

BLE Module |

MS45SF1

DateSheet

V 1.1.0

Applicable Product Model
MS44SF2-nRF5340

Version Note

Version	Details	Contributor(s)	Date	Notes
1.0.0	First edit	Eddie	2022.03.22	
1.1.0	Layout Changes	Michelle	2023.10.07	

MS45SF1-nRF5340

Dual Core, Ultra Low Power, Full IO Port, High Performance Bluetooth 5.4 Module



PCB

The MS45SF1 is a chip Bluetooth 5.4 module designed using the Nordic nRF5340. It has 1 MB FLASH, 512 KB RAM, a floating point unit (FPU), an 8 KB 2-way associative cache, and DSP instruction functions; the network processor has a frequency of 64 MHz and is optimized for low power consumption and efficiency, and it comes with 256 KB FLASH and 64 KB RAM, enabling more powerful computing capabilities and floating point technologies. It can realize very complex algorithms. It is suitable for Bluetooth low-power applications and Bluetooth high-end applications.

■ Features

- Bluetooth 5.4
- Dual core
- All IO ports
- Ultra-low power consumption
- High Performance

■ Application

- Smart Buildings
- Consumer Electronics
- Smart Healthcare
- Security Equipment
- Automotive Devices
- Smart Agriculture

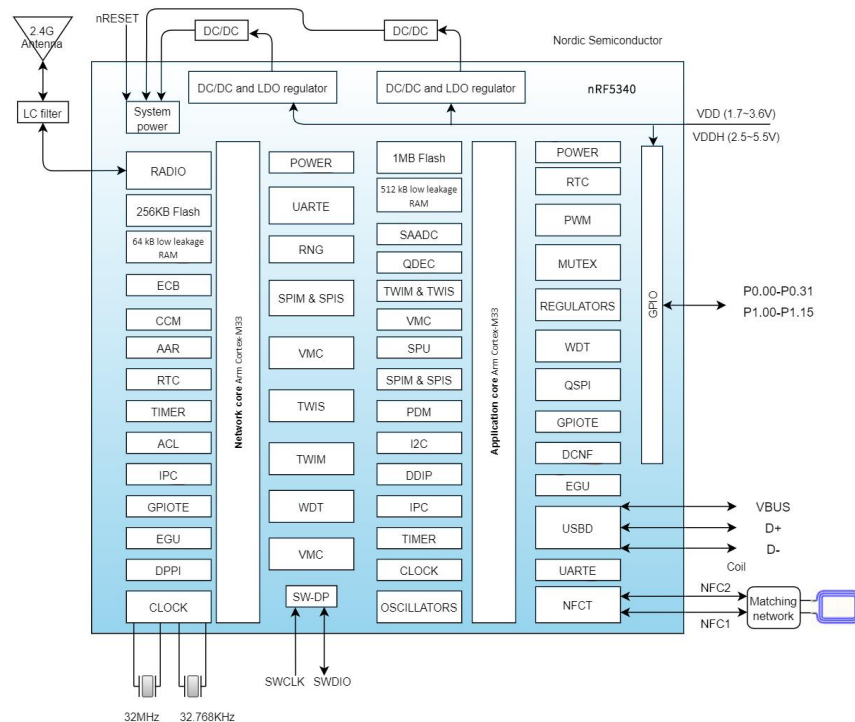
■ Key parameter

Chip Model	nRF5340	Antenna	PCB
Module Size	18×12.5×2mm	GPIO	48
Flash	1M+256KB	RAM	512KB+64KB
Receiving Sensitivity	-98dBm (1Mbps) ; -104dBm (125kbps)	Transmission Power	-40 ~ +3dBm
Current(TX)	0dBm- 3.2mA	Current(RX)	2.6mA

INDEX

1 Block Diagram	5
2 Electrical Specification	5
3 Pin Description	6
4 Pin Definition	7
5 Mechanical Drawing	8
6 Electrical Schematic	9
7 PCB Layout	10
8 Reflow and Soldering	12
9 Package Information	13
Quality	14
Contact Us	14
Copyright Statement	15

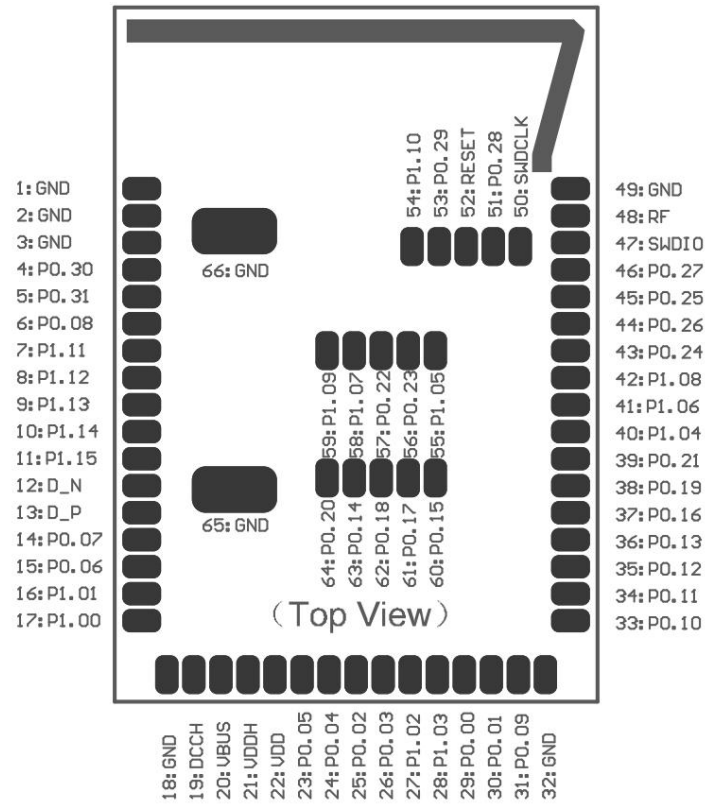
1 Block Diagram



2 Electrical Specification

Parameter	Values	Notes
Working Voltage	1.7V-5.5V	To ensure RF work, supply voltage suggest not lower than 3V
Working Temperature	-40℃~+85℃	Storage temperature is -40℃~+125℃
Transmission Power	-40 ~ +3dBm	Configurable
Current(RX)	2.6mA	RF receiving current under 1Mbps pattern
Current(TX)	3.2mA	RF transmission current under odB pattern
Module Dimension	18*12.5*2mm	
Quantity of IO Port	48	

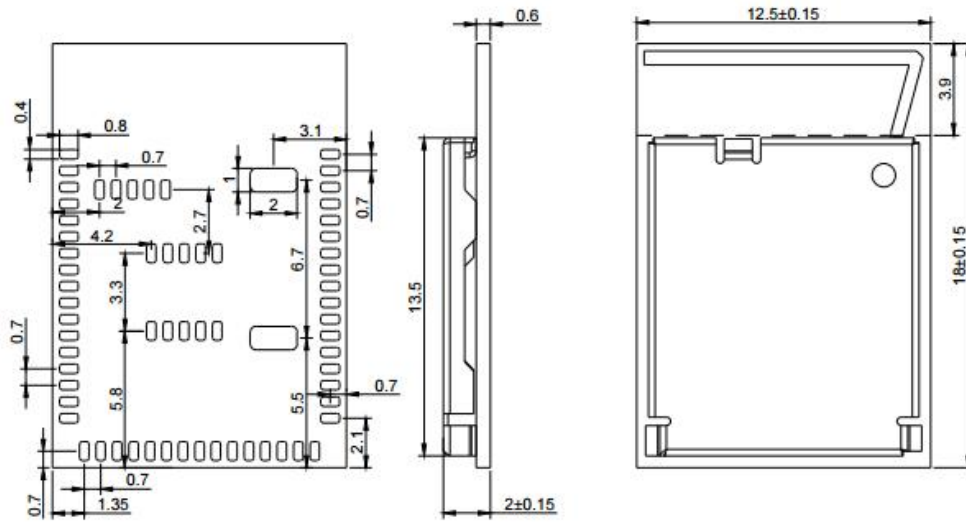
3 Pin Description



4 Pin Definition

Pin Number	Symbol	Type	Definition
22	VDD	Power	Power supply 1.7-3.6V
21	VDDH	Power	Power supply 2.5-5.5V
20	VBUS	Power	Power conversion access required for USB port
1/2/3/18/32/49/65/66	GND	Power	Ground
50	SWDCLK	Debug	Serial wire debug clock input for debug and programming
47	SWDIO	Debug	Serial wire debug I/O for debug and programming
19	DCCH	Power	DC/DC Conversion Output
4-11/14-17/23-31/33-46/51/53-64	GPIO	Digital I/O	General purpose I/O
13	D+	USB	USB D+
12	D-	USB	USB D-

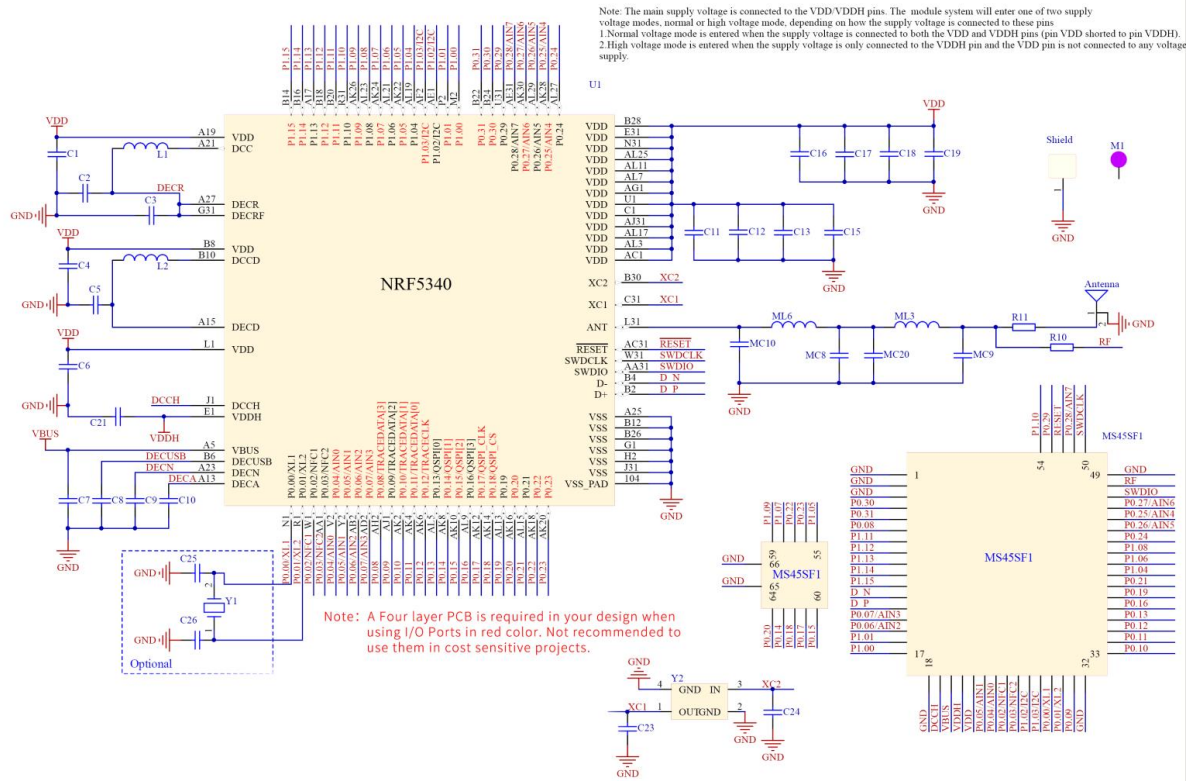
5 Mechanical Drawing



* (Default unit: mm Default tolerance: ± 0.1)

Notice: The recommended pad size is 1.8*0.8mm with a pad extension of 0.5mm

6 Electrical Schematic

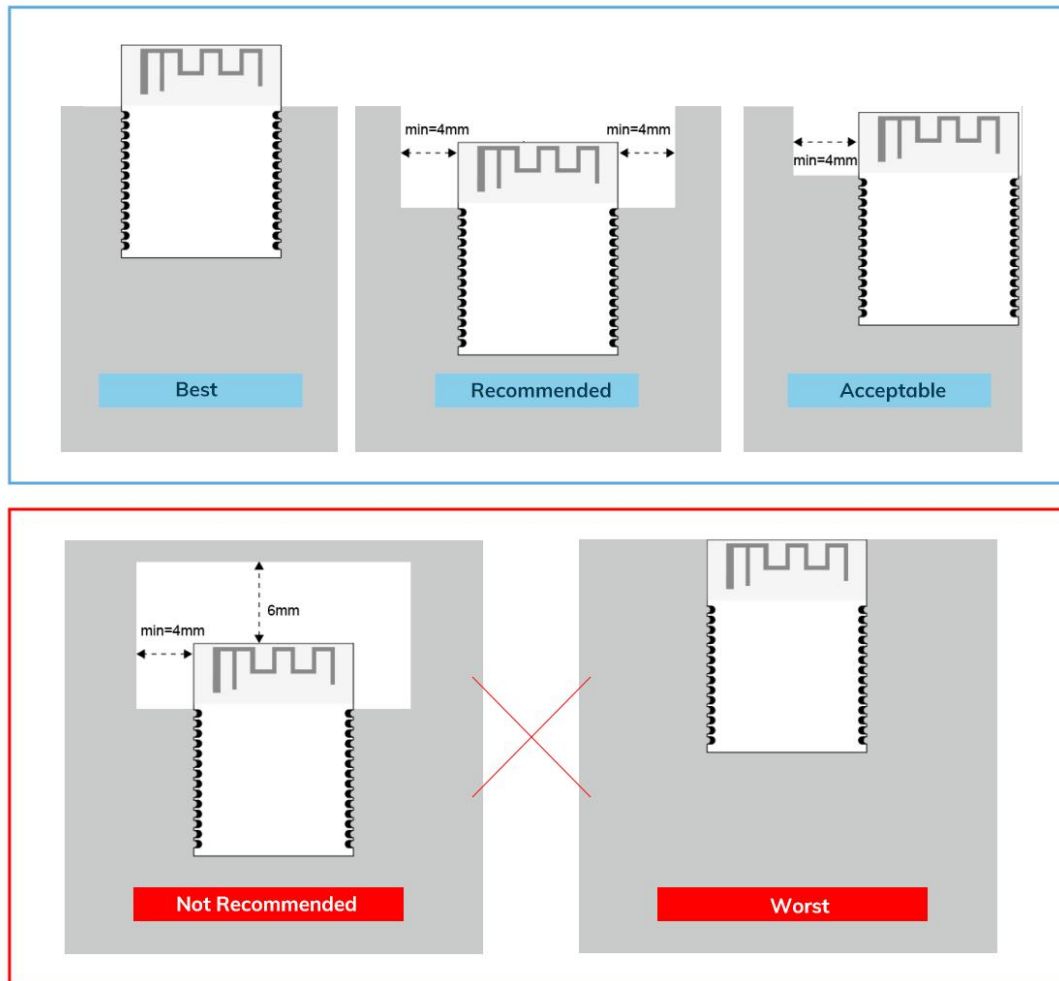


Notice: Before placing an order, please confirm the specific configuration required with the salesperson.

7 PCB Layout

Module antenna area couldn't have GND plane or metal cross line, couldn't place components nearby. It is better to make hollow out or clearance treatment or place it on the edge of PCB board.

Notice: Refer to examples as below, and highly suggest to use the first design and the adjustment of modules antenna design according to the first wiring.



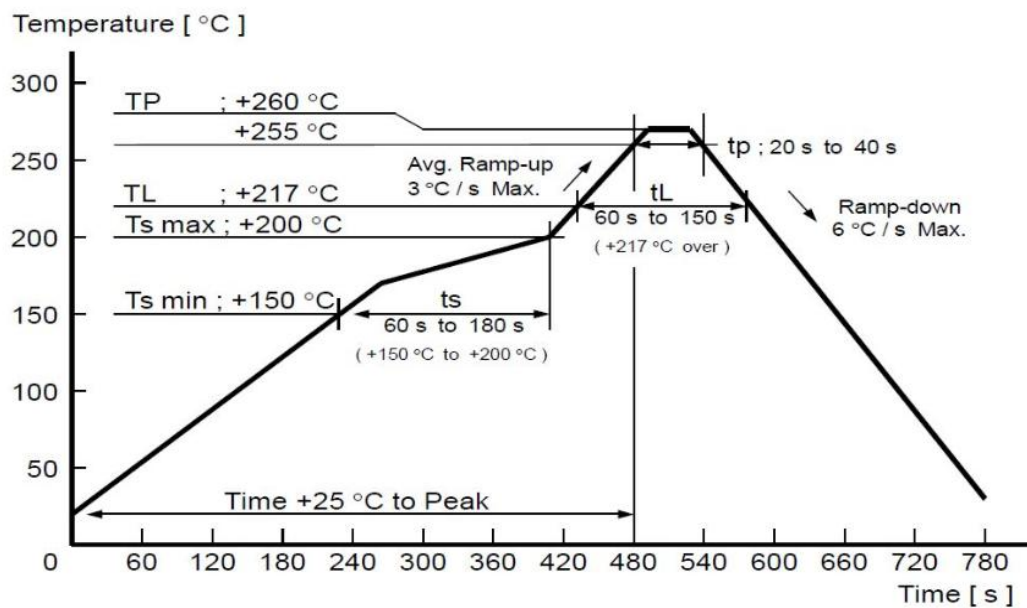
Layout notes:

- 1) Preferred Module antenna area completely clearance and not be prevented by metals, otherwise it will influence antenna's effect (as above DWG. indication).
- 2) Cover the external part of module antenna area with copper as far as possible to reduce the main board's signal cable and other disturbing.
- 3) It is preferred to have a clearance area of 4 square meter or more area around the module antenna (including the shell) to reduce the influence to antenna.
- 4) Device should be grounded well to reduce the parasitic inductance.
- 5) Do not cover copper under module's antenna in order to avoid affect signal radiation or lead to transmission distance affected.
- 6) Antenna should keep far from other circuits to prevent radiation efficiency reduction or affects the normal operation of other lines.
- 7) Module should be placed on edge of circuit board and keep a distance away from other circuits.
- 8) Suggesting to use magnetic beads to insulate module's access power supply.

8 Reflow and Soldering

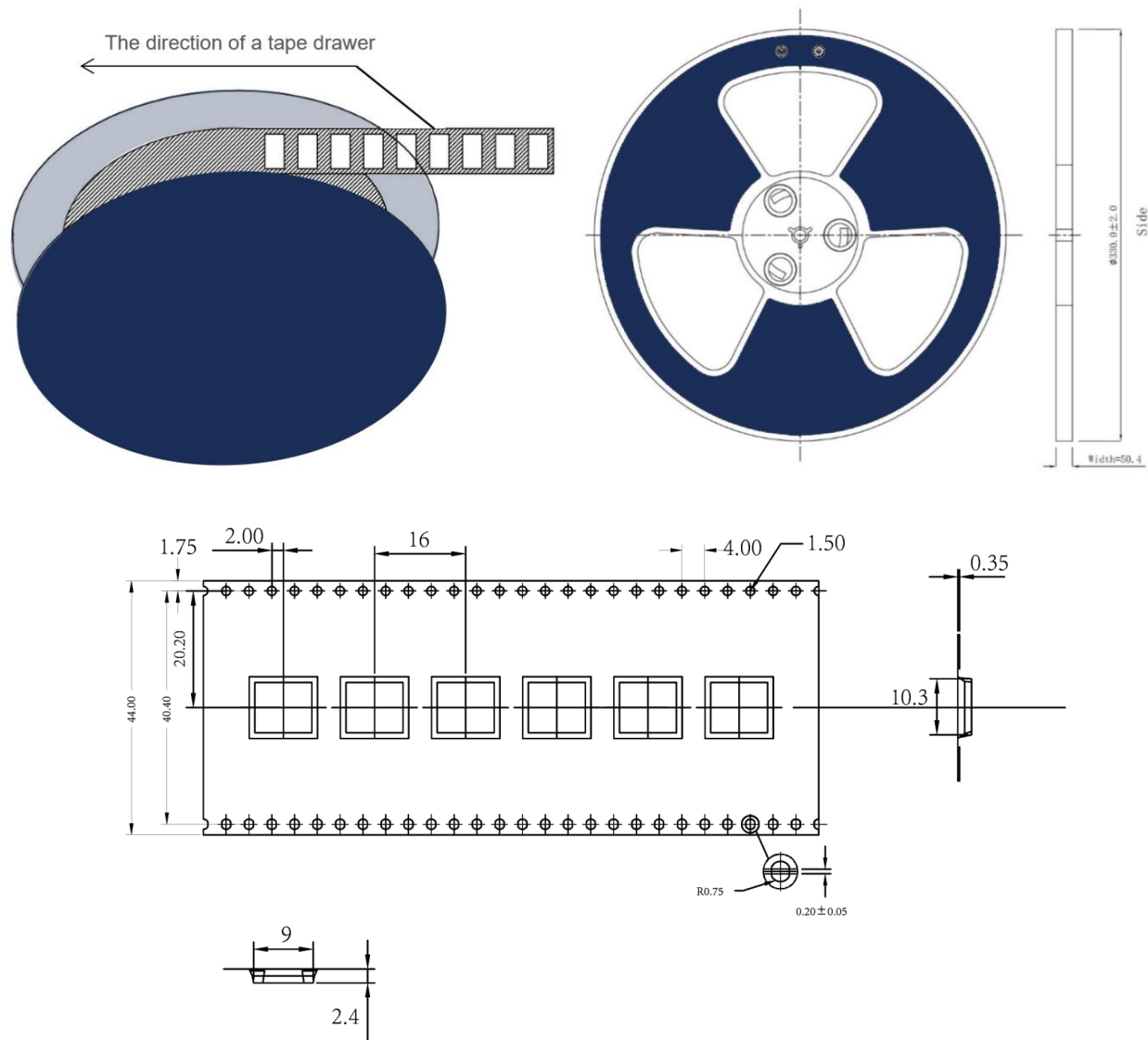
- 1) Do SMT according to above reflow oven temperature deal curve. Max. Temperature is 260°C;

Refer to IPC/JEDEC standard; Peak TEMP<260°C; Times: ≤2 times, suggest only do once reflow soldering on module surface in case of SMT double pad involved. Contact us if special crafts involved.



- 2) Suggesting to make 0.2mm thickness of module SMT for partial ladder steel mesh, then make the opening extend 0.8mm
- 3) After unsealing, it cannot be used up at one time, should be vacuumed for storage, couldn't be exposed in the air for long time. Please avoid getting damp and soldering-pan oxidizing. If there are 7 to 30 days interval before using online SMT, suggest to bake at 65-70 °C for 24 hours without disassembling the tape.
- 4) Before using SMT, please adopt ESD protection measure.

9 Package Information



* (Default unit: mm Default tolerance: ± 0.1)

Packing detail	Specification	Net weight	Gross weight	Dimension
Quantity	850PCS	723g	1183g	W: 44mm,T:0.35mm

*** Note:** Default weight tolerance all are within 10g (except the special notes)

● Quality

Cognizant of our commitment to quality, we operate our own factory equipped with state-of-the-art production facilities and a meticulous quality management system. We hold certifications for ISO9001, ISO14001, ISO27001, OHSA18001, BSCI.

Every product undergoes stringent testing, including transmit power, sensitivity, power consumption, stability, and aging tests. Our fully automated module production line is now in full operation, boasting a production capacity in the millions, capable of meeting high-volume production demands.

● Contact Us

Shenzhen Minewsemi Co., Ltd. is committed to swiftly delivering top-quality connectivity modules to our customers. For assistance and support, please feel free to contact our relevant personnel, or contact us as follows:

Web: www.minewsemi.com

Email: minewsemi@minew.com

Linkedin: www.linkedin.com/company/minewsemi

Shop: <https://minewsemi.en.alibaba.com/>

Tel: +86 0755-28010353

Address: 3rd Floor,I Building, Gangzhilong Science Park, NO.6, Qinglong Road,Longhua District, Shenzhen, China

Click the icon to view and download the latest product documents electronically.



Related documents: Chip specification

● Copyright Statement

This manual and all the contents contained in it are owned by Shenzhen Minewsemi Co., Ltd. and are protected by Chinese laws and applicable international conventions related to copyright laws.

The certified trademarks included in this product and related documents have been licensed for use by MinewSemi. This includes but is not limited to certifications such as BQB, RoHS, REACH, CE, FCC, BQB, IC, SRRC, TELEC, WPC, RCM, WEEE, etc. The respective textual trademarks and logos belong to their respective owners. For example, the Bluetooth® textual trademark and logo are owned by Bluetooth SIG, Inc. Other trademarks and trade names are those of their respective owners. Due to the small size of the module product, the "®" symbol is omitted from the Bluetooth Primary Trademarks information in compliance with regulations.

The company has the right to change the content of this manual according to the technological development, and the revised version will not be notified otherwise. Without the written permission and authorization of the company, any individual, company, or organization shall not modify the contents of this manual or use part or all of the contents of this manual in other ways. Violators will be held accountable in accordance with the law.



Tel: 0086-755-2801 0353

Email: minewsemi@minew.com

Web: www.minewsemi.com

Address: 3rd Floor, Building I, Gangzhilong Science Park, Qinglong Road, Longhua District, Shenzhen 518109, China

