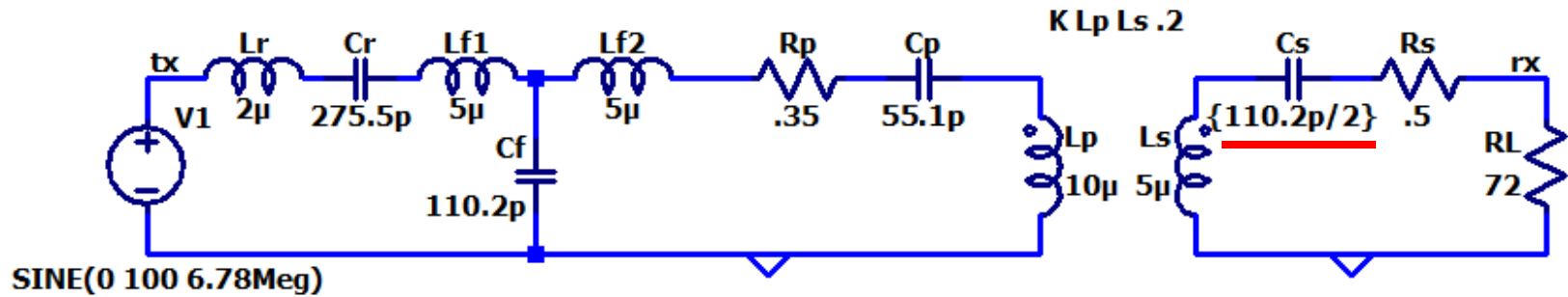


$$\underline{V_{RL}} =$$

Numerical Example 2



MATLAB Result:

mag =

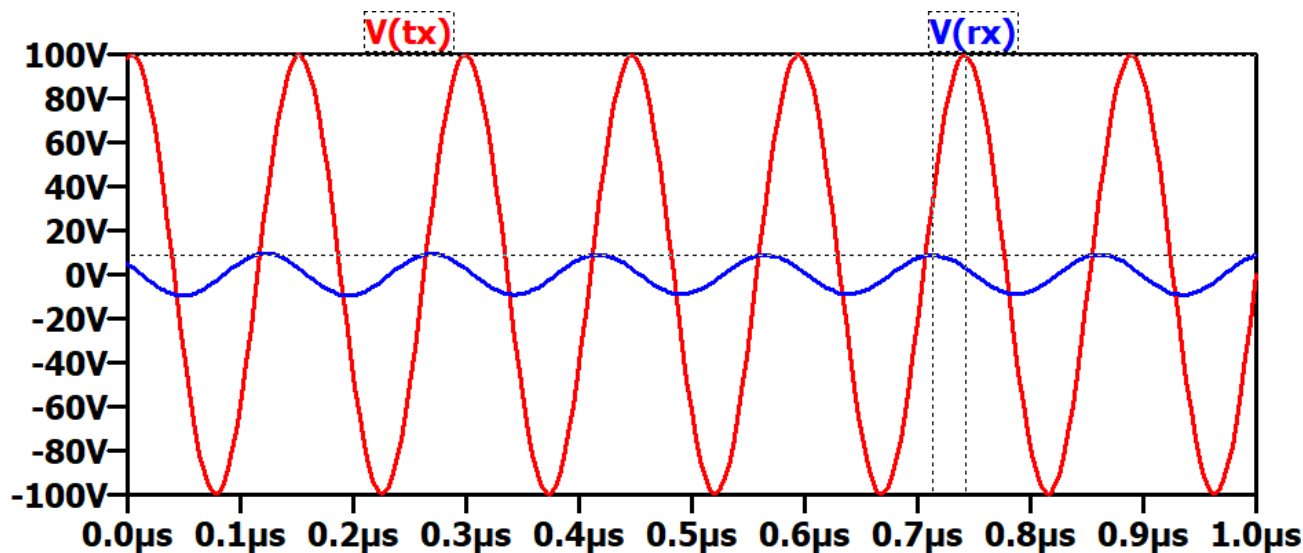
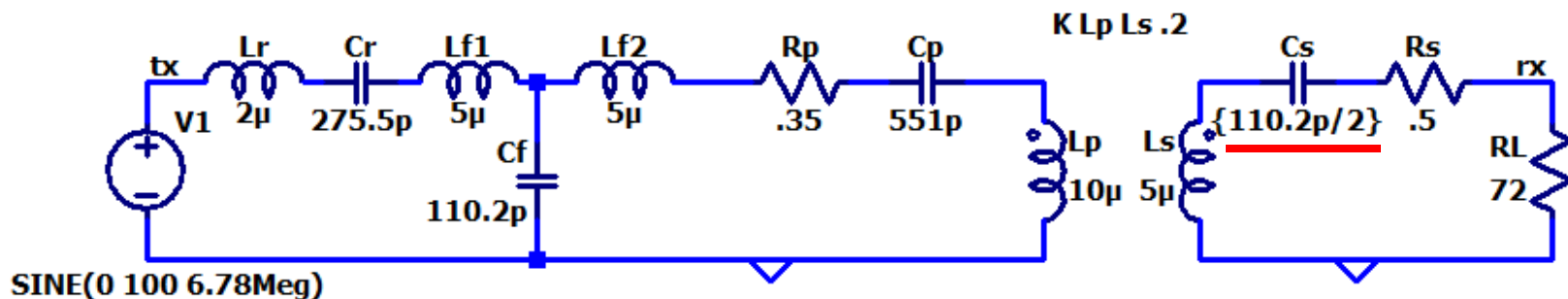
9.06

phase =

-18.7973

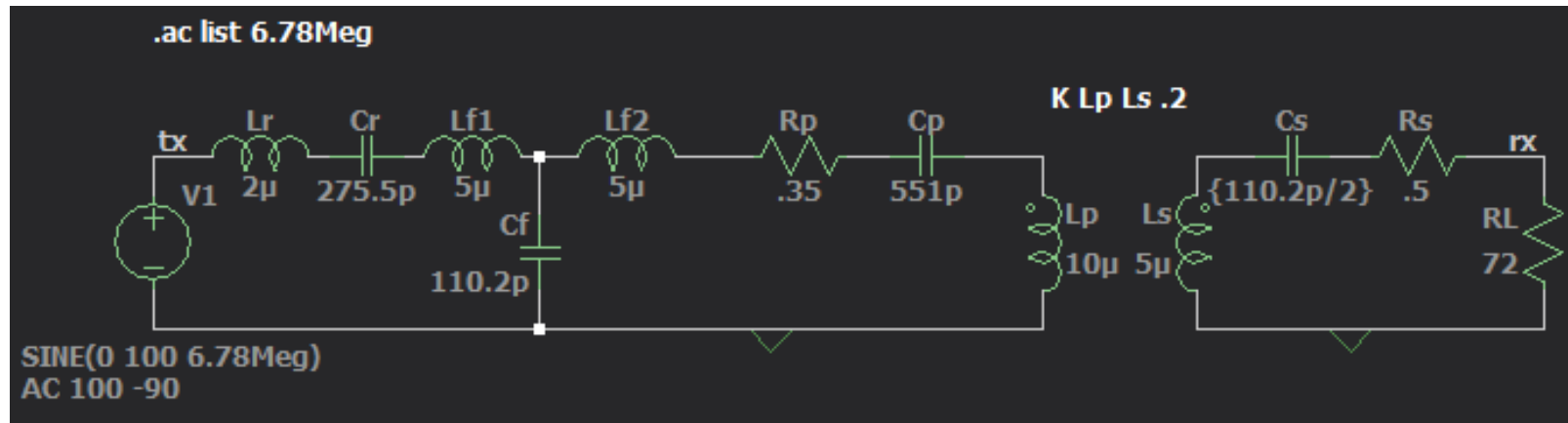
Circuit Simulation 2

.tran 0 1m 999u



Cursor 1	
Horz:	742.80534ns
Vert:	99.533096V
Cursor 2	
Horz:	712.84545ns
Vert:	8.8561678V
Diff (Cursor2 - Cursor1)	
Horz:	-29.959884ns
Vert:	-90.676929V
Freq:	33.377966MHz
Slope:	3.02661e+009

AC Analysis



Edit Simulation Command

Transient **AC Analysis** DC sweep Noise DC Transfer DC op prt

Compute the small signal AC behavior of the circuit linearized about its DC operating point.

Type of sweep: List

1st frequency: 6.78Meg

2nd frequency:

3rd frequency:

Syntax: .ac list <Freq1> [<Freq2> [<Freq3> [...]]]

.ac list 6.78Meg

Cancel OK

Independent Voltage Source - V1

Functions

- (none)
- PULSE(V1 V2 Tdelay Trise Tfall Ton Period Ncycles)
- SINE(Voffset Vamp Freq Td Theta Phi Ncycles)
- EXP(V1 V2 Td1 Tau1 Td2 Tau2)
- SFFM(Voff Vamp Fcar MDI Fsig)
- PWL(t1 v1 t2 v2...)
- PWL FILE: Browse

DC offset[V]: 0

Amplitude[V]: 100

Freq[Hz]: 6.78Meg

Tdelay[s]:

Theta[1/s]:

Phi[deg]:

Ncycles:

Additional PWL Points

Make this information visible on schematic:

DC Value

DC value:

Make this information visible on schematic:

Small signal AC analysis(.AC)

AC Amplitude: 100

AC Phase: -90

Make this information visible on schematic:

Parasitic Properties

Series Resistance[Ω]:

Parallel Capacitance[F]:

Make this information visible on schematic:

Cancel OK

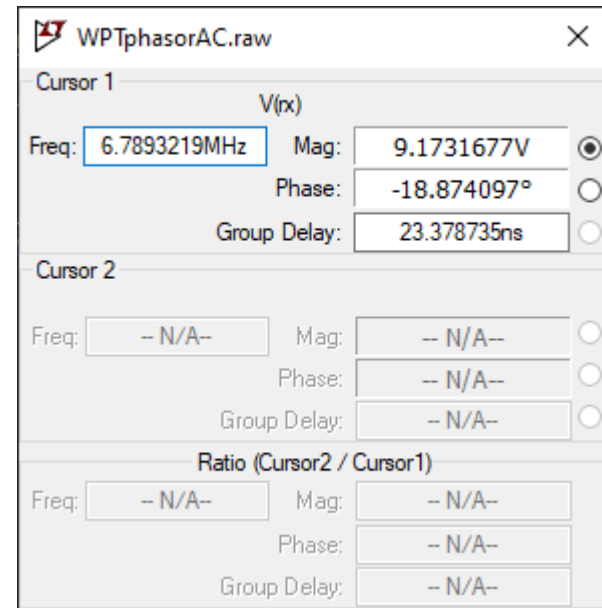
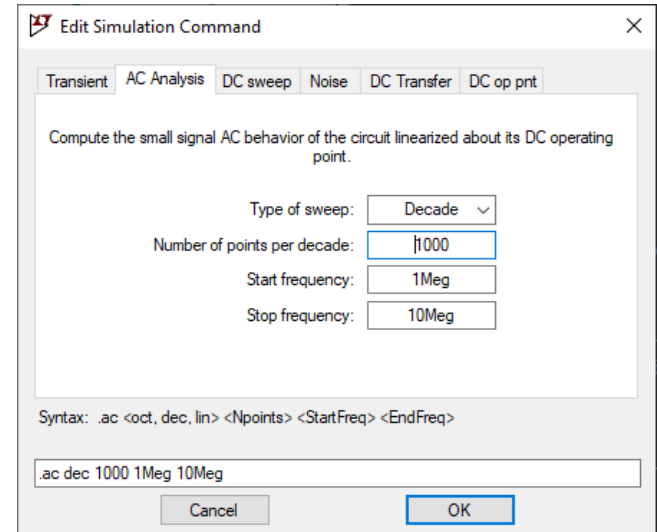
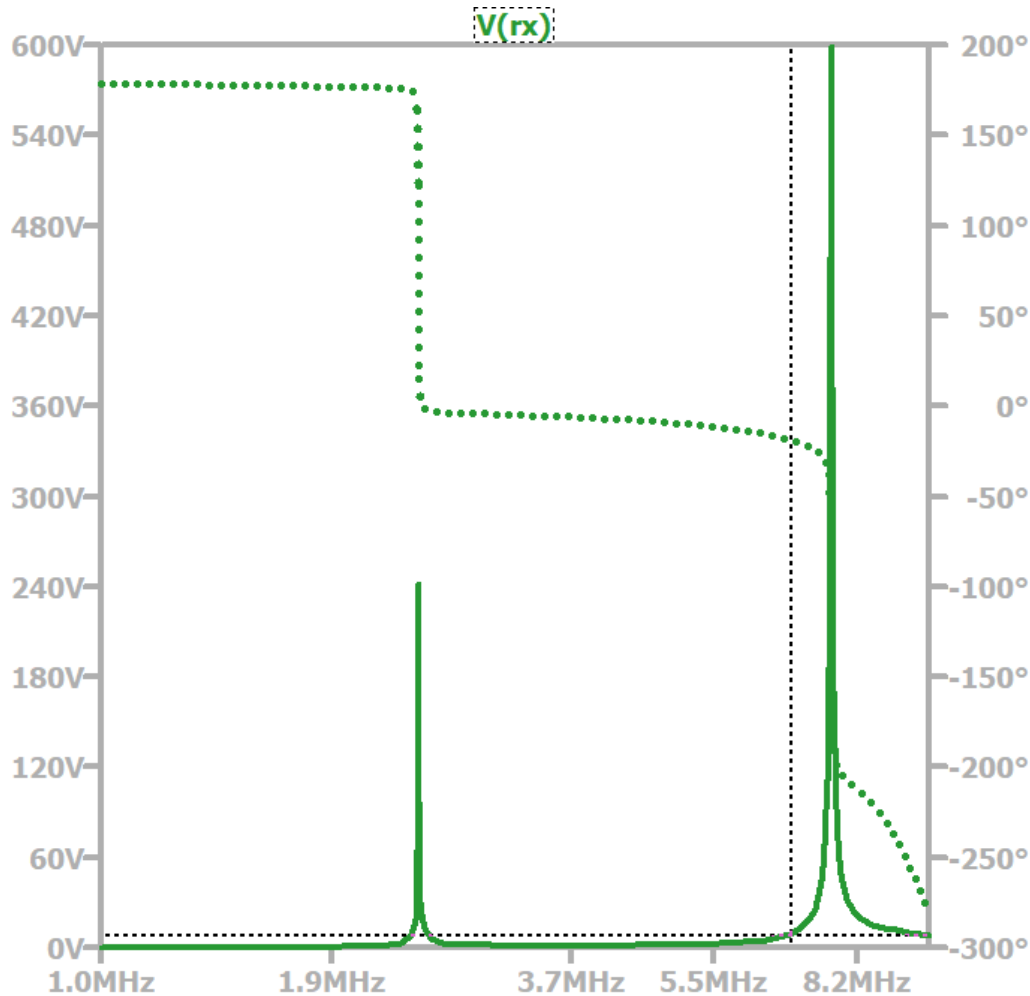
AC Simulation Results (Single Point)

* C:\Users\dcostine\Dropbox\Courses\UTK Courses\ECE 202\In Class Examples\WPTExample-Phasors\WPT... X

--- AC Analysis ---

frequency:	6.78e+006	Hz		
V(tx) :	mag: 100	phase: -90°	voltage	
V(n001) :	mag: 174.844	phase: -90.3419°	voltage	
V(n002) :	mag: 99.9949	phase: -90.0005°	voltage	
V(n003) :	mag: 287.109	phase: -90.5205°	voltage	
V(n004) :	mag: 187.14	phase: -90.798°	voltage	
V(n006) :	mag: 207.132	phase: -90.6756°	voltage	
V(n007) :	mag: 54.3051	phase: -99.138°	voltage	
V(n005) :	mag: 187.137	phase: -90.7477°	voltage	
V(n008) :	mag: 9.11047	phase: -18.7958°	voltage	
V(rx) :	mag: 9.04764	phase: -18.7958°	voltage	
I(Cs) :	mag: 0.125662	phase: -18.7958°	device_current	
I(Cp) :	mag: 0.469369	phase: 179.999°	device_current	
I(Cf) :	mag: 1.34784	phase: 179.48°	device_current	
I(Cr) :	mag: 0.878499	phase: 179.202°	device_current	
I(Ls) :	mag: 0.125662	phase: -18.7958°	device_current	
I(Lp) :	mag: 0.469369	phase: -0.000865793°	device_current	
I(Lf2) :	mag: 0.469369	phase: 179.999°	device_current	
I(Lf1) :	mag: 0.878499	phase: -0.798129°	device_current	
I(Lr) :	mag: 0.878499	phase: -0.798129°	device_current	
I(Rp) :	mag: 0.469369	phase: -0.000865793°	device_current	
I(Rl) :	mag: 0.125662	phase: 161.204°	device_current	
I(Rs) :	mag: 0.125662	phase: 161.204°	device_current	
I(Vl) :	mag: 0.878499	phase: 179.202°	device_current	

Frequency Sweep



Form of the solution

$$\sum_{i=0}^N b_i \frac{d^i}{dt^i} v_o(t) = \sum_{i=0}^M a_i \frac{d^i}{dt^i} v_i(t)$$

Chapter 11

AC CIRCUIT POWER ANALYSIS

Average Power

Power in a Resistor

RMS of a sinusoid