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$$data := \begin{pmatrix} 0.005 & 8 & 98 \\ 0.01 & 8 & 175 \\ 0.02 & 8 & 270 \\ 0.05 & 8 & 340 \\ 0.1 & 8 & 360 \\ 0.2 & 8 & 365 \\ 0.5 & 8 & 375 \\ 1 & 8 & 370 \\ 2 & 8 & 370 \\ 5 & 7.9 & 365 \\ 10 & 7.8 & 360 \\ 15 & 7.4 & 335 \\ 19 & 6.9 & 330 \end{pmatrix}$$

column 1: frequency, MHz
column 2: channel 1 voltage, V
column 3: channel 2 voltage, mV

$s := 1 .. rows(data)$ $\quad f_s := data_{s,1} \cdot 10^6$

$$ZT_s := \left| \begin{array}{l} Vch1 \leftarrow data_{s,2} \\ Vch2 \leftarrow data_{s,3} \cdot 10^{-3} \\ Iprim \leftarrow \frac{Vch1}{50} \\ \frac{Vch2}{Iprim} \end{array} \right.$$

Fig 7.2.6 Using the test results to calculate the transfer impedance

$y1 := \log(5 \cdot 10^3)$ $y2 := \log(20 \cdot 10^6)$

Calculting a set of 100 frequencies, equally spaced between 5 kHz and 20 MHz.

$m := \frac{y2 - y1}{100}$

$i := 1 .. 101$

$F_i := \left| \begin{array}{l} y \leftarrow m \cdot (i - 1) + y1 \\ 10^y \end{array} \right.$

$R1 := 300\ \Omega$ $R2 := 51\ \Omega$ $R3 := 50\ \Omega$

$R4 := 850\ \Omega$ $L1 := 200 \cdot 10^{-6}\ H$ $C1 := 60 \cdot 10^{-12}\ F$

$Turns := 10$

$ZTm_i := \left| \begin{array}{l} \omega \leftarrow 2 \cdot \pi \cdot F_i \\ Z1 \leftarrow R4 + \frac{1}{j \cdot \omega \cdot C1} \\ Y2 \leftarrow \frac{1}{R1} + \frac{1}{R2} + \frac{1}{R3} + \frac{1}{j \cdot \omega \cdot L1} + \frac{1}{Z1} \\ Z2 \leftarrow \frac{1}{Y2} \\ ZT \leftarrow \frac{|Z2|}{Turns} \end{array} \right.$

Figure 7.2.8 Calculating the transfer impedance of the circuit model

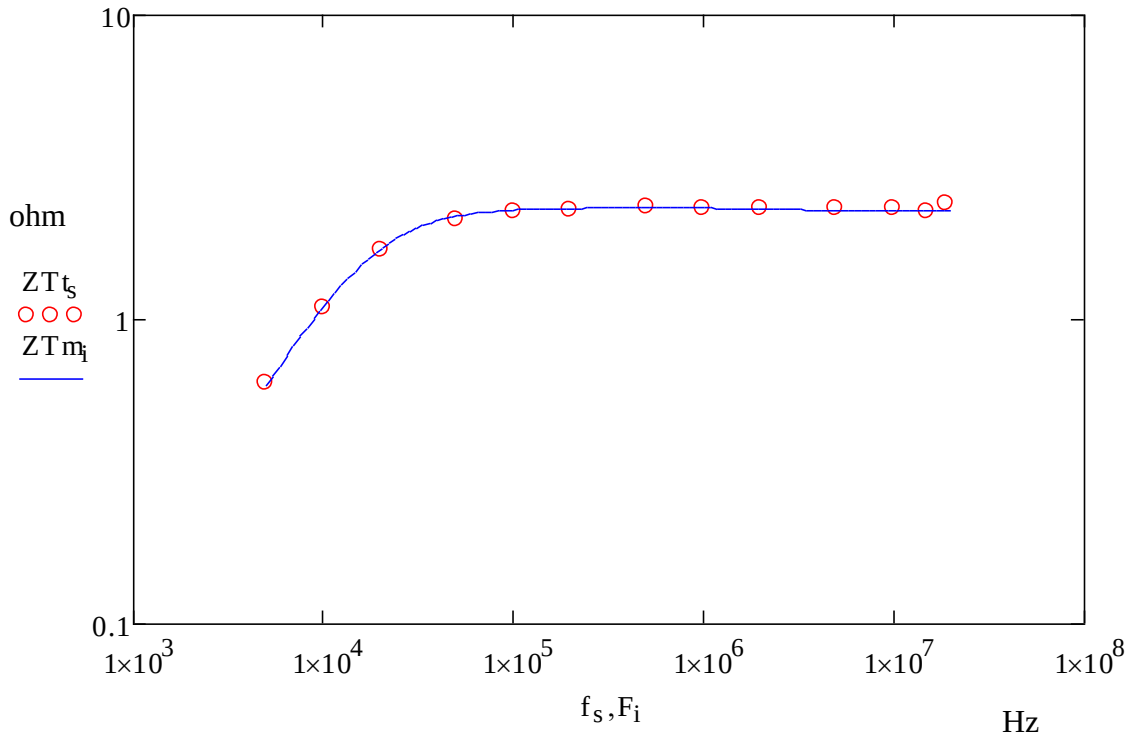

Figure 7.2.9 Transfer impedance from test results, *ZTt*, and from circuit model, *ZTm*