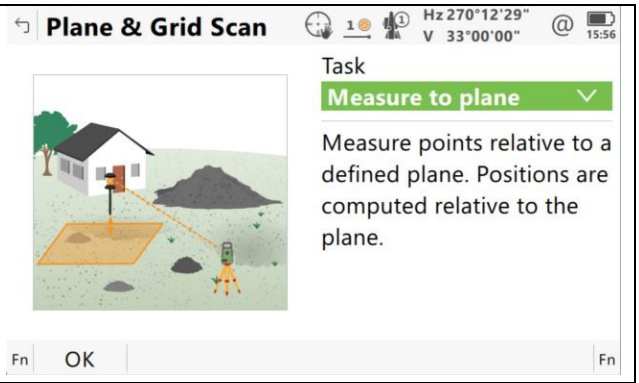
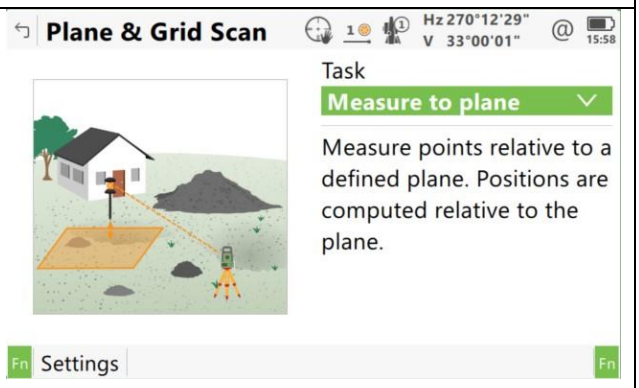
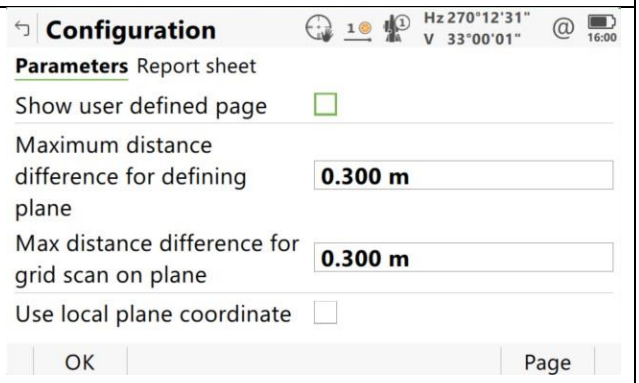
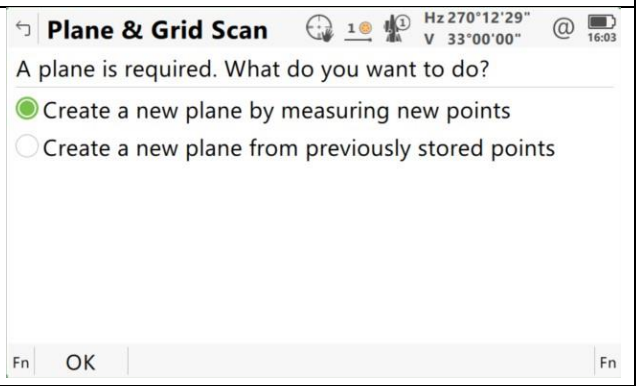
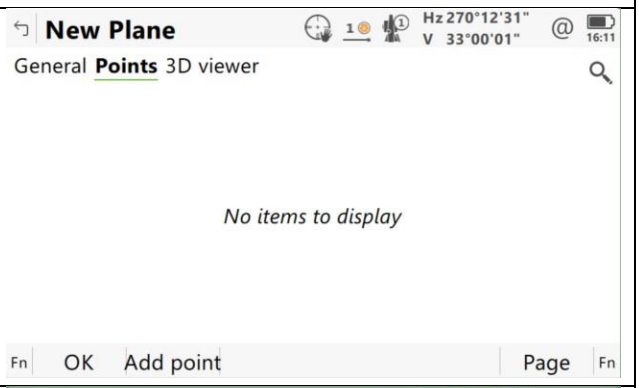
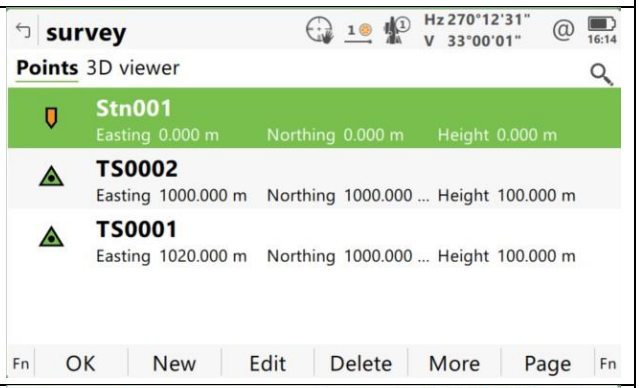
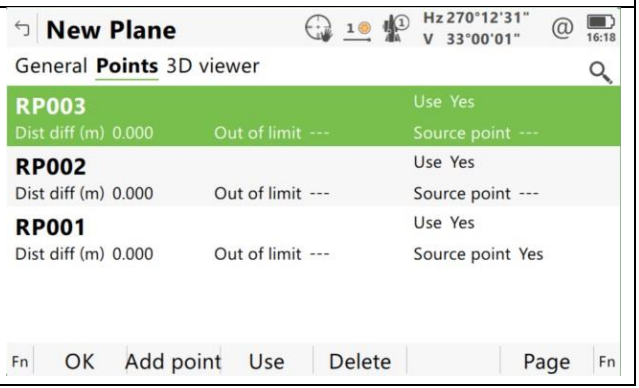
Leica Captivate: Measure plane/grid

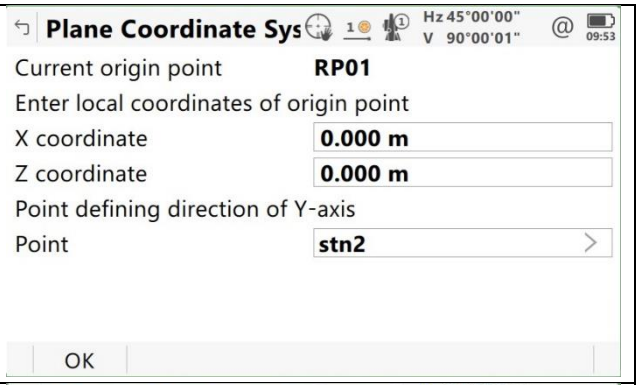
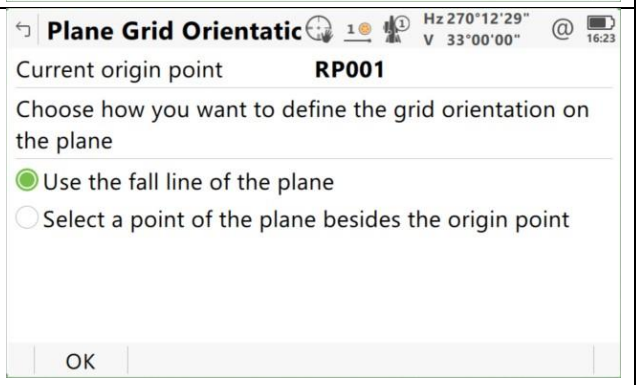
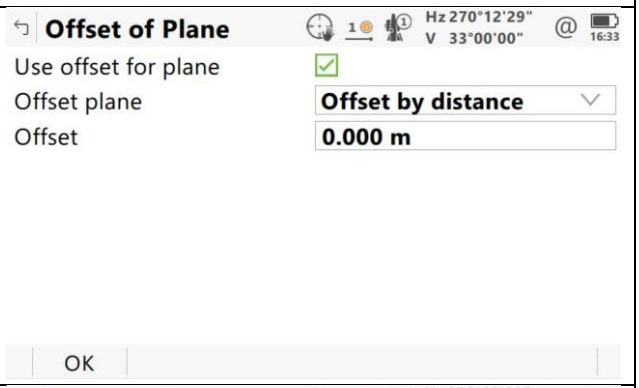
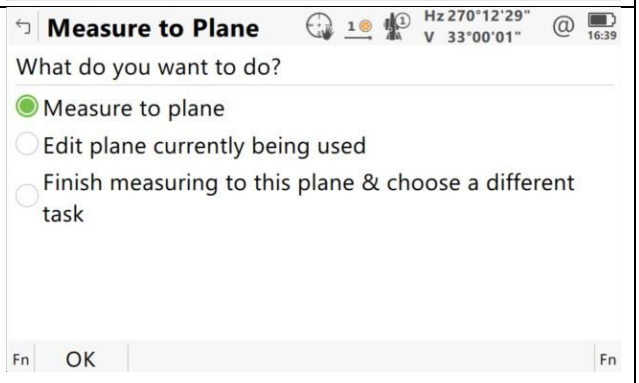
This guide covers the functions available in the Measure plane/grid application within Leica Captivate.

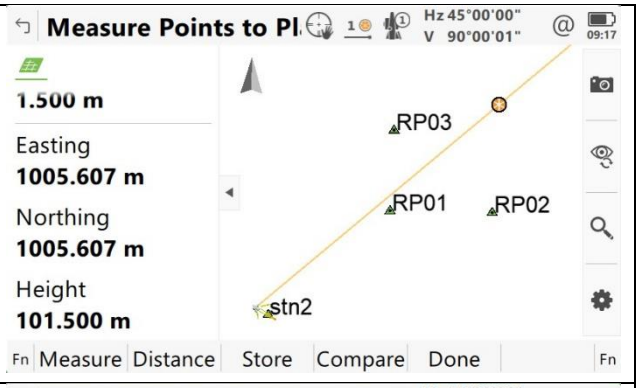
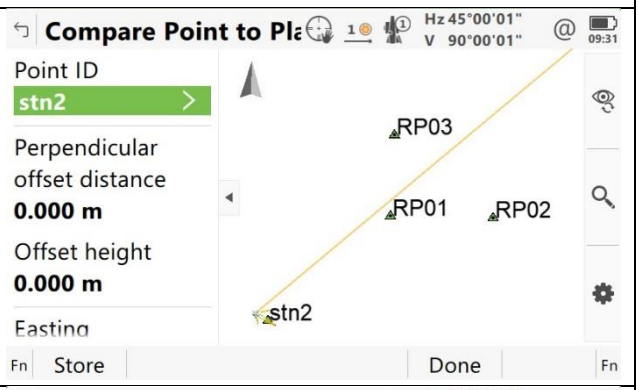
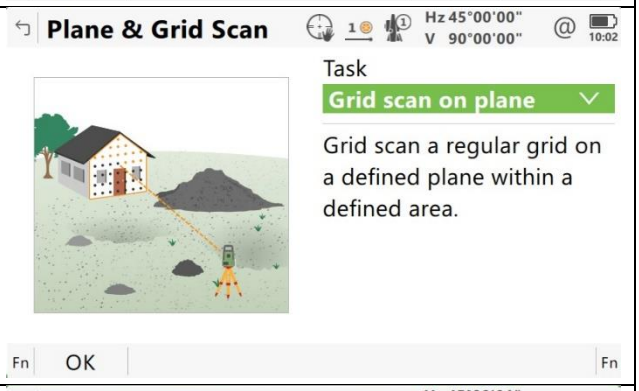
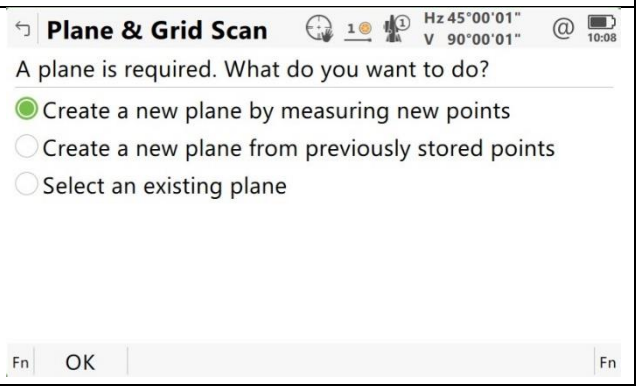
It covers three aspects of the application:
1. Measure to Reference Plane. Allows you to define and visualize a position in relation to a predefined plane.
2. Grid Scan to a plane. Automatically measure a grid of points on a plane you can define.
3. Grid Scan to a surface. Define a measurement area using a polygon or rectangle, then capturing a grid of points.

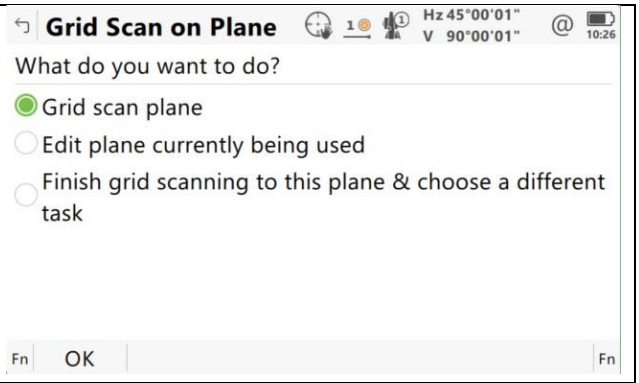
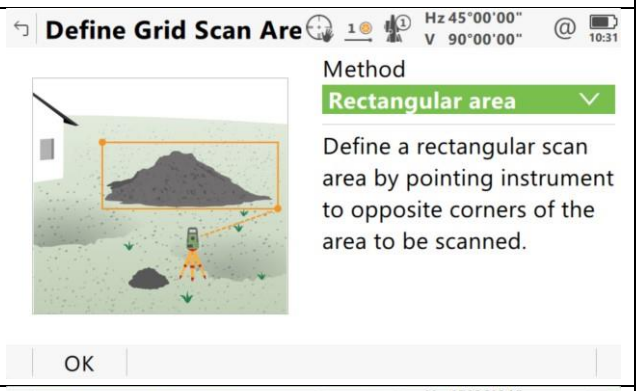
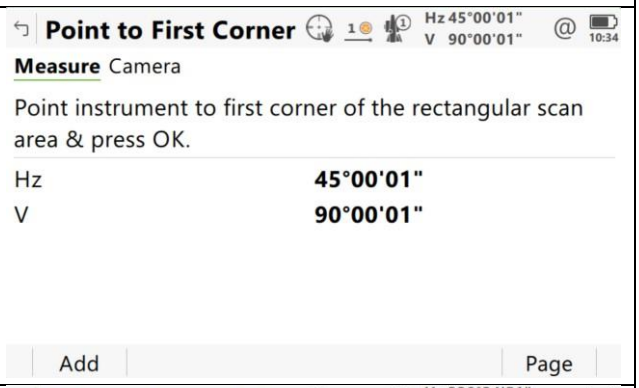
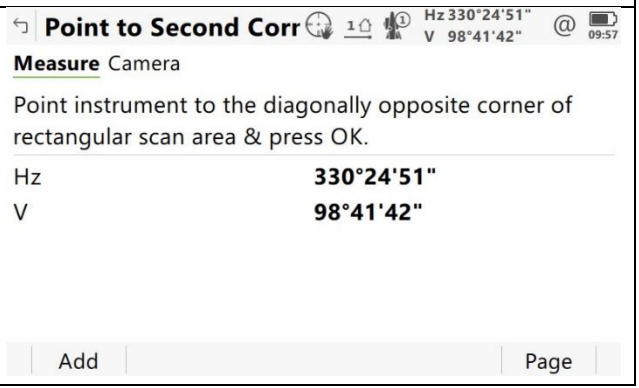
For more details on the application please consult the Captivate Technical Reference Manual

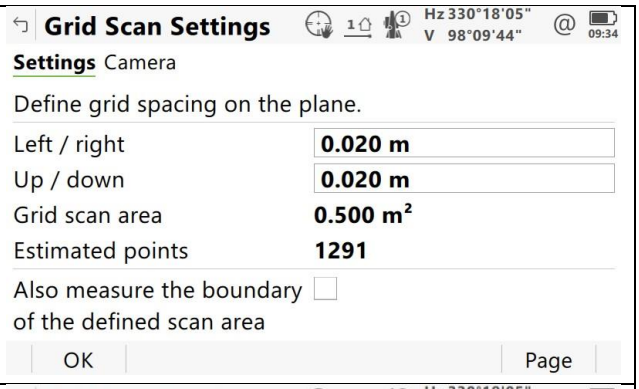
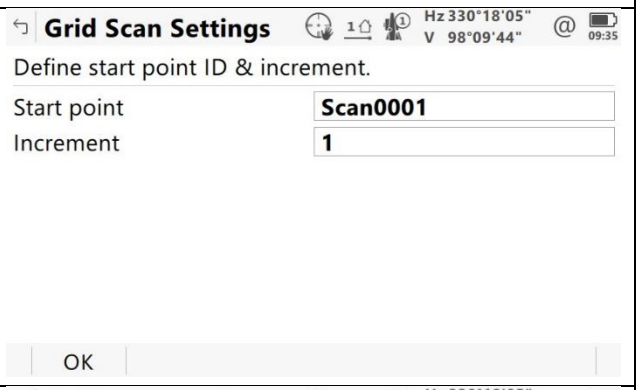
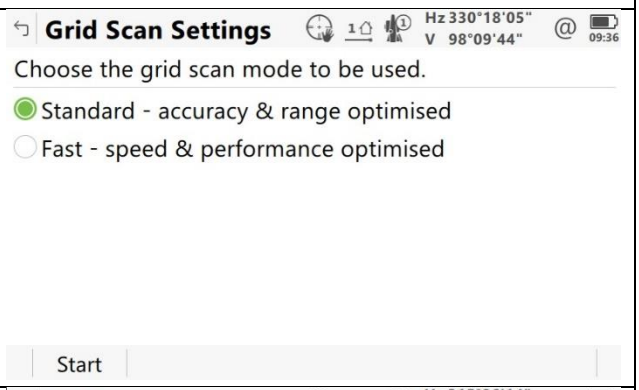
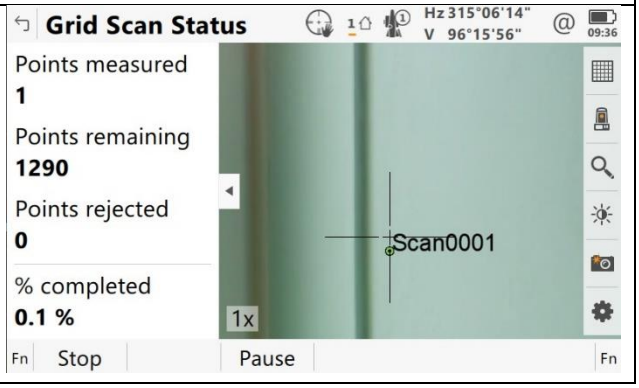
1	**Measure to Plane** Open the **Measure plane/grid** app then select Measure to plane and **F1 OK**	
1.1	To edit some of the settings for the program press the **Fn** key. Then Press **F1 Settings**	
1.2	This allows the user to add an additional display screen to the application from the survey application. Set a tolerance for how well the points defining the plane fit to it Whether to use a local coordinate grid (tick) or be in the same grid as the	
2	Choose the option that suits. In this case select the option to Create a new plane by from previously measured points. **F1 OK** If you choose to measure new points you will be taken to the measure screen.	

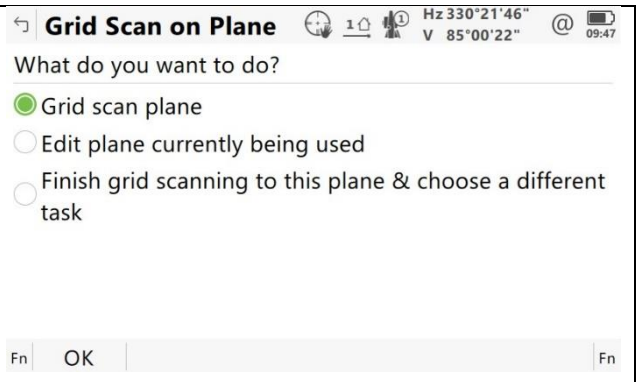
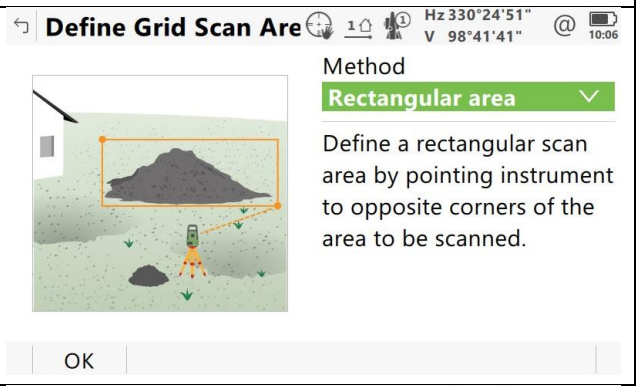
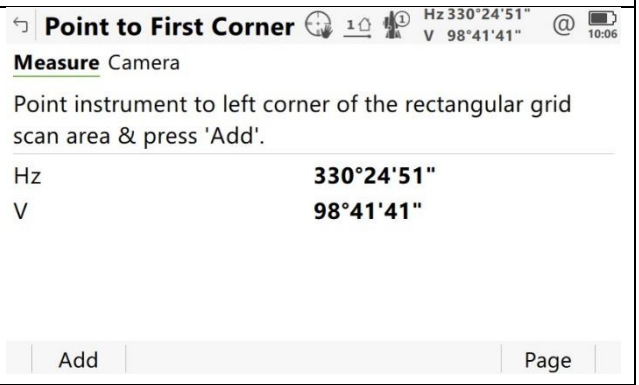
3	Give the reference plane a name. **F1 OK**	
4	In the point tab select **F2 Add Point**.	
5	Select the point from the list of points available. Click on F1 **OK** to select the highlighted point. **NB:** These can be previously measured or keyed into the active working job.	
6	Repeat steps 6 and 7 until the reference plane is defined. **N.B**. it is possible to change the origin point of the plane by highlighting the intended origin point, pressing the Fn key and selecting **Origin**	

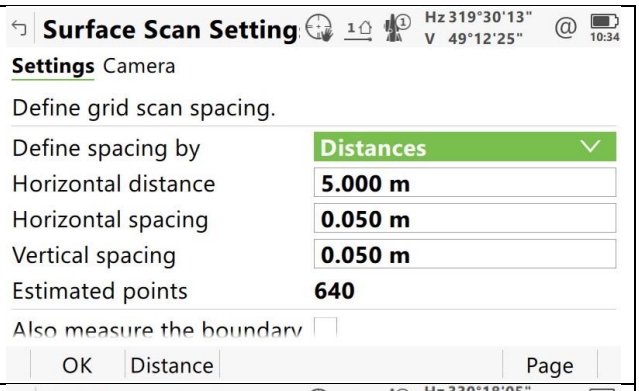
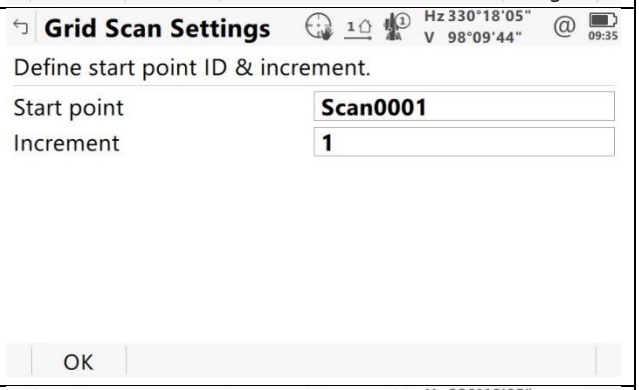
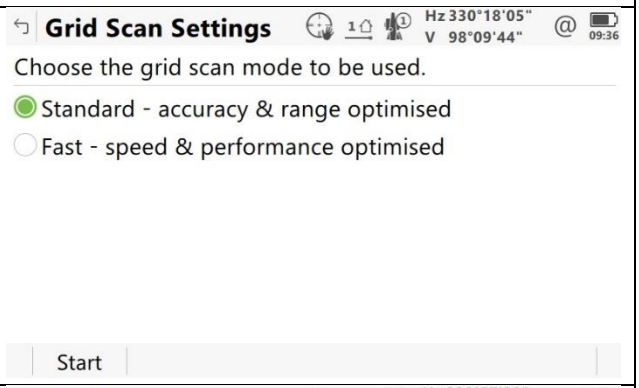
6b	If you selected the option to use a local plane coordinate system you will get the option to define that coordinate system here. This will let you define new coordinates for the points within your plane.	
7	The next page lets you define the orientation of the grid. Either by using the fall line of the current origin point or by selecting another point on the plane other than the origin point. The fall line of the plane is the curve following the steepest slope. It is always orthogonal to the contour lines.	
8	The next option allows you to set an offest to the plane you are working with. Offsets are set on the Z axis of the plane	
9	The final set of options allow you to move on to measuring relative to the plane, edit the plane or finish the task. Select **Measure to the plane**.	

10	In the following screen you can start measuring positions relative to the plane you have created. As in the Measure App the **Measure** button will measure and store the point and **Distance** will take a reading but not record the result.	
11	**Compare** (F4) lets you compare previously stored points to the plane you have just created.	
12	**Grid Scan on a Plane** Lets you measure a regular grid of points on an area defined by a plane. Open the **Measure plane/grid** app and select **Grid scan on plane**.	
13	The first task is to define your plane either by measuring new points on the surface or selecing them from points you have already measured.	

14	Once you have established your plane the next option is to either edit the plane you just created or actually start your grid scan.	
15	There are two methods to set the area whtin the grid you want to scan. Rectangular area requires you measure two points to define an area. Polygonal area allows you to define an area using more measured points.	
16	For example, selecting the Rectangular area will get you to the screen opposite. Point the TS to the top right of the area you want to measure then select F1 Add. Your measurment area needs to be within the area of your plane. So it is important to create your plane to be larger than the area you want to measure	
17	Once you have added the top right point, you can measure in the bottom left coner of your rectangle. Add this to define your area	

18	Once you define the area of the grid to survey you then need to define the spacing of the measurments within that area.	
19	You can then define the point ID for the scan points as well as the increment in number.	
20	Then you can set the grid scan mode. Standard – will use a single measurement and is optimised for accuracy Fast – Will use a continuous measurement mode and is optimised for speed.	
21	The TS will then begin measuring the points within the grid.	

22	Once completed the app will ask you if you want to measure another grid on the plane, edit the plane you are using or move onto a different task.	
23	**Grid Scan to Surface** Similar to grid scan on a plane, grid scan to a surface lets you automatically measure a grid of points but this time without setting a reference plane first	
24	Select how to define your scan area. You can use a rectangle or define a polygonal area using more measurements.	
25	You cannot define your surface with pre-measured points so you'll need to measure them live. Either measure the two points of your rectangle as before or measure your points around your polygon and select Next when you're done.	

26	Then it's time to define the spacing of your measurments. As there is no plane to work from this is slightly more tricky. You can either set the angular spacing between measurements or set the maximum horizontal range of your measurments then the distance spacing. Once you're done select OK	
27	Define your point ID and increment. Select OK	
28	Followed by your scan mode. Select Start	
29	And your scan will begin.