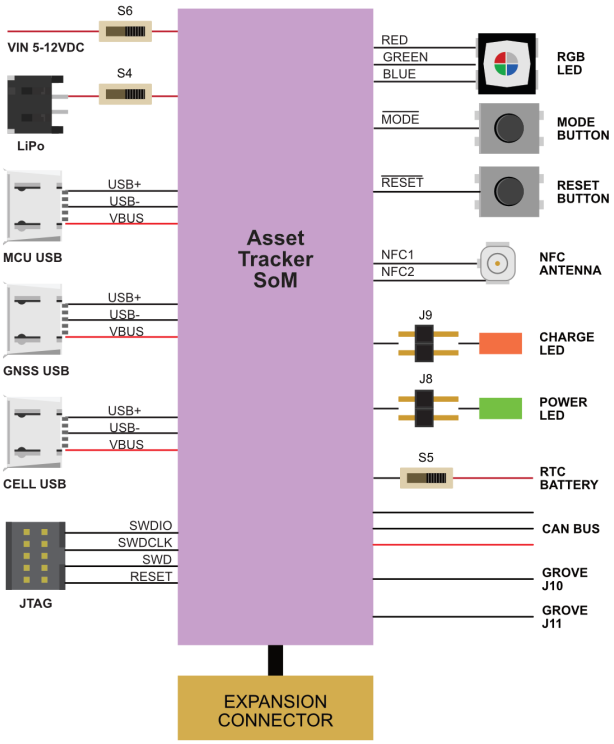
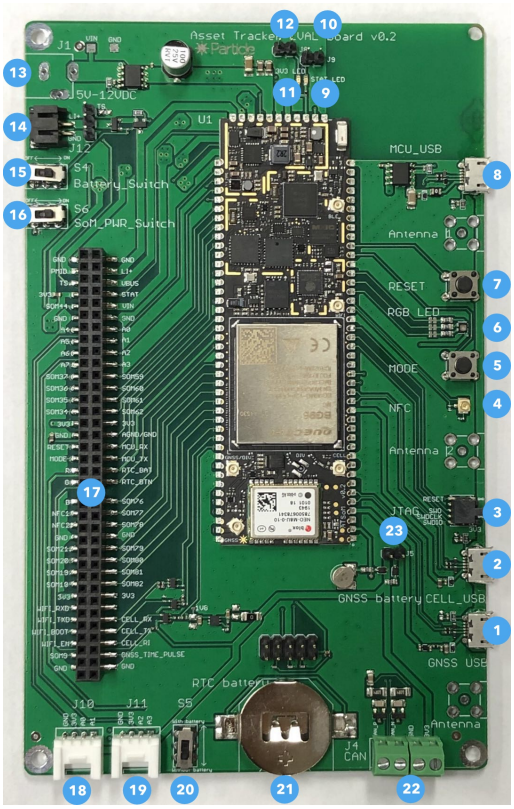
Tracker SoM Evaluation Board

This is a breakout board for Particle's Tracker SoM. The Tracker SoM Cellular GNSS module is a castellated system-on-a-module that can either be reflow soldered to your own custom base board, or can be used in this evaluation board, or the carrier board.

Block Diagram



Description



Num	ID	Description
1	GNSS USB	u-blox GNSS USB connection
2	CELL USB	Quectel cellular modem USB connection
3	JTAG	JTAG/SWD debugging connector for nRF52 MCU
4	NFC	NFC antenna connection for NFC tag feature
5	MODE	MODE button
6	RGB	RGB status LED
7	RESET	RESET button
8	MCU USB	nRF52 MCU USB for debugging. Can also power the SoM.
9	STAT LED	Charge status indicator.
10	J9	STAT LED jumper. Normally installed, remove to disable STAT LED.
11	3V3 LED	Power LED, indicates 3.3V supply is enabled.
12	J8	3V3 LED jumper. Normally installed, remove to disable 3V3 LED.
13	VIN	External power 5-12 VDC
14	LiPo	JST-PH connector for LiPo battery
15	S4	Battery switch
16	S6	SoM power switch
17		Expansion connector
18	J10	Grove connector (A0, A1 or I2C)
19	J11	Grove connector (A2, A3)
20	S5	RTC battery switch
21	RTC battery	Optional battery
22	J4	CAN data connection and 3.3V power output
23	J5	JTAG power jumper. Install to allow the MCU to be powered by the JTAG port.

POWERING THE TRACKER SOM EVALUATION BOARD

There are several options for powering the evaluation board:

The **MCU USB** connector. If using a laptop with a 500 mA USB port, you should also use the LiPo battery. With a 2A tablet charger, you can power only by USB.

The **VIN** connector (5-12 VDC). This is useful with an external power supply. Switch **S6** is the power switch.

The **LiPo** connector. This is typically used with a LiPo battery. Use switch **S4** to enable the battery.

USB CONNECTORS

There are three USB connectors on the evaluation board, however you most commonly will only use the **MCU USB** connector.

The **MCU USB** connector is connected to the nRF52 MCU and can be used for Serial debugging, flashing code, and setup by USB. It can also power the AssetTracker SoM. If using a laptop with a 500 mA USB port, you should also use the LiPo battery. With a 2A tablet charger, you can power only by USB.

The **GNSS USB** connector is connected to the u-blox NEO-M8U GNSS. It can be used for firmware upgrades or with the u-blox u-center application.

The **CELL USB** connector is connected to the Quectel cellular modem. It can be used for firmware upgrades.

LED INDICATORS

The **STAT** LED indicates the charge status:

- Off: Not charging or no power
- On: Charging
- Blinking: Charge fault
- Flickering: No battery

Jumper **J9** disconnects the charge status LED.

The **3V3** LED indicates that the 3.3V MCU power supply is enabled. Jumper **J8** disconnects the power LED.

EXPANSION CONNECTOR

Left Description	Left	Right	Right Description
Ground	GND	GND	Ground
PMIC power out	PMID	LI+	LiPo battery
PMIC thermistor	TS	VBUS	nRF52 USB power
3.3V Out	3V3	STAT	PMIC charge status
Unused	SOM44	VIN	Power input 5-12V
Ground	GND	GND	Ground
A4, D4, SPI MOSI	A4	A0	A0, D0, Wire SDA
A5, D5, SPI MISO	A5	A1	A1, D1, Wire SCL

A6, D6, SPI SCK	A6	A2	A2, D2, Serial1 CTS
A7, D7, SS, WKP	A7	A3	A3, D3, Serial1 RTS
Unused	SOM37	SOM59	Unused
Unused	SOM36	SOM60	Unused
Unused	SOM35	SOM61	Unused
Unused	SOM34	SOM62	Unused
3.3V Out	3V3	3V3	3.3V Out
Ground	GND	AGND	Analog Ground
RESET button	RESET	MCU_RX	Serial1 RX, GPIO D9
MODE button	MODE	MCU_TX	Serial1 TX, GPIO D8
RGB Status LED Red	R	RTC_BAT	RTC battery
RGB Status LED Green	G	RTC_BTN	RTC wake button

RGB Status LED Blue	B	SOM76	Unused
NFC Tag Antenna	NFC1	SOM77	Unused
NFC Tag Antenna	NFC2	SOM78	Unused
Unused	SOM21	SOM79	Unused
Unused	SOM20	SOM80	Unused
Unused	SOM19	SOM81	Unused
Unused	SOM18	SOM82	Unused
3.3V Out	3V3	3V3	3.3V Out
ESP32 Serial RX	WIFI_RXD	NC	
ESP32 Serial TX	WIFI_TXD	CELL_RX	Cellular serial RX
ESP32 boot mode	WIFI_BOOT	CELL_TX	Cellular serial TX
ESP32 enable	WIFI_EN	CELL_RI	Cellular ring indicator
Unused	SOM9	GNSS_TIME_PULSE	GNSS time pulse or fix indicator
Ground	GND	GND	Ground

Basic Setup

The basic setup for the Tracker SoM Eval Board to be operational is shown below:

- Plug the cellular antenna into the U.FL connector labeled **CELL** on the SoM. Remember never to power up this board without the antenna being connected. There is potential to damage the transmitter of the cellular module if no antenna is connected.
- Connect power the **MCU USB** (8), **VIN** (13), or a LiPo battery (14).
- Turn on the appropriate power switches (15 and/or 16).

Evaluation Board Schematics

To be provided at a later date.

Mechanical specifications

To be provided at a later date.

DIMENSIONS AND WEIGHT

To be provided at a later date.

Parameter	Value
Width	
Length	
Thickness	
Weight	

Revision history

Revision	Date	Author	Comments
pre	31 Mar 2020	RK	Preview Release