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1. Introduction

EB-800A evaluation kit is an user friendly tool for your evaluation of TSI's EB-800A GPS / GLONASS engine board. With its miniature size, low power consumption and superior performance, EB-800A is your ultimate choice for all embedded applications such as :

- Handheld devices (PDA, Smart phone...)
- Automotive and Marine Navigation
- Automotive Navigator Tracking
- Emergency Locator
- Geographic Surveying
- Personal Position
- Sporting and Recreation

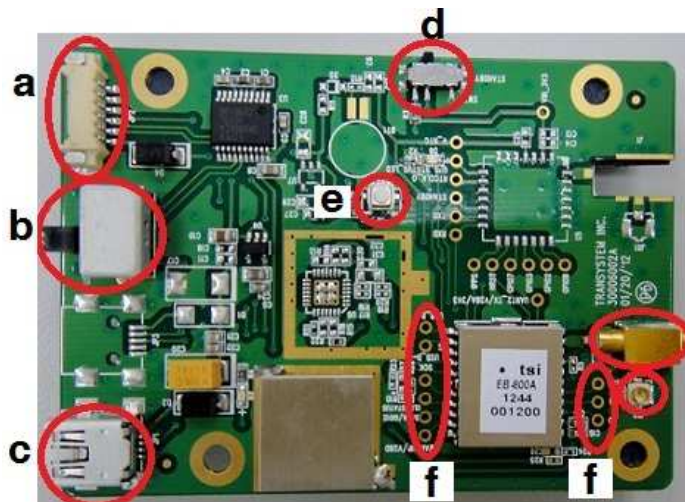
2. When you open it

2.1. Checking the package content



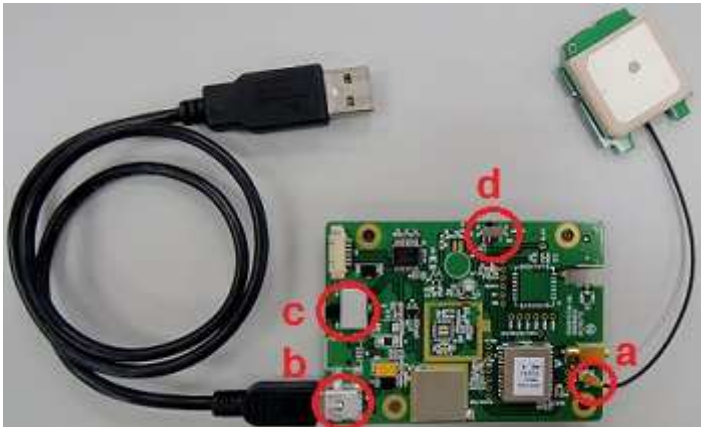
- a. USB cable *1
- b. EB-800A evaluation board *1
- c. GA-723A active antenna *1

2.2. Evaluation Board Picture



- a. RS-232 port
- b. USB & RS232 select switch
- c. Mini USB port
- d. Standby switch
- e. Hardware reset button
- f. Test point
- g. Aux RF port1 (MMCX)
- h. RF port2 (IPEX)

2.3. USB Setup



- a. Plug active antenna into the RF port2 (IPEX)
- b. Connect USB cable between EB-800A evaluation board and PC
- c. Turn USB & RS232 select switch to “USB” position
- d. Turn GPS on/off switch to “GPS on” position

3. EB View Software

Open EB View software and select correct COM port and Baud Rate and then click “On” button to establish the communication between EB-800A evaluation board and PC. If the connection is successful, the NMEA stream will keep showing.

The screenshot shows the EB View software interface with the following components:

- Status Bar:** Status | Setup | Command
- Configuration:** Please choose: 115200 | Com20 | [On]
- NMEA Stream:**

```

$GNRMC,102724.000,A,2446.3056,N,12101.0514,E,0.10,190.53,
$GPVTG,190.53,T,M,0.10,N,0.18,K,A*3B
$GPGGA,102725.000,2446.3056,N,12101.0514,E,1.12,0.77,148.0,0.0,0.0,0.0,0.0
$GNGSA,A,3,02,26,05,15,,,,,,,,,1.13,0.77,0.82*12
$GNGSA,A,3,74,88,87,81,66,72,75,65,,,,,,,,,1.13,0.77,0.82*14
$GPGSV,3,1,11,15,70,286,49,26,56,023,49,21,56,282,,05,42,052
$GPGSV,3,2,11,02,36,138,49,193,,43,41,,,,,29,,46*78
$GPGSV,3,3,11,18,,37,09,,48,08,,39*73
$GLGSV,2,1,08,88,48,272,49,65,39,345,47,75,37,112,44,87,33,21
$GLGSV,2,2,08,72,26,048,44,74,23,051,43,81,15,325,43,66,14,21
$GNRMC,102725.000,A,2446.3056,N,12101.0514,E,0.15,190.53,

```
- Globe View:** A globe showing satellite positions with callouts for satellites 02, 05, 08, 15, 18, 21, 26, 29, 41, 46, 47, 44, 43, 43, 48, 49, 50, 66, 75, 77, 81, 87. Includes 'hot', 'warm', and 'cold' status indicators.
- Data Summary:**

| | | |
|-----------------------------------------|-----------------------------------------|-----------------------------------------|
| Date: 2012/11/08 | Latitude: N 24°46'18.33" | Fix SBAS Mode: 3D NO Fix |
| Time: 18:27:25 | Longitude: E 121°01'03.08" | Speed: 0.277 km/h |
| <input checked="" type="checkbox"/> GGA | <input checked="" type="checkbox"/> GSA | <input checked="" type="checkbox"/> GSV |
| <input checked="" type="checkbox"/> RMC | <input type="checkbox"/> GLL | <input checked="" type="checkbox"/> VTG |
| <input type="checkbox"/> ZDA | <input type="checkbox"/> MCHN | PDOP: 1.13 |
| | Altitude: 148.3 | Fix Time: 0 |
- Bar Chart:** A bar chart showing signal strength for various satellites, with values ranging from 0 to 50.

3.1. Configuration

In Setup and Command Page, Output frequency of each NMEA can be changed from 1second to 5 seconds and Fix update rate can be changed from 1 time to 5 times per second. DGPS like WASS, EGNOS, MSAS can be enable or disable. Here also allow users to update the AGPS and record the NMEA sentence.

EB View
Status | **Setup** | Command

Datum: [0]wGS1984"International" [Query] [Set]

DGPS
Current Status: Enable Disable [Query]
Setting: Enable Disable [Set]

Device Name: [] [Read] [Write]

Send Command: [\$PMTK] [Send]

Satellite Channel

| Channel | SVID | SNR | Status |
|---------|------|-----|--------|
| 1 | 02 | 47 | |
| 2 | 05 | 50 | |
| 3 | 08 | 44 | |
| 4 | 09 | 49 | |
| 5 | 15 | 50 | |
| 6 | 18 | 40 | |
| 7 | 21 | 0 | |
| 8 | 26 | 51 | |
| 9 | 29 | 46 | |
| 10 | 42 | 40 | |
| 11 | 65 | 46 | |
| 12 | 66 | 44 | |
| 13 | 72 | 41 | |
| 14 | 74 | 43 | |

EB View
Version 1.0.6 Oct. 12th 2012
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EB View
Status | **Setup** | Command

Datum: [0]wGS1984"International" [Query] [Set]

DGPS
Current Status: Enable Disable [Query]
Setting: Enable Disable [Set]

Device Name: [] [Read] [Write]

Send Command: [\$PMTK] [Send]

Satellite Channel

| Channel | SVID | SNR | Status |
|---------|------|-----|--------|
| 1 | 02 | 47 | |
| 2 | 05 | 50 | |
| 3 | 08 | 44 | |
| 4 | 09 | 49 | |
| 5 | 15 | 50 | |
| 6 | 18 | 40 | |
| 7 | 21 | 0 | |
| 8 | 26 | 51 | |
| 9 | 29 | 46 | |
| 10 | 42 | 40 | |
| 11 | 65 | 46 | |
| 12 | 66 | 44 | |
| 13 | 72 | 41 | |
| 14 | 74 | 43 | |

EB View
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For example:

| NMEA output setting | + | Fix update-rate | = | Real NMEA output |
|--------------------------------|---|-----------------|---|----------------------------------------|
| GGA(1), GSA(1), GSV(1), RMC(1) | + | 1 | = | GGA(1), GSA(1), GSV(1), RMC(1) |
| GGA(1), GSA(1), GSV(1), RMC(1) | + | 2 | = | GGA(1/2), GSA(1/2), GSV(1/2), RMC(1/2) |
| GGA(1), GSA(1), GSV(1), RMC(1) | + | 3 | = | GGA(1/3), GSA(1/3), GSV(1/3), RMC(1/3) |
| GGA(1), GSA(1), GSV(1), RMC(1) | + | 4 | = | GGA(1/3), GSA(1/3), GSV(1/3), RMC(1/3) |
| GGA(1), GSA(1), GSV(1), RMC(1) | + | 5 | = | GGA(1/5), GSA(1/5), GSV(1/5), RMC(1/5) |

Note:

1. GGA(1) means GGA sentence output every 1 second, GGA(2) output every 2 seconds.
2. GGA(1/2) means GGA sentence output 2 times per second, (1/5) output 5 times per second.

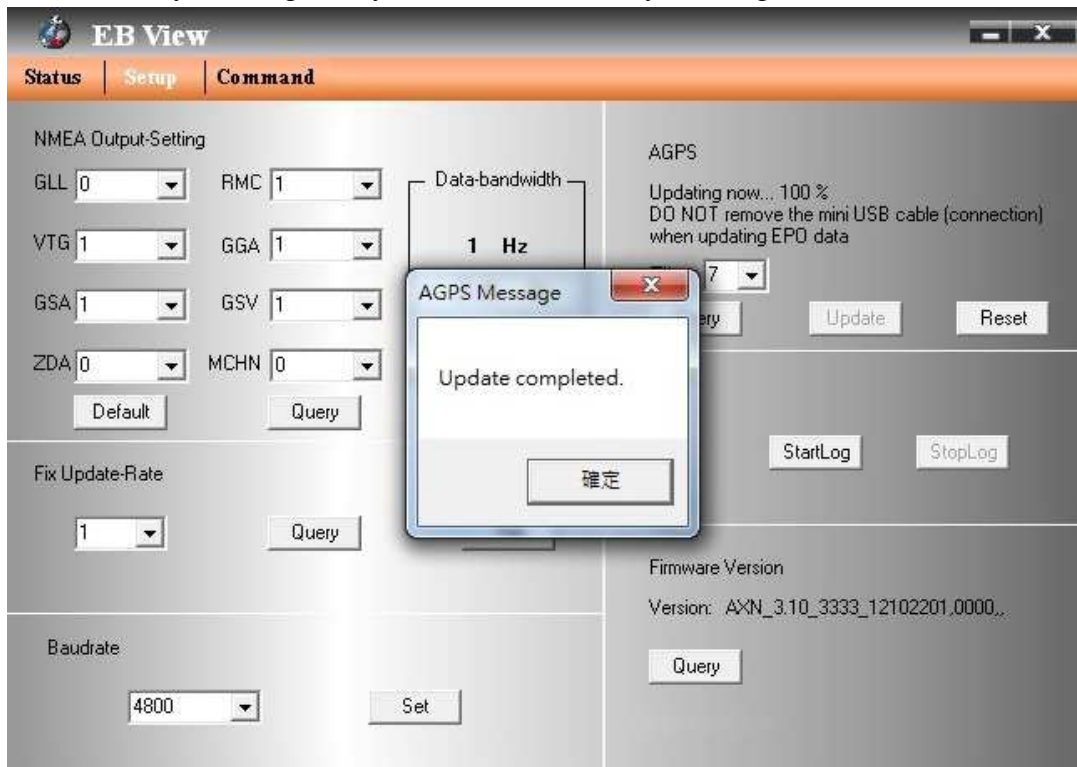
3.2. Update AGPS

Step1. Make sure you have network available for accessing the internet.

Step2. Connect EB-800A evaluation board to PC and then open EB View to establish the communication.

Step3. Go to “Setup” page

Step4. Click “Update” button under AGPS to update the AGPS data. The program will connect to the AGPS server and download the data automatically. You can also check the valid time of AGPS by clicking Query. Clear AGPS data by clicking Reset.



Note: AGPS has 7 or 14 days time limited it was depend by your select file.

4. Connector Definition

| Pin# | Signal Name | Type | Description |
|------|-------------|------|---------------------------------------------------------------------------------|
| 1 | RX1 | I | UART port 1 input |
| 2 | TX1 | O | UART port 1 output |
| 3 | PPS | O | Pulse per second output when GPS has position fix, 10% duty cycle |
| 4 | TX0 | O | GPS TX0 |
| 5 | RX0 | I | GPS RX0 |
| 6 | GND | P | Ground |
| 7 | GPIO[4] | I/O* | General input/ output, leave open if not used |
| 8 | GNSS status | O | GNSS status, blink when GPS / Glonass has position fix |
| 9 | GPIO[11] | I/O* | General input/ output, leave open if not used |
| 10 | NC | I | NC |
| 11 | Standby | I | Falling edge trigger. Back to High for normal operation. Leave open if not used |
| 12 | V_RTC_3V3 | P | RTC power 2.0~4.3V Quiescent current 2.0uA max |
| 13 | VIN_3V3 | P | Power Supply 3.0~4.2V DC |
| 14 | GPIO[3] | I/O* | General input/ output, leave open if not used |
| 15 | GPIO[2] | I/O* | General input/ output, leave open if not used |
| 16 | GPIO[5] | I/O* | General input/ output, leave open if not used |
| 17 | GND | P | Ground |
| 18 | HRST | I | Module reset, active low. Internal pull high leave open if not used |
| 19 | V28A | P | Analog power indicator, 2.8V±2% |
| 20 | GND | P | Ground |
| 21 | RF Input | I | Antenna port, L1, 1575.42MHz, 50 ohm |
| 22 | GND | P | Ground |

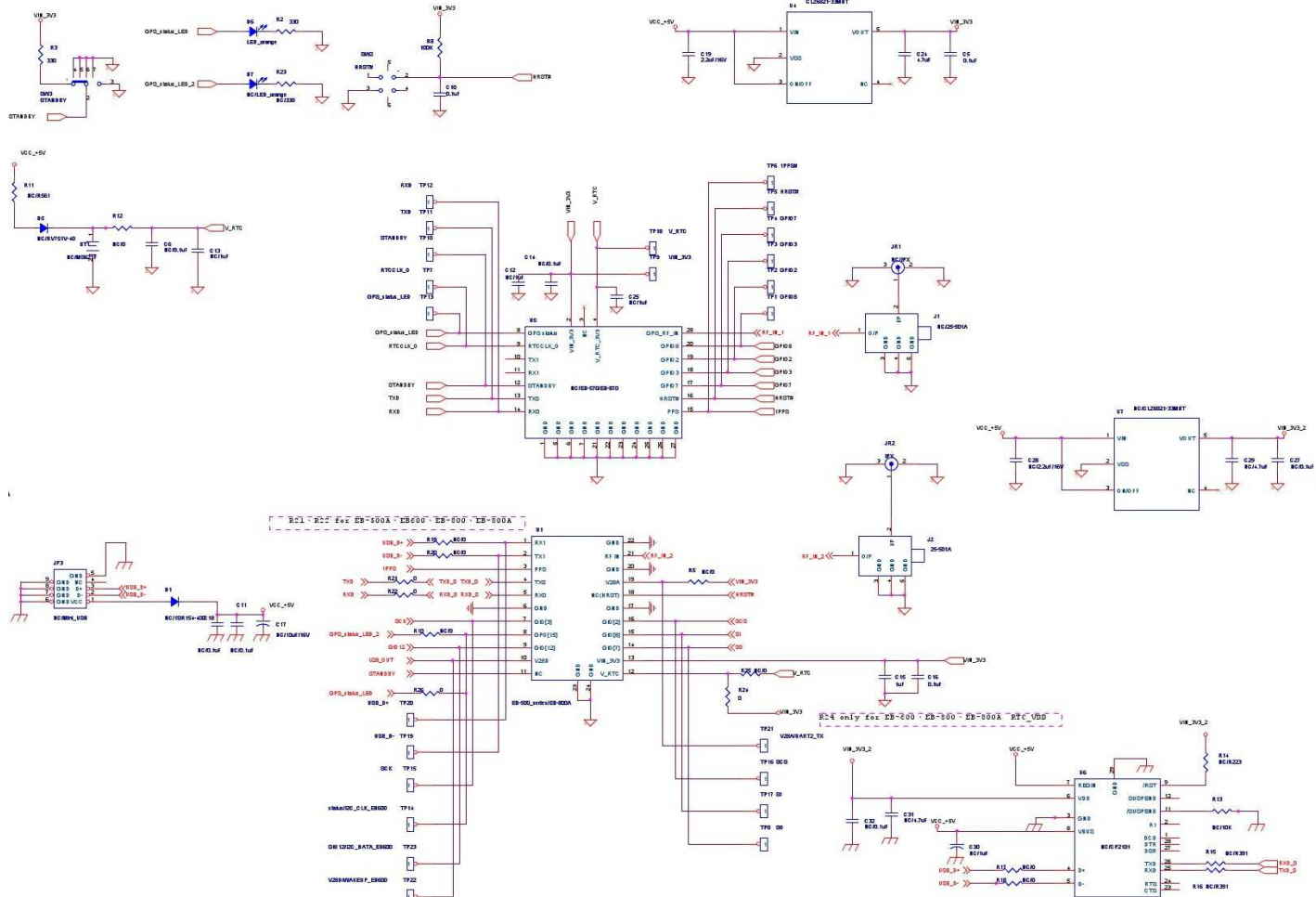
P: Power I: Input O: Output I/O*: Input or Output, Open if not used

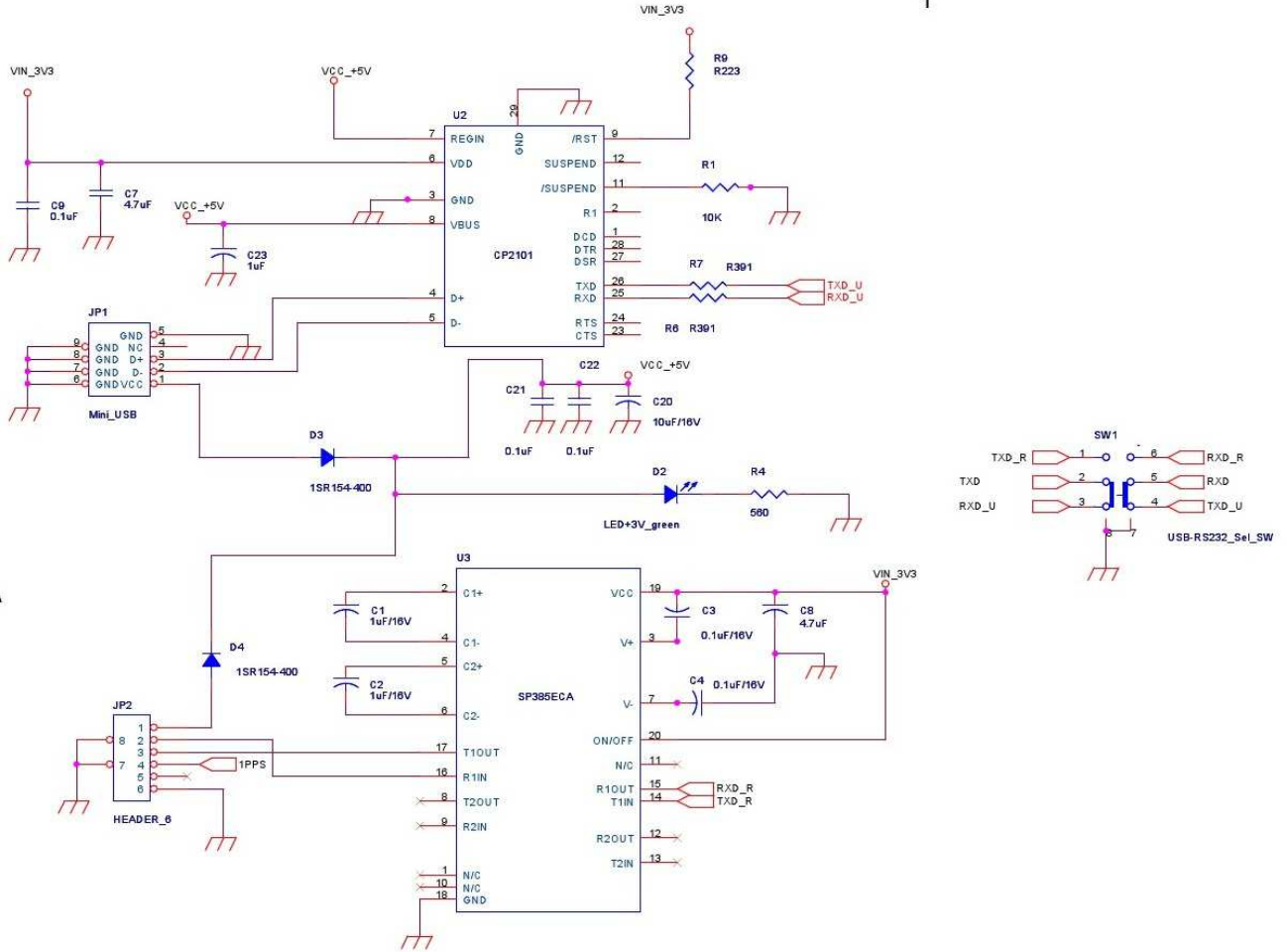
Note : GIO current output default : 4mA, Max: 16mA

EB-800A GPS Engine Board Evaluation Kit User's Manual

AN-01

5. Evaluation Board Schematics





EB-800A GPS Engine Board **Evaluation Kit User's Manual**

AN-01

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