

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	Comment
1	194,389	21*10 ⁻⁸	88.000	Absorptionswerte aus dem internet für die jeweilige Frequenz
2	194,432	7*10 ⁻⁸	100.000	

Berechnung:

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

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

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

$$k = 9,74$$

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

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

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