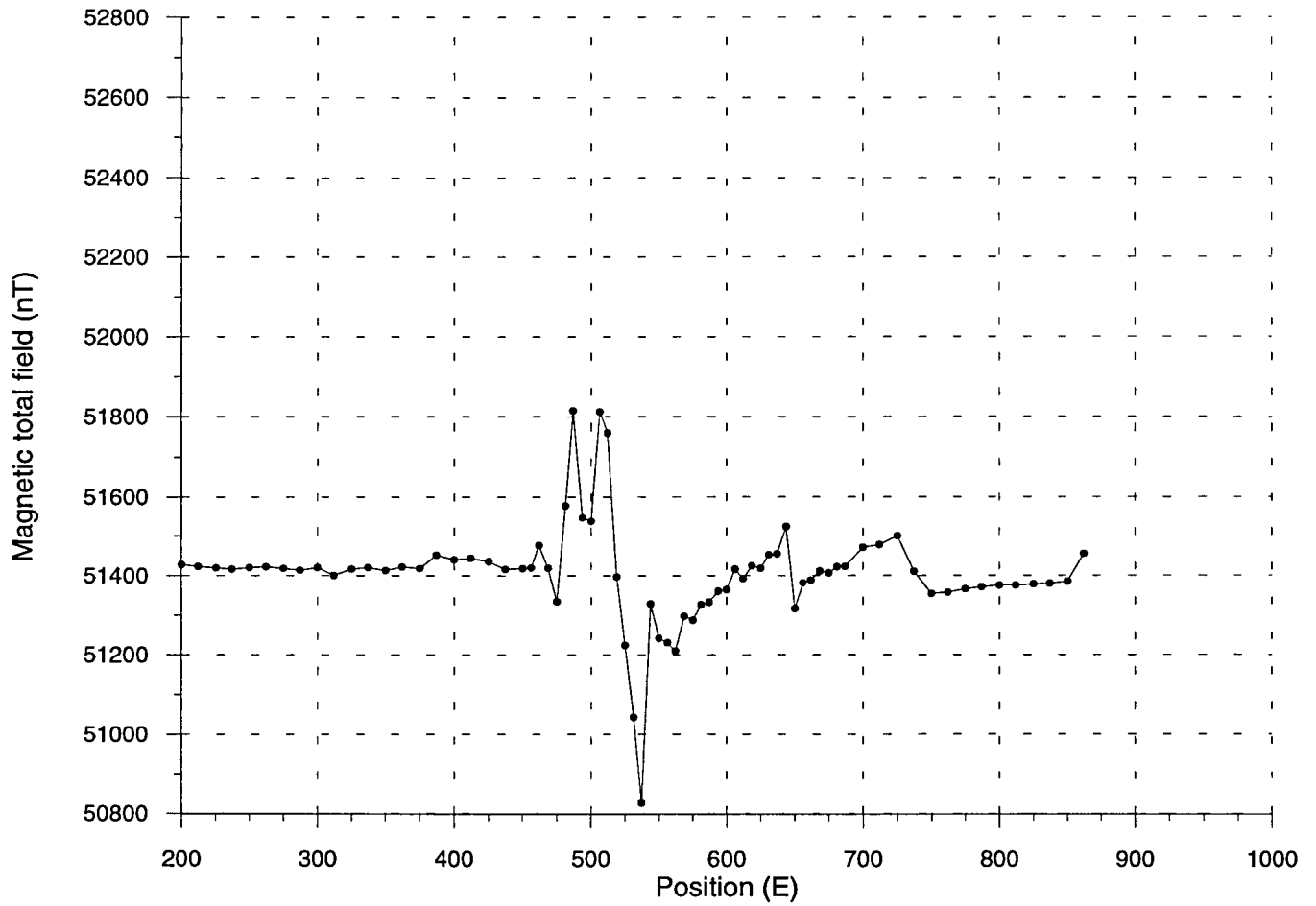


Figure 7a. Slingram MaxMin profile 1250 N.

KLINKENBERG
Magnetic total field
Profile 1250 N



KLINKENBERG
VLF
Profile 1250 N

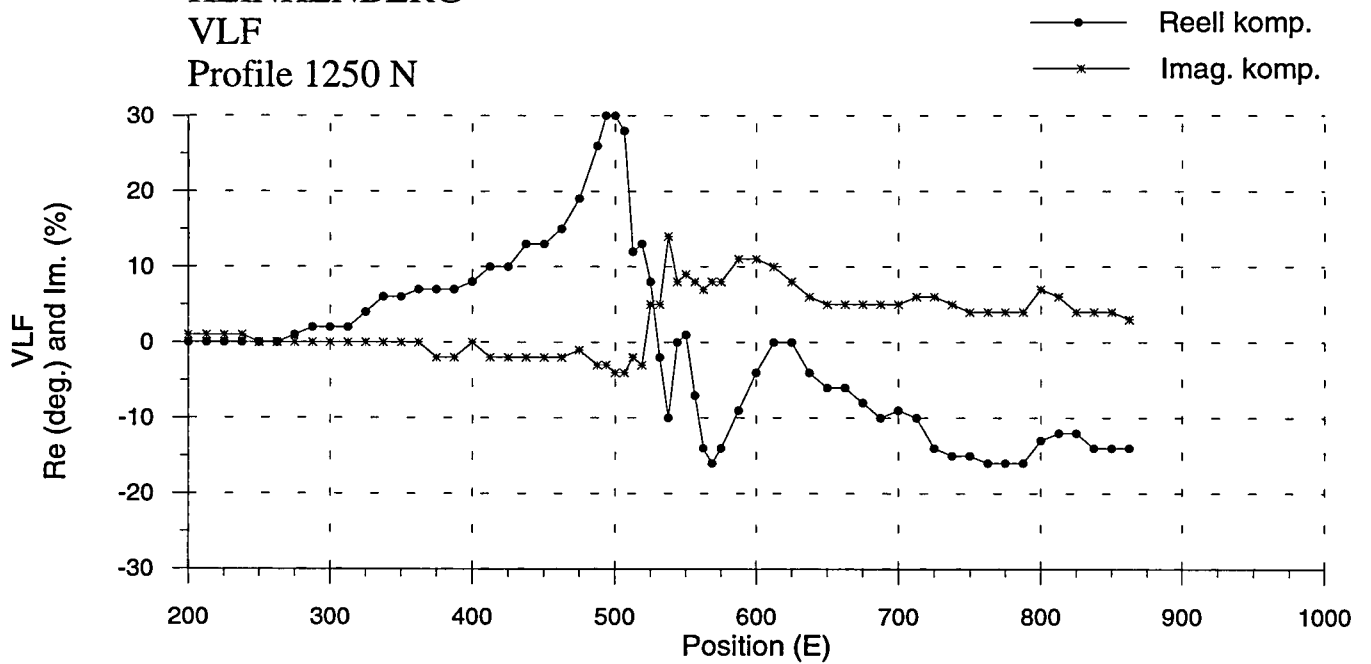


Figure 7b. Magnetic total field and VLF profile 1250 N.

KLINKENBERG
Slingram MaxMin
Profile 1350 N

Tx ----- Rx 100m

—●— Reell komp.
- - * - - Imag. komp.

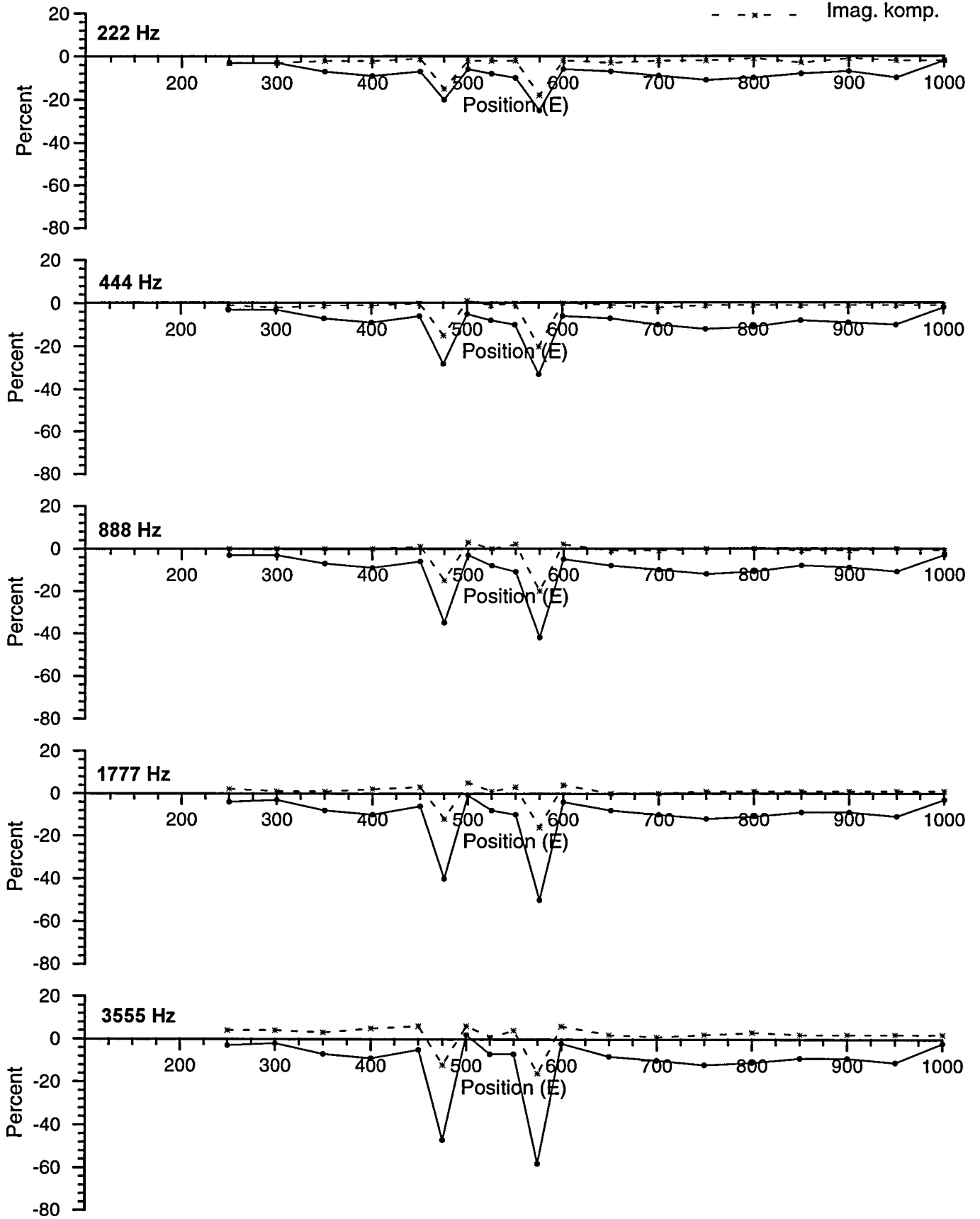
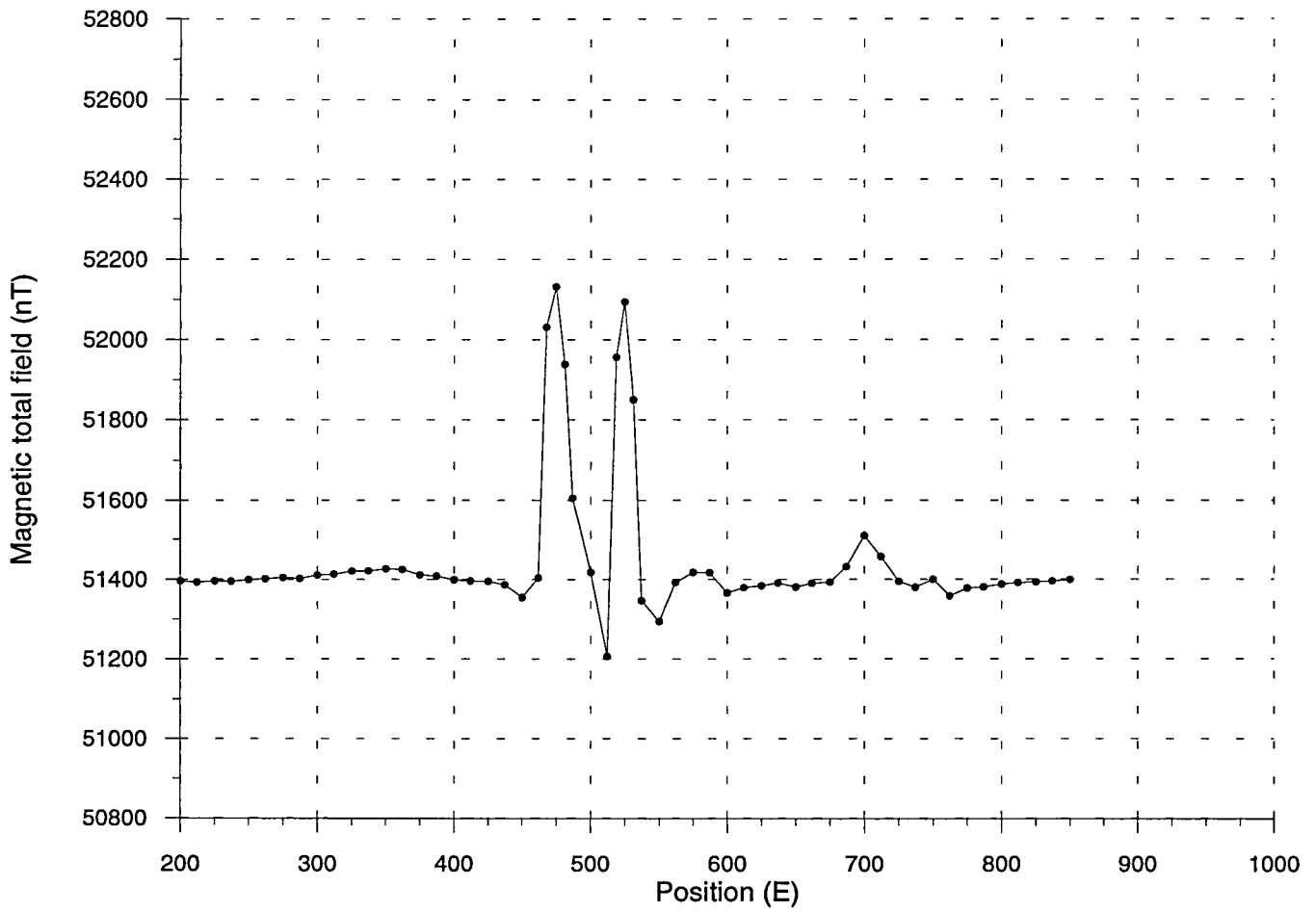


Figure 8a. Slingram MaxMin profile 1350 N.

KLINKENBERG
Magnetic total field
Profile 1350 N



KLINKENBERG
VLF
Profile 1350 N

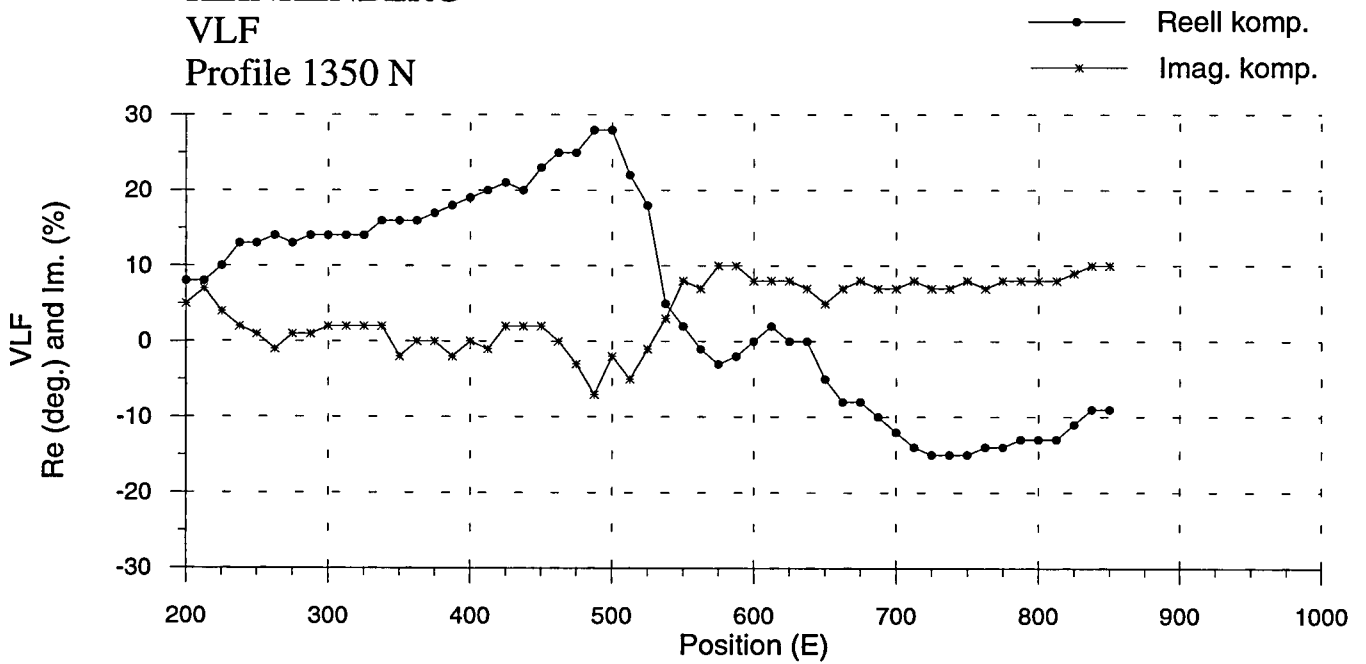


Figure 8b. Magnetic total field and VLF profile 1350 N.

KLINKENBERG
Slingram MaxMin
Profile 1450 N

Tx ----- Rx 100m

—●— Reell komp.
- - * - - Imag. komp.

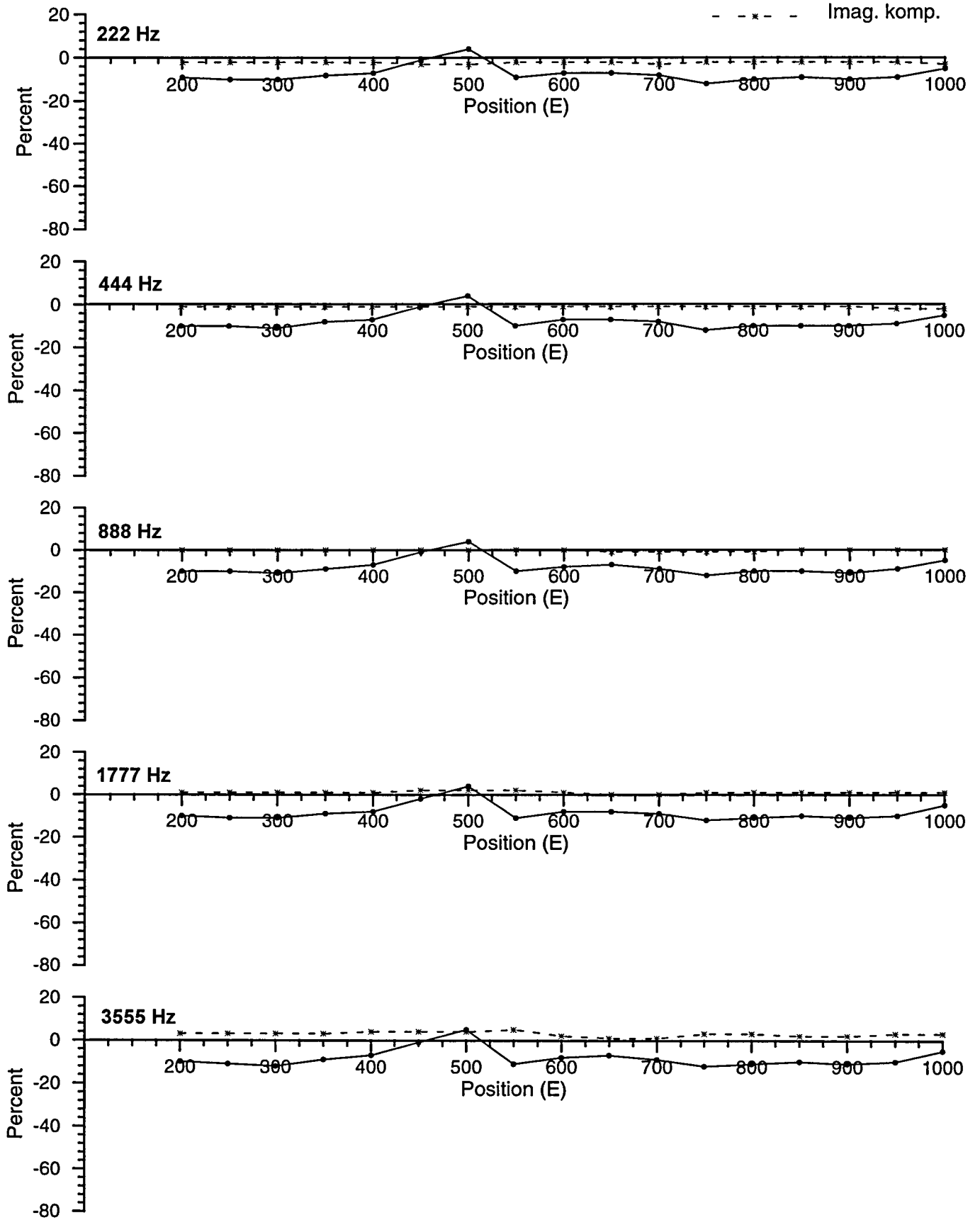
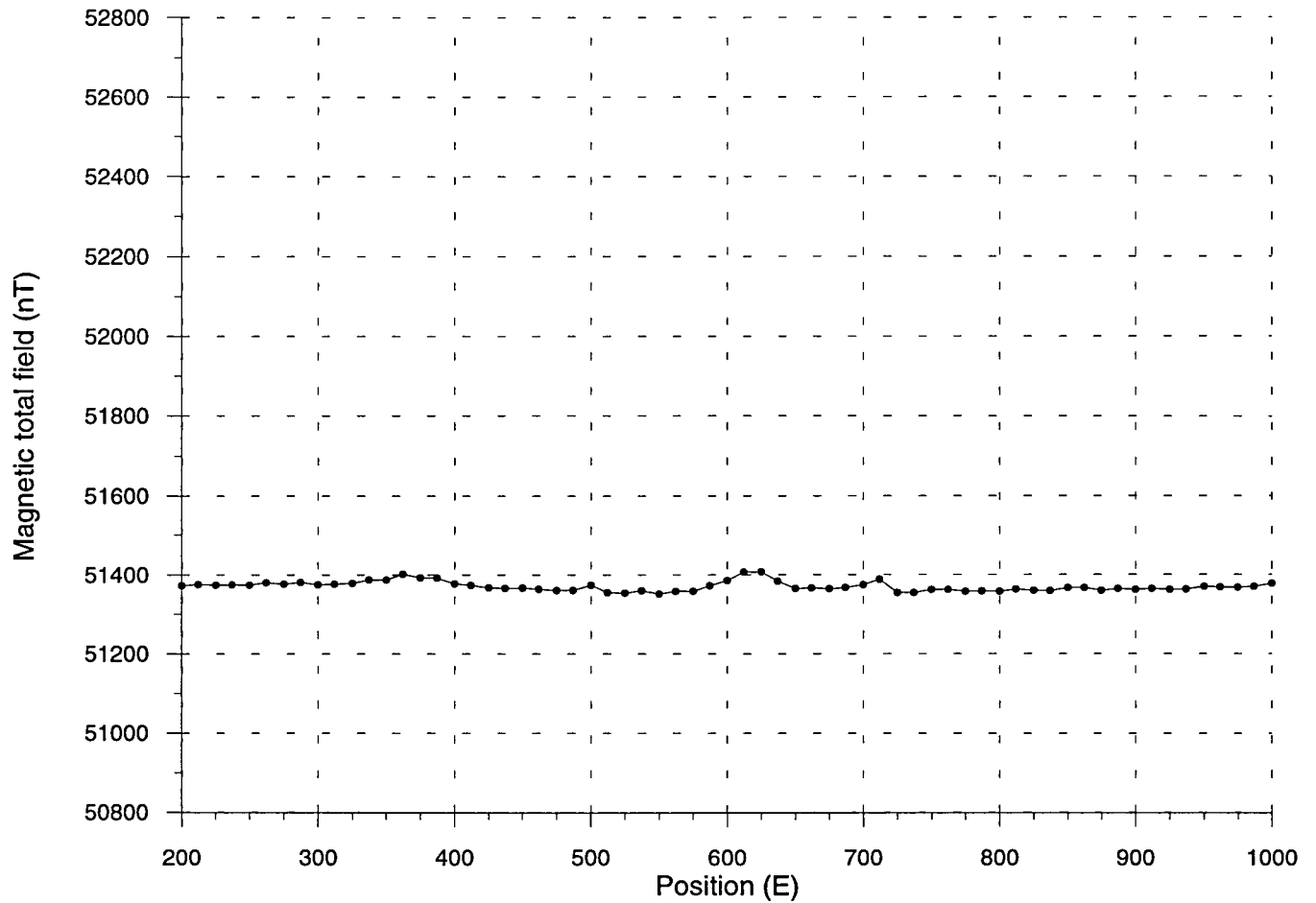


Figure 9a. Slingram MaxMin profile 1450 N.

KLINKENBERG
Magnetic total field
Profile 1450 N



KLINKENBERG
VLF
Profile 1450 N

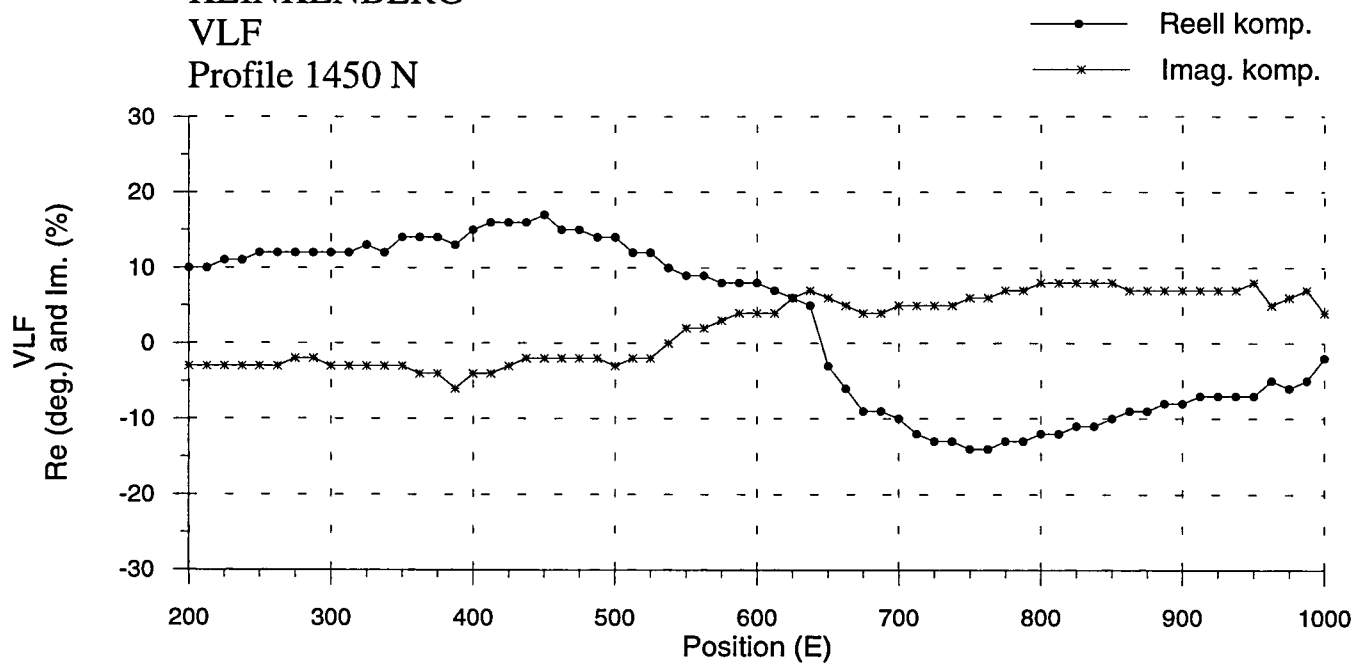


Figure 9b. Magnetic total field and VLF profile 1450 N.

KLINKENBERG
Slingram MaxMin
Profile 1550 N

Tx ----- Rx 100m

—●— Reell komp.
- - * - - Imag. komp.

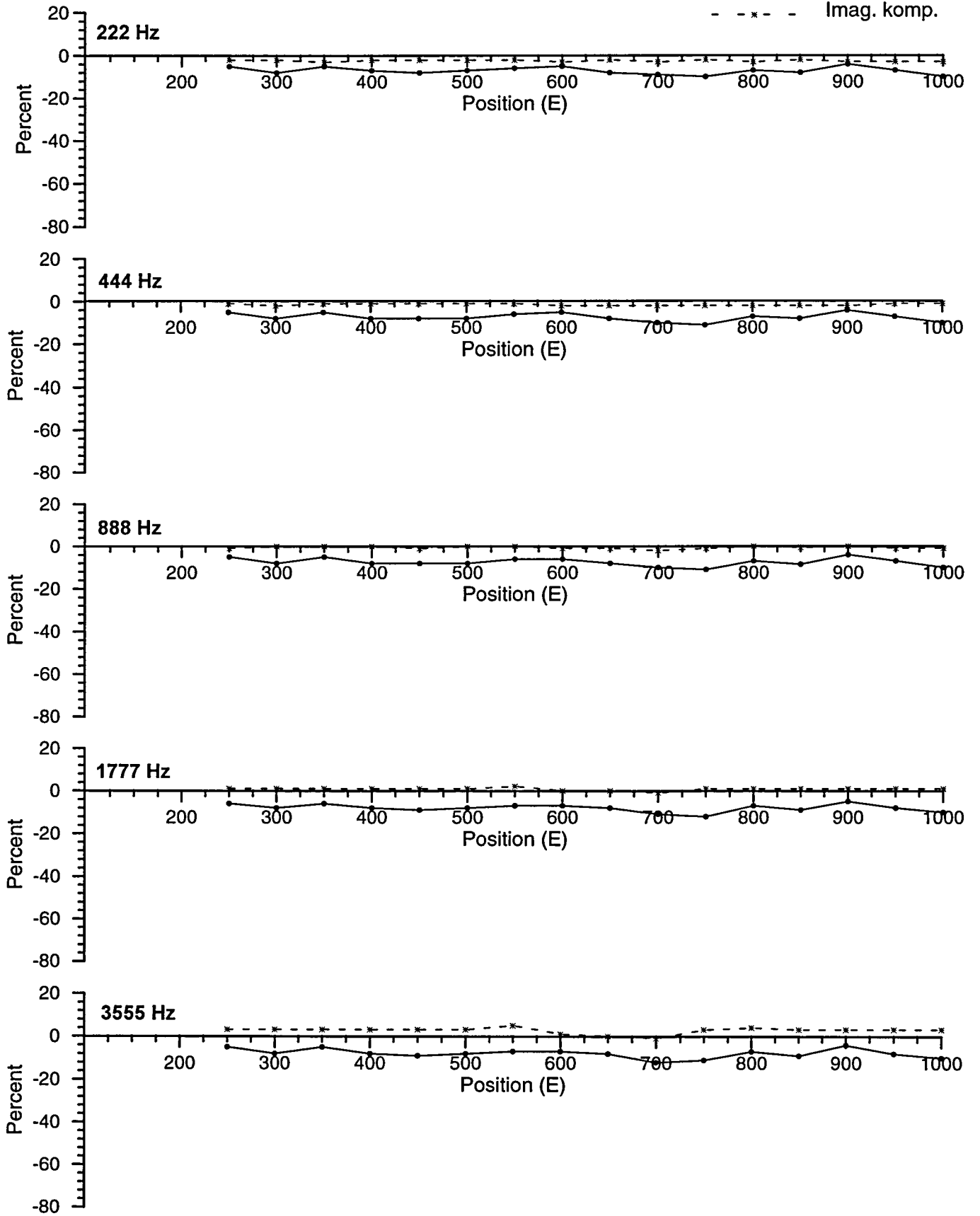
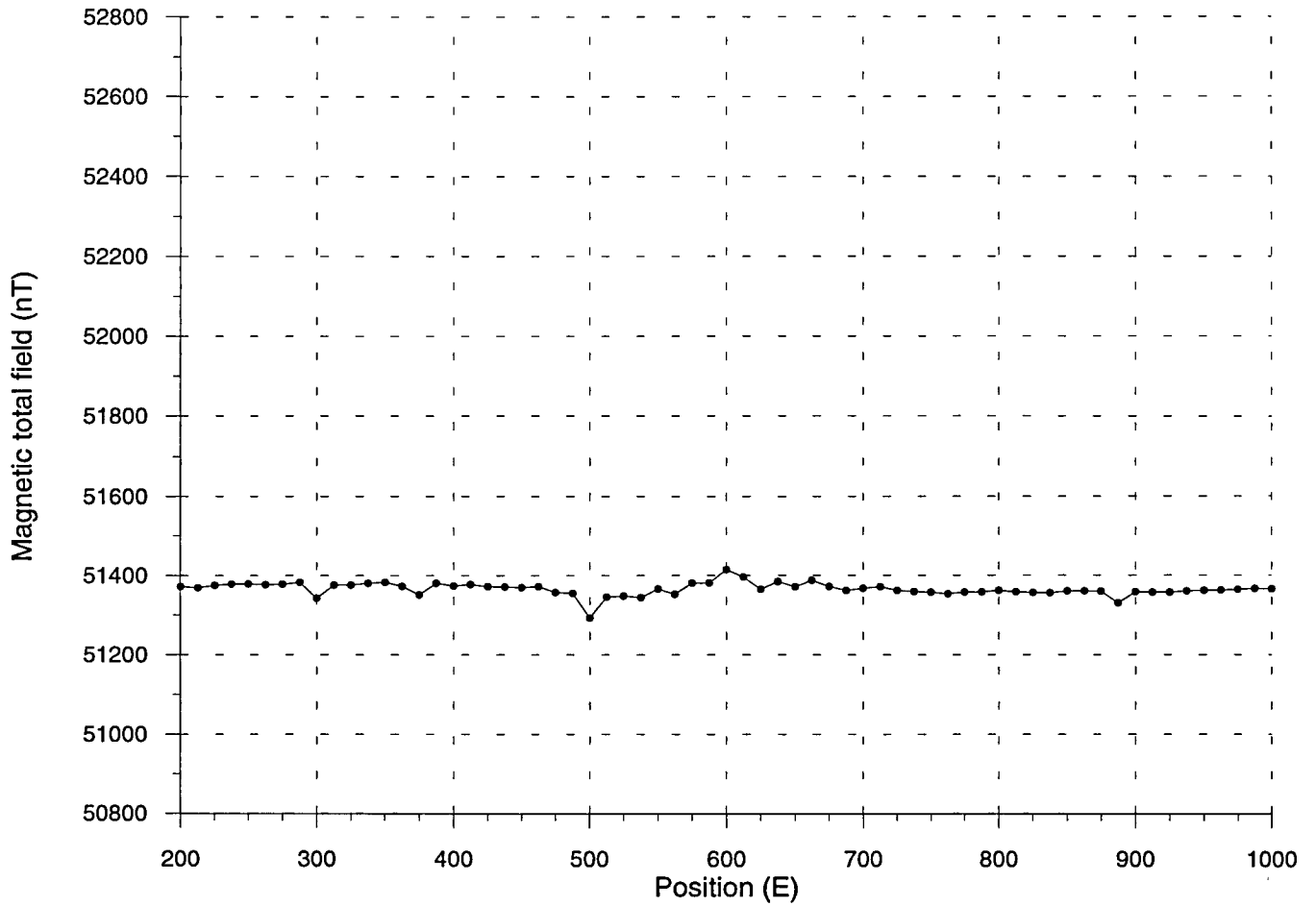


Figure 10a. Slingram MaxMin profile 1550 N.

KLINKENBERG
Magnetic total field
Profile 1550 N



KLINKENBERG
VLF
Profile 1550 N

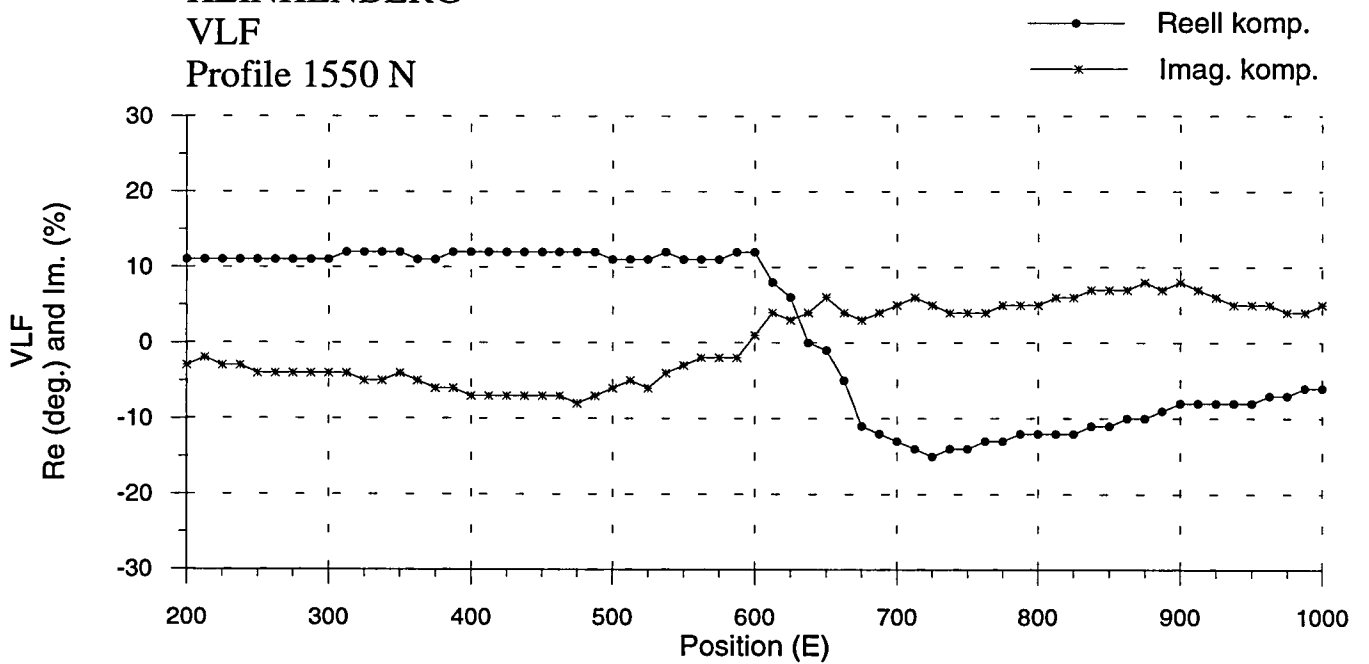


Figure 10b. Magnetic total field and VLF profile 1550 N.

KLINKENBERG
Slingram MaxMin
Profile 1650 N

Tx ----- Rx 100m

—●— Reell komp.
- - * - - Imag. komp.

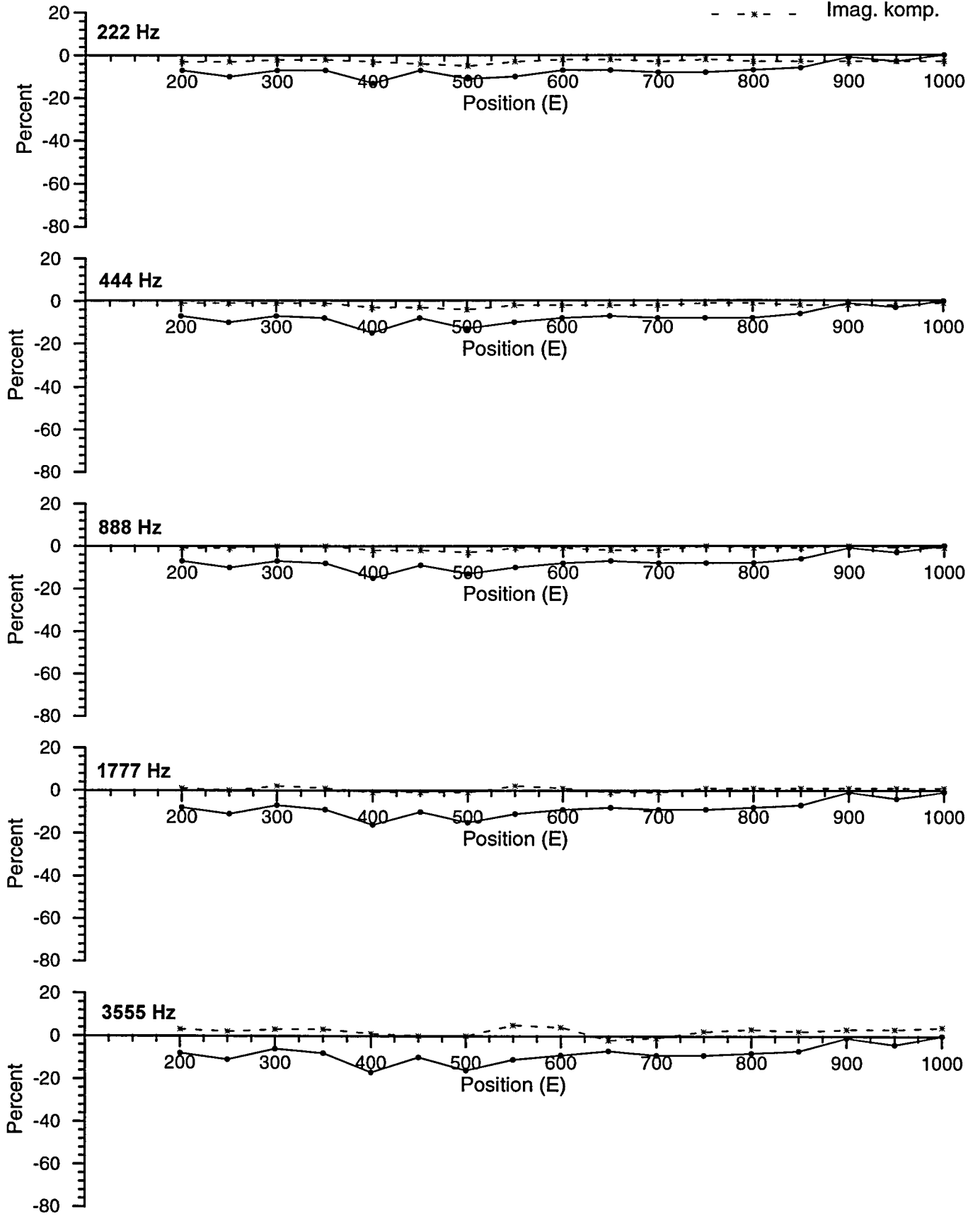
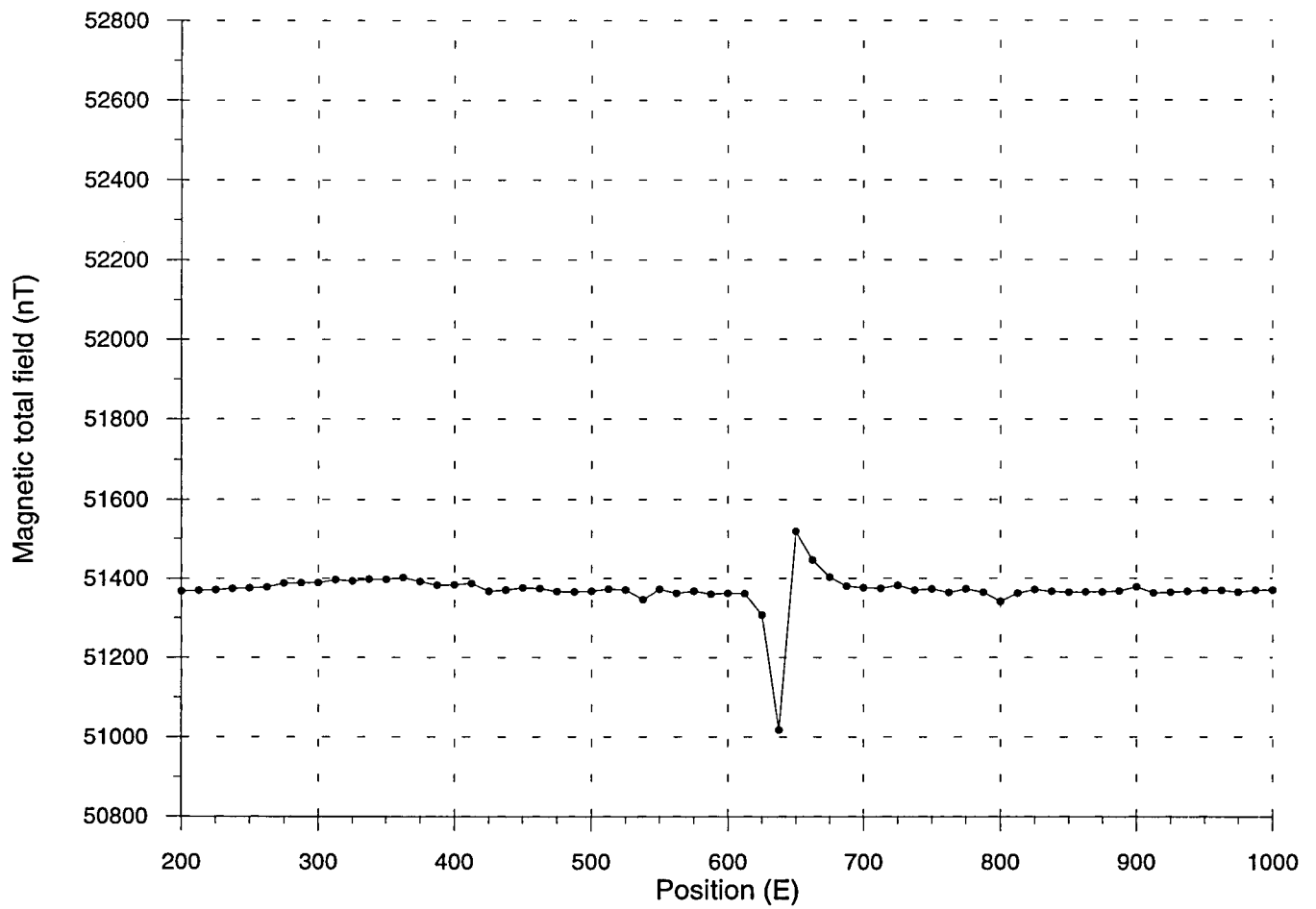


Figure 11a. Slingram MaxMin profile 1650 N.

KLINKENBERG
Magnetic total field
Profile 1650 N



KLINKENBERG
VLF
Profile 1650 N

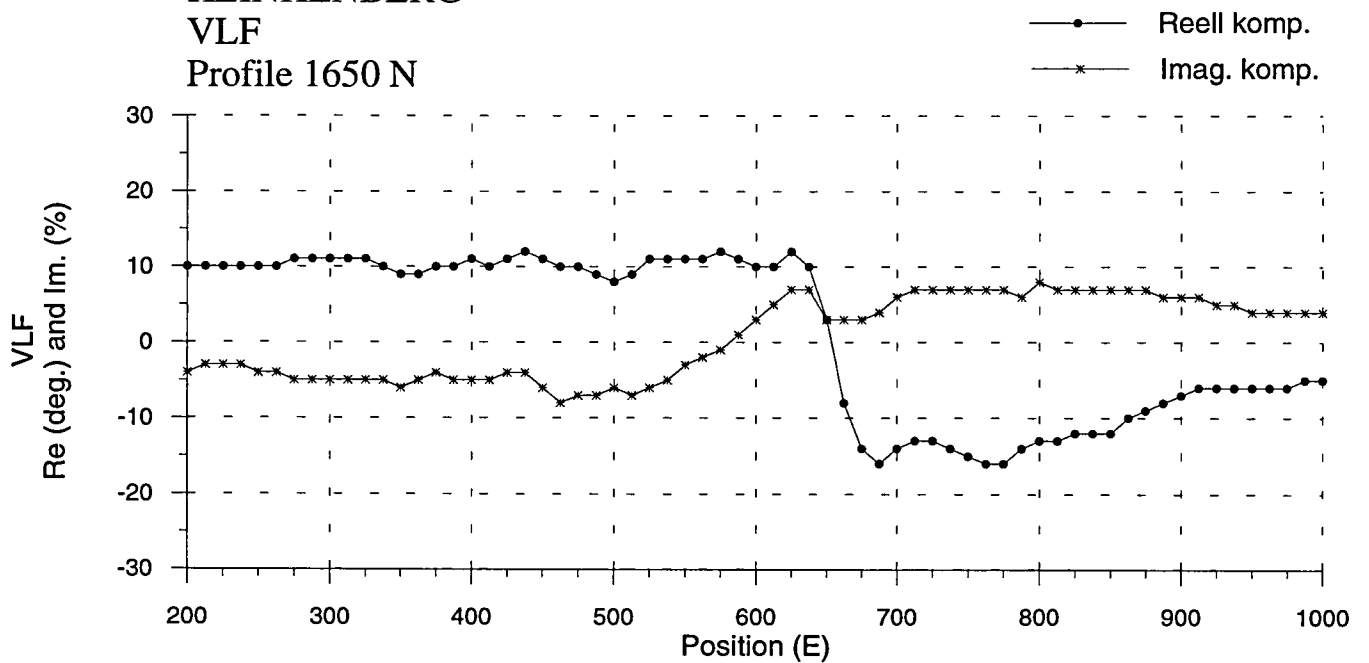


Figure 11b. Magnetic total field and VLF profile 1650 N.

KLINKENBERG
Slingram MaxMin
Profile 1750 N

Tx ----- Rx 100m

—●— Reell komp.
- - * - - Imag. komp.

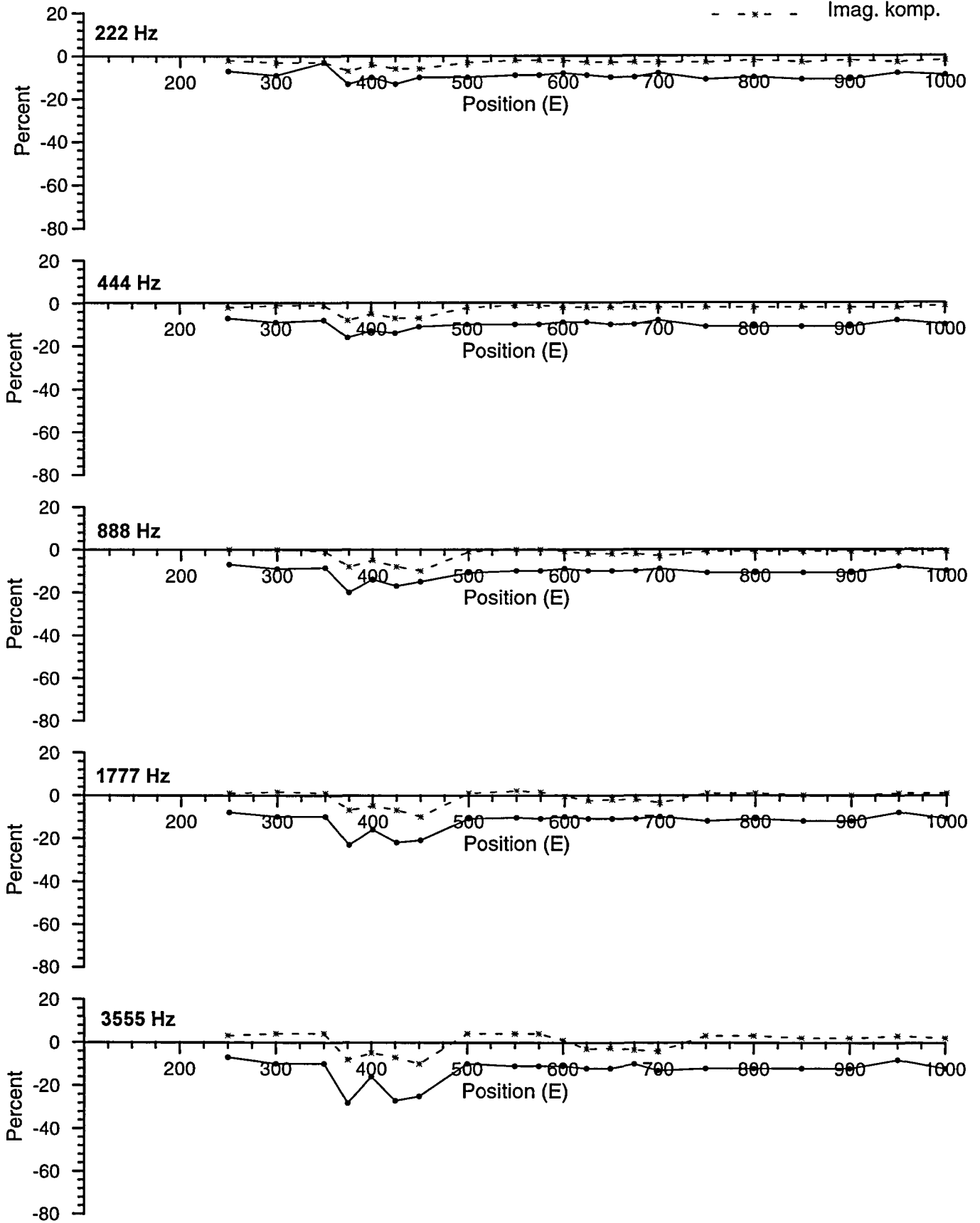
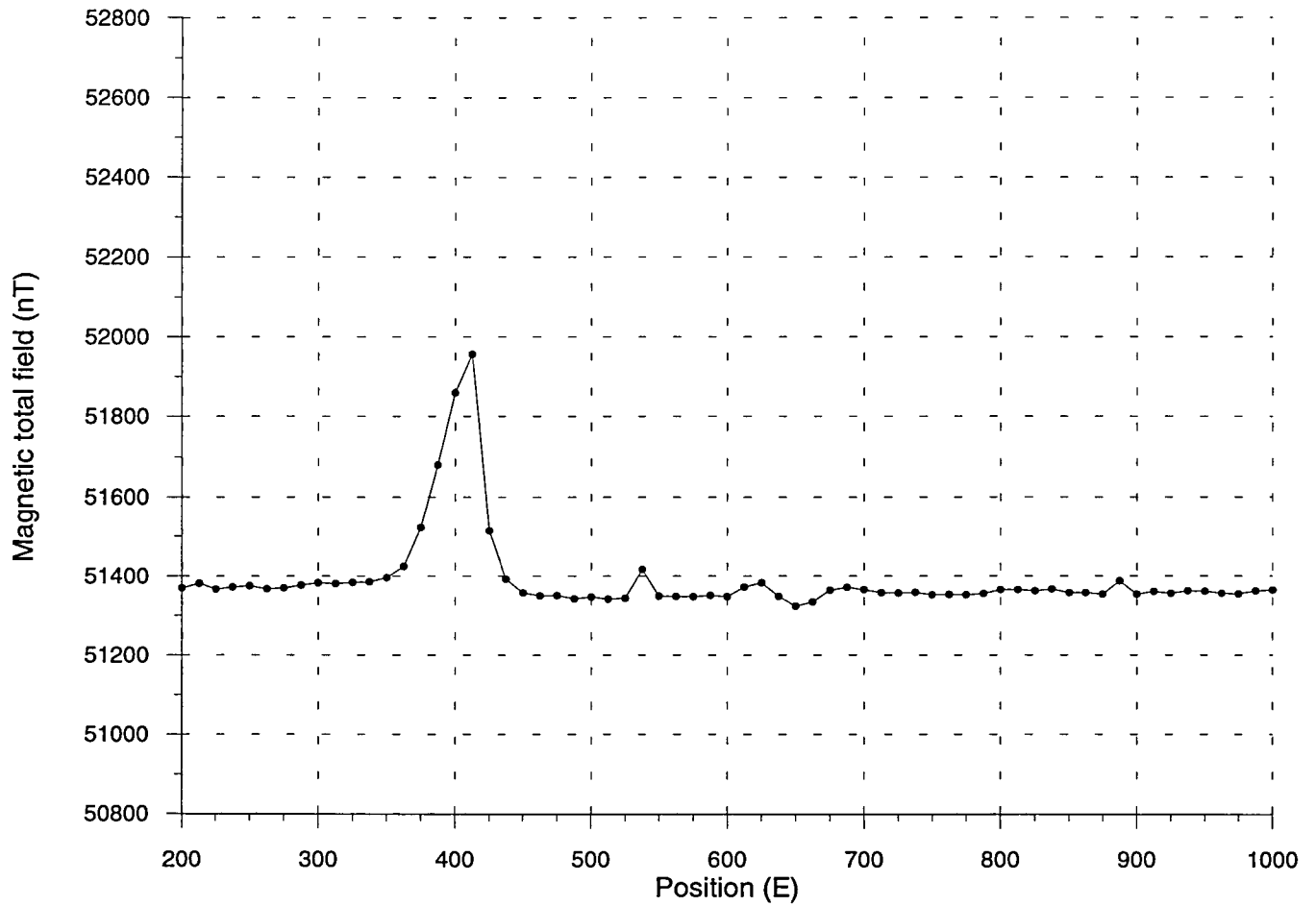


Figure 12a. Slingram MaxMin profile 1750 N.

KLINKENBERG
Magnetic total field
Profile 1750 N



KLINKENBERG
VLF
Profile 1750 N

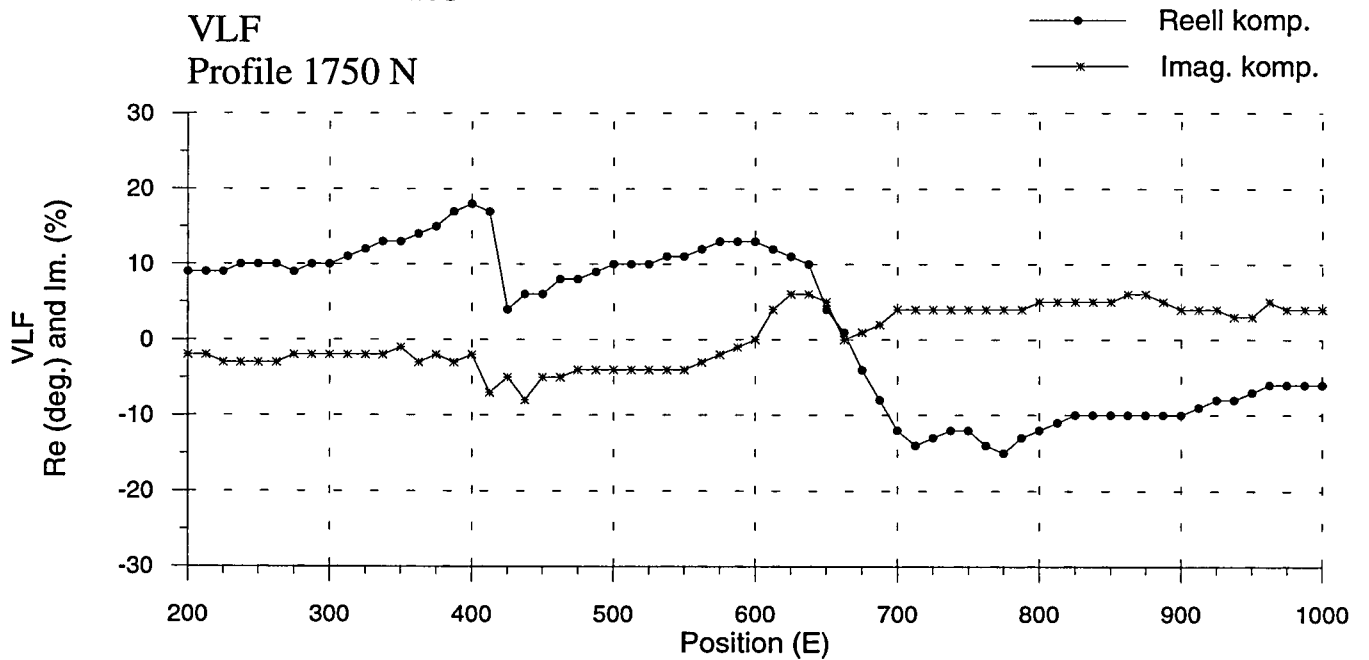


Figure 12b. Magnetic total field and VLF profile 1750 N.

KLINKENBERG
Slingram MaxMin
Profile 1850 N

Tx ----- Rx 100m

—●— Reell komp.
- - * - - Imag. komp.

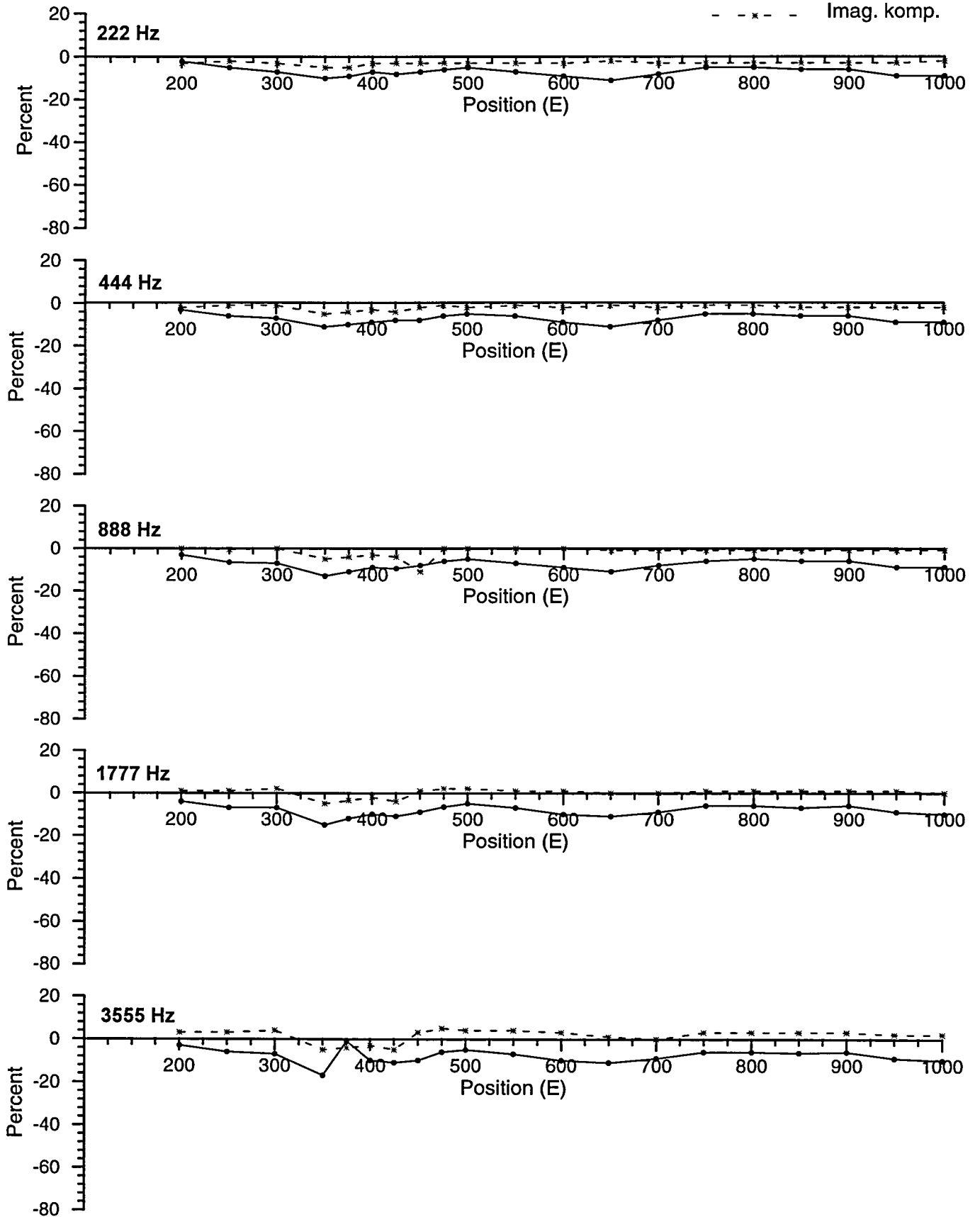
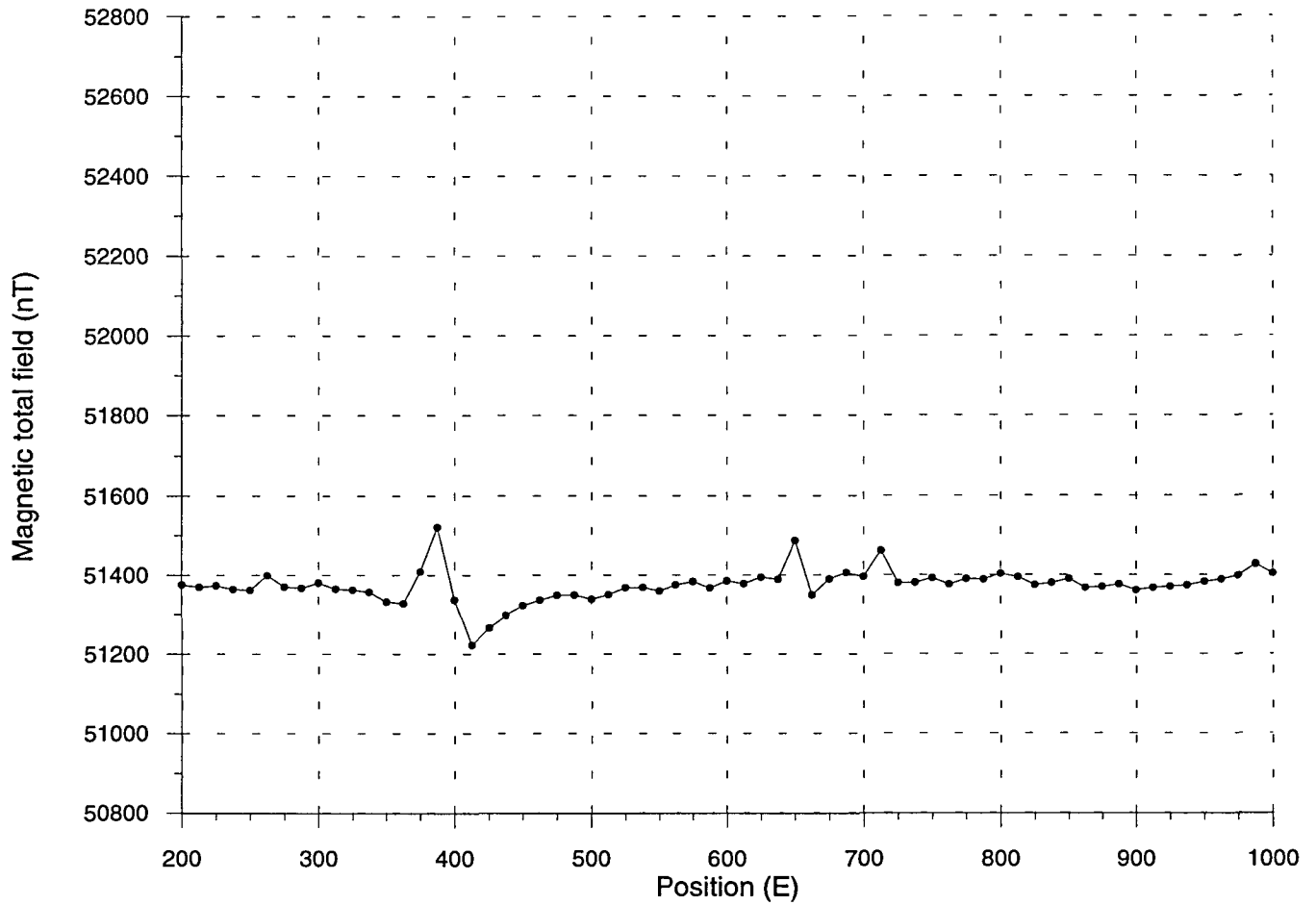


Figure 13a. Slingram MaxMin profile 1850 N.

KLINKENBERG
Magnetic total field
Profile 1850 N



KLINKENBERG
VLF
Profile 1850 N

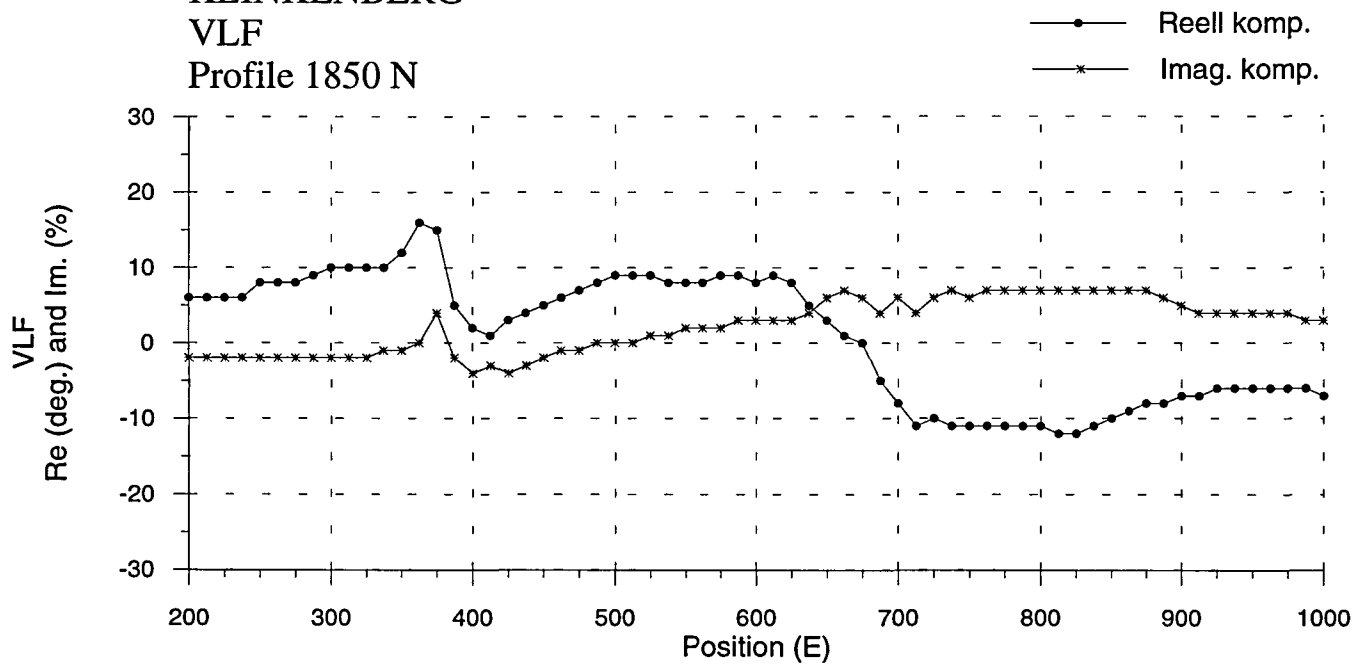


Figure 13b. Magnetic total field and VLF profile 1850 N.

KLINKENBERG
Slingram MaxMin
Profile 1950 N

Tx ----- Rx 100m

—●— Reell komp.
- - * - - Imag. komp.

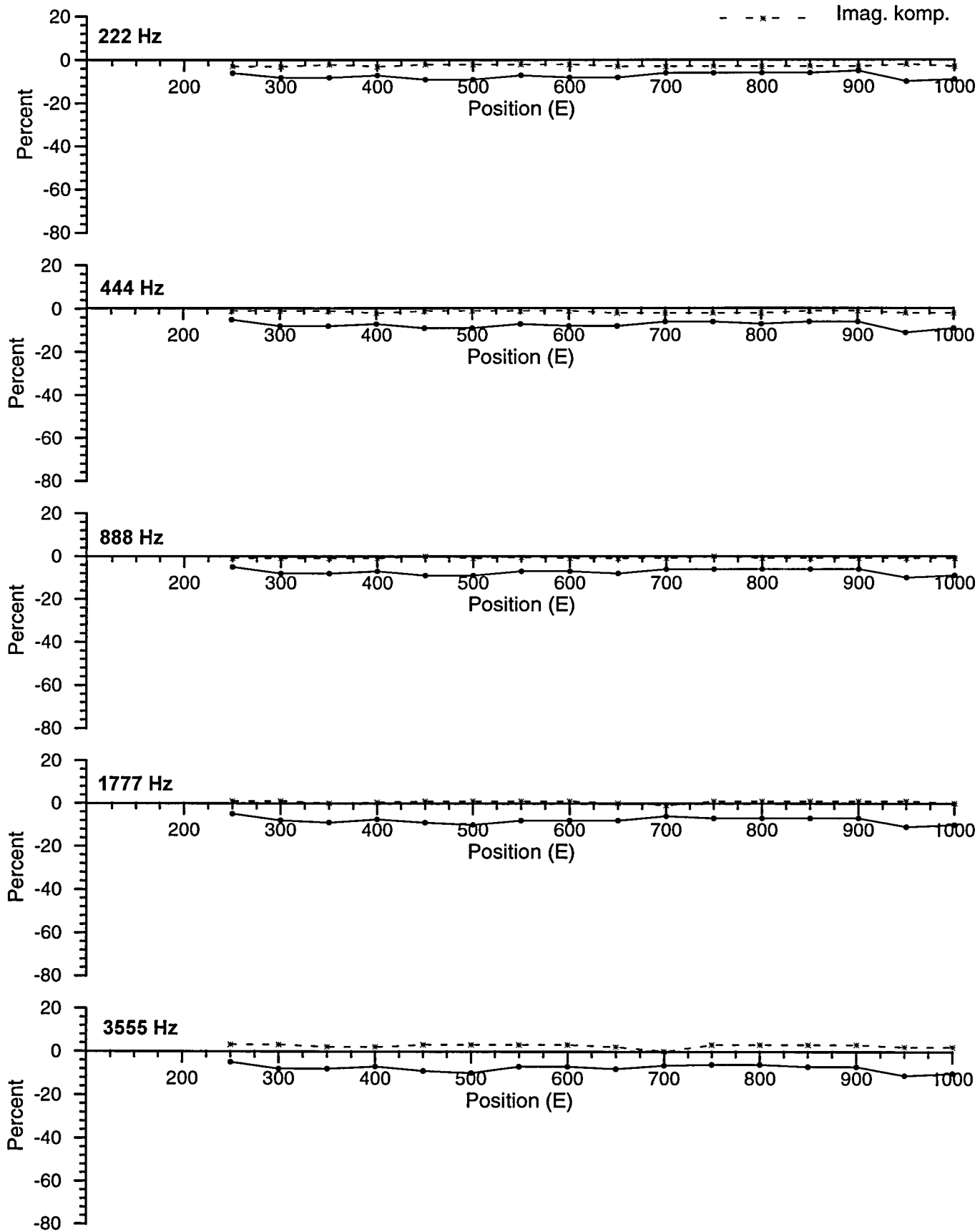
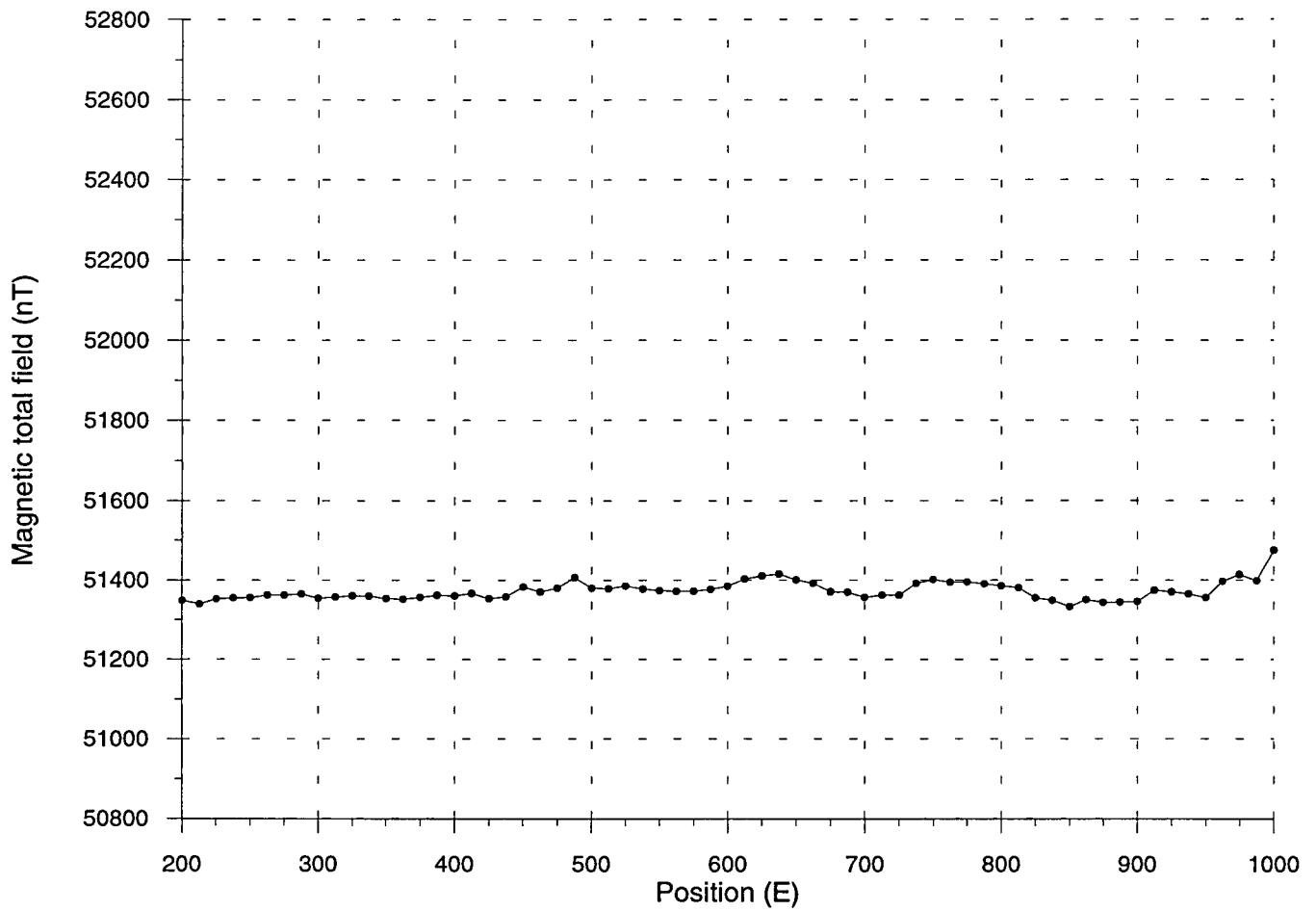


Figure 14a. Slingram MaxMin profile 1950 N.

KLINKENBERG
Magnetic total field
Profile 1950 N



KLINKENBERG
VLF
Profile 1950 N

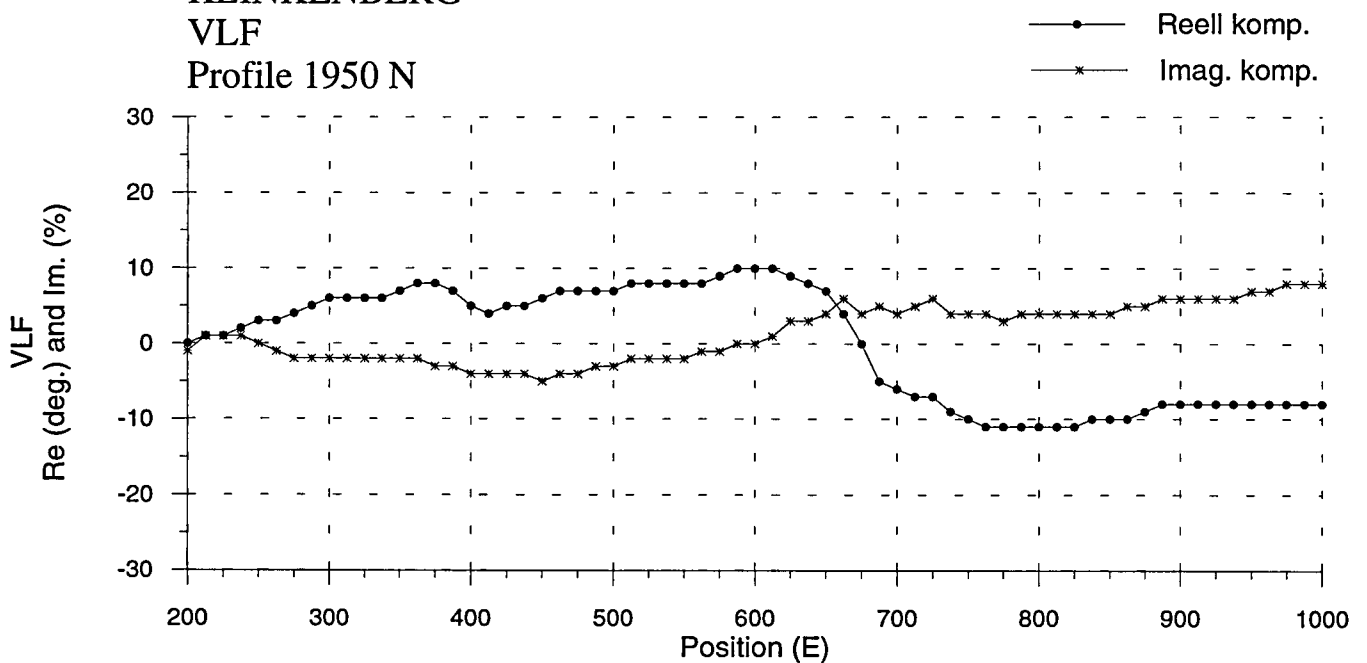


Figure 14b. Magnetic total field and VLF profile 1950 N.



INVESTIGATED AREA

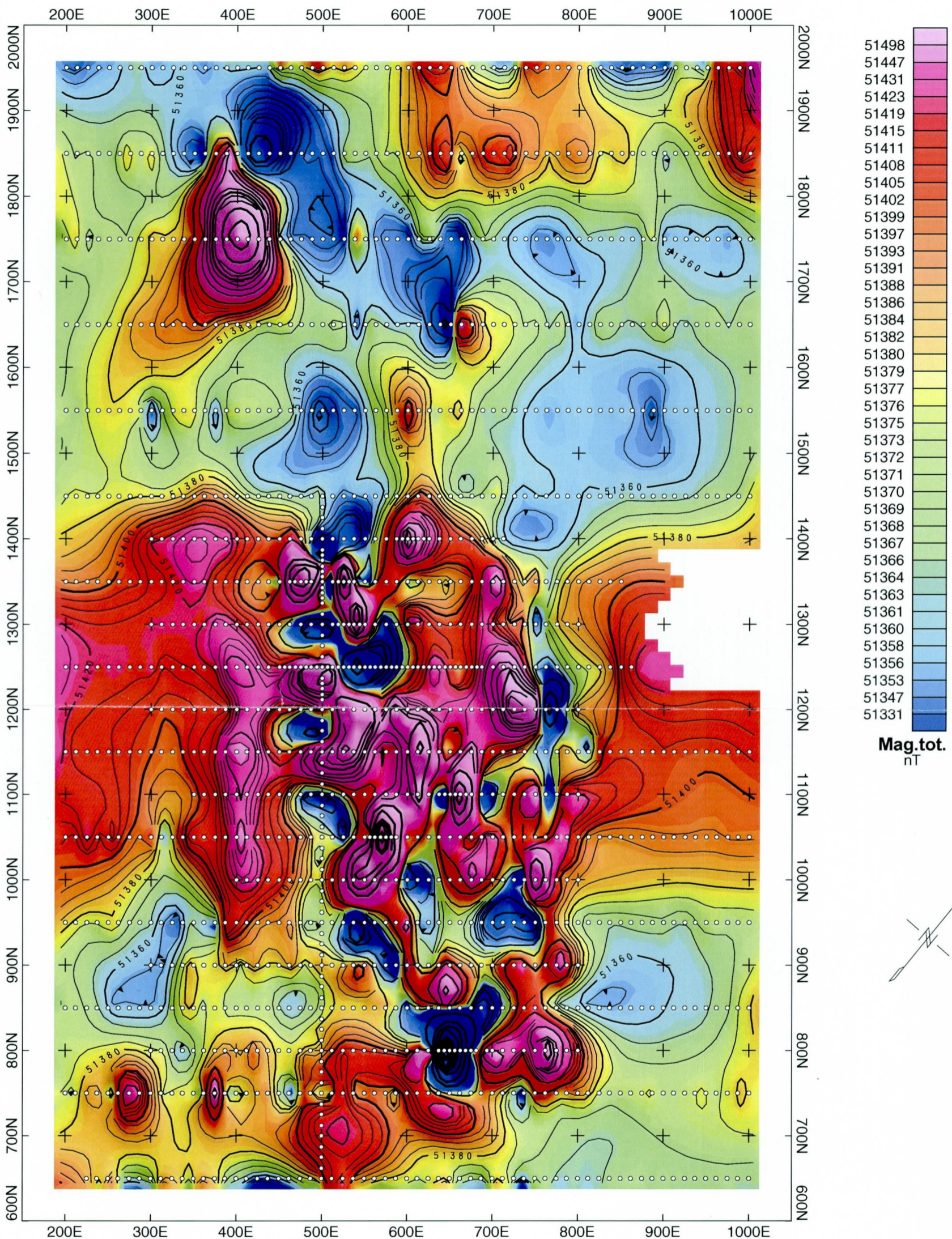
CREW DEVELOPMENT CORPORATION
 INVESTIGATED AREA
KLINKENBERG
 RØROS, SØR-TRØNDELAG

SCALE 1:50 000	OPER. E.D.	1999 - 2000
	DRAW E.D.	MAY 2000
	TRAC	

GEOLOGICAL SURVEY OF NORWAY
 TRONDHEIM

MAP NO.
 2000.064-01

MAP 1:50 000
 1720 III



Scale 1: 5000
 50 0.0 50 100 150
 (meters)



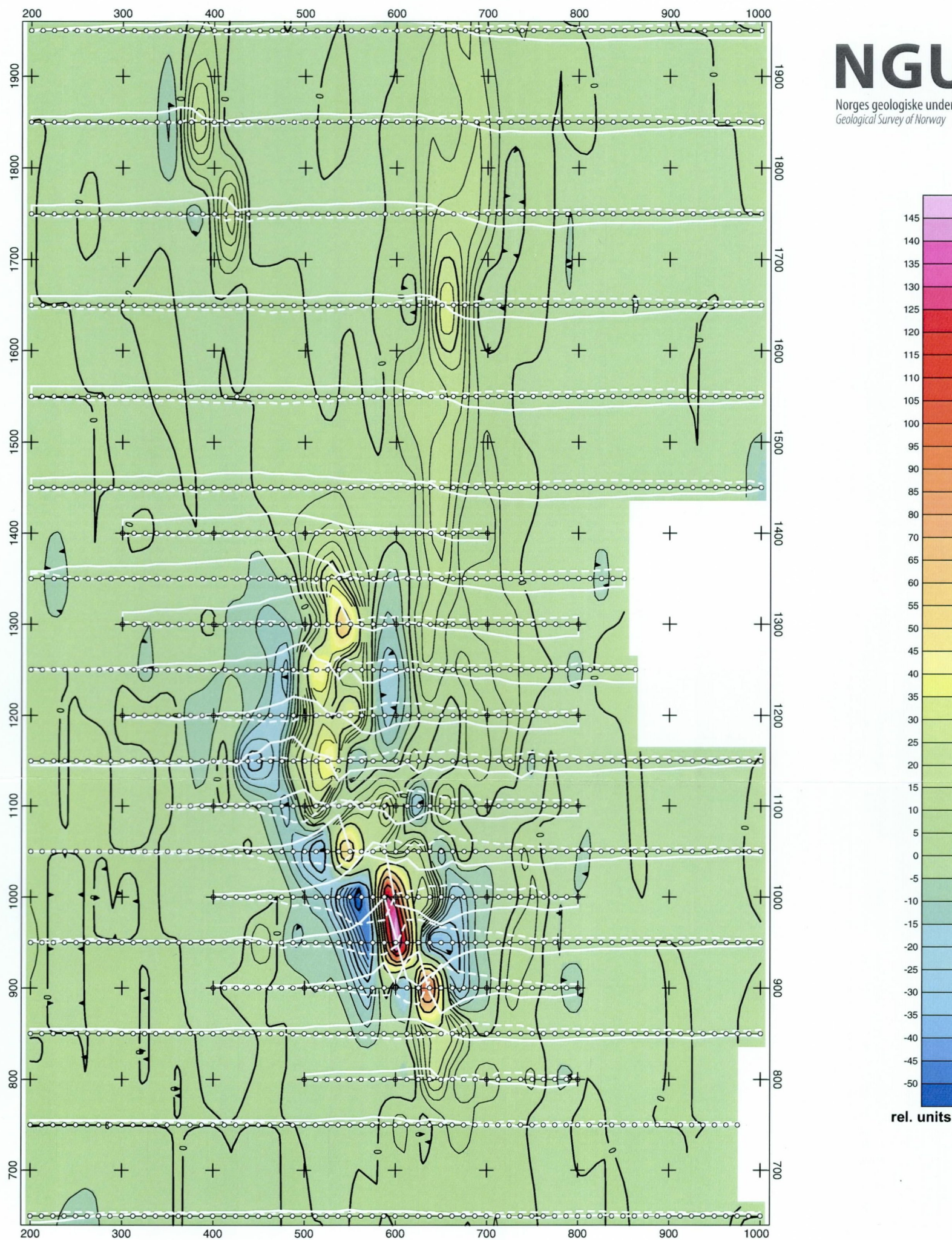
CREW
 DEVELOPMENT CORPORATION

Magnetic total field

KLINKENBERG

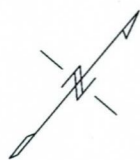
2000.064-02

VLF Fraser-filtered tilt angle

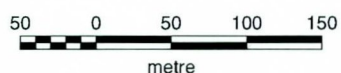


VLF profile curves

Tilt angle: solid white, 5 degr./mm
 Quadrature: white dashes, 5 % /mm



Scale 1 : 5000



CREW

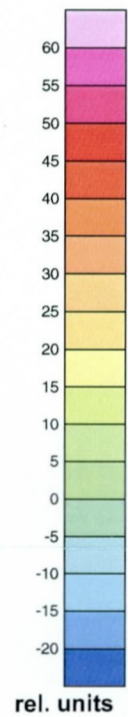
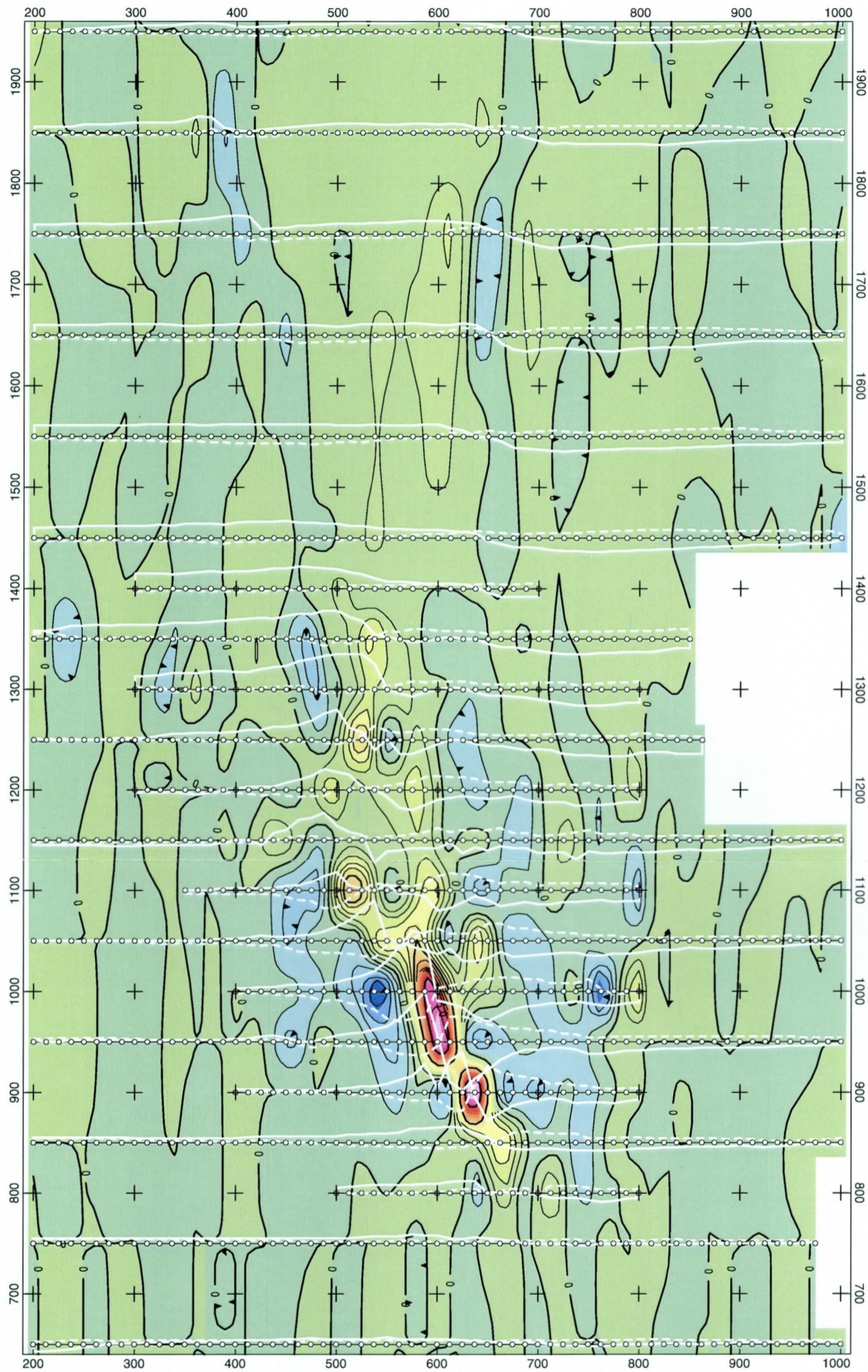
DEVELOPMENT CORPORATION

VLF Fraser-filtered tilt angle

KLINKENBERG

2000.064-03

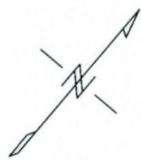
VLF Fraser-filtered quadrature



VLF profile curves

Tilt angle: solid white, 5 degr./mm

Quadrature: white dashes, 5 % /mm



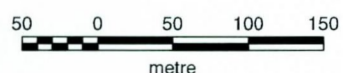
CREW

DEVELOPMENT CORPORATION

VLF Fraser-filtered quadrature

KLINKENBERG

Scale 1 : 5000



2000.064-04