HARDWARE APPLICATION NOTE FOR ACTIVE GNSS ANTENNA SUPPLY ON DEV-FMLR-1110

ABSTRACT

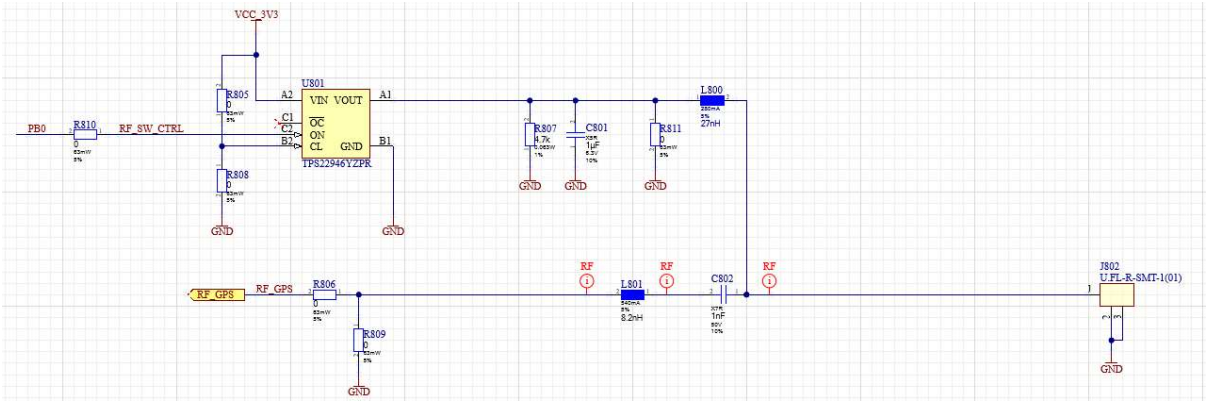
Miromico's Evaluation Kit FMLR-1110-U-STL0Z integrates a LoRa® transceiver together with passive Wi-Fi AP MAC address scanning and a GNSS (GPS/BeiDou) low-power scanning based on Semtech's LR1110 chipset.
This application note shows the required hardware and firmware steps for GNSS scanning with an active GNSS antenna.

ACTIVE VS PASSIVE ANTENNA

The LR1110 GNSS scanning can be implemented with both active and passive GNSS antennas. While passive antennas contain only the radiating element, active antennas are additionally equipped with a Low-Noise Amplifier (LNA), which is beneficial for the GPS performance, but adds to the overall power consumption. Compared to passive antennas, active antennas require a power supply on the antenna path. Please note that Miromico highly recommends the use of an active antenna in conjunction with the LR1110 chipset.

USE OF ACTIVE ANTENNA WITH DEV-FMLR-1110

As the development kit is shipped together with an active GNSS antenna, it provides hardware infrastructure to switch on the required supply for the active antenna by the means of a GPIO.



CODE SNIPPET FOR USE OF ACTIVE ANTENNA WITH DEV-FMLR-1110

Please see the code snippet below on how to initialize and switch on the supply for the active antenna using the pin PB0 and the STM32L0x driver:

```
void GNNSSupplyInit()
{
  /* Configure the SWITCH pin */
  GPIO_InitTypeDef GPIO_InitStruct  = { 0 };

  GPIO_InitStruct.Pin = GPIO_PIN0;
  GPIO_InitStruct.Mode = GPIO_MODE_OUTPUT_PP;
  GPIO_InitStruct.Pull = GPIO_NOPULL;
  GPIO_InitStruct.Speed = GPIO_SPEED_FREQ_VERY_HIGH;
  HAL_GPIO_Init( GPIOB, &GPIO_InitStruct );
}

void GNSSSupplySwitch( uint8_t enable)
{
  HAL_GPIO_WritePin( GPIOB, GPIO_PIN0, enable );
}
```

USE OF PASSIVE ANTENNA WITH DEV-FMLR-1110

It is sufficient to switch of the active antenna supply when using a passive antenna with the development kit.