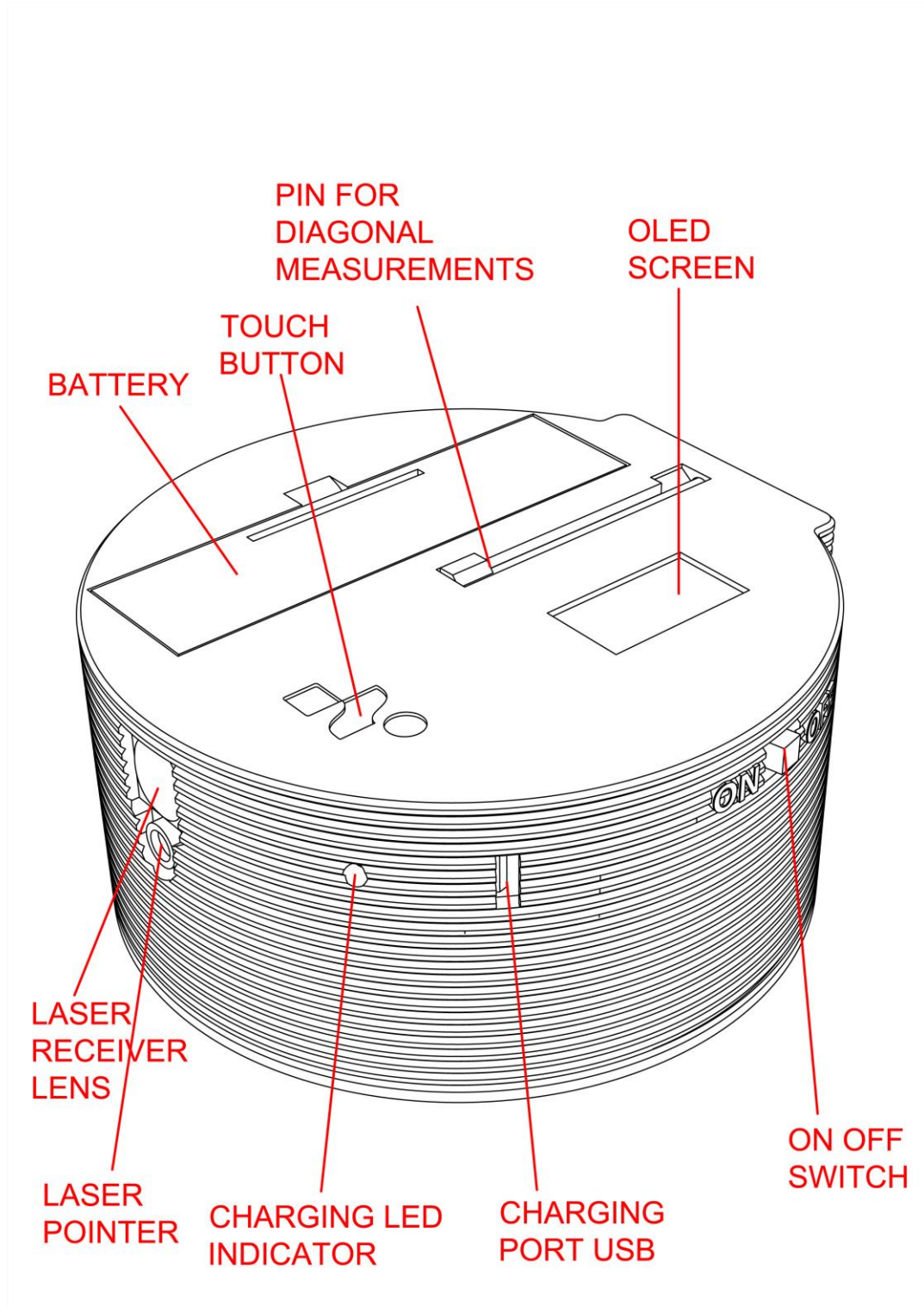


Diagram of Device



Connection with Blue Tooth

- Turn on the device
- Go to Blue Tooth settings in your mobile phone and search for new devices.
- Choose our device. You should see SN**** where **** is the Serial No of the 2dscanner as shown on the screen.
- When the code is requested, type in 1234

If the connection is successful SN-**** will appear on the connected device.

Installation of App

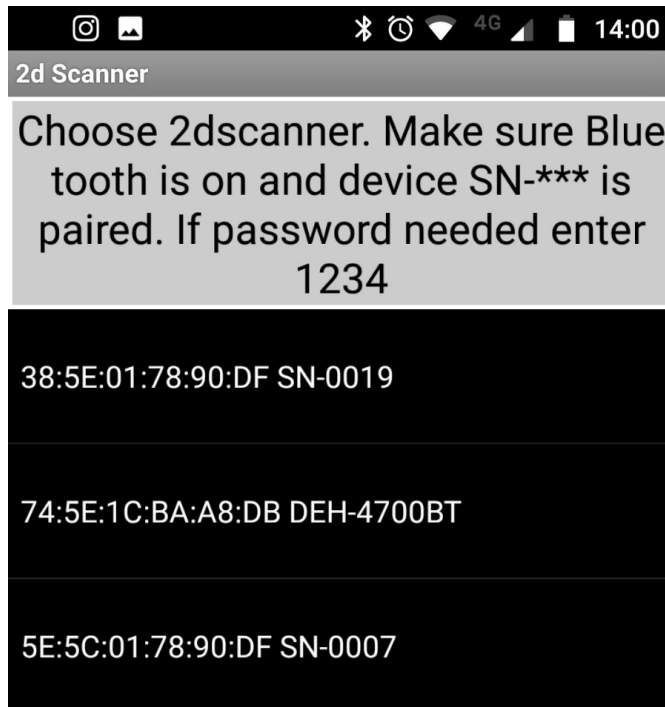
From our web page 2dscanner.com download the app in your android mobile or tablet. The app does not work on Iphones or windows phones. Install the app in your mobile or tablet. If there are security warnings they should be dealt with through settings.

The app will request permission for storage and location. Permission must be granted for both.

Use the app 2dScanner with the yellow icon



On opening, a list of the paired Blue Tooth devices will appear. Our device SN**** should be seen there.



Press once and wait for the device to respond.

As soon as this happens CONNECTED will appear on the OLED screen and the app will proceed to the next menu. From this point onwards the device will be in continual contact with your phone. If you move away from the device and the connection is lost, you should reconnect both the app and 2dscanner by turning them on and off.

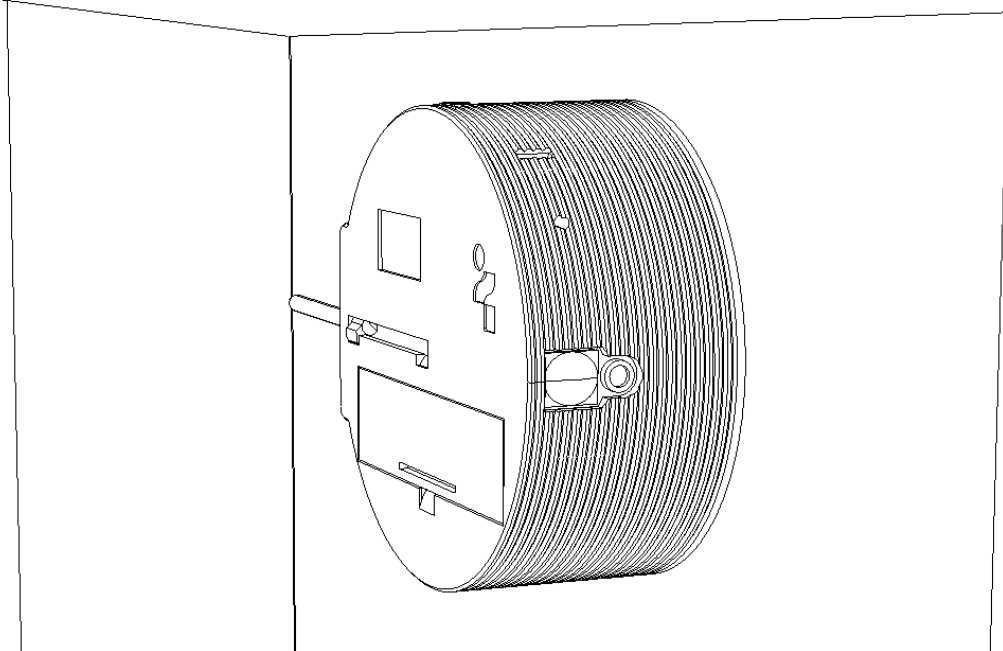
Basic Functions

Use as a Simple Laser Meter

Immediately after the device's start mode(ON-OFF button) you can touch the logo(touch device) and use the 2d scanner as a simple laser measurer. The measurement appears on the screen and is the distance from the back of the device up to the point being measured .A simple measurement can be made at anytime unless the device is in scanning mode.

Use of central point for diagonal measurement

Due to the shape of the device, the measurement from 1 internal corner to the opposite corner of a room is not possible .For this reason the 2dscanner has a central extension pin, as do most quality laser measurers. By opening the pin you can measure from 1 corner of a room to the opposite one. The device is equipped with a sensor which detects when the pin is opened and gives the distance from the tip of the pin to the point aimed .It is not easy ,however, to accurately aim at the opposite corner. For this reason, keep the button permanently pressed down and aim continuously. The 2dscanner takes readings continually. When the button is depressed, the largest value of measurement taken will be displayed and this theoretically is the diagonal measurement. This function requires caution when measuring starts so that you do not aim at the ceiling or another distant point. In this case the measurement will not be reliable. You can also use the scanning procedure to give a more accurate result.



Charging the Device

The device is charged by connecting a simple mobile phone charger to the charging port. The port is USB Micro type A, the most widely available type of charger at the present time. Charger is not included in the package.

When the battery is charging the device's LED remains on.

When charging is complete the LED goes off.

If the device is not used for some time , it must be charged before use.

When the battery is less than 10% the measurements cannot be considered reliable. The device can still be used though as a simple laser meter.

The battery used is type 18650 with a capacity of 3000 mAh.

When replacing ,use a brandname battery.

The device has overcharge protection so it can be left to charge continually. If the LED light does not turn off after 5-6 hours then the battery is old and cannot reach the required voltage for the LED light to turn off. In this case it can still be used normally. The device will stop charging after 10 hours. We recommend changing the battery.

The charging time is approximately 4 hours.

Don't exhaust the battery before charge it. Don't let it reach low levels of 10% or less because this will shorten battery's cycle life.

Safety Precautions

Keep out of reach of children. The prolonged eye contact with laser beam may cause harm as with all laser measuring instruments.

Laser Class: II

Laser Type: 635nm , <1mw

Voltage: 3.6V - Motor 12V

Use temperature: 0-40 C

Storage temperature: -25 C – 60 C

If the battery becomes unusually hot whilst charging ,replace it.

The device is not waterproof .Any contact with liquid may cause damage.

Fall damage

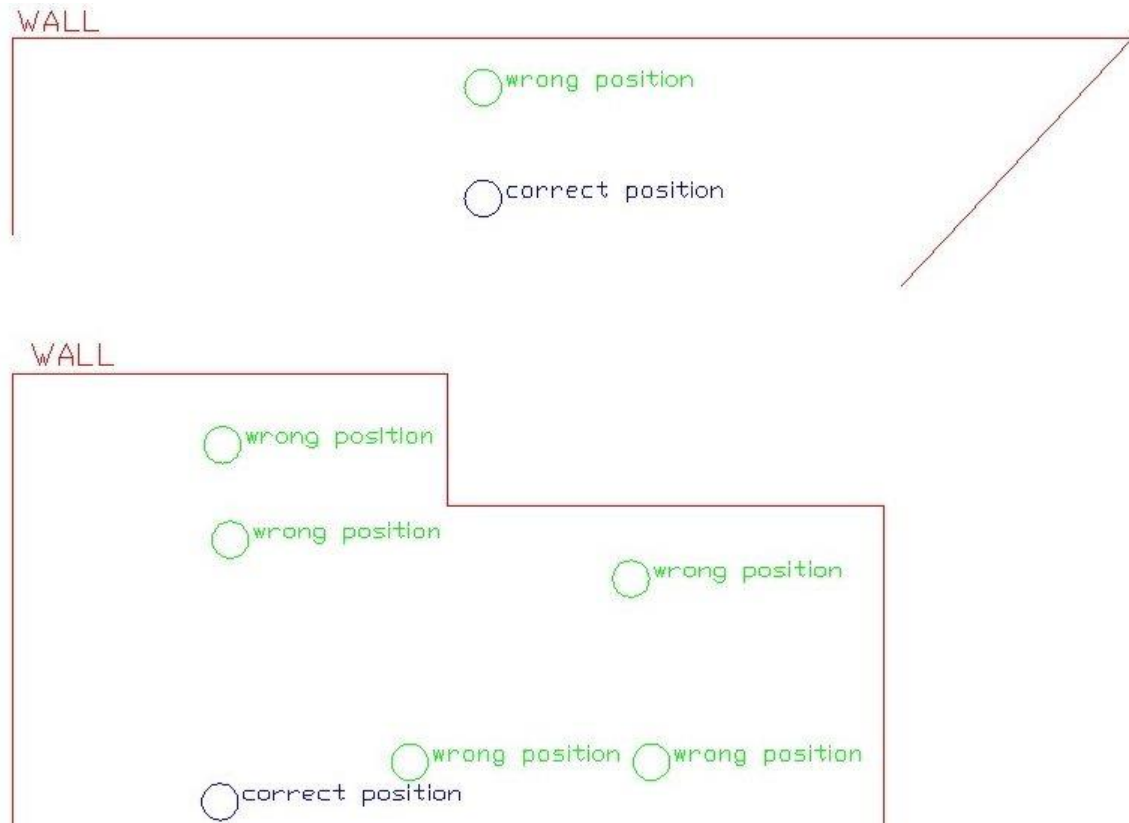
The device is a mechanically accurate product. A fall will not result in external damage but may affect the accuracy of the measurements.

Maintenance

The 2dscanner does not require any maintenance

Accuracy - Range

The accuracy of the measurements is affected by various factors. The most important of these is the shade of the surface being measured. Dark colours absorb part of the laser's rays and return a low reading to the device. The second factor is the geometry of the space being measured. It's a good idea, as far as possible, to avoid measurements where the ray aims at a great angle. In the following diagram several ways to position the device are presented.

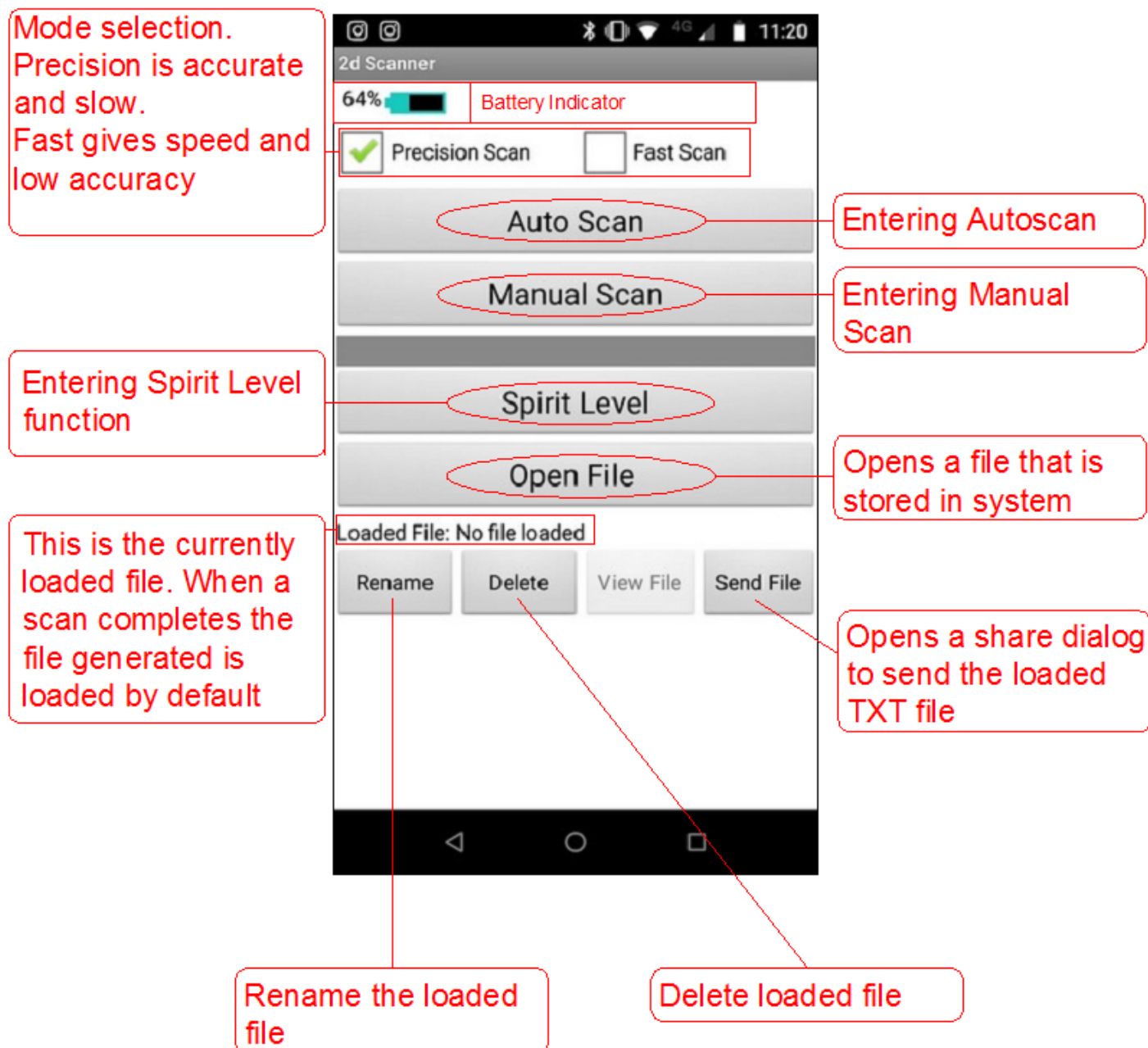


In internal spaces with a width of less than 10m, the accuracy will be within 3-4mm . In corners of a kitchen counter when the 2dscanner is placed about 2m from the wall, the accuracy achieved will be within 1-2mm.

With the 2dscanner a pattern is not required when copying walls. The bumps in walls, inaccurate corners and any other building imperfections are captured digitally.

The range of the device is 40m. This means that theoretically it can measure a space with a width of 80m. However with such large distances there may be deviations of up to 3-5cm. Furthermore the laser's spot will not be visible. The device has not been designed for use in such large spaces but it can produce a measurement.

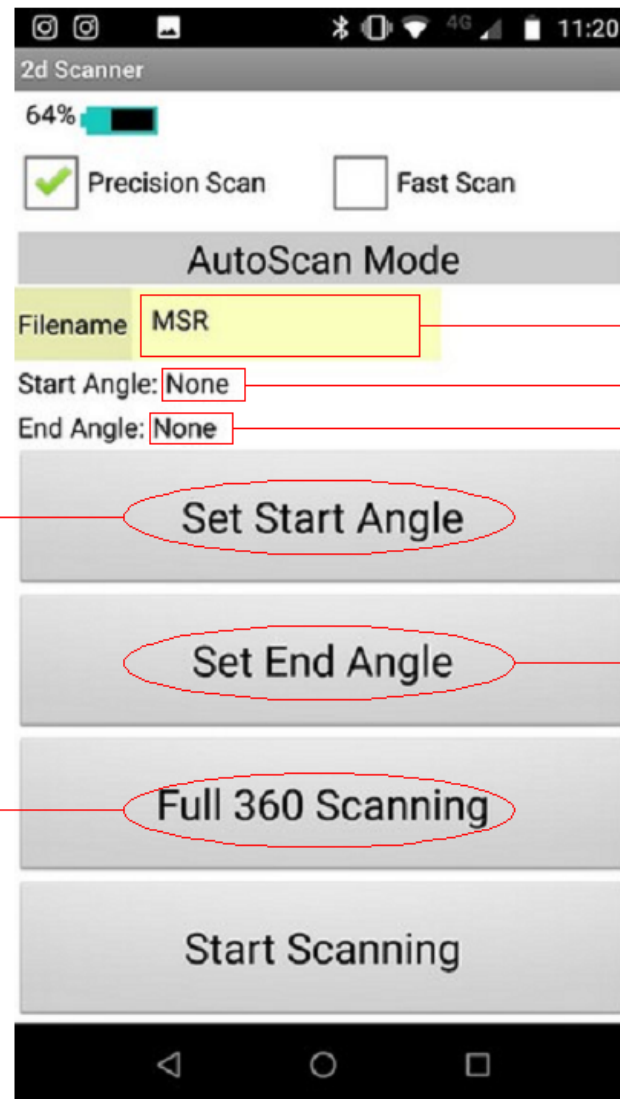
Initial App Menu



From the app's home menu you can choose which method of measurement to use, Auto or Manual and manage the files which are in your mobile phone. On the screen shown here the device's motor is in Sleep Mode and the device is not draining the battery.

Auto Scan Mode

By clicking on Auto Scan the menu in the picture appears



You can enter the desired filename in this field. You must press Enter key in Keyboard and not Back key. Otherwise it will show different filename but it will not be active. If a filename exists the app will add an increasing number.

Start angle point if set

End angle point if set

Entering movement Menu to define Start angle

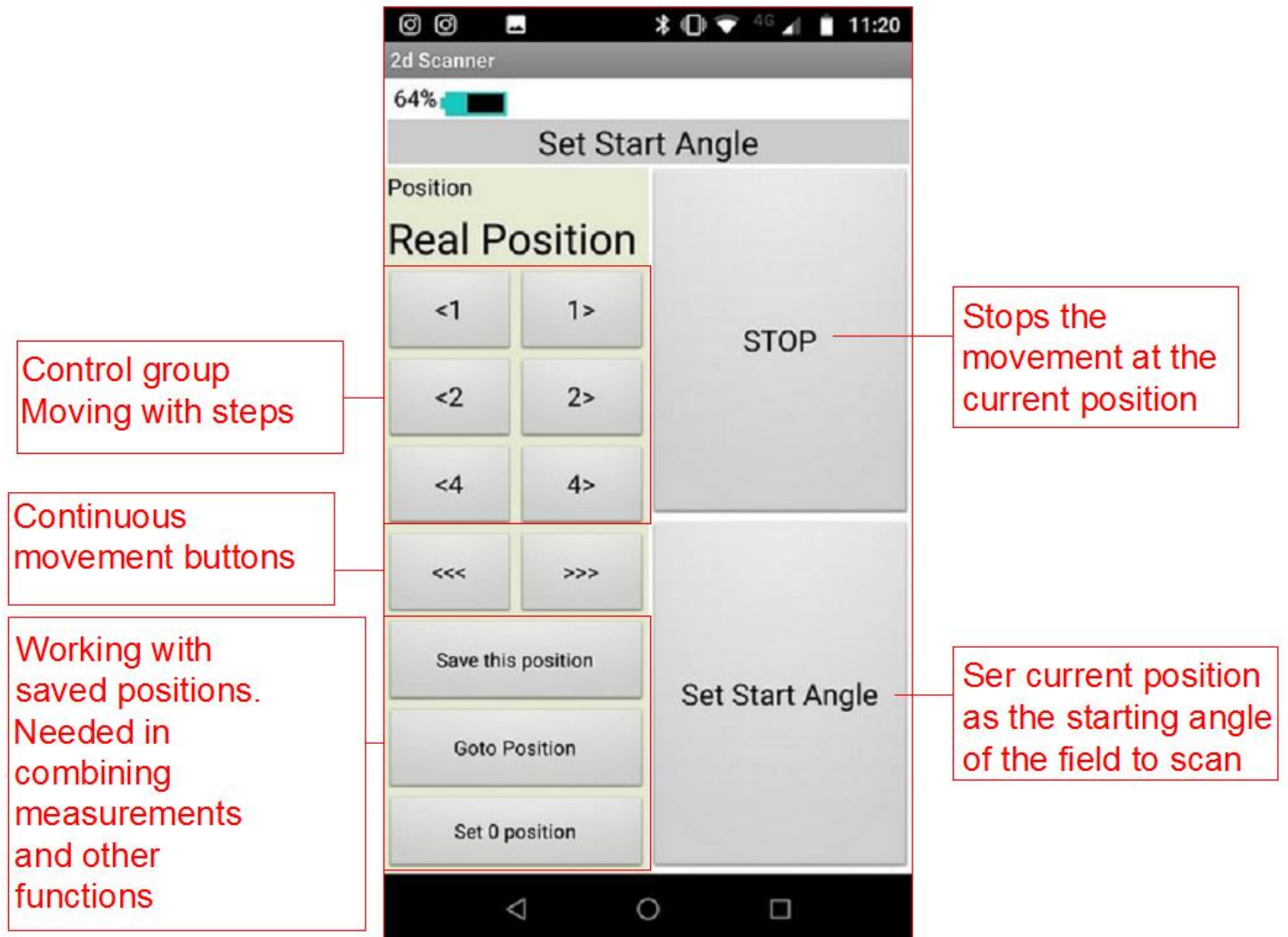
Entering movement Menu to define End angle

Full scanning starting from current spot

Start Scanning from Start to End Angle

You can take measurements from the start to the end angle or full scanning. Its use is relatively simple. Choose the start and end angle. The device always measures clockwise. If the end angle is further left than the start angle then it will reverse them. A good idea is to first select the start angle and then the end angle, always turning clockwise. The measurement step is chosen after scanning begins. The angles are in degrees although it is not very important as the user has visual contact and sets the start and end angles with the laser beam pointer.

Operation of Movement for choice of start and end angle.



On choosing Set Start Angle move on to the movement screen. From here you can rotate the 2dscanner right or left, move it to the desired position and set the start angle and then the end angle to define the field to be scanned



The Group control step enables you to make accurate movement on a scale of 1 to 4 steps. Note that a full rotation is 2000 steps.



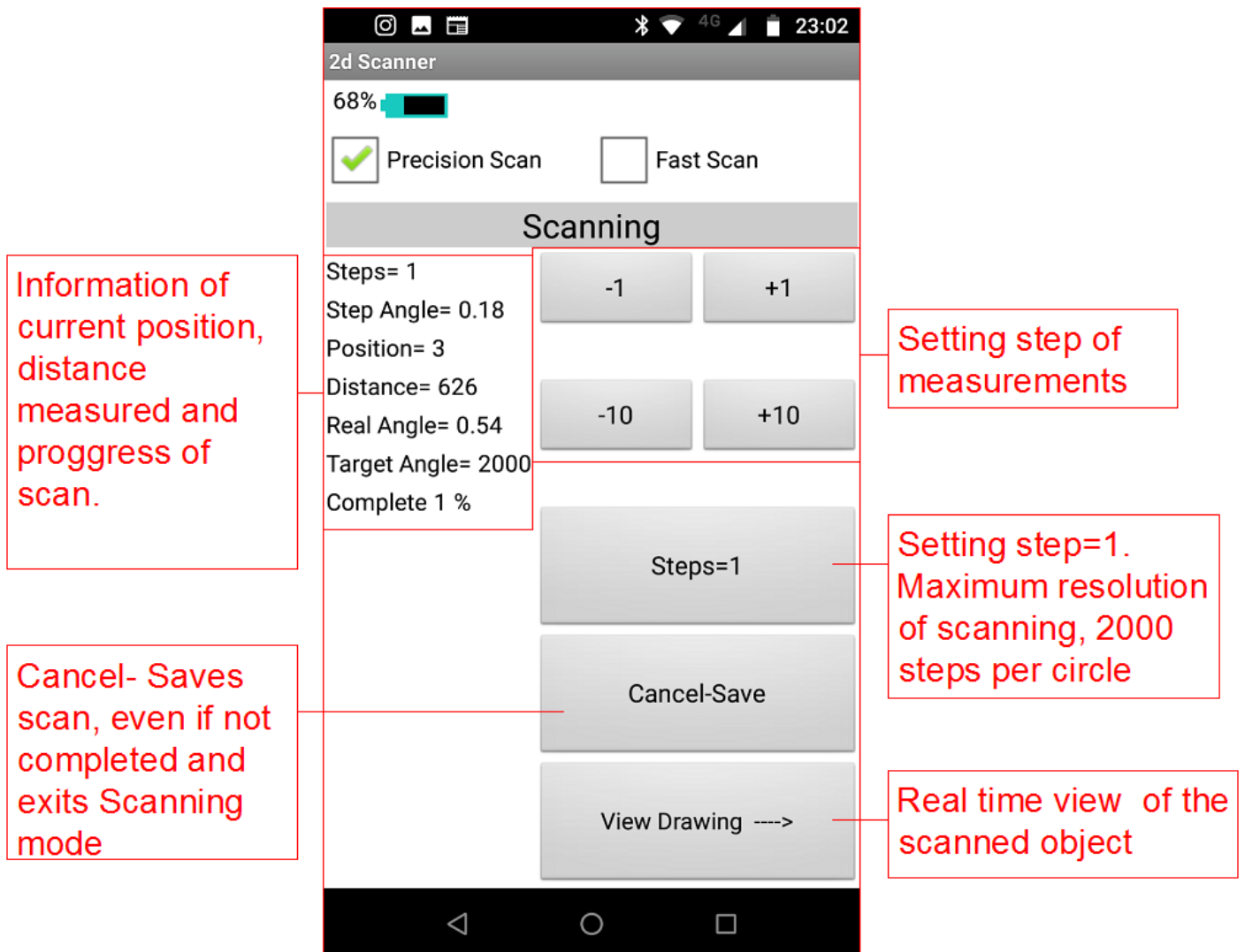
The Group continuous movement permanently rotates the 2dscanner left or right until the button is depressed. When this happens the device does not stop immediately. It returns to the spot where it was when the button was depressed. Generally when the device is in motion it will not stop suddenly as this could cause a tilt and ruin the measurement.



From these control points you can save a position so that the device automatically returns to this angle. This can be useful for checking if the device was moved or if you want to take a double reading. Additionally the device can be rotated 180 degrees (1000 steps) if you wish to measure diagonally opposite angles.

When the laser spot is at the desired angle, press Set Start Angle or End Angle and proceed to measurement.

Measurement Mode



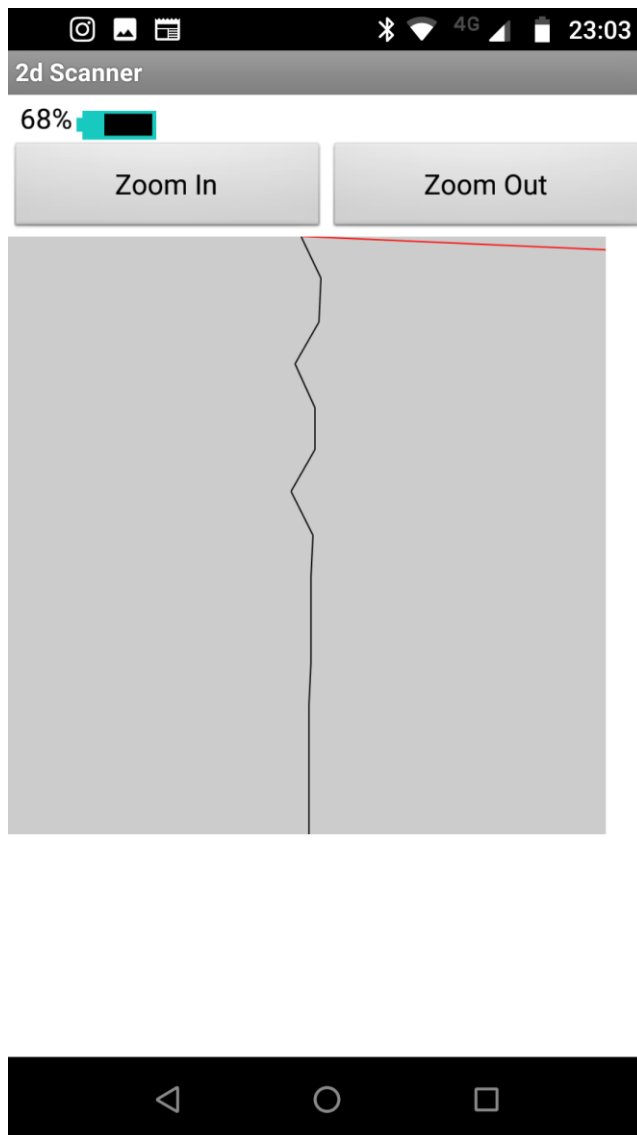
At this point the 2dscanner has started scanning. You can set the scanning steps with the keys of the Group Set Settings. When at least two measurements have been received the View Drawing key is activated and you can move to the screen where the measurement is shown in real time.

If the measurement achieved is the desired one and you do not want to continue, you can press Cancel-Save and leave scanning. The app exports DXF and TXT files. When measuring finishes the app prompts you to send the DXF in the share dialog that will open.



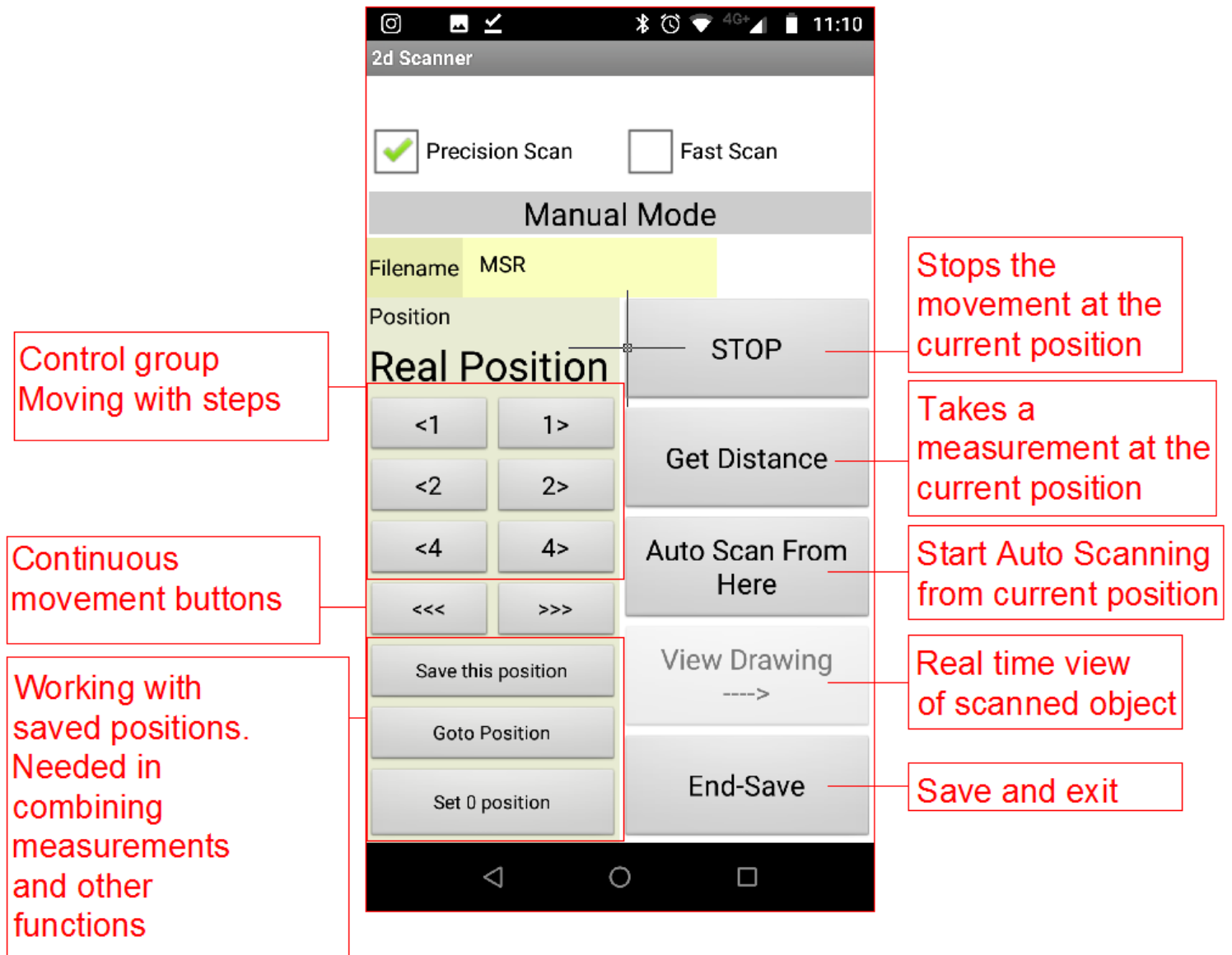
To use TXT file, needed only in certain circumstances, you can press send file in the app's Home Menu when the measurement has finished.

View Drawing



Through the View Drawing mode you can see the 2dscanner live and on the spot. The red line is the laser's beam. By zooming in and out you can see all the measurements accurately. You cannot interfere with or delete any of the measurements.

Manual Scan Mode



The Manual Scan Mode gives you greater freedom than automatic scanning.

1. The same angle can be measured multiple times.
2. You can go back and take additional measurements from a particular part of a large step you had set which requires greater accuracy.
3. Automatic scanning can be started from any point desired.

The way it operates is the same as the group movement to set the Start and End angle. In addition here, you can take a measurement and start Auto Scan from any point you desire.

Combined Measurement

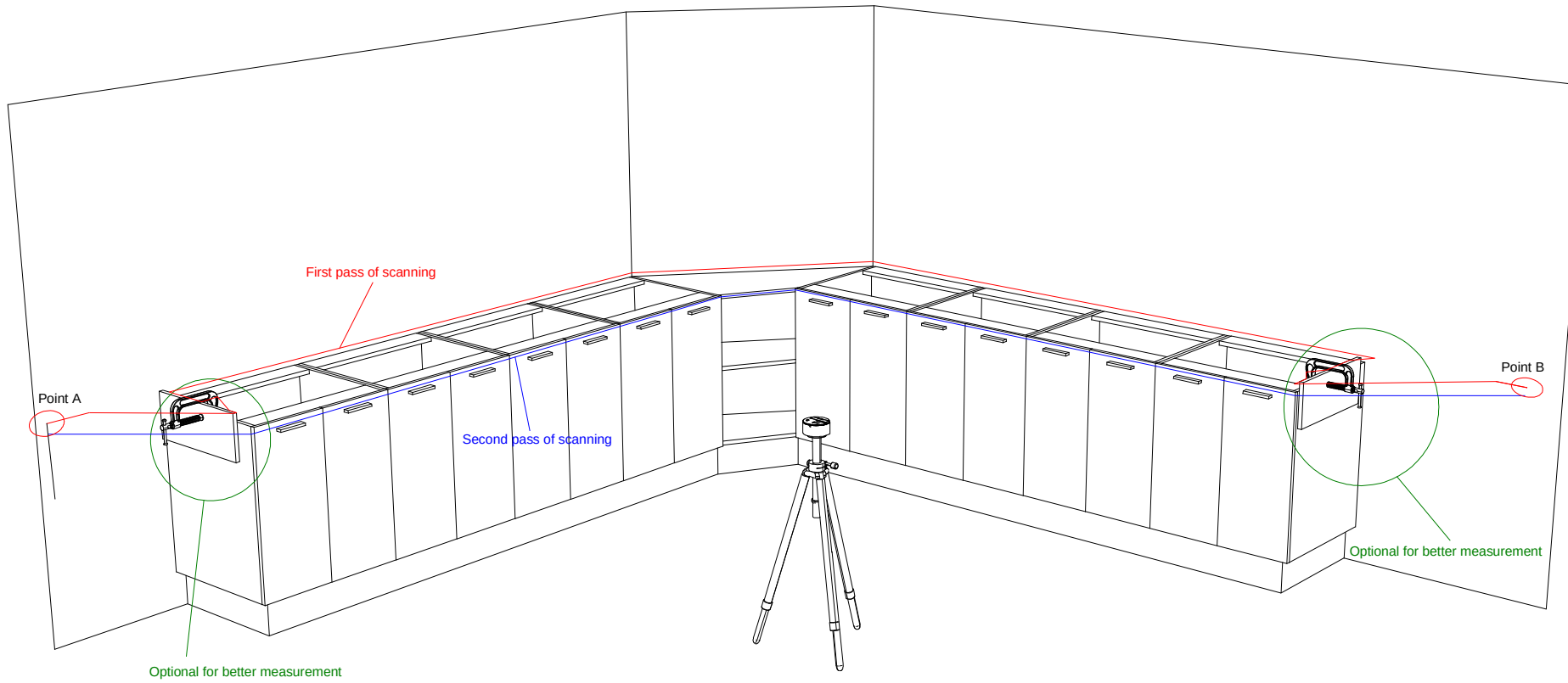
In Manual Mode 2 measurements can be made.

E.g. for a kitchen counter where you need a measurement of the wall and one of the cupboards.

You can place the 2dscanner on a tripod, aligned vertically and take a reading of the wall. Then, carefully you can lower the tripod 2-3cm so that the laser beam is aimed at the cupboards. Without leaving Manual Mode remeasure and outline the cupboards. The exact correlation between the 2 measurements will depend on how well aligned the tripod is. After lowering it 2-3cm the divergence will be very small anyway.

Let's study the following example.

The red and blue lines correspond to the 1st and 2nd laser readings respectively.



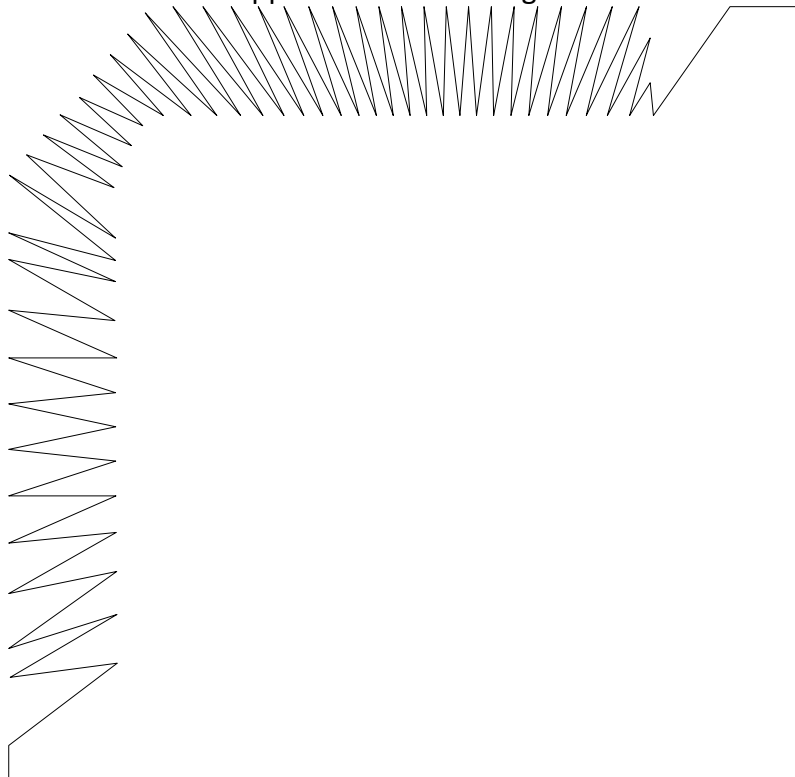
At the end of the cupboards you can add 2 layers to mark the boundary of the cupboards. If this is not possible, you can manage without it but you should take the measurements manually and add them to the diagram. In this instance the manual measurements are not straight forward because you don't have a definite angle but a curved one. The 2dscanner will accurately give you the 2 angles on the wall so from those angles you can measure the cupboards.

The measurement process is quite simple.

1. Enter Manual Mode
2. Go to angle A on the device
3. Choose Auto Scan from here
4. Wait for the device to reach angle B and stop the measurement
5. Return to angle A
6. Carefully lower the tripod so that the laser beam is aimed at the cupboard doors. (If the doors are not in place, the perimetric tape of the crosspiece should be aimed at. In this case the device should be well aligned.)
7. Press Auto Scan from here.
8. When you reach angle B stop the measurement

During the measurements you can alter the step measurement to finish faster. If you need greater accuracy at any point, you can go back and remeasure.

The DXF file in this case will appear in the following form.



This happens because the app sorts the measurements according to the angle from which they were taken and not according to the time they were taken.

From the PC's app you can open the TXT file which the device creates and choose a different classification method but then you will have difficulty with the angles, if there are any, that you went back to remeasure.

The correct solution for combined measurements is presented below.

Correct Method for Combined Measurements

A different and simple method of measurement can be applied with the DXF taking the desired form. The steps are the same with a few small differences which you will see in red letters in the following list

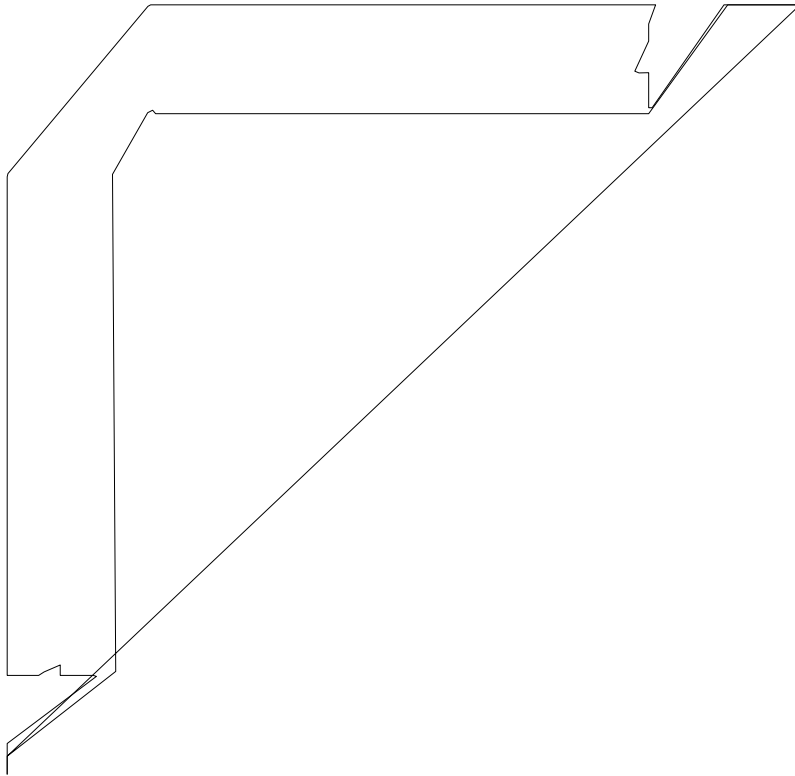
1. Choose Manual Mode
2. Go to angle A the device. Press **Set 0 position**
3. Choose Auto Scan from here.
4. Wait for it to reach angle B and stop measuring.
5. Return to angle A but making **a full clockwise rotation or press Go to Position →2000 and the device will automatically go to angle A + one rotation which is again angle A. In other words position 0 is the same as 2000, 4000 , etc.**
6. Carefully lower the tripod so that the laser beam is aimed at the cupboard doors (if the doors are not in place you should aim at the perimetric tape of the crosspiece in which case the device must be very well aligned).
7. Press Auto Scan from here.
8. When it reaches angle B stop measuring.

In this way the first measurements will show a smaller angle, they will be categorized and exact and the second measurement will have an angle from 2000 steps(2000 steps= 360 degrees) and above. This will also be categorized and exact.

CAUTION- THE TRIPOD MUST NOT BE MOVED

If the tripod is moved you will probably realise this from the measurements taken. The continuity will be lost and an unwarranted spike will appear. In this case we recommend the measurement is repeated.

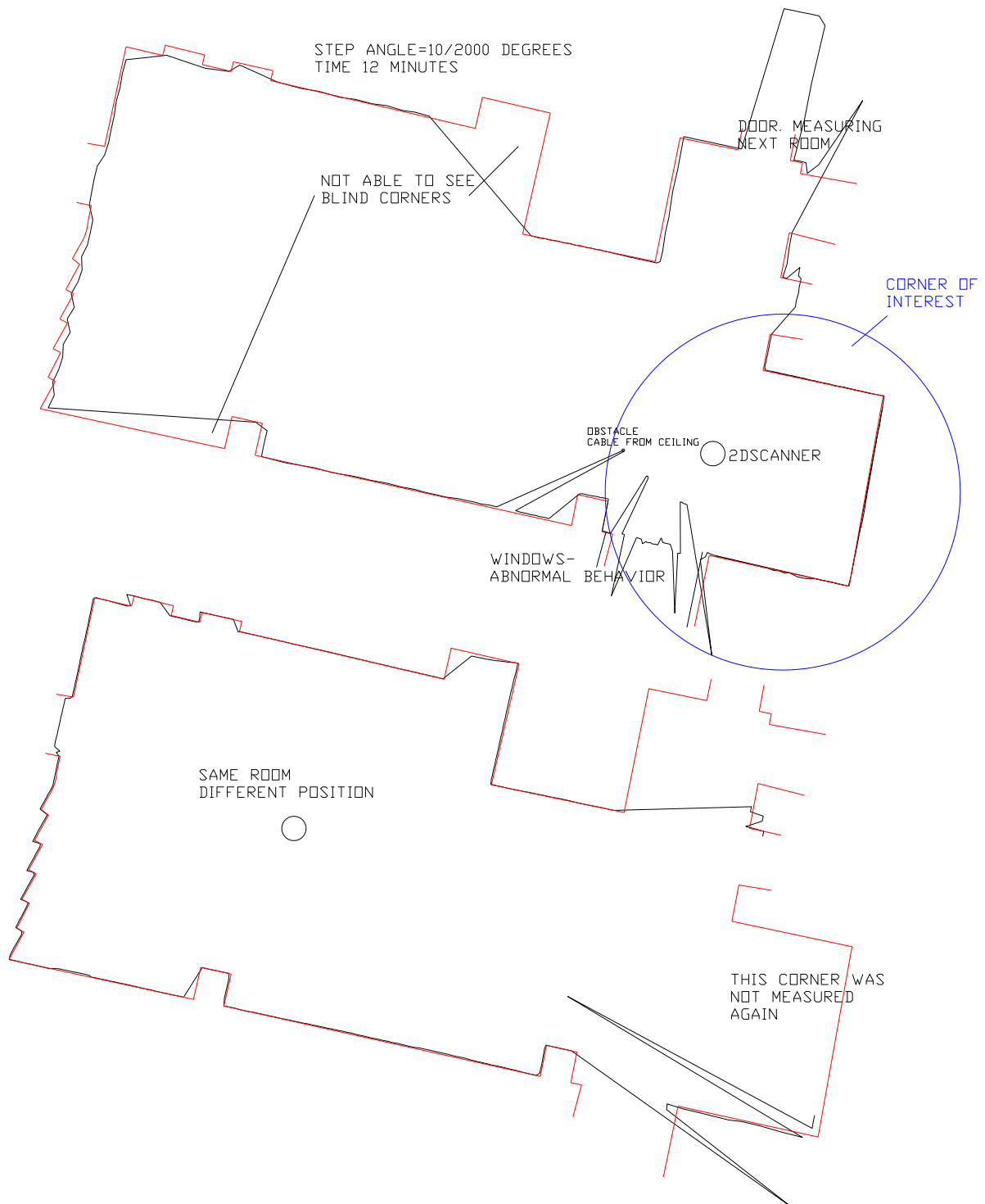
With this method the file will have the following form and will be easily editable.



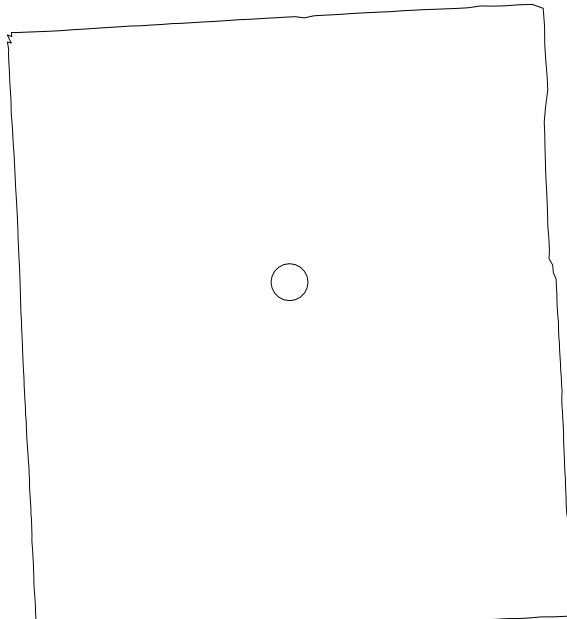
The present example is explanatory, we present you several examples of DXF files in the next pages to show you what Point Cloud means.

Real files from 2dscanner

The red line is the actual drawing

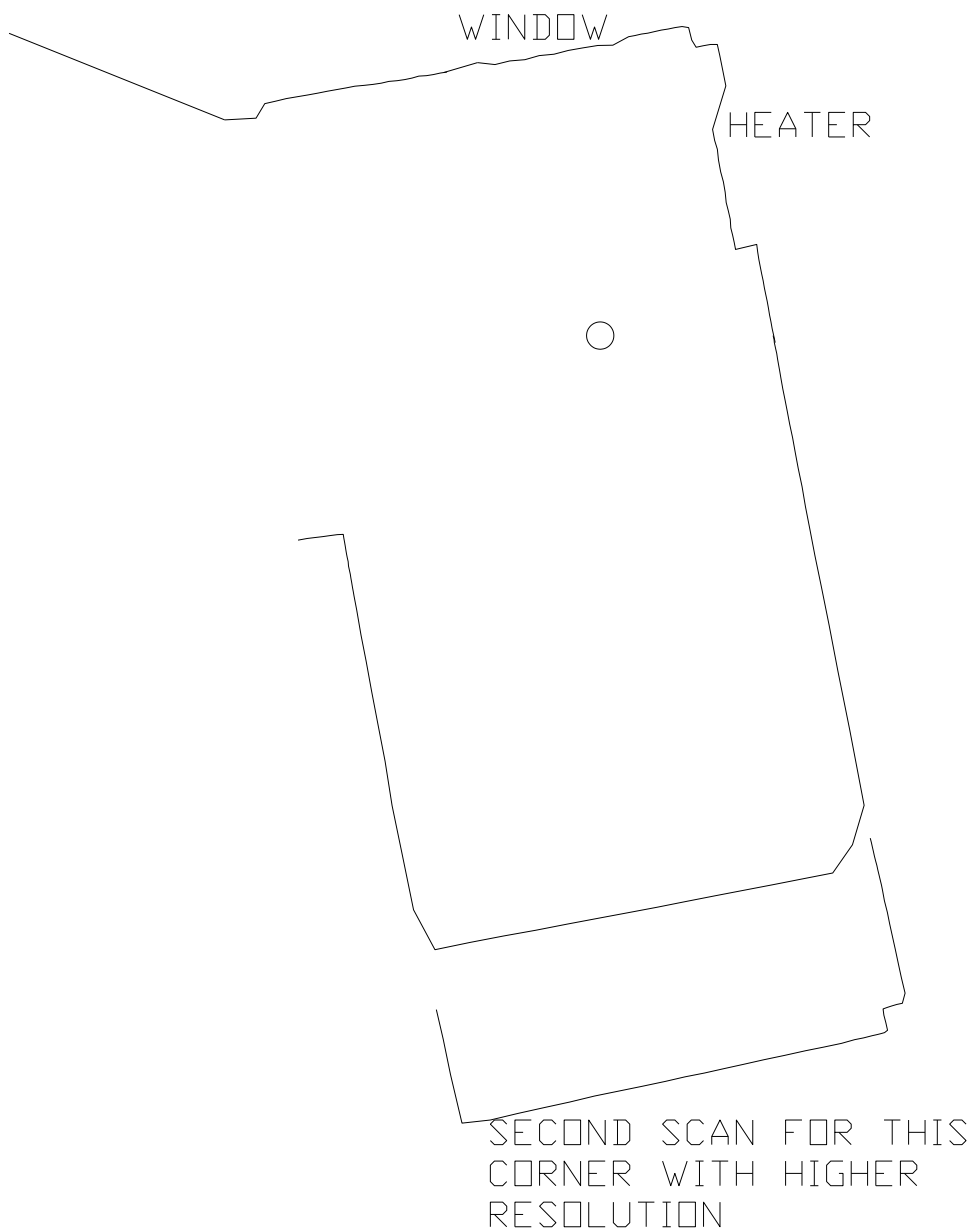


THIS IS AN EASY ROOM



ERASED THIS PART
AFTER A FULL SCAN





Storage location

The files are stored in the central folder of your device (mobile or tablet). Depending on your android version it may be easier or harder to locate the files. If you cannot locate them, we suggest you install the app Mi File Manager or any other similar file handling app. They can be found easily. If you have a Xiaomi the app is already installed.



Mi File Manager - free and easily

Xiaomi Inc. Εργαλεία

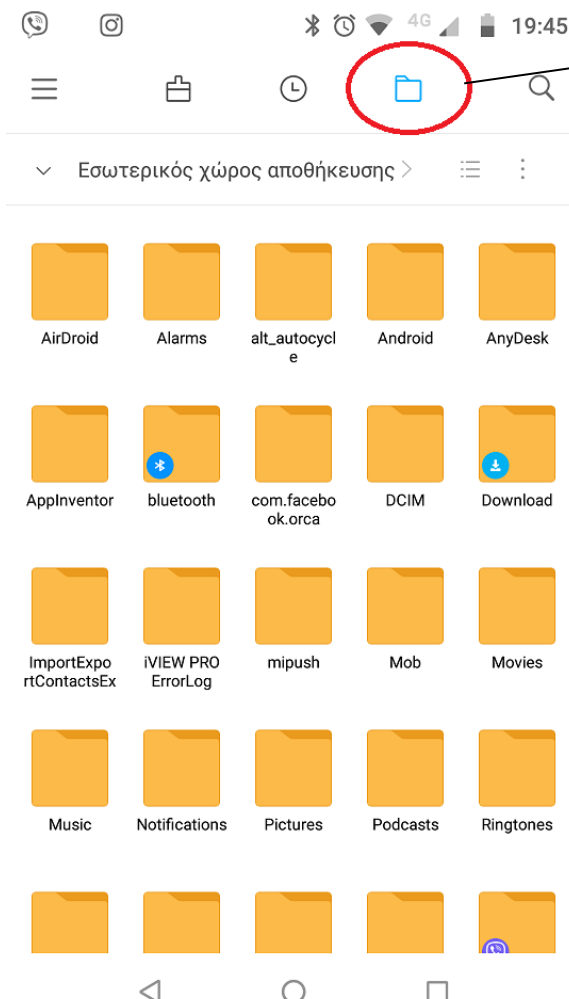
★★★★★ 1.996.138

PEGI 3

Περιέχει διαφημίσεις

Αυτή η εφαρμογή είναι συμβατή με όλες τις συσκευές σας.

Εγκαταστήθηκε



Press on the folder icon and navigate downwards.

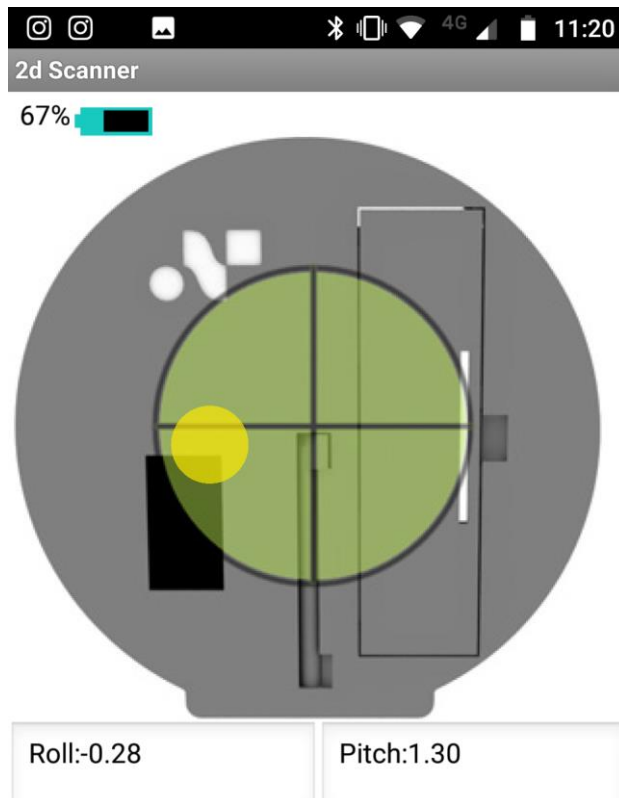
At the bottom of the page you should find the files MSR***.TXT and MSR***.DXF. If you change the name while measuring then you'll find the files with the name you entered and a number.

No measurement is deleted even if a reading is canceled, the measurement will have been stored and the next file will receive the next available number next to its name.

In the TXT file the time and date of the measurement is stored. This information may help you if you do not send the file directly through the app and search for it later.

Spirit Level

As we have mentioned the device does not need levelling when measuring walls. However there are applications where levelling is needed when the targeted surface is of a low height. In this case we have the choice Spirit Level. By pressing the key the alignment screen appears.



By moving the device try to move the yellow circle into the centre. If ALL the yellow is inside the circle already the deviation is very small. There is no need to centre it completely.

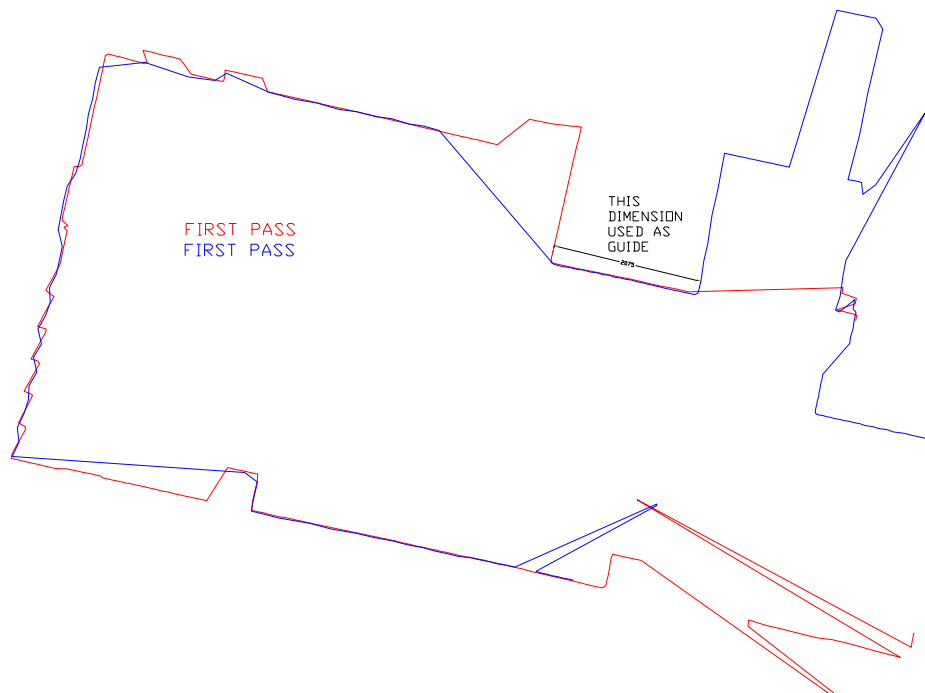
Rotating the device causes the circle to move. You can zero it at one point so when it rotates it is no longer at zero. This is normal. The movement causes some faults but it does not affect the result. Don't spend too much time on levelling the device as long as you can achieve aiming of the surface target. It has been observed that many users waste time trying to align the device when this does not affect the accuracy of the measurements due to the device's internal mechanism.

Combining multiple positions

The combination of multiple positions can be achieved but the accuracy depends on the level of the user's experience. You cannot depend 100% on combined measurements for exact applications (application of glass or ceramic surfaces). The deviation may be in the region of 1-2cm.

The best way is to take advantage of a structural component of which the measurements can be measured with a simple tape measure. If this structural component is visible on the 2dscanner from both positions then we can combine them on the CAD program we use.

Presented below is a combination of 2 positions.



The possibilities of combining positions are endless with the only limit being the time the user has available and the accuracy demanded. In cases of simple diagrams not needing great accuracy, it has been observed that most users prefer simple measuring methods and not the 2dscanner.

View and edit DXF files

2dscanner exports DXF files. They are not ready for use but need some processing. You will have to find the angles by extending some straight lines thus making the prints simpler. Furthermore no wall has a perfect corner. The plaster on the wall creates a small curve. Even if you aim at the corner and take a reading a perfect angle will not appear.

This process can be done with different programmes which are available. The most popular and reliable is Autocad. In case you need a free open source DXF editor you can try LibreCad which has the required functions to process the files.

<https://librecad.org/>

Warranty

The 2d scanner has a full 3year warranty. The warranty does not cover misuse (fall damage, exposure to liquids, etc.). It covers all of the devices internal electronics except for the battery which is consumable and can be replaced at a low cost.

When buying the 2dscanner you gain an accurate measuring product of high quality. Full support will be provided in the event of any problem which may occur.

Support Line: info@2dscanner.com