

-Manual-



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1. Rights and Responsibilities

Thank you for having downloaded our application *myFrequency* please read the following lines concerning rights and responsibilities.

This application measures vibrations of objects and analyzes their behavior in terms of eigenfrequencies and frequency spectra. APPtodate is **not responsible** for the results obtained with this application. It is up to you to interpret the results as an engineer. By using the app, you agree with the mentioned conditions.

Your team from



2. Overview *myFrequency*

With the help of this application you can measure, store and analyze vibrations anywhere you want directly on your smartphone. Within seconds you can determine the eigenfrequencies of objects and structures. Just place your device with the *myFrequency* app on an object you want to analyze. The app measures the acceleration in all three axes (see Fig. 1).



Figure 1: Axes of acceleration

The eigenfrequencies are shown in a frequency spectrum and are easily selectable.

Numerous tests between professional sensors and this application proved the reliability of our app. In average just **1,1 % variation** in frequency peaks (see Fig. 2).

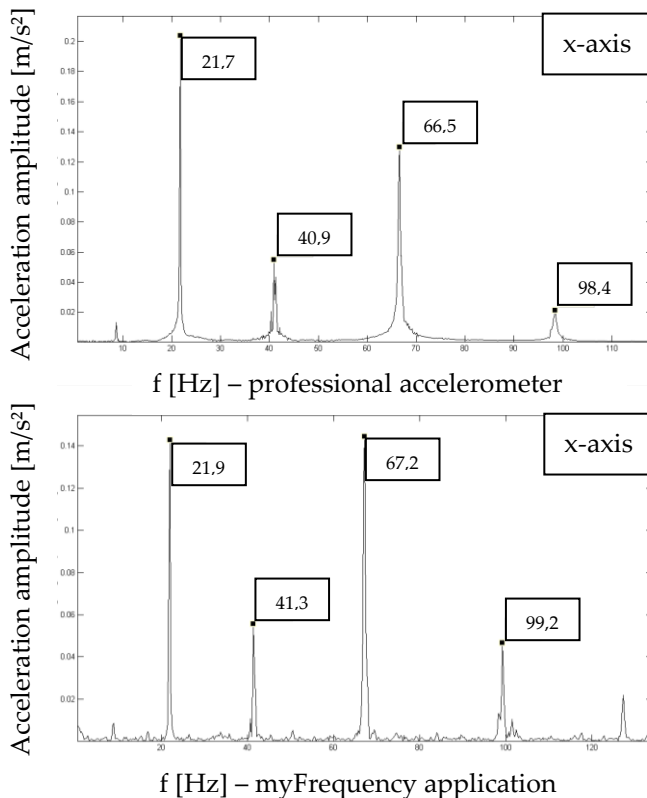


Figure 2: Comparison professional accelerometer - myFrequency application
(test on a suspender of a street bridge)

3. Settings

You have a lot of possibilities to adjust the performance of this application.

Display Range

You can define the display range of a measurement by selecting one of the following options (see Fig. 3).

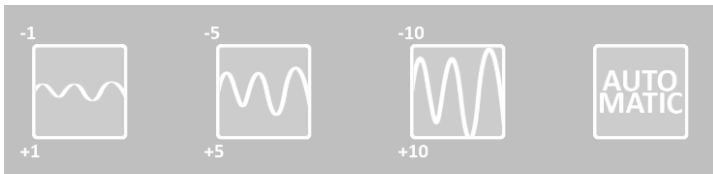


Figure 3: Display Range

If you select the automatic option, the display area will automatically adjust to the maximum amplitudes. By selecting one of the other options the range will be static during the measurement. The engineer has to choose the right option for the expected vibrations.

Device Orientation

You can define the orientation of the device during a measurement by selecting one of the following options (see Fig. 4).



Figure 4: Device Orientation

If you select the automatic option, the device will automatically align itself. By selecting one of the other options the orientation will be static during the measurement. The engineer has to choose the right option for the single measurement.

The alignment is stored in the txt file of the measurement in order to interpret the measured data better (see Fig. 5).

```
Date: 4.11.2017, Time: 14:39:25
Scalefactor: 300 , Samplingrate: 500.0Hz
Device-Orientation: vertical (automatic)
```

Figure 5: Text file with orientation entry

Linear Trendfilter

You can apply a trendfilter to the measured data in order to suppress a drift in the signal. The signal will be centered around the 0-Axis. A peak around 0 Hz will be suppressed in the frequency spectrum to optimize its quality.

Window Function

To avoid capping effects every part of a measurement will be superimposed by a window function. In this application a sinus-wave is used as window function. In the options you can choose if you want to display this function when selecting a part of the signal.

Smart Saving

When you want to store a measurement, you can use indexes to use the smart saving mode. A filename with an index at the end will be suggested the next time you want to save a measurement with an increased index. Example:

You selected the option **Smart Saving**.

If you enter a filename "test1", "test2" will be automatically suggested for the next storage. So you save time when saving multiple files for the same examination.

4. Starting a new measurement

On the home screen you can click on “new measurement” to start a new measurement.



Figure 6: starting a new measurement

5. Saving a measurement

You can save a measurement by clicking on the “save button” (see Fig. 6). The entered filename will be displayed later in the loading area. The measurement will be stored as .txt file on your device to reload or export the data by USB-cable or e-mail on your PC.

By default, the data is stored in the following path on your device storage:

```
//ANDROID/data/apptodate.myFrequency/  
files/myFrequency
```

See Chapter 3. **Settings** for detailed information about the smart saving mode.

6. Analyzing a measurement

With the help of our application you can analyze the vibrations directly on your smartphone within seconds.

When you press the “analyze button” (see Fig. 7) you get to the analyzation area, where you have two options: analyzing the total range or just a section of the signal (see Fig. 8 and 10). The second option is useful when you recorded disturbing vibrations that you do not want to analyze.



Figure 7: start analyzing

Total Range

Here you can analyze the entire signal. Just select the desired axis and start the calculation.

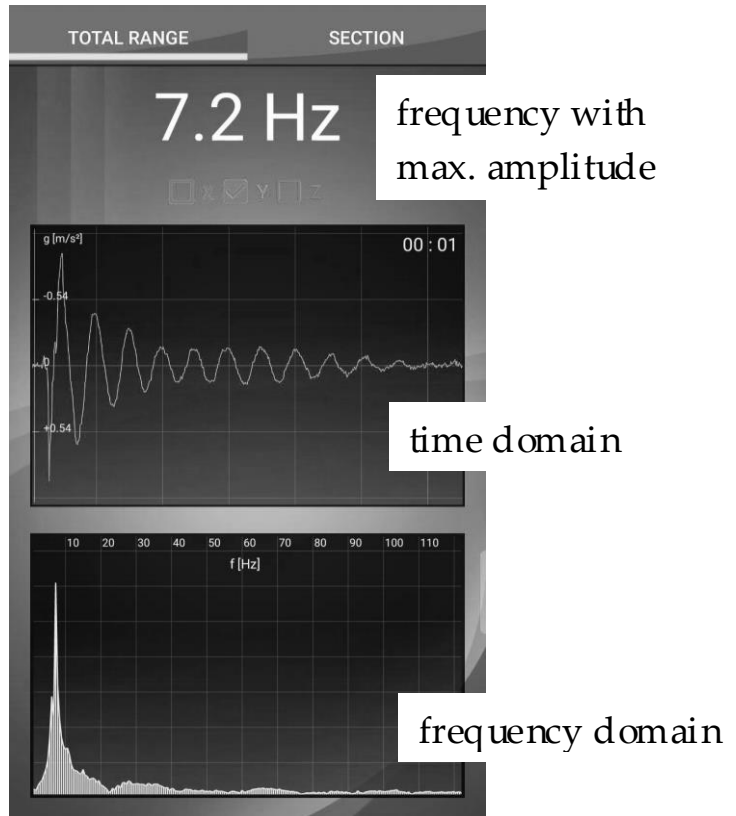


Figure 8: total range

Section

Here you can analyze a section of the signal. Just select the desired axis and swipe your finger in the time domain to move to the spot you want to analyze (see Fig. 9). When you press for around one second on the display of the time domain you switch to the selection mode (long click). Now you have to select a specific area by moving your finger from left to right. You will see a rectangular area that will be analyzed as soon as you lift your finger (see Fig. 10). The frequency with the maximum amplitude will be displayed at the top of the screen. On the bottom you see the frequency spectrum. By clicking on the spectrum, you will get to a detailed view where you can swipe with your finger to a desired frequency to show its exact frequency with the corresponding amplitude (see Fig. 11).

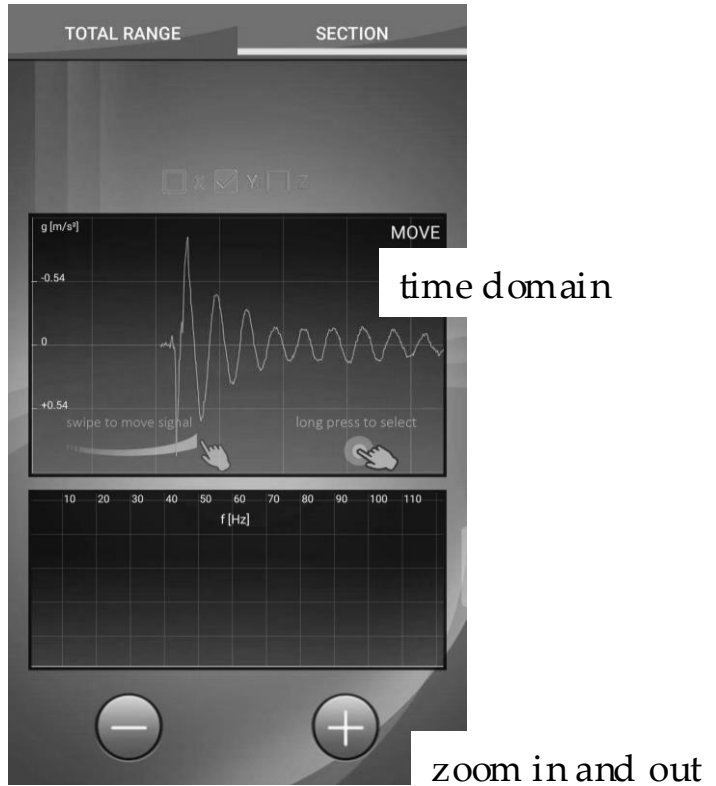


Figure 9: move in the time domain

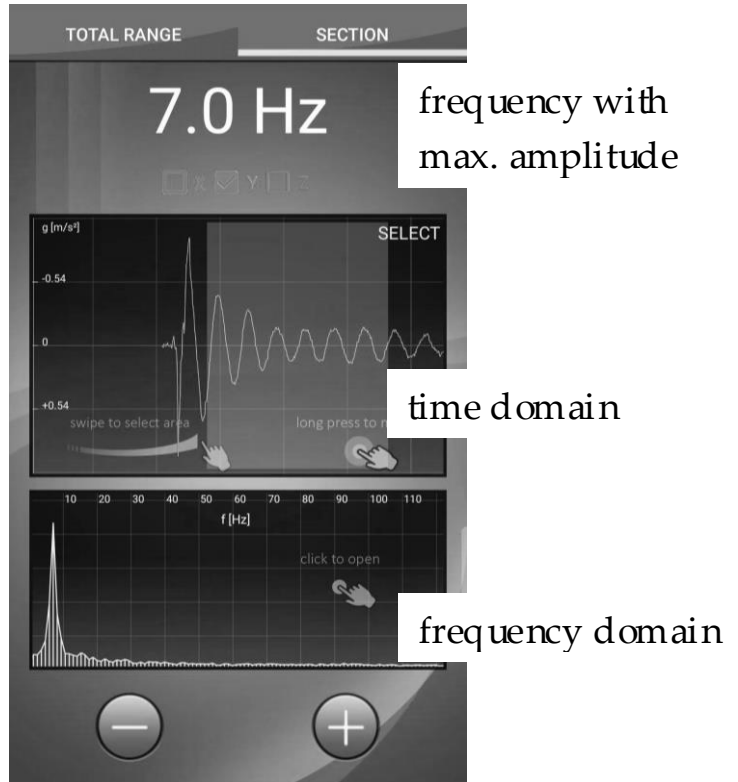


Figure 10: select area in time domai

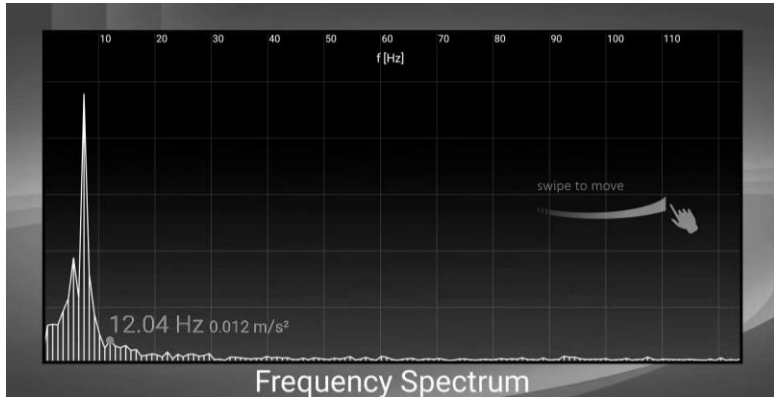


Figure 11: detailed view of the spectrum

Hint:

“When selecting an area within the time domain, try to set the start- and endpoint so that you catch an entire period of the signal.”

7. Loading a measurement

By clicking on “load measurement” on the home screen you can select a measurement out of the list or you can search it by its name in the seek bar. By clicking on the folder icon with the question mark, you can show the exact path where all your data is stored (see Fig. 12).

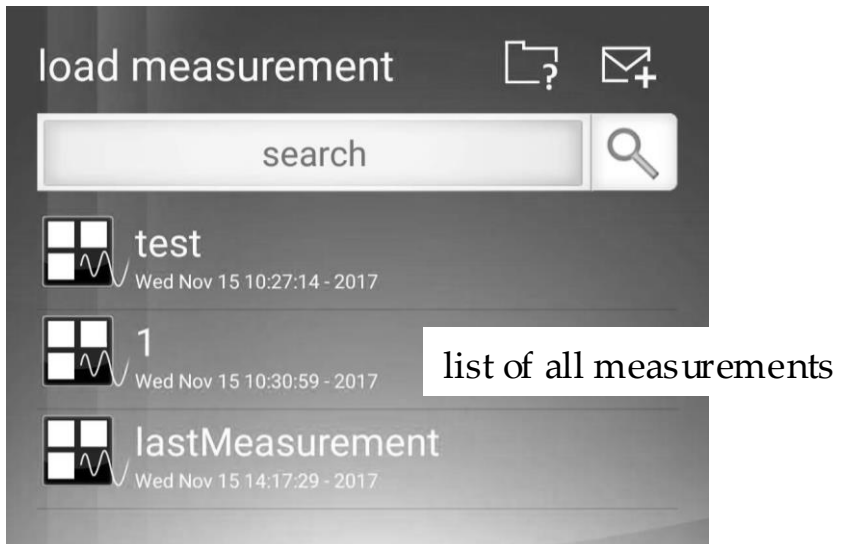


Figure 12: load measurement

8. Export of Data

You can export the recorded data by using a USB-cable to move the files to your PC or you can send files by e-mail.

Sending by e-mail

At first you have to enter an e-mail address you want to send the file to, by clicking on the letter icon with the plus (see Fig. 12 at the top). Afterwards you can long press on a measurement and choose whether you want to delete the file or send it by e-mail (see Fig. 13).

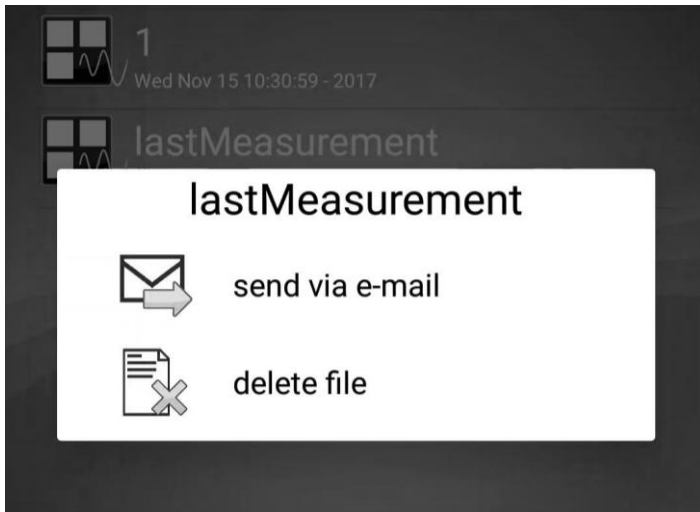


Figure 13: sending file by e-mail

9. Contact

If you like to give us feedback, announce problems or suggest some new features that you would like to use in this application do not hesitate to send us an e-mail:

apptodate-center@hotmail.com