



WaveTrac X2 User Manual

Device Description:

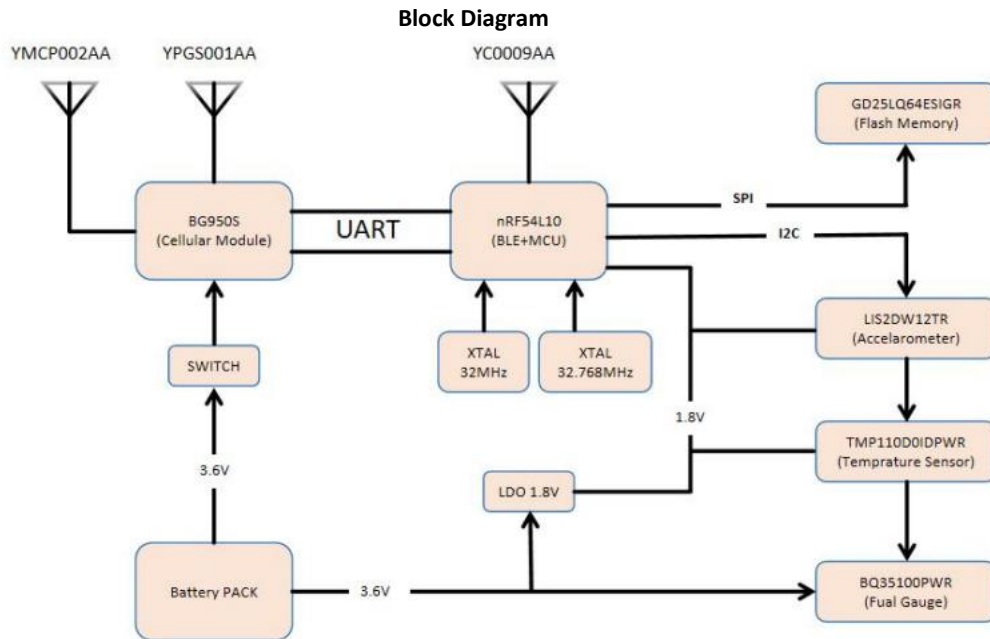
The WaveTrac X2 is an innovative asset tracking solution designed for the monitoring of mobile assets such as boxes, crates, pallets, containers, dumpsters, and packages. Engineered for massive deployments with minimal operational overhead, the WaveTrac X2 combines reliability and flexibility with advanced features including multi-signal indoor-outdoor global positioning, high- penetration cellular LTE connectivity, and remote over-the-air (OTA) reconfigurability. Its unique self-learning edge AI/ML algorithms and diverse array of sensors enable adaptive behaviour based on usage patterns, optimizing power- performance to extend battery life, thus eliminating the need for frequent recharging or replacement in most applications. With its robust waterproof design, integrated global connectivity, and user-friendly REST APIs & platform, the WaveTrac X2 ensures exceptional performance and rapid time-to-market, all at the lowest total cost of ownership.

Operation:

On predefined reporting interval device captures GNSS location and other sensor data and reports to server over MQTTS using NB-IoT and LTE-M cellular connectivity.

Specifications:

- Cellular Connectivity: LTE-M/NB-IoT with built-in eSIM
- Geolocation: GNSS (1.5m CEP), Cellular, Wi-Fi & Bluetooth
- Sensor Options: Temperature, light, shock, drop, motion, vibration, orientation detection
- Enterprise Integration: Dashboard & REST APIs
- Cloud Configurability: Reporting intervals, sensor alerts & analytics, Geofence, Geo-location authentication
- Remote Updates: Supports Cellular & Bluetooth OTA
- Small Size: 125mm(L) X 63mm(W) X 20mm(H)
- Battery: 3.6V Li-SOCl₂ (10400 mAh)
- Weight: 156 g
- Waterproof: IP66 Compliant
- Temperature Rating: -40°C to 85°C
- Security: MQTTS with TLS encryption
- Voltage Range: 2.2V- 4.35V



1. BG950s LTE CAT-M1/NB2 Module:

Frequency Bands: B1/B2/B3/B4/B5/B8/B12/B13/B14/B17/B18/B19/B20/B25/B28/B66/B70/B85

Output Power Maximum: 23dBm

Voltage Range: 2.2V-4.3V

2. nRF54L10 Bluetooth + MCU:

Frequency Bands: 2.4GHz

Output Power Maximum: 8dBm

Voltage Range: 1.7V-5.5V

Crystal: 32MHz and 32.768KHz

3. Battery Pack:

4 AA size Li-SOCl₂ Battery (ER14505)

Voltage: 3.6V

4. Switch (KTS1601EUM-1-TR):

Load Switch

Voltage Range: 1.5V-5.5V

5. GD25LQ64ESIGR FLASH - NOR Memory IC:

64Mbit

Voltage Range: 1.65V-2V

6. LIS2DW12TR Accelerometer:

X, Y, Z Axis $\pm 2g$, 4g, 8g, 16g

Voltage Range: 1.62V-3.6V

7. TMP110B0IDPWR Temperature Sensor:

Voltage Range: 1.14V-5.5V

8. BQ35100PWR Battery Management:

Battery fuel gauge for non-rechargeable batteries

Voltage Range: 2.5V-4.5V

9. LDO (TPS7A0318DBVR):

200mA low Dropout LDO

Voltage Range: 0.8V-5V

FCC Caution

a、 § 15.19 Labeling requirements.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

b、 § 15.21 Changes or modification warning.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

c、 § 15.105 Information to the user.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

*RF warning for Mobile device:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Innovation, Science and Economic Development Canada (ISED) Statement: Canada Only

This device complies with Industry Canada RF radiation exposure limits set forth for general population (uncontrolled exposure). This device must not be collocated or operating in conjunction with any other antenna or transmitter. This device complies with Innovation, Science and Economic Development license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

The radiated energy from the antennas connected to the wireless adapters conforms to the IC limit of the RF exposure requirements regarding IC RSS-102, Issue 6. Usage of this device is limited to indoor operation in the 5150 to 5250 MHz frequency band.

Le présent appareil est conforme aux Innovation, Sciences et Développement économique Canada (ISDE) applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

L'énergie rayonnée par les antennes reliées aux adaptateurs sans fil conforme à la limite IC de l'exigence de l'exposition aux RF concernant IC RSS-102, Issue 6. L'utilisation de cet appareil est limitée à une utilisation à l'intérieur dans la bande de fréquences de 5150 à 5250 MHz.