Student: Găujăneanu Nicoleta Monica
Grupa: 424D

LUCRAREA DE LABORATOR NR. 1.
SEMNALE PERIODICE

A) Semnal dreptunghiular cu factor de umplere 50%

f_0 = 200kHz **T_0 = 0.5µs**

k	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
f(kHz)	200	400	600	800	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200	3400	3600	3800	4000
Ak/A1(teoretic)	1	0	0.333	0	0.2	0	0.142	0	0.111	0	0.090	0	0.076	0	0.066	0	0.058	0	0.052	0
Ak/A1(teoretic) [dB]	0	-∞	-9.629	-∞	-13.987	-∞	-16.954	-∞	-19.093	-∞	-20.915	-∞	-22.383	-∞	-23.609	-∞	-24.731	-∞	-25.679	-∞
Ak/A1(experim)	1	0	0.329	0	0.199	0	0.141	0	0.109	0	0.089	0	0.074	0	0.084	0	0.037	0	0.049	0
Ak/A1(experim) [dB]	0	-45.148	-9.558	-45.145	-14.019	-44.184	-16.99	-45.189	-19.223	-45.172	-21.034	-45.315	-22.577	-45.354	-23.918	-45.302	-25.11	-45.247	-26.184	-45.569

B) Semnal dreptunghiular cu factor de umplere 25%

f_0 = 200kHz **T_0 = 0.5µs**

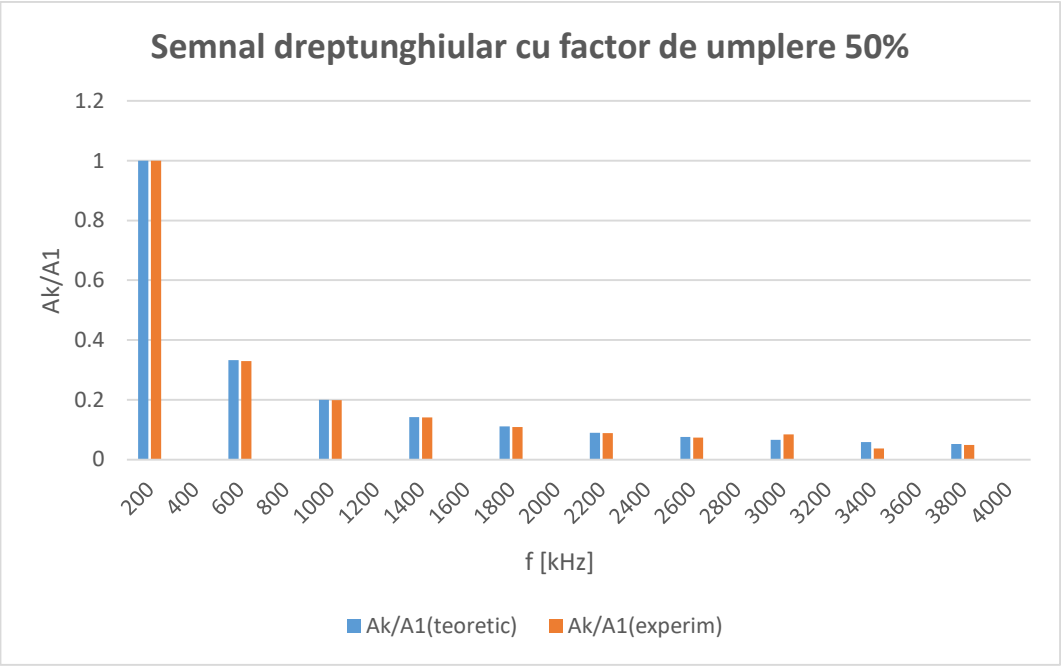
k	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
f(kHz)	200	400	600	800	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200	3400	3600	3800	4000
Ak/A1(teoretic)	1	0,707	0.333	0	0.2	0.235	0.142	0	0.111	0.141	0.090	0	0.076	0.101	0.066	0	0.058	0.078	0.052	0
Ak/A1(teoretic) [dB]	0	-3.011	-9.551	-∞	-13.979	-12.578	-16.954	-∞	-19.093	-17.015	-20.915	-∞	-22.383	-19.913	-23.609	-∞	-24.731	-22.158	-25.679	∞
Ak/A1(experim)	1	0.703	0.326	0	0.203	0.232	0.136	0	0.114	0.137	0.083	0	0.078	0.096	0.058	0	0.059	0.073	0.044	0
Ak/A1(experim) [dB]	0	-3.062	-9.742	-42.624	-13.848	-12.674	-17.354	-42.489	-18.898	-17.235	-21.605	-42.64	-22.016	-20.349	-24.682	-43.021	-24.339	-22.077	-27.043	-42.954

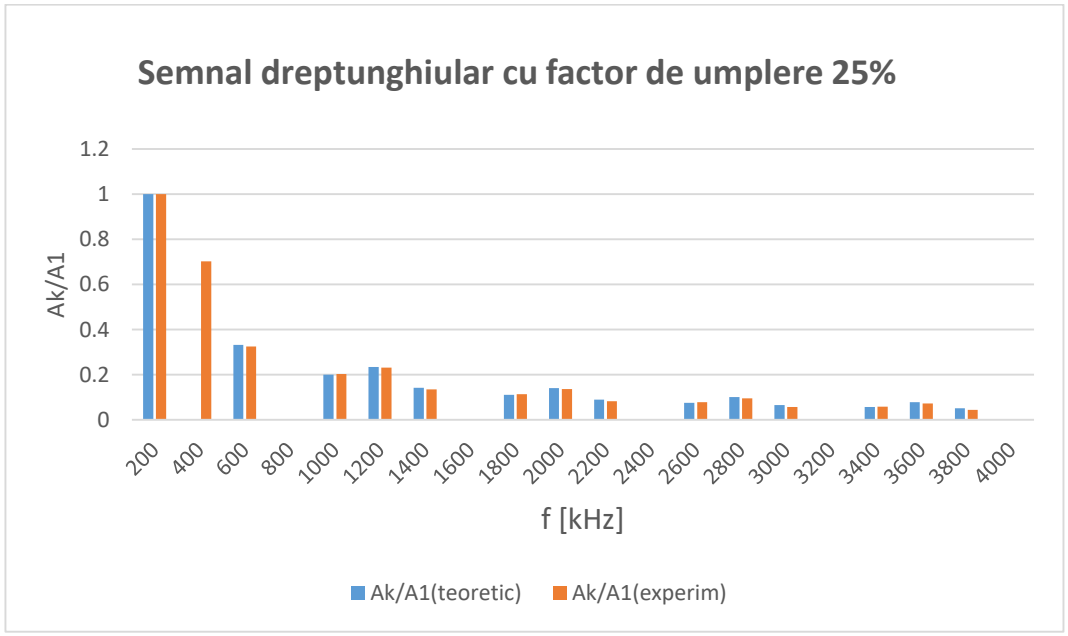
C) Semnal triunghiular

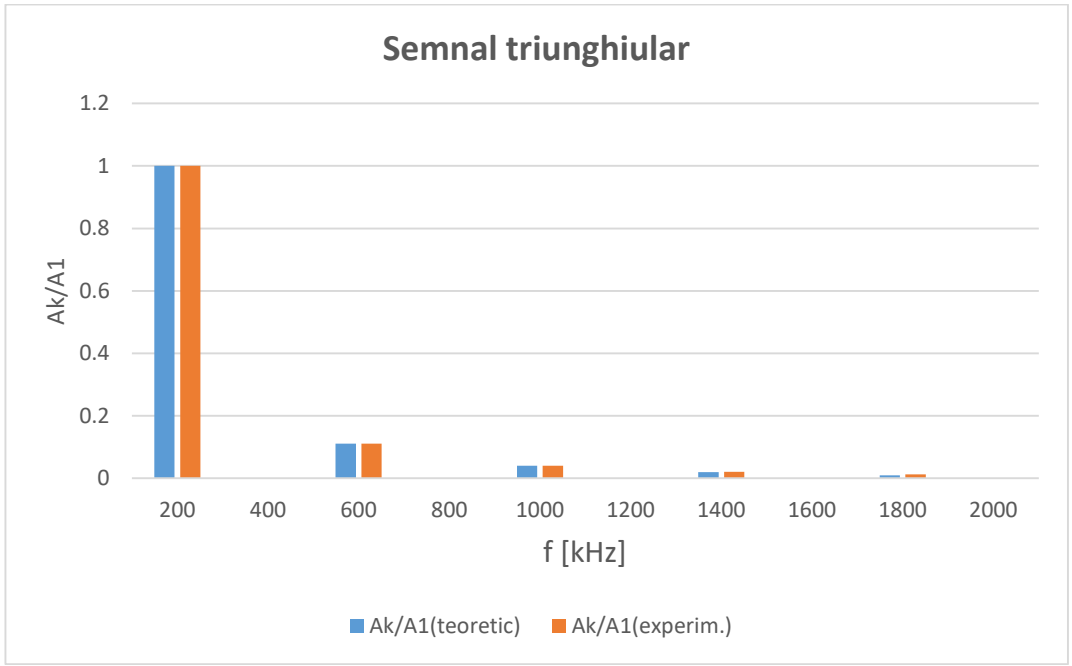
f_0 =200kHz **T_0 = 0.5µs**

k	1	2	3	4	5	6	7	8	9	10
f(kHz)	200	400	600	800	1000	1200	1400	1600	1800	2000
Ak/A1(teoretic)	1	0	0.111	0	0.04	0	0.02	0	0.01	0
Ak/A1(teoretic) [dB]	0	-inf	-19.093	-inf	-27.958	-inf	-33.979	-inf	-40	-inf
Ak/A1(experim.)	1	0	0.111	0	0.04	0	0.021	0	0.013	0
Ak/A1(experim) [dB]	0	-99.606	-19.181	-99.172	-27.90	-99.534	-33.606	-99.637	-37.786	-99.174

D) Spectrele de amplitudini teoretice și experimentale pentru semnalul dreptunghiular cu factor de umplere 25%, 50% și triunghiular - 3 GRAFICE, 2 SETURI DE DATE PE FIECARE GRAFIC (experimental și teoretic) Excel




Semnal dreptunghiular cu factor de umplere 25%
1.2
1
0.8
0.6
0.4
0.2
0
Ak/A1
200
400
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
3000
3200
3400
3600
3800
4000
f [kHz]
Ak/A1(teoretic)
Ak/A1(experim)


Semnal triunghiular
1.2
1
0.8
0.6
0.4
0.2
0
Ak/A1
200
400
600
800
1000
1200
1400
1600
1800
2000
f [kHz]
Ak/A1(teoretic)
Ak/A1(experim.)

E) Banda semnalelor triunghiular si dreptunghiular

B dreptunghi (duty cycle = 50%) =8.2 MHz
B dreptunghi (duty cycle = 25%) =11.2 MHz
B triunghi =2.6 MHz

F) Factorul de distorsiuni pentru semnalul sinusiodal

f_0 =200kHz **T_0 = 0.5µs**

k	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
f(kHz)	200	400	600	800	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200	3400	3600	3800	4000
Ak/A1(exp)	1	0.008	0.018	0.014	0	0	0.014	0.012	0.025	0.02	0	0.014	0.024	0	0.017	0	0	0.024	0	0
Ak/A1(exp) [dB]	0	-37.35	-34.74	-37.133	-55.669	-55.576	-36.962	-38.43	-32.163	-33.819	-31.954	-37.034	-32.934	-48.308	-35.52	-47.208	-43.543	-32.457	-31.805	-31.522

δ = 0.74