

## Frequency Validation for device2

This is the validation for the sampling frequency. This report was generated automatically.

### Methods

A senoidal signal with a **500.000 Hz** frequency, amplitude of **1.00 V**, and offset of **0.500V** was given to the transmitter and its frequency was measured at the receiver.

The supposed sampling frequency was **2040.000 Hz**, the signal was sampled for **300.000 seconds**, and the FFT (to calculate the frequency) was calculated every **2.000 seconds**.

In order to calculate the sampling frequency, the signal frequency was supposed to be static (even though it is widely known that it admits a little fluctuation, which is also shown in the results).

The sampled signal was generated by a SIGLENT SDG 830 function generator.

### Results and discussion

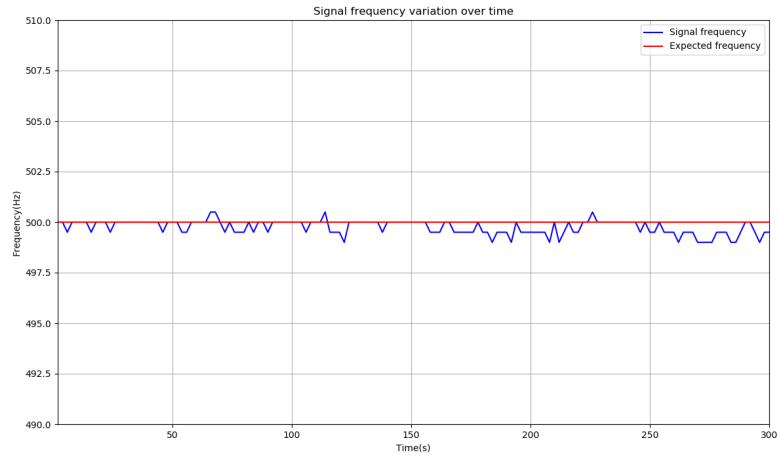
#### Signal frequency variation

The following table analyzes the signal frequency that was measured.

Unit	Value
Expected frequency	<b>500.000Hz</b>
Mean frequency $\pm$ std*	<b>499.743<math>\pm</math>0.346Hz</b>
Maximum measured frequency	<b>500.500Hz</b>
Mininum measured frequency	<b>499.000Hz</b>

\* Unbiased standard deviation. Same as Matlab's one.

It is important to notice that the maximum deviation from the expected valued of **500.000Hz** was **0.200%** for values below it, **0.100%** for values above it, and **0.051%** for the mean. The following plot shows this variation



### Sampling frequency variation

The following table analyzes the sampling frequency that was measured.

Unit	Value
Expected frequency	<b>2040.000Hz</b>
Mean frequency $\pm$ std*	<b>2041.049<math>\pm</math>1.415Hz</b>
Maximum measured frequency	<b>2044.088Hz</b>
Minimum measured frequency	<b>2037.962Hz</b>

\* Unbiased standard deviation. Same as Matlab's one.

It is important to notice that the maximum deviation from the expected valued of **500.000Hz** was **0.100%** for values below it, **0.200%** for values above it, and **0.051%** for the mean. The following plot shows this variation

