We give you more than just a Buzz... We give you...

MRI
Magnetic Raster Imaging

Patents

Integrated Magnetic Locator with TRIUMPH-LS

Pages 1-4

With our 6+ RTK Engines

Monitor the health of your RTK shots. Verify, Record, Present and Defend.

RTK is a statistical process by nature and needs **verification**. TRIUMPH-LS has **six different RTK engines** and extensive automatic verification to ensure your shots are 100% reliable.

It also has many tools to **document** the process of your shots for **presentation** when you need to **prove** and **defend**. The screen shots on following pages can automatically be recorded and attached to each point and easily **exported in HTML format**.
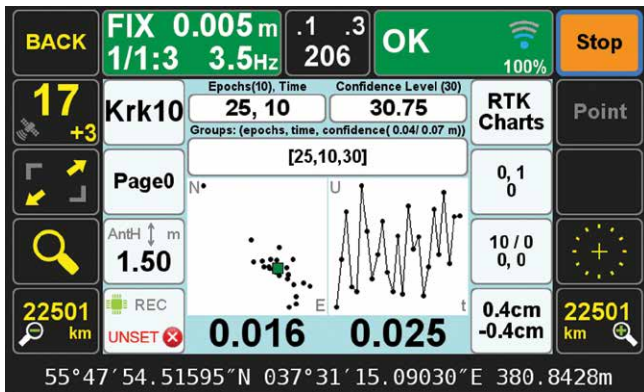
Pages FL-FR
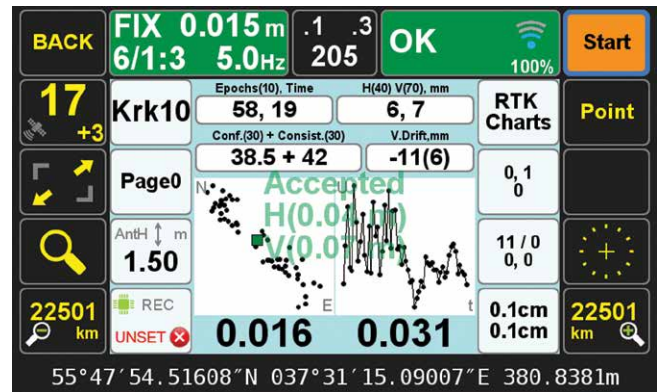
J-Shield in back page

We do all these behind the scene for your peace of mind and confidence
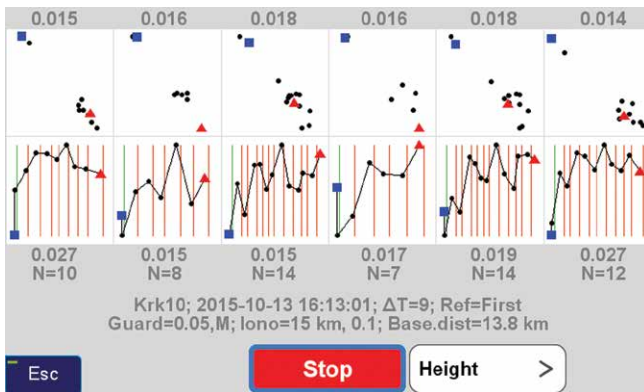
RTK Verification, Phase-1

This graph shows the horizontal and vertical RTK epochs of Phase-1 along with their statistics. Each epoch is the average of six RTK engines.
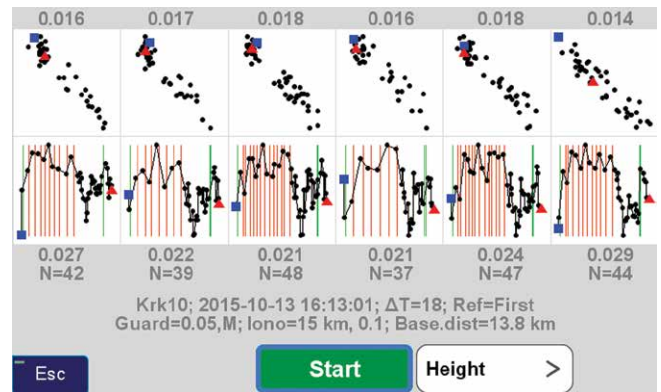

Phase-1 horizontal and vertical solution of each engine for each epoch.

Expanded view of the vertical solution of each engine. Vertical red lines show the instants in which each engine has been reset and ambiguity solutions recalculated.

RTK Verification, Phase-2
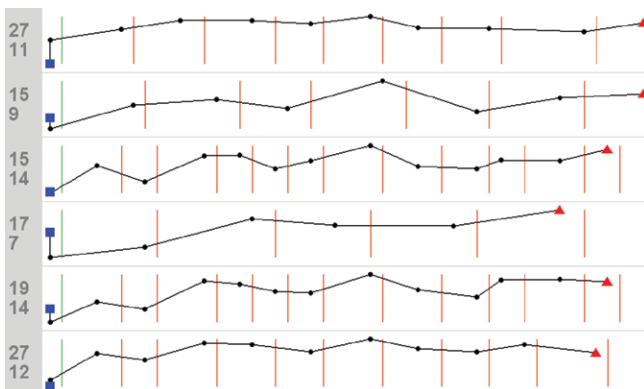

In Phase-2 the best ambiguity solution is selected and RTK is continued with the best ambiguity selection.

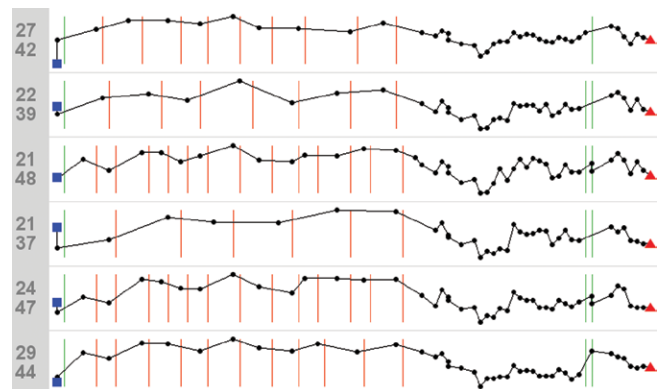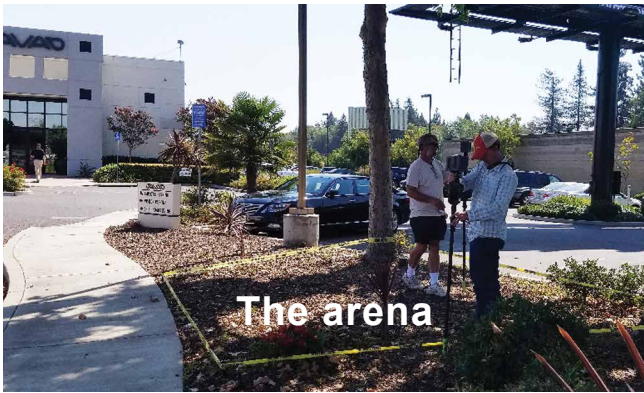Horizontal and vertical view of each engine in Phase-2. At the end of the process, all engines are reset once more to ensure correct ambiguity resolution.
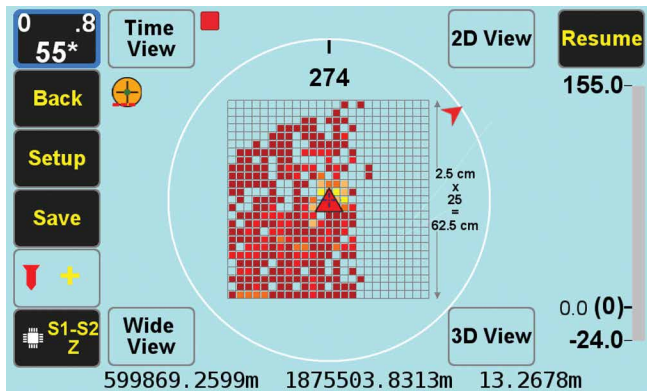

Similar expanded view of the vertical solutions in Phase-1 and Phase-2.

The arena

We have planted 19 mag nails, close together, from 16d common nails to 2-3/4 inch Mag Spikes from ChrisNik, in an 18 x 12 feet land in front of our San Jose headquarters.
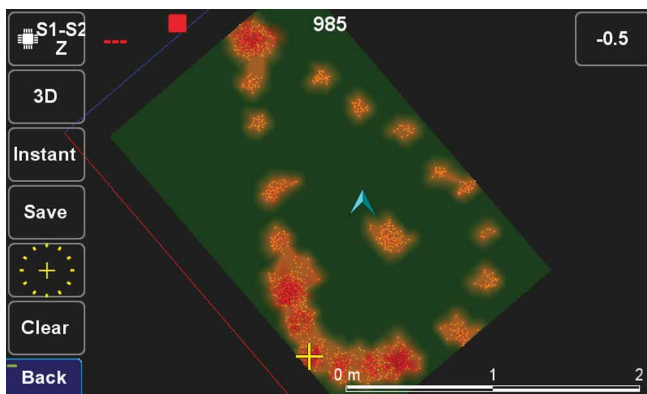
The site has a great deal of ambient noise from a nearby freeway and construction work.

The initial Mag View focuses only on the mag object with the highest mag value.
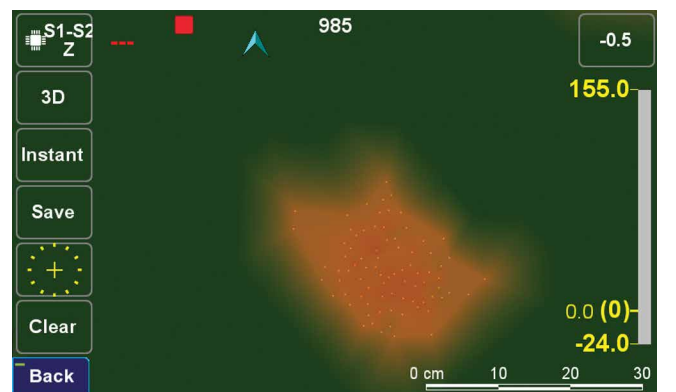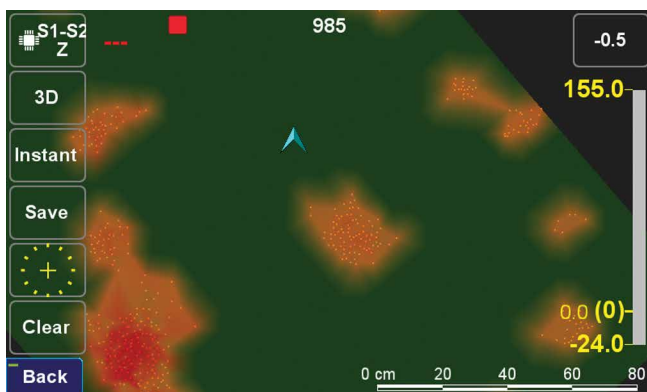
The audio and graphical bar on the right side show the magnitude of the magnetic object.
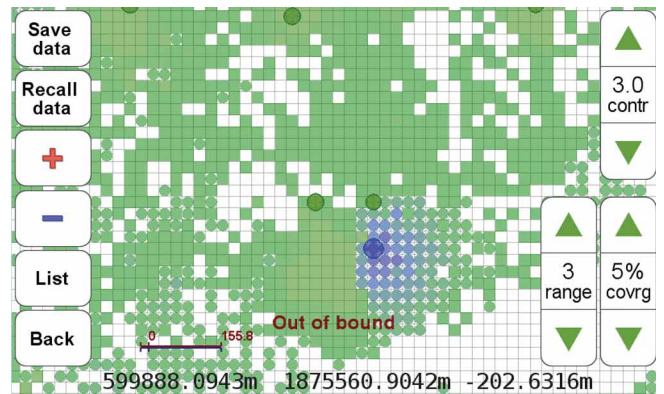
In "Setup" you can select the cell size and the size of the field you want to scan.
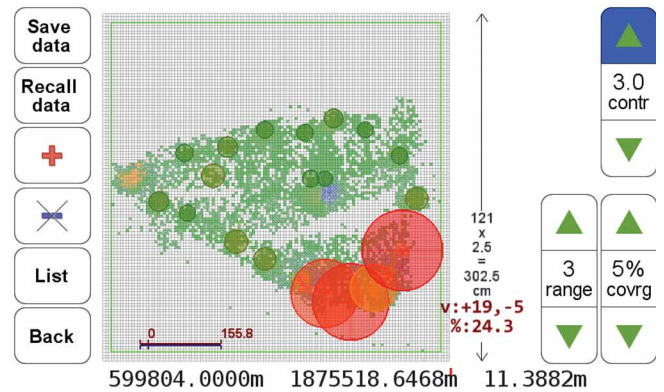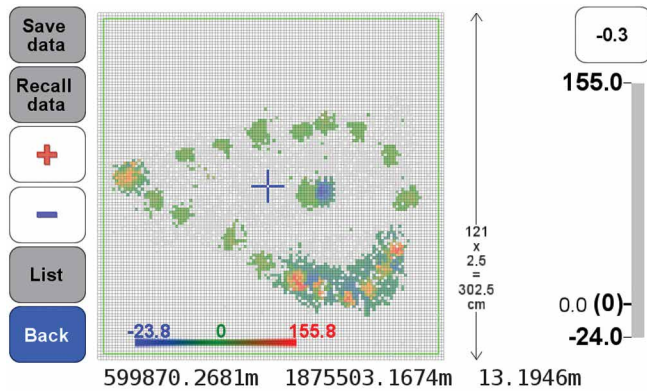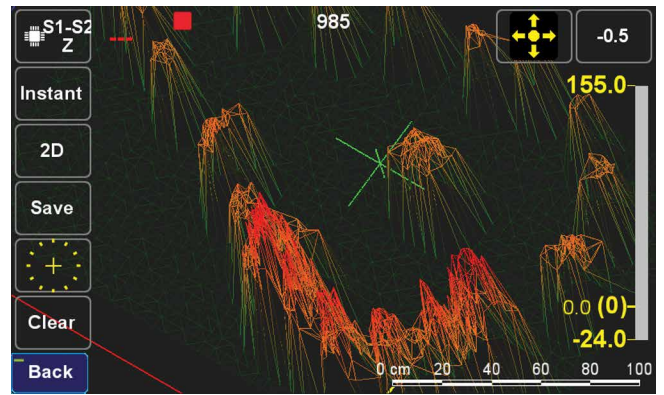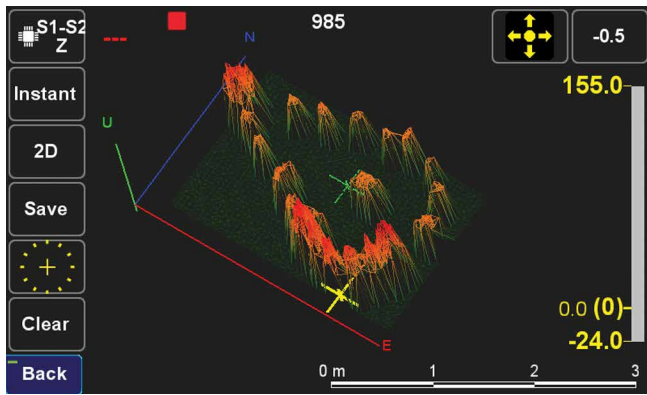

2D view of the field shows the magnetic objects that have been scanned.

Zooming the 2D screen can show the shape of the magnetic objects under the ground.

The top two graphs show the 3D view of the magnetic objects in the field. The following four screens show the digitized version of the 2D view. The mag data collected can be saved and recalled for further viewing and documentation. The "List" button lists the magnetic objects detected and their characteristics. Zoom button shows details of the selected object. Guide button will guide to the selected item.

Select	Name	Mag	Avg Range	Filled Cells	Opposite C...
	M1	155.8	68.8	29	7
	M2	146.4	55.3	24	11
	M3	128.8	38.5	24	16
	M4	83.1	37.5	34	10
	M5	32.2	5.3	25	1
	M6	32.1	11.6	40	0
	M7	30.6	14.1	41	1
	M8	30.5	11.3	39	0
	M9	25.9	9.4	34	5
	M10	24.3	10.1	42	5
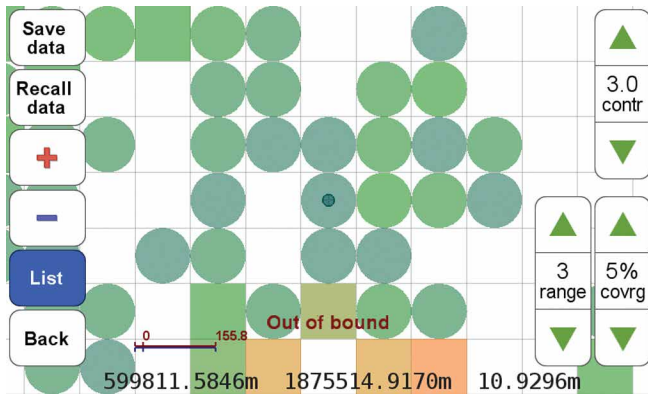
MRI — Magnetic Raster Imaging

When zoomed to any selected point, the characteristics of the cells around the peak are shown. Squares show the positive and circles the negative cells. Cell sizes are programmable. Similar to the MRI used by doctors!
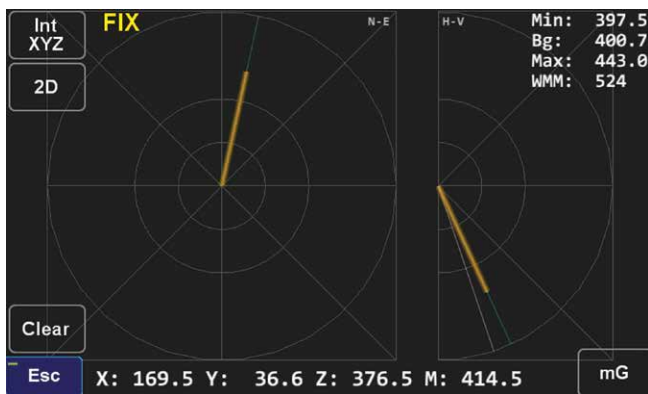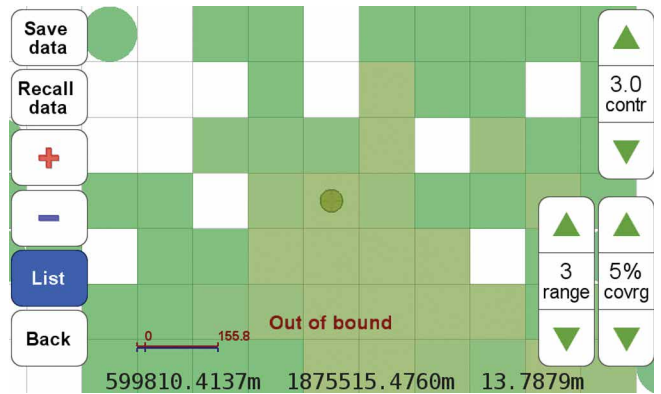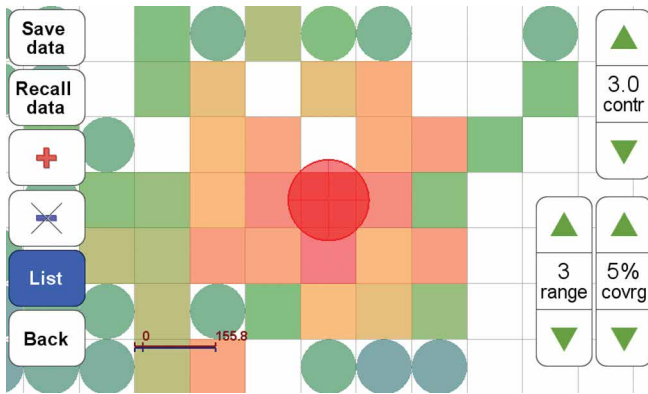
Horizontal and vertical magnetic vectors show the instantaneous vectors from the current position to the mag point.

Below graphs show the Time View of the mag values of the two sensors and their difference as scanning is in progress. Clicking on any graph shows its expanded view.
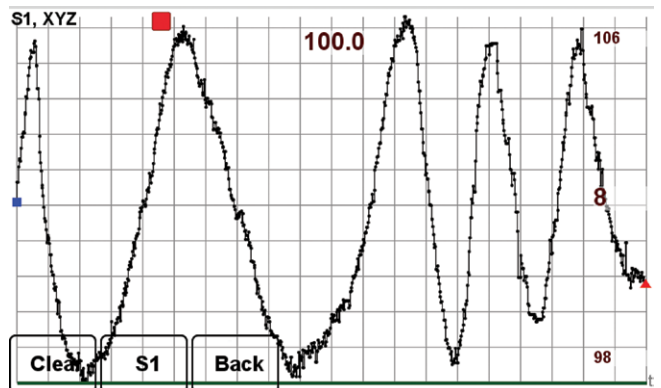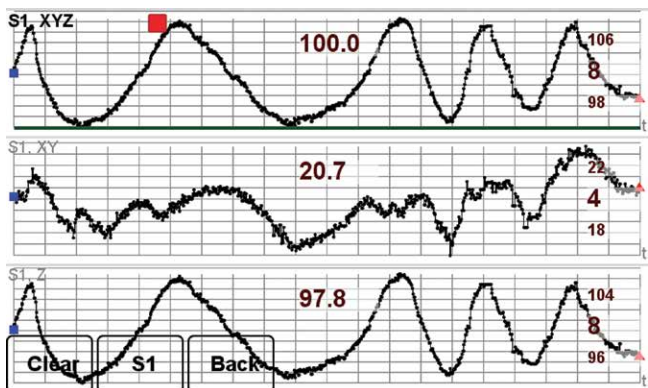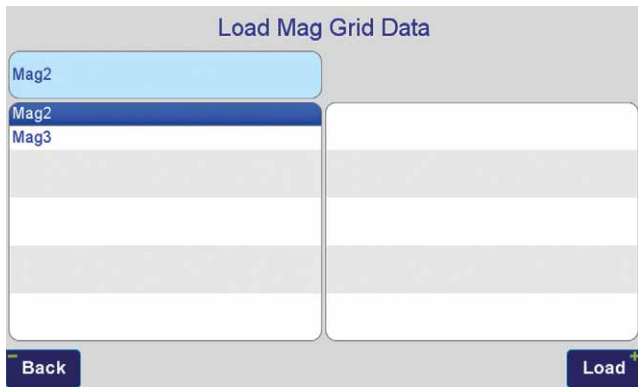
Field View

When you scan a large area, you can save all possible peak points, view them on the map and select the point with the highest peak to dig.

When you save a point, you can also save all the raw Mag sensor data for future view and documentation.

Work Flow
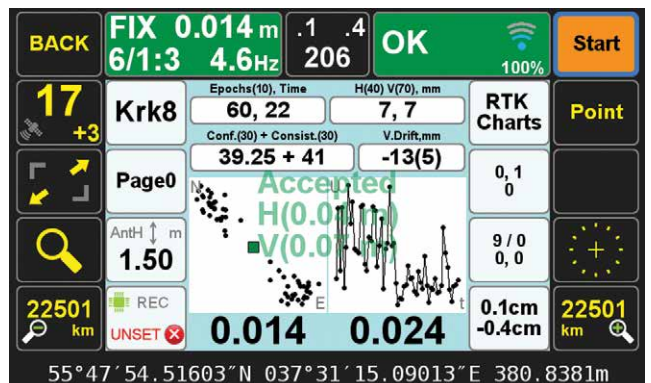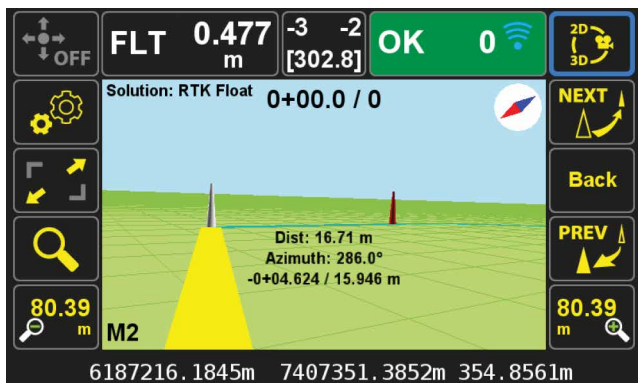
We have not only integrated a sophisticated magnetic locator in the TRIUMPH-LS, but we have also streamlined the whole process. First, the "Stakeout" screen will guide you towards the target.

Then the "Mag" screen locates your underground target and determines its coordinates. You can also save this point.

And finally in the "Collect" screen, you can survey the target point which you have dug up and exposed. This is also the time to use the **built in camera** of the TRIUMPH-LS to photograph and fully document the evidence which you have recovered.

We have shown many J-Tip internal details to show the sophistication embedded in it. Its operation is much easier than conventional magnetic locators.

1 Equip and park your car.

2 Start Base

Disconnect	Start Base	O

5 ⊻ Receiving ⊻ OK — Rover: Triumph-LS 9DT_00281 / Base: JAVAD GNSS 35006

Uhf5hznew
Base ID: 0
Ref. Frame: WGS84(ITRF2008)
Format: RTCM 3.0 Min
Period: 0.2 Sec
Frequency: 461.02500 MHz
Mod.,Band.: D16QAM, 25.0 KHz
FEC,Scrmb: On, On
Out. Power: 30/15 mW/dBm

[Base] Ref42
55°47'55.30679"N   2D Delta: 0.66 m
037°31'15.48313"E   Δ H: -0.45 m
361.0235m   Azimuth: ---
WGS84(ITRF2008)
@2005.0000
Ant.Type: JAVTRIUMPH_1MR NONE
Ant.Height: 0.0 m   Vertical

From Base	To Base	Recall	Copy As	Done

After your field work, sip your favorite drink... ...while we fill the other 5 buckets.
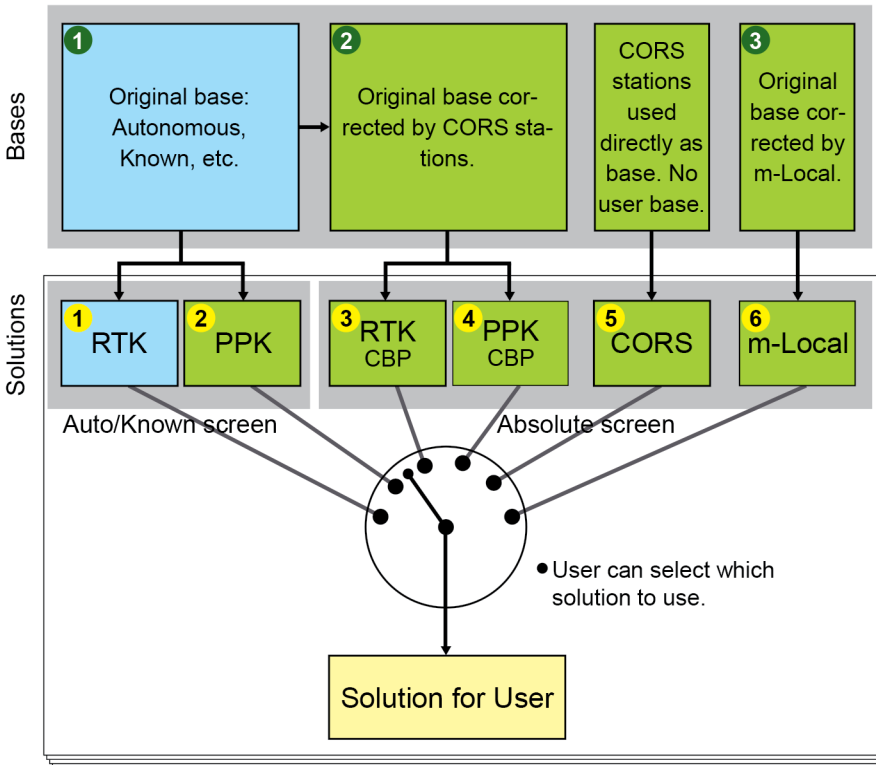
Mount your base on your car, park it in any unknown location and start the base. Perform your RTK work. Then download the base data in your TRIUMPH-LS rover. We will do the rest as follow:

TRIUMPH-LS will send the base data to DPOS, which will process it with CORS stations, and will determine the accurate position of the base and then corrects all of your rover points. DPOS also post processes the rover data and ensures that RTK solutions were correct and applies the base corrections to these solutions as well.


Base	AUTO	O	CORS Fixed	O	2-Local Calculated	O
N, m	+2.045		-0.002		14647.056	
E, m	-0.273		-0.001		1414.587	
U, m	+3.535		-0.013		349.623	
RMS, mm	1303, 1615		14, 9		1303, 1615	
Epochs / s			3124 / 3161			
Sats	9+7		10+9		9+7	
Stat			1			

Initial base position can also be corrected by the rover occupying one or more known positions. This screen shows the initial and corrected positions of the base both by CORS and by m-Local known rover occupations.

ABS	RTK$_{BCP}$ Fixed	O	PPK$_{BCP}$ Fixed	O	CORS Fixed	O	2-Local Calculated	O
N, m	-0.002		-0.000		+0.008		14647.060	
E, m	-0.001		+0.000		+0.005		1414.587	
U, m	-0.013		+0.009		-0.026		347.781	
RMS, mm	4, 3		4, 4		15, 9		4, 3	
Epochs / s	2956 / 602		601 / 601		601 / 601		2956 / 602	
Sats	8+7		8+7		8+7		8+7	
Stat	36 / 4400		1		1			

All rover positions (initial RTK, Post Processed, corrected with CORS and corrected with m-Local) are shown in this screen. User can select the desired solution. Statistics and differences are shown as well.

If the **Jedi** returns
J-Shield is ready for it!
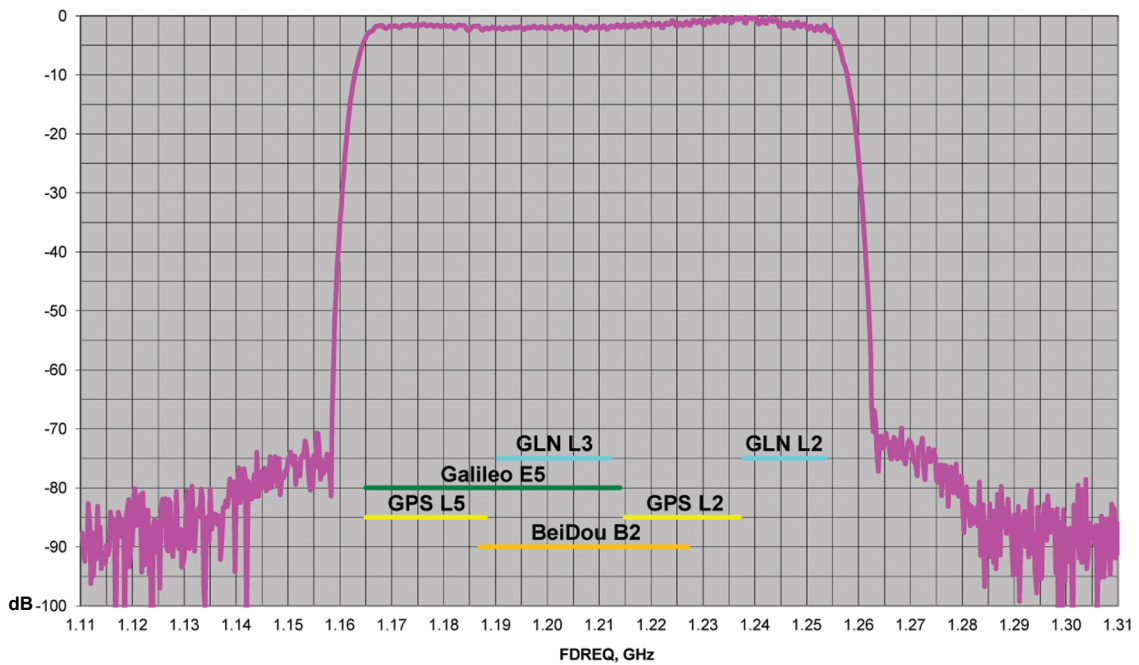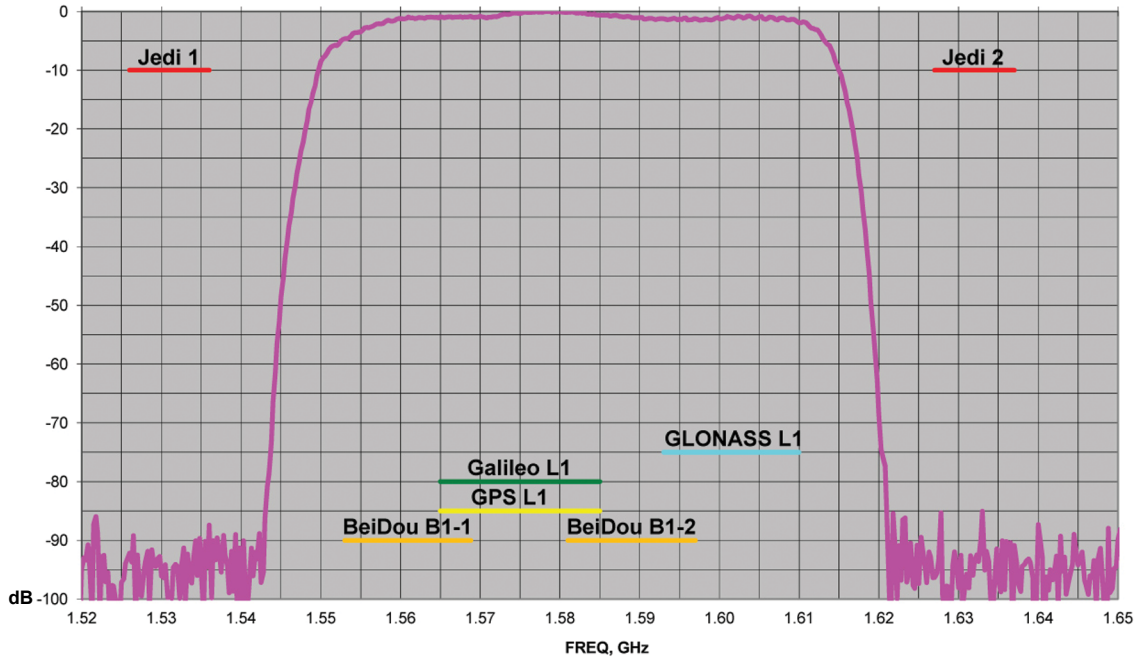
J-Shield in TRIUMPH-LS
protects all GNSS Bands