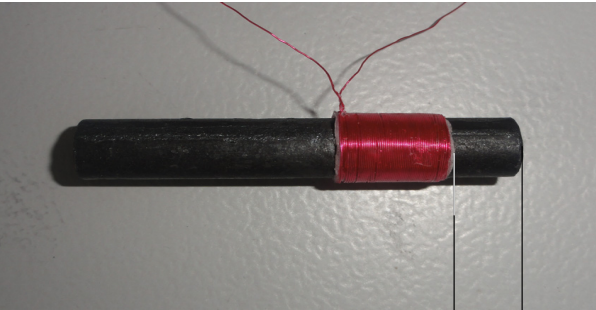


Abhängigkeit der Induktivität von der Position der Spule auf dem Ferritkern

Messung von L mittels RLC 9000 M (von ELV 1993)

Ferrit-Kern: L=50 D=8
 Spule: L=12.5 d=8 (innen) D=9 (aussen)
 Wicklungen: Kupfer-Lack-Draht (VERO-Fädeltechnik)
 2x55 Windungen D = 0.15 mm (0.20 mm mit Lack)



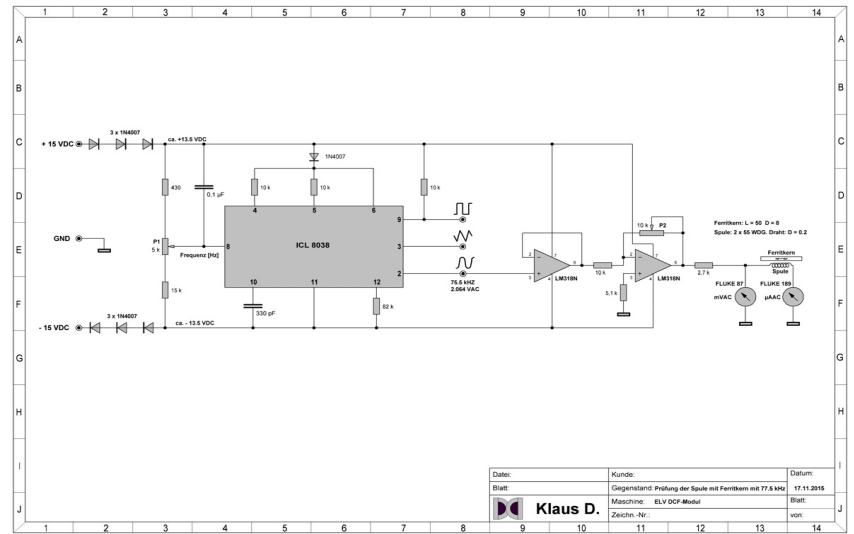
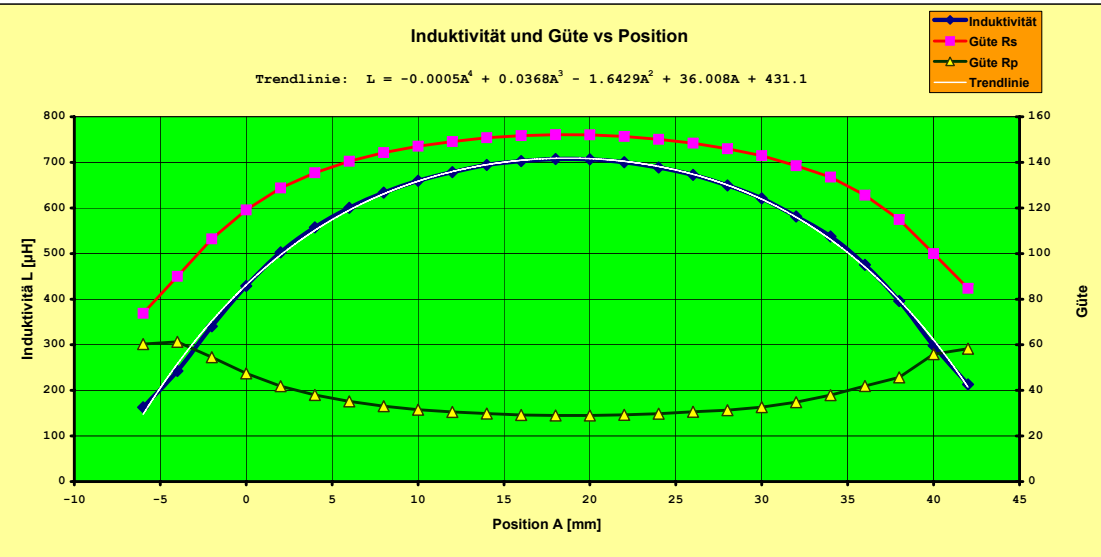
R = 2.11 [Ohm] (konstant)
 C = 6.599 [nF] (konstant)
 $f_o = 1 / 2 * \pi * \sqrt{L * C} \wedge 0.5$ [Hz]
 $XL = 2 * \pi * fo * L$ [Ohm]
 Q = XL / R

A [mm]	L [µH]	fo [kHz]	XL [Ohm]
>100			
-6	162.90	153.50	157.12
-4	242.6	125.79	191.74
-2	340.6	106.16	227.19
0	429.0	94.59	254.97
2	502.7	87.38	276.00
4	557.6	82.97	290.68
6	600.1	79.98	301.56
8	633.5	77.84	309.84
10	659.5	76.29	316.13
12	678.6	75.21	320.68
14	694.5	74.34	324.41
16	702.6	73.91	326.30
18	707.5	73.66	327.43
20	706.5	73.71	327.20
22	700.3	74.04	325.76
24	688.8	74.65	323.08
26	672.6	75.54	319.26
28	649.3	76.89	313.68
30	621.0	78.62	306.77
32	581.2	81.27	296.77
34	537.6	84.50	285.42
36	475.3	89.87	268.38
38	396.0	98.45	244.97
40	298.2	113.46	212.58
42	213.1	134.21	179.70
>100			

ELV RLC 9000 M	
R serial	Q = XL/Rs
Rs [Ohm]	
2.110	
2.129	73.80
2.130	90.02
2.135	106.41
2.140	119.14
2.143	128.79
2.146	135.45
2.147	140.46
2.148	144.24
2.149	147.11
2.150	149.15
2.151	150.82
2.151	151.70
2.152	152.15
2.152	152.05
2.152	151.38
2.152	150.13
2.151	148.42
2.149	145.96
2.146	142.95
2.142	138.55
2.138	133.50
2.137	125.59
2.132	114.90
2.126	99.99
2.121	84.73
2.110	

ELV RLC 9000 M	
R parallel	Q = XL/Rp
Rp [Ohm]	
2.156	
2.606	60.29
3.130	61.26
4.164	54.56
5.376	47.43
6.599	41.83
7.652	37.99
8.581	35.14
9.361	33.10
10.020	31.55
10.500	30.54
10.880	29.82
11.160	29.24
11.290	29.00
11.280	29.01
11.130	29.27
10.860	29.75
10.440	30.58
10.010	31.34
9.388	32.68
8.531	34.79
7.530	37.90
6.407	41.89
5.356	45.74
3.803	55.90
3.083	58.29
2.154	

FLUKE 87			FLUKE 189		
[mVAC]	[µAAC]	R [Ohm]	[mVAC]	[µAAC]	R [Ohm]
1.5	0.69	2173.91			
54.1	1.69	32011.83			
80.4	2.42	33223.14			
114.4	3.38	33846.15	100.0	2.98	33557.05
147.0	4.33	33949.19	100.0	3.00	33333.33
175.5	5.07	34615.38	100.0	3.00	33333.33
196.3	5.60	35053.57	100.0	3.01	33222.59
210.7	5.95	35411.76	100.0	3.03	33003.30
223.8	6.27	35693.28	100.0	3.03	33003.30
233.4	6.51	35852.53	100.0	3.03	33003.30
240.7	6.68	36032.93	100.0	3.03	33003.30
245.5	6.83	35944.36	100.0	3.03	33003.30
248.2	6.89	36023.22	100.0	3.03	33003.30
250.3	6.95	36014.39	100.0	3.03	33003.30
249.9	6.94	36008.65	100.0	3.03	33003.30
248.2	6.89	36023.22	100.0	3.03	33003.30
244.1	6.81	35844.35	100.0	3.03	33003.30
238.7	6.68	35733.53	100.0	3.03	33003.30
231.0	6.49	35593.22	100.0	3.03	33003.30
220.2	6.23	35345.10	100.0	3.02	33112.58
210.5	5.99	35141.90	100.0	3.02	33112.58
189.8	5.47	34698.35	100.0	3.02	33112.58
167.7	4.90	34224.49	100.0	3.02	33112.58
142.1	4.20	33833.33	100.0	3.01	33222.59
102.9	3.08	33409.09	100.0	3.00	33333.33
72.6	2.20	33000.00			
1.6	0.69	2318.84			



Datum: 17.11.2015
 Klausur D
 Blatt: 11 von 14