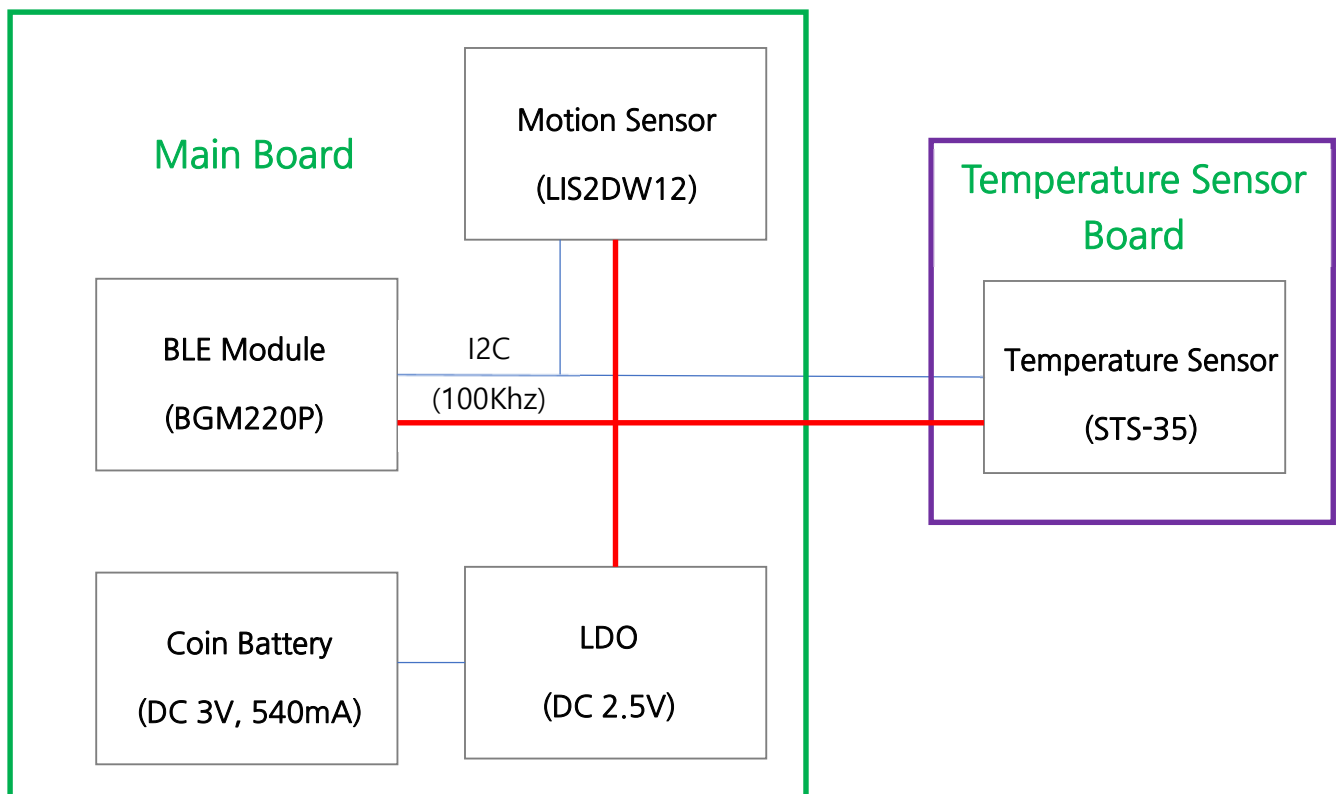FP-100 Operation Manual

1. FP-100 component
   - The FP-100 has a structure in which the main board and the temperature sensor board are connected by a wire.
   - The main board consists of BGM220P Bluetooth module supporting BLE5.2, Motion Sensor, and Coin Battery.
   - The 'Temperature sensor board' consists of a temperature sensor.
   - FP-100 Block Diagram is as shown below.

2. BLE Module
   - Use the BGM220P BLE Module in Bluetooth 5.2 Beacon mode.
   - It has a 32-bit ARM Cortex-M33 core operating up to 76.8MHzfh, 512/32 kB of Flash/RAM memory, and up to 25 GPIOs.
   - The maximum transmit power is 8 dBm.
   - It uses a chip antenna and has a maximum receive sensitivity of -98.9 dBm at a 1 Mbps data rate.
   - The antenna efficiency, gain, and radiation pattern are shown below.

Parameter	With optimal layout	Note
Efficiency	-1 dB	Antenna efficiency, gain and radiation pattern are highly dependent on the application PCB layout and mechanical design. Refer to Design Guidelines for recommendations to achieve optimal antenna performance.
Peak gain	1.86 dBi	

Table 1.   BT FP-100 Antenna Efficiency and Peak Gain
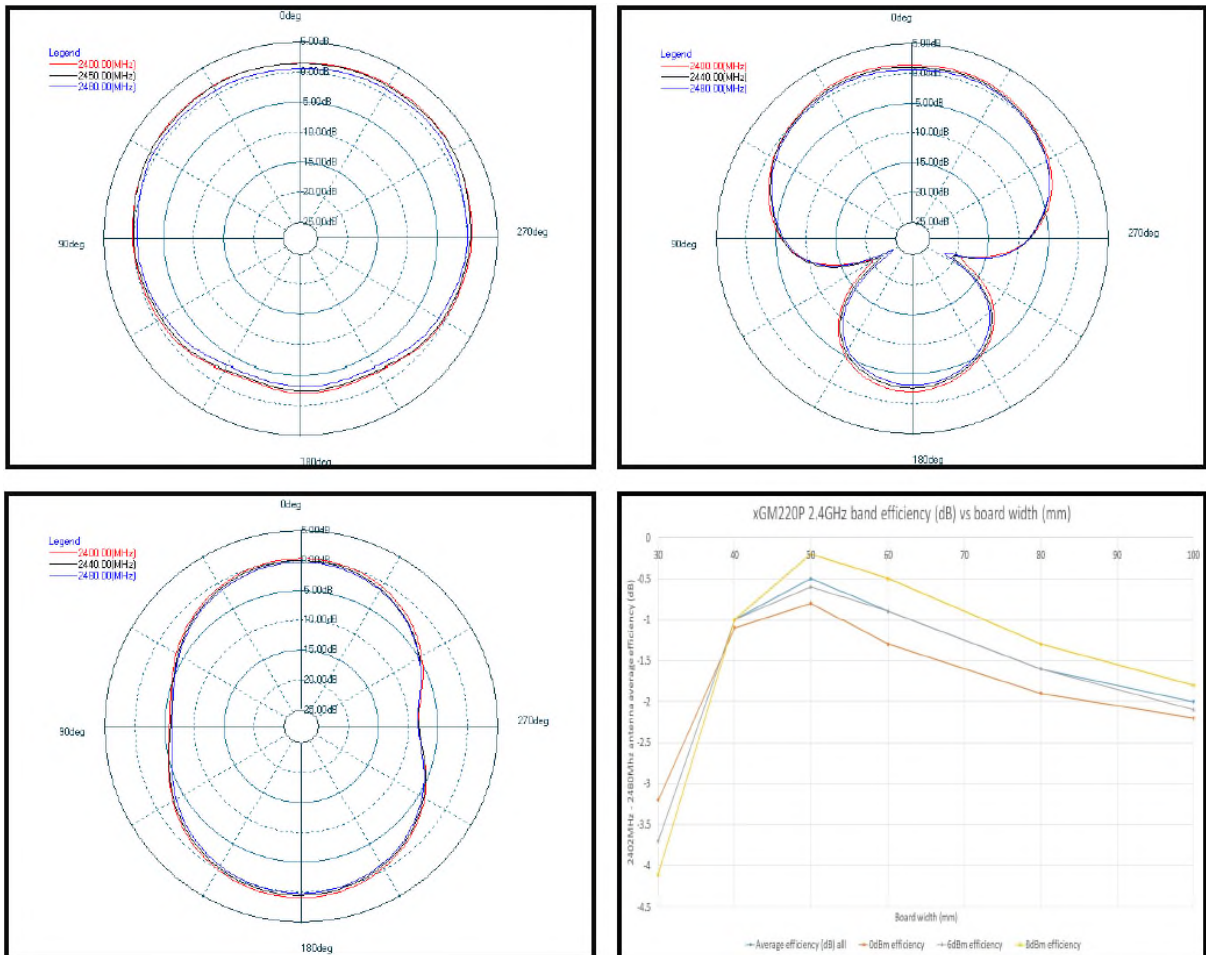
Picture 1. BT FP-100 Typical 2D Antenna Radiation Patterns and Efficiency

3.   Motion Sensor

- LIS2DW12 Motion sensor is a 3-axis acceleration measurement sensor.
- It supports ±2g/±4g/±8g/±16g acceleration measurement range.

4.   Temperature Sensor

- The STS-35 temperature sensor has a measurement range of -40°C to 125°C.
- It performs with a maximum accuracy of ±0.1 °C over a temperature range of 20 °C to 60 °C.

5. Operation Description
   - When power is supplied, the BLE module acquires motion sensor and temperature sensor data every 10 minutes and saves it in memory, then switches the operation mode to Power Save Mode to minimize battery consumption.
   - The BLE module switches from Power Save Mode to Normal Mode every 10 minutes by the internal Interrupt Timer to acquire motion sensor and temperature sensor data, store it in memory, and repeat the routine of switching to Power Save Mode.
   - The BLE module transmits the collected data to the Access Point and switches to Power Save Mode when 6 motion sensor and temperature sensor data are acquired at 1 hour intervals.