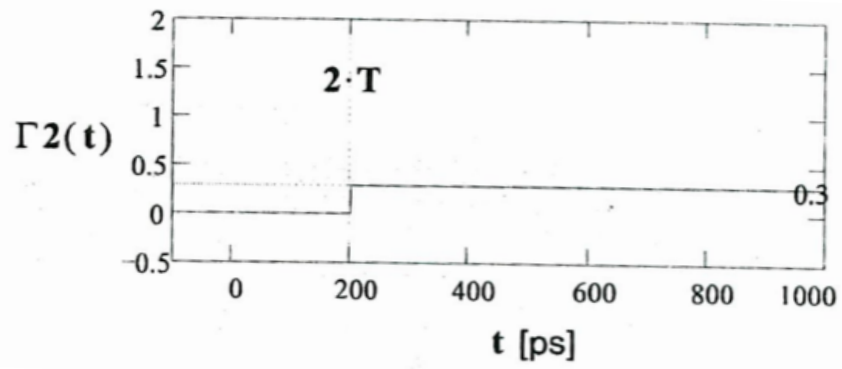
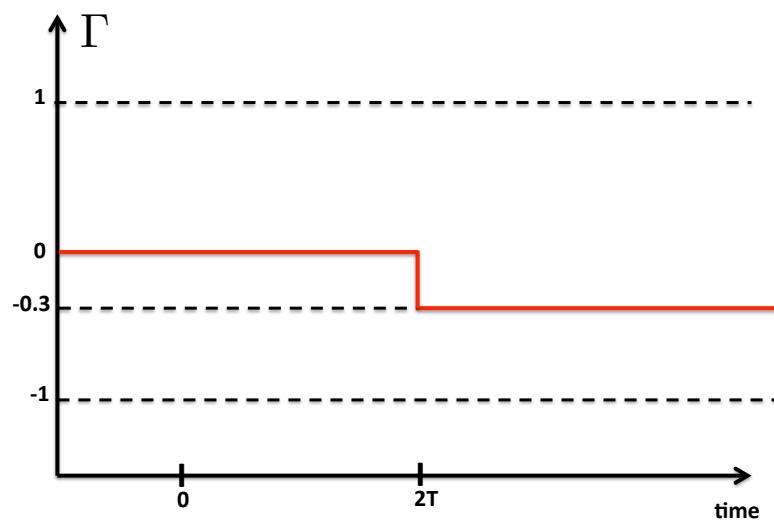
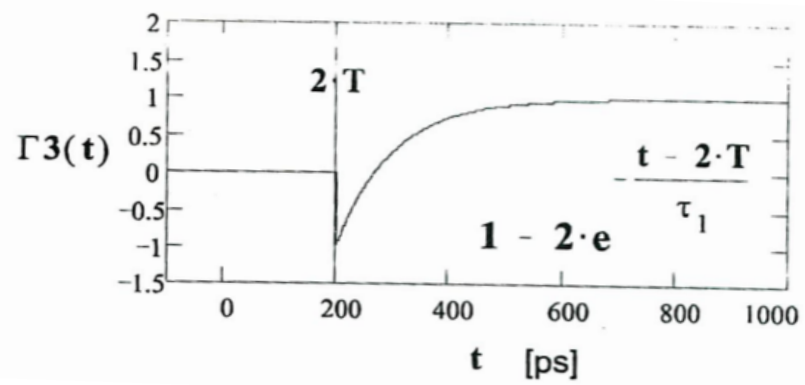
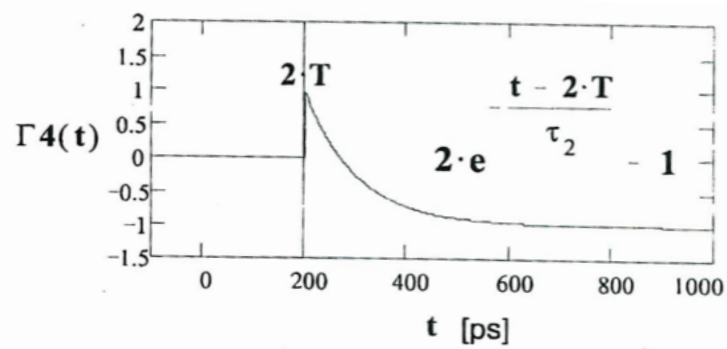
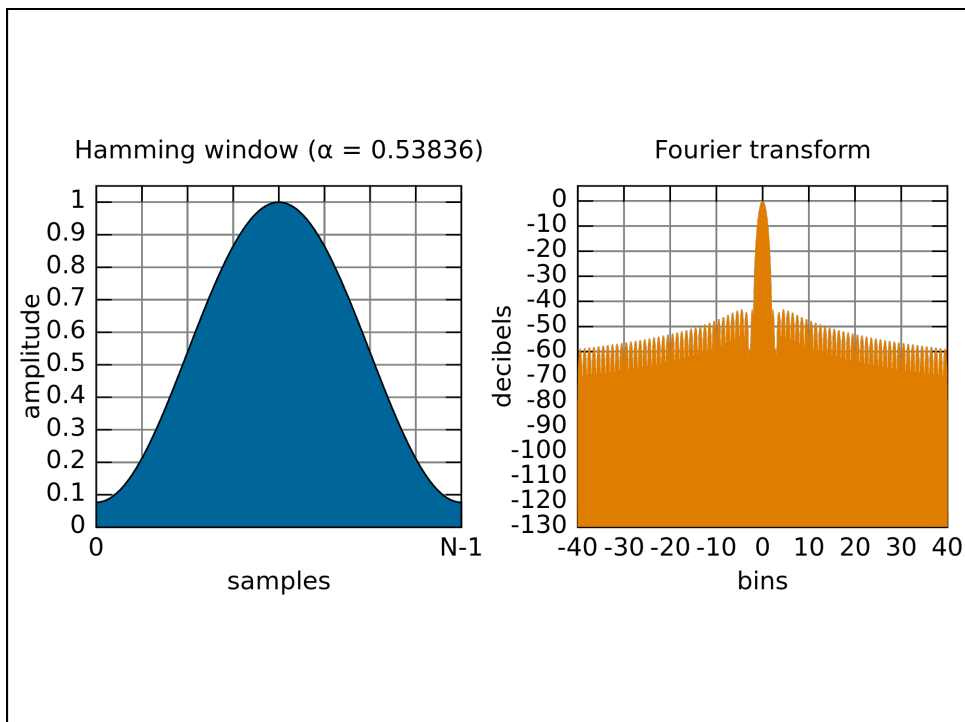
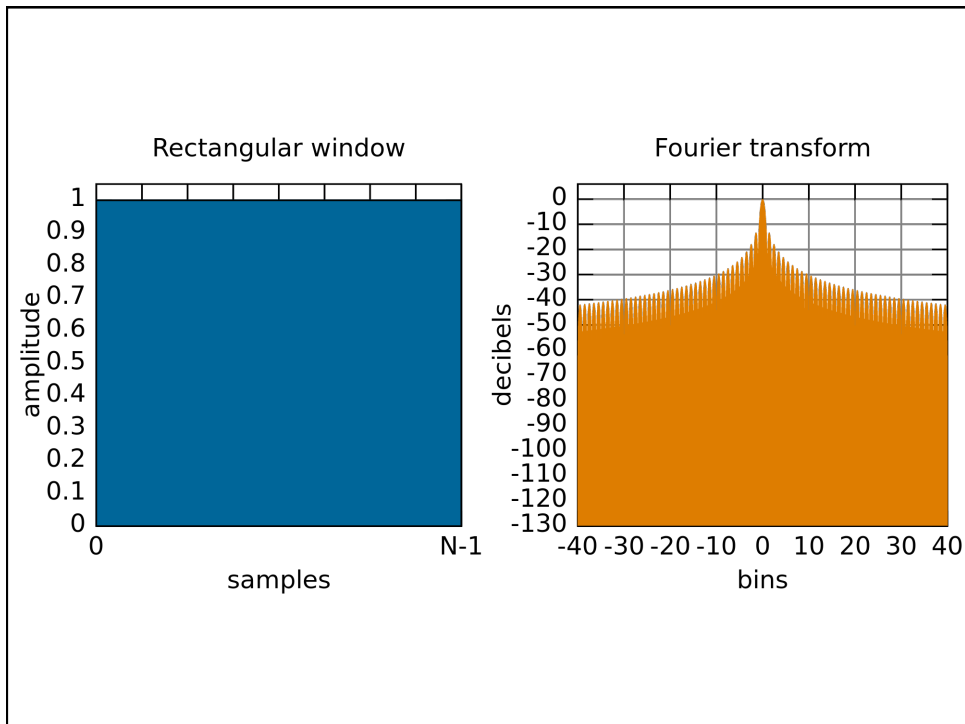
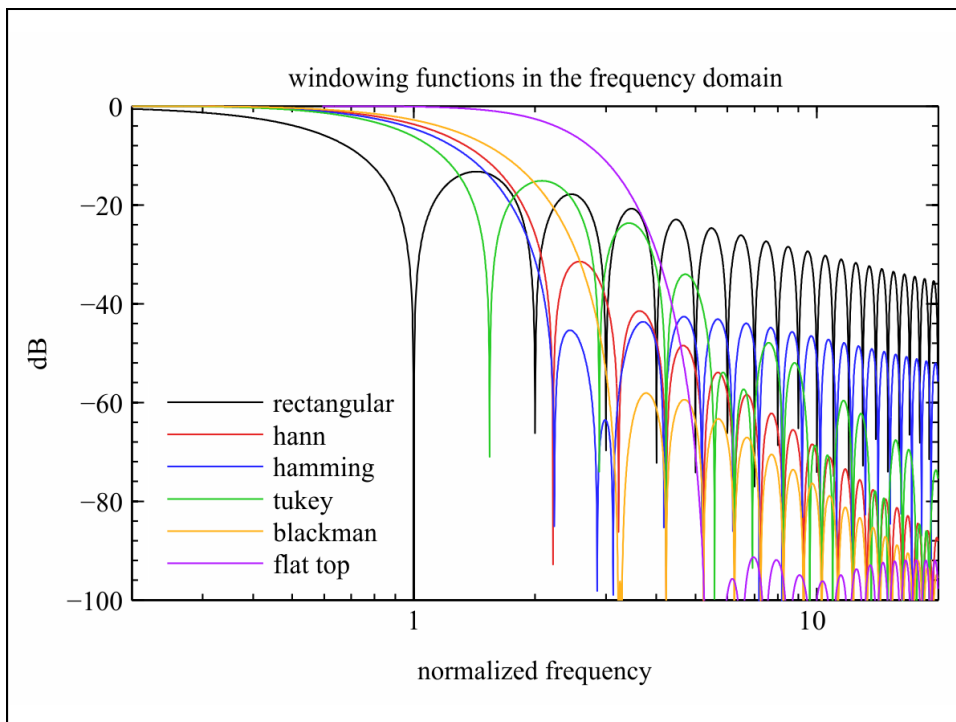
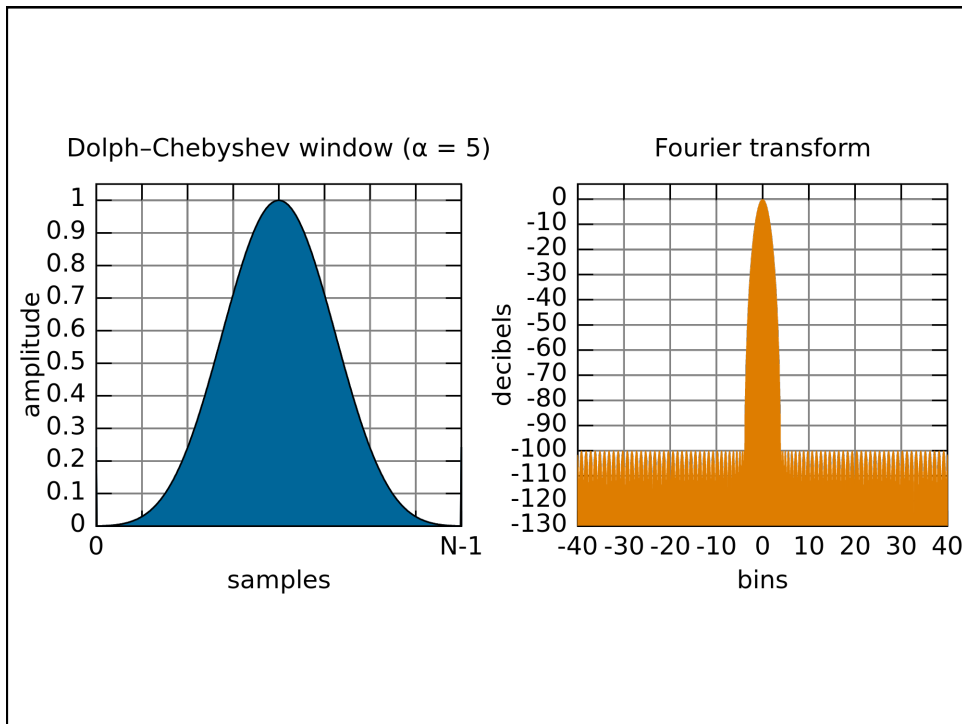


$2z_0$  $z_0/2$ 



**Capacitor****Inductor**



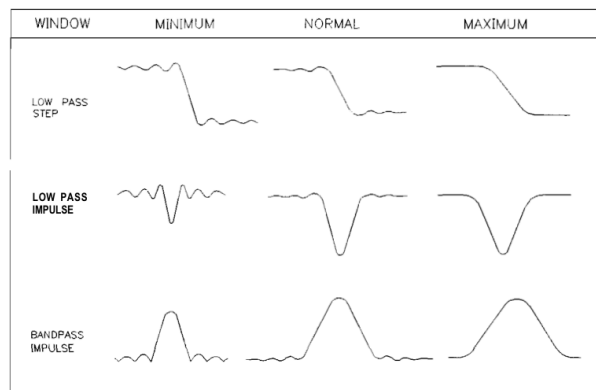


To select a window, press **(System) TRANSFORM MENU WINDOW**. A menu is presented that allows the selection of three window types (see Table 6-12).

**Table 6-12. Impulse Width, Sidelobe Level, and Windowing Values**

Window Type	Impulse Sidelobe Level	Low Pass Impulse Width (50%)	Step Sidelobe Level	Step Rise Time (10 - 90%)
Minimum	-13 dB	0.60/Freq Span	-21 dB	0.45/Freq Span
Normal	-44 dB	0.98/Freq Span	-60 dB	0.99/Freq Span
Maximum	-75 dB	1.39/Freq Span	-70 dB	1.48/Freq Span

NOTE: The **bandpass** mode simulates an impulse stimulus. **Bandpass** impulse width is twice that of low pass impulse width. The **bandpass** impulse **sidelobe** levels are the same as low pass impulse **sidelobe** levels.



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Figure 6-72. The Effects of Windowing on the Time Domain Responses of a Short Circuit

	LOW-PASS	BANDPASS
	Simula la TDR tradizionale	Analisi nel dominio del tempo per dispositivi a banda stretta
	Frequenza di inizio dipende dalla freq. massima e dal numero dei punti di misura	Scopi più generali
	Risoluzione doppia rispetto alla modalità BAND PASS	
Eccitazione a gradino ( <i>step response</i> )	Ideale per identificare discontinuità (distanza e tipo) in dispositivi che supportano la componente DC	
Eccitazione ad impulso ( <i>impulse response</i> )	Ideale per osservare piccole risposte in dispositivi che supportano la componente DC	Ideale per misurare dispositivi con banda limitata come filtri. Utile anche per localizzare guasti (non la tipologia), specialmente in sistemi che non supportano la frequenza nulla

Table 6-13. Gate Characteristics

Gate Shape	Passband Ripple	Sidelobe Levels	Cutoff Time	Minimum Gate span
Gate Span Minimum	$\pm 0.10$ dB	-48 dB	1.4/Freq Span	2.8/Freq Span
Normal	• 0.01 dB	-68 dB	2.8/Freq Span	5.6/Freq Span
Wide	$\pm 0.01$ dB	-57 dB	4.4/Freq Span	8.8/Freq Span
Maximum	$\pm 0.01$ dB	-70 dB	12.7/Freq Span	25.4/Freq Span

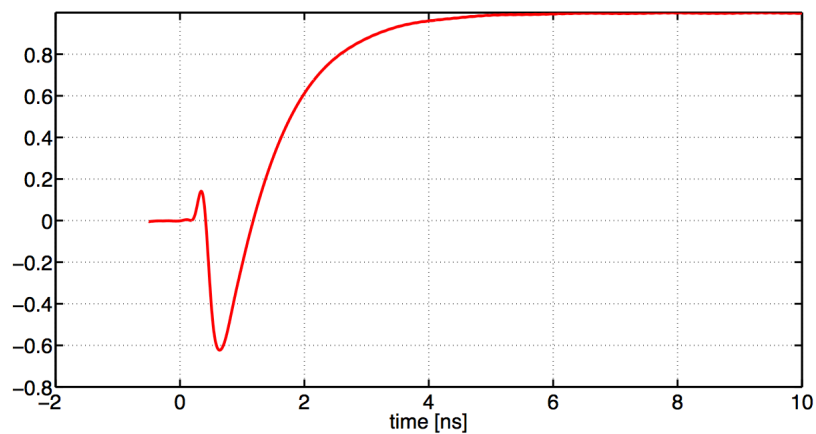
## Ten Steps for Performing TDR (Low Pass Step)

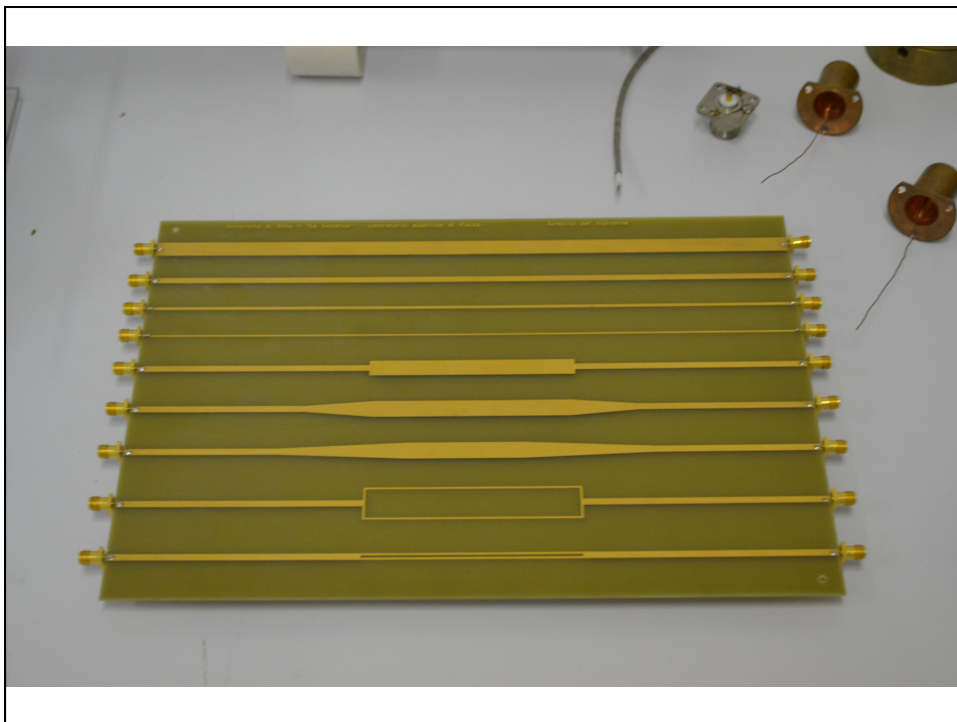
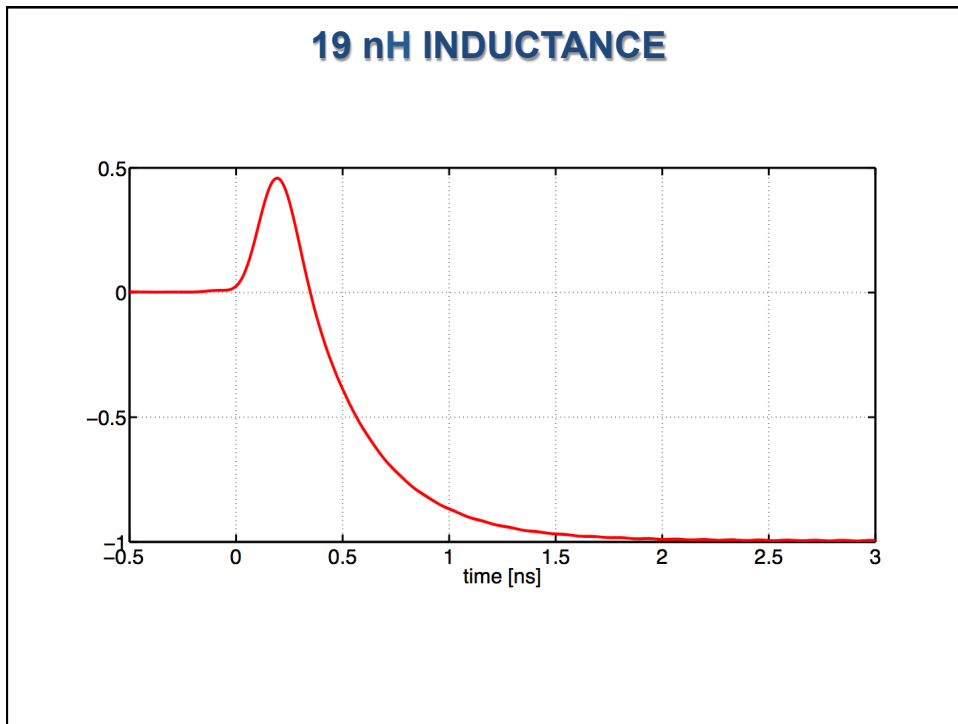
1. Set up desired frequency range (need wide span for good spatial resolution)
2. Under SYSTEM, transform menu, press "set freq low pass"
3. Perform one- or two-port calibration
4. Select S11 measurement \*
5. Turn on transform (low pass step) \*
6. Set format to real \*
7. Adjust transform window to trade off rise time with ringing and overshoot \*
8. Adjust start and stop times if desired
9. For gating:
  - set start and stop frequencies for gate
  - turn gating on \*
  - adjust gate shape to trade off resolution with ripple \*
10. To display gated response in frequency domain
  - turn transform off (leave gating on) \*
  - change format to log-magnitude \*

\* If using two channels (even if coupled), these parameters must be set independently for second channel

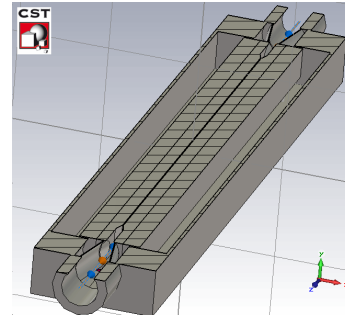
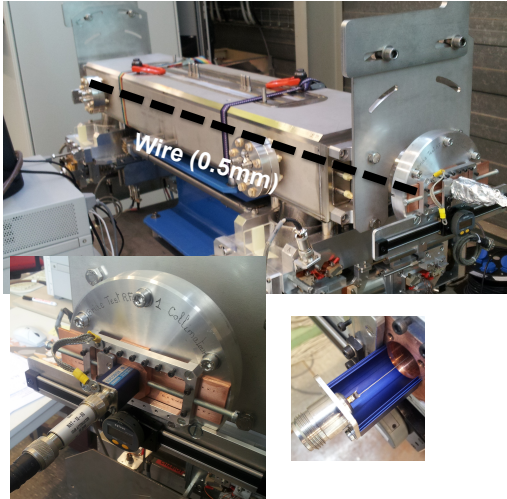


### 20 pF CAPACITOR

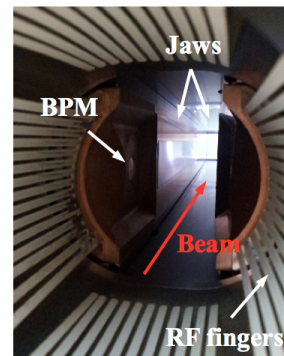
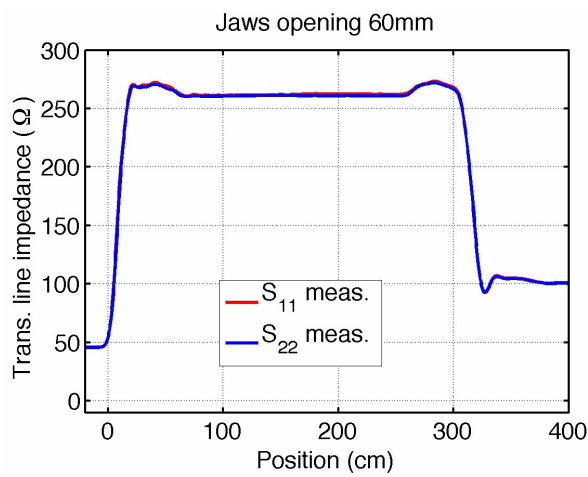




## LHC TCTP COLLIMATOR WIRE MEASUREMENT



## COAXIAL TRANSMISSION LINE PROPERTIES



Matching in impedance measurement is critical.

N. Biancacci et al., TCTP collimator meas., 2014