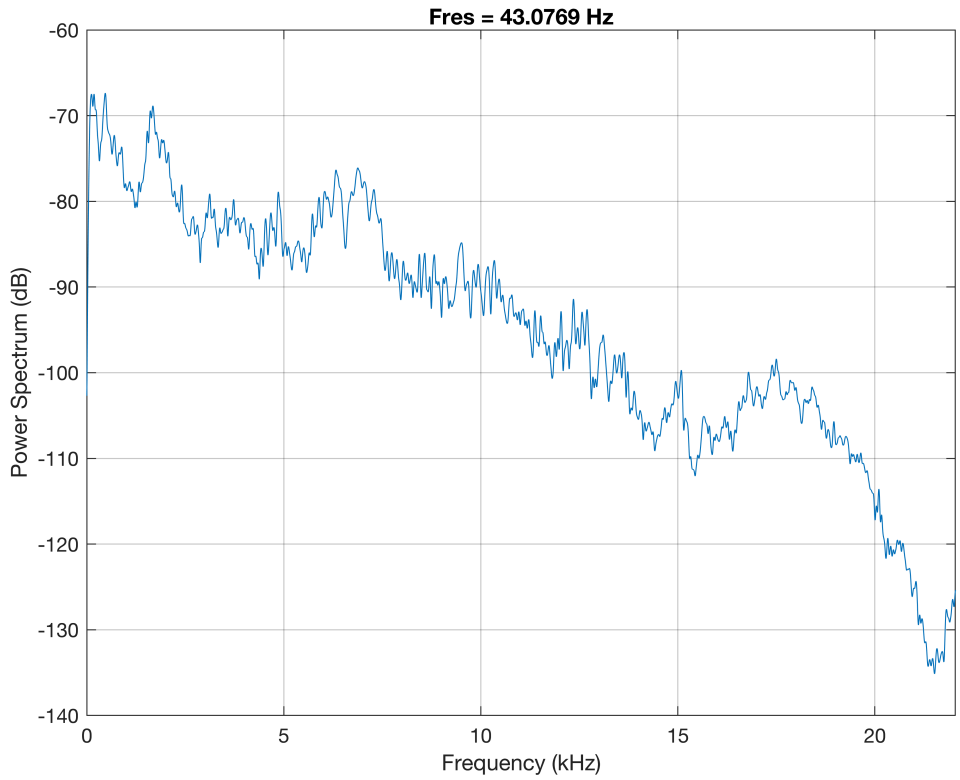
```
% Jeremiah Sullivan. EC602. October 2019

% Script to call Python function and perform basic data analysis and
% simultaneously output the buffer to a file
clc; close all; clear all;
```

Record Audio

```
fs = 44.1E3; bitDepth = 24;
recorder = audiorecorder(fs, bitDepth, 1, 0);
recorder.record;
pause(2);
recorder.stop;
yAmbient = recorder.getaudiodata;
figure; pspectrum(yAmbient, fs);
```




```
recorder.delete;
recorder = audiorecorder(fs, bitDepth, 1, 0);
recorder.record;
tic;
```

Run Chirp

```
pythonDir               = '/usr/local/bin/python3';
messengerScript     = '/Users/JP-Macbook/Documents/ec601/chirp/EC601-A2-Acoustic-Comm/messenger
cmd                         = sprintf('%s %s -m abcdefghijk --wait %d', pythonDir, messengerScri
tStart = toc;

[status, result]        = system(cmd);
    % Append "&" to skip waiting for the output
 result2 = strsplit(result, '\n');
 msg     = regexp(result2, '(?<=Received: ).*', 'match');
 inds    = ~cellfun(@isempty, msg);
 tStop  = str2double(regexpi(result,  '(?<=Receiving message....[^"]*)\d+?(?= s of)', 'match',
 fprintf('\nUsing the Chirp App on my phone, I sent the following message,\nbeginning about %02
```

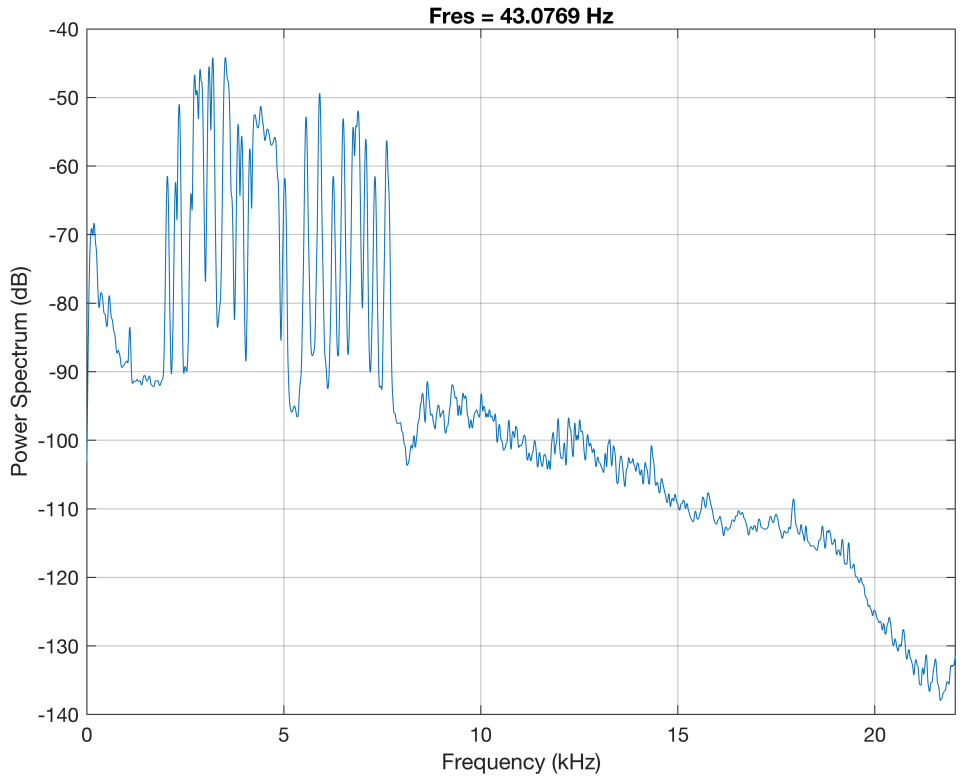
```
Using the Chirp App on my phone, I sent the following message,
beginning about 08 seconds into the recording:
```

```
cellfun(@disp, msg(inds));
```

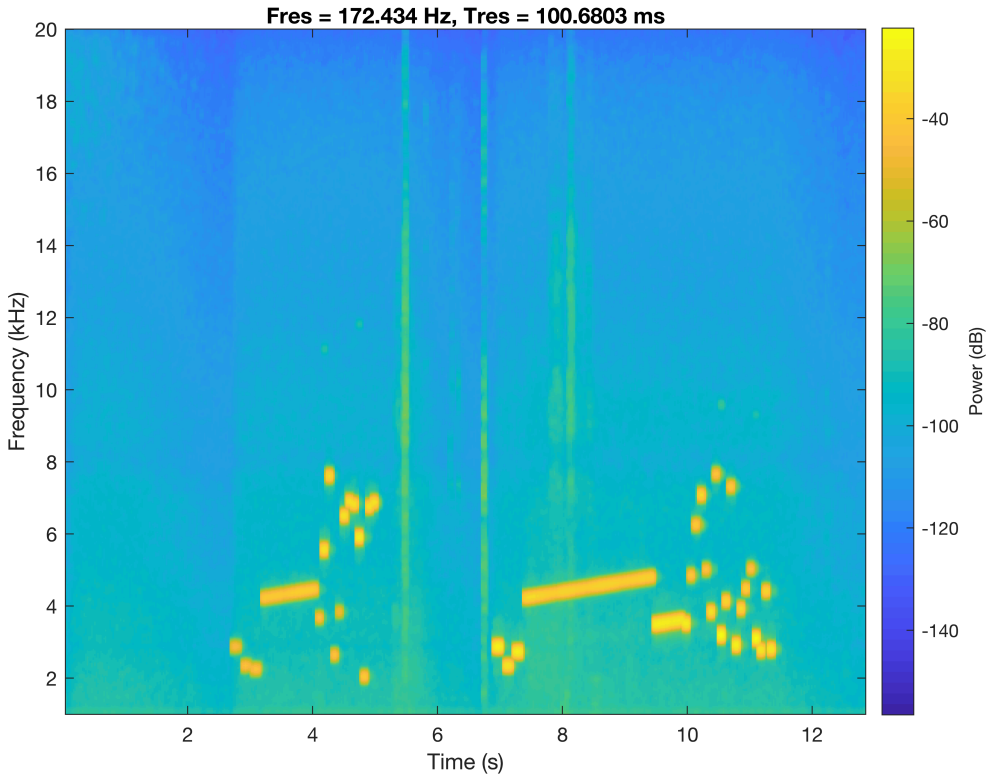
```
'abcdefghijklmnopqrstuvwxyzABCDEF'
```

Analyze Signals

```
recorder.stop;
y     = recorder.getaudiodata;
fs    = recorder.SampleRate;
figure; pspectrum(y, fs);
```




```
figure; pspectrum(y, fs, 'spectrogram', 'frequencylimits', [1E3, 20E3])
```



Conclusions

The LFM slide seems to correspond to the main message payload, for both the sent and recieved

There were no observed errors in sending or recieving any data.

Questions:

- The send payload package (~2s to 5s), was expected to be at 16 kHz. Why is this not the case?

- Previously was unclear if the App could decode multiple frequencies... '

- Now appears "messenger.py" may simple not be setting the range properly

- The recieved payload package (via the Chirp app (Google Play), appeared to be at the same frequencies (2-8 kHz)

- Makes me believe everythign is simply using the "standard" frequency regime