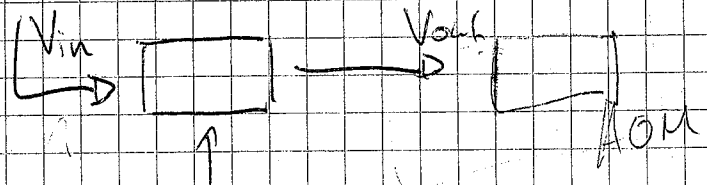
10.04.2024 E101

Amplifier gain max 33 dBm

$$29 = 40 \log\left(\frac{V_{in}}{V_{out}}\right)$$

$$[dBm] = 10 \log\left(\frac{V_{in}}{632\,m\,Vpp}\right)$$



Vout dBM

↑ max. dBM = 33

Bsp.: Output 500mV/$\hat{=}$ $14,16 \cdot 10^3$ mVpp

$= V_{out}$

gain ist 29;

$$29 = 10 \log_{10}\left(\frac{V_{out}}{V_{out\,in}}\right)$$

$$10^{2,9} = \frac{V_{out}}{V_{out\,in}}$$

$$\Rightarrow V_{in} = \frac{V_{out}}{10^{2,9}}$$

$= 17,82$ mVpp

$$29 = 20 \cdot \log_{10}\left(\frac{V_{out}}{V_{in}}\right)$$

500 mW, 1000 mW, 2000 mW

$\hat{=}$ 14,16 $\cdot 10^3$ mV$_{pp}$) 20 $\cdot 10^3$ mV$_{pp}$,

28,3 $\cdot 10^3$ mV$_{pp}$

$$V_{in} = \frac{V_{out}}{10^{\frac{29}{20}}}$$

$V_{in} =$ 502,1 mV$_{pp}$ (500 mW)

709,6 mV$_{pp}$ (1000 mW)

(2000 mW)

$$gain = 20 \cdot \log_{10}\left(\frac{V_{out}}{V_{in}}\right)$$

500 mW, 1000 mW, 2000 mW

$\hat{=}$ 14,16 / 20 / 28,3 } $\cdot 10^3$ mV$_{pp}$

$$V_{in} = \frac{V_{out}}{10^{\frac{gain}{20}}}$$

(gain, V_{out})

$\Rightarrow$ $V_{in} =$ 201,8, 912, 1, 583, 2 mV$_{pp}$

(3.1) measure so that P_1 is not ($P_{1,not} = 0{,}746$ mW)

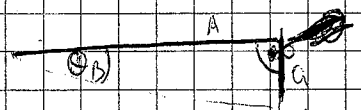
change the AOM angle

$\Rightarrow$ det. opt angle

$\Leftrightarrow$ distance between 0 & 1 : 0,7 cm

dist AOM-pd: 9,5(2) mm + 15,0(2) cm + 32,3(2) cm

$\hat{=}$ 56,80 ± 0,35



$\tan(\Theta_B) = \frac{0{,}7}{56{,}80}$

$\Rightarrow \Theta_B =$

$\Theta = 2\Theta_B =$

Powermeter noise 0,65(5) µW

0,904 mW before 10M

0,858 mW after 10M ± 0,001 mW

~~1 W~~

Power / W	~~0,~~ 1st Order	4th Order
1 W	0,751(1) mW	67,1(2) µW
0,5 W	0,548(1) mW	0,286(1) mW
2 W	0,728(1) mW	59,6(2) µW
0 W	0	0,82 mW

Frequency / MHz	bei 0,5 mW Power 1st Order	Distance 1st - 0th / mm
60	~~0,424~~ 0,412 (1) mW ~~0,152 (2) mW~~	6 (1) mm
65	0,473 (1) mW	6 (1) mm
70	~~0,501 (1) mW~~ 0,512 mW	6,5 mm ± 1 mm
75	~~0,52 51 (1) mW~~ 0,519 (1) mW	6,5 mm ± 1 mm
80	0,549 mW ~~0,543 (1) mW~~	7 (1) mm
85	~~0,534~~ 0,536 mW	7,5 mm ± 1 mm
90	0,510 mW ~~0,48~~	8 mm
95	0,457 (1) mW	8,5 mm
100	0,370 (1) mW	9 mm

Power / mVpp	0th Order	1st Order bei 30MHz
519	~~117,5(2)µW~~ 20,44 µW	~~0,594(1)mW~~ 0,769(1)mW
462	26,3(2)µW ~~0,1495mW~~	~~0,558(1)mW~~ 0,775(1)mW
412	64,7(2)µW	0,746(1)mW
367	126,0(2)µW	0,691(1)mW
327	0,202(1)mW	0,621(1)mW
292	0,282(1)mW	0,546(1)mW
260	0,361(1)mW	0,469(1)mW
232	0,437(1)mW	0,399(1)mW
206	0,504(1)mW	0,321(1)mW
184	0,561(1)mW	0,274(1)mW
164	0,611(1)mW	0,225mW
146	0,650(1)mW	0,183(1)mW
130	0,686(1)mW	0,148

Angle in deg	1st Order Power in mW @ 80 MHz
0	0,746(1) mW
Uhrzeigersinn	
0,2	0,714(1) mW
0,4	0,641(1) mW
0,6	0,522(1) mW
0,8	~~0,357~~ 0,367(1) mW
1	0,222(1) mW
Gegenuhrzeigersinn	0 – 0,752(1) mW (neu Max)
0,2	0,743(1) mW
0,4	0,641(1) mW
0,6	0,500(1) mW
0,8	0,387(1) mW
1	0,241(1) mW

1 W
(4,12 mWpp)

Frequency in MHz	Max. Power (AOM adjusted) at 0,5W
60	0,457 mW
65	0,504 mW
70	0,519 mW
75	0,532 mW
80	0,542 mW
85	0,547 mW
90	0,549 mW
95	0,537 mW
100	0,481 mW

292 mVpp