Student 1 – Name | Student 1 – Name | Group Date/hour

SECOND LABORATORY
AMPLITUDE MODULATED SIGNALS WITH HARMONIC CARRIER SIGNAL

A) Determination of the modulation index using spectral measurements

$A_{M,ef}$ [V]	$A_{0,ef}$ [dBm]	$A_{1,ef}$ [dBm]	$A_{-1,ef}$ [dBm]	$A_{0,ef}$ [V]	$A_{1,ef}$ [V]	$A_{-1,ef}$ [V]	m_1	m_{-1}
0,3								
0,5								
0,7								
0,9								

B) Determination of the modulation index using measurements in time domain

A_M [V_{rms}]	$2A_{max}$ [V]	$2A_{min}$ [V]	m	m [%]
0,3				
0,5				
0,7				
0,9				

$A_M =$

$A_M =$

$A_M = 0,5$ V_{rms} triangular signal

$A_M =$

$A_M =$

$A_M = 0,5$ V_{rms} rectangular signal

C) The measurement of the bandwidth occupied by the AM signal, B_{MA} , using the spectrum analyzer

$B_{MA} =$ $B_m =$

Observation:

D) The bandwidth of the amplitude modulated signal generator is measured

F_M [kHz]	5	7	9							
F_1 [kHz]	505	507	509							
A_1 [dBm]	−16.47									
F_{-1} [kHz]	495	493	491							
A_{-1} [dBm]	−16.47									

$B_{MA} =$

E) Rectangular message signal **F)** $B_{MA} =$ **G)**

k	F_{-k} [kHz]	$A_{-k,ef}$ [dBm]	$A_{-k,ef}$ [V]	F_k [kHz]	$A_{k,ef}$ [dBm]	$A_{k,ef}$ [V]
1	495			505		
2	490			510		

k	$A_{k,p,ef}$	$\frac{A_{k,p,ef}}{A_{1,p,ef}}$	$\frac{A_{-k,ef}}{A_{-1,ef}}$	$\frac{A_{k,ef}}{A_{1,ef}}$	m_{-k}
1					
2					

H) Triangular message signal $B_{MA} =$

k	F_{-k} [kHz]	$A_{-k,ef}$ [dBm]	$A_{-k,ef}$ [V]	F_k [kHz]	$A_{k,ef}$ [dBm]	$A_{k,ef}$ [V]
1	*495*			*505*		
2	*490*			*510*		

	$A_{k,p,ef}$	$\frac{A_{k,p,ef}}{A_{1,p,ef}}$	$\frac{A_{-k,ef}}{A_{-1,ef}}$	$\frac{A_{k,ef}}{A_{1,ef}}$	m_{-k}
1					
2					

I) The characteristic of the modulator is drawn $m = f(A_m)$ **on millimeter paper.** $K_A =$

J) The amplitude spectra are drawn on millimeter paper

K) The power of the MA signal

A_m [V]	P_1 [mW]	P_2 [mW]	X_{1ef} [V]	X_{2ef} [V]	P_{U1} [mW]	P_{U2} [mW]	$\frac{P_{U1}}{P_1}$	$\frac{P_{U2}}{P_2}$
0,3								
0,5								
0,7								
0,9								

L) The amplitude spectra are drawn on millimeter paper

M) The power of the MA signal with a rectangular message signal

P_1 [mW]	P_2 [mW]	X_{1ef} [V]	X_{2ef} [V]	P_{U1} [mW]	P_{U2} [mW]	$\frac{P_{U1}}{P_1}$	$\frac{P_{U2}}{P_2}$

N) The power of the MA signal with a triangular message signal

P_1 [mW]	P_2 [mW]	X_{1ef} [V]	X_{2ef} [V]	P_{U1} [mW]	P_{U2} [mW]	$\frac{P_{U1}}{P_1}$	$\frac{P_{U2}}{P_2}$