Bluetooth Low Energy

(BLE) 4.2 Module

Model MB-N2 Data Sheet

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Version: 0.1 (Initial Draft)

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Document release	Date	Modification	Initials
Version 0.1	2016/11/01	Initial version	Ping

Description

MB-N2 BLE module houses the Nordic nRF52832 SoC with an on-board chip antenna tuning for great performance and low power consumption.

MB-N2 offers all Bluetooth low energy features: radio, stack, profiles and application space for customer applications, so no external processor is needed. The module also provides flexible hardware interfaces to connect sensors, simple user interfaces or even displays directly to the module.

MB-N2 can be powered directly with a standard 3V coin cell batteries or pair of 3A batteries. In lowest power sleep mode, it consumes only 0.4uA and will wake up in few hundred microseconds.

For the nRF52832 SoC, refers to the nRF52832 Product Specification and the SDK is available from the Nordic Semiconductor website.

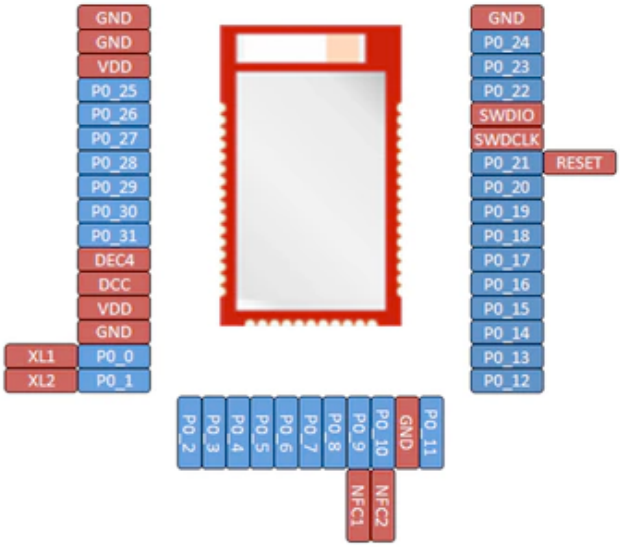
Key Features

- Bluetooth 4.2 certified, 5.0 ready (BLE only)
- 32-bit ARM Cortex-M4F processor @ 64MHz
- FPU, DSP
- Up to 64 KB SRAM and 512 KB Flash
- Certified for CE, FCC and Bluetooth
- Small size 10 mm x 18 mm
- An on-board chip antenna tuning for great performance
- Supports NFC-A tags

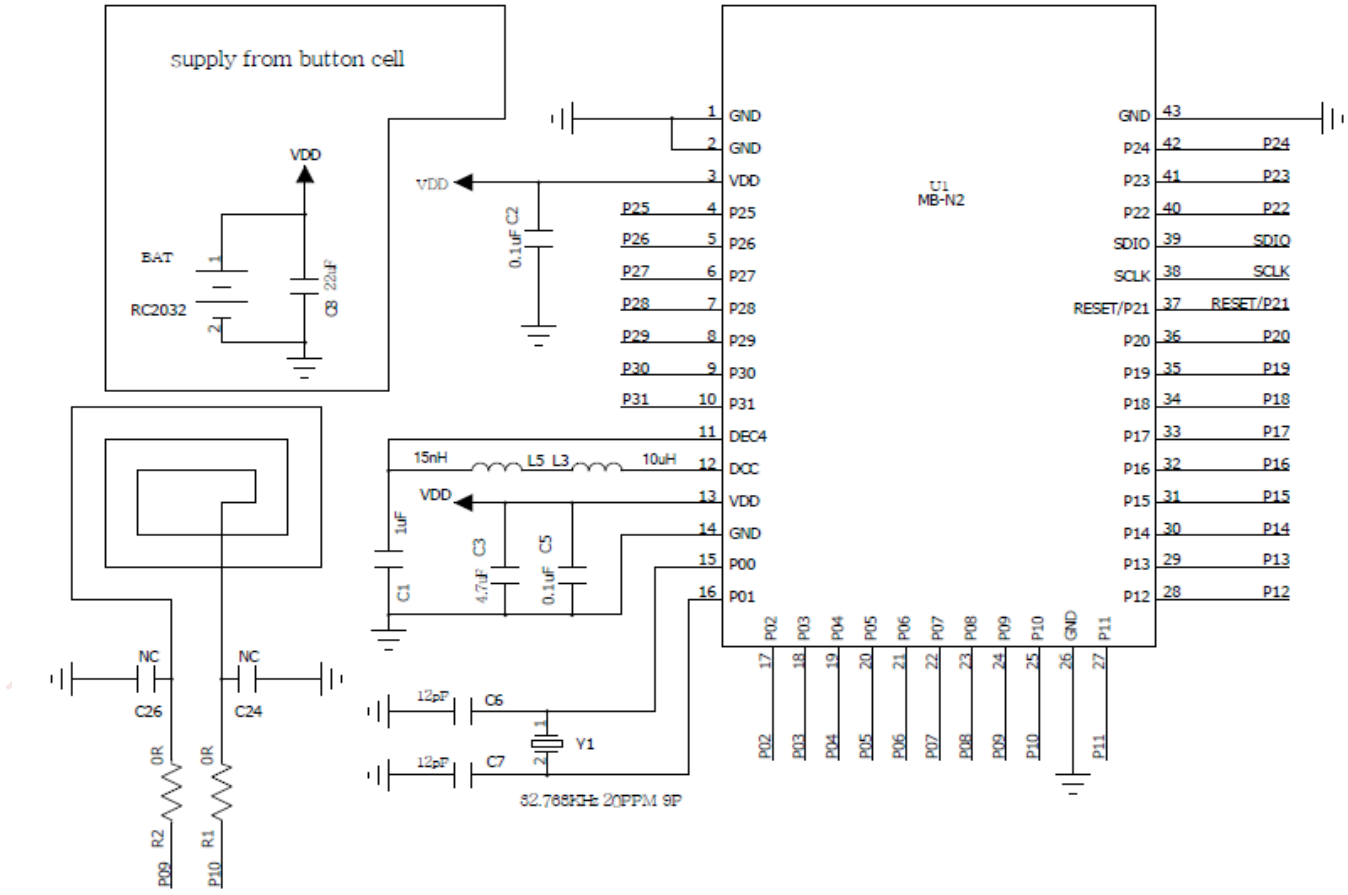
Applications

- Sports and leisure equipment
- Heart rate collector
- Pedometer
- Watches
- Cycling and cadence sensor
- Consumer electronics
- Human Interface Devices (Keyboard, Mouse)
- Consumer medical
- Smart energy
- Security finder
- Proximity and presence
- Home and building automation

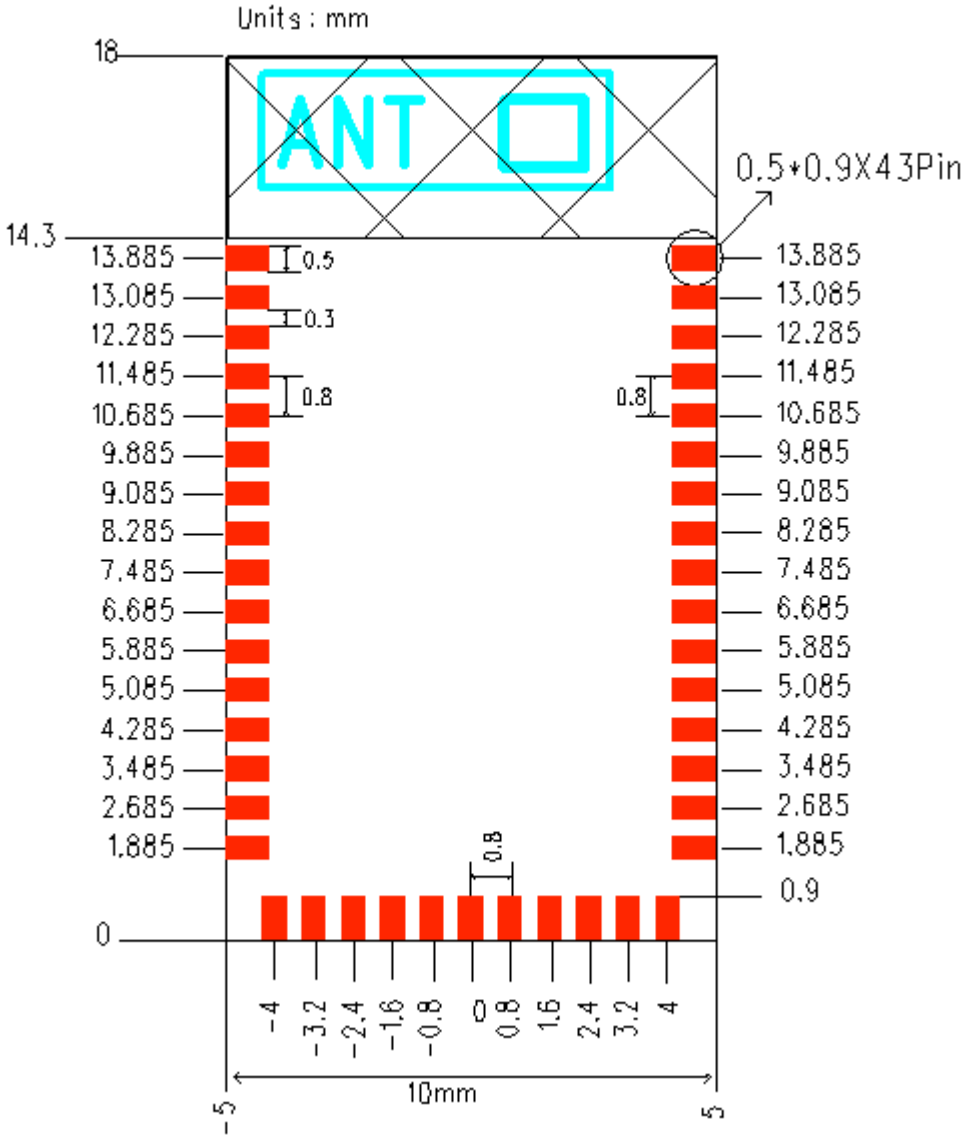
1. Package Pinout Diagram



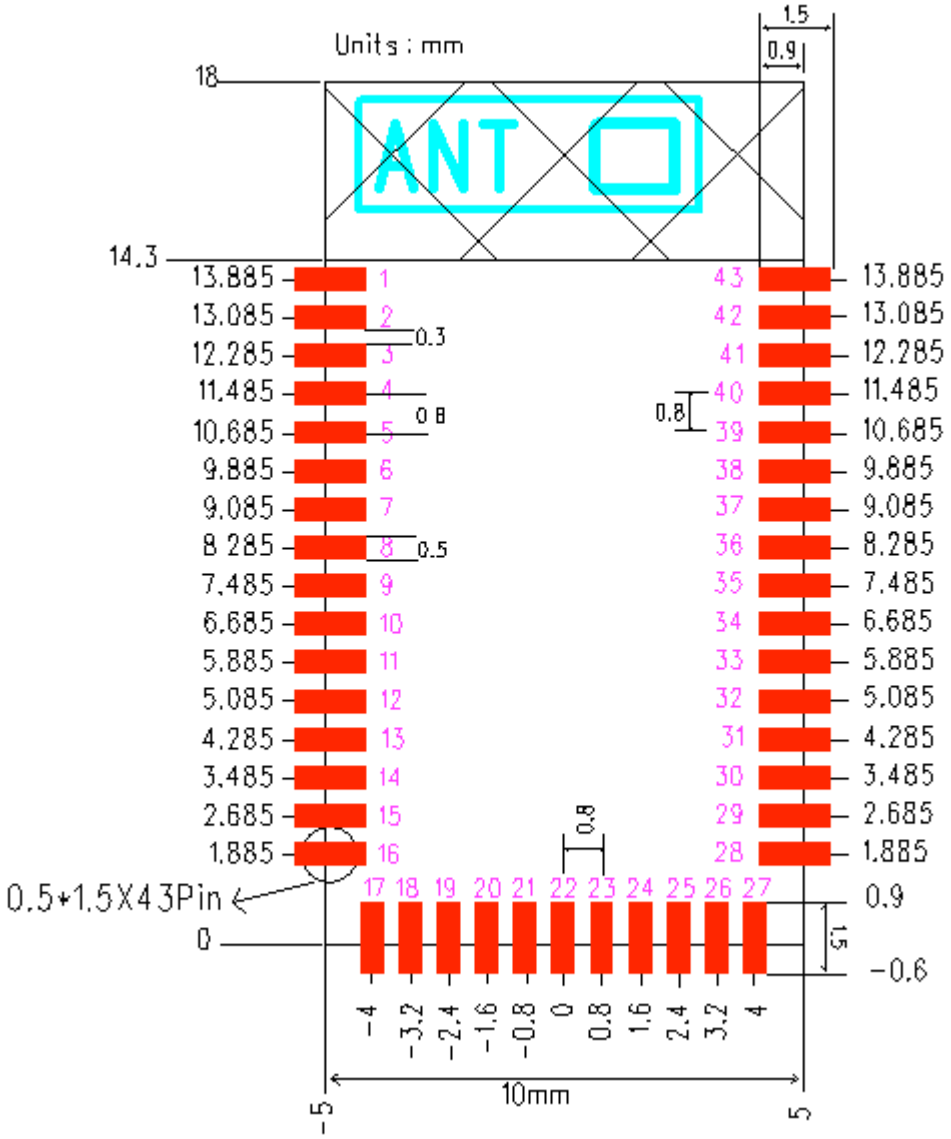
2. Reference Schematic



3. Module Physical Dimensions



4. Layout Guide



5. Pin Assignment

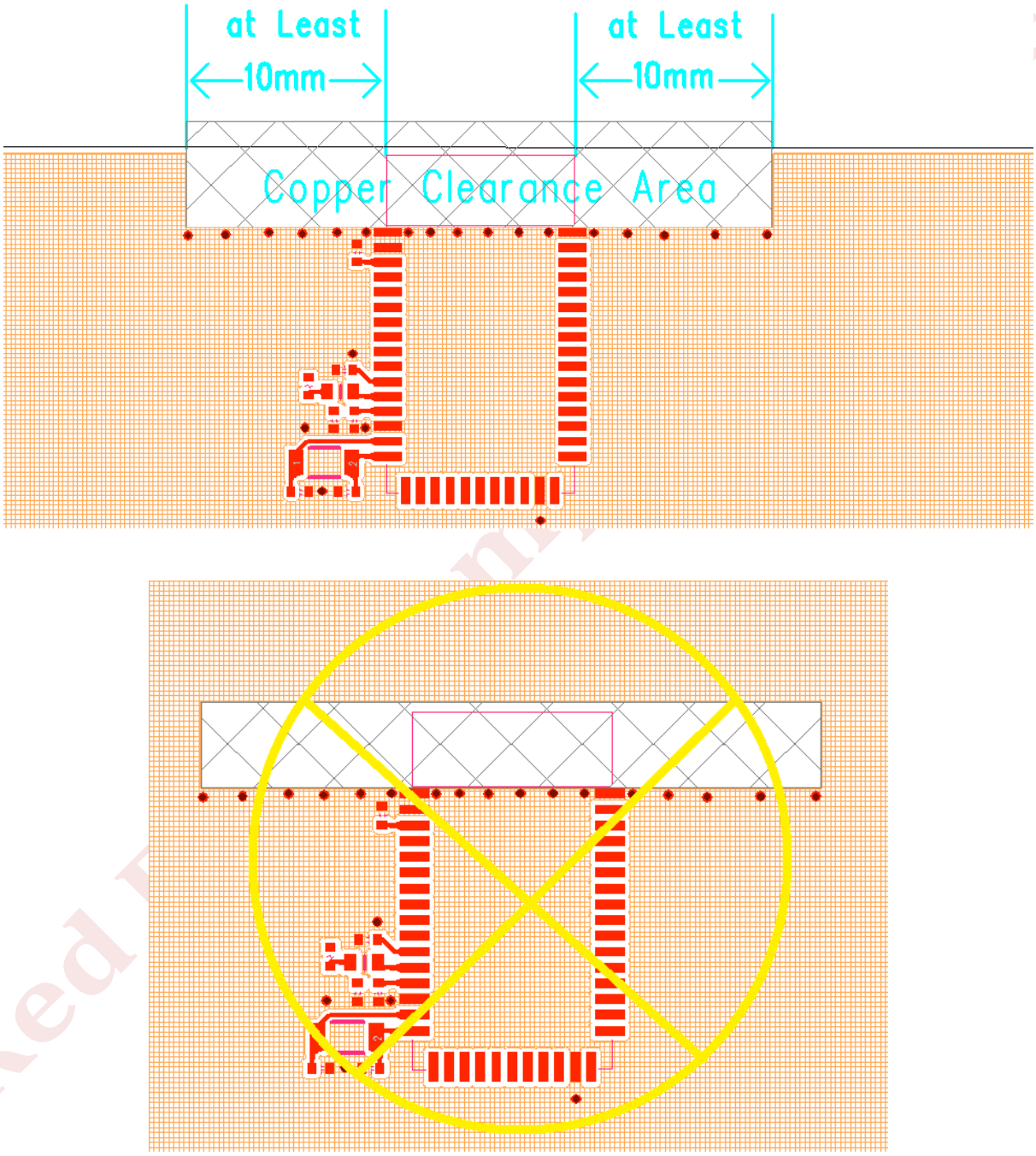
Pin No.	Name	Type	Description
(1)(2)(14) (26)(43)	GND	Ground	Ground. The pad must be connected to a solid ground plane
(3)(13)	VDD	POWER	Power supply (1.9 – 3.6V)
(4)	P0.25	Digital I/O	General purpose I/O pin
(5)	P0.26	Digital I/O	General purpose I/O pin
(6)	P0.27	Digital I/O	General purpose I/O pin.
(7)	P0.29 AIN4	Digital I/O Analog Input	General purpose I/O pin. SAADC/COMP/LPCOMP input.
(8)	P0.29 AIN5	Digital I/O Analog Input	General purpose I/O pin. SAADC/COMP/LPCOMP input.
(9)	P0.30 AIN6	Digital I/O Analog Input	General purpose I/O pin. SAADC/COMP/LPCOMP input.
(10)	P0.31 AIN7	Digital I/O Analog Input	General purpose I/O pin. SAADC/COMP/LPCOMP input.
(11)	DEC4	POWER	1V3 regulator supply decoupling. Input from DC/DC regulator. Output from 1.3 V LDO.
(12)	DCC	POWER	DC/DC regulator output pin.
(15)	P0.00 XL1	Digital I/O Analog Input	General purpose I/O pin. Connection for 32.768 kHz crystal (LFXO).
(16)	P0.01 XL2	Digital I/O Analog Input	General purpose I/O pin. Connection for 32.768 kHz crystal (LFXO).
(17)	P0.02 AIN0	Digital I/O Analog Input	General purpose I/O pin. SAADC/COMP/LPCOMP input.

Pin No.	Name	Type	Description
(18)	P0.03 AIN1	Digital I/O Analog Input	General purpose I/O pin. SAADC/COMP/LPCOMP input.
(19)	P0.04 AIN2	Digital I/O Analog Input	General purpose I/O pin. SAADC/COMP/LPCOMP input.
(20)	P0.05 AIN3	Digital I/O Analog Input	General purpose I/O pin. SAADC/COMP/LPCOMP input.
(21)	P0.06 AIN4	Digital I/O Analog Input	General purpose I/O pin. SAADC/COMP/LPCOMP input.
(22)	P0.07	Digital I/O	General purpose I/O pin.
(23)	P0.08	Digital I/O	General purpose I/O pin.
(24)	P0.09 NFC1	Digital I/O NFC Input	General purpose I/O pin. NFC antenna connection.
(25)	P0.10 NFC1	Digital I/O NFC Input	General purpose I/O pin. NFC antenna connection.
(27)	P0.11	Digital I/O	General purpose I/O pin.
(28)	P0.12	Digital I/O	General purpose I/O pin.
(29)	P0.13	Digital I/O	General purpose I/O pin.
(30)	P0.14 TRACEDATA(3)	Digital I/O	General purpose I/O pin. Trace port output.
(31)	P0.15 TRACEDATA(2)	Digital I/O	General purpose I/O pin. Trace port output.
(32)	P0.16 TRACEDATA(1)	Digital I/O	General purpose I/O pin. Trace port output.
(33)	P0.17	Digital I/O	General purpose I/O pin.

Pin No.	Name	Type	Description
(34)	P0.18 TRACEDATA(0) SWO	Digital I/O	General purpose I/O pin. Single Wire Output.
(35)	P0.19	Digital I/O	General purpose I/O pin.
(36)	P0.20 TRACECLK	Digital I/O	General purpose I/O pin. Trace port clock output.
(37)	P0.21 RESET	Digital I/O	General purpose I/O pin. Configurable as pin reset.
(38)	SWDCLK	Digital Input	Serial Wire Debug clock input for debug and programming.
(39)	SWDIO	Digital I/O	Serial Wire Debug I/O for debug and programming.
(40)	P0.22	Digital I/O	General purpose I/O pin.
(41)	P0.23	Digital I/O	General purpose I/O pin.
(42)	P0.24	Digital I/O	General purpose I/O pin.

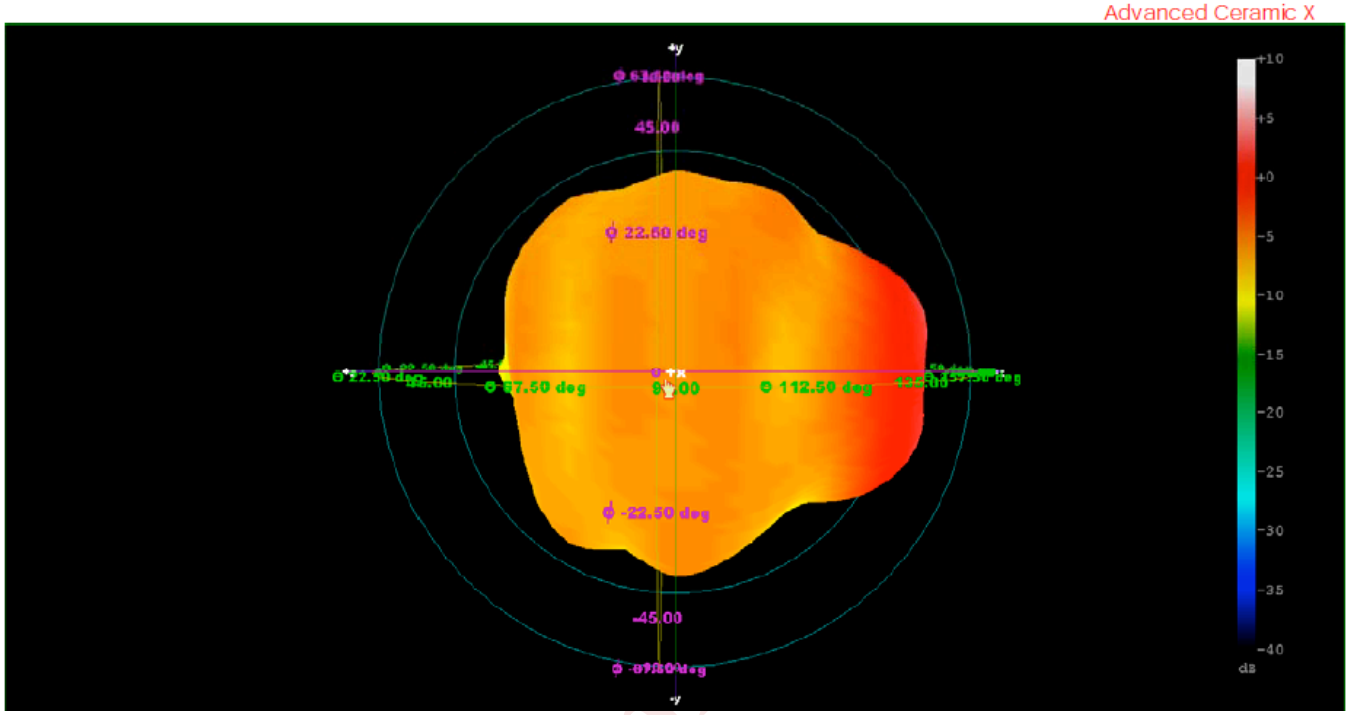
6. PCB Layout Guide

For optimal performance of the antenna, place the module at the corner of the PCB as shown in the diagram below, do not place any metal (traces, components, battery etc.) within the clearance area of the antenna. Place the GND vias as close to the GND pins as possible.

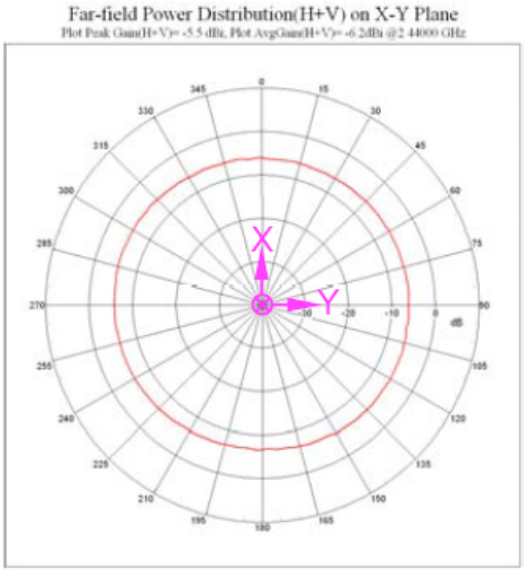


Recommended layout

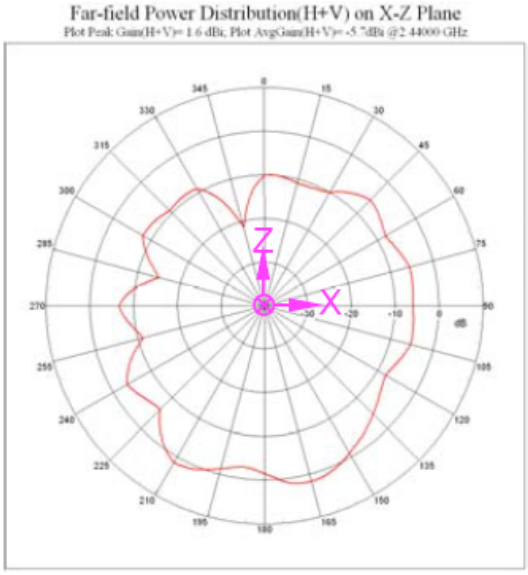
7. 3D Radiation Pattern



◆XY-plane



◆XZ-plane



◆YZ-plane