Existing high precision GNSS receivers were not designed with LightSquared in mind and do not have protective filters. Javad GNSS has developed solutions to ensure your systems are compatible with LightSquared.

We have also invented a unique solution for timing applications in which we dynamically compensate for group delay variations with the accuracy of better than 100 picoseconds. We are developing techniques to reduce this to better than 10 picoseconds.

All we ship are LightSquared compatible

All we ship today are LightSquared compatible or eligible for free retrofit. We also offer to retrofit our existing receivers for $300 to $800, depending on the model.

We make competitors LightSquared compatible too!

We extend our LightSquared retrofit offer to receivers made by other manufacturers as well.

We also upgrade theirs

We offer not only to retrofit them to be LightSquared compatible; but we can also upgrade them to receive new GPS, GLONASS, and/or Galileo signals. All existing receivers that cannot track new GPS signals (L1C, L2C, L5) will soon be obsolete.

See www.javad.com

If you own a high precision GNSS receiver from another manufacturer and want to make them LightSquared compatible and/or upgrade them to receive new GPS signals, visit our website, www.javad.com, for details.

We were the first to

• Combine GPS and GLONASS • Track GLONASS-K L3 CDMA • Track Galileo E5 altBOC • Track Chinese Compass • Offer 12 (1989), 76 (1999), and 216 (2007) channel GNSS receivers.

We received highest score in Japanese CORS “GEONET” selection process and received USGS award for its high precision networks.

We are the only company who offers GNSS receivers with

• Galileo • QZSS and its L1C signal • GPS L5 • GLONASS • Mitigating SVN-49 anomaly • Best multipath reduction (German Aerospace report) • Lift & Tilt survey • Interference Analysis feature • In-band interference rejection feature • Calibrating GLONASS inter-channel biases (0.2 mm) • Fully integrated high precision GNSS RTK system • 6-pack RTK engine of up to 100 Hz.

LightSquared Inside

And Now...

Protected from ...
Compensated for ...
and Integrated with... LightSquared.

- LightSquared not only can coexist with GPS... It complements it.
- TRIUMPH-LS can benefit from LightSquared communication channels for receiving RTK corrections.
- LightSquared communication channels are much faster and less expensive than conventional channels for RTK correction transmissions.

Introducing TRIUMPH-VS

Revolutionary new GNSS complex that combines high performance 216-channel GNSS receiver, all-frequency GNSS antenna, and a modern featured handheld.

- Complete RTK rover unit

TRIUMPH-NT

- Where you don't need internal GNSS antenna

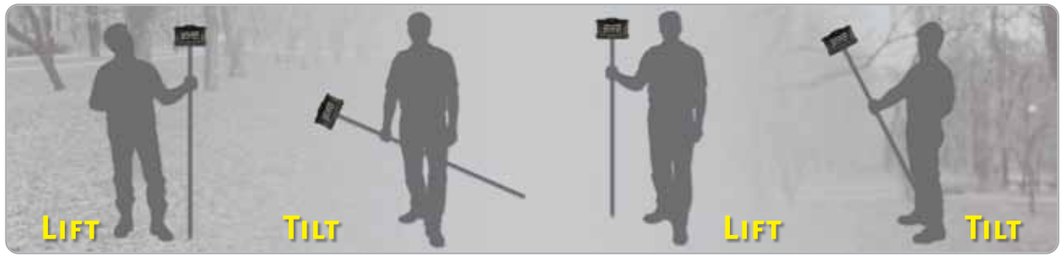
Same as TRIUMPH-VS but without internal GNSS antenna, inclinometers, compass and cameras.

VICTOR-VS

- 4.3-inch display of 800x480 pixels
- Integrated camera 3 Mpixels

We complete our receivers with an ultra-rugged Windows CE controller for Field Applications. VICTOR-VS is powerful, waterproof, shockproof and versatile.

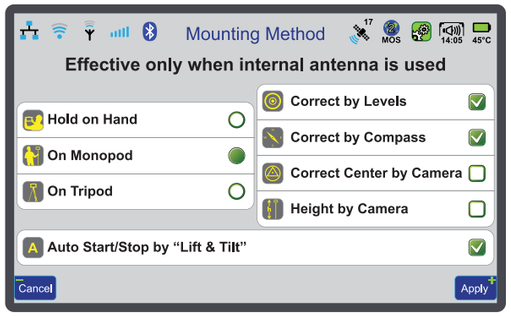
Don't Look! Don't Touch! ... Survey with Lift&Tilt



It seems TRIUMPH-VS reads your mind! Many sensors, intelligence, and innovations inside TRIUMPH-VS bring this new revolution to surveyors.

You don't need to look. You don't need to touch.

First, put TRIUMPH-VS in "Lift & Tilt" mode.



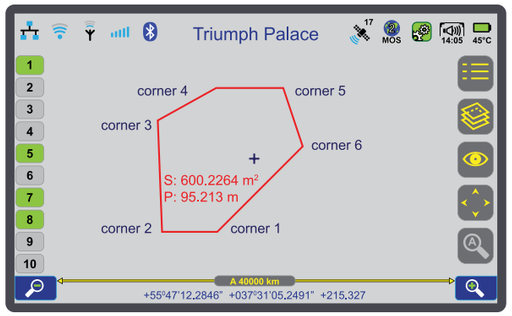
- Then, go to the survey mark, lift TRIUMPH-VS to near vertical (better than 5 degrees). Survey will start automatically and sensors continuously compensate for leveling offsets. Audio tones keep you informed of the survey progress. You can use a headset if you are in noisy area. You can also take notes by talking to TRIUMPH-VS.

- When you are happy with the survey result, just tilt the TRIUMPH-VS (more than 15°) and walk to the next point. TRIUMPH-VS will close files automatically.

- Then go to your next point. Lift it up and do again as you did in the previous survey point: Do Nothing! Just lift it up to near vertical.

- When you are happy again, tilt it again, and walk to the next point. Points and file names will auto-increment. You can over-write names if you like.

- If you are doing a parcel survey (for example) after the last parcel point, push "Parcel End" and see the parcel map, parcel area and parcel perimeter instantly.



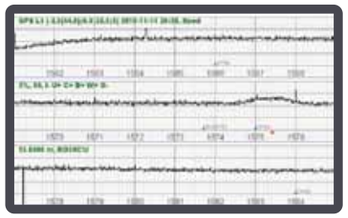
See who jams your GPS/GNSS

TRIUMPH-VS

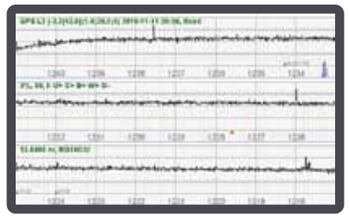
shows interferences in all GNSS bands
Including LightSquared possible interferences

Your GNSS receiver sometimes does not track satellites? Sometimes RTK solutions get stuck in “Float”, or take longer to converge to “Fixed”? You may have interferences in one or more of your GNSS bands. In addition to harmonics of signals like local TV and radio stations, now there are $10 GNSS jammers on the market that interfere with GNSS signals as well!
The GNSS interference analyzer feature of TRIUMPH-VS does much more than a generic $30,000 spectrum analyzer. TRIUMPH-VS shows interferences by analyzing signals before RF and after digital sections and quantifies how much interference is in your neighborhood. See the reverse side for more detail.

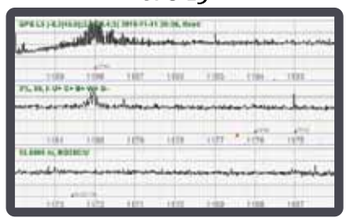
GPS L1



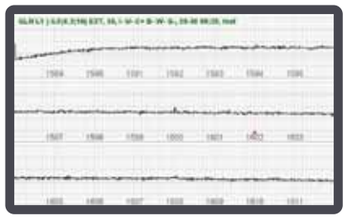
GPS L2



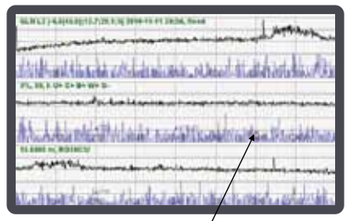
GPS L5

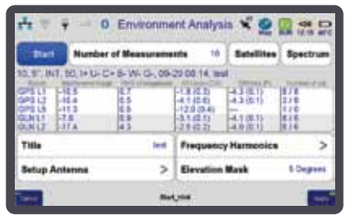


GLONASS L1



GLONASS L2





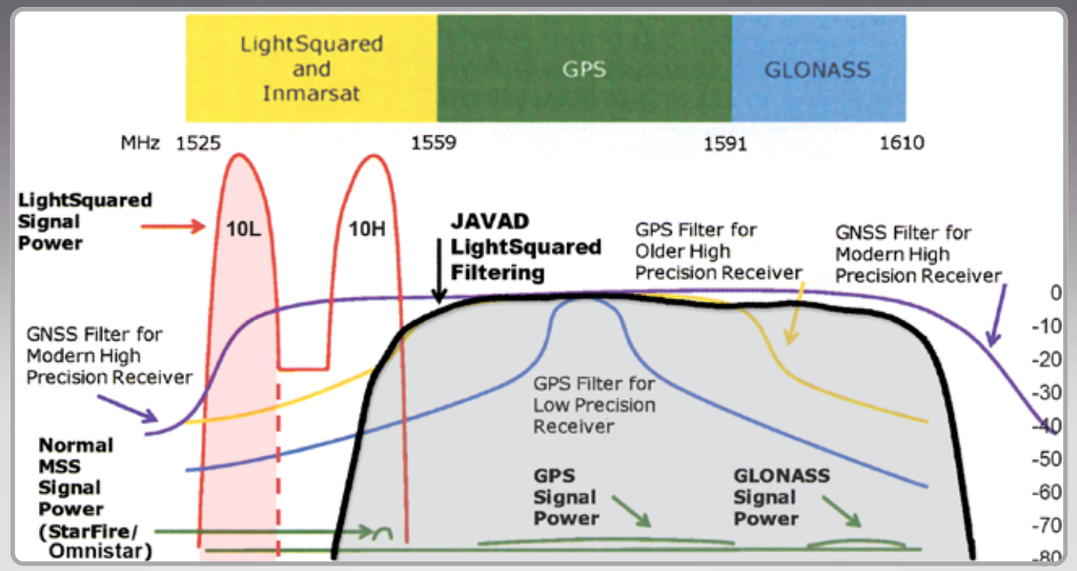
Center of the Band

TRIUMPH-VS not only scans the GNSS bands and shows the shape and frequencies of the interferences, but it also quantifies the magnitude of the interferences in two distinct and complementary ways: a) by analyzing the analog signal and determining the “Interference Magnitude”, and b) by analyzing the S/N (Signal-to-Noise ratio) of all satellites’ signals after they are digitized and processed (after code and carrier correlations) and determining the “Satellites S/N loss” due to interferences.

“Interference Magnitude” is determined by analyzing the amount of gain that we can apply to the GNSS signal before digitizing it. The more interference there is, the less we can amplify the signal to avoid saturation. We can determine the “Interference Magnitude” by comparing the actual amplification magnitude with our nominal amplification magnitude (when no interference exists).

“Satellites S/N loss” is determined by comparing the actual measured S/N of each satellite (for each of its signals) with its nominal S/N at that elevation angle and then averaging all such deviations for all satellite signals.

TRIUMPH-VS not only analyzes and shows interferences, it also has In-Band Interference Rejection option that removes in-band interferences.



LightSquared-Protected:
Protected by the above JAVAD LNA system. For all precision positioning applications. Multipath mitigation features preserved.
November 2011

LightSquared-Compensated:
Protected by the above JAVAD LNA system and dynamically compensated for group delay variations (better than 100 picosecond). For precision timing applications.
March 2012

LightSquared-Integrated:
Same as two above plus LightSquared communication module inside.
June 2012

For the latest GNSS news and technical information visit www.javad.com