We track QZSS Satellite and its New L1C signal

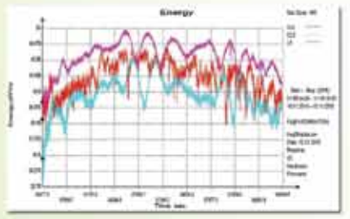
Another first: On the afternoon of Friday October 29, 2010, JAVAD GNSS engineers in Moscow tracked Japan's first QZSS satellite and its new L1C signal, as we reported earlier.

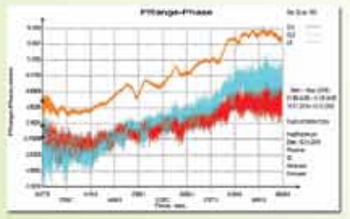
We update our report by presenting C/A, L2C, L5, SAIF and the new L1C signals that were collected on Nov 10, 2010 from 02.00 till 12.00 UTC, when QZSS-1 satellite was visible in Moscow. QZSS is the first satellite which transmits new L1C signal.

All of the current JAVAD GNSS receivers, including OEM boards, ALPHA, DELTA, SIGMA, TRIUMPH-1 and TRIUMPH-VS can track QZSS signals with a software update. The software upgrade may be released as early as next week.

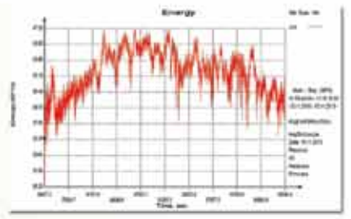
Figures below show "SNR" and "code-minus-phase" plots for all the above signals

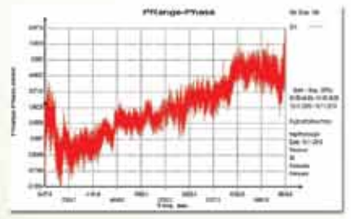
QZSS C/A, L2C, L5 signals:



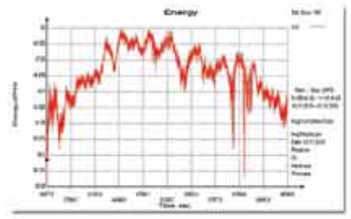


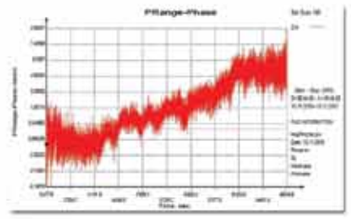
QZSS SAIF signal:

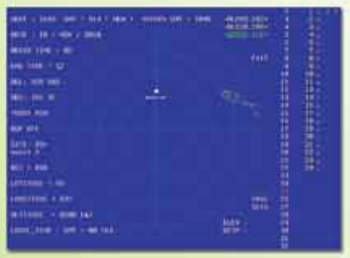




QZSS L1C signal:

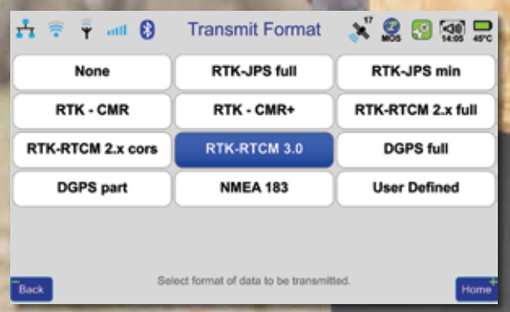


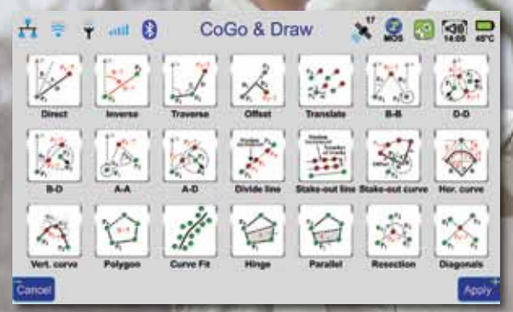


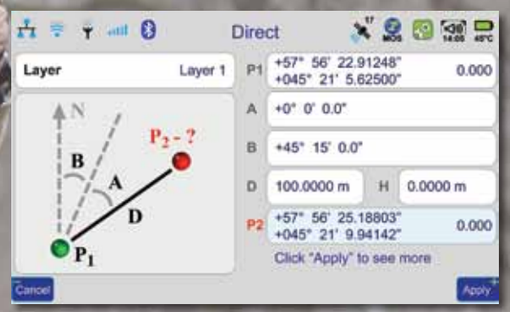


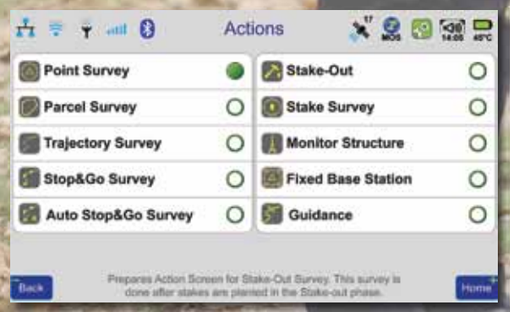
Michibiki satellite has a periodic Highly Elliptical Orbit (HEO). In Moscow it's day track is shown on the next figure.

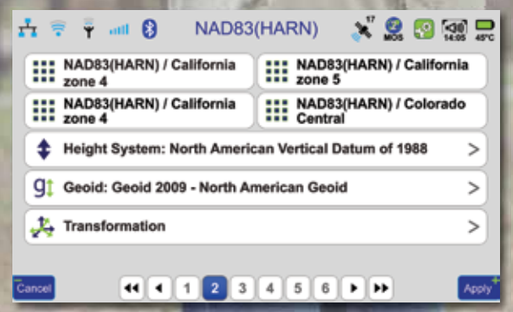
Three New Revolutionary Products



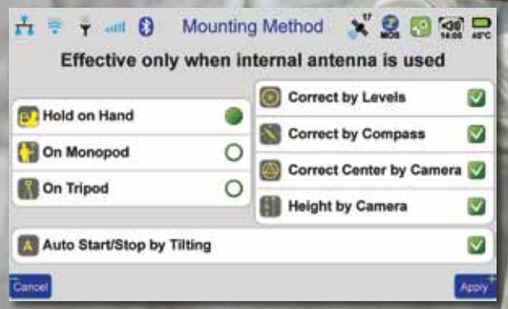








Packaged in One!



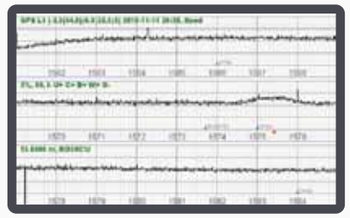
216 Channels GPS + GLONASS + Galileo Geodetic Receiver

TRIUMPH-VS shows interferences in all GNSS bands

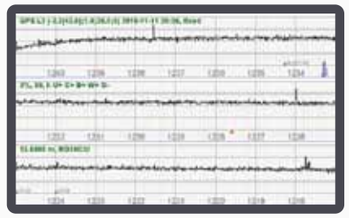
Your GNSS receiver sometimes does not track satellites? Sometimes RTK solutions get stuck in “Float”, or take longer to converge to “Fixed”? You may have interferences in one or more of your GNSS bands. In addition to harmonics of signals like local TV and radio stations, now there are $10 GNSS jammers on the market that interfere with GNSS signals as well!

The GNSS spectrum 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.

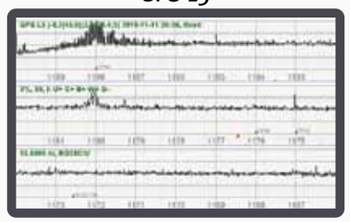
GPS L1



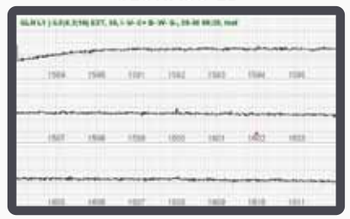
GPS L2



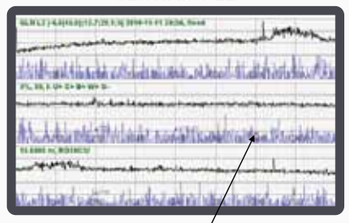
GPS L5

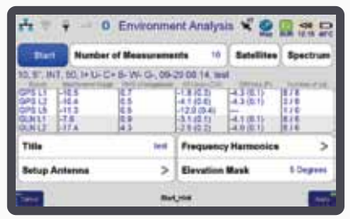


GLONASS L1



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.

German Aerospace Center (DLR) Reports

Multipath Error on Different Receivers

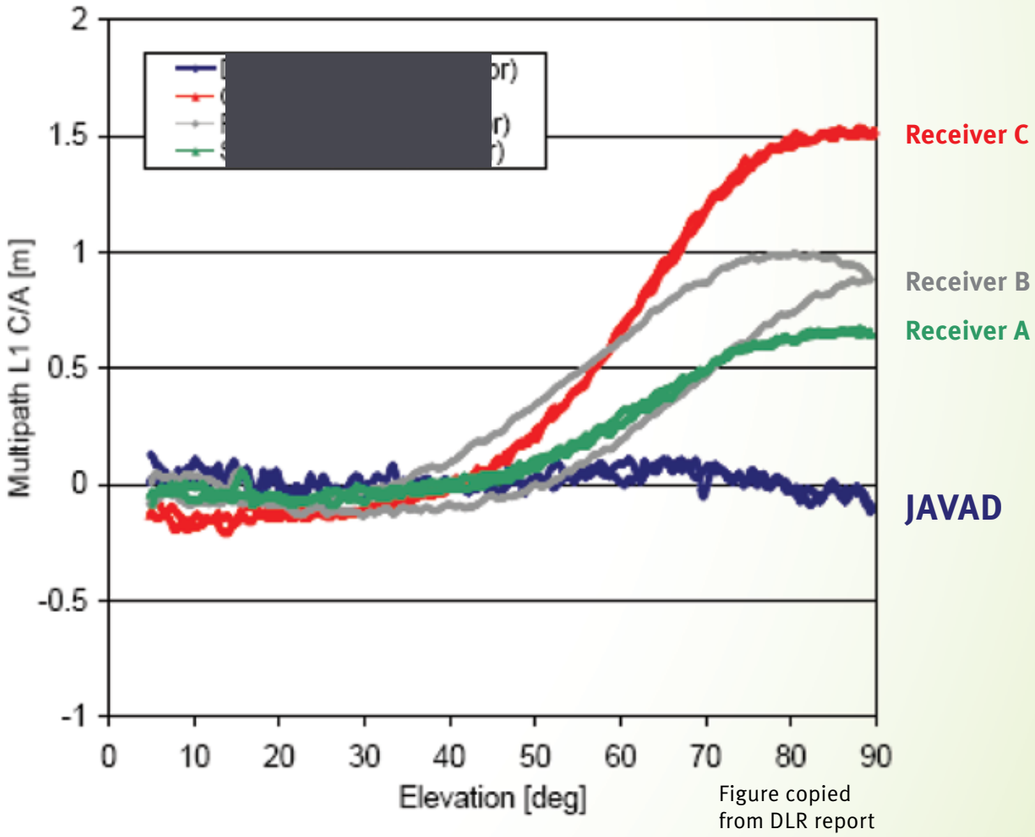


Figure copied from DLR report

JAVAD GNSS receivers virtually remove multipath errors in all elevation angles. Other receivers get affected by up to 1.5 meters!

The study was sponsored and performed by German Aerospace Center (DLR) using their 30-m dish antenna in cooperation with U.S. GPS Air Force authorities.

The complete report along with identity of other receivers will be published soon by DLR and Springer Publishing.