

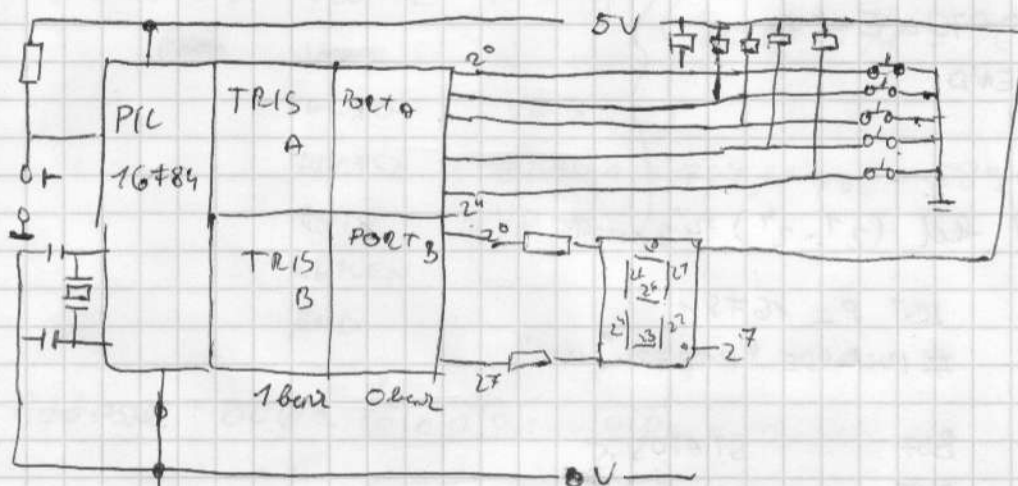
MOVF address, d  
 MOVWF address  
 MOVLW <sup>literal</sup> b'11110000'  
 b'11111111'  $\equiv 0xFF$

RLF address, d  
 RRFB address, d

VeriE

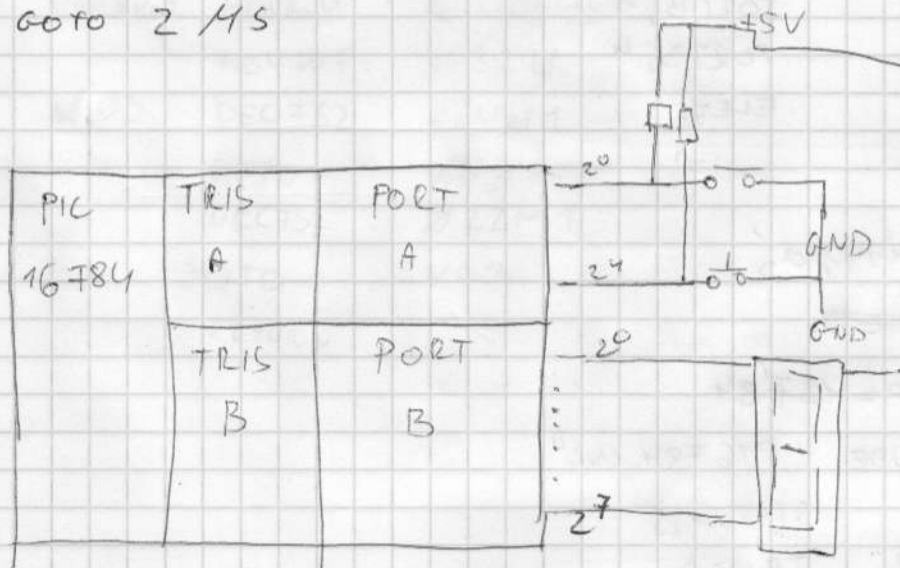
GOTO Cimke  
 CALL -1-  
 RETURN

PIC 16F84 Output Panel



$f_c = 4MHz$

1  $\mu s$  <sup>microsecond</sup>  
 goto 2  $\mu s$



STATUS15 SET 1 ~~bit~~ bank  
 clear -1-

1 copy LED keepjstest

2° lister soldered LED

~~LIST~~

LIST P=16F84

#INCLUDE "P16F84.INC" } directivaz

BSF STATUS, 5

BCF TRISB, 0

BCF STATUS, 5

ELEFE BCF PORTB, 0

GOTO ELEFE

END

2, Kelt led (2<sup>1</sup>-2<sup>4</sup>) signpost

LIST P=16F84

#INCLUDE "P16F84.INC"

BSF STATUS, 5

BCF TRISB, 1

BCF TRISB, 4

BCF STATUS, 5

~~ELEFE~~ BCF PORTB, 1

BCF PORTB, 4

GOTO ELEFE

END

3, ossas led signpost

~~LIST LED~~

LIST P=16F84

#INCLUDE "P16F84.INC"

BSF STATUS, 5

CLRF TRISB

BCF STATUS, 5

MOVLW B'00000000

MOVWF PORTB

GOTO ELEFE

END

1002170 SLUBUTIN  
Led mellegetty

```

LIST P= 16F84
* INCLUDE "P16F84.INC"
BSF STATUS, 5
CLRF TRISB
BCF STATUS, 5
VILLOF BCF PORTB, 6
CALL VARAKOZ
BSF PORTB, 6
CALL VARAKOZ
GOTO VILLOF
VARAKOZ V03 DECFSZ 020H, 1
GOTO V03
GOTO V03
DECFSZ 021H, 1
GOTO V03
RETURN
END

```

2/1

$$256 \cdot 3 / \mu s = 768 \mu s$$

$$768 \mu s \cdot 768 = 589424 \mu s$$

Address 020h <sup>2<sup>1</sup></sup> 0 0 0 0 0 0 0 0 <sup>2<sup>0</sup></sup>  
- 1  
1 1 1 1 1 1 1 1  
1 1 1 1 1 1 1 0

```

VARAKOZ MOVLW B'00000011
MOVWF 022H
V03 DECFSZ 020H, 1
GOTO V03
DECFSZ 022H, 1
GOTO V03
RETURN

```



J#ut#Ea

LIST P=16#84. ~~16#84~~

\*INCLUDE IIP16#84.INC

```
BSF    STATUS,5
CLRF   TRISB
BCF    STATUS,5
MOVLW  B'11111110
MOVWF  PORTB
JUT    RE#    PORTB
CALL   VARAKO?
GOTO   JUT
```

VARAKOZ

```
V03 DECFSZ    020H,1
GOTO  V03
DECFSZ    021H,1
GOTO  V03
RETURN
END
```

6 Neger'snab dlenetder ~~reptatad~~  
Neger'snab

PORTA 

0	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---

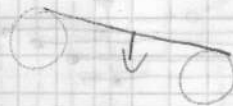
LIST P=16#84

\*INCLUDE "P16#84.INC"

```
BSF    STATUS,5
MOVLW  0xFF
MOVWF  TRISA
CLRF   TRISB
BCF    STATUS,5

EIEIF MOVF  PORTA,0
MOVWF  PORTB
BSF    PORTB,7
BSF    PORTB,6
BSF    PORTB,5
CALL   VARAKOZ
GOTO   EIEIF
```

7 elágazás



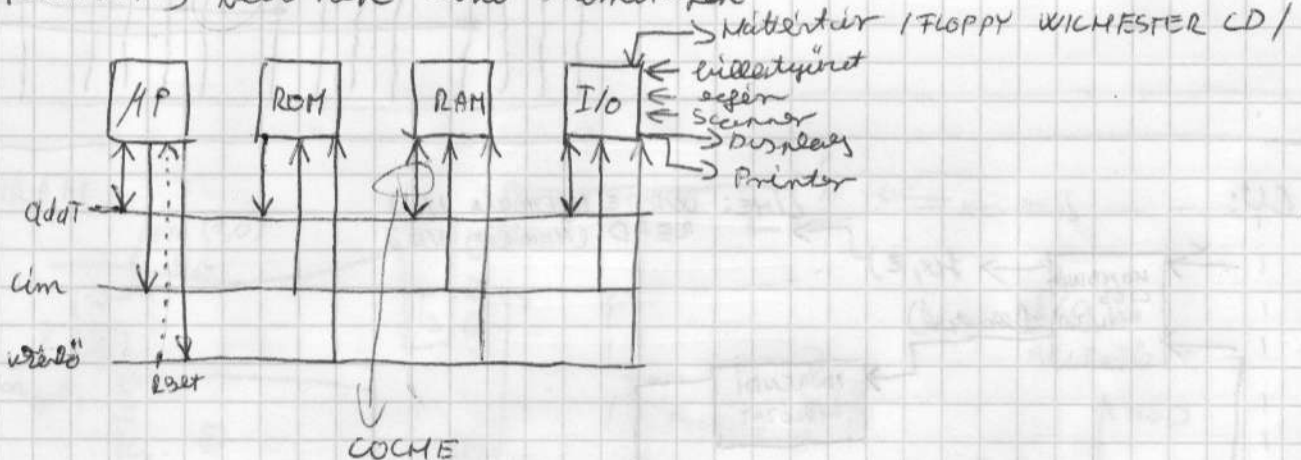
~~ELEJE~~ BT

```

ELEJE      BT#SC  PORT,0
          GOTO    ELEJ
          MOVLW   B'11000000'
          MOVWF   PORTB
          GOTO    ELEJE
          END

TORLES     MOVLW   B'11111111'
          MOVWF   PORTB
          RETURN
  
```

Háromszínes képernyő elvárni számítógépen



Milyen részei

UP:

ALU

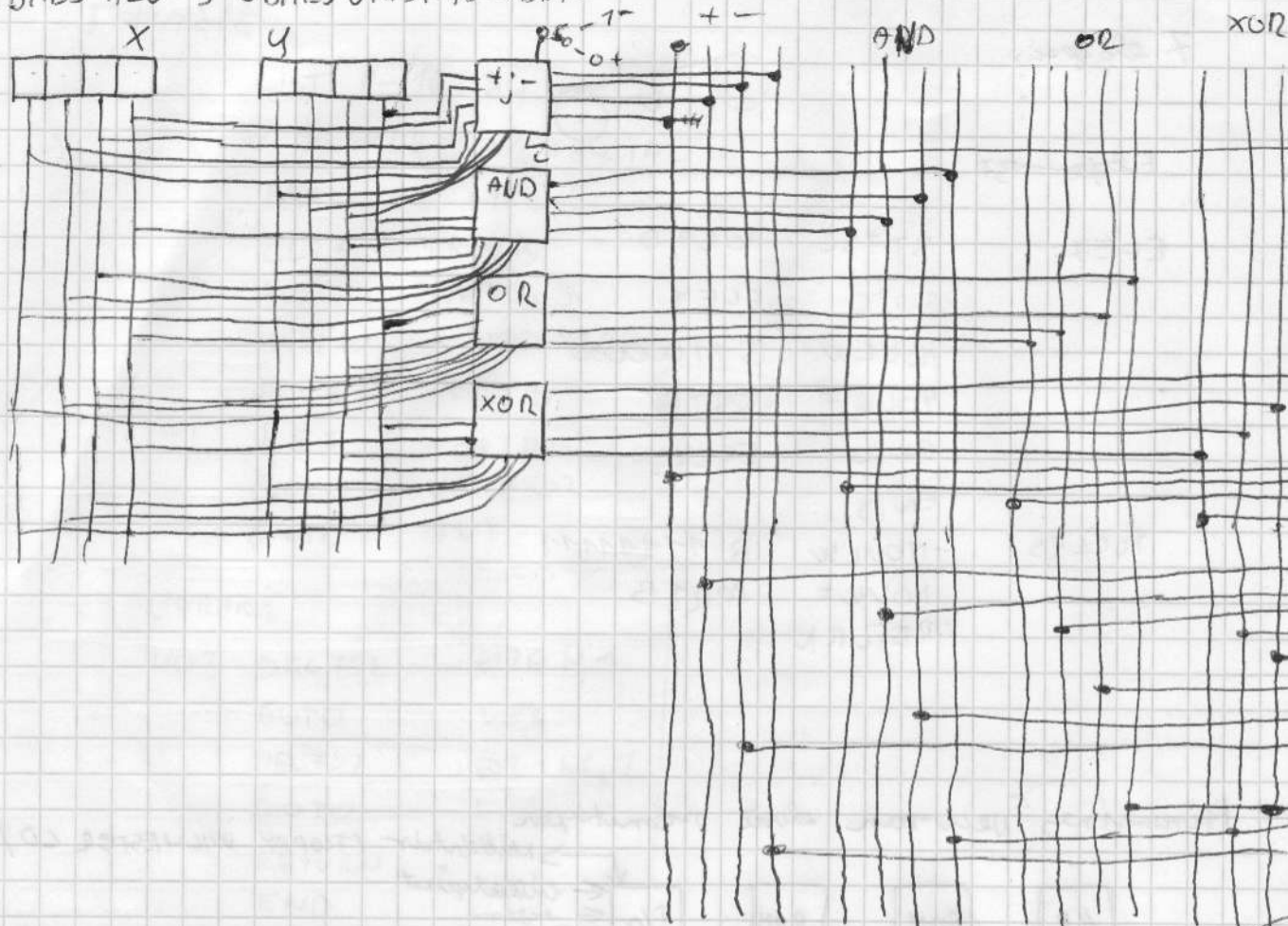
Control Unit (CU)

REGISZTEREK

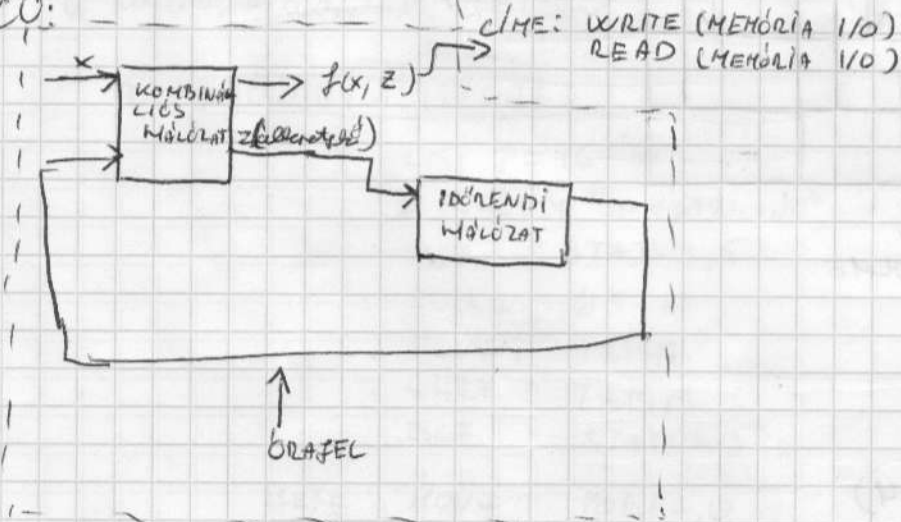
4 bites ALU 3-6 bites utasításokkal

LAPOLZ!!!

4 BITES ALU 3-6 BITES UTASÍTÁSKÓDOK

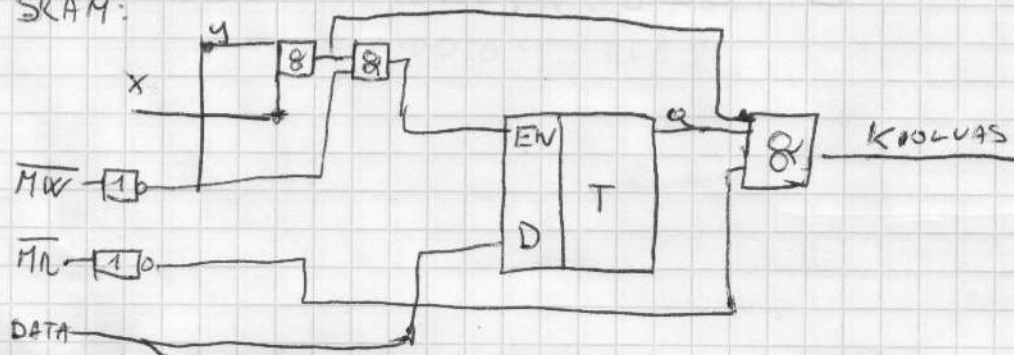


CU:



RAM — SRAM (CACHE)  
— DRAM

SRAM:

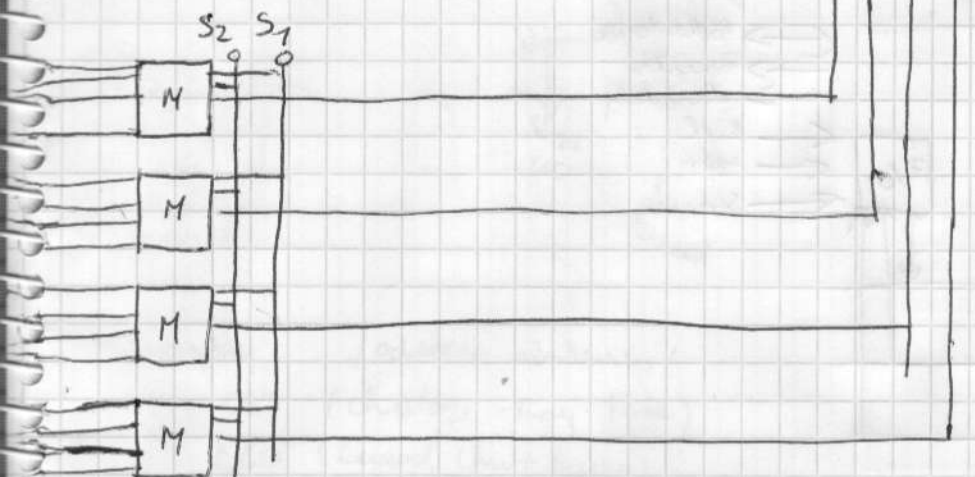




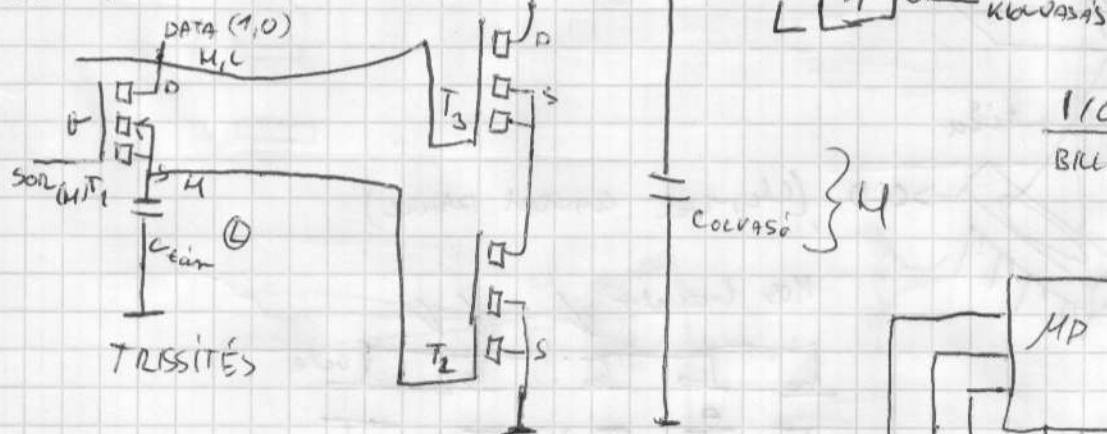
E REDMÉNY

2<sup>3</sup> 2<sup>2</sup> 2<sup>1</sup> 2<sup>0</sup>

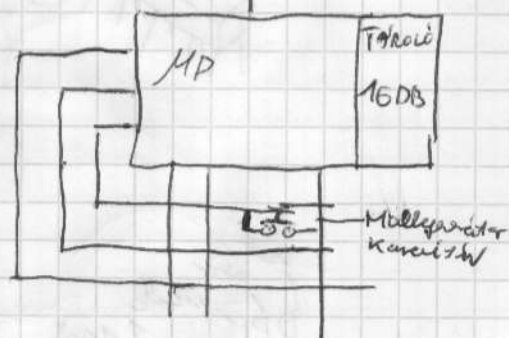
S <sub>2</sub>	S <sub>1</sub>	S <sub>0</sub>	
0	0	0	ÖSSZEAD
0	1	0	KIVON
1	0	0	AND
1	1	0	OR
1	1	1	XOR



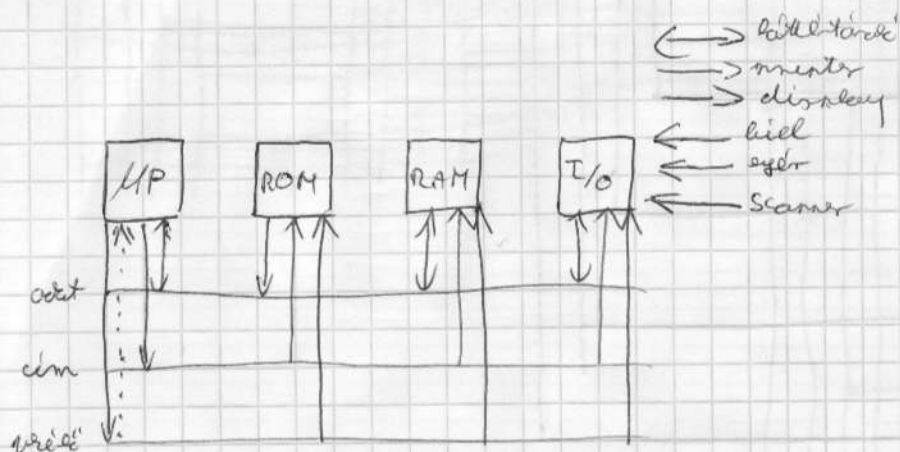
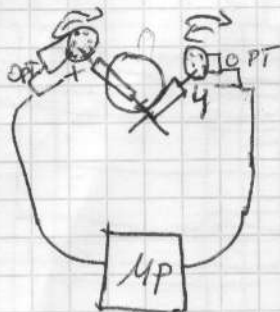
DRAM



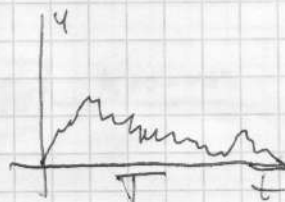
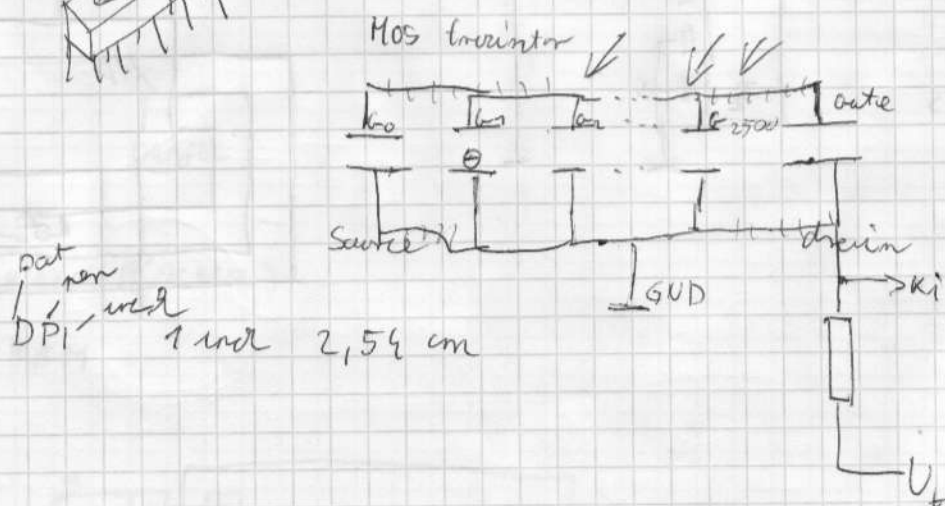
I/O  
BILLENTÜZET  
↑ KÓD



EVER

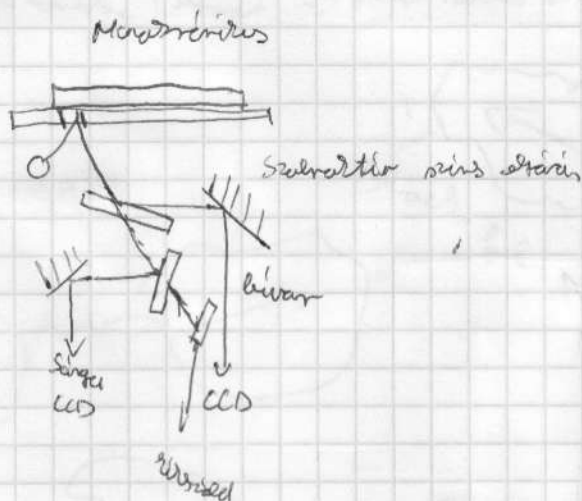
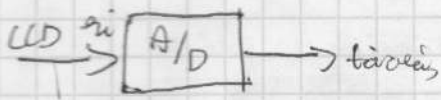


# Scanner



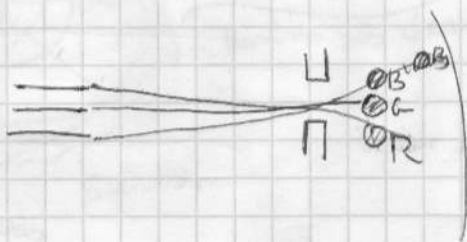
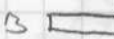


Analog digitál átv.

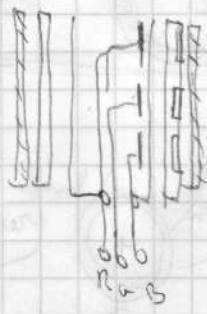
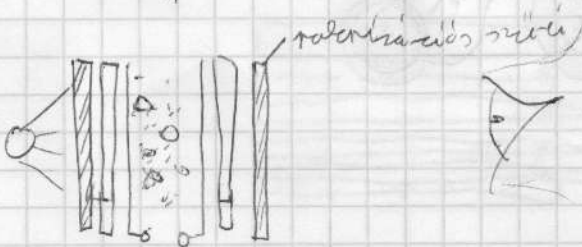
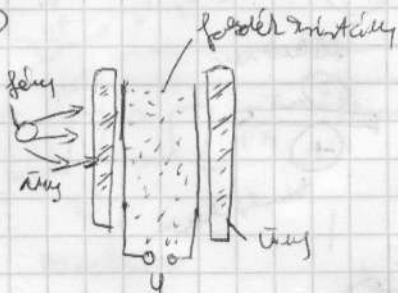


Díszlámpa / additív színkeverés /  
 CRT (kathódsugár-cső)  
 LCD (Liquid Crystal Display)  
 PLAZMA

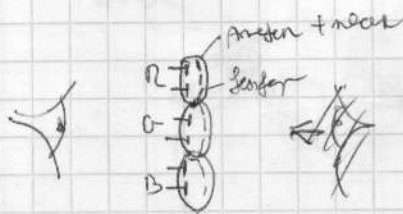
CRT



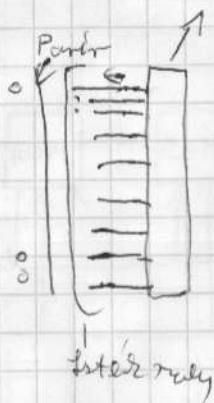
LCD



# PLAZMA

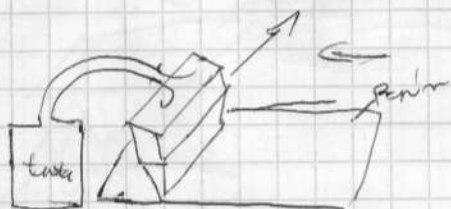


## Matrix ugantato

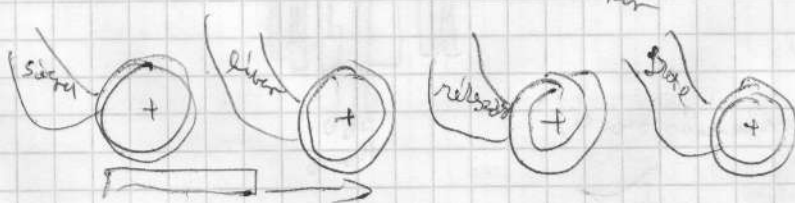
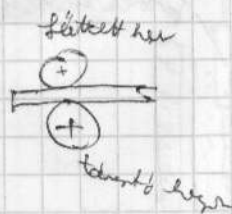
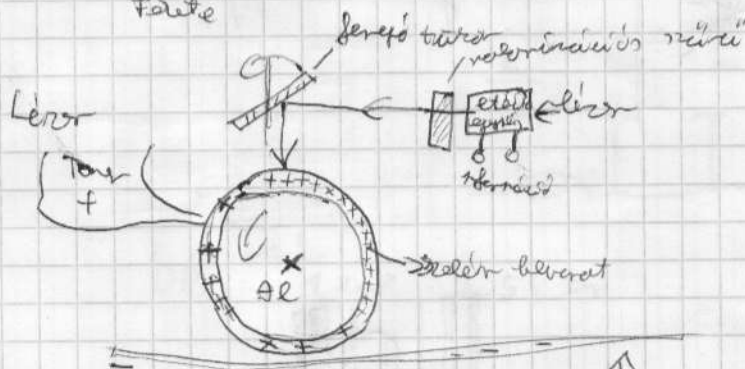


## Tentozsegerer

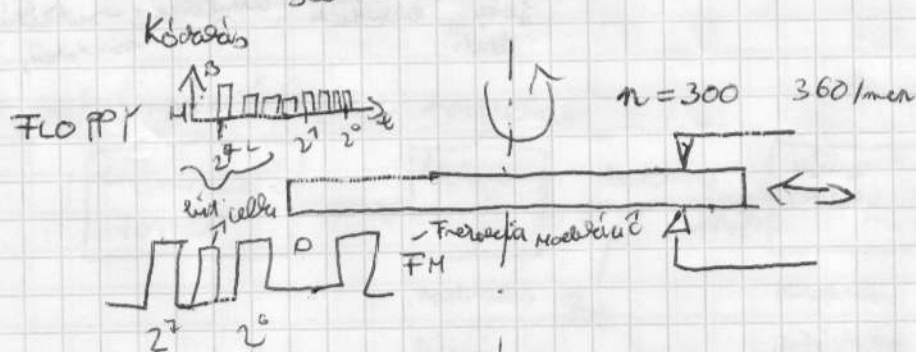
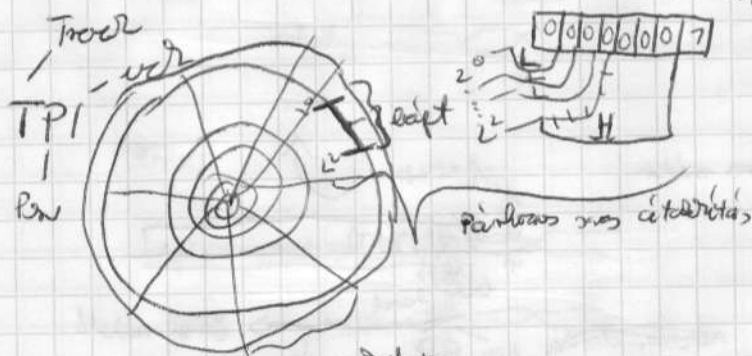
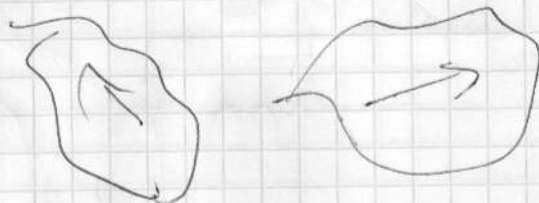
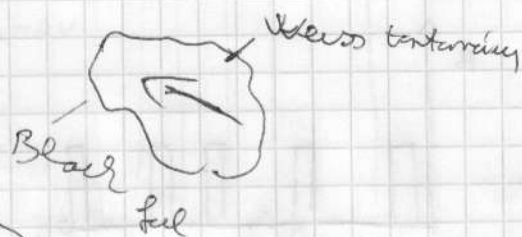
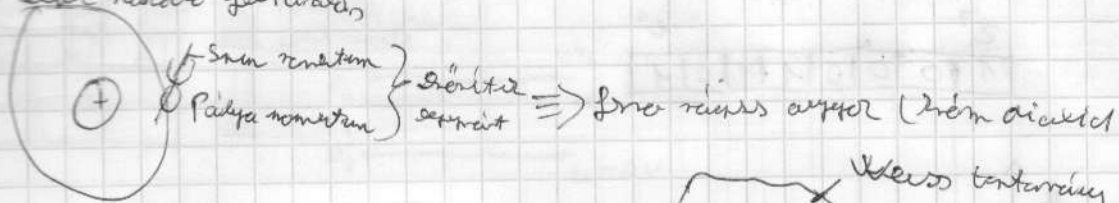
Piece electrons  
a, nias  
ly, Bubble Jet



Singa  
kian  
nias  
Folite

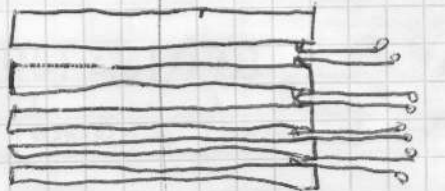


Kéreges és "néző" feltáratás



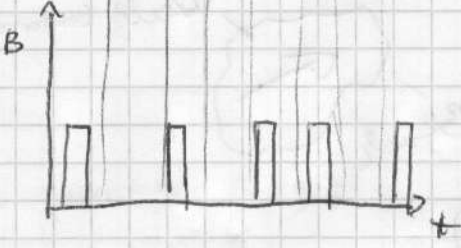
Webster

$n = 3000$  ford/m

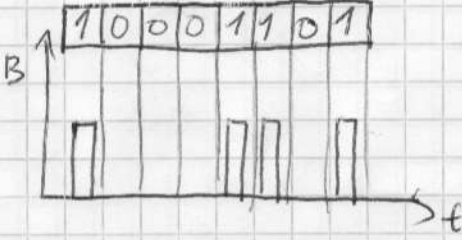




20



陳其南

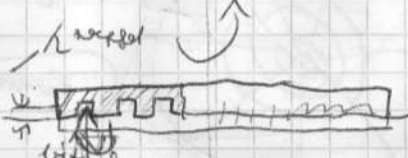
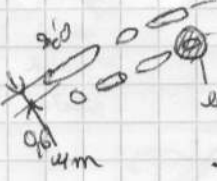


26889 anal



7,6 Mon

läng 2: 780 nm

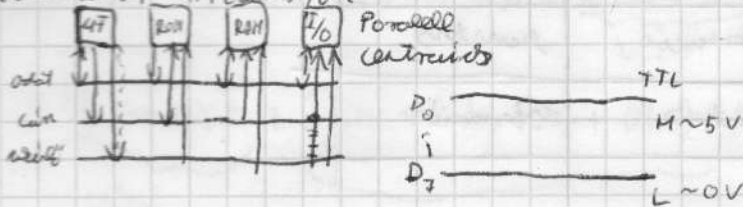


Seizure 2000

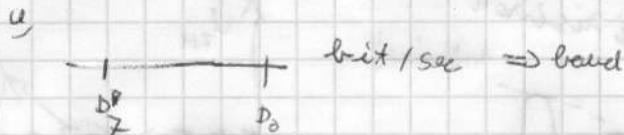
$\downarrow$

Interferenz → Interferenz  
Viel mehr

# KÜLVILÁGI KAPCSOLATOK



SERIES  
RS232-C



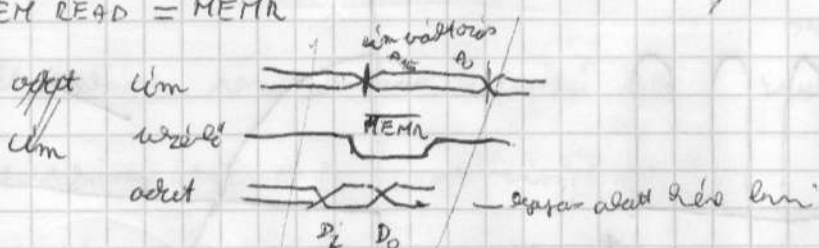
b USB



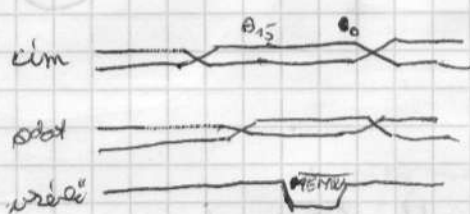
## Hardver alapelemek

UP ← Read  
→ Write

MEM READ = MEMR



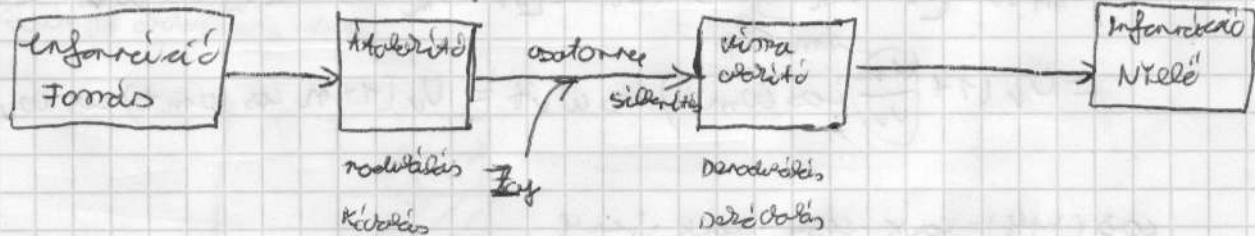
MEMW



1/0R  
1/0W

((p))

## Információk modelle



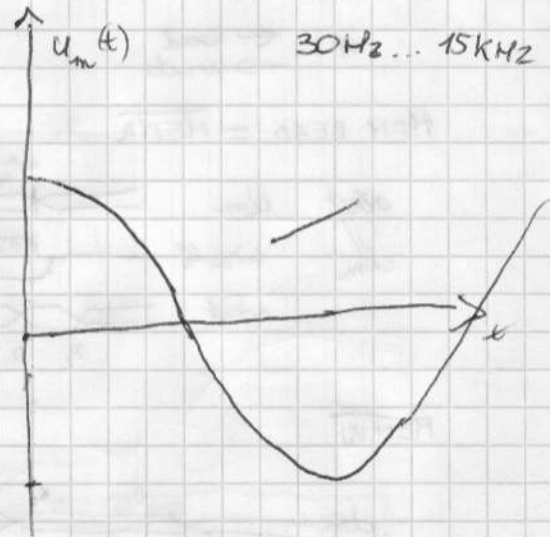
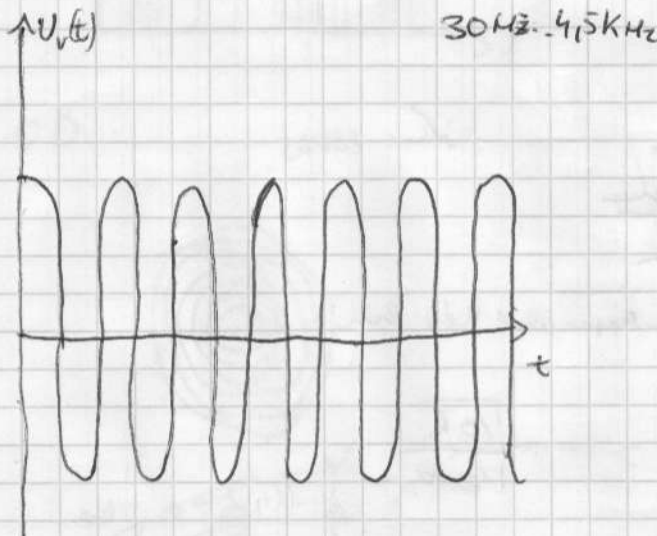
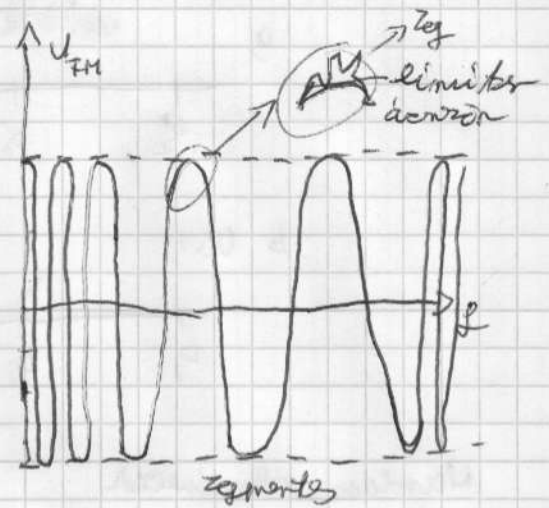
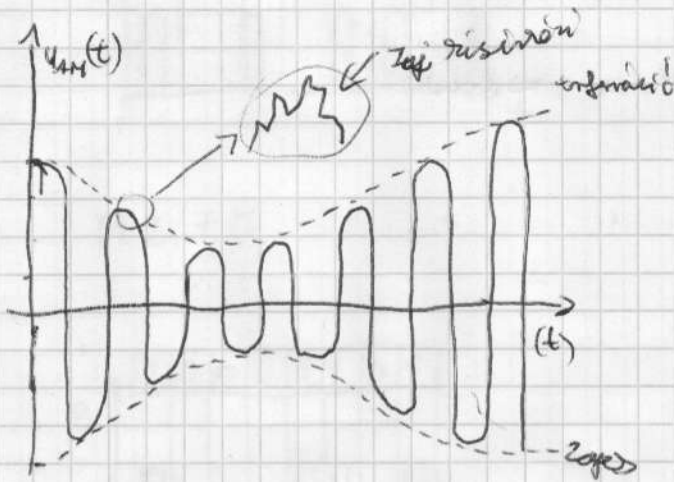
Moduláció:

$$U_v(t) = U(t) \cos[\omega(t)]$$

amplitúdó      argumentum

$$U_m(t) = U_m \cos \omega_m t \quad \omega = 2\pi f$$

Amplitúdai moduláció /AM/	amplitúdó	frekvencia
Frekvencia moduláció /FM/	frekvencia	amplitúdó



AM

$$u_v(t) = U_v \cos \omega_v t \quad u_m(t) = U_m \cos \omega_m t$$

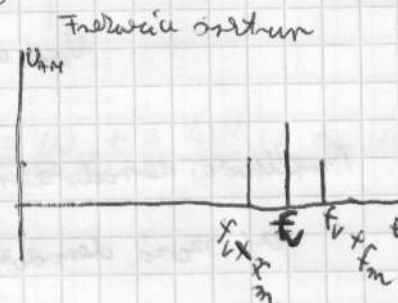
$$u_{AM}(t) = [U_v + u_m(t)] \cos \omega_v t = [U_v + U_m \cos \omega_m t] \cos \omega_v t = U_v (1 + m \cos \omega_m t) \cos \omega_v t$$

$$\begin{aligned} \cos(x+y) &= \cos x \cdot \cos y - \sin x \cdot \sin y \\ \cos(x-y) &= \cos x \cdot \cos y + \sin x \cdot \sin y \\ \cos(x+y) + \cos(x-y) &= 2 \cos x \cdot \cos y \\ \cos x \cdot \cos y &= \frac{1}{2} \cos(x+y) + \frac{1}{2} \cos(x-y) \\ x &= \omega_v t \quad y = \omega_m t \end{aligned}$$

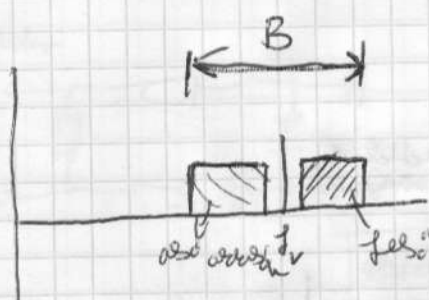


$$U_{AM}(t) = U_v(1 + m \cos \omega_m t) \cos \omega_v t = \underbrace{U_v \cos \omega_v t}_{\text{Vibe}} + U_v \cdot m \cos \omega_m t \cdot \cos \omega_v t =$$

$$= \underbrace{U_v \cos \omega_v t}_{\text{Vibe}} + \underbrace{\frac{1}{2} U_v m \cos(\omega_v + \omega_m) t}_{\text{alsó}} + \underbrace{\frac{1}{2} U_v m \cos(\omega_v - \omega_m) t}_{\text{alsó}}$$



Móduláció fel sáv  $f_u \dots f_f$  (30 MHz ... 4,5 KHz)



$$\text{Keres: } B = 2 f_f (= 30 \text{ KHz})$$

Sáv szélesség 3 KHz  $\rightarrow$  1000 csatorna

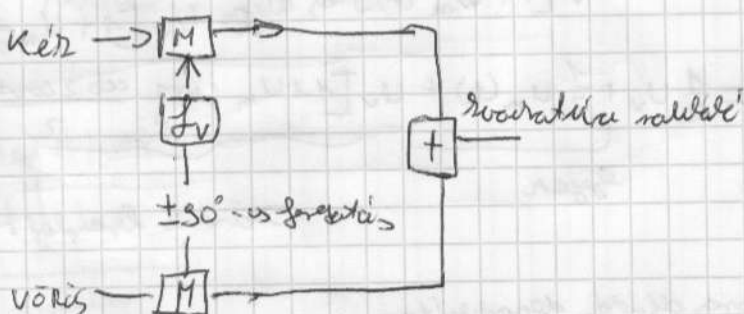
$$\text{Video: } B = 2 f_f (2 \cdot 6,5 \text{ MHz} = 13 \text{ MHz})$$

sáv szélesség 8 MHz

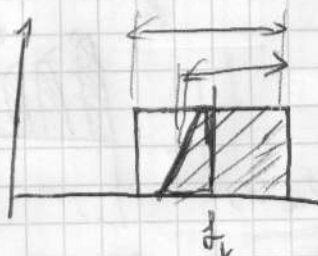
a) Két oldalsáv nem elnyertett módosított AM  $\rightarrow$  impulzus demoduláció (oldós)

b) Két oldalsáv elnyertett (szűrött) módosított AM

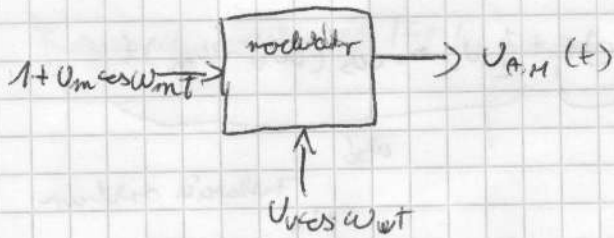
c) kvadrátúra moduláció



d) Szűrött oldalsáv AM

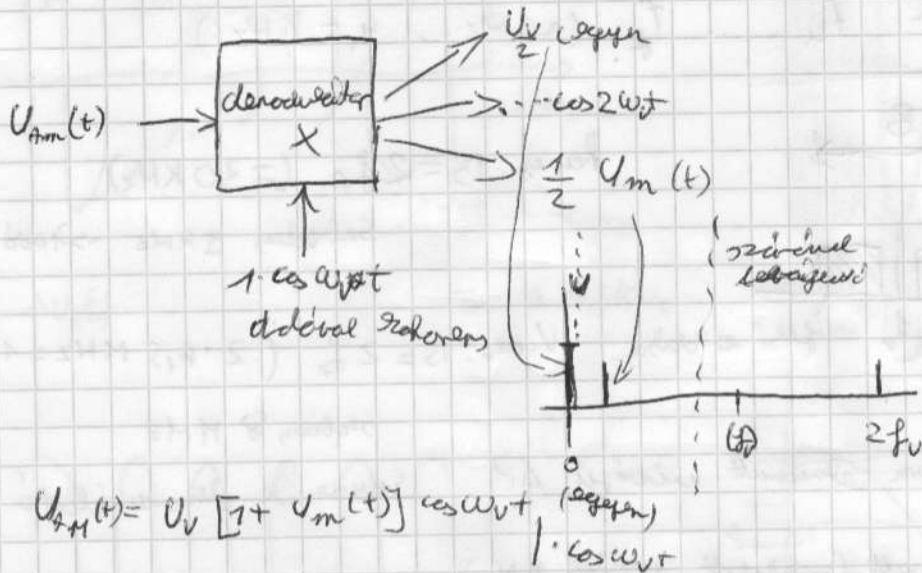


Amplitude modulator  $U_{AM} = U_V (1 + U_m \cos \omega_m t) \cos \omega_c t$



Amplitude demodulator

by zero demodulator



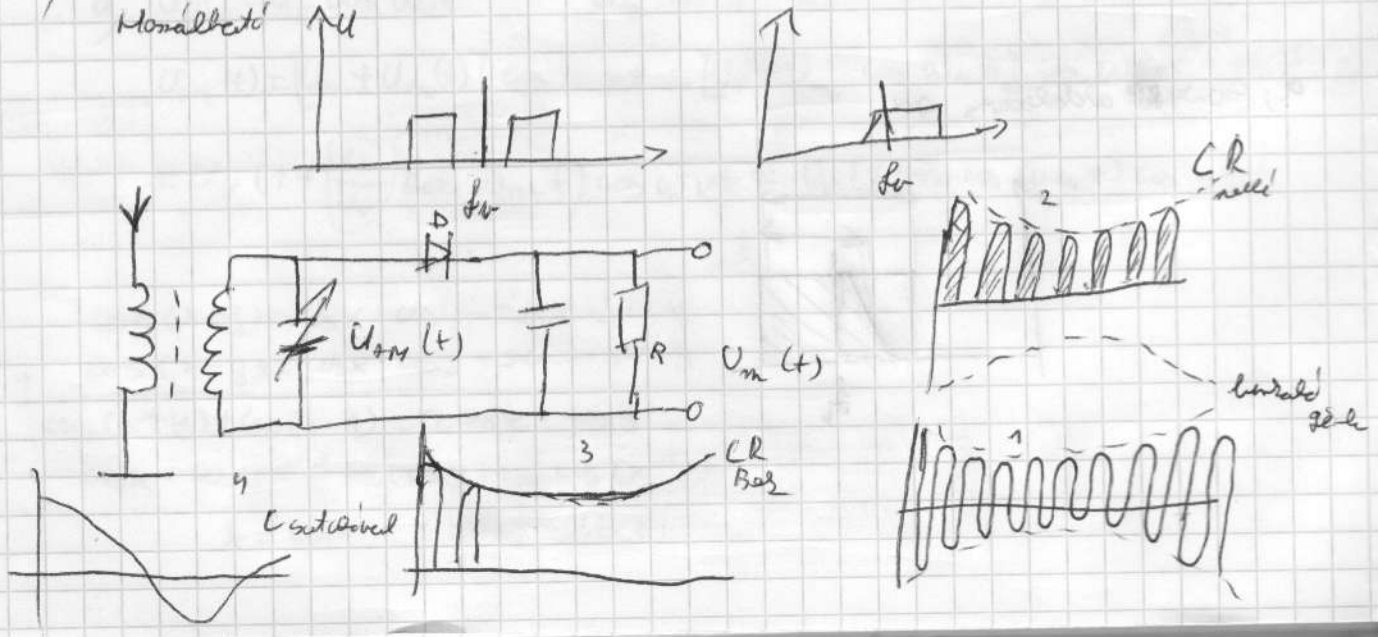
$$U_{AM}(t) = U_V [1 + U_m(t)] \cos \omega_c t + \text{Gegen} \cdot \cos \omega_c t$$

$$= U_V [1 + U_m(t)] \cos \omega_c t = U_V [1 + U_m(t)] \frac{1 + \cos 2\omega_c t}{2} =$$

$$= \underbrace{\frac{1}{2} U_V + \frac{1}{2} U_m(t)}_{\text{Gegen}} + \underbrace{U_V [1 + U_m(t)] \frac{\cos 2\omega_c t}{2}}_{\text{Nützlich laufsicher}}$$

by Sorens diode demodulator

Monalbeits



Frequenzmodulation FM/

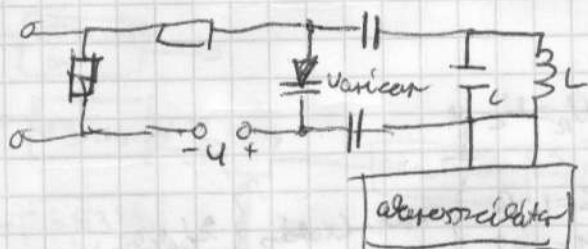
$$U_V(t) = U_V \cos \overset{\text{total}}{\theta(t)}$$

$$\frac{d}{dt} \theta(t) = \omega_V + \Delta\omega \cdot U_m \cdot \cos \omega_m(t)$$

$$\int_0^t \frac{d\theta(t)}{dt} dt = \int_0^t (\omega_V + \Delta\omega \cdot U_m \cdot \cos \omega_m t) dt = \omega_V t + \frac{\Delta\omega}{\omega_m} U_m \sin \omega_m t$$

$$U_{FM}(t) = U_V \cos \left[ \omega_V t + \frac{\Delta\omega}{\omega_m} U_m \sin \omega_m t \right]$$

Modulator

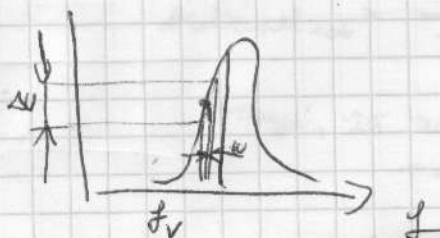
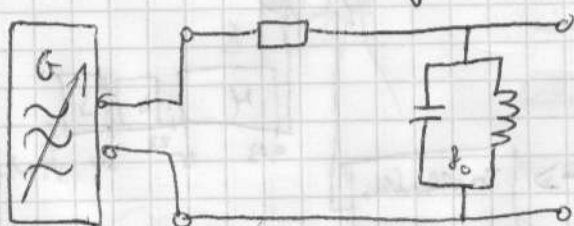


Thomson formel

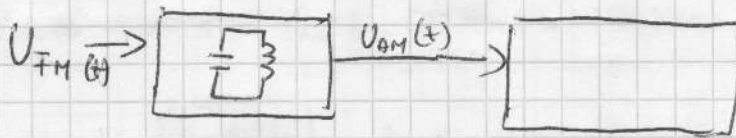
$$f = \frac{1}{2\pi \sqrt{L C}} \quad \left. \begin{array}{l} \uparrow \\ \text{varicor} \\ \text{unt} \end{array} \right\}$$

Demodulator

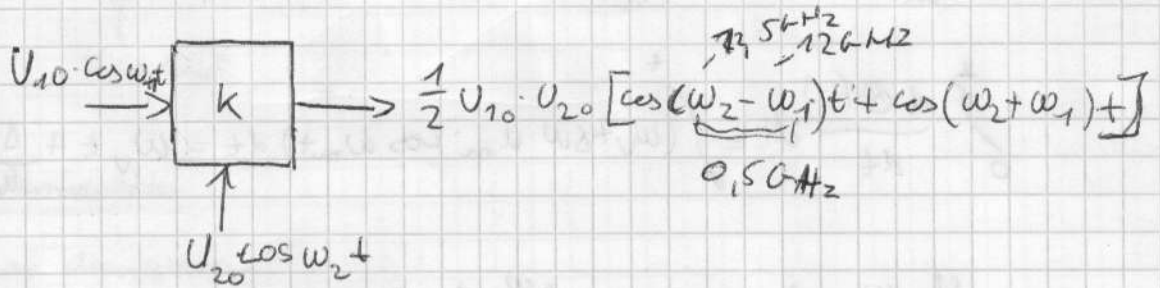
$$U_{FM}(t) \rightarrow U_{AMP}(t) \rightarrow \text{Sens. drehen um}$$



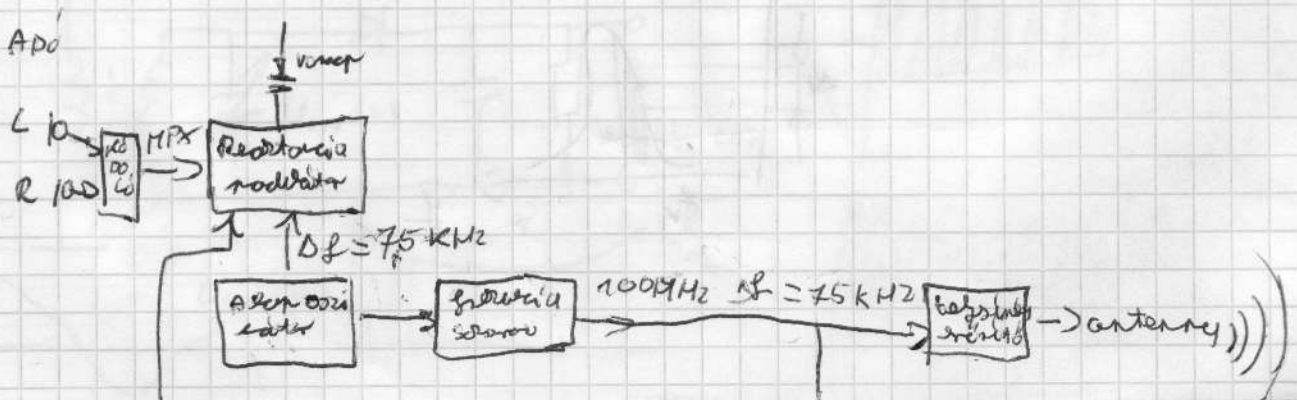
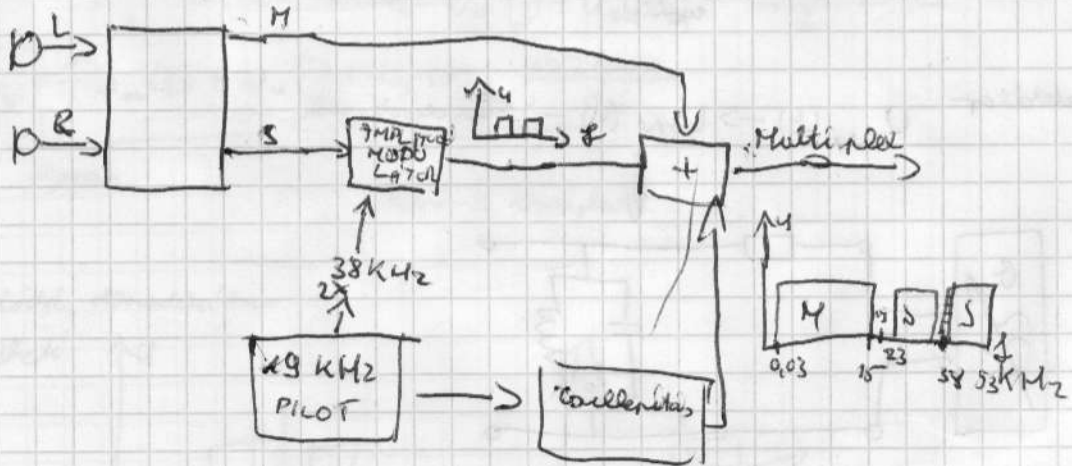
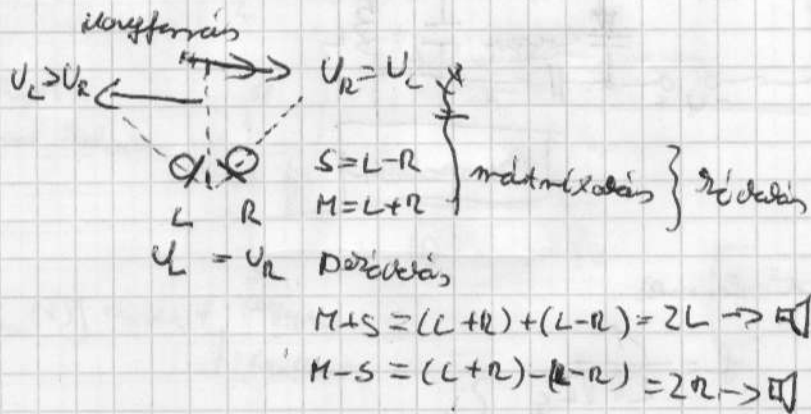


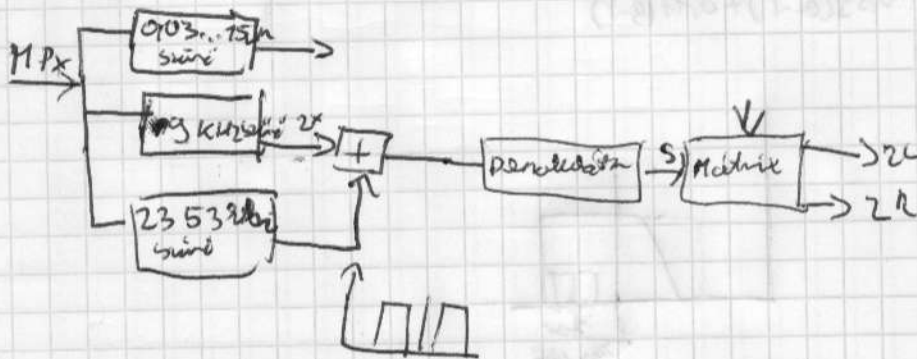
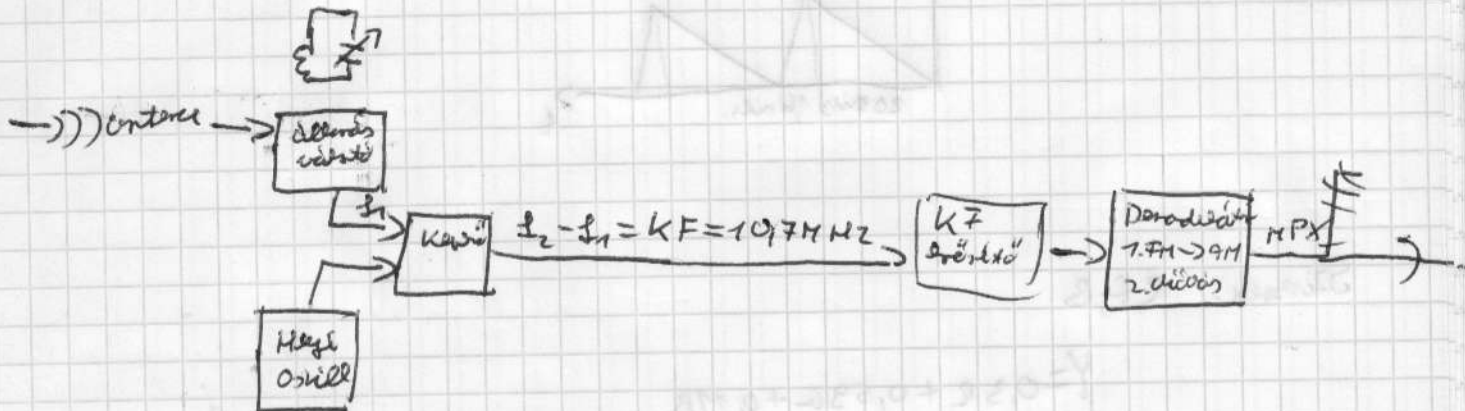


Keresés (transzmisszió)

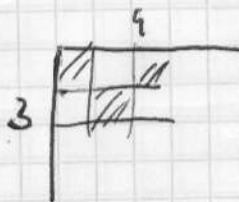
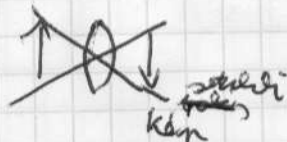


Hang interferencia (I)  
frekvencia (f)  
térhossz (s)





Vizuális elemek



Ortodox  
nézőpont 20°

Számítások 2' (88)

$$n_1 = \frac{20^\circ}{2} \cdot 600$$

$$n_2 = \frac{4}{3} \cdot 600$$

$$\left. \begin{array}{l} n_1 = \frac{20^\circ}{2} \cdot 600 \\ n_2 = \frac{4}{3} \cdot 600 \end{array} \right\} n = n_1 \cdot n_2 = 600 \cdot 800 = 4,8 \cdot 10^5$$

$$\text{Módulátor} = \frac{\frac{n}{2}}{T} = \frac{n}{2T} = \frac{n}{2 \cdot 0,04} = 6 \text{ MHz}$$

modulátor 25 2er/s

$$T = \frac{1}{25} = 0,04$$

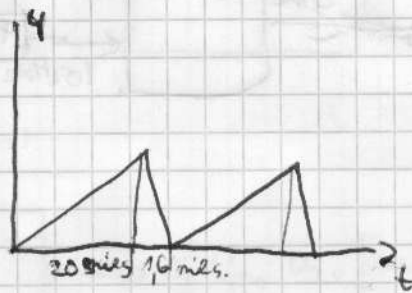
modulátor 20

Számítások



Kem nur der Teil

50 Hz Voll. 259er



Stärken: R, G, B

$$Y = 0,3R + 0,59G + 0,11B$$

$$O = 0,3(R-Y) + 0,59(G-Y) + 0,11(B-Y)$$

PAL  $\left. \begin{matrix} R-Y \\ B-Y \\ Y \end{matrix} \right\} (G-Y)$   
verf

