ECE 3101L Section 3

Activity 0 Simulink

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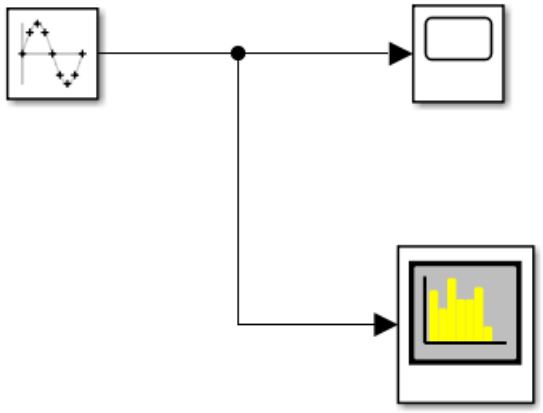
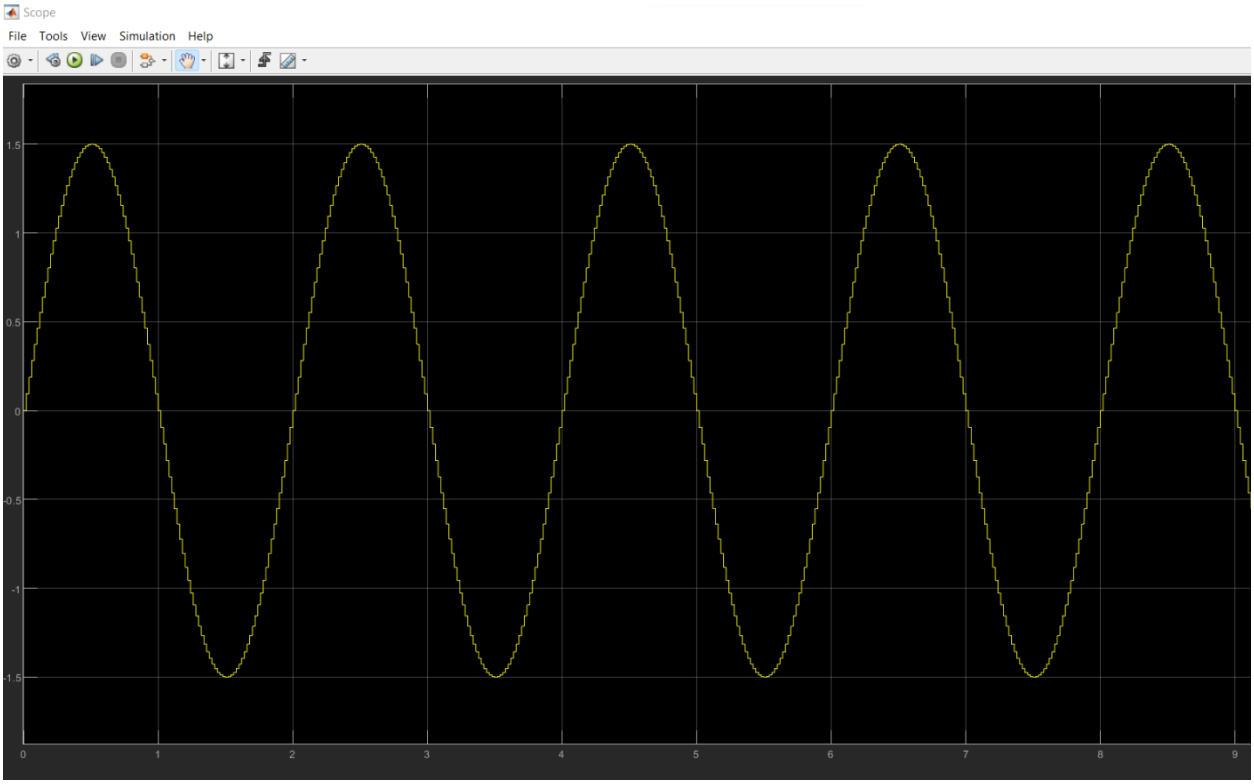
PART 1 Sinewave

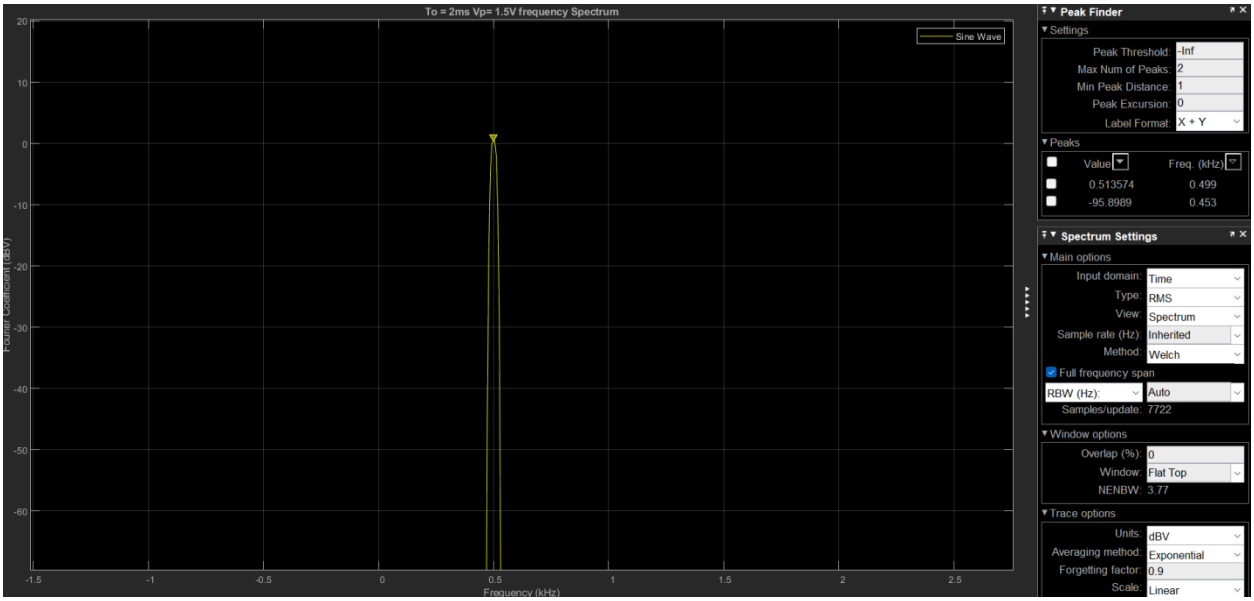
Schematic



Scope

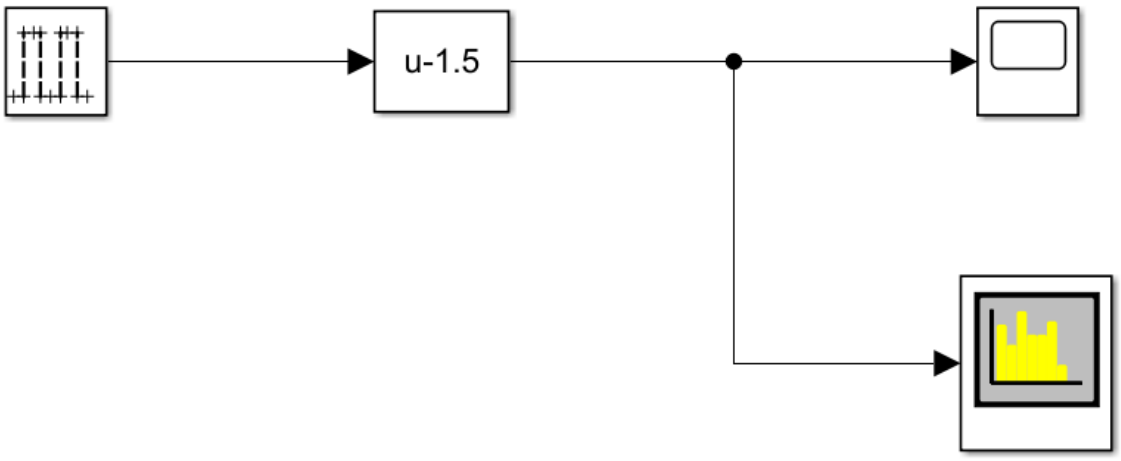


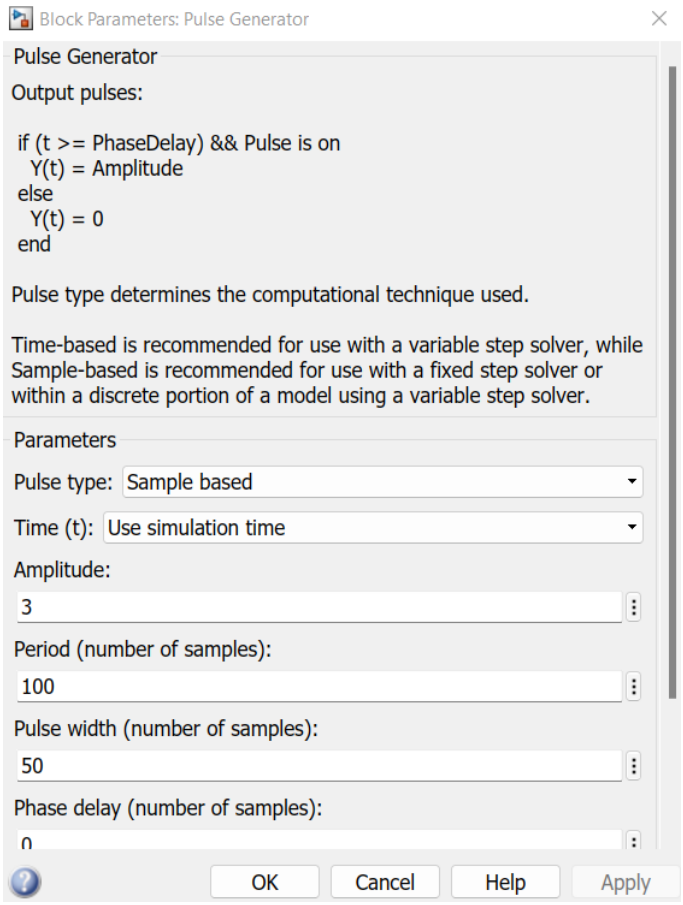
Spectrum analyzer



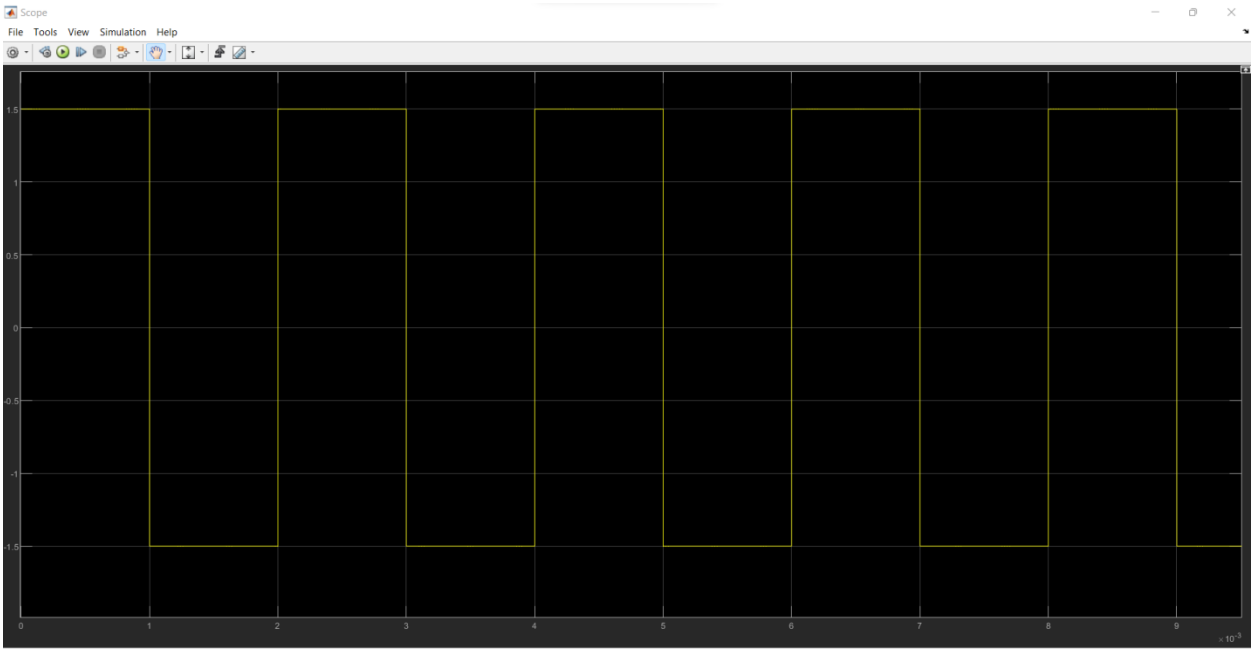
PART 2 50% duty cycle square wave

Schematic

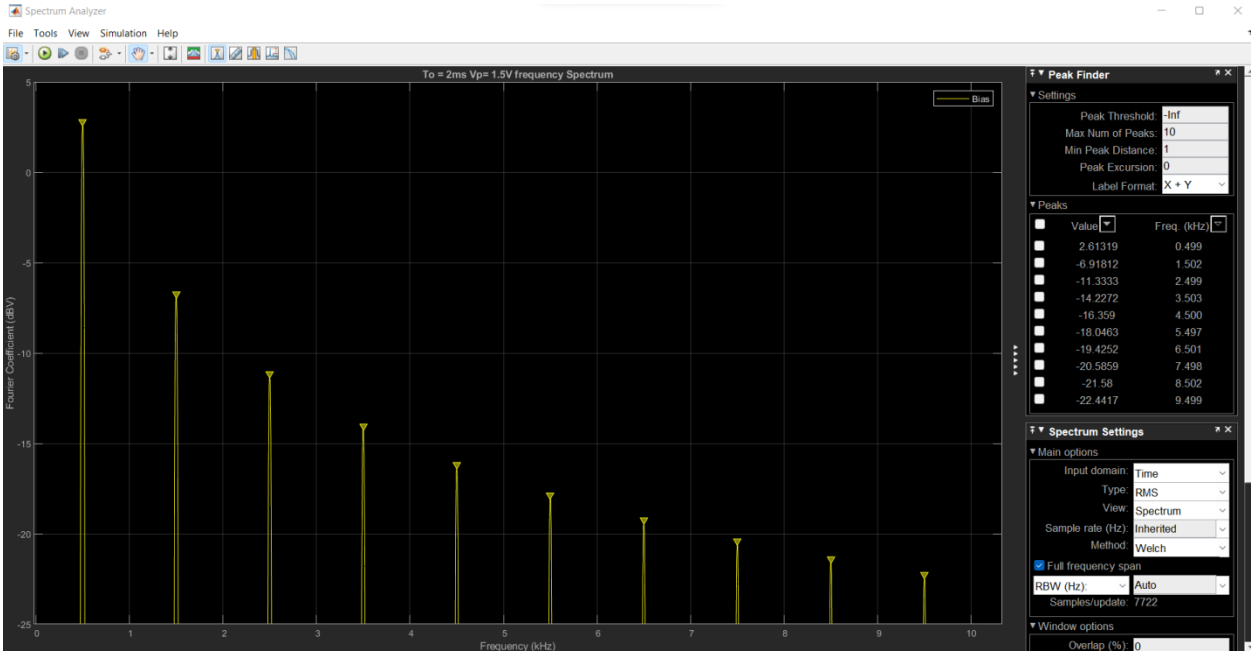



Block Parameters: Pulse Generator
Pulse Generator
Output pulses:
if (t >= PhaseDelay) && Pulse is on
Y(t) = Amplitude
else
Y(t) = 0
end
Pulse type determines the computational technique used.
Time-based is recommended for use with a variable step solver, while Sample-based is recommended for use with a fixed step solver or within a discrete portion of a model using a variable step solver.
Parameters
Pulse type: Sample based
Time (t): Use simulation time
Amplitude:
3
Period (number of samples):
100
Pulse width (number of samples):
50
Phase delay (number of samples):
0
OK
Cancel
Help
Apply

Scope

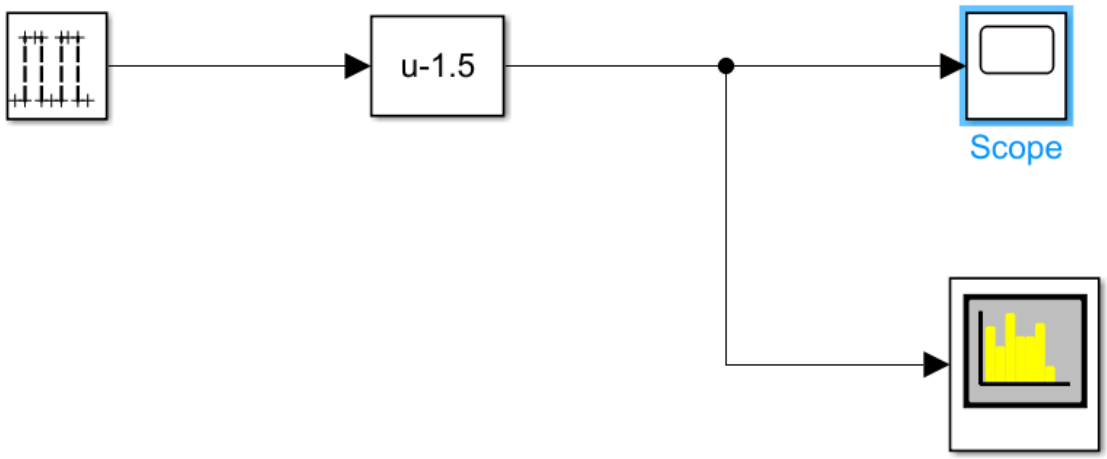

Scope
File Tools View Simulation Help
1.5
1
0.5
0
-0.5
-1
-1.5
0
1
2
3
4
5
6
7
8
9

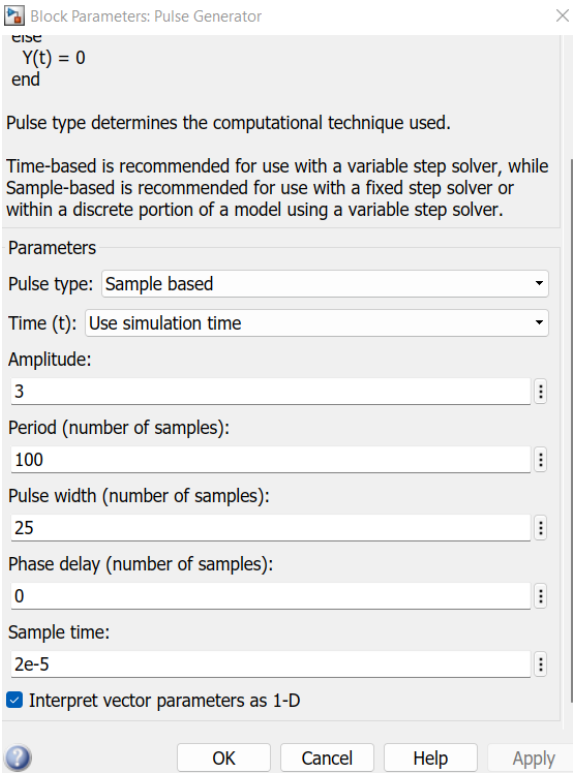
Spectrum analyzer



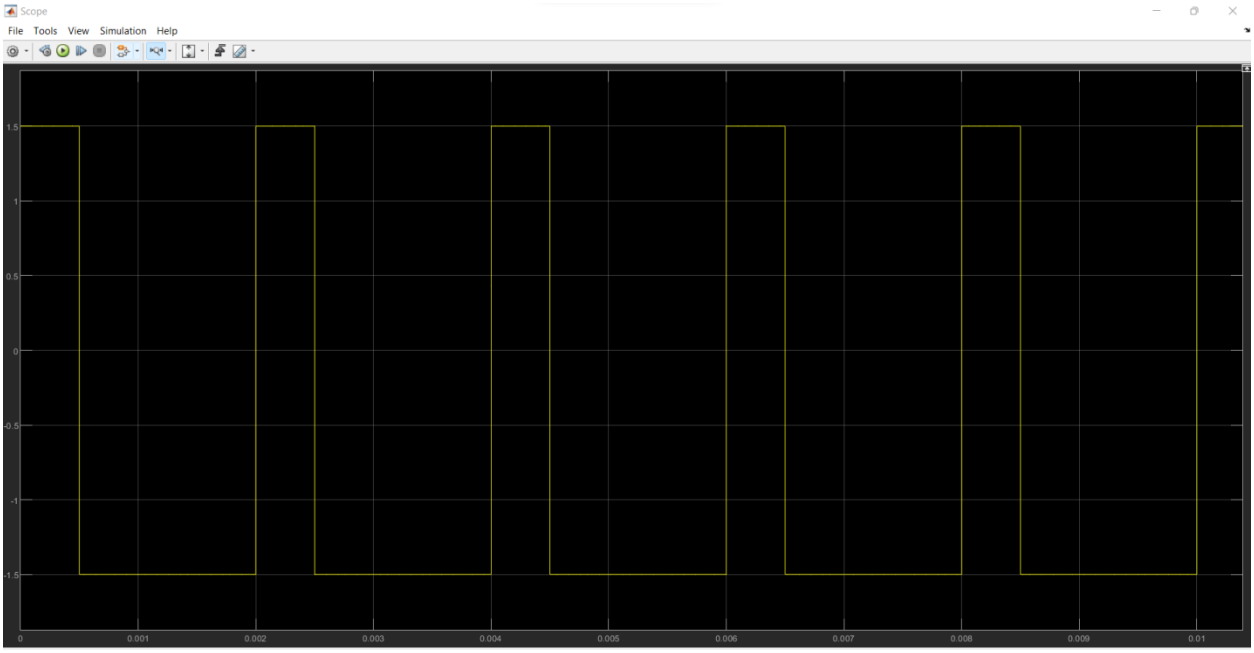
PART 3 25% duty cycle square wave

Schematic

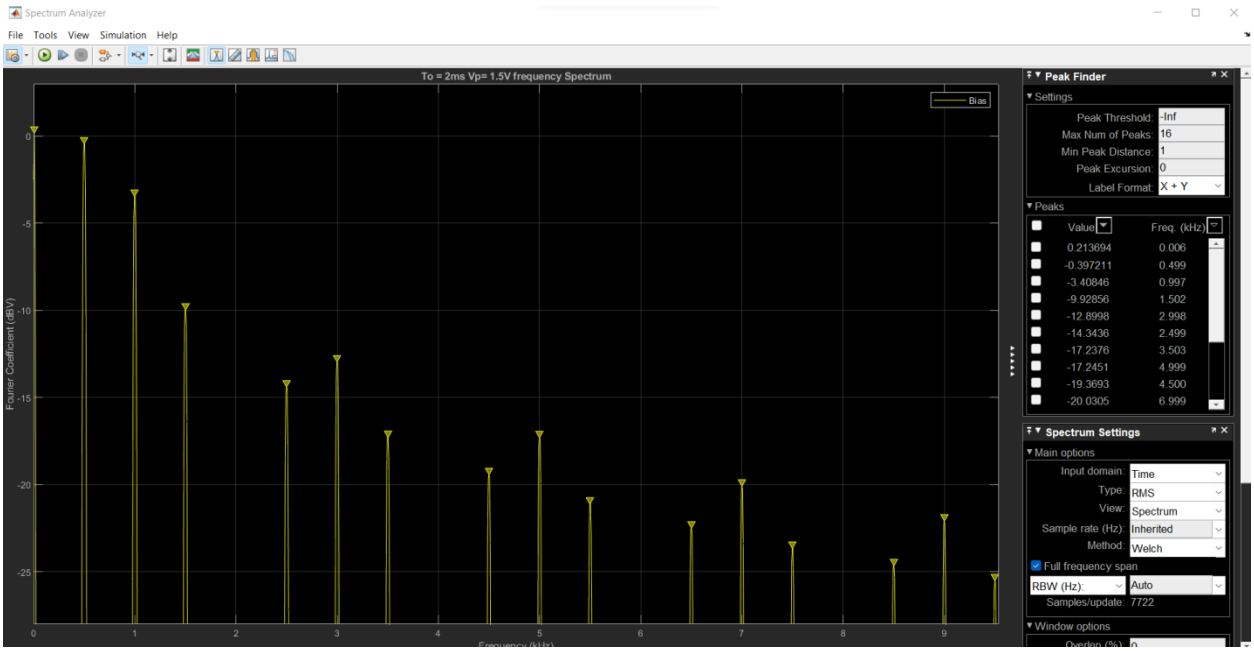




Scope



Spectrum analyzer


Spectrum Analyzer
File Tools View Simulation Help
To = 2ms Vp= 1.5V frequency Spectrum
Bias
Fourier Coefficient (dBV)
0
-5
-10
-15
-20
-25
0 1 2 3 4 5 6 7 8 9
Peak Finder
Settings
Peak Threshold: -Inf
Max Num of Peaks: 16
Min Peak Distance: 1
Peak Excursion: 0
Label Format: X + Y
Peaks
Value
Freq. (kHz)
0.213694 0.006
-0.397211 0.499
-3.40846 0.997
-9.92856 1.502
-12.8998 2.998
-14.3436 2.499
-17.2376 3.503
-17.2451 4.999
-19.3693 4.500
-20.0305 6.999
Spectrum Settings
Main options
Input domain: Time
Type: RMS
View: Spectrum
Sample rate (Hz): Inherited
Method: Welch
Full frequency span
RBW (Hz): Auto
Samples/update: 7722
Window options