QML800 / QML800G QuickMark Layout

User Guide

QuickMark Layout User Guide

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Introduction

Thank you for choosing QML800 / QML800G QuickMark Layout for your interior layout needs. QML will enable you to locate points on your jobsite quickly and accurately. Before using your QML, read this manual carefully. Included is information about operation, safety and maintenance.

Consider also, tutorial videos that can be accessed from www.spectralasers.com

Your comments and suggestions are welcome; please contact us at:

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Laser Safety and General Care

Laser Safety Use of this product by people other than those trained on this product may result in exposure to hazardous laser light.

- Do not remove warning labels from the unit.
- QML800 is a Class 2, 642nm laser product .
- QML800G is a Class 2, 522nm laser product .
- Never look into the laser beam or direct it to the eyes of other people.
- Always operate the unit in a way that prevents the beam from getting into people‘s eyes.

General Care, Safety And Storage General safety rules

1) Check the condition of the tool before use.

2) The user must check the accuracy of the tool after it has been dropped or subjected to other mechanical stresses.

3) Although the tool is designed for the tough conditions of jobsite use, as with other measuring instruments it should be treated with care.

Cleaning and drying

1. Blow dust off the windows.

2. Use only a clean, soft cloth for cleaning. If necessary, moisten the cloth slightly with pure alcohol or a little water.

NOTE Do not use any other liquids as these may damage the plastic components.

Storage

The temperature limits for storage of your equipment must be observed, especially in winter / summer. Remove the tool from its pouch if it has become wet. The tool, its carrying case and accessories should be cleaned and dried (at maximum40°C). Repack the equipment only once it is completely dry. Check the accuracy of the equipment before it is used after a long period of storage or transportation.

Transport

Use the original packaging or packaging of equivalent quality for transporting or shipping your equipment.

Product Configurations

QML800 includes:

- 2 laser transmitters
- Tablet controller with rubber protector
- 2 tripods,
- Red and white interceptors with a LP30 red plumb pointer
- Laser glasses
- Chargers
- BuildView QuickMark Layout 2.0 Android Contoller software
- BuildView Office – free computer download to review architectural files

QML800G includes:

- 2 laser transmitters
- Tablet controller with rubber protector
- 2 tripods,
- Green and white interceptors with a LP20G green plum pointer
- Laser glasses
- Chargers
- Clutter Buster
- BuildView QuickMark Layout 2.0 Android Contoller software
- BuildView Office – free computer download to review architectural files

Software Updates

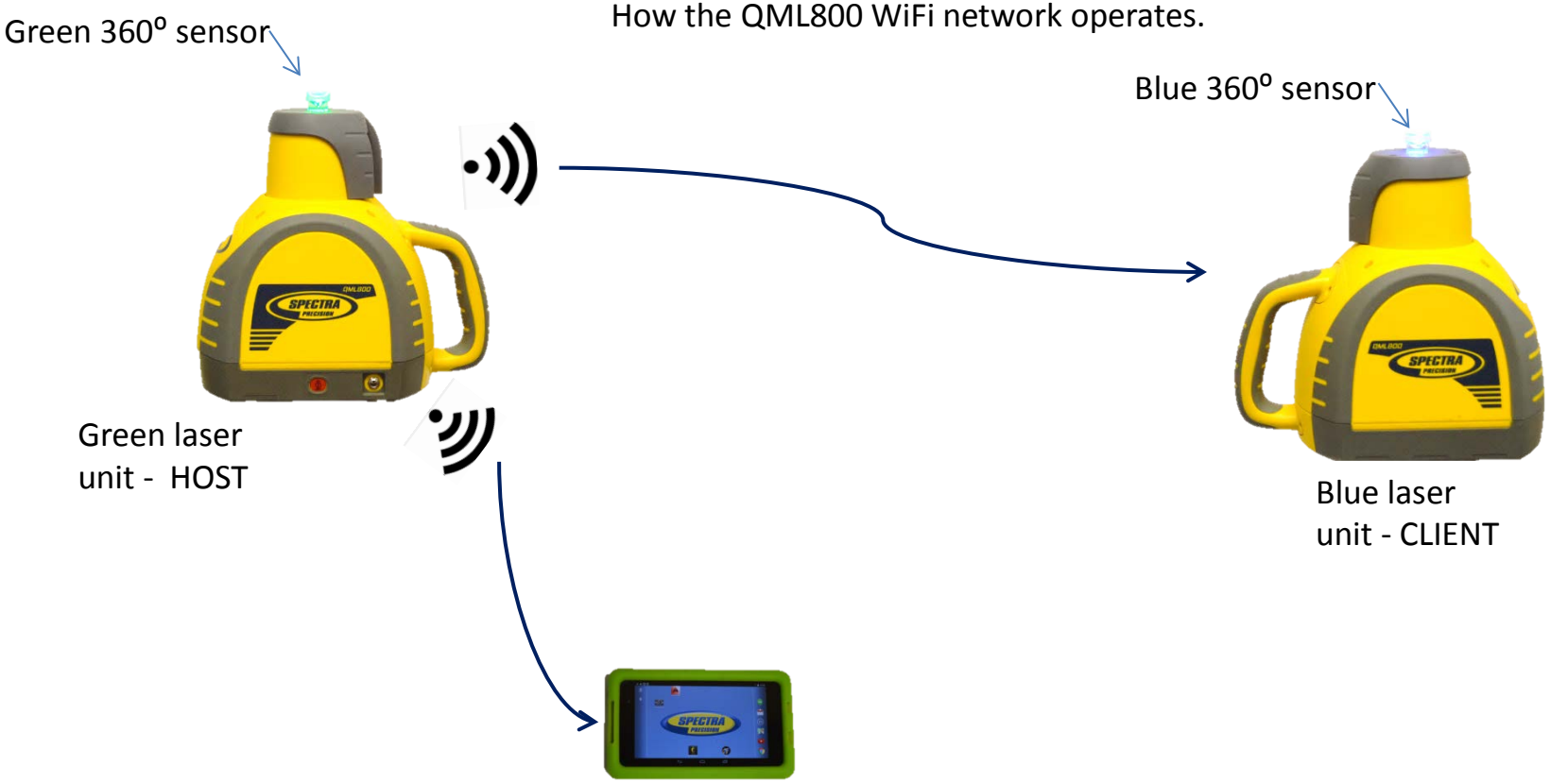
QML800 controller uses an Android application called BuildView. This software is what allows you to see the architectural drawings on the controller.

It is recommended that you check for updates occasionally (once per quarter)

- Connect Controller Tablet to the internet
  - Find a hot spot (work office, Starbucks, etc.)
  - Go to settings, select Wi-Fi
  - Select appropriate Wi-Fi network to connect (you may need username and/or password if network is secure)
- Go to app store (Google Playstore) – Search “QuickMark Layout 2.0”
- If an upgrade is available, it will be indicated.

QML Wi-Fi network

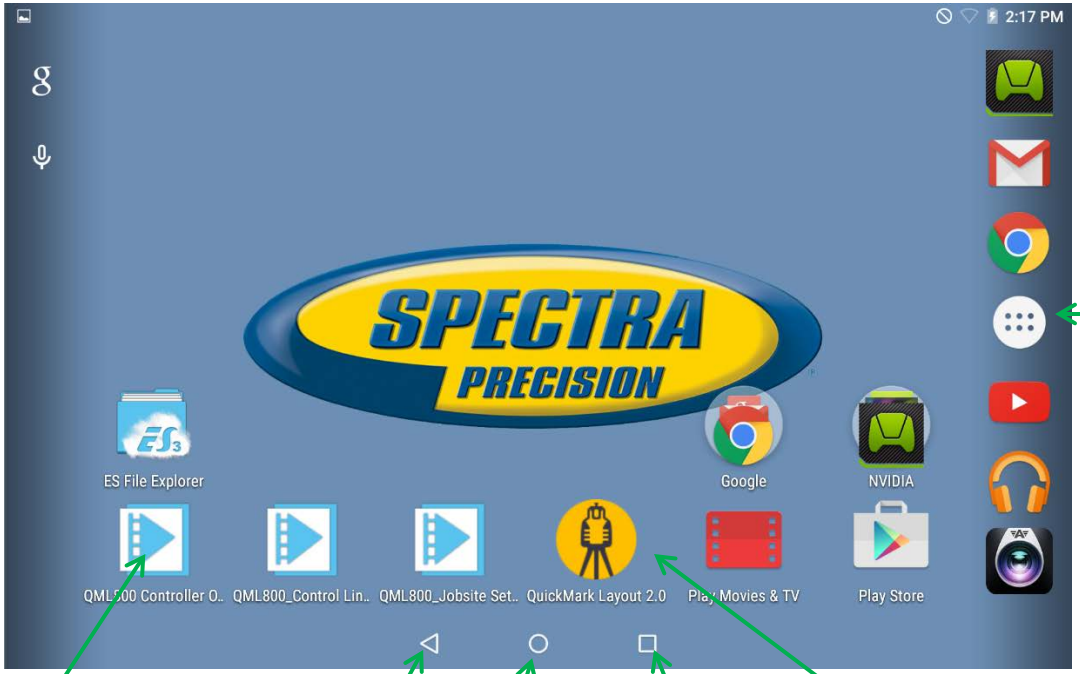
How the QML800 WiFi network operates.



Power ON one Laser Unit (LU) at a time- waiting 3 to 5 seconds between powering laser units. The first LU powered on becomes the Wi-Fi Host and shows a green 360 sensor. The second LU powered on becomes the Client and shows a blue 360 sensor. If powered on at the same time, they may both become hosts with green lights. If this happens power off one laser unit and then power on again.

After the Laser Units are powered on, launch the QML application on the controller. It will search for a QML network and join it. If the Laser Units are not powered on, you can only work off-line.

Tablet – useful settings



Other Functions including:

- Change Channel
- Screen rotate lock

Instructional Videos

Back arrow. Also = undo

Go to home screen

Navigate to other open applications

QuickMark Layout 2.0 app

The controller is an off-the-shelf tablet. YouTube videos and other useful control information is available on the internet.

Preparation Prior to Job Site

1

Obtain Architectural File

dwg or dxf

2

Move File to Tablet (QML800 Folder)

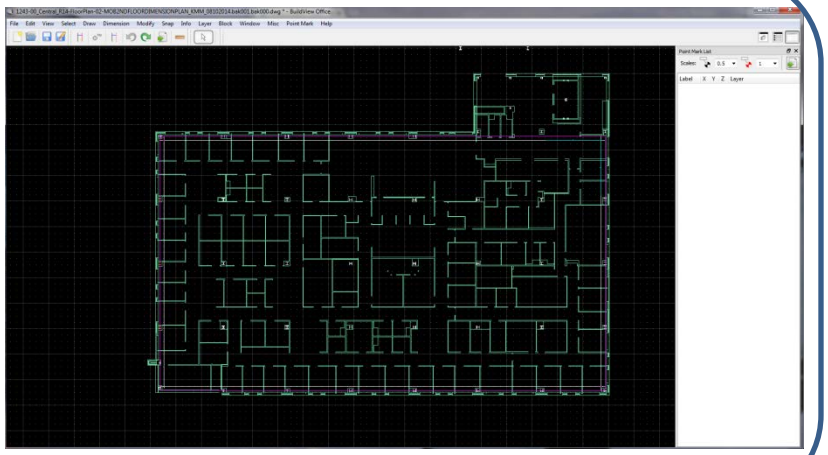
Option 1: Via USB cable
Option 2: Set up Email account on tablet.

Move file on to “Internal Storage” drive on the tablet

BuildView Office (computer program)

You may also wish to review architectural drawings on your computer using BuildView Office. You can review details, confirm completeness, manage layers, discuss with architect, etc.

See Section 14.

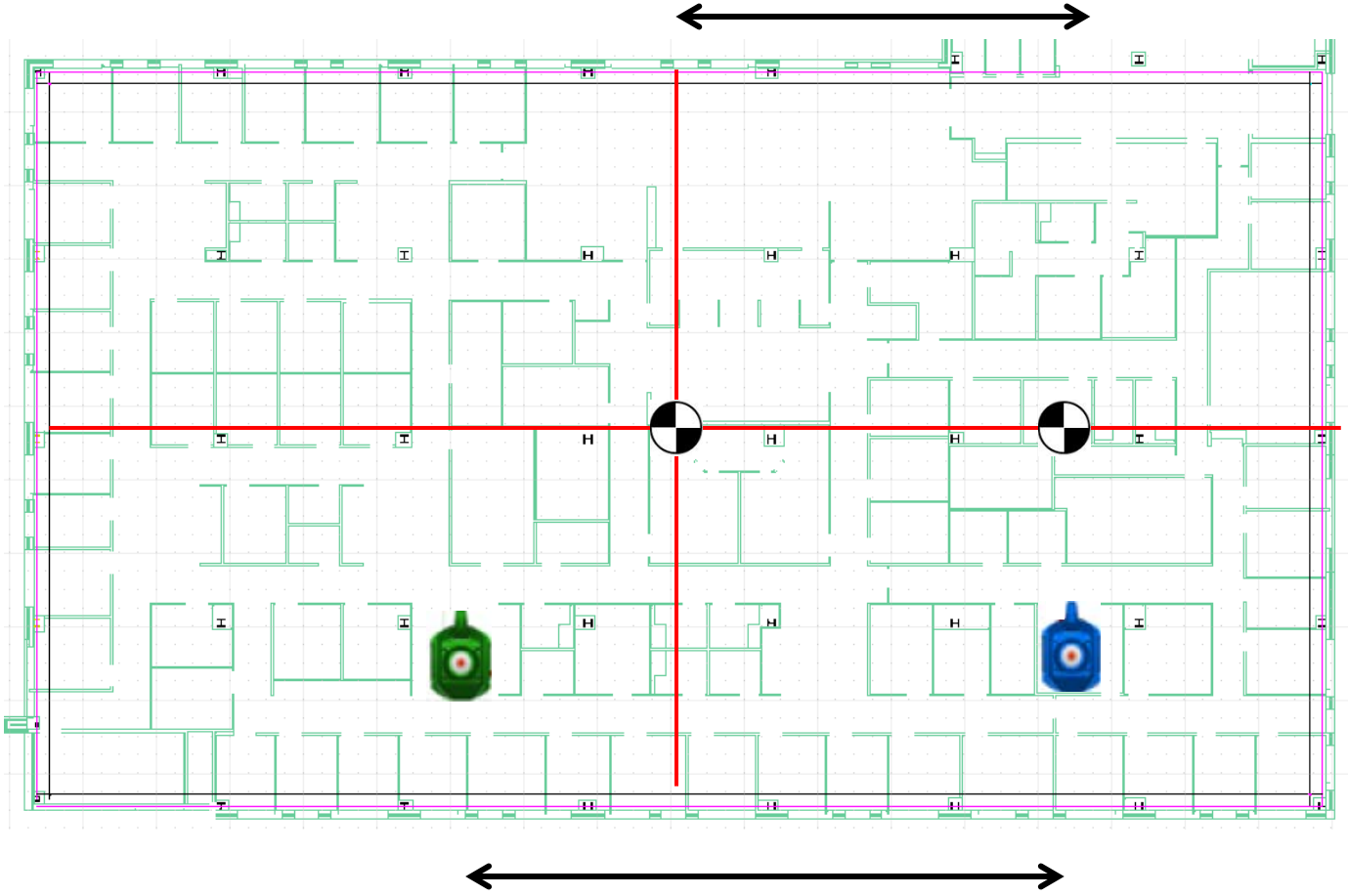


Set Up – At Job Site Floor

1

Place control lines and reference points on jobsite floor

Reference Points minimum 20 ft (7m)



Lasers minimum 20 ft (7m)

2

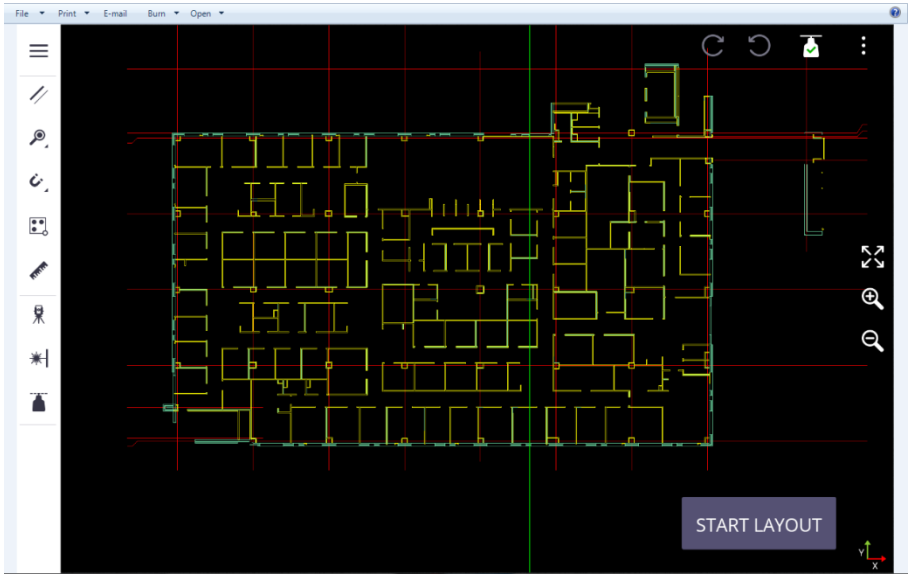
Place lasers 20 – 60 ft (7 -20m)
Power on lasers one at a time

Set Up QML800 at Job Site Floor

Manage File Layers

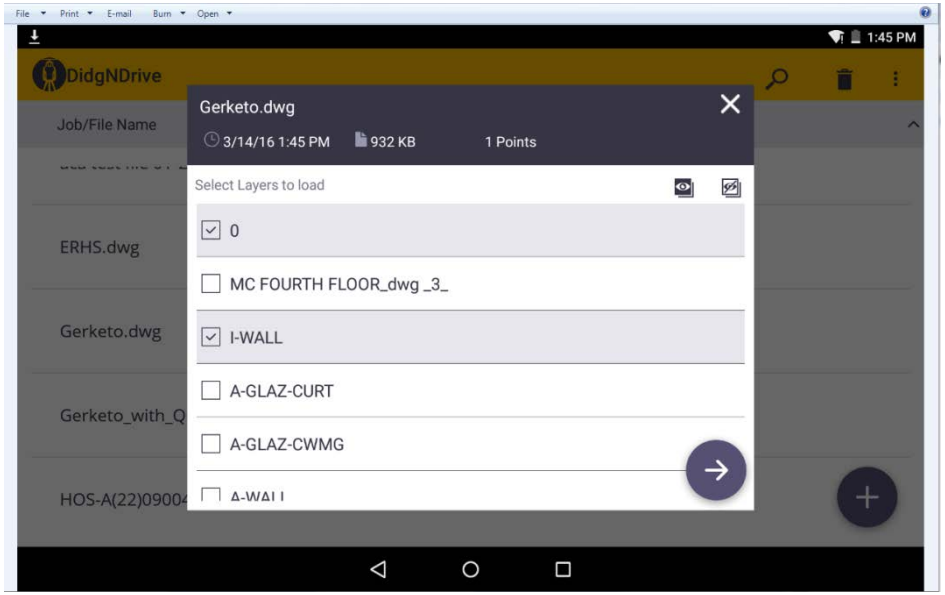
Start QML App, Choose and Open Job File, Select Layers

Manage Open Layers →



Select layers of interest

Tip. File will open faster with fewer layers open

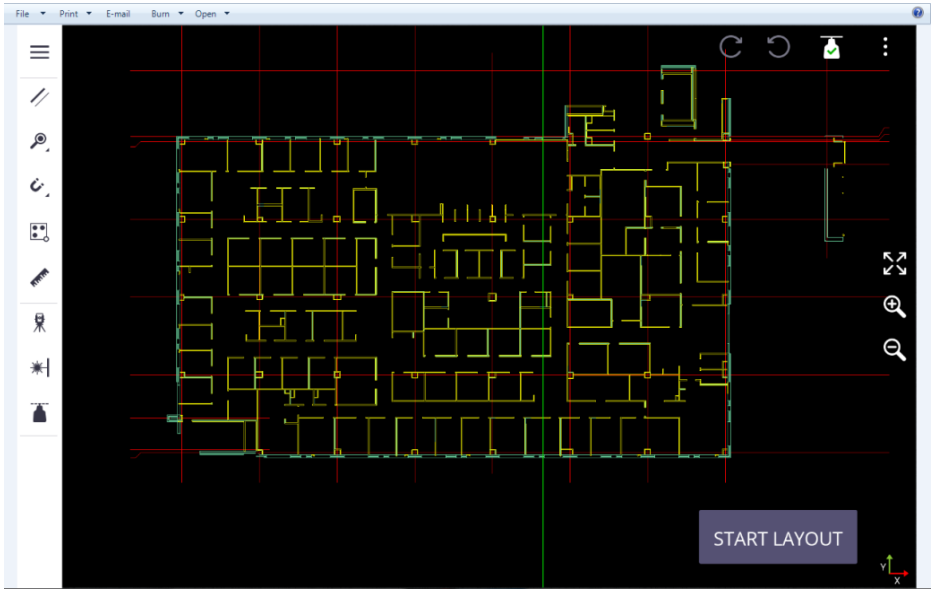


Set Up QML800 at Job Site Floor

Control Lines

Create control lines in the job file – in the same location as control lines are on the floor.

Create Control Lines

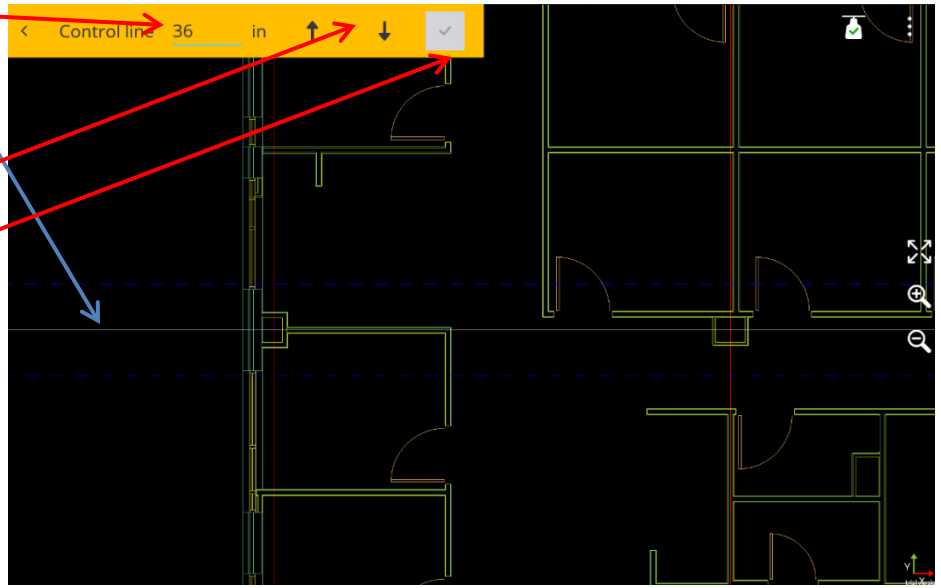


A) Input Offset Distance

B) Tap Entity to offset (often column line)

C) Select which Side to Offset

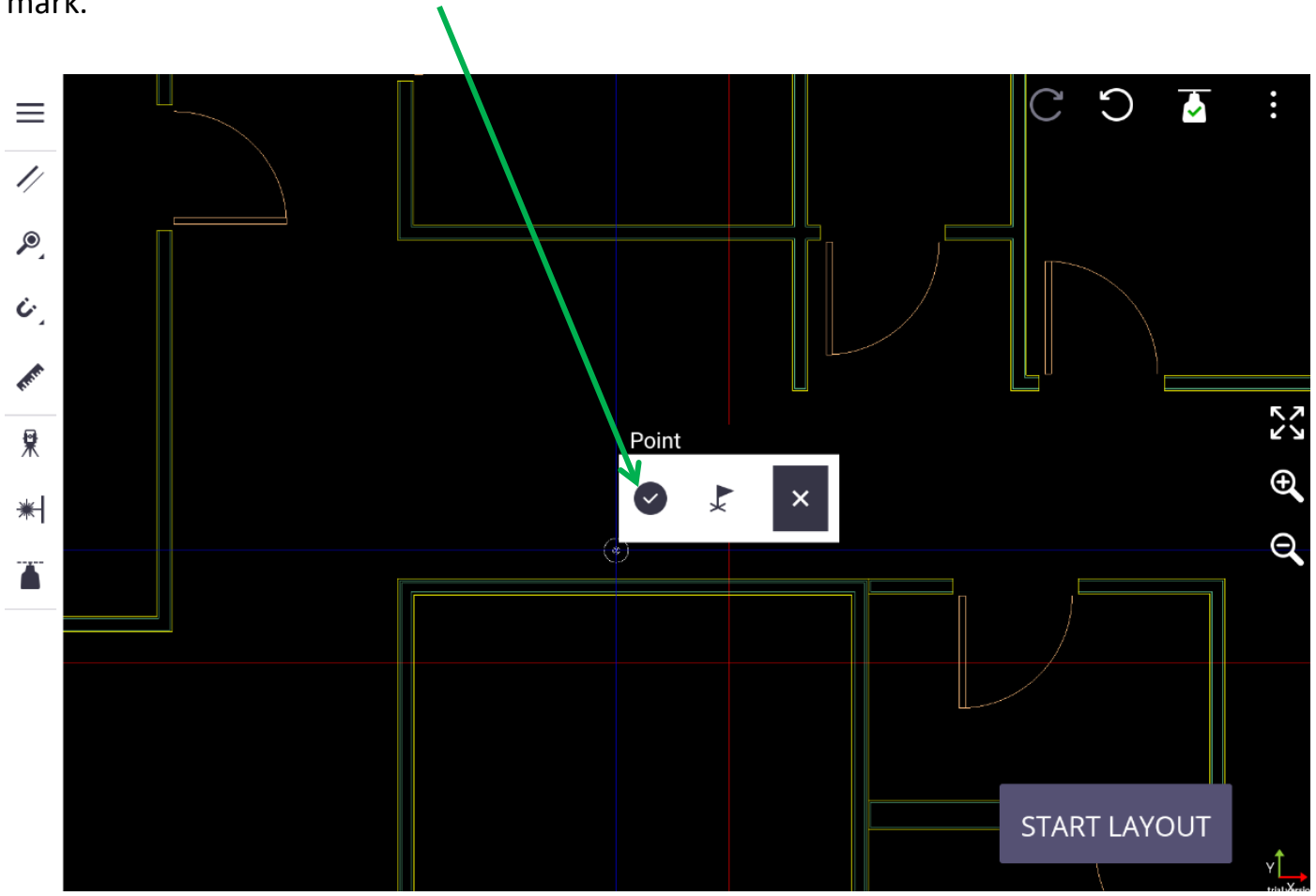
D) Create Control Line



Set Up QML800 at Job Site Floor

Create Control Points

Place Control Points at the same locations as on the job site. Minimum 2 Control Points
Tap intersection. To create points, zoom in and tap on the control line intersection. Then tap on the check mark.



Alternatively, you can create control points after laser alignment.

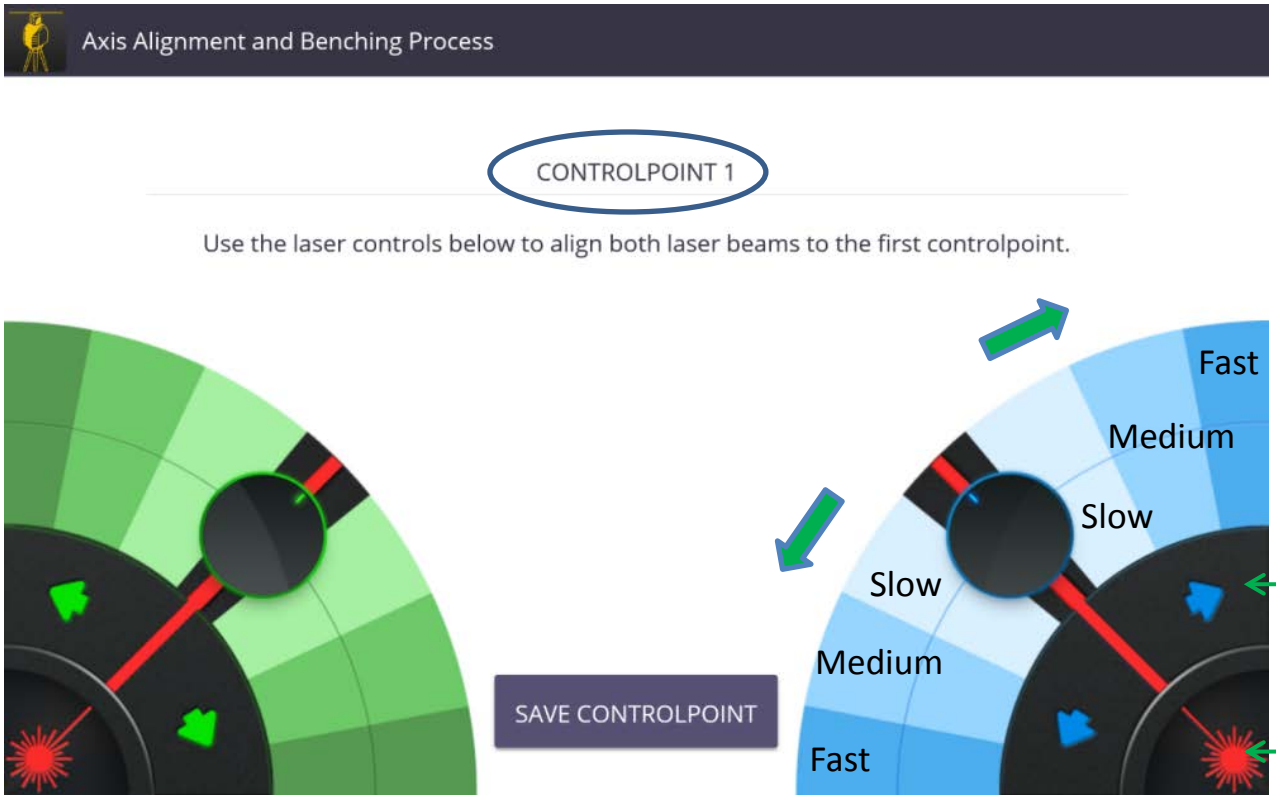
Set Up QML800 at Job Site Floor

Locate Control Points with QML800 System

"Start Layout" This begins Laser Alignment

Tap "Found Unit" or "Reflection"

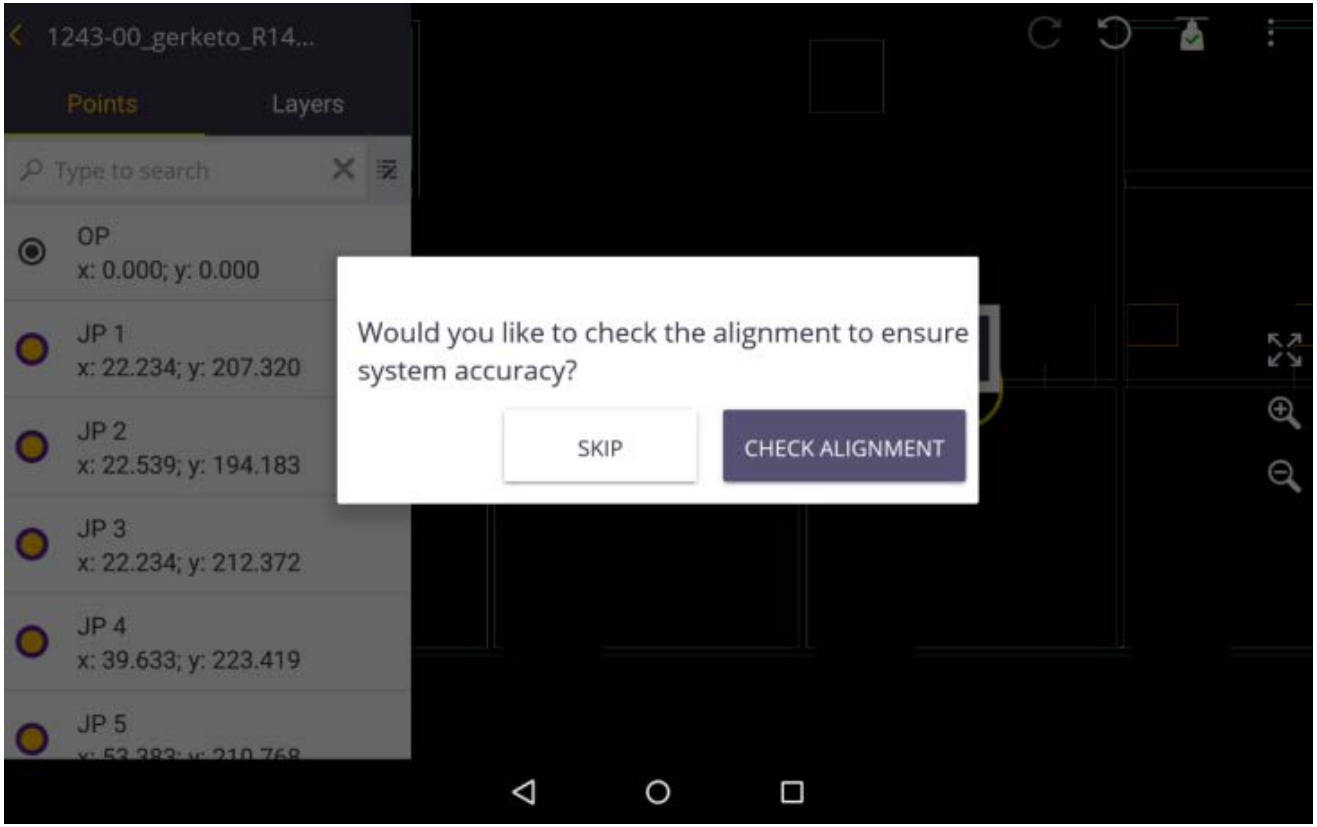
When laser alignment is complete, go to benching.
Locate control points with both lasers.



Set Up QML800 at Job Site Floor

Verify setup

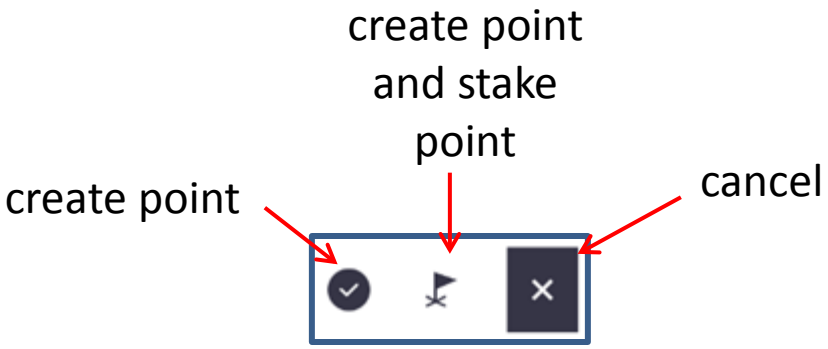
- Recommendation - do not skip this step.
- Drive laser X to 2 points and mark the points
- Measure the distance between the points
- Compare QML calculations to your measurement
- If with in your tolerance, proceed.
- If difference exceeds 1/8” (3mm) start laser alignment again

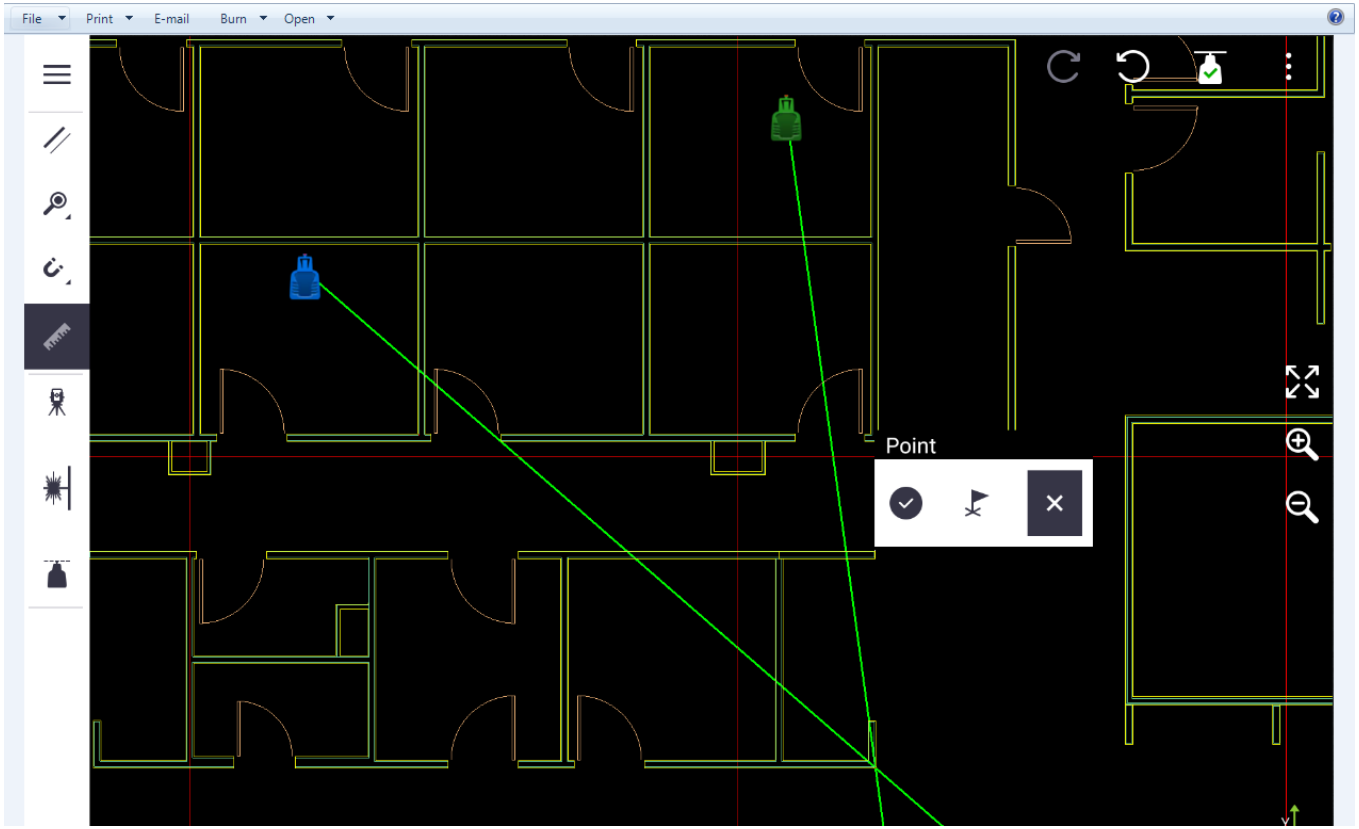


Layout Points

Begin Staking Out Points

Tap intersection. Choose:

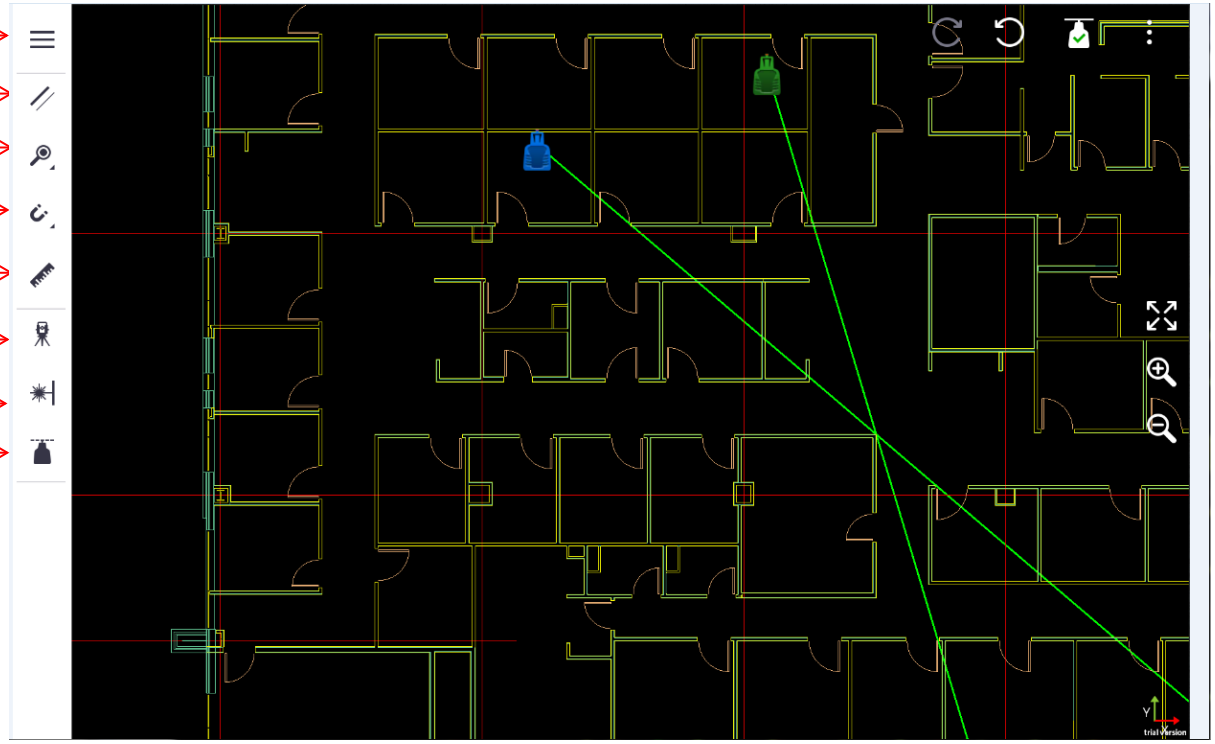




Note. The program keeps all points created or staked.

CONTROLLER FUNCTIONS

- Point / Layers
- Place Control lines
- Point size
- “Snap” manage
- Measure Distance
- Survey Mode
- Column Buster
- Flash Lasers



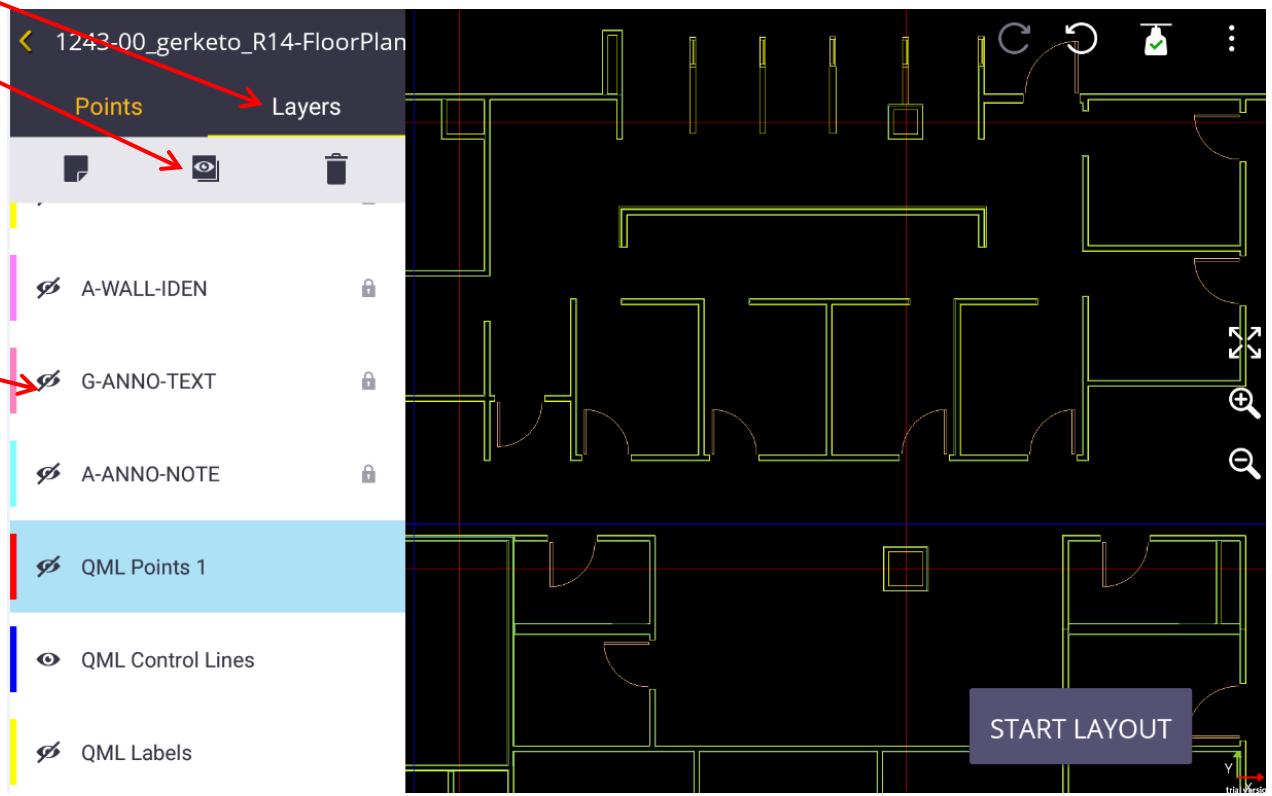
See Following Pages for Explanations

Layer Management

Tap Layers

All Layers On / Off

Individual layer
On / Off



Job files will load faster if many layers are off

Points are placed in “QML Points 1” layer by default. You can create a new layers for point management.

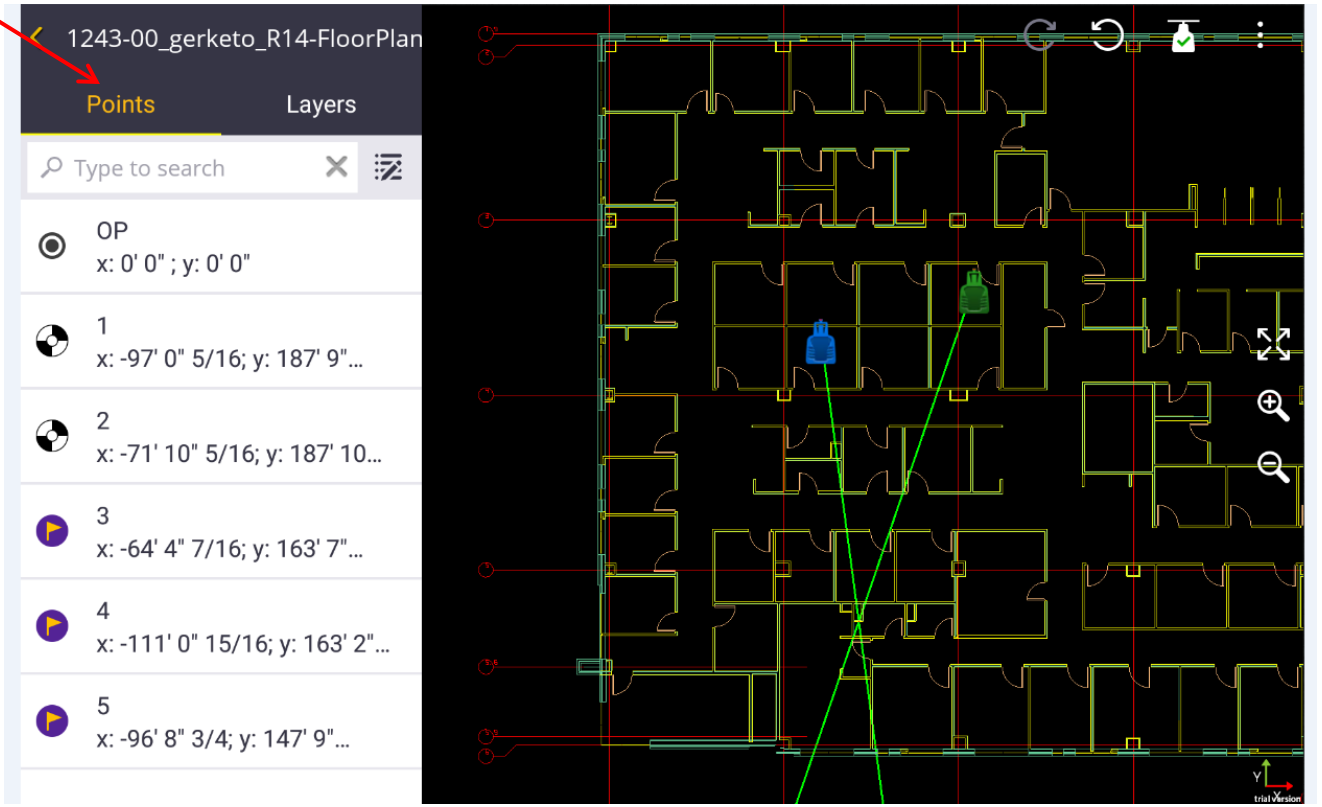
Point List

Tap Points

Scroll to points to find one quickly.

Or search for point number.

Tap on Point to bring up Options:



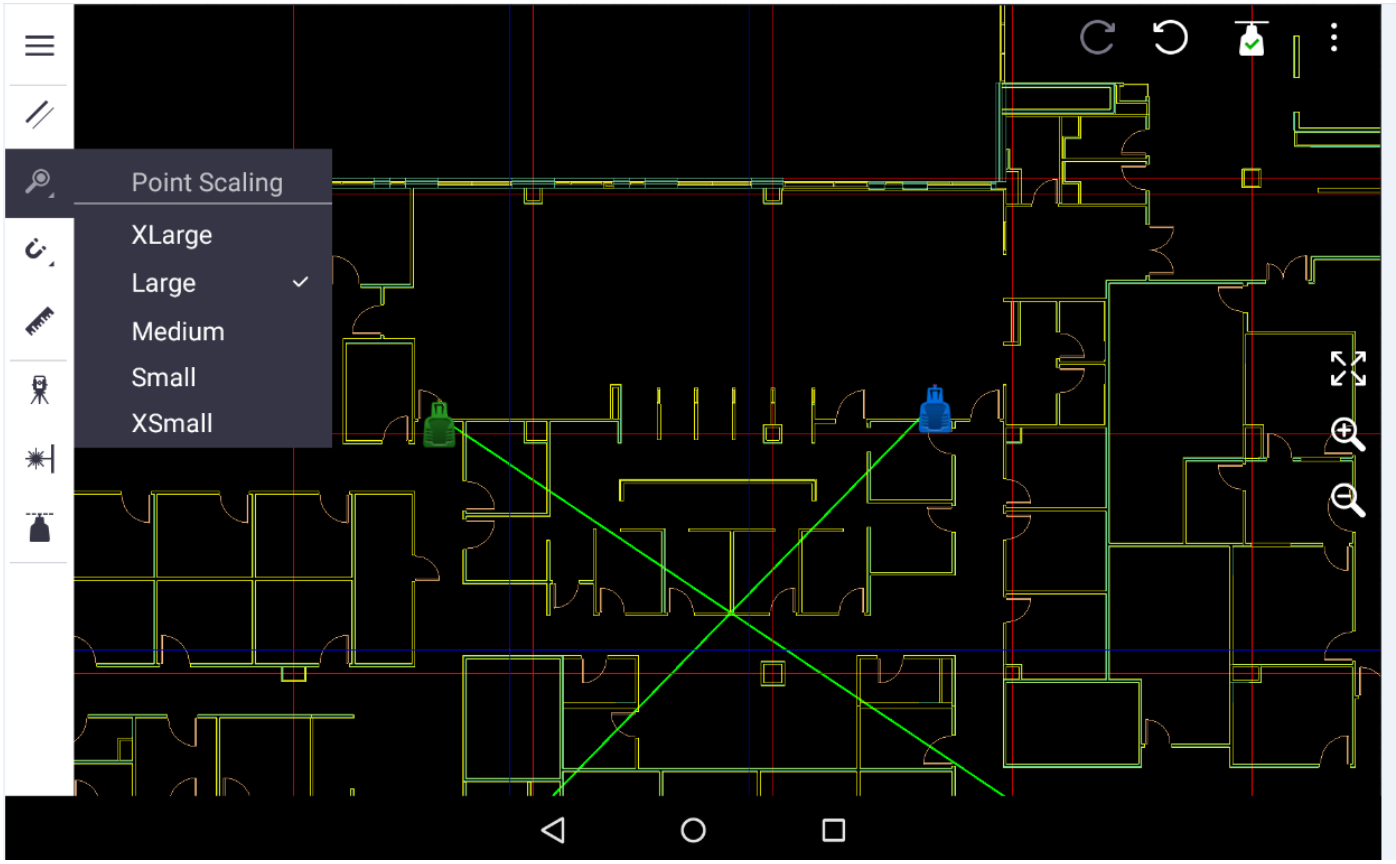
Edit Point

Delete Point

Stake Point

Point Size

Select Point Size Icon on tablet

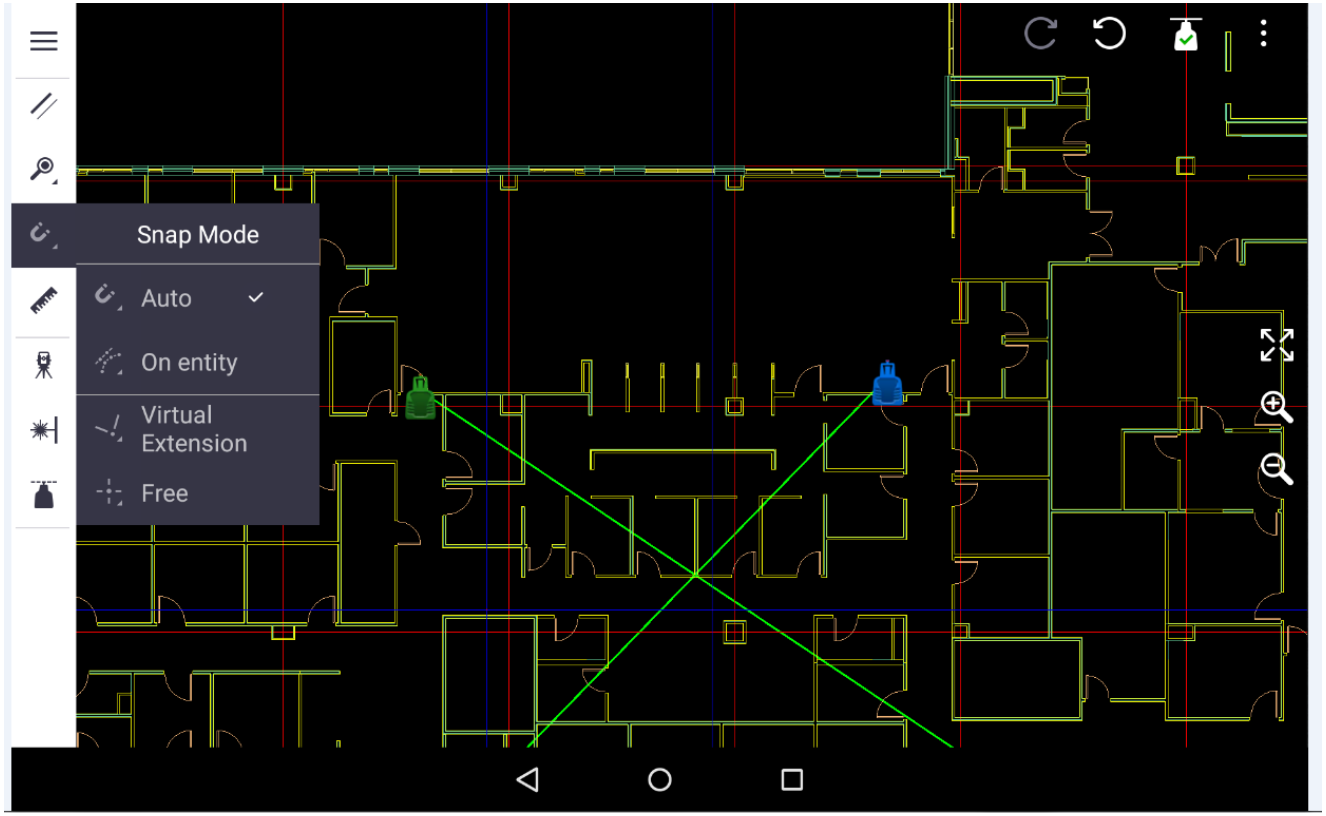


Snap

Auto:
Line End Point
Line Mid Point
Circle / Arc Center

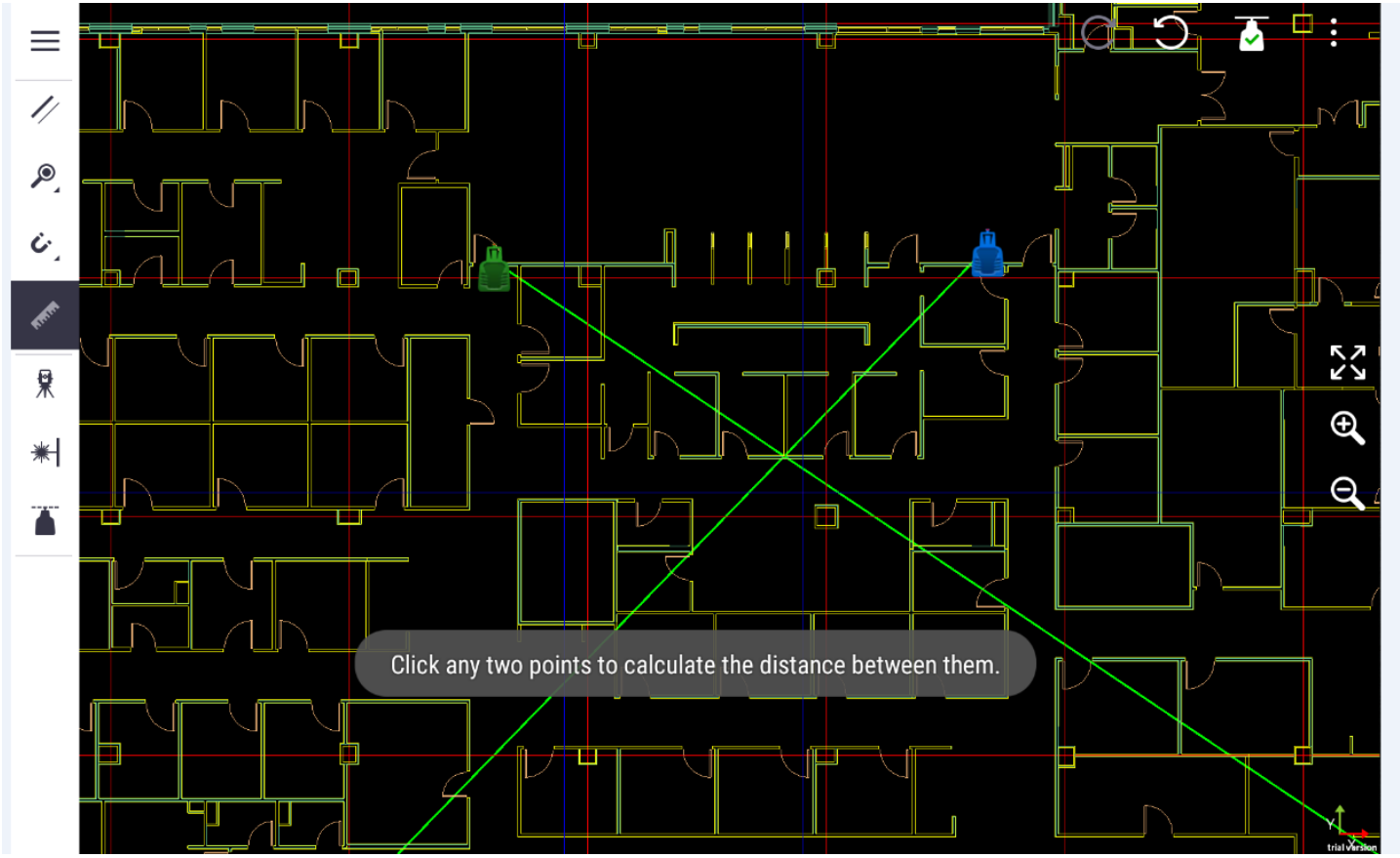
On entity:
For curves, arcs

Virtual Extension:
Offset Points



Distance Measure

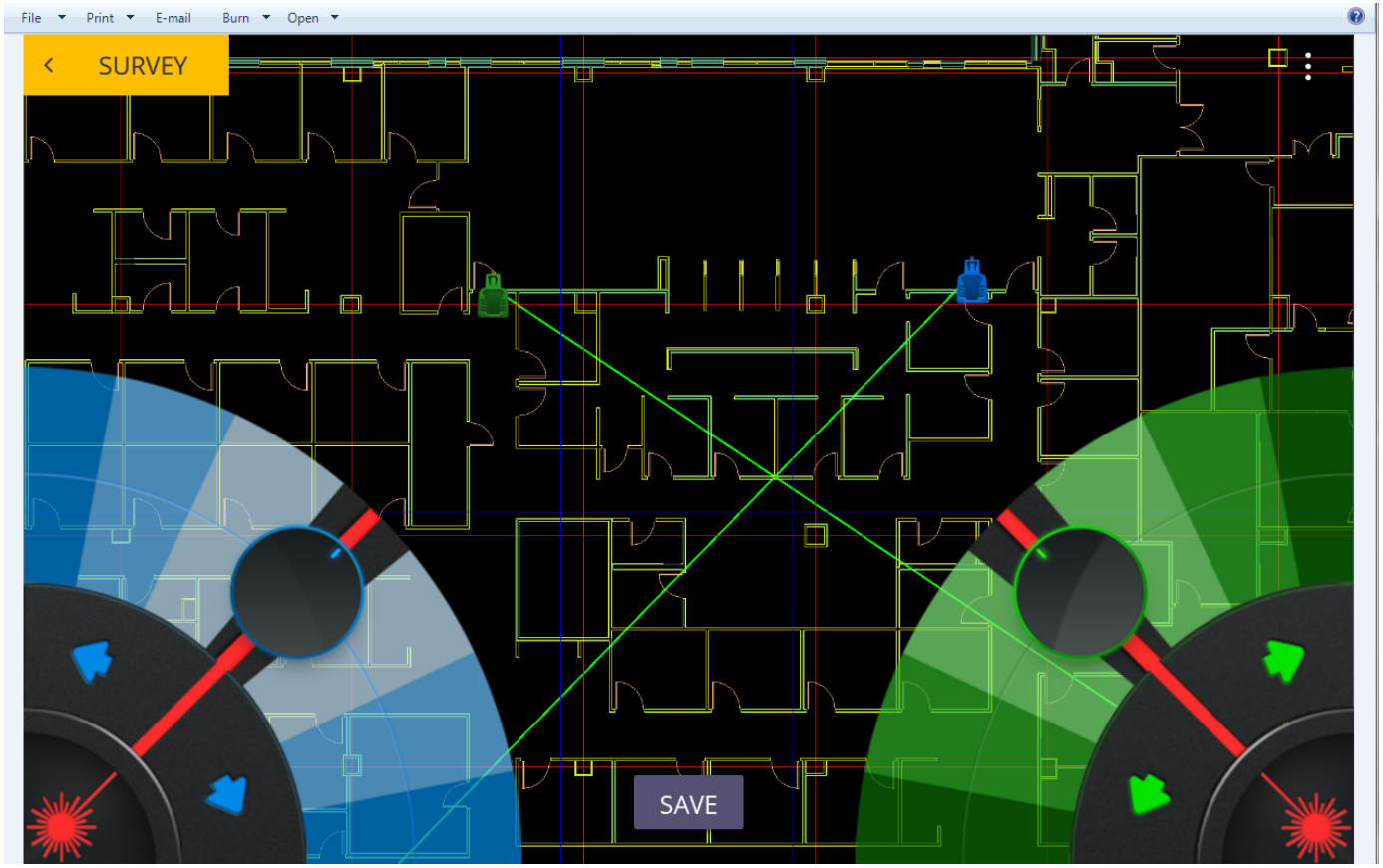
Measure Distance between any 2 Points (from map or list)



Survey Mode

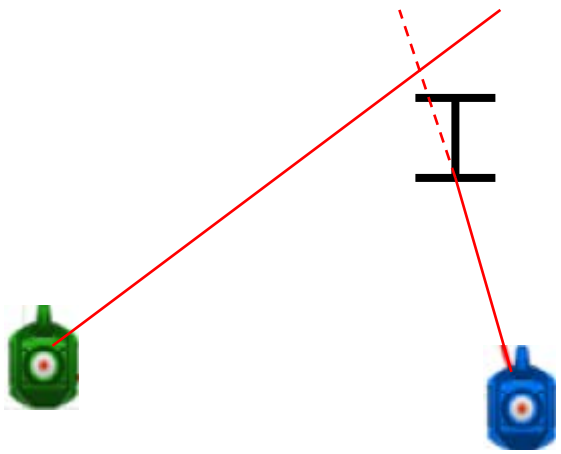
Drive Lasers to a point on floor or ceiling. Save Point. Coordinates provided.

Useful to communicate issues back to architects.

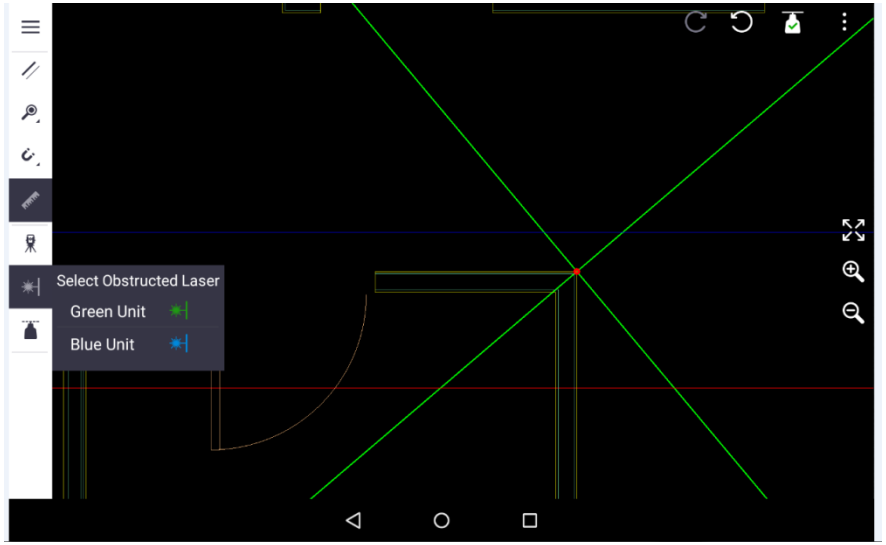


Column Buster

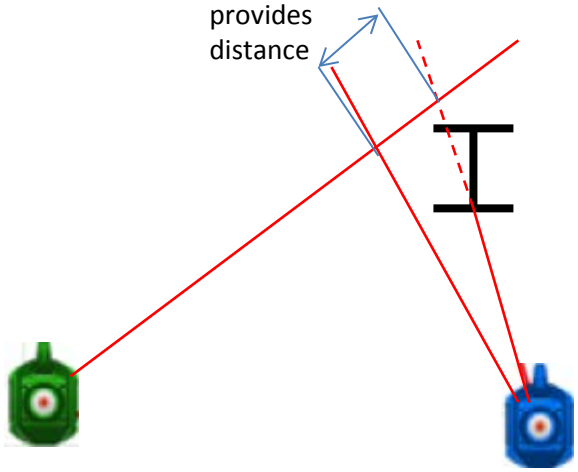
One laser beam is blocked!



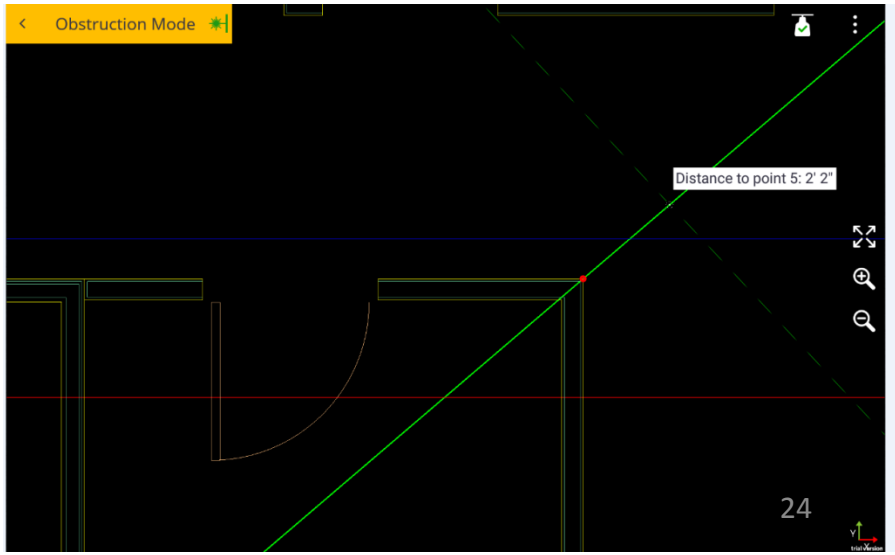
Select Laser Obstruction
Indicate Which Laser is Blocked Blue or Green



QML provides distance



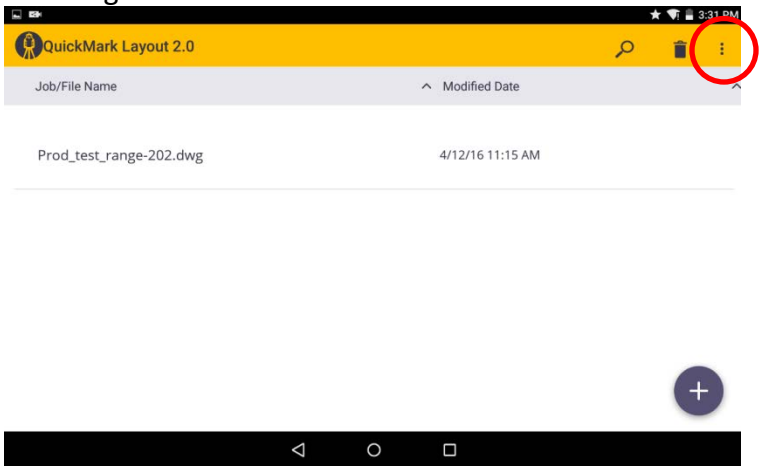
Tap on non Blocked laser to locate new temporary point
Distance along non Blocked laser is given. Measure back manually



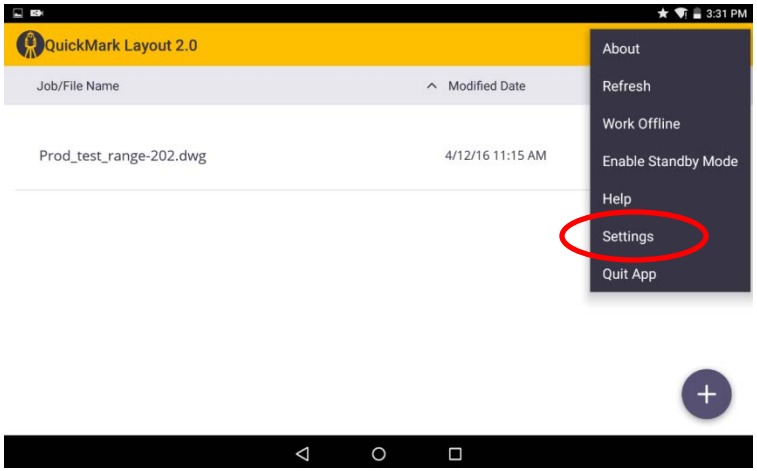
Change Channel

Consider downloading an app called Wi-Fi Analyzer (by Techet) to analyze network (Andriod). If there are many networks overlapping channel 9, a different channel may improve communication. Power off both lasers.

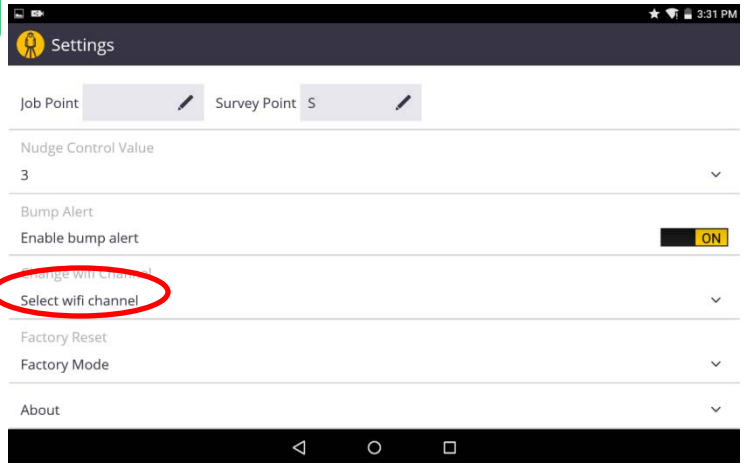
1 Power on **1st laser** unit and the controller
Launch QML app
Settings



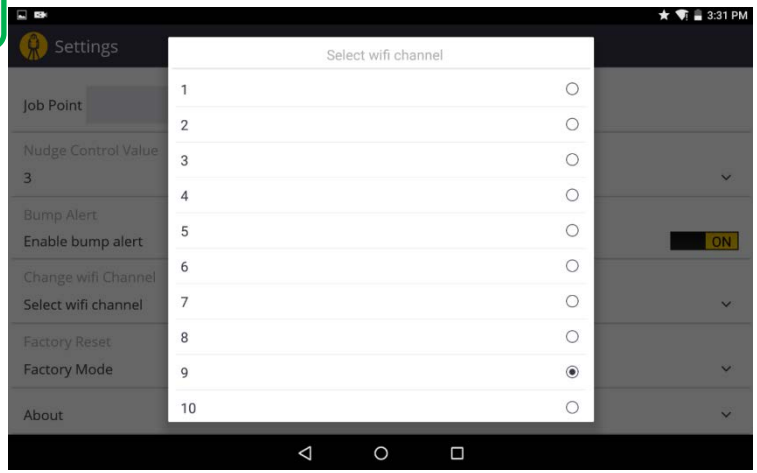
2 Settings



3 Select wifi channel



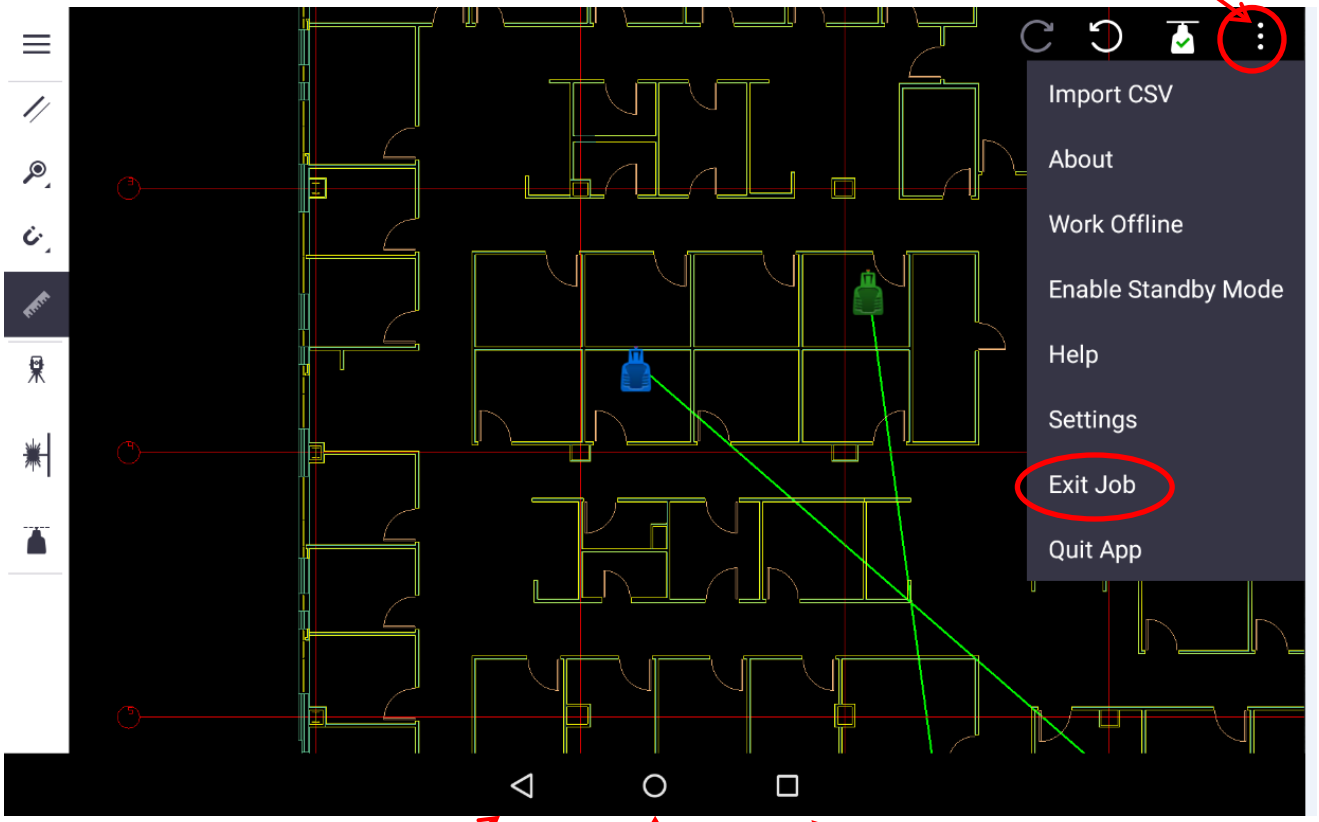
4 Select the new channel



2nd laser Power off first laser. Power on the other laser. Repeat above, set to same channel.
Power 2nd laser off. Exit QML app
Power on units as per normal and launch app.

Exit and Power Off

Press 3 dots, then Exit



Back
Exit

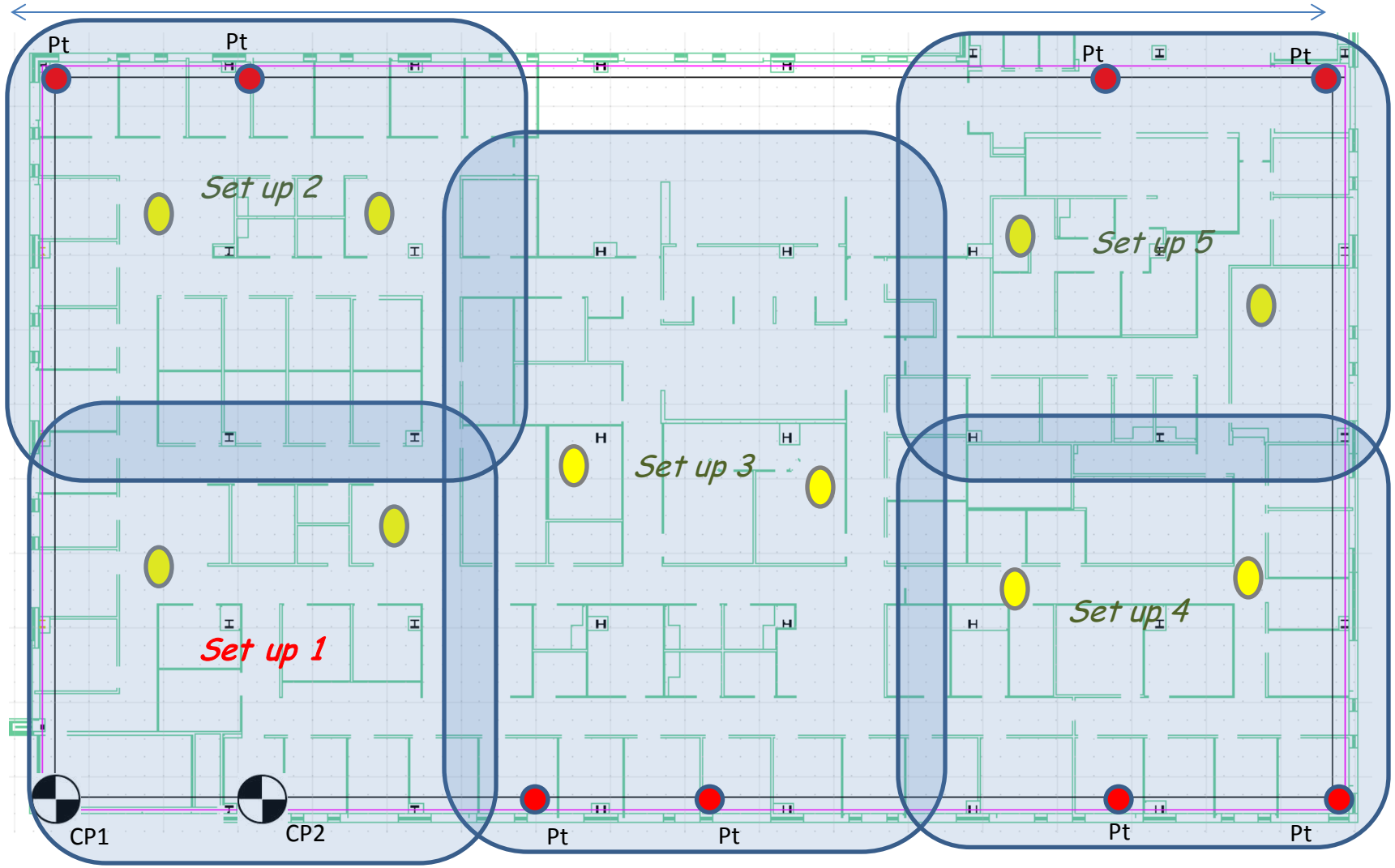
Home
Screen

Show Open
Programs

Laser Unit Dome Light Colors

Color	Flashing frequency	Description	Action
Green+Blue+Red	Alternating	Startup sequence until WiFI is connected.	None
Green	Solid	Unit Configured as Host	None
Blue	Solid	Unit configured as Client	None
Green	Flashing	Unit is leveling	None
Blue	Flashing	Unit is leveling	None
Red	Fast flashing	Bump alert, laser detected possible movement	Check set up. Re-setup.
Red	Slow flashing	Low Battery indication	Connect charger.
Yellow	Flashing	Charging	None
Yellow	Solid	Charger connected. Fully charged	None
White background red flashes	1 red flash	Tilt limit triggered	Adjust tripod level
White background red flashes	2 red flashes	Level timeout	Move laser to more stable location
White background red flashes	3 red flashes	Network communication difficulties	Change channel
White background red flashes	4 red flashes	Encoder initialization	Send for Servicing
White background red flashes	5 red flashes	Charging error	Send for Servicing
White background red flashes	6 red flashes	Charge timeout	Send for Servicing
White background red flashes	7 red flashes	Rotor stalled	Send for Servicing
White background red flashes	8 red flashes	Calibration data corrupted	Send for Servicing

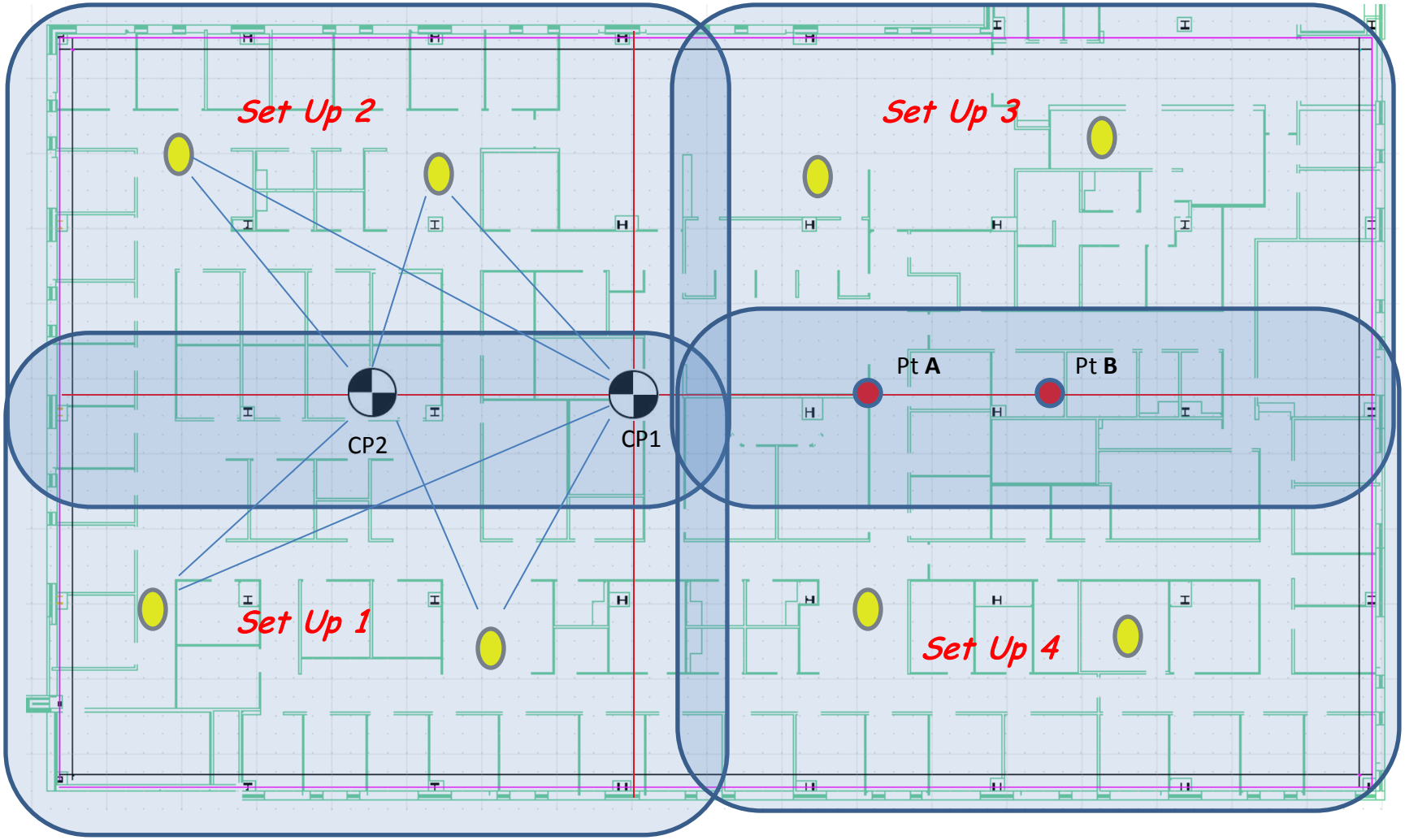
Multiple Set Up – reference points



There are many options for Set Ups.

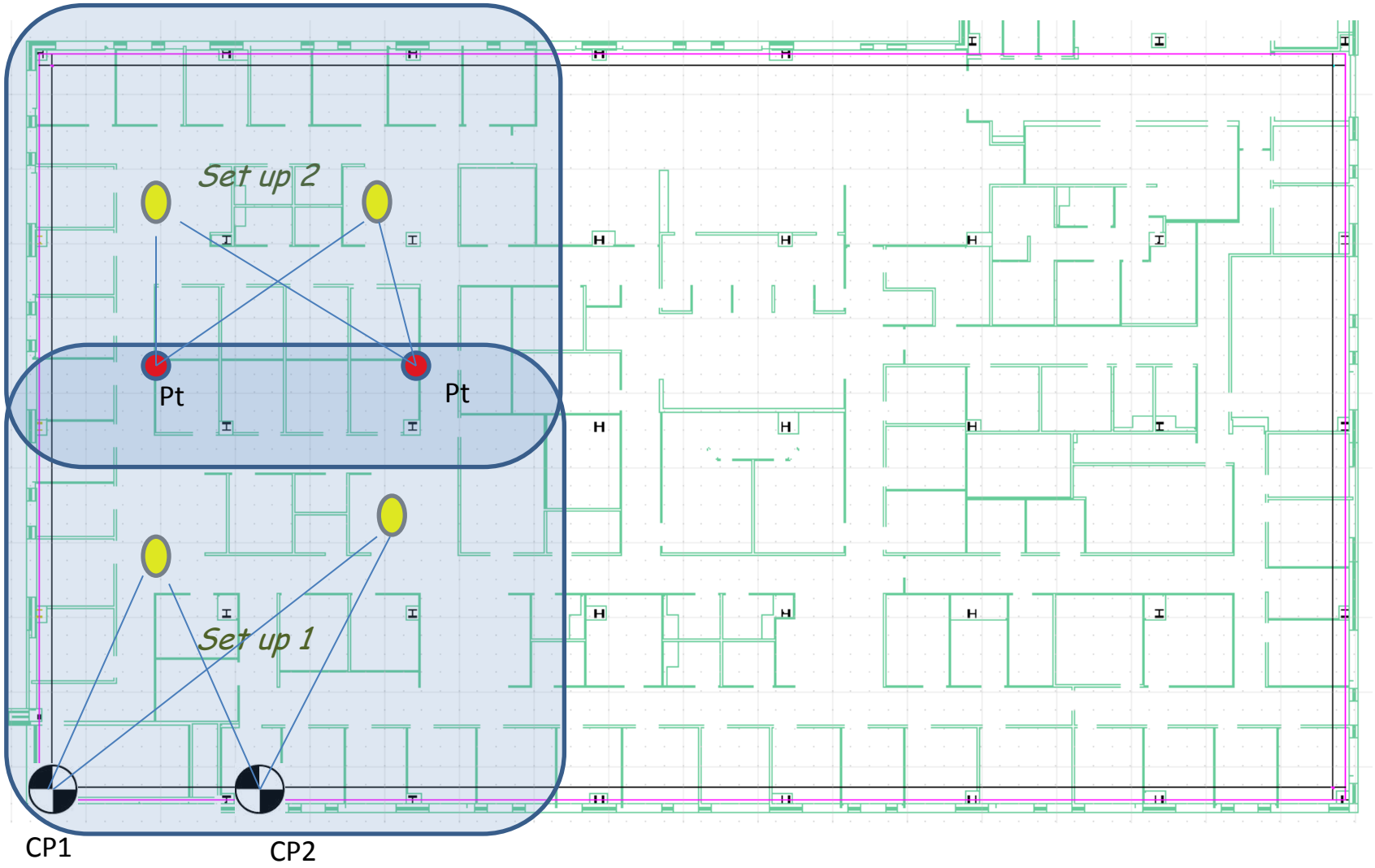
A direct approach is to use BM1 and BM2 for one of the Set Ups, and to use easy-to-locate points along the control lines for the other Set Ups.

Multiple Set Ups Using Same Reference Points



Another option is to use points between 2 Set Ups for more than Set Up. Center control lines were used for CP1 and CP2 and Pt A and Pt B

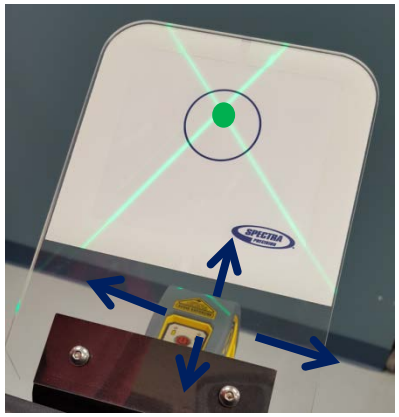
Multiple Set Up – “Leap Frog” Set Up



Set up 1 was done with CP1 and CP2.
After the 2 points shown in red were marked from Set Up 1, these points were then used as benchmarks for Set Up 2. This can safely be done once. Each Leap Frog offers an additional potential for error. It is recommended to not do more than 2 Leap Frog Set Ups.

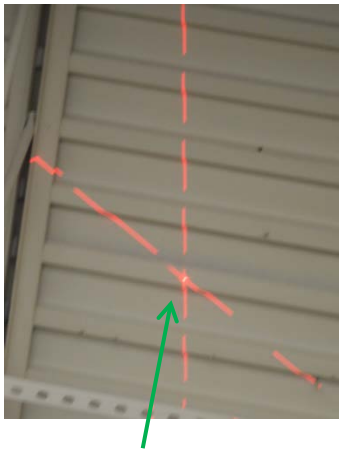
Accessories

Clutter Buster



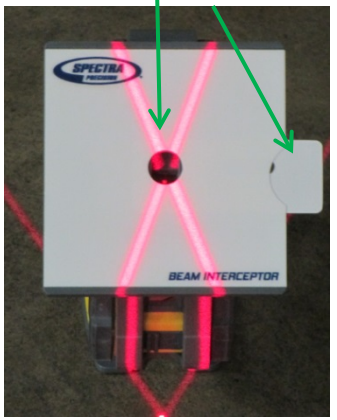
Interceptor

Bright light



Up to Ceiling

Dim light



Specifications and WiFi

System		
Feature	**QML800**	**QML800G**
Size laser instrument packaged case	 267 x 165 x 165mm(10.5 x 6.5 x 6.5 in) 700 x 455 x 254mm (28 x 18 x 10 in)	 267 x 165 x 165mm(10.5 x 6.5 x 6.5 in) 540 x 404 x 305mm (22 x 16.5 x 12 in)
Weight laser instrument packaged case	 2.7 kg (6 LBS) 10.5 kg (23 LBS)	 2.7 kg (6 LBS) 13.6 kg (30 LBS)
Accuracy	3mm (1/8") typical (see chart)	3mm (1/8") typical (see chart)
Self Leveling range	4 +/-1 deg from true level.	4 +/-1 deg from true level.
Working range - typical work area - laser visible distance	 - 30m x 30m (130ft x 130ft) - 22m (700ft)	 - 40m x 40m (130ft x 130ft) - 30m (100ft)
Environmental - IP - Operating Temperature - Storage temp	 IP54 -10C – 45C (14F to 113F) -20C - 60C (-4F to 140F)	 IP54 -10C – 45C (14F to 113F) -20C - 60C (-4F to 140F)
Battery type and rating operating time charge time	 Lithium ion 2 x 5200 mAh, 3.7 V 16 hrs 12 hrs	 Lithiun ion 2 x 5200 mAh, 3.7 V 8 - 10 hrs 12 hrs
Charger	Input: 100 - 240V AC 500mA Output: 5V DC 2A	Input: 100 - 240V AC 500mA Output: 5V DC 2A
Laser Class	Laser class II	Laser class II
Laser type	642nm red	522nm green
Tripod height attachment	 0.48m -0.84m (19 in to 33 in) 5.8 x 11	 0.48m -0.84m (19 in to 33 in) 5.8 x 11
Controller		
Model	Google Nexus 7	Shield
Manufacturer	Asus	Nvidia
Size (diagonal active screen)	7 inch (175mm)	8 inch (200mm)
Weight (in protective case)	0.6 LB (0.3Kg)	0.6 LB (0.3Kg)
Wireless Protocal Frequency Range (typical)	 IEEE 802.11b/g/n 2.4 - 2.497 GHZ 45m (150 ft)	 IEEE 802.11b/g/n 2.4 - 2.497 GHZ 45m (150 ft)
Shipping		
System size	30 x 21 x 11 in / 760 x 530 x 275 mm	23 x 18 x 17 in / 580 x 455 x 430 mm
System weight	36 LBS / 16.3 kg	41 LBS / 18.5 kg
Clutter Buster size		48 x 14 x 9 in / 122-0 x 355 x 228 mm
Clutter Buster weight		13 LBS / 6 kg

BuildView Office

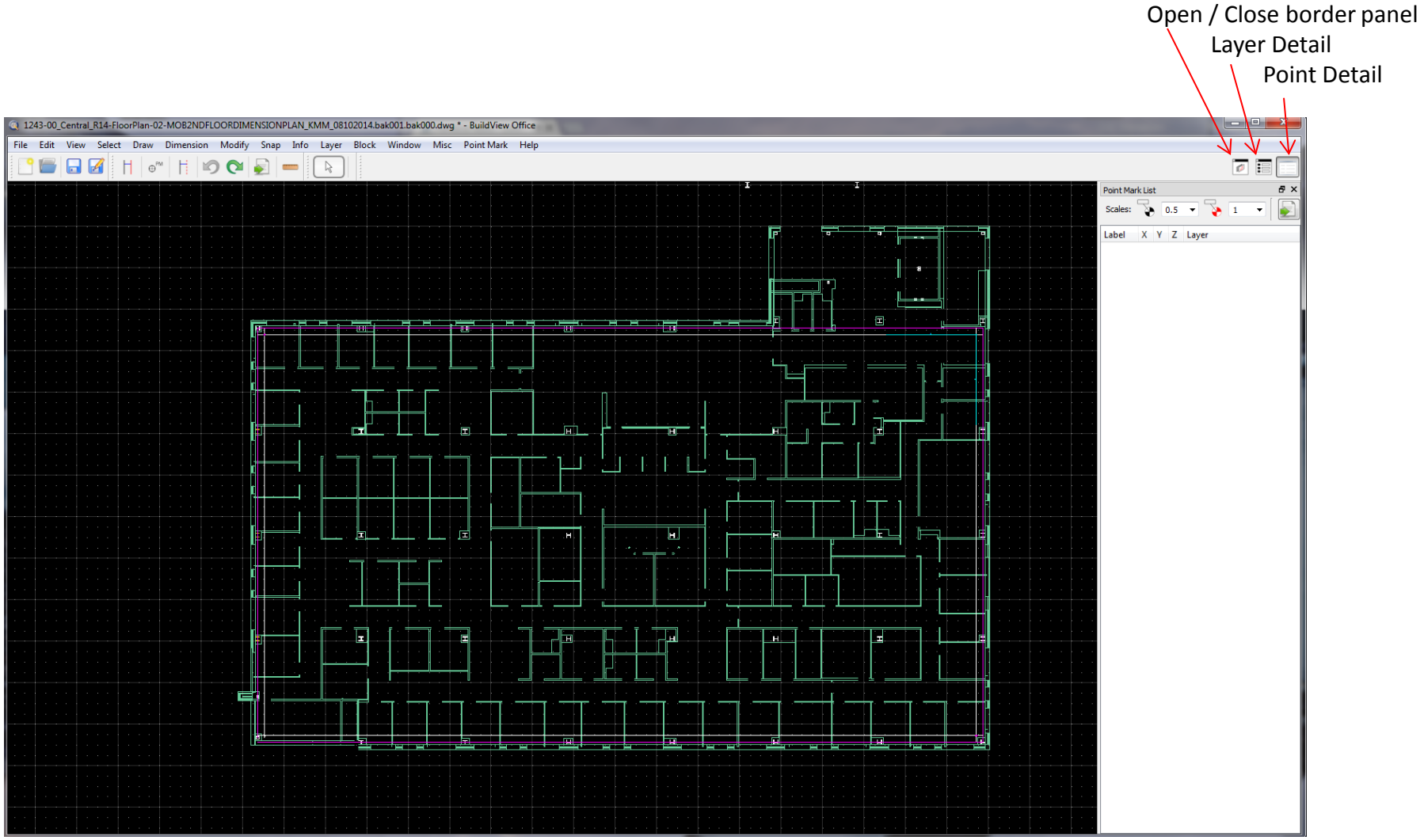
You can Download a copy BuildView Office for your computer from www.spectralasers.com

- You must register.
- You will need your QML800 System Serial Identification (SSID).

SSID number is on the back of the controller:
xxxxx-xxxxx-xxxxx

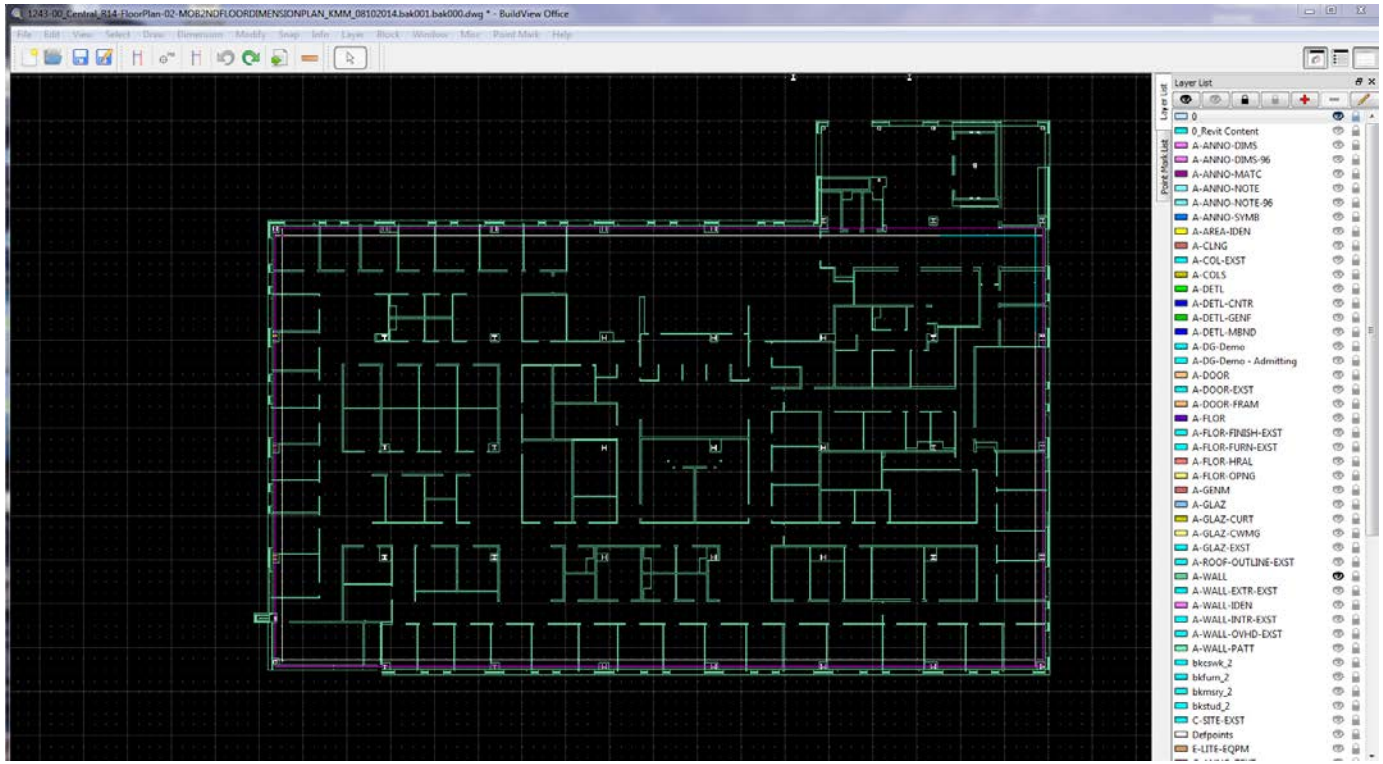
- BuildView Office can be used to open and review architectural CAD files
- Drawing layers can be managed
- Point files can be created in advance of arriving at the job site
- BuildView Office can facilitate dialog with Architect

BuildView Office



BuildView Office can be used to open and review Architectural Drawing Files. (dwg and dxf files)

Layers can be managed

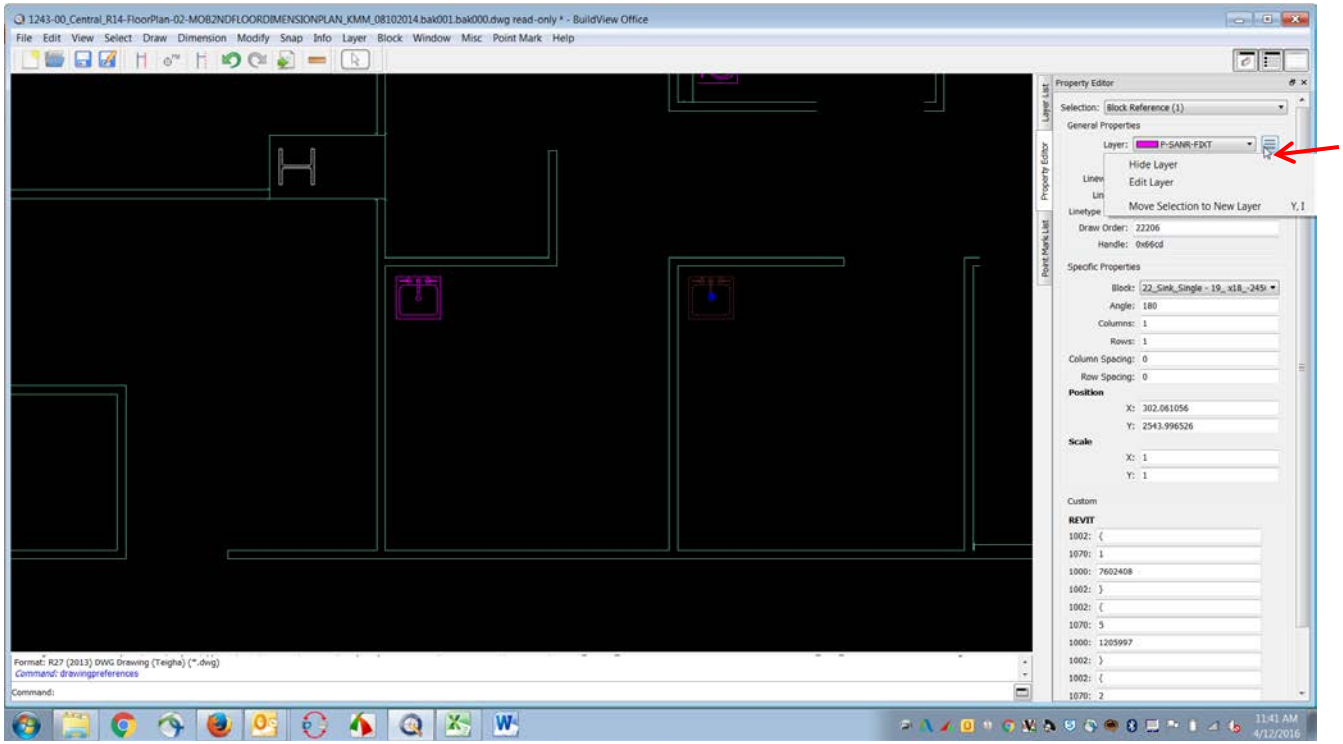


On / Off All layers

On / Off
Individual layer

Add layers
Delete layers
Edit layer

Click on an entity in the drawing view port (such as a line)



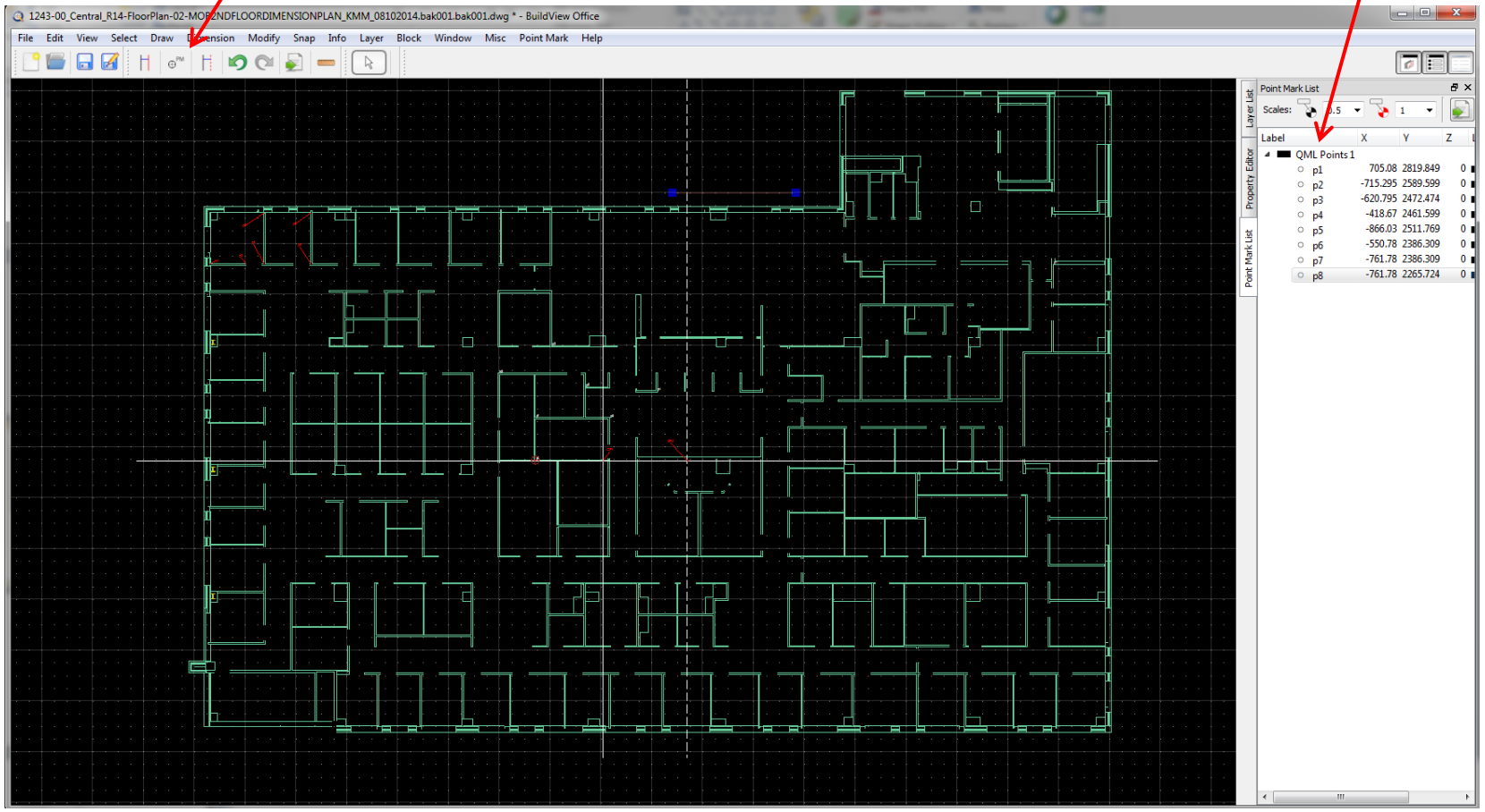
You can hide or edit that entity in this tab

View or modify properties of that layer

To create points, select PM. Then bring the cursor over the location where you want a point. Default "snap" will allow you to find intersections. Click to create a point.

Point List

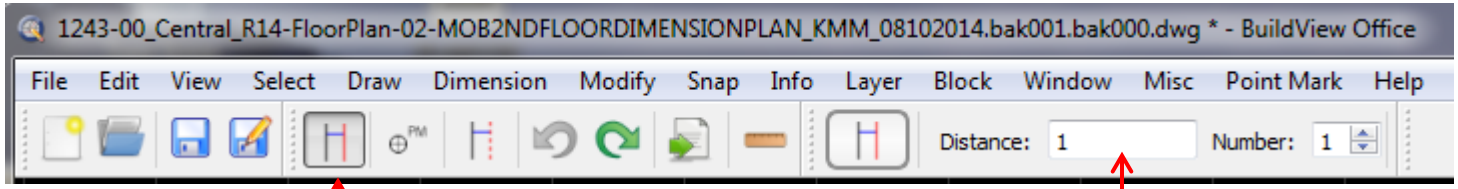
PM



Note: BuildView Office places points in a layer in the CAD file.
Do not save points as a csv file.

These functions can be used to create control lines, control points and other points to be laid out

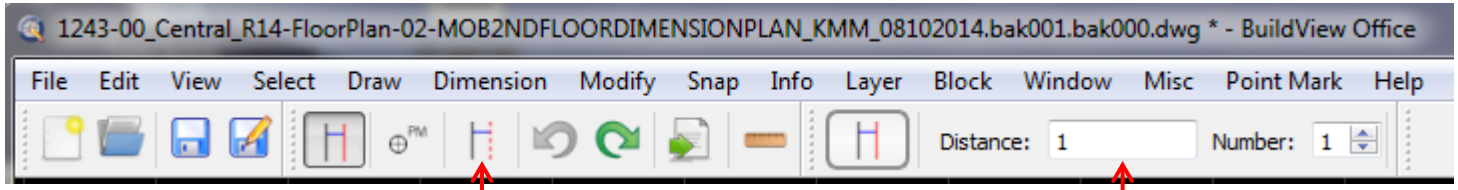
Control Lines: tap “Control line”, input offset distance, tap on entity to offset, select which side to offset



Create Control Lines

Control Line Offset Distance

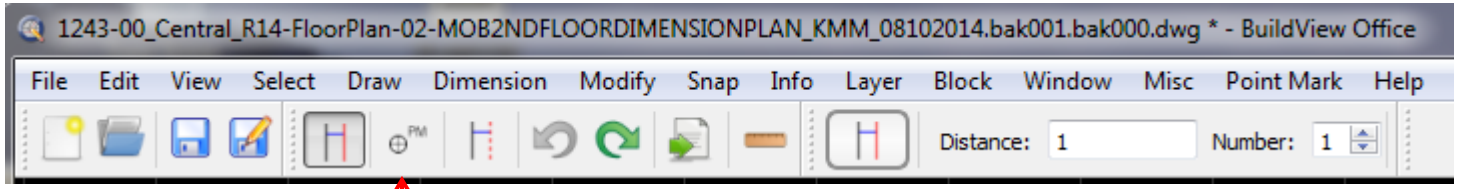
Reference Lines: tap “Reference line”, input offset distance, tap on entity to offset, select which side to offset



Create Reference Lines.
Useful to create control points locations

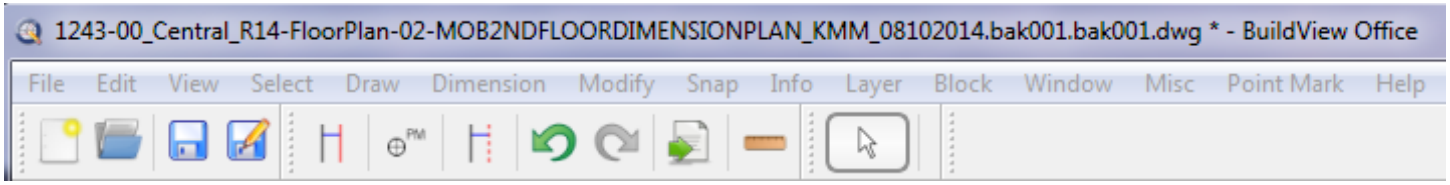
Reference Line Offset Distance

Points: tap “Point Mark”, zoom in, tap on intersection or location to place a point



Create Points

BuildView Navigation



Save and Save As

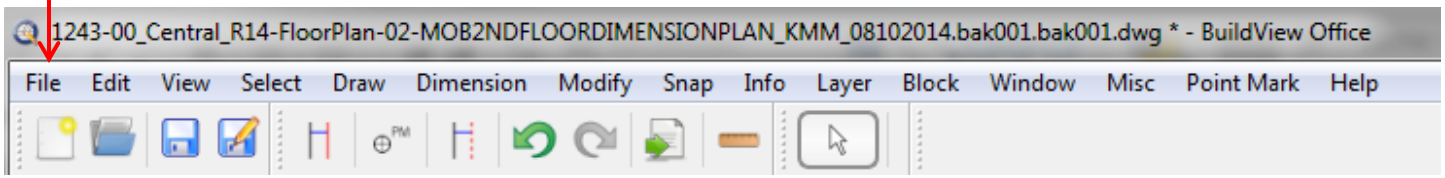
Undo

The Scroll Wheel is critical for BuildView navigation.

- The scroll wheel zooms in and out from the point of the cursor.
- Press the scroll wheel and hold to move the CAD file position within the window

Escape button is used to end a function

Drop down menus for advance functions such as Snap, Draw



Calibration

Accuracy

The “Set Up Verification” function that follows job set up is the best way to verify system accuracy. Open a job (new or existing), be very careful with benchmarks and then follow the steps for “Set Up Verification.” If the measured and calculated distances are the same, the unit is within calibration.

Repeatability

To check repeatability, create several points and mark them on the floor. Return to those points. If the system returns to the same point, within 1/16” (1.5mm), the system is within calibration.

Plumb

Drive to a point where the “X” can be seen on both the floor and ceiling. Use the included LP30 plumb pointer to verify that the “X” on the ceiling is direct plumb with the point on the floor.

Service

There are no maintenance service requirements.

Warranty

System Warranty: Trimble warrants the QML800/G to be free of defects in material and workmanship for a period of 2 years. Trimble or its authorized service center will repair or replace, at its option, any defective part, or the entire product, for which notice has been given during the warranty period. If required, travel and per diem expenses to and from the place where repairs are made will be charged to the customer at prevailing rates. Customers should send the product to Trimble Navigation Ltd, or to the nearest authorized service center fro warranty repairs or exchange, freight prepaid. Any evidence of negligent or abnormal use, or any attempt to repair equipment by other than factory-authorized personnel or Trimble certified or recommended parts, automatically voids the warranty. Special precautions have been taken to ensure the calibration of the laser, however, calibration is not covered by this warranty. Maintenance of the calibration is the responsibility of the user. The foregoing states the entire liability of Trimble regarding the purchase and use of its equipment. Trimble will not be held responsible for any consequential loss or damage of any kind. This warranty is in lieu of all other warranties, except as set forth above, including an implied warranty. Merchantability of fitness for a particular purpose is hereby disclaimed. In countries with Trimble Service Subsidiary Centers, the repaired products will be returned to the customer, freight prepaid.

OEM Controller Warranty: The controller is an off-the-shelf Android controller. Trimble warrants the controller for 6 months under similar terms as from the original manufacturer.

Service Request

To locate your authorized Trimble Service Center contact the dealer from where you purchased the product or check at www.spectralasers.com

Declaration of Conformity

We , **Trimble Navigation Inc.**
declare under our sole responsibility that the product
QML800 / QML800G
to which this declaration relates is in conformity with the following standards
EN 61000-6-3:2007 + A1:2010, EN 61000-6-2:2005 and EN 60825-1:2007
following the provisions of directive
Electromagnetic compatibility 2004/108/EC.
The managing director **Notice to Our European Union Customers**

FAQ - General

Q Is the laser safe?
A QML is rated class 2 per IEC 60825-1 and CDRH 21. This rating is considered generally safe because the natural blink reflex will limit exposures to no more than 0.25 seconds. It is always recommended to not look directly into a laser

Q Do you need to use tripods?
A No. You can place the lasers directly on the floor . You can also use other tripods. Visibility on the floor is likely better if the lasers are placed on tripods.

Q How accurate is QML
A Typically, about 1/8" (3mm). There are regions of greater and less accuracy. Be cautious of very shallow X angles.

Q Is QML waterproof? Is it dustproof?
A QML is rated IP54, which is considered splash proof dust resistant beyond what is normally present on a construction site.

Q Can QML be used outdoor?
A QML is a visible laser system. Daylight normally limits the ability to see the lasers to indoor areas. At night, QML can be used effectively outdoors.

Q If the floor is sloped, does it affect accuracy?
A No. The laser "X" goes from floor to ceiling, though you can see it only off of surfaces that reflect lasers.

Q Can I use an iphone or ipad as a controller
A No. The QML application works only on Android devices.

Q How do I get a CAD (.dwg or .dxf file) file of my floor plan?
A The CAD file can be obtained from the architect or general contractor or contract manager. Normally, architects provide pdf or other files that cannot be modified. CAD files are usually provided if requested.

Q What is the difference between .dwg and .dfx files
A A .dwg file is a native CAD file. A .dfx file is "translated" file that can be opened with programs other than CAD. BuildView Office can open either file. You can download BuildView Office from from www.spectralasers.com. Go to QML800G details.

Q How much charge can I get during lunch for my controller?
A Lasers: About 2 hours of operation. (30 minute charge) Controller. About 1.5 hours (30 minute charge)

FAQ - Operation

Q What if someone bumps a tripod
A The laser transmitters have a sensor to detect disruption that will alert the operator to recheck alignment. Additionally, there is a quick alignment check function available which can be used at any time.

Q If there is a hole or bump in the floor, does it affect accuracy?
A No, the intersection of the X is an accurate location. The use of the Interceptor may help with rough floors.

Q Should I power down lasers and/or controller during lunch
A It is not necessary, unless you are concerned about your battery power level. Most crews leave lasers and controller on during lunch.

Q What is the operating range?
A Depends upon lighting conditions and laser placement. Red lasers generally cover an area of 100 x 100 ft (30x30m) with single set up. Green lasers cover an area 130 x 130 ft (40x40m).

Q What if accuracy is poor.
A Check set up. Check distance between benchmarks. Has the system been "Leap Frogged?" Check axis alignment

Q Laser units do not charge
Should flash yellow (greenish looking) during charging. Verify electric power. Trouble shoot if battery or charger is a problem by using the other charger.

Q System failed "Check Alignment
A Try a second and third time. Restart axis alignment.

Q What if following set up, the calculated distances does not match my measured distance? What difference is acceptable?
A Generally, if measure distance is less than 10 ft (3m), seek an accuracy within 1/16 inch (1.5mm). With longer verification distance, you can expect large discrepancies.

Q What does it mean when both laser beacons are green.
A The system has lost communication between the controller and lasers. Exit the application and power the lasers off and try again. Note that the controller should indicate communication break (X on laser).

Q What can be done if communication is lost several times?
A Exit the QML application and turn off both lasers. Power on 1 laser, wait 5 seconds and power on the second laser. If the second laser unit dome light turns blue, launch the QML app. If the second laser dome light turns green (both dome lights are green) then there is too much Wi-Fi congestion. Try moving lasers very close together while powering on. Consider changing the channel.

Q Control points are not accessible.
A Are other control points accessible? You can create a new control point offset from the original control point, be careful to save the new point location correctly

Q Laser lines are not on
A Check if there is a message to check axis alignment. Check if both domes are green. Stake a point.

Q Rotor Stalled
A Make sure the laser has a good charge. Try to gently turn/wiggle the rotor. If this does not work, arrange service

FAQ - Tablet

Q Can the controller be dropped?
A The controller is an off-the-shelf Android tablet. It does not include a drop specification and warranty does not cover drops. The protective case is included to increase robustness.

Q Tablet gets into Airplane Mode
A Go to settings, search airplane mode, switch off.

Q Tablet battery life is short
A You can adjust brightness in settings. Generally, 50% is adequate and will increase battery life about 30%. Off-the-shelf battery back ups are available. Charge during lunch.

Q Can I use the controller while wearing gloves?
A Probably. There are conductive gloves on the market. Trimble does not guarantee that conductive gloves work.

Q Can I use a stylus?
A Yes. "Active" stylus work better.