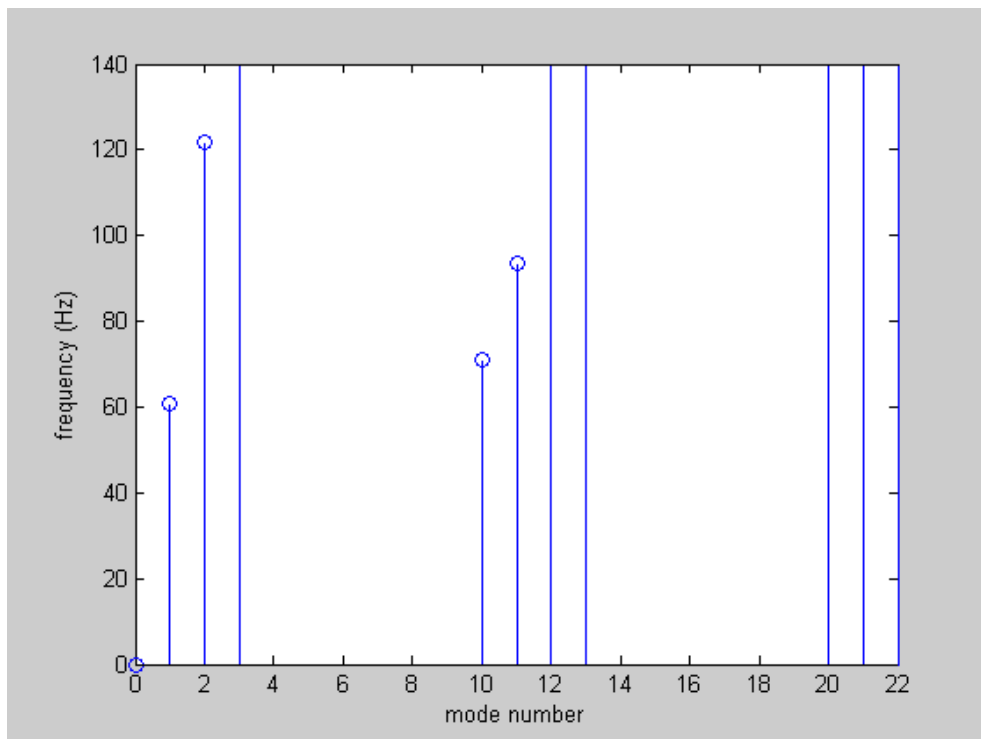
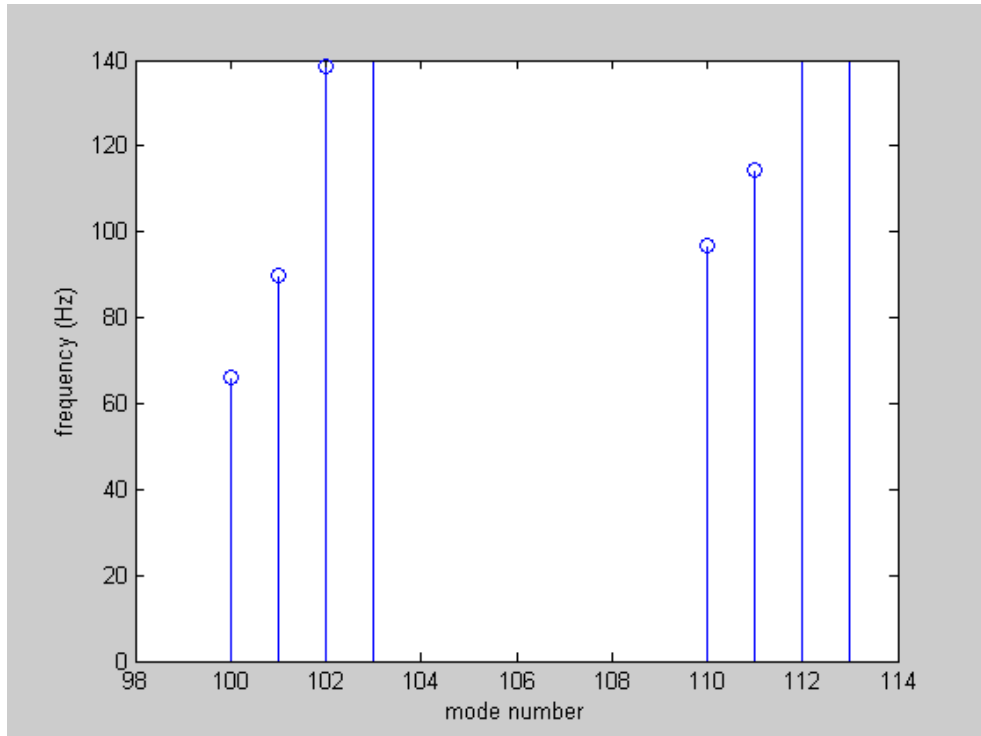


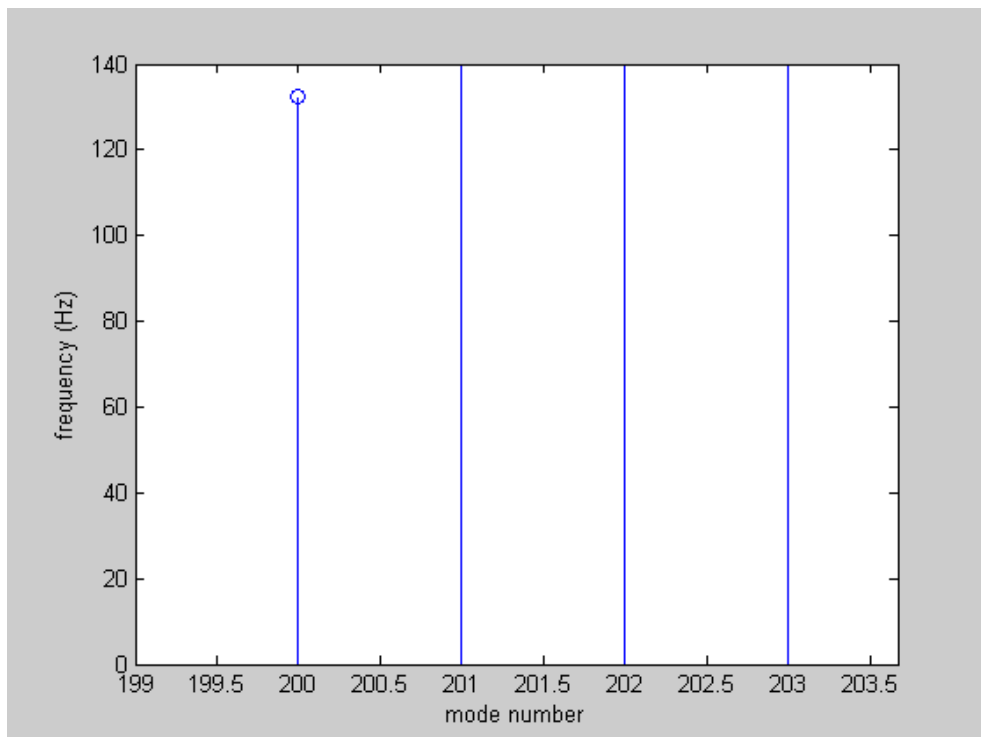
From the above plot (figure 2), note that the 10th frequency of interest is between 138 and 140Hz.



After zooming in on figure 1, it becomes clear that modes with a leading zero in the 'top ten' include 001, 020, 010, 011.



After again zooming in on figure 1, it becomes clear that modes with a leading one in the 'top ten' include 100, 101, 102, 110, and 111.



After zooming in on figure 1 one last time, it is clear that the only mode with a leading two in the 'top ten' is 200. (Two tricks to quickly finishing these plots – set the upper limit on the y-axis to 140 on all 3 plots, and use even integers as limits on the x-axis.)

Matlab code:

```
figure(1)
l = 0;
m = 0;
n = 1;
f(l + 1, m + 1, n + 1) = 343 / 2 / pi * sqrt((pi * l / 2.59)^2 + (pi * m / 2.42)^2 + (pi * n / 2.82)^2);
stem(l * 100 + m * 10 + n, f(l + 1, m + 1, n + 1))
hold on

for l = 0:3,
for m = 0:3,
for n = 0:3,
f(l + 1, m + 1, n + 1) = 343 / 2 / pi * sqrt((pi * l / 2.59)^2 + (pi * m / 2.42)^2 + (pi * n / 2.82)^2);
stem(l * 100 + m * 10 + n, f(l + 1, m + 1, n + 1))

end
end
end
ylabel('frequency (Hz)')
xlabel('mode number')
```

First 10 sorted results (in Hz): (from sort(f(:)) on the matlab command line)

```
[001] = 60.8156
[100] = 66.2162
[010] = 70.8678
[101] = 89.9062
[011] = 93.3851
[110] = 96.9888
[111] = 114.4787
[002] = 121.6312
[200] = 132.4324
[102] = 138.4873
```

```
figure(2)
stem(sort(f(:)))
ylabel('frequency (Hz)')
```