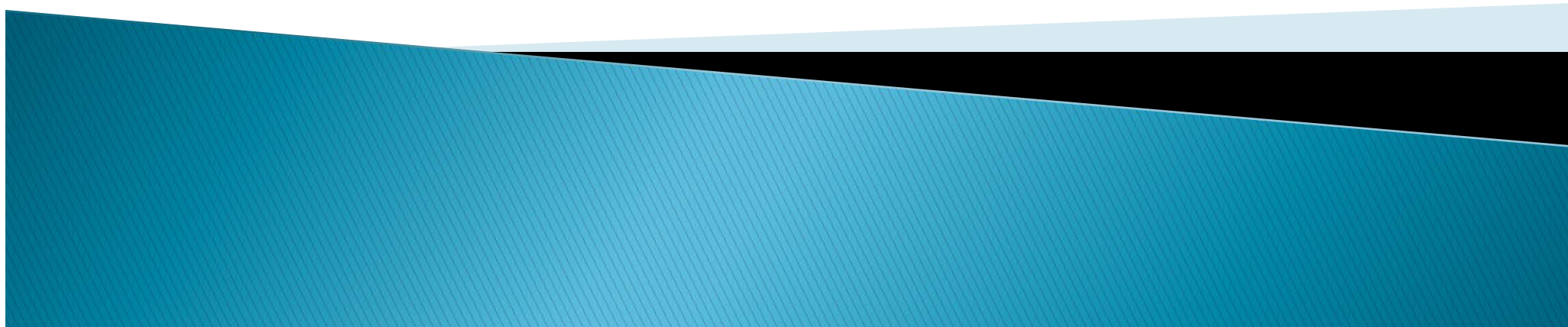


# Connecting to the CRTN

NTRIP Connection / IPs & Ports / RTCM Versions

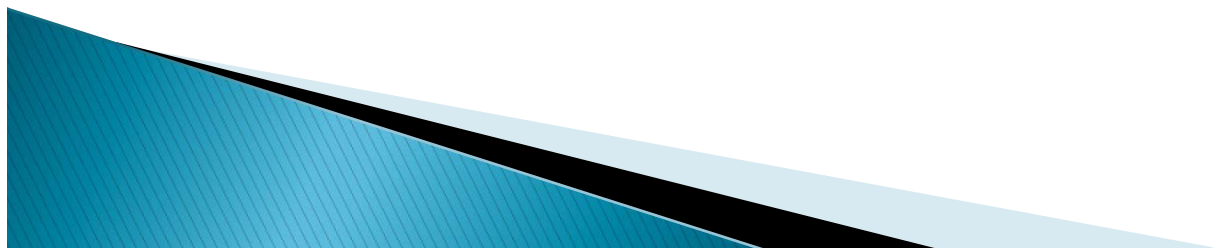
Richard Maher, PLS  
CSRC EC Secretary

[rmaher@kdmmeridian.com](mailto:rmaher@kdmmeridian.com)



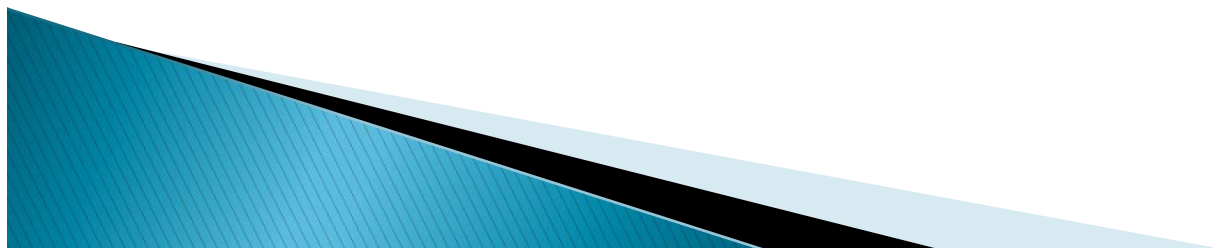
# What we will cover.

- ▶ Why
- ▶ What
- ▶ The Connection
- ▶ Getting Started (The Internet)
- ▶ Configuration Settings
- ▶ Information & Status of Network
- ▶ Samples / Questions



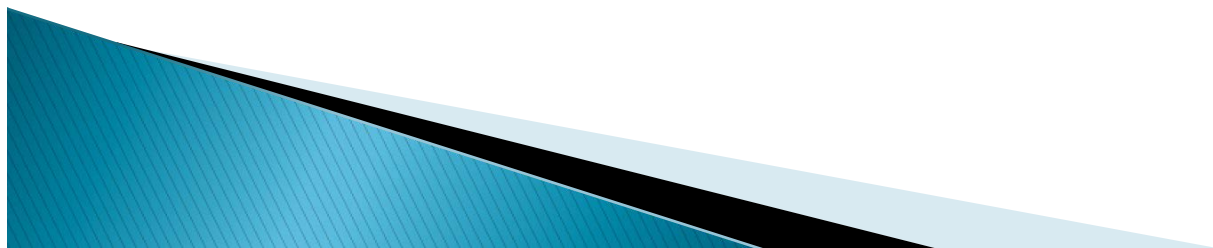
# Why?

- ▶ Makes you money (Pays for self)
- ▶ Eliminate need for physical base/radio.
- ▶ No setup. Radio Conflicts.
- ▶ No risk of theft or cost of guard.
- ▶ Known coordinate point.



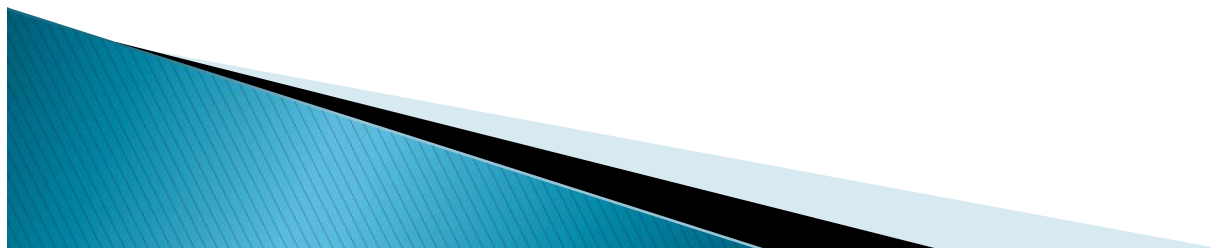
# What are we doing?

- ▶ CRTN –is– RTK (Single Base Solution)
- ▶ Basic RTK Principles
- ▶ Positioning Performance 95% (Trimble R8)
  - 15km 1 Reading Horiz: 0.12' +/-
  - 15km 2 Readings Horiz: 0.09' +/-
  - 15km 3 Readings Horiz: 0.07' +/-
  - 15km 4 Readings Horiz: 0.06' +/-



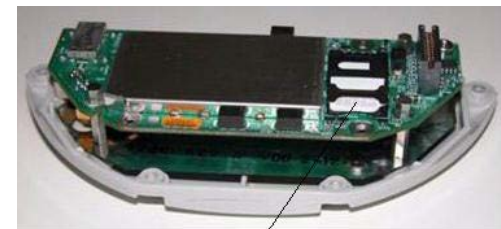
# The Connection

- ▶ NTRIP: (Networked Transport of RTCM via Internet Protocol)
- ▶ Infrastructure: Server / Caster / Client
- ▶ Data: RTCM stream (Radio Technical Commission for Maritime Services)
- ▶ Coordinates



# Getting Started (The Internet)

- ▶ Data Collector vs. Receiver
- ▶ Getting hooked up:
  - Serial Modem
  - Bluetooth DUN
  - Tethering by Bluetooth/WiFi (Cell Phone)
  - WiFi Device
  - Built in Cell (usually SIM)



Enter SIM Card Here

# Configuration Settings

## ▶ NTRIP Access:

### ◦ Northern California

- IP: 132.239.152.175 (Updated August 5, 2017)
- Port: 2103

### ◦ Southern California

- IP: ~~132.239.152.74~~ 132.239.154.80 (Updated February 6, 2018)
- Port: 2103

## ▶ RTCM v3.0

## ▶ Broadcast Coordinates ~~CSRC 2011.00 Epoch – NAD83 (NSRS2007)~~ CSRS Epoch 2017.50 (NAD83)

## ▶ CRTN NTRIP Account Requests:

[https://www.surveymonkey.com/s/CRTN\\_Registration](https://www.surveymonkey.com/s/CRTN_Registration)

## ▶ Website: [csrc.ucsd.edu](http://csrc.ucsd.edu)

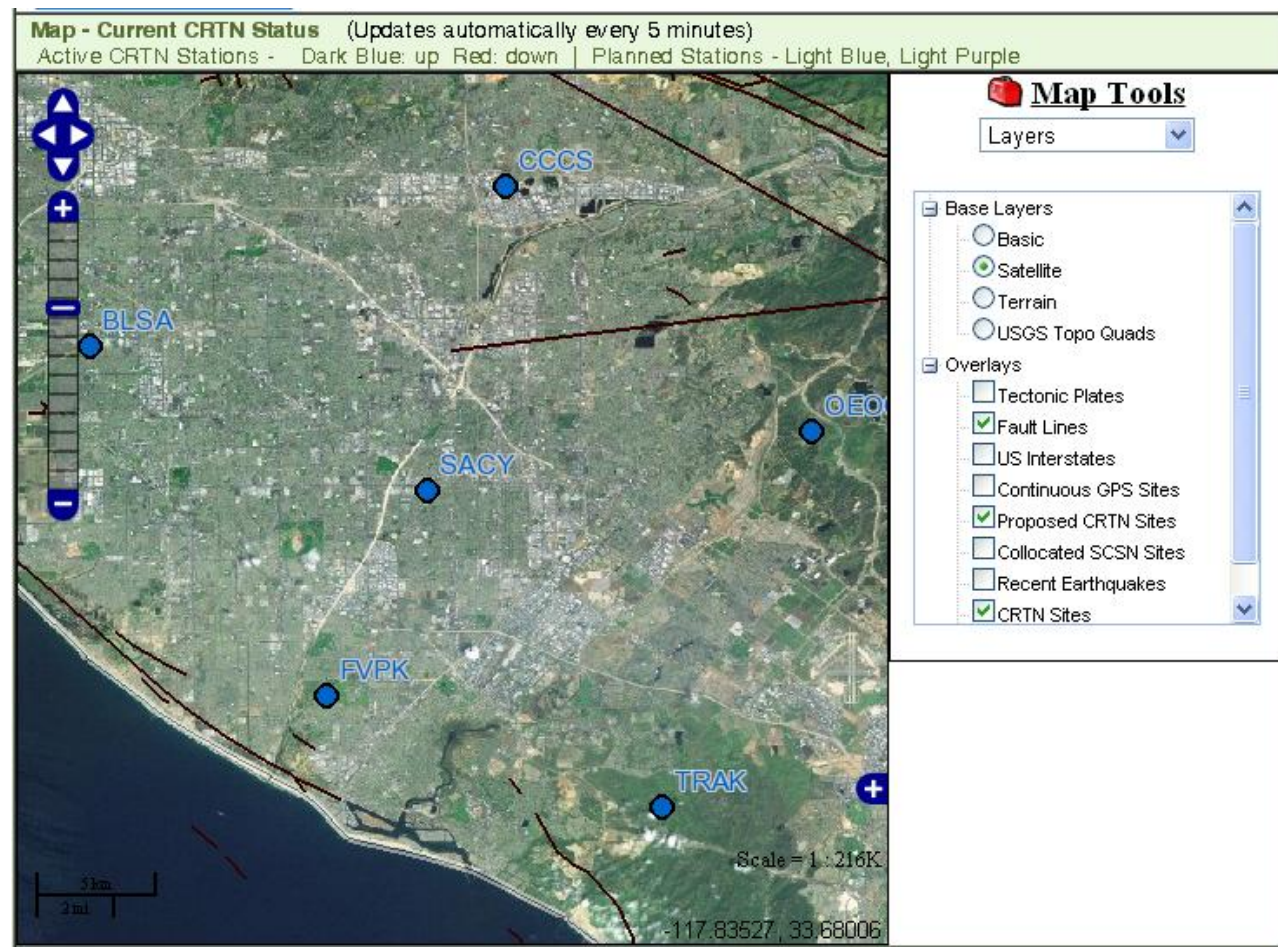
## ▶ Forums: CRTN





# Status

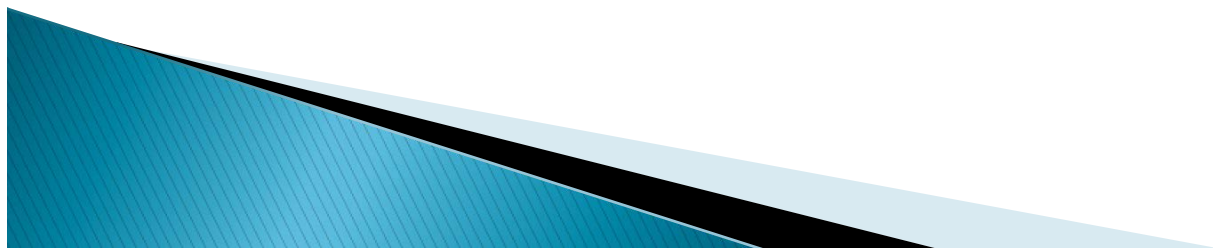
## ▶ CRTN Current Status Map:





# Samples / Questions

- ▶ Connection Configuration Database
- ▶ Samples
  - GeoXH
  - TSC2 (Access) R8
- ▶ Questions?

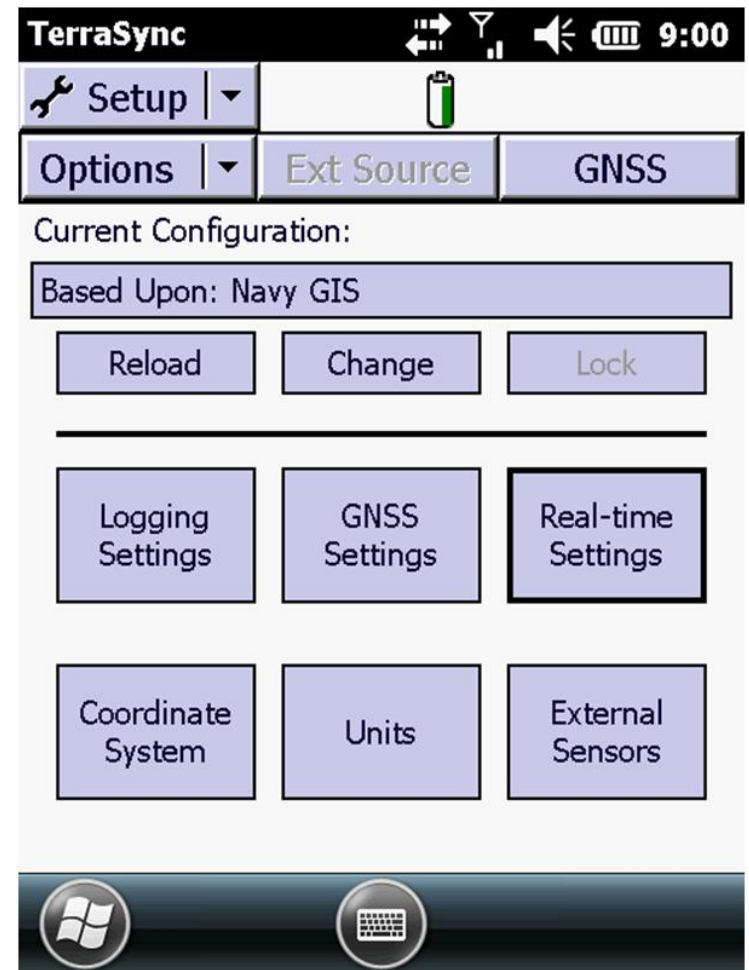
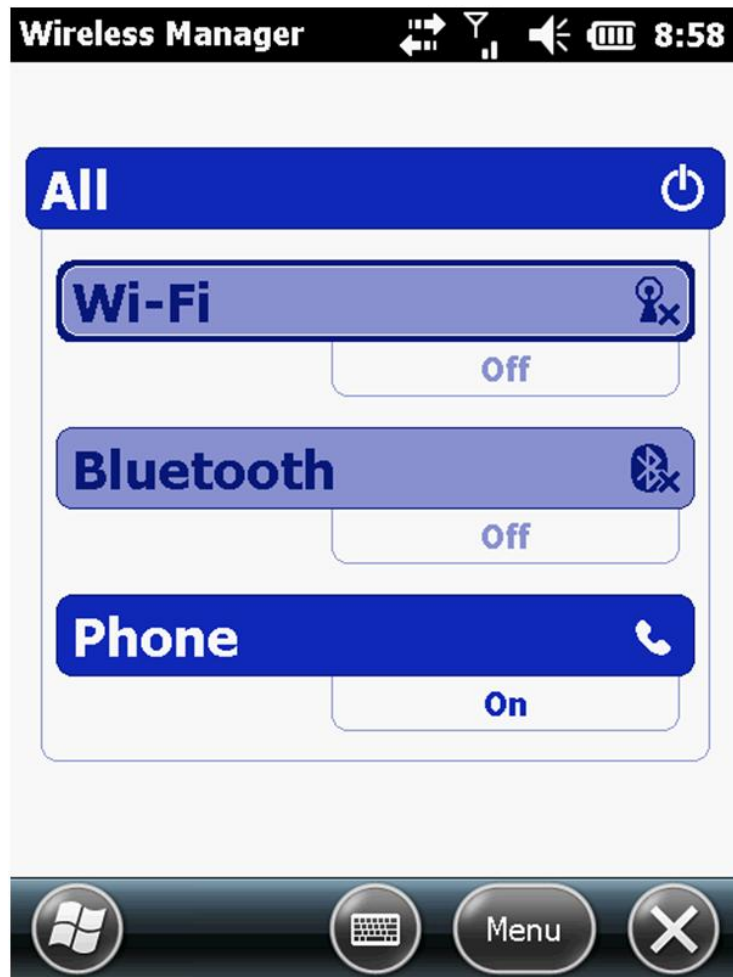


# Mapping Unit (GeoXH 6000)

- ▶ 10cm and 1cm versions
- ▶ GIS Mapping
- ▶ SIM Chip Cell Phone Internal



# GEOXH 6000



# GEOXH 6000



# GEOXH 6000

**TerraSync** 9:01

Setup

**External Source Settings**

Correction Datum:  
NAD 1983 (Conus)

Type: Single Base

Connection Method:  
Internet

Address:  
132.239.152.74

Port: 2103

Done Cancel

**TerraSync** 9:01

Setup

**External Source Settings**

Source: WHYT\_RTCM3

User name:  
KDMCrew1

Password:  
\*\*\*\*\*

Connection Control: Auto

Real-time Protocol: Auto

Station ID: Any

Done Cancel



# Survey Unit (TSC2 Access/R8)

- ▶ Survey Grade Receiver
- ▶ WiFi Data Collector
- ▶ WiFi Cell Device

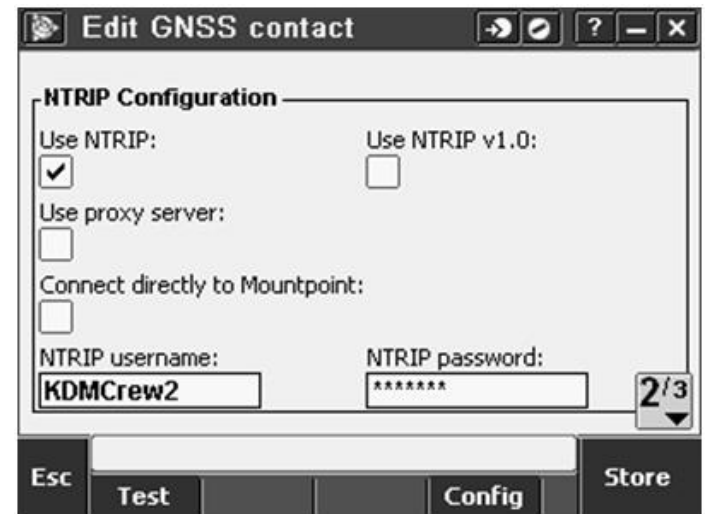
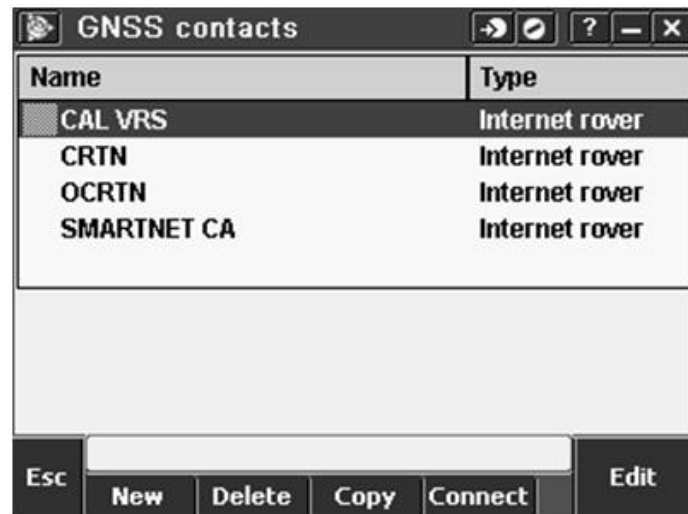
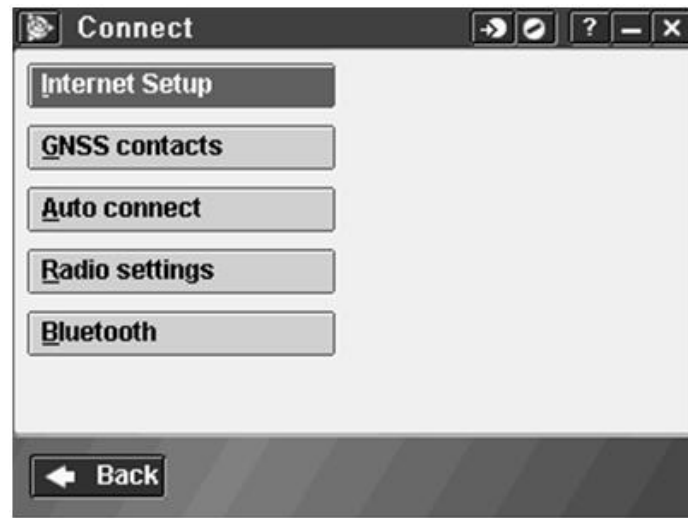




# TSC2 Access WiFi



# TSC2 Access WiFi



# TSC2 Access WiFi

**Edit GNSS contact**

IP Address:  IP Port:

Send user identity info: ☐

3/3

Esc  Test Config Store

**Bluetooth**

Connect to GNSS rover:  Connect to GNSS base:

Connect to conventional instrument:

Connect to laser:  Send ASCII data to:

Connect to echo sounder:  Automatically enable Bluetooth: ☒

Esc  Config Accept

**Survey Styles**

Name	Size	Modified	Location
CAL VRS	2kb	7/23/2012	\Trimble
CRTN	2kb	7/23/2012	\Trimble
FastStatic	2kb	8/10/2012	\Trimble
I-CAL VRS	2kb	7/23/2012	\Trimble
I-CRTN	2kb	7/23/2012	\Trimble
I-OCRTN	2kb	7/23/2012	\Trimble
I-SMARTNET	2kb	7/23/2012	\Trimble
OCRTN	2kb	9/14/2012	\Trimble
PRK	2kb	7/23/2012	\Trimble

Esc  New Copy Delete Options Edit

**CRTN**

Rover options

- Rover radio
- Base options
- Base radio
- Topo point
- Observed control point
- Rapid point
- Continuous points
- Stakeout
- Site calibration
- Duplicate point tolerance
- Laser rangefinder

Esc  Store Edit

# TSC2 Access WiFi

**Rover options** [Navigation icons] [Help] [Close]

Survey type:  
**RTK**

Broadcast format:  
**RTCM RTK**

Elevation mask:  
**10°**

PDOP mask:  
**6.0**

Map  
Menu  
Favorites  
Switch to

1/3

Esc Accept

**Rover options** [Navigation icons] [Help] [Close]

**Tracking**

Use L2e: **Yes**

GPS L2C: ☐

GLONASS: ☒

Map  
Menu  
Favorites  
Switch to

3/3

Esc Accept

**Rover options** [Navigation icons] [Help] [Close]

**Antenna**

Type:  
**R8 GNSS/SPS88x**

Measured to:  
**Bottom of antenna mount**

Antenna height: **2.000m** Part number: **60158-00**

Serial number:  
**?**

Map  
Menu  
Favorites  
Switch to

2/3

Esc Accept

**Rover radio** [Navigation icons] [Help] [Close]

Type:  
**Internet connection**

Route through controller:  
**Yes**

GNSS Contact:  
**CRTN**

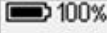
Prompt for GNSS contact:  
☐

Map  
Menu  
Favorites  
Switch to

Esc Accept

# TSC2 Access WiFi

**Observed control point**

Auto store point: ☒ Quality control: **QC 1 & QC 2** 

**RTK**

Number of measurements: **60**

**Precision**

Auto tolerance: ☒ **1/2**

Map  
Menu  
Favorites  
Switch to

Esc Accept

**New job: CRTN-PRES**

Job name: **CRTN-PRES.**

Template: **ZONE 6 (OC. RIV. SAN D. IMP)**

**Properties**

Coord. sys.: **California Zone 6 0406 (US Sta**

Units (Dist.): **US survey feet**

Linked files: **None**

Active map: **None**

Feature library: **None** **1/2**

Esc Accept

**Observed control point**

**Postprocess**

Time for 4 SVs: **10m0s** Time for 5 SVs: **8m0s**

Time for 6+ SVs: **5m0s**

Map  
Menu  
Favorites  
Switch to **2/2**

Esc Accept

**New job**

Cogo settings: **Ground**

Descriptions: **Off**

Media file: **Previous point**

Reference: **?**

Description: **?**

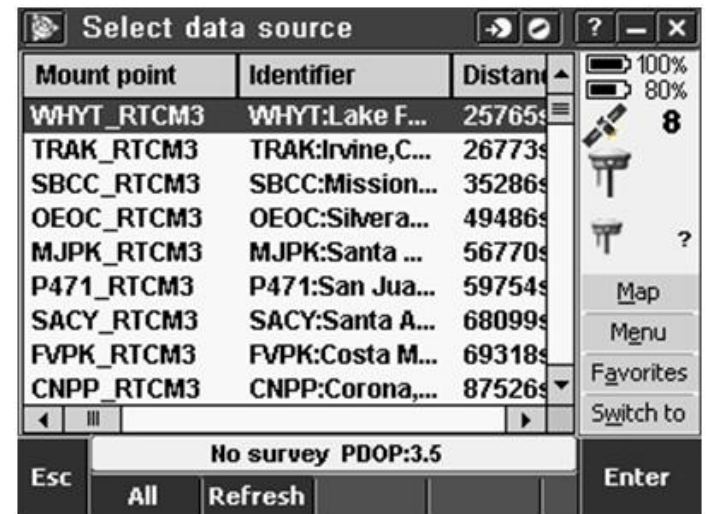
Operator: **?**

Notes: **?** **2/2**

Esc Accept



# TSC2 Access WiFi





# Samples / Questions

- ▶ Connection Configuration Database
- ▶ Samples
  - GeoXH
  - TSC2 (Access) R8
- ▶ Questions?

