

Finesse assessment for vacuum

Parameter:

Bezeichnung	Variable
Finesse	F
Streuung	S
Absorption	A
Faktor	k

Werte:

Messung i	Frequenz [THz]	A_i	Finesse F_i
1	194,389	$21 \cdot 10^{-8}$	88k
2	194,432	$7 \cdot 10^{-8}$	100k

Berechnung:

$$\frac{1}{F_i} = S + k \cdot A_i$$

$$\frac{1}{F_1} - \frac{1}{F_2} = k \cdot (A_1 - A_2)$$

$$k = \frac{\frac{1}{F_2} - \frac{1}{F_1}}{A_1 - A_2} = \frac{F_1 - F_2}{F_1 \cdot F_2 \cdot (A_1 - A_2)}$$

$$k = 9,74$$

$$S = \frac{1}{F_1} - k \cdot A_1 = 9,32 \cdot 10^{-6}$$

$$F_{\text{Vacuum}} = \frac{1}{S} = 107000$$

Annahme im Vakuum ist Absorption = 0; $F = \frac{1}{S} \rightarrow F_{\text{Vacuum}} = 107000$

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