

Applicable Testing and Associated Challenges

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GPS ABC Workshop

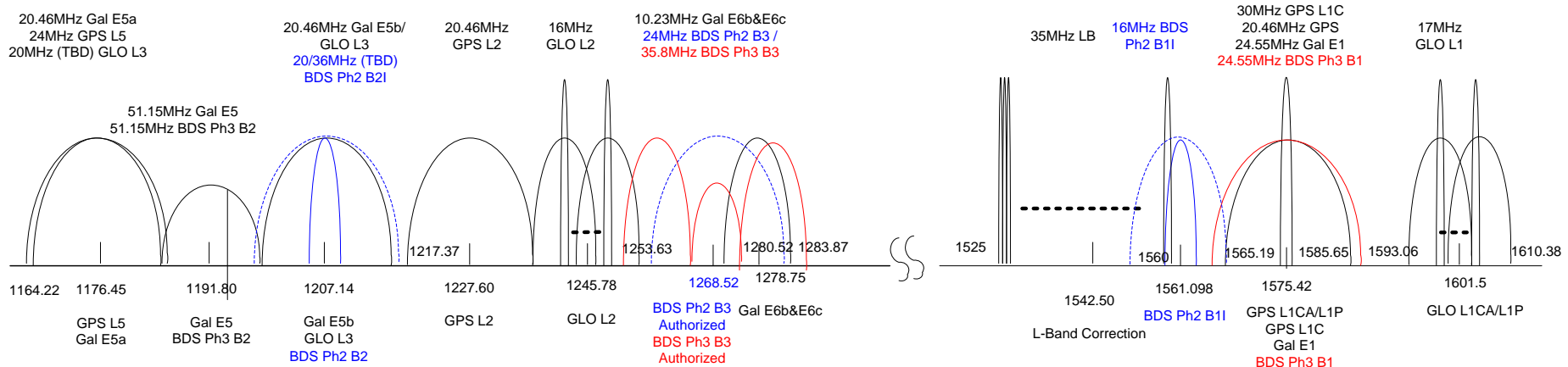


Outline

- NovAtel Context
- Clarifications/Questions around standard definition
- Test Procedure questions/comments

NovAtel Context to Set 1 GPS L1 Only

- NovAtel receivers are wideband, at a minimum of 20MHz to adequately capture the full L1 CA main lobe
 - To achieve 4 cm code and 0.5 mm carrier phase measurements on GPS L1
- GPS L1 only users are typically a SW restricted on HW that is capable of multi-frequency and multi-constellations



Metric: SNR Degradation while Tracking

- Tracking vs Acquisition is key though
 - Acceptable delays in acquisition will depend on the application
- Is the intent worst case or nominal case?
 - Also very application dependent
 - 100% operation may be required for some, while intermittent drop outs okay for others

Threshold: 1 dB of CN

- Agreed that a 1 dB drop in CNo should not affect measurement or positioning accuracy
- Practical reliable measurement of 1 dB may be problematic
 - Perhaps measure 3 dB drop point and apply an offset to create a clean 1 dB drop line
- Mask reference point must be clear
 - Receiver input vs antenna LNA input
 - Active antenna typically used in high precision applications
 - Antenna element effect can be added as a correction

Interference Wave Form: CW

- Related to worst case vs nominal case
 - 5 MHz steps vs 1 kHz steps
 - Worst case is CW interference lined up with 1 KHz spacing of CA spectral lines
 - Chirp interferer has a higher probability of lining up with CA spectral lines
- Initial CW level must be well defined in test set up
 - As well as time between measurements to allow CNo to settle

Signal Scenario

- Simulator or Live?
 - Simulator is more repeatable/controllable
- 1 SV vs multiple SVs
 - 1 SV is easiest to define and set up
 - More grey areas with multiple SVs
 - Effect on positioning due to individual SVs being interfered with will depend on geometry
 - Number of SVs in view will depend on application, and specific of that applications
 - 9 SVs reasonable in some places, in many other only 3 or 4 SVs is typical

Margin for the Mask?

- Test equipment accuracy
- Unit to unit variation of units under test