APPENDIX C: CALIBRATION CERTIFICATE

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client	Element Columbia, USA	Certificate No.	MAGPy-8H3D-3060

CALIBRATION CERTIFICATE

Object	MAGPy-8H3D+E3DV2 SN:3060 MAGPy-DASV2 SN:2051
Calibration procedure(s)	QA CAL-46.v1 Calibration Procedure for MAGPy–8H3D+E3D Near-field Electric and Magnetic Field Sensor System
Calibration date	June 28, 2024 TK ✓ 7/1/2024

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Oscilloscope	SN: 112135	25-Sep-23 (No. 17A1162175)	Sep-24
Reference 20 dB Attenuator	SN: CC2552 (20x)	26-Mar-24 (No. 217-04046)	Mar-25
Type-N mismatch	SN: 310982 / 06327	26-Mar-24 (No. 217-04047)	Mar-25

Secondary Standards	ID	Check Date (in house)	Scheduled Check
Network Analyzer E5061B	SN: MY49810822	In house check: Nov-23	In house check: Nov-24
TEM Cell	SN: S6029i	In house check: Nov-23	In house check: Nov-24
Plate Capacitor	SN: 6028i	In house check: Nov-23	In house check: Nov-24
Resonator (160kHz)	SN: 6030i	In house check: Nov-23	In house check: Nov-24

	Name	Function	Signature
Calibrated by	Aidonia Georgiadou	Laboratory Engineer	
Approved by	Sven Kühn	Technical Manager	

Issued: June 28, 2024

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Glossary

MAGPy-8H3D-E3D	Magnetic Amplitude and Gradient Probe – Eight H-field Sensors, Single E-field sensor
MAGPy-DAS	Magnetic Amplitude and Gradient Data Acquisition System

Calibration is Performed According to the Following Standards:

a) IEEE Std 1309-2013, "IEEE Standard for calibration of electromagnetic field sensors and probes, excluding antennas, from 9 kHz to 40 GHz", November 2013

Methods Applied and Interpretation of Parameters

- Calibration has been performed after the adjustment of the device.
- *Linearity*: Calibration of the linearity of the field reading over the specified dynamic range at 161.75 kHz. Influence of offset voltage is included in this measurement.
- *Frequency response*: Calibration of the field reading over the specified frequency range from 3.0 kHz to 10.0 MHz.
- Receiving Pattern: Assessed for H-field polarizations ϑ, and $\phi = 0° \ldots 360°$; $\vartheta = 90°$, and $\phi = 0° \ldots 360°$; for the XYZ sensors (in TEM-Cell at 4 kHz, 40 kHz, 400 kHz and 4 MHz).
- Receiving Pattern: Assessed for E-field polarizations ϑ, and $\phi = 0° \ldots 360°$; $\vartheta = 90°$, and $\phi = 0° \ldots 360°$; for the XYZ sensor (in parallel plate capacitor at 4 kHz, 40 kHz, 400 kHz and 4 MHz).

Calibration Uncertainty

The calibration uncertainty is 0.7 dB for the H-field readings and 1.06 dB for the E-field readings. The calibration uncertainty is specified over the frequency range from 3.0 kHz to 10.0 MHz and a dynamic range from 0.1 A/m to 3200 A/m and from 0.08 V/m to 2000 V/m respectively.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

Unit Type	MAGPy–8H3D+E3DV2 (SP MGY 303 AA)	3060
	MAGPy–DASV2 (SE UMS 303 AD)	2051
	MAGPy FPGA Board	WP000210
Adjustment Date	Last MAGPy Adjustment	June 28, 2024
Firmware SW Version	MAGPy Firmware	Ver. 1.00
Backend SW Version	MAGPy Backend	Ver. 1.0.2
Calibration SW Version	MAGACAP	Ver. 1.0

Dynamic Range

Dynamic Range, H-field, Channel 0

H-field/(A/m) Applied			H-field/(A/m) Reading			Difference/(dB)			
x	y	z	x	y	z	x	y	z	Tolerance/(dB)
0.370	0.360	0.350	0.390	0.380	0.350	0.46	0.47	0.00	±1.00
0.500	0.490	0.470	0.520	0.520	0.470	0.34	0.52	0.00	±1.00
0.680	0.670	0.650	0.680	0.700	0.650	0.00	0.38	0.00	±1.00
0.890	0.880	0.840	0.880	0.880	0.840	−0.10	0.00	0.00	±1.00
1.21	1.19	1.14	1.21	1.19	1.14	0.00	0.00	0.00	±1.00
1.66	1.63	1.57	1.67	1.63	1.56	0.05	0.00	−0.06	±1.00
2.21	2.17	2.09	2.21	2.18	2.08	0.00	0.04	−0.04	±0.20
2.96	2.90	2.79	2.96	2.89	2.78	0.00	−0.03	−0.03	±0.20
4.01	3.94	3.79	4.04	3.94	3.79	0.06	0.00	0.00	±0.20
5.43	5.33	5.12	5.49	5.31	5.14	0.10	−0.03	0.03	±0.20
7.31	7.17	6.90	7.39	7.17	6.92	0.09	0.00	0.03	±0.20
9.76	9.58	9.22	9.84	9.58	9.21	0.07	0.00	−0.01	±0.20
13.2	12.9	12.4	13.3	13.0	12.5	0.07	0.07	0.07	±0.20
17.8	17.4	16.8	17.9	17.5	16.8	0.05	0.05	0.00	±0.20
24.0	23.6	22.6	24.1	23.6	22.7	0.04	0.00	0.04	±0.20
32.0	31.4	30.2	32.3	31.6	30.4	0.08	0.06	0.06	±0.20
43.3	42.5	40.8	43.5	42.7	41.0	0.04	0.04	0.04	±0.20
58.7	57.5	55.3	59.0	57.9	55.7	0.04	0.06	0.06	±0.20
80.8	79.2	76.2	80.4	78.8	75.9	−0.04	−0.04	−0.03	±0.20
106	104	99.7	105	103	99.2	−0.08	−0.08	−0.04	±0.20
145	142	137	145	142	137	0.00	0.00	0.00	±0.20
202	198	190	201	197	190	−0.04	−0.04	0.00	±0.20
280	274	264	281	269	265	0.03	−0.16	0.03	±0.20
415	406	392	408	401	385	−0.15	−0.11	−0.16	±0.20
575	563	542	568	558	536	−0.11	−0.08	−0.10	±0.20
862	844	813	860	845	812	−0.02	0.01	−0.01	±0.20
1310	1280	1240	1320	1300	1250	0.07	0.13	0.07	±0.30
1790	1750	1690	1830	1800	1730	0.19	0.24	0.20	±0.30
2950	2890	2780	3040	2990	2870	0.26	0.30	0.28	±0.40
3610	3540	3410	3740	3670	3530	0.31	0.31	0.30	±0.50

SPEAG H-field linearity tolerance criteria[1]:
±1.0dB for applied H-fields < 2.0A/m
±0.2dB for applied H-fields ≥ 2.0A/m and < 1000A/m
±0.3dB for applied H-fields ≥ 1000A/m and < 2000A/m
±0.4dB for applied H-fields ≥ 2000A/m and < 3000A/m
±0.5dB for applied H-fields ≥ 3000A/m

[1]Calibration uncertainty not taken into account (shared risk 50%).

Dynamic Range, H-field, Channel 1

H-field/(A/m) Applied			H-field/(A/m) Reading			Difference/(dB)			Tolerance/(dB)
x	y	z	x	y	z	x	y	z	
0.370	0.370	0.360	0.390	0.390	0.380	0.46	0.46	0.47	±1.00
0.500	0.500	0.490	0.510	0.520	0.500	0.17	0.34	0.18	±1.00
0.690	0.680	0.670	0.680	0.690	0.670	−0.13	0.13	0.00	±1.00
0.900	0.890	0.880	0.890	0.880	0.870	−0.10	−0.10	−0.10	±1.00
1.22	1.21	1.19	1.23	1.20	1.18	0.07	−0.07	−0.07	±1.00
1.68	1.65	1.63	1.68	1.65	1.63	0.00	0.00	0.00	±1.00
2.24	2.20	2.17	2.25	2.21	2.18	0.04	0.04	0.04	±0.20
2.99	2.95	2.90	3.00	2.95	2.90	0.03	0.00	0.00	±0.20
4.06	4.00	3.94	4.08	4.00	3.94	0.04	0.00	0.00	±0.20
5.49	5.41	5.33	5.55	5.41	5.33	0.09	0.00	0.00	±0.20
7.39	7.29	7.17	7.46	7.31	7.18	0.08	0.02	0.01	±0.20
9.87	9.74	9.59	9.93	9.75	9.59	0.05	0.01	0.00	±0.20
13.3	13.2	12.9	13.4	13.2	13.0	0.07	0.00	0.07	±0.20
18.0	17.7	17.4	18.0	17.8	17.5	0.00	0.05	0.05	±0.20
24.3	23.9	23.6	24.3	24.0	23.6	0.00	0.04	0.00	±0.20
32.4	31.9	31.4	32.6	32.2	31.7	0.05	0.08	0.08	±0.20
43.8	43.1	42.5	44.0	43.4	42.7	0.04	0.06	0.04	±0.20
59.3	58.4	57.5	59.7	58.8	58.0	0.06	0.06	0.08	±0.20
81.7	80.5	79.2	81.3	80.1	78.9	−0.04	−0.04	−0.03	±0.20
107	105	104	106	105	103	−0.08	0.00	−0.08	±0.20
147	145	143	146	144	142	−0.06	−0.06	−0.06	±0.20
204	201	198	203	200	197	−0.04	−0.04	−0.04	±0.20
283	279	275	284	274	276	0.03	−0.16	0.03	±0.20
420	413	407	412	407	400	−0.17	−0.13	−0.15	±0.20
582	572	564	574	567	557	−0.12	−0.08	−0.11	±0.20
872	857	846	870	858	844	−0.02	0.01	−0.02	±0.20
1330	1300	1290	1340	1320	1300	0.07	0.13	0.07	±0.30
1810	1780	1760	1850	1830	1800	0.19	0.24	0.20	±0.30
2980	2930	2890	3080	3040	2990	0.29	0.32	0.30	±0.40
3650	3590	3550	3780	3730	3680	0.30	0.33	0.31	±0.50

SPEAG H-field linearity tolerance criteria[1]:
±1.0dB for applied H-fields < 2.0A/m
±0.2dB for applied H-fields ≥ 2.0A/m and < 1000A/m
±0.3dB for applied H-fields ≥ 1000A/m and < 2000A/m
±0.4dB for applied H-fields ≥ 2000A/m and < 3000A/m
±0.5dB for applied H-fields ≥ 3000A/m

[1]Calibration uncertainty not taken into account (shared risk 50%).

Dynamic Range, H-field, Channel 2

H-field/(A/m) Applied			H-field/(A/m) Reading			Difference/(dB)			Tolerance/(dB)
x	y	z	x	y	z	x	y	z	
0.360	0.360	0.360	0.390	0.380	0.390	0.70	0.47	0.70	±1.00
0.490	0.490	0.490	0.510	0.510	0.510	0.35	0.35	0.35	±1.00
0.680	0.680	0.680	0.680	0.700	0.670	0.00	0.25	−0.13	±1.00
0.880	0.880	0.880	0.890	0.910	0.880	0.10	0.29	0.00	±1.00
1.20	1.19	1.19	1.23	1.20	1.22	0.21	0.07	0.22	±1.00
1.64	1.64	1.64	1.69	1.63	1.66	0.26	−0.05	0.11	±1.00
2.19	2.18	2.18	2.22	2.18	2.21	0.12	0.00	0.12	±0.20
2.93	2.92	2.91	2.96	2.94	2.92	0.09	0.06	0.03	±0.20
3.97	3.96	3.95	4.00	3.99	3.97	0.07	0.07	0.04	±0.20
5.38	5.35	5.35	5.41	5.40	5.36	0.05	0.08	0.02	±0.20
7.23	7.21	7.20	7.27	7.24	7.23	0.05	0.04	0.04	±0.20
9.66	9.63	9.62	9.68	9.64	9.65	0.02	0.01	0.03	±0.20
13.1	13.0	13.0	13.1	13.0	13.0	0.00	0.00	0.00	±0.20
17.6	17.5	17.5	17.6	17.6	17.5	0.00	0.05	0.00	±0.20
23.8	23.7	23.6	23.8	23.7	23.6	0.00	0.00	0.00	±0.20
31.7	31.6	31.6	31.9	31.8	31.7	0.05	0.05	0.03	±0.20
42.9	42.7	42.6	43.1	43.0	42.9	0.04	0.06	0.06	±0.20
58.1	57.7	57.7	58.4	58.2	58.2	0.04	0.07	0.07	±0.20
80.0	79.6	79.6	79.6	79.2	79.2	−0.04	−0.04	−0.04	±0.20
105	104	104	104	104	104	−0.08	0.00	0.00	±0.20
144	143	143	143	142	143	−0.06	−0.06	0.00	±0.20
200	199	199	199	198	198	−0.04	−0.04	−0.04	±0.20
277	276	276	278	271	277	0.03	−0.16	0.03	±0.20
411	408	409	404	403	402	−0.15	−0.11	−0.15	±0.20
569	566	566	562	561	560	−0.11	−0.08	−0.09	±0.20
853	848	849	853	849	847	0.00	0.01	−0.02	±0.20
1300	1290	1290	1310	1310	1300	0.07	0.13	0.07	±0.30
1780	1760	1770	1810	1800	1800	0.15	0.20	0.15	±0.30
2920	2900	2900	3010	3000	3000	0.26	0.29	0.29	±0.40
3580	3550	3560	3700	3690	3690	0.29	0.34	0.31	±0.50

SPEAG H-field linearity tolerance criteria[1]:
- ±1.0 dB for applied H-fields < 2.0 A/m
- ±0.2 dB for applied H-fields ≥ 2.0 A/m and < 1000 A/m
- ±0.3 dB for applied H-fields ≥ 1000 A/m and < 2000 A/m
- ±0.4 dB for applied H-fields ≥ 2000 A/m and < 3000 A/m
- ±0.5 dB for applied H-fields ≥ 3000 A/m

[1] Calibration uncertainty not taken into account (shared risk 50%).

Dynamic Range, H-field, Channel 3

H-field/(A/m) Applied			H-field/(A/m) Reading			Difference/(dB)			Tolerance/(dB)
x	y	z	x	y	z	x	y	z	
0.360	0.360	0.350	0.390	0.370	0.370	0.70	0.24	0.48	±1.00
0.490	0.490	0.480	0.530	0.510	0.500	0.68	0.35	0.35	±1.00
0.670	0.670	0.660	0.720	0.690	0.680	0.63	0.26	0.26	±1.00
0.880	0.870	0.860	0.920	0.900	0.880	0.39	0.29	0.20	±1.00
1.19	1.18	1.17	1.21	1.19	1.17	0.14	0.07	0.00	±1.00
1.63	1.62	1.60	1.66	1.62	1.60	0.16	0.00	0.00	±1.00
2.18	2.16	2.14	2.23	2.16	2.14	0.20	0.00	0.00	±0.20
2.91	2.89	2.85	2.95	2.91	2.87	0.12	0.06	0.06	±0.20
3.95	3.92	3.88	3.99	3.96	3.88	0.09	0.09	0.00	±0.20
5.34	5.31	5.24	5.39	5.33	5.26	0.08	0.03	0.03	±0.20
7.19	7.14	7.06	7.25	7.17	7.09	0.07	0.04	0.04	±0.20
9.61	9.55	9.44	9.66	9.54	9.45	0.05	−0.01	0.01	±0.20
13.0	12.9	12.7	13.0	12.9	12.8	0.00	0.00	0.07	±0.20
17.5	17.4	17.2	17.6	17.4	17.2	0.05	0.00	0.00	±0.20
23.6	23.5	23.2	23.7	23.5	23.2	0.04	0.00	0.00	±0.20
31.5	31.3	30.9	31.7	31.5	31.1	0.05	0.06	0.06	±0.20
42.6	42.3	41.8	42.8	42.5	42.0	0.04	0.04	0.04	±0.20
57.7	57.2	56.6	58.1	57.6	57.1	0.06	0.06	0.08	±0.20
79.5	78.9	78.0	79.1	78.5	77.7	−0.04	−0.04	−0.03	±0.20
104	103	102	104	103	102	0.00	0.00	0.00	±0.20
143	142	141	142	141	140	−0.06	−0.06	−0.06	±0.20
199	197	195	198	196	194	−0.04	−0.04	−0.04	±0.20
275	273	270	276	268	272	0.03	−0.16	0.06	±0.20
408	405	401	401	399	394	−0.15	−0.13	−0.15	±0.20
566	561	556	559	556	549	−0.11	−0.08	−0.11	±0.20
848	841	833	847	842	831	−0.01	0.01	−0.02	±0.20
1290	1280	1270	1300	1300	1280	0.07	0.13	0.07	±0.30
1770	1750	1730	1800	1790	1770	0.15	0.20	0.20	±0.30
2900	2870	2850	2990	2960	2940	0.27	0.27	0.27	±0.40
3560	3520	3490	3680	3620	3620	0.29	0.24	0.32	±0.50

SPEAG H-field linearity tolerance criteria[1]:
±1.0 dB for applied H-fields < 2.0 A/m
±0.2 dB for applied H-fields ≥ 2.0 A/m and < 1000 A/m
±0.3 dB for applied H-fields ≥ 1000 A/m and < 2000 A/m
±0.4 dB for applied H-fields ≥ 2000 A/m and < 3000 A/m
±0.5 dB for applied H-fields ≥ 3000 A/m

[1] Calibration uncertainty not taken into account (shared risk 50%).

Dynamic Range, H-field, Channel 4

H-field/(A/m) Applied			H-field/(A/m) Reading			Difference/(dB)			Tolerance/(dB)
x	y	z	x	y	z	x	y	z	
0.370	0.370	0.360	0.380	0.400	0.370	0.23	0.68	0.24	±1.00
0.500	0.510	0.490	0.510	0.530	0.500	0.17	0.33	0.18	±1.00
0.680	0.690	0.670	0.690	0.700	0.680	0.13	0.12	0.13	±1.00
0.890	0.900	0.870	0.890	0.910	0.880	0.00	0.10	0.10	±1.00
1.20	1.22	1.18	1.21	1.24	1.19	0.07	0.14	0.07	±1.00
1.65	1.68	1.62	1.65	1.69	1.62	0.00	0.05	0.00	±1.00
2.21	2.24	2.15	2.21	2.26	2.17	0.00	0.08	0.08	±0.20
2.95	2.99	2.87	2.94	3.01	2.88	−0.03	0.06	0.03	±0.20
4.00	4.06	3.90	4.00	4.08	3.93	0.00	0.04	0.07	±0.20
5.42	5.49	5.28	5.42	5.50	5.30	0.00	0.02	0.03	±0.20
7.29	7.39	7.11	7.29	7.40	7.13	0.00	0.01	0.02	±0.20
9.74	9.88	9.50	9.72	9.86	9.54	−0.02	−0.02	0.04	±0.20
13.2	13.3	12.8	13.1	13.3	12.9	−0.07	0.00	0.07	±0.20
17.8	18.0	17.3	17.7	18.0	17.3	−0.05	0.00	0.00	±0.20
23.9	24.3	23.3	24.0	24.3	23.4	0.04	0.00	0.04	±0.20
31.9	32.4	31.1	32.2	32.6	31.4	0.08	0.05	0.08	±0.20
43.2	43.8	42.1	43.4	44.0	42.3	0.04	0.04	0.04	±0.20
58.5	59.2	57.0	58.9	59.6	57.4	0.06	0.06	0.06	±0.20
80.5	81.6	78.5	80.2	81.3	78.2	−0.03	−0.03	−0.03	±0.20
105	107	103	105	106	102	0.00	−0.08	−0.08	±0.20
145	147	142	144	146	141	−0.06	−0.06	−0.06	±0.20
201	204	196	201	203	196	0.00	−0.04	0.00	±0.20
279	283	272	280	278	273	0.03	−0.15	0.03	±0.20
414	419	404	407	413	397	−0.15	−0.13	−0.15	±0.20
574	581	559	566	576	553	−0.12	−0.08	−0.09	±0.20
860	870	838	859	872	837	−0.01	0.02	−0.01	±0.20
1310	1320	1270	1320	1340	1290	0.07	0.13	0.14	±0.30
1790	1810	1740	1830	1850	1780	0.19	0.19	0.20	±0.30
2940	2980	2870	3040	3080	2960	0.29	0.29	0.27	±0.40
3600	3640	3520	3730	3790	3650	0.31	0.35	0.32	±0.50

SPEAG H-field linearity tolerance criteria[1]:
±1.0 dB for applied H-fields < 2.0 A/m
±0.2 dB for applied H-fields ≥ 2.0 A/m and < 1000 A/m
±0.3 dB for applied H-fields ≥ 1000 A/m and < 2000 A/m
±0.4 dB for applied H-fields ≥ 2000 A/m and < 3000 A/m
±0.5 dB for applied H-fields ≥ 3000 A/m

[1] Calibration uncertainty not taken into account (shared risk 50%).

Dynamic Range, H-field, Channel 5

H-field/(A/m) Applied			H-field/(A/m) Reading			Difference/(dB)			
x	y	z	x	y	z	x	y	z	Tolerance/(dB)
0.370	0.370	0.370	0.370	0.390	0.370	0.00	0.46	0.00	±1.00
0.500	0.510	0.500	0.510	0.530	0.510	0.17	0.33	0.17	±1.00
0.680	0.700	0.690	0.690	0.720	0.690	0.13	0.24	0.00	±1.00
0.890	0.910	0.900	0.900	0.930	0.910	0.10	0.19	0.10	±1.00
1.20	1.23	1.22	1.20	1.24	1.23	0.00	0.07	0.07	±1.00
1.65	1.69	1.67	1.66	1.69	1.67	0.05	0.00	0.00	±1.00
2.20	2.25	2.22	2.22	2.26	2.23	0.08	0.04	0.04	±0.20
2.94	3.02	2.97	2.96	3.02	2.97	0.06	0.00	0.00	±0.20
3.99	4.09	4.03	4.00	4.09	4.05	0.02	0.00	0.04	±0.20
5.40	5.54	5.46	5.40	5.52	5.47	0.00	−0.03	0.02	±0.20
7.26	7.45	7.35	7.26	7.47	7.36	0.00	0.02	0.01	±0.20
9.70	9.96	9.82	9.70	9.98	9.81	0.00	0.02	−0.01	±0.20
13.1	13.4	13.2	13.1	13.5	13.3	0.00	0.06	0.07	±0.20
17.7	18.1	17.9	17.7	18.1	17.9	0.00	0.00	0.00	±0.20
23.9	24.5	24.1	23.9	24.5	24.2	0.00	0.00	0.04	±0.20
31.8	32.7	32.2	32.0	32.9	32.4	0.05	0.05	0.05	±0.20
43.0	44.1	43.5	43.2	44.4	43.7	0.04	0.06	0.04	±0.20
58.3	59.7	58.9	58.7	60.2	59.4	0.06	0.07	0.07	±0.20
80.3	82.3	81.2	79.9	81.9	80.8	−0.04	−0.04	−0.04	±0.20
105	108	106	105	107	106	0.00	−0.08	0.00	±0.20
145	148	146	144	147	146	−0.06	−0.06	0.00	±0.20
201	206	203	200	205	202	−0.04	−0.04	−0.04	±0.20
278	285	281	279	280	282	0.03	−0.15	0.03	±0.20
412	422	417	405	416	410	−0.15	−0.12	−0.15	±0.20
572	585	578	565	580	571	−0.11	−0.07	−0.11	±0.20
857	877	866	856	878	865	−0.01	0.01	−0.01	±0.20
1300	1330	1320	1320	1350	1330	0.13	0.13	0.07	±0.30
1780	1820	1800	1820	1870	1840	0.19	0.24	0.19	±0.30
2930	3000	2960	3030	3100	3060	0.29	0.28	0.29	±0.40
3590	3670	3640	3720	3820	3770	0.31	0.35	0.30	±0.50

SPEAG H-field linearity tolerance criteria[1]:
- ±1.0 dB for applied H-fields < 2.0 A/m
- ±0.2 dB for applied H-fields ≥ 2.0 A/m and < 1000 A/m
- ±0.3 dB for applied H-fields ≥ 1000 A/m and < 2000 A/m
- ±0.4 dB for applied H-fields ≥ 2000 A/m and < 3000 A/m
- ±0.5 dB for applied H-fields ≥ 3000 A/m

[1] Calibration uncertainty not taken into account (shared risk 50%).

Dynamic Range, H-field, Channel 6

H-field/(A/m) Applied			H-field/(A/m) Reading			Difference/(dB)			Tolerance/(dB)
x	y	z	x	y	z	x	y	z	
0.370	0.370	0.360	0.400	0.370	0.360	0.68	0.00	0.00	±1.00
0.510	0.500	0.490	0.540	0.510	0.500	0.50	0.17	0.18	±1.00
0.700	0.690	0.680	0.720	0.700	0.680	0.24	0.12	0.00	±1.00
0.910	0.900	0.880	0.920	0.910	0.890	0.09	0.10	0.10	±1.00
1.23	1.22	1.20	1.24	1.23	1.20	0.07	0.07	0.00	±1.00
1.68	1.67	1.64	1.71	1.70	1.65	0.15	0.15	0.05	±1.00
2.25	2.22	2.19	2.27	2.27	2.21	0.08	0.19	0.08	±0.20
3.01	2.97	2.93	3.01	3.01	2.95	0.00	0.12	0.06	±0.20
4.08	4.03	3.98	4.07	4.09	4.02	−0.02	0.13	0.09	±0.20
5.52	5.46	5.38	5.51	5.53	5.43	−0.02	0.11	0.08	±0.20
7.43	7.35	7.24	7.42	7.44	7.30	−0.01	0.11	0.07	±0.20
9.92	9.82	9.68	9.91	9.90	9.73	−0.01	0.07	0.04	±0.20
13.4	13.3	13.1	13.4	13.4	13.2	0.00	0.07	0.07	±0.20
18.1	17.9	17.6	18.1	18.0	17.7	0.00	0.05	0.05	±0.20
24.4	24.1	23.8	24.4	24.2	23.9	0.00	0.04	0.04	±0.20
32.5	32.2	31.7	32.8	32.5	32.0	0.08	0.08	0.08	±0.20
44.0	43.5	42.9	44.3	43.8	43.1	0.06	0.06	0.04	±0.20
59.6	58.9	58.0	60.0	59.3	58.5	0.06	0.06	0.07	±0.20
82.1	81.1	80.0	81.7	80.7	79.6	−0.04	−0.04	−0.04	±0.20
107	106	105	107	106	104	0.00	0.00	−0.08	±0.20
148	146	144	147	145	143	−0.06	−0.06	−0.06	±0.20
205	203	200	204	202	199	−0.04	−0.04	−0.04	±0.20
284	281	277	285	276	278	0.03	−0.16	0.03	±0.20
422	416	411	414	411	404	−0.17	−0.11	−0.15	±0.20
584	577	570	577	572	563	−0.10	−0.08	−0.11	±0.20
876	865	854	874	866	852	−0.02	0.01	−0.02	±0.20
1330	1320	1300	1350	1330	1310	0.13	0.07	0.07	±0.30
1820	1800	1780	1860	1840	1810	0.19	0.19	0.15	±0.30
3000	2960	2920	3090	3060	3020	0.26	0.29	0.29	±0.40
3670	3620	3580	3800	3760	3710	0.30	0.33	0.31	±0.50

SPEAG H-field linearity tolerance criteria[1]:
±1.0dB for applied H-fields < 2.0A/m
±0.2dB for applied H-fields ≥ 2.0A/m and < 1000A/m
±0.3dB for applied H-fields ≥ 1000A/m and < 2000A/m
±0.4dB for applied H-fields ≥ 2000A/m and < 3000A/m
±0.5dB for applied H-fields ≥ 3000A/m

[1]Calibration uncertainty not taken into account (shared risk 50%).

Dynamic Range, H-field, Channel 7

H-field/(A/m) Applied			H-field/(A/m) Reading			Difference/(dB)			Tolerance/(dB)
x	y	z	x	y	z	x	y	z	
0.370	0.370	0.350	0.390	0.410	0.360	0.46	0.89	0.24	±1.00
0.500	0.500	0.480	0.520	0.550	0.490	0.34	0.83	0.18	±1.00
0.690	0.680	0.660	0.690	0.710	0.660	0.00	0.37	0.00	±1.00
0.900	0.890	0.860	0.910	0.920	0.870	0.10	0.29	0.10	±1.00
1.21	1.20	1.16	1.24	1.25	1.19	0.21	0.35	0.22	±1.00
1.67	1.65	1.59	1.70	1.70	1.62	0.15	0.26	0.16	±1.00
2.22	2.20	2.12	2.26	2.25	2.16	0.16	0.20	0.16	±0.20
2.97	2.94	2.83	3.00	2.98	2.86	0.09	0.12	0.09	±0.20
4.03	3.99	3.85	4.08	4.04	3.88	0.06	0.11	0.07	±0.20
5.46	5.40	5.20	5.48	5.44	5.23	0.03	0.06	0.05	±0.20
7.34	7.27	7.01	7.37	7.30	7.03	0.04	0.04	0.02	±0.20
9.81	9.71	9.37	9.85	9.74	9.39	0.04	0.03	0.02	±0.20
13.2	13.1	12.6	13.3	13.2	12.7	0.07	0.07	0.07	±0.20
17.9	17.7	17.1	17.9	17.7	17.1	0.00	0.00	0.00	±0.20
24.1	23.9	23.0	24.2	23.9	23.1	0.04	0.00	0.04	±0.20
32.2	31.9	30.7	32.4	32.0	30.9	0.05	0.03	0.06	±0.20
43.5	43.0	41.5	43.8	43.3	41.7	0.06	0.06	0.04	±0.20
58.9	58.2	56.2	59.3	58.6	56.6	0.06	0.06	0.06	±0.20
81.1	80.3	77.4	80.7	79.9	77.1	−0.04	−0.04	−0.03	±0.20
106	105	101	106	105	101	0.00	0.00	0.00	±0.20
146	144	139	145	144	139	−0.06	0.00	0.00	±0.20
203	200	194	202	200	193	−0.04	0.00	−0.04	±0.20
281	278	268	282	273	269	0.03	−0.16	0.03	±0.20
417	412	398	410	407	391	−0.15	−0.11	−0.15	±0.20
578	571	551	570	566	545	−0.12	−0.08	−0.10	±0.20
866	855	826	864	858	825	−0.02	0.03	−0.01	±0.20
1320	1300	1260	1330	1320	1270	0.07	0.13	0.07	±0.30
1800	1780	1720	1840	1820	1750	0.19	0.19	0.15	±0.30
2960	2930	2830	3060	3030	2920	0.29	0.29	0.27	±0.40
3630	3580	3470	3760	3730	3590	0.31	0.36	0.30	±0.50

SPEAG H-field linearity tolerance criteria[1]:
±1.0 dB for applied H-fields < 2.0 A/m
±0.2 dB for applied H-fields ≥ 2.0 A/m and < 1000 A/m
±0.3 dB for applied H-fields ≥ 1000 A/m and < 2000 A/m
±0.4 dB for applied H-fields ≥ 2000 A/m and < 3000 A/m
±0.5 dB for applied H-fields ≥ 3000 A/m

[1] Calibration uncertainty not taken into account (shared risk 50%).

Dynamic Range, E-field, Channel 0

E-field/(V/m) Applied			E-field/(V/m) Reading			Difference/(dB)			Tolerance/(dB)		
x	y	z	x	y	z	x	y	z	x	y	z
0.340	0.200	0.080	0.370	0.200	0.100	0.73	0.00	1.94	±5.00	±5.00	±5.00
0.470	0.280	0.110	0.480	0.280	0.110	0.18	0.00	0.00	±5.00	±5.00	±5.00
0.640	0.380	0.140	0.640	0.410	0.140	0.00	0.66	0.00	±5.00	±5.00	±5.00
0.830	0.490	0.190	0.850	0.500	0.200	0.21	0.18	0.45	±5.00	±5.00	±5.00
1.13	0.670	0.250	1.15	0.660	0.280	0.15	−0.13	0.98	±5.00	±5.00	±5.00
1.54	0.920	0.350	1.58	0.920	0.360	0.22	0.00	0.24	±5.00	±5.00	±5.00
2.06	1.22	0.470	2.09	1.22	0.480	0.13	0.00	0.18	±1.00	±5.00	±5.00
2.75	1.63	0.620	2.77	1.63	0.620	0.06	0.00	0.00	±1.00	±5.00	±5.00
3.73	2.21	0.850	3.79	2.23	0.830	0.14	0.08	−0.21	±1.00	±1.00	±5.00
5.05	3.00	1.15	5.12	2.99	1.17	0.12	−0.03	0.15	±1.00	±1.00	±5.00
6.80	4.03	1.54	6.90	4.04	1.55	0.13	0.02	0.06	±1.00	±1.00	±5.00
9.09	5.39	2.06	9.20	5.39	2.06	0.10	0.00	0.00	±1.00	±1.00	±1.00
12.3	7.28	2.78	12.4	7.31	2.77	0.07	0.04	−0.03	±1.00	±1.00	±1.00
16.5	9.80	3.76	16.7	9.84	3.73	0.10	0.04	−0.07	±1.00	±1.00	±1.00
22.3	13.2	5.07	22.6	13.3	5.04	0.12	0.07	−0.05	±1.00	±1.00	±1.00
29.8	17.7	6.76	30.3	17.8	6.74	0.14	0.05	−0.03	±1.00	±1.00	±1.00
40.3	23.9	9.14	40.9	24.0	9.08	0.13	0.04	−0.06	±1.00	±1.00	±1.00
54.5	32.3	12.4	55.3	32.6	12.3	0.13	0.08	−0.07	±1.00	±1.00	±1.00
75.1	44.5	17.1	75.3	44.4	16.8	0.02	−0.02	−0.15	±1.00	±1.00	±1.00
98.3	58.3	22.3	98.5	58.1	21.9	0.02	−0.03	−0.16	±1.00	±1.00	±1.00
135	80.1	30.7	135	79.7	30.1	0.00	−0.04	−0.17	±1.00	±1.00	±1.00
188	111	42.6	187	111	41.9	−0.05	0.00	−0.14	±1.00	±1.00	±1.00
260	154	59.0	261	154	58.5	0.03	0.00	−0.07	±1.00	±1.00	±1.00
385	228	87.6	364	217	87.1	−0.49	−0.43	−0.05	±1.00	±1.00	±1.00
534	317	121	507	302	121	−0.45	−0.42	0.00	±1.00	±1.00	±1.00
800	474	182	769	458	184	−0.34	−0.30	0.09	±1.00	±1.00	±1.00
1220	721	277	1190	706	284	−0.22	−0.18	0.22	±1.00	±1.00	±1.00
1660	986	379	1640	976	392	−0.11	−0.09	0.29	±1.00	±1.00	±1.00
2740	1620	622	2730	1620	625	−0.03	0.00	0.04	±1.00	±1.00	±1.00
3350	1990	762	3360	2000	768	0.03	0.04	0.07	±1.00	±1.00	±1.00

SPEAG E-field linearity tolerance criteria[1]:
±5.0 dB for applied E-field < 2 V/m
±1.0 dB for applied E-field ≥ 2 V/m

[1] Calibration uncertainty not taken into account (shared risk 50%).