Navigation Signal Generation Unit (NSGU)

Satellite Navigation depends on truly precise signals, signals that convey accurate satellite time and ephemeris. The use of digital synthesis guarantees the high qualities as required for Galileo. The Navigation Signal Generation Unit (NSGU), generating these signals, is already under development.

Main Features:

- Composition of Navigation Data
- Generation of Navigation Ranging Codes
- Signal Generation in E5a, E5b, E6 and E2L1E1 bands
- Full Digital Signal Formatting and Modulation
- Reconfiguration Flexibility for Data, Rates and Codes
Signal Generation supported by NSGU

<table>
<thead>
<tr>
<th>Band</th>
<th>ESA</th>
<th>E5B</th>
<th>E6</th>
<th>E2L1E1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency (MHz) after upconversion</td>
<td>1176.45</td>
<td>1207.14</td>
<td>1278.75</td>
<td>1575.42</td>
</tr>
<tr>
<td>Multiple Access</td>
<td>CDMA</td>
<td>CDMA</td>
<td>CDMA</td>
<td>CDMA</td>
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<tr>
<td>Sub-Carrier</td>
<td>I</td>
<td>Q</td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>Sub-Modulation</td>
<td>BOC (10.5)</td>
<td>BOC (m,n)</td>
<td>BOC (2,2)</td>
<td></td>
</tr>
<tr>
<td>Purpose</td>
<td>DATA</td>
<td>Pilot</td>
<td>DATA</td>
<td>Pilot</td>
</tr>
<tr>
<td>Power Share (%)</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>25</td>
</tr>
<tr>
<td>Code Rate (Maps)</td>
<td>10.23</td>
<td>10.23</td>
<td>5.115</td>
<td>5.115</td>
</tr>
<tr>
<td>Primary x Secondary Code Length</td>
<td>10230x20</td>
<td>10230x100</td>
<td>10230x160</td>
<td>10230x50</td>
</tr>
<tr>
<td>Service Data Allocation</td>
<td>OS</td>
<td>NA</td>
<td>OS</td>
<td>NA</td>
</tr>
</tbody>
</table>

Signal Service Definition:
OS: Open Service
SOL: Safety of Life Service
CS: Commercial Service
PRS: Public Regulated Service

History:
- 1999: Delivery of GNSS-2 Payload Processor Unit in the frame of GNSS-2 Comparative System Studies
- 2001: Kick-off of Navigation Signal Generation Unit Contract

Coming soon:
- Mid 2003: Delivery of a breadboard

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