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c1_resample.m

```matlab
%{
Description:
  Resamples the Cadence data to a constant sampling rate of in the
  passband. The resampled signals are then saved into a .mat file.

Input:
  - input_pa.csv
  - output_pa.csv

Output:
  - pa_resampled.mat
%}
clear; clc; close all;
tic
```

Parameters

```matlab
freq_sampling = 37.8e9;
step_sampling = 1 / freq_sampling;
```

Read input and output files

```matlab
input_data = readmatrix('input_pa.csv');
output_data = readmatrix('output_pa.csv');

time_orig = input_data(:,1);
signal_in = input_data(:,2);
signal_out = output_data(:,2);
```

Data parameters

Average sampling frequency

```matlab
freq_sampling_in = length(signal_in)/time_orig(end)
freq_sampling_out = length(signal_out)/time_orig(end)
```

```
freq_sampling_in =

   1.5818e+11


freq_sampling_out =

   1.5818e+11
```

Create new uniform time base

```
t_min = time_orig(1);
t_max = time_orig(end);
time_uniform = (t_min:step_sampling:t_max).';
```

Resample both signals using interpolation

```
signal_in_resampled  = interp1(time_orig,  signal_in,  time_uniform);
signal_out_resampled = interp1(time_orig, signal_out, time_uniform);
```

Save results

```
script_folder = fileparts(mfilename('fullpath'));
mat_filename = fullfile(script_folder, 'pa_resampled.mat');

save(mat_filename, 'time_uniform', 'signal_in_resampled', 'signal_out_resampled',
v7.3');
disp(['Signals resampled and saved in ', mat_filename]);

toc

Signals resampled and saved in C:\Users\Shoit\Desktop
\pa_db_1p8_5p4\f3_pa_demod\pa_resampled.mat
Elapsed time is 18.079245 seconds.
```

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