I am using the Triumph LS+ and Triumph 3 with all four (4) satellite constellations and cellular communication. My Triumph LS+ is updated with all the new pre-release software. I've been using the RTPK the last month or so and pretty satisfied with it thus far. I'm wanting to optimize my production and curious to see the settings everyone else uses and see if I'm doing something that is holding me up. Feel free to let me know if I need to change something. I think testing is ongoing to come up with best settings. I'll try to answer some questions but not a developer so take with a grain of salt. And, things are changing fast because on the cutting edge of technology. I can't answer many of the questions.
Hope this helps a little bit
Duane Frymire

My Settings
General Group (T3 TCP Base):
Advanced >
GNSS >

- Sytems & Signals Tracking = All available

Elevation Mask = 10 degrees There is a battle between multipath noise at lower elevations and the better DOP that lower elevations provide. I read a study that found 40 degrees result in no signals with much if any noise (in wide open). L1 bands have the most noise. At any rate, you could experiment with this. But, the receiver is supposed to be able to detect and reject signals with too much noise. This is what the SNR is doing I think, moderating that battle.

- Time System = GPS
- Reject In-Band Interference = Checked
- Tracking Loops = Very Fast *Curious to see if I need to go to just Fast or Medium?
- Tracking Mode = Guided *I see some people using independent. What is the difference and which is better? Independent is latest word.
- Timing Signals = All are default *Do I need to change any of these? I wouldn't mess with those.
- SBAS Code Diff Position = Checked

RTK/DGPS >

- RTK Rate = 0.2 Sec *Is there better results by slowing down to 0.5 Sec or 1 Sec? No, best results are 0.2 Sec with upsampling checked. This has to do with the "beast mode" or true 5 hz rtk and was an improvement over previous way.
- Use data for up to = None
- Data UpSampling = Checked
- Engine 3D Guard = 0.2 ft
- Advanced RTK Settings >

Reset Tracking = 60 Sec
Smart Reset = Checked

Use Beidou Geostationary Satellites = Checked Not sure it matters, but I would uncheck. I think you would only receive these in Asian market and they were first ones used. Plenty of other signals available that are more modernized.
Engine 1 = All default except for Min SNR = 35 *This is pretty big as I've seen a lot of differences in the number of satellites especially if you go above 35, it seems to not recognize as many. Yes, it's important engine one isn't overloaded with too many signals as it provides other functions. So I would expect snr to be higher for engine one to filter out more noisy signals. But again it's a competition between GDOP and low elev multipath. Last I heard you could use anything above 20, with 23-25 mentioned as a target. I think I would use the default as these are modified through testing. But you could experiment.
Engine 2 = All default except for Min SNR = 30 *Same as Engine 1
Engine 3 = All default except for Min SNR = 30 *Same as Engine 1
Engine 4 = All default except for Min SNR = 30 *Same as Engine 1
*Does changing the AFCL to High (99.9%) or Low (95%) change my results significantly? Subject to testing, but theory is better to have 2 engines fix at lower probability than one engine at highest. Should be faster and more reliable.
*Max signals are all 38, does this need to change? I think current recommend is 30-33 on engine one and 38 on the rest.
*Reset it from Far from STDL are all 20.0. What does this mean and does it need to change?

Antenna, TCP Server, Remote FTP Server, Units, Real-time Position-Shift, and Base Reference Frame >

- Are defaulted or set to personal preference.

Action Setup (Boundary):

How to stop >

- Automatic after = 90 Epochs
- Minimum Duration = 90 Sec
- Maximum Duration = 600 Sec
- Auto Accept H = 0.049 ft V = 0.23 ft
- Auto Re-Start

Verify >

- Verify with Engines Reset
- Minimum Phase-1 Duration = 30 Sec I don't think you need any minimum phase-1 with all constellations.
- Confidence Level = 5
- Confidence Guard = 0.131 / 0.23
- Show on Screen = 6 Groups
- Consistency Level = 0
- Min RTK Engines = At least 1 This has to do with the confidence level mentioned elsewhere. Using one engine you would want confidence level at 95% or more I think.

- Validate Result = with at least 1 Engine I would use same number in validate as above, because of confidence levels.
- Reset Engines at Start = Checked

Activate DPOS option after = 10 Min

Options >

- Auto Setup RTK = 25 Sec *What do I need to change it to? This will retry to find best signals at intervals if you are not getting a fix I think. Experiment.
- Enable Post-Processing on the device = Checked Yes, needed for RTPK.
- Correct for Tilts = Checked Uncheck for precise work like monuments or control.
- Prefer RTPK = Unchecked You will have to decide after comparing results for awhile.
- The rest are personal Preference

The rest are Personal Preference.

In GNSS collect data Mode -

- Independent or Conventional? Don't know really which to use? I've been using Conventional. Latest I've heard is use Independent. I forget exactly the difference, but independent supposed to be better if you have the computing power (LS+).
- In Auto Setup Strategy
    - Strategy = System Based *What exactly does this mean? I sometimes swap these up and it seems to help with getting a fix one way or the other. I think this prefers GPS and then fills with best other signals. Best of all doesn't prefer any system over the other, just tries to take all and use best.
    - No Same Frequency = Unchecked *It's always unchecked. Do I need to check it? More than one signal in the same frequency. I guess the theory is if one frequency has a lot of disturbance you might be better limiting to only one signal from there and forcing it to use signals from other frequencies to complete the solution.
    - Use AltBOC Galileo and Use AltBOC BeiDou = Checked These are supposed to be really great, especially in multipath environments. They are also really new, I think JAVAD was first to implement them. Some early testing showed BeiDou messages occasionally had problems. Haven't heard anything on it lately, but if you suddenly start having trouble getting fixes try unchecking it.

Under Base/Rover Settings -

- Format = RTCM 3.2 MSM3 *Do I need to change? I think you want MSM3 "short". I'm told the longer message has unnecessary information and adversely affects radio range due to more information in the message.
- Signals = same as before
- Base Guard = Default
- DPOS Configuration

    - Process All raw GNSS Points = Checked *I was reading where I need to probably uncheck while using RTPK? Unless recently changed, RTPK will be overwritten unless you uncheck this.
    - Preferable Network = CORS (US)
    - Base-Rover + Base Cors Processing = Checked
    - Advanced
        - Use Data UpSampling in CORS Processing = Checked
        - Use DEBUG Server to Process Data = Uncheck *Do I need to Check it? Only if having trouble processing.
- Broadcast Period = 0.2 Sec *Do I need to change? No I don't think so.
- The rest are Personal Preference

If I could get some answers to these questions or comments about any of these that would be really helpful.

Thanks in advance.