



Positioning Leadership

APN-049 Rev 1

September 11, 2008

SUPERSTAR II Messages for OEMV

OEMV 3.500 introduces the ability to use SUPERSTAR II (SSII) ID #20, #21 and #33 messages on OEMV cards. We added this functionality to simplify interoperability with SSII products and to ease transition from SSII to OEMV.

NovAtel discontinued the SSII family of products and the last order date has passed. NovAtel will continue to provide technical services and repairs until June 30, 2011.

Behavioral Changes

Details on Message IDs #20, #21 and #33 are in the [L1 GPS Firmware Reference Manual](#), available on our website. This application note adds information about OEMV-specific behavioral changes. The behavioral changes are:

- Message ID #20 and Message ID #21 always report the WGS84 datum type, even if another datum was used
- Message ID #33 only reports in-view satellites above the elevation cut-off angle
- SSII self-test and initialization system modes do not exist on an OEMV
- Sets 'Differential Corrections Available' flag, in Message ID #33, to 'ON' if the observation used in the filter had differential corrections applied to it, so there may be observations that have differential corrections available but are not flagged if the receiver does not use them in the solution
- Number of satellites in the solution may exceed 12 since the OEMV has more channels (16) than the SSII (12)
- Message ID #33 only reports on GPS and SBAS satellites, even if the solution uses GLONASS satellites
- OEMV's Dilution of Precision (DOP) replaces SSII's Figure of Merit (FOM)

OEMV Interface Configuration

These messages are for output only. Use only NovAtel commands to request these messages and to configure the OEMV receiver. You cannot configure the receiver with SSII binary commands.

To request Message ID #20 at 5 Hz, send this command:

```
LOG COM1 SSIIMSG20 ONTIME 0.2
```

To request Message ID #21 at 5 Hz, send this command:

```
LOG COM1 SSIIMSG21 ONTIME 0.2
```

To request Message ID #33 at 1 Hz, send this command:

```
LOG COM1 SSIIMSG33 ONTIME 1
```

SSIIMSG20 and SSIIMSG21 are populated from the NovAtel BESTPOS and BESTXYZ logs respectively. SSII NAV Modes, in Message ID #20 and Message ID #21, correspond to certain position mode, and solution status, values in BESTPOS and BESTXYZ.

Specifically:

SSII NAV Mode 2: **NAV 3-D**

corresponds to OEMV Position Type: **SINGLE**

SSII NAV Mode 4: **Differential 3-D** and Differential Source Selection 0: **SBAS**

corresponds to OEMV Position Type: **WAAS**

SSII NAV Mode 4: **Differential 3-D** and Differential Source Selection 1: **DGPS**

corresponds to OEMV Position Type: **PSRDIFF**

SSII NAV Mode 0: **Initialization Required**

corresponds to OEMV Solution Status: **INSUFFICIENT_OBS**

SSII NAV Mode 3: **Altitude Hold (NAV 2-D)**

corresponds to OEMV Position Type: **FIXEDHEIGHT**

SSII NAV Mode 8: **Base Station**

corresponds to OEMV Position Type: **FIXEDPOS**

See also the following:

OEMV Firmware Reference Manual for BESTPOS and BESTXYZ details

<http://www.novatel.com/support/docupdates.htm#oemv>

L1 GPS Firmware Reference Manual for Message IDs #20 and #21

<http://www.novatel.com/support/docupdates.htm#a2>

PDP Filter and GLIDE Application Note for details on L1 positioning filters

<http://www.novatel.com/support/applicationnotes.htm>

Final Points

If you require any further information regarding the topics covered within this application, please contact:

NovAtel Customer Service

1120 – 68 Ave. N.E.

Calgary, Alberta, Canada, T2E 8S5

Phone: 1-800-NOVATEL (in Canada or the U.S.) or +1-403-295-4500

Fax: 403-295-4501

E-mail: support@novatel.ca

Website: www.novatel.com