


Yetala Demo Tutorial

This tutorial is for the Yetala Logic Analyzer APP. If you have not yet installed the APP in your Android gadget, please install it from Google Play, search for "Yetala".

Section 1.

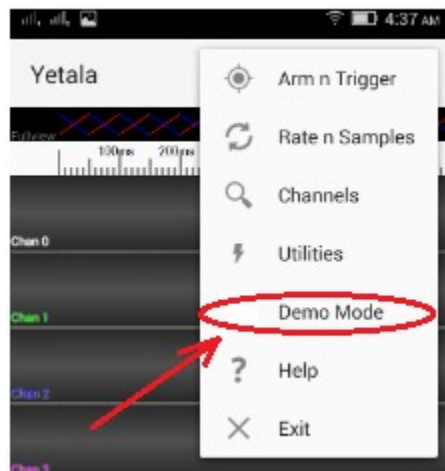
Launch the Yetala app in Demo mode


1.1 Launch Yetala by touching  icon in your Android.

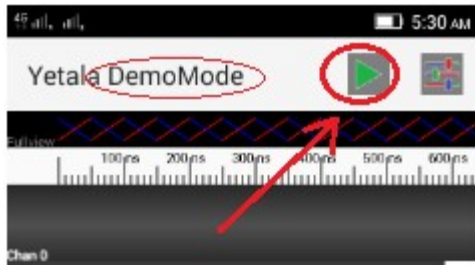
1.2 Touch the Settings  icon at the upper right corner:



1.3 Touch "Demo mode" from the drop-down List:



1.4 The APP will switch to Demo Mode as seen in the title bar, now touch the Run  icon:

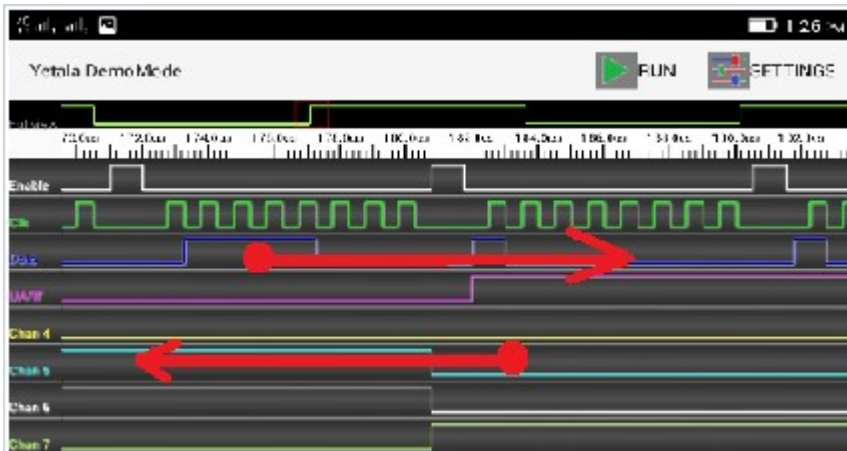


1.5 Wait for Yetala to finish Capturing and Loading the demo waveform:

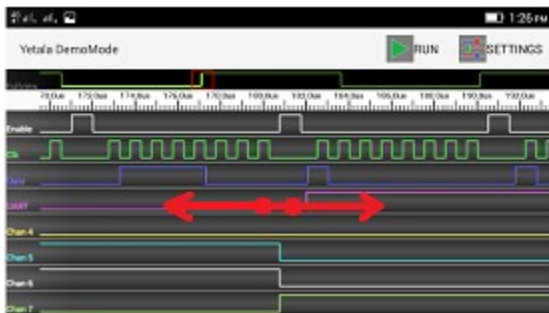


After the messages, the demo waveform will show up in the screen, you may want to rotate to landscape viewing. ***Sometimes, newly installed app crashes with an error, just exit from the drop down list, and repeat Step 1.1

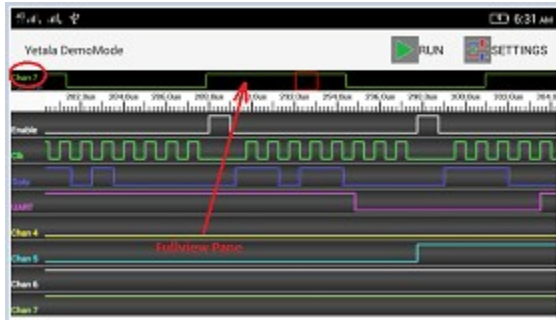
1.6 To pan the waveform, Slide your finger left-or-right anywhere in the waveform display:



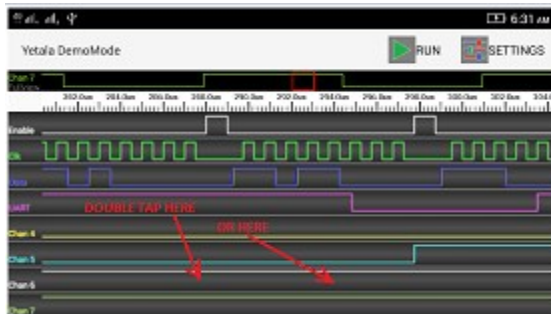
1.7 Try the pinch-zoom using two fingers:



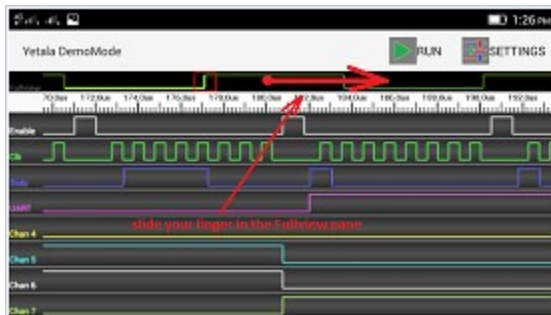
1.8 The red arrow below is pointing to the Fullview pane, it displays the entire captured waveform of Channel 7:



1.8 To select Channel 6 for Fullview display, double-tap the trace of Channel 6 as shown below:




1.91 You can slide your finger anywhere in the Fullview pane for faster scrolling of the wave display. The red rectangle in the Fullview pane indicates the portion that is currently on wave display.

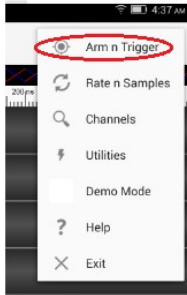


Section 2.

Arm and Trigger

"Trigger" is the event when the logic analyzer will begin saving data into the capture memory. "Armed" is the condition that will enable the trigger mechanism, all trigger events will be ignored if the system is not yet "Armed".

To setup the arm and trigger, touch the Settings  icon and then select "Arm n Trigger" from the drop-down List:



the "Arm & Trigger" screen will show up.

ARM

In the Arm portion at the left, there are 2 columns of checkboxes for configuring the Arm event, H-checkbox and L-checkbox. Touch the topmost H-checkbox and also the H-checkbox at the very bottom. We have just configured our Arm-event to enable the triggers "if" Channel 0 and Channel 7 are both Logic-Hi at the same time. Unless this condition is met, all triggers are disabled.

TRIGGER

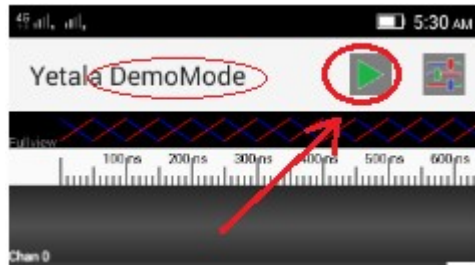
The Trigger portion at the right have R-checkboxes and F-checkboxes. Touch the very bottom R-checkbox and the very bottom F-checkbox. We have just configured the system to trigger at the "R"ising edge of Channel-7 or at the "F"alling edge of Channel-7, whichever occurred first.

The screen should look like this:

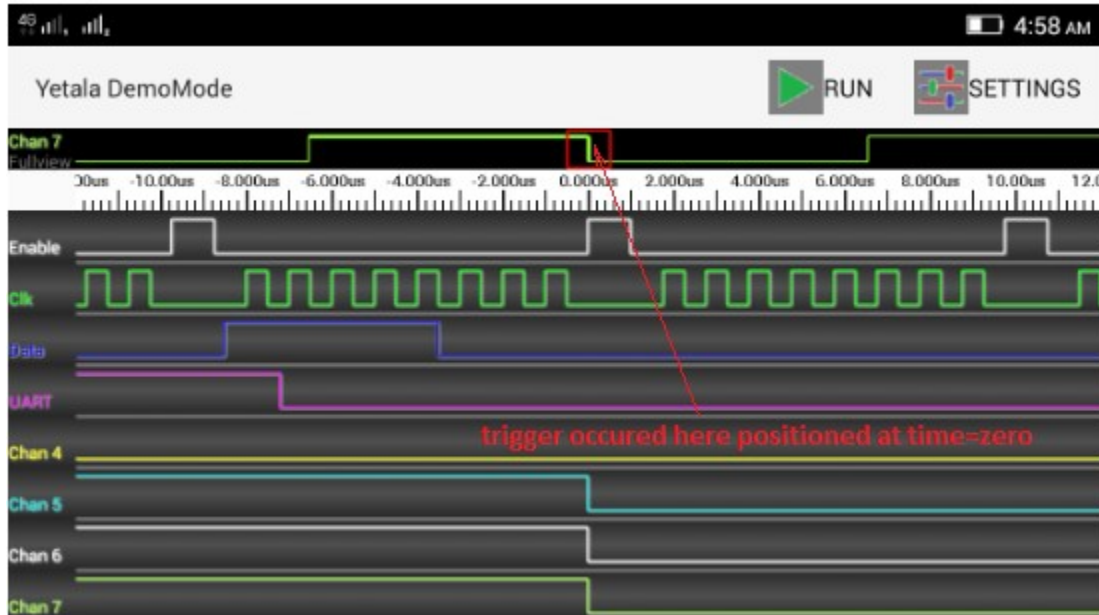


To save, touch the arrow beside "Save & Exit" as shown above, and the main screen comes back as shown next.

Back to the main screen, touch the "Run" button and wait until finish (Please make sure Demo Mode is in effect).



When the waveform display comes back, you will see the "F"alling edge of Channel-7 at the center of the screen.



You may want to try different combination of ARM and TRIGGERS.

Next topic is setting the Sampling Rate and the number of Samples, setting the trigger POSITION will be discussed also.

Section 3.

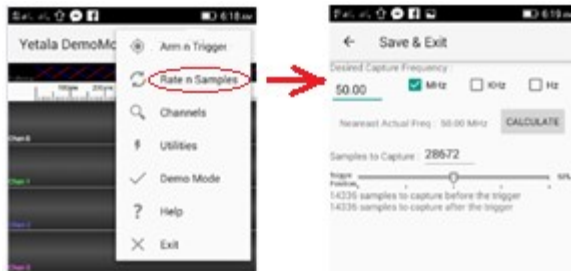
Rate and Sample

Sampling rate, expressed in Hz, is the interval between samples. A sampling rate of 1MHz will result to samples that are 1 microsecond apart (reciprocal of 1MHz). In a waveform trace, a Logic-Hi is represented by a line positioned higher than the Logic-Lo line. Geometrically speaking, a line is composed of two or more points, a point in a line is one "sample".

It follows that if your sampling rate is slower than the signal you are capturing, then the sampling mechanism will miss to capture some points in your signal that is changing at a fast rate, giving you a false result. In some engineering discipline, a sampling rate that is much slower than the signal is called under sampling.

Under sampling have good uses in a well planned setup, but in general, you should set the Sampling Rate to be faster than the signal you are capturing.

To setup the rate and samples, touch the Settings icon and then select "Rate & Sample" from the drop-down-list.



In the "Desired Capture Frequency" at the top, touch the MHz checkbox, and then edit the desired value to "7.00". You may need to use backspace to do that.

While typing "7.00", you will see the "Nearest Actual Freq: 7.00 ???", this is because the app is not yet sure if 7.00MHz can be achieved by the hardware.

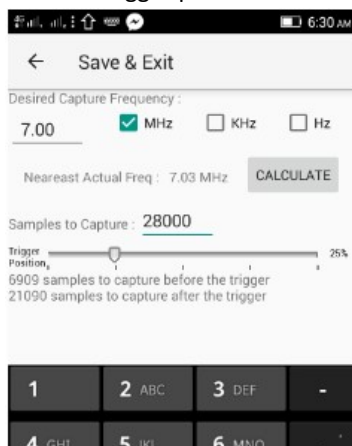
Now, touch the "CALCULATE" button nearby, and the display will show "7.03 MHz", this means the hardware cannot give you exactly 7.00MHz but the nearest value it can offer is 7.03MHz.

To set the number of samples to capture, edit the field "Samples to Capture".

Minimum value is 100, maximum value is 28672, edit the value to 28000.

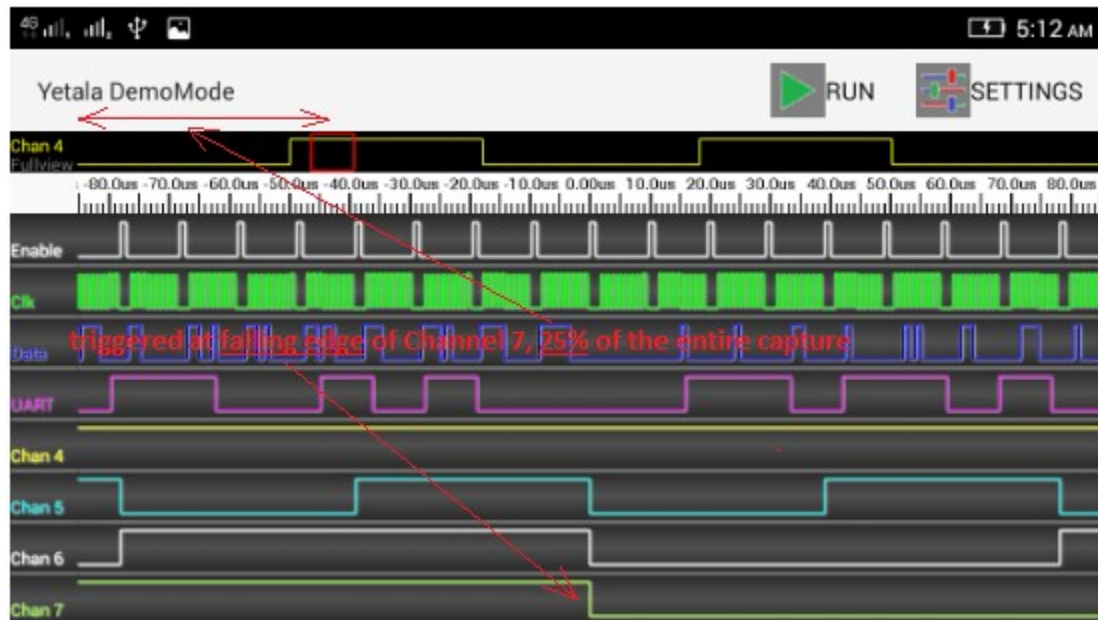
The default trigger position is at the center, it can be changed by touching & sliding the "Trigger Position" slider.

Slide the trigger position to about 25%, the screen should look like below:



When you are satisfied with your changes in "Rate and Sample", touch "Save & Exit" at the top of the screen to save your changes. The new settings will take effect the next time you hit "RUN".

Now touch the Run icon (please make sure Demo Mode is in effect), after capture, the screen will show like below:



To get the same waveform as shown above, make sure you have the same Arm n Trigger settings as described in Section 2.

If not, re-visit Arm n Trigger, follow the settings from Section 2, save & exit, then hit RUN again.

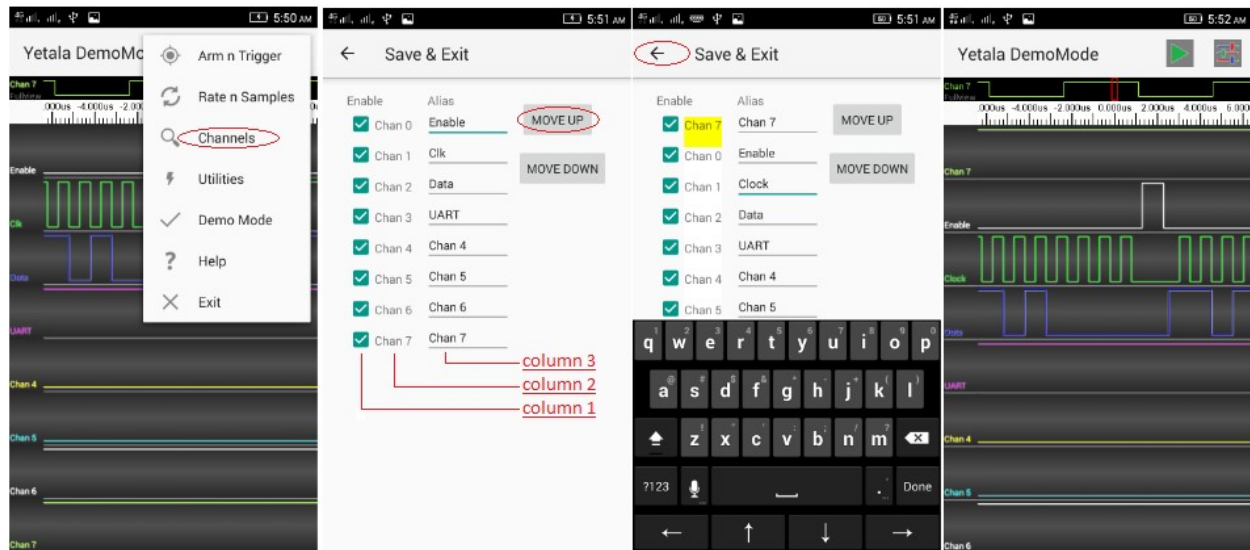
Section 4.

Channels

You can customize the way Channels are shown in the waveform display.

For this exercise, begin with a demo waveform on the display, please refer to Section 1.1 up to 1.5 to do that.

To use the Channels menu, touch the Settings from the menu, and select "Channels" from the drop-down-list.



You will find two buttons named "MOVE UP" and "MOVE DOWN", you use this button to change the arrangement of the channels in the waveform display.

At the left, you will find 3 columns, a column of checkboxes, next is the column of channel numbers, third is the column of assigned names to the channels (known as the alias, which you can edit).

To bring Channel 7 to the topmost position, touch the bottom of the second column, not the checkbox, but the channel number that says "Chan 7".

You should see "Chan 7" highlighted in yellow, then touch the "MOVE UP" button seven times until it reaches the top.

To change the name of Channel 1, touch the third column for Channel 1 that says "Clk", edit the value to "Clock", you may need to use backspace.

Hit "Save & Exit" at the top to go back to the waveform display, you will notice the changes you made took effect.

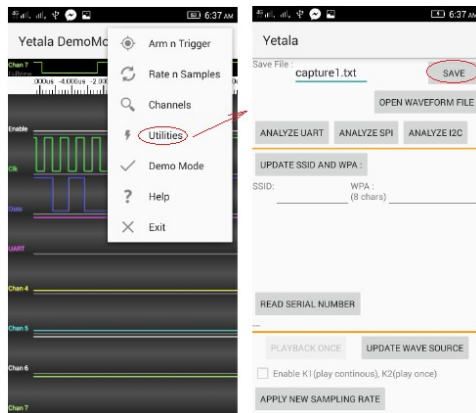
Section 5.

Utilities

The Utilities shows a very busy screen. Here you can do these things:

- You can save the current waveform to a file for later viewing or give the file to a friend for him to view.
- You can open a waveform previously saved to a file for viewing.
- Analyze a serial protocol (at the moment, uart protocol is the only one available).
- You can change the SSID and PASSWORD of your logic analyzer (Yetala hardware is required).
- You can playback the waveform currently on display (Yetala hardware is required). This feature will transform your Logic Analyzer to a "Logic Signal Generator". The same hardware channels that you use for capturing will become all output channels during playback. You can open any previously saved waveform file, upload it to the hardware then play back once. You can change the sampling rate, then playback again. The best thing is you can edit the waveform file before playing it back, the file is saved in an easy to understand text file.

To check out these features, touch the Settings from the menu, then select "Utilities" from the drop-down-list.

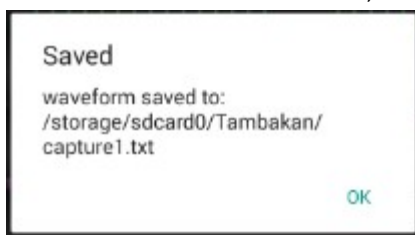


To save the waveform currently on display, touch the "SAVE" button shown above with the red circle. It will give you the message below:



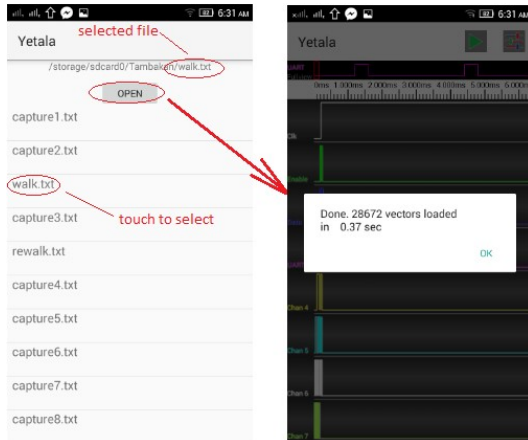
The folder "Tambakan" is the place where this app stores the files you save. You can find this folder in the root of your SD card after it was created. If it does not exist yet, you would see the message above, touch "YES" to create the folder now, touch "OK" on the next dialog box shown above.

Now back to the "Utilities" screen, touch the "SAVE" button again and see the message that it was saved to a file.



You may locate the "Tambakan" folder using your File Browser and find the saved files in it with .txt extensions. You may also edit the saved files using your favorite text editor. If you don't have a text editor, download one from Google.

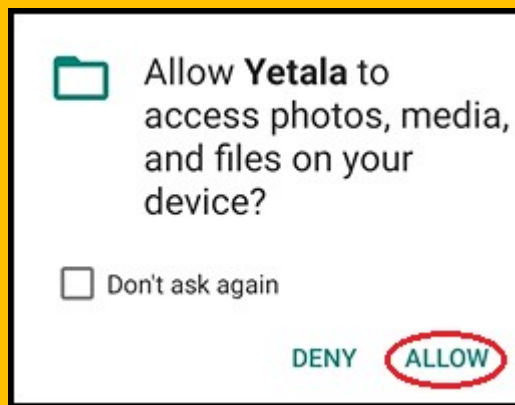
To open a saved waveform file for viewing, touch the **OPEN WAVEFORM FILE** button. Select a file from the list and hit "OPEN":



If there are no waveform file in the list, you must save a waveform first.

The other features in this "Utilities" screen is only available together with the Yetala hardware.

***In Android version **Marshmallow** and above, the user need to grant permission to this APP to have access to the flash memory storage of the Android gadget. When you see the message:



Please touch the ALLOW option and re-try the open or save operation.

Section 6.

Serial Protocol Analyzer

The UART protocol analyzer is another function found in the Utilities screen.

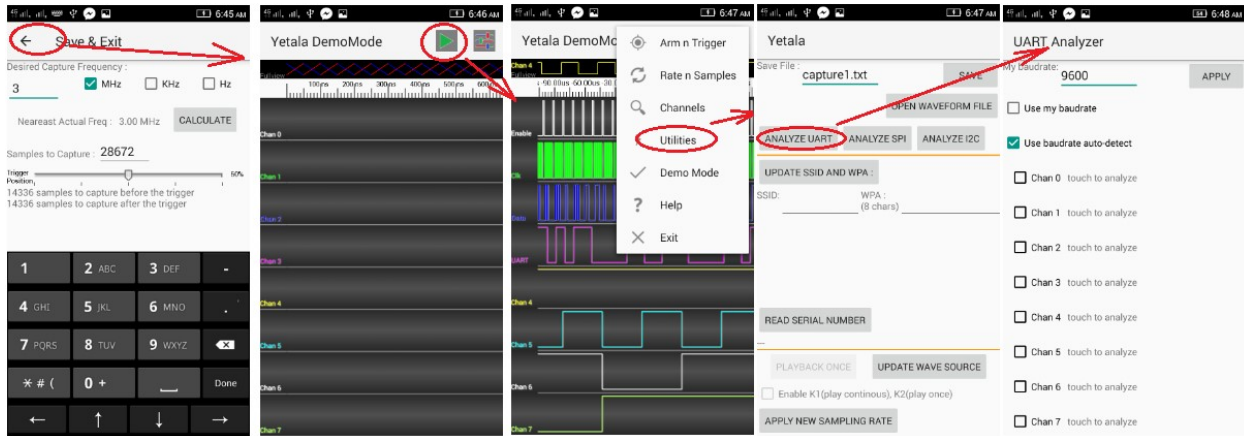
In this demonstration, we must have a UART stream in our waveform display, follow these steps:

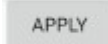
Section 6.1

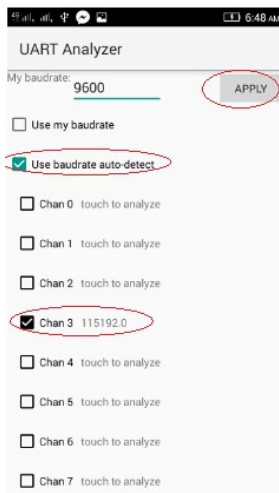
Bring up the Yetala app in Demo mode as described in Section 1.

Section 6.2

Update the sampling frequency to 3 MHz as described in Section 3. For this exercise we will use 3MHz, you may want to use different sampling frequency after this exercise. Try to use different sampling, and try to explain what happened to the result. The screens should look like these:



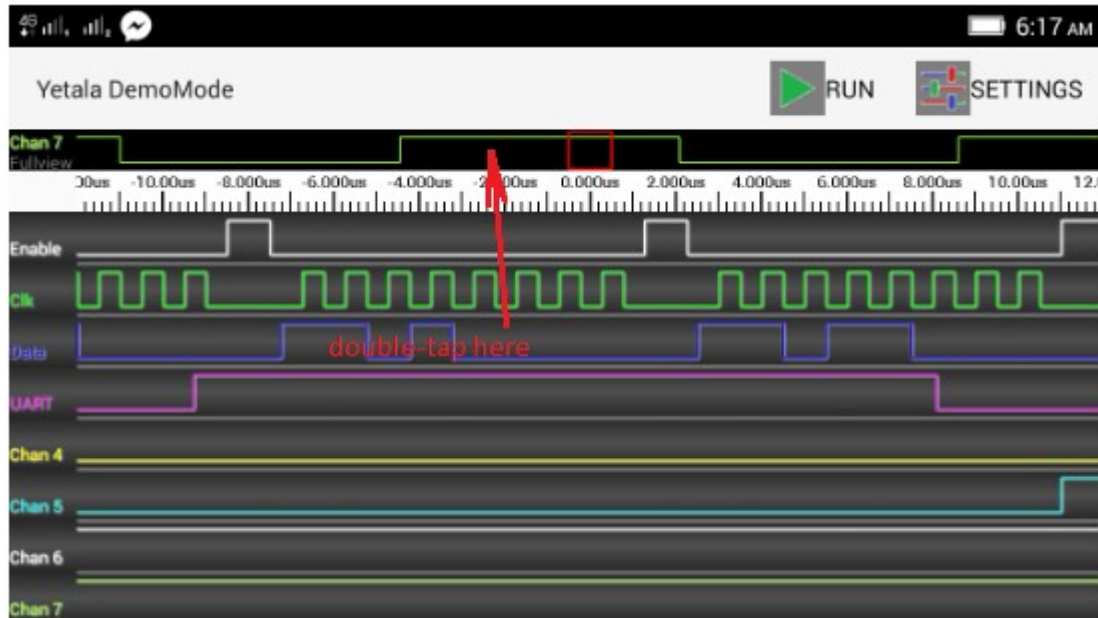
We know that our UART stream is in Channel 3, touch the checkbox for Chan 3 then hit  button as shown below:



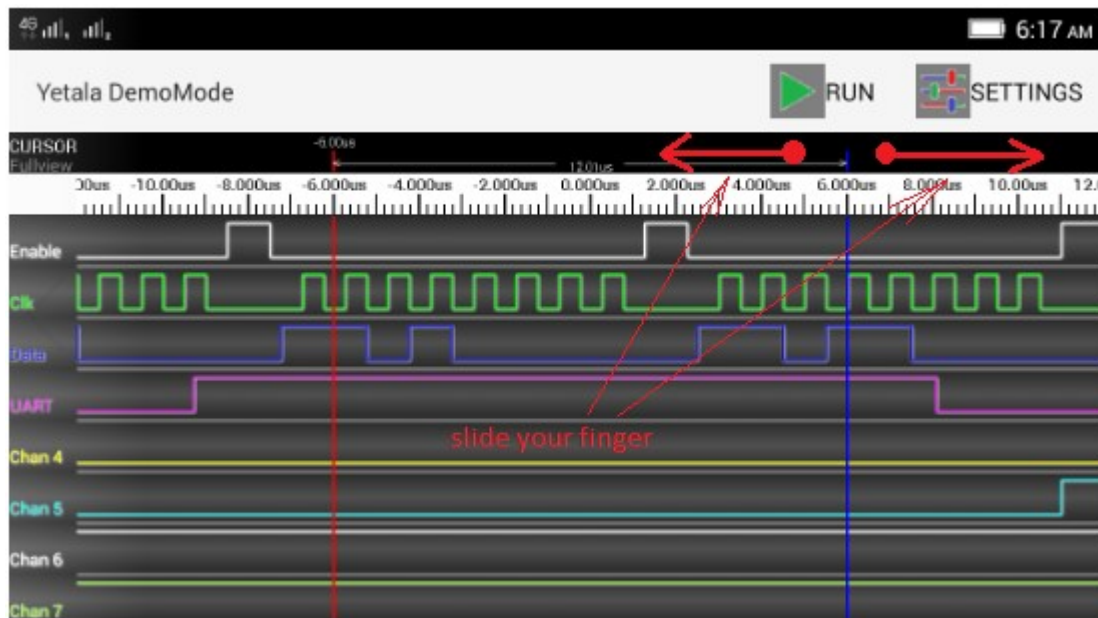
Section 7.

CURSORS

A logic analyzer must have cursors. To activate the Cursors, double-tap anywhere in the Fullview pane area then two vertical cursors will appear. To move the cursors, touch an area in the Fullview pane near the cursor you want to move and slowly slide your finger left or right.



Moving the cursors



To de-activate the cursors, double-tap anywhere in the Fullview pane.