

## ENGINEERING CHANGE NOTIFICATION FORM

ECN: 80200572		REV: 1	ISSUE DATE: 11/20/2018						
TYPE OF CHANGE: Firmware Modification									
<b>DETAILED DESCRIPTION OF CHANGE:</b> The v1.15 firmware release for both the CLAW GPS Simulator and RSR Transcoder includes several functionality improvements and bug fixes.									
<b>REASON FOR CHANGE:</b> Feature improvements and bug fixes									
<b>PRODUCTS AFFECTED:</b> <table border="1" data-bbox="131 659 1458 806"> <thead> <tr> <th>Firmware Version</th> <th>Model</th> </tr> </thead> <tbody> <tr> <td rowspan="3">Firmware v1.03 and previous versions</td> <td>CLAW GPS Simulator</td> </tr> <tr> <td>RSR Transcoder</td> </tr> <tr> <td>RSR Transcoder with CSAC</td> </tr> </tbody> </table>				Firmware Version	Model	Firmware v1.03 and previous versions	CLAW GPS Simulator	RSR Transcoder	RSR Transcoder with CSAC
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Notes:									
<b>AVAILABILITY:</b> <table border="1" data-bbox="131 863 1458 932"> <thead> <tr> <th>MILESTONE</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td>ECN release for hardware change and firmware release files</td> <td>11/20/2018</td> </tr> </tbody> </table>				MILESTONE	DATE	ECN release for hardware change and firmware release files	11/20/2018		
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<b>Firmware release 1.15 for the CLAW GPS Simulator and RSR Transcoder provides the following improvements:</b>									
<b>Issue 1:</b> The method for defining the simulated GPS constellation was limited to RINEX file uploading with a command line utility or proprietary SCPI commands.									
<b>Resolution:</b> Version 1.15 adds support for Novatel binary format commands RAWEPHEMB, RAWALMB, and IONUTCB to provide the ephemeris, almanac, and ionospheric and UTC correction data in real time. This feature is useful for simulating the current live constellation that is required when switching between live and transcoded signals for Assured Position, Navigation and Timing (A-PNT) applications.									
<b>Issue 2:</b> External GPS receiver baud rate selection was limited to auto-detection of 9600 and 38400 baud.									
<b>Resolution:</b> Version 1.15 adds support for selecting AUTO mode or manually configuring the baud rate between 9600 and 115200 baud with the SYST:COMM:SER:BAUD command.									
<b>Issue 3:</b> A synchronized start between two CLAW GPS Simulators or RSR Transcoders requires sending synchronized SCPI commands to both units.									
<b>Resolution:</b> Version 1.15 adds a TIMER simulation time mode to start the simulation when the system time and date matches the defined simulation start time and date. The simulation time accuracy with an external GPS receiver and 1PPS input is at the nanosecond-level. The motion command position synchronization with the TIMER mode is within $\pm 50$ milliseconds.									

**Issue 4:**

The simulation PVT data is not available in a standard format from the SCPI interface.

**Resolution:**

Version 1.15 adds GPGGA and GPRMC NMEA output that matches the running simulation. This output is useful for comparison with the NMEA output from a target receiver connected to the simulation RF output. To support the HDOP field in the GPGGA sentence, DOP calculations were added based on all simulated satellites being received. The DOP values are also available from the SIM:HDOP?, SIM:VDOP? And SIM:TDOP? queries.

**Issue 5:**

Even with GPGGA and GPRMC NMEA output provided in the Resolution of Issue 4, separate calculations are required to determine target receiver's accuracy.

**Resolution:**

Version 1.15 adds the GPS: SCPI commands to query the horizontal, vertical and 1PPS accuracy of a target receiver connected to the external GPS RS232 port and external 1PPS input. By querying and plotting the response with the GPSCON application, the target GPS receiver accuracy can be monitored in real time while the simulation is running.

**Issue 6:**

The NMEA input over the SCPI interface with the "Upload" feature in SimCON occasionally resulted in a "Command Error" response.

**Resolution:**

Version 1.15 includes improvements in the throughput of the SCPI serial interface to prevent corruption of the NMEA input on the SCPI interface.

**Issue 7:**

The input position filtering when operating in TRANSCODE mode would cause position delays of greater than the 100 ms specification.

**Resolution:**

Version 1.15 improves the position filtering in TRANSCODE mode to better match the simulated position with the input position PVT data. Also, up to 10Hz NMEA input is supported from an external GPS receiver to further improve matching of the input position with the simulated position under dynamic conditions.

**REFERENCE DOCUMENTS/ATTACHMENTS:**

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