WLT8266BMG BLE透传模块

模块规格书

V1.1

前言

此模块的设计目的是迅速桥接电子产品和智能移动设备，可广泛应用于各种电子设备，如工业控制、仪器仪表、物流跟踪、健康医疗、智能家居、运动计量、汽车电子、休闲玩具等。用户可借此模块，以最短的开发周期整合现有方案或产品，以最快的速度占领市场，同时为企业的发展注入崭新的技术力量。

如下为 WLT8266BM 系列不同型号对比表：

表 1　WLT8266BM 系列比对表

模块类型	功能	尺寸（mm）
WLT8266BMG	维霖通标准软件版本 BLE 模块，不支持软件客制化。标准软件功能包括 BLE 透传、AT Command 控制、手机 APP 配置，OTA 升级 。提供 Android/iOS　APP 参考源代码	15×17
WLT8266BM	可提供客制化软件的 BLE 模块。除支持 WLT8266BMG 所有功能外，还支持从机、主机、Mesh 组网，主从切换，BLE/Mesh 切换等多种工作模式。	
WLT8266BME	在 WLT8266BM 功能基础上精化缩小模块尺寸，以适配更多应用场景。	11.2×15

注：1,尺寸短边为天线所在边，详细尺寸参数请参照相关模块规格书。

2,WLT8266BM 支持 mesh 功能，能够实现用户的组网及多连接需求。另外为了解决使用过程中 Mesh 功耗过高，而 BLE 不能满足组网需求的痛点，我司专门为此研发了 BLE/Mesh 切换系统，在满足用户组网需求的情况下，降低整体系统功耗。详细信息请登录 http://www.wi-linktech.com/联系我司客服。

3,WLT8266BMG，WLT8266BM，WLT8266BME 有带屏蔽罩版本，如有需求可与我司联系。

4,模块样品和开发板获取，请登录阿里巴巴国际站 https://www.alibaba.com/ 搜索 WLT8266BMG 进行购买。或登录 http://www.wi-linktech.com/联系我司客服。

关于本手册

《WLT8266BMG 模块规格书》提供了 WLT8266BMG 模块的基本功能介绍，包括模块的电气规格、射频性能、引脚尺寸、以及参考原理图设计等。读者可以参照此文档对模块的整体功能参数有详细的了解应用，有问题请登录 http://www.wi-linktech.com/联系我司或客服。

修订历史

版本信息管理

版本号	时间	更新记录	编辑者
V1.0	2018.12.19	概述、规格说明、引脚说明、参考设计	Leon、李恩庆
V1.1	2019.02.19	添加前言	郭振兴

目录

1.概述

1.1 功能特点

WLT8266BMG 是维霖通公司研发的小尺寸、低成本的蓝牙 BLE 标准化透传模块。本模块特性如下：

- 内置高性能 32-bit MCU，128KB Flash，16KB SRAM
- 符合蓝牙 5.0 标准
- 高达+8dBm 的输出功率
- -92dBm 的接收灵敏度
- 支持 UART 接口
- 支持 AT 指令
- 支持 APP 参数配置
- 板载高性能 PCB 天线，并支持外接天线
- 邮票孔管脚，焊接容易可靠
- 超小封装：15x17mm
- 通过 FCC 认证，CE 认证，BQB 蓝牙 5.0 认证

WLT8266BMG 模块只需要连接 VCC,GND,TX,RX 四线即可完成数据透传功能，而且还支持使用 AT 指令来修改默认名称等相关参数（详细请见《WLT8266BMG 使用手册》文档）。

模块配置完成后，可以使用相关手机软件测试透传功能。安卓用户通过百度手机助手搜索，可以下载维霖通官方测试软件“维霖通测试软件”。苹果用户推荐使用手机商店的 light blue，如图 1；

图 1

维霖通公司从事蓝牙领域多年，研发实力强劲，能够轻松实现用户蓝牙设备的互联、数据传输以及其它各种应用。我司可以在 WLT8266BMG 标准版模块的基础上，根据客户要求，定制设计符合客户使用规范的蓝牙模块，并提供相应的软硬件支持。详情可联系我司。

1.2 应用领域

个人设备：

穿戴式，鼠标和键盘，遥控玩具；

零售物流：

电子货架标签，冷链运输；

智能家居：

照明，传感器，智能锁，遥控器，割草机，语音控制，智能打印机，升降桌椅；

工业控制：

安防监控，专用打印机，医疗设备；

2. 电气规格

表 2 供电规格

Symbol	Minimum	Typical	Maximum	Units
VDD	2.7	3.3	3.6	V

表 3 数字 I/O 规格

Symbol	Minimum	Normal	Maximum	Units
V_{IH}	0.7VDD	-	VDD	V
V_{IL}	VSS	-	0.3VDD	V
V_{OH}	VDD-0.3	-	VDD	V
V_{OL}	VSS	-	0.3	V

表 4 温度规格

Item	Minimum	Maximum	Units
Storage	-65	+150	℃
Soldering	-	+260	℃
Working	-40	+85	℃

表 5 功耗参数表

工作模式（Item）	典型值（typ）	单位（Units）
发射模式 Tx current @0dBm	10.8	mA
接收模式 Rx current	9.8	mA
睡眠广播（Sleep Advertisement）	30	uA
深睡眠（Deep sleep）	1	uA

环境温度：25℃ 工作电压：3.3V 工作模式：DC-DC

注：发射模式和接收模式的电流典型值是在全速运行下的值

3. 蓝牙规格

表 6　RF_Rx 性能

Item	Symbol	Minimum	Normal	Maximum	Units
Sensitivity	1Mbps	-93	-92	-90	dBm
Frequency offset tolerance	-	-300	-	+300	KHz
Co-channel rejection	-	-	-7	-	dB
In-band blocking rejection	±1 MHz offset	-	12	-	dB
	-2 MHz offset	-	47	-	dB
	-3 MHz offset	-	48	-	dB
	+3 MHz offset	-	50	-	dB
	>4 MHz offset	-	52	-	dB
Image rejection	-	-	44	-	dB

表 7　RF_Tx 性能

Item	Symbol	Minimum	Normal	Maximum	Units
Output	-	-37	0	8	dBm
Modulation 20dB bandwidth	-	-	1000	-	KHz

表 8　WLT8266BMG 模块蓝牙传输实测距离

模块	测试项目	距离（m），空旷地带
WLT8266BMG	数据最大传输距离	70

4. 引脚说明

4.1 引脚分布

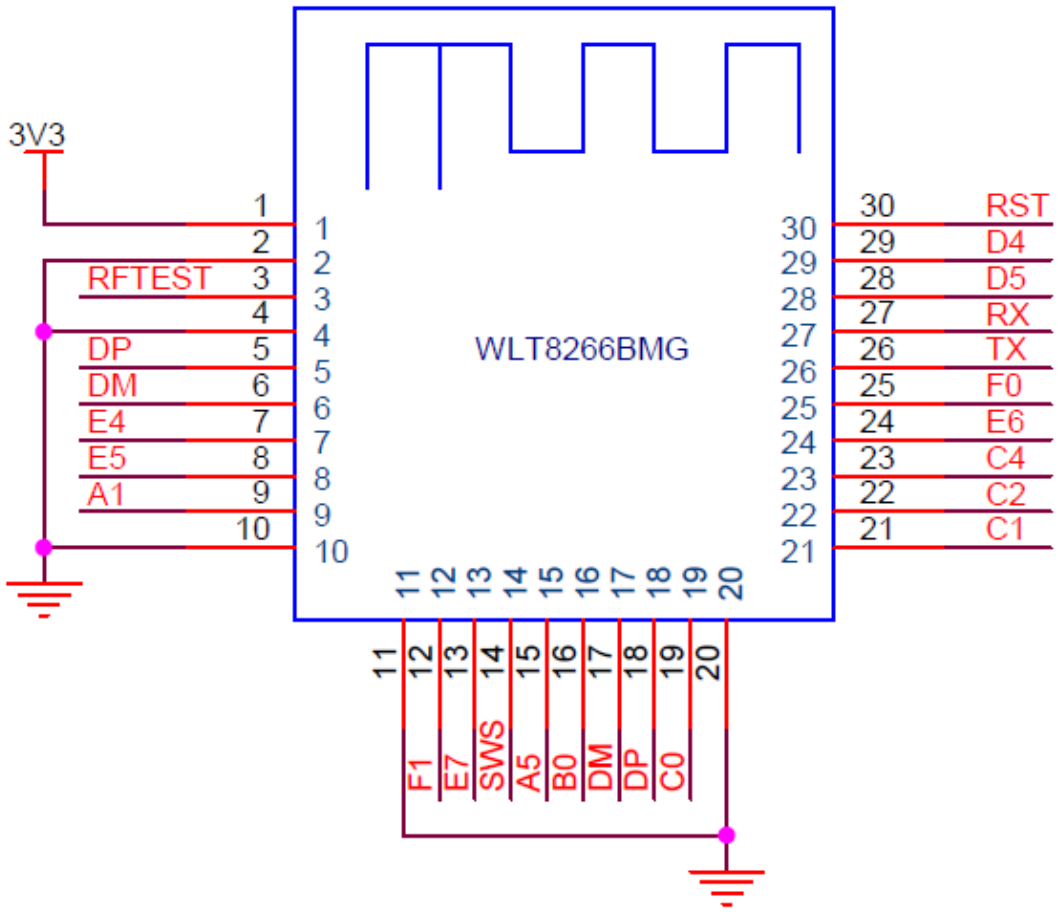


图 2 引脚分布

4.2 引脚定义

表 9 模块引脚定义

PIN #	引脚名	类型	描述
1	3V3	POWER	3.3V 供电
2、4、10、11、20	GND	POWER	地
3	RF_TEST	ANALOG	预留，用作外接天线
5、18	DP	I/O	USB data Positive/GPIO/ANA_B<6>
6、17	DM	I/O	USB data Minus/GPIO/ANA_B<5>
7	E4	I/O	GPIO16/ANA_E<4>
8	E5	I/O	GPIO17/ANA_E<5>
9	A1	I/O	PWM3 output/GPIO/ ANA_A<1>
12	F1	I/O	SPI clock/I2C_SCK/GPIO/ ANA_F<1>
13	E7	I/O	SPI data input/I2C_SDA/GPIO/ ANA_E<7>
14	SWS	I/O	Single wire slave/GPIO/ANA_A<0>
15	A5	I/O	PWM4 output/GPIO/ ANA_A<5>
16	B0	I/O	PWM5 output/GPIO/ ANA_B<0>
19	C0	I/O	PWM0 output/GPIO/ANA_C<0>/ Analog mcrophone Bias
21	C1	I/O	GPIO/PWM1 inverting output/ANA_C<1>/ Analog microphone input
22	C2	I/O	PWM1 inverting output/GPIO/ANA_C<2>
23	C4	I/O	PWM2 output/GPIO/ ANA_C<4>
24	E6	I/O	SPI chip select. Active low/ UART_RTS /GPIO/ANA_E<6>
25	F0	I/O	SPI data output/ UART_CTS /GPIO/ ANA_F<0>
26	TX	I/O	GPIO4/UART_TX/ ANA_C<6>
27	RX	I/O	GPIO5/UART_RX/ ANA_C<7>
28	D5	I/O	GPIO11/ ANA_D<5>/ (optional) 32KHz crystal output
29	D4	I/O	GPIO10/ ANA_D<4>/(optional) 32KHz crystal input
30	RST	I/O	Power on reset, active low

4.3 UART 接口

WLT8266BMG UART 一般采用“四线制”，分别是 UART_TX，UART_RX，UART_RTS，UART_CTS。如果主控 MCU 的可使用引脚数量有限，WLT8266BMG 和主控 MCU 最少可使用“两线制”进行通讯，即只需要 UART_TX，UART_RX。WLT8266BMG 的 UART 接口与客户主控 MCU 连接的示意图如下：

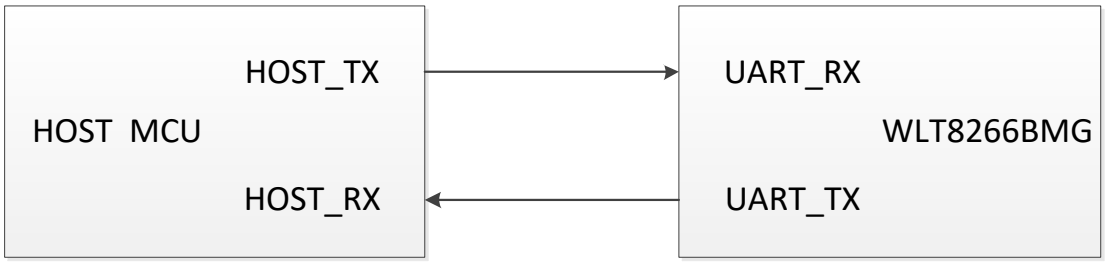


图 3　WLT8266BMG 与主控 MCU 的 UART 接法

5. 参考设计

5.1 参考原理图

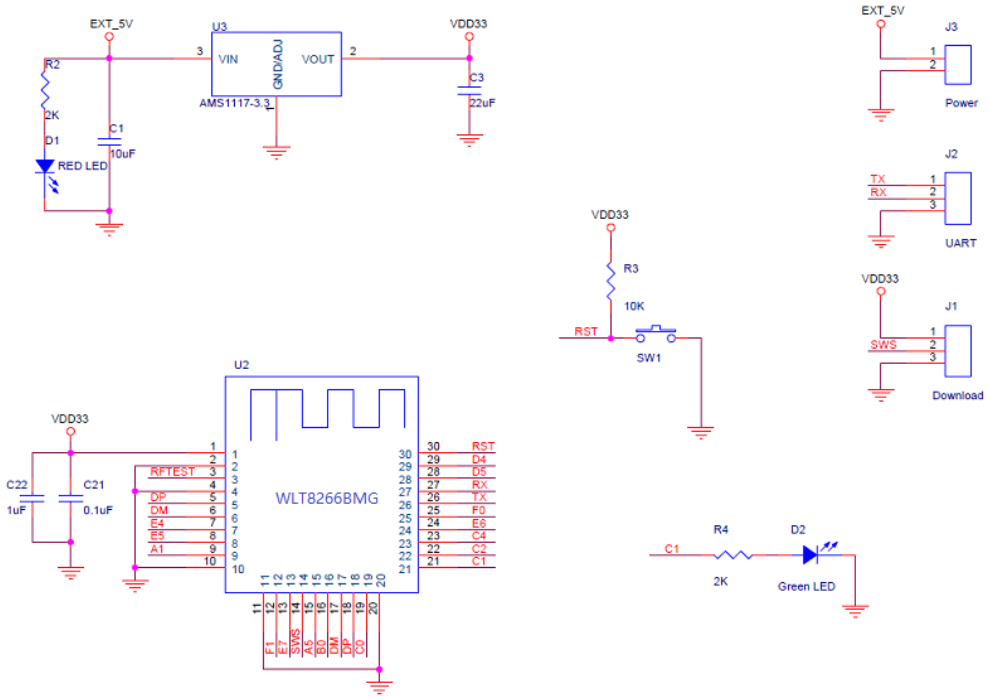


图 4 参考原理图

5.2 模块封装

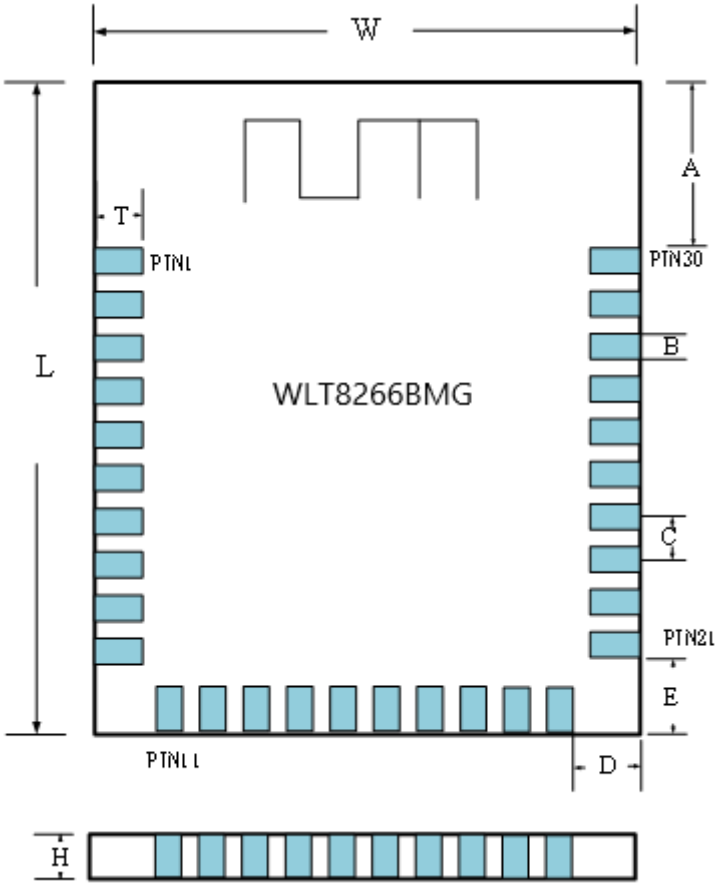


图5 模块封装

表10 模块尺寸

Symbol	Min.	Typ.	Max.
W	14.96	15.00	15.04
L	16.96	17.00	17.04
T	0.73	0.75	0.77
A	4.55	4.60	4.65
B	-	0.80	-
C	-	1.10	-
D	2.10	2.15	2.20
E	1.65	1.7	1.75
H	1.50	1.60	1.70

5.3 模块实物图

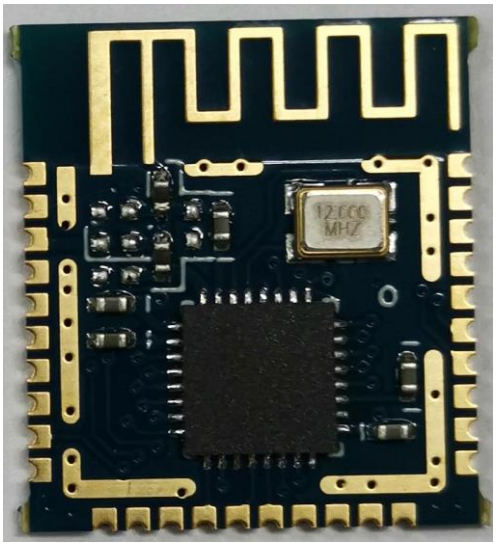


图6 WLT8266BMG模块

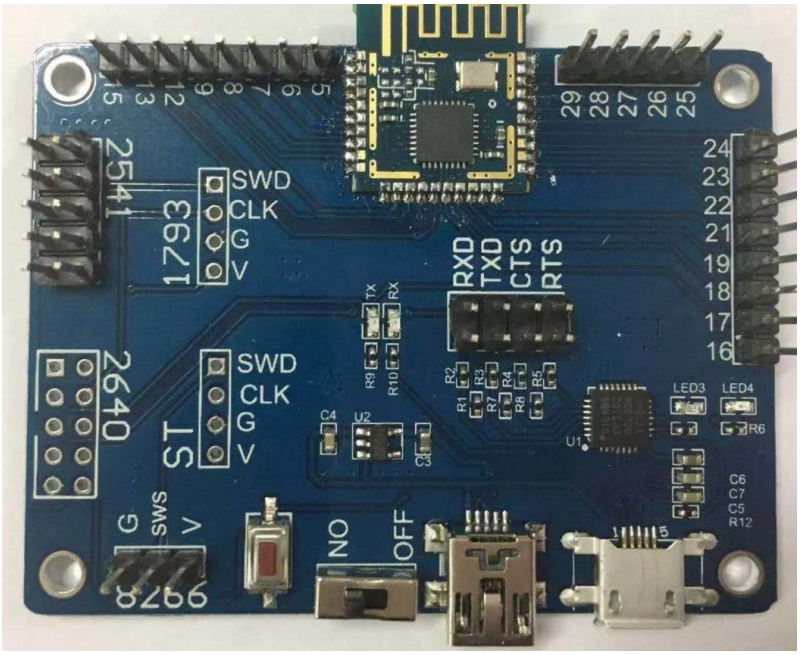


图7 WLT8266BMG开发板

模块样品和开发板获取，请登录阿里巴巴国际站 https://www.alibaba.com/ 搜索 WLT8266BMG 进行购买。或登录 http://www.wi-linktech.com/联系我司客服。

5.4 注意事项

蓝牙工作在 2.4GHz 频率下，应尽量避免各种因素对无线收发的影响，注意以下几点：

- 包围模块的产品外壳部分避免使用金属，如果外壳是金属的，应考虑使用外置天线。
- 产品内部金属螺钉等应远离模块的射频部分。
- 模块应放置于主板的四周，天线部分靠边或角，模块天线下方的主板区域不允许铺铜或走线。

5.5 回流参数推荐

回流参数可以参考以下设置：

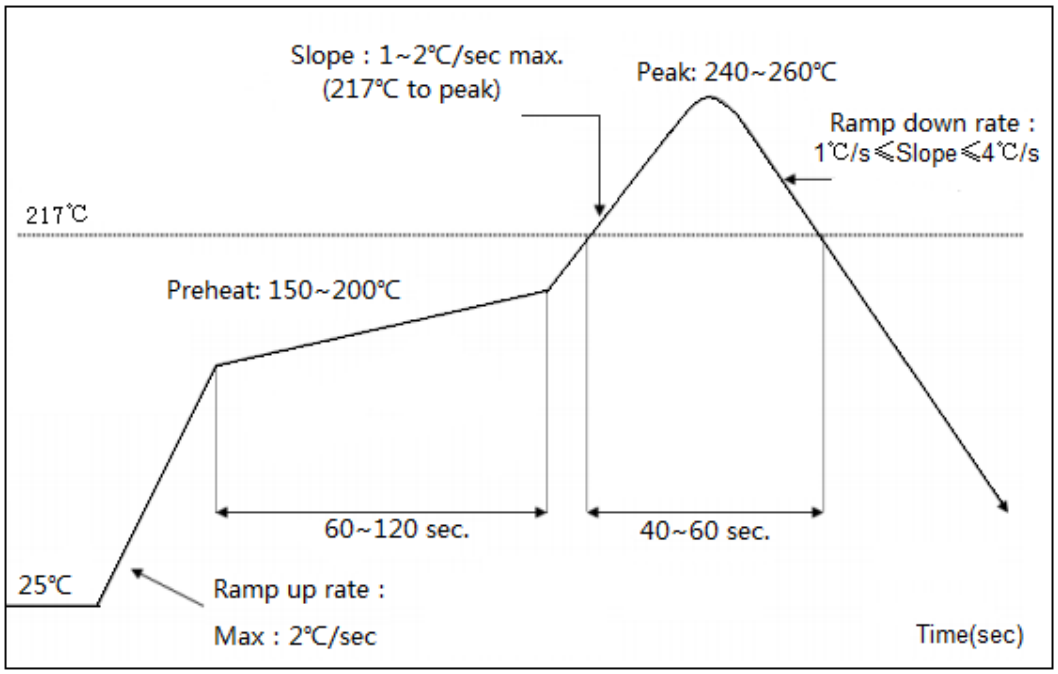


图 8 回流推荐曲线

表 11 回流推荐参数

Temperature range	Time	Key parameters
Preheat zone(<150℃)	60-120S	Ramp up rate:≤2S
Uniform temperature zone(150-200℃)	60-120S	Ramp up rate:<1S
Recirculation zone(>217℃)	40-60S	Peak:240-260℃
Cooling zone	Ramp down rate:1℃/s≤Slope≤4℃/s	

5.6 模块出货包装

卷带（真空包装）

尺寸：半径(R)=160(mm)

图 9 出货包装图

备注：

1 卷带含 1200 片模块。

6. 软件应用

WLT8266BMG 是数据传输模块，支持透明传输模式和命令传输模式。

AT+指令集方式是用户通过串口输入命令来配置参数，具体 AT 命令详解请查看《WLT8266BMG 使用手册》文档。

需要定制功能可采用 WLT8266BM 模块，具体要求请于我司接洽。

7. 附件（相关认证）：

CE 认证：

CERTIFICATE

Anbotek
Product Safety

CERTIFICATE
Of Conformity
Directive 2014/53/EU
On The Radio Equipment Directive

Certificate No.:	ATSZAWW171226003
Certificate Holder:	Wi-linktech Communication Technologies (Shanghai) Co.,Ltd
Address:	Room217, 518Bibo Road, Pudong New District, Shanghai, China
Manufacturer:	Wi-linktech Communication Technologies (Shanghai) Co.,Ltd
Address:	Room217, 518Bibo Road, Pudong New District, Shanghai, China
Product Name:	BT 4.2 single
Model No.:	WLT8266BM
Trade Mark:	N.A.
Rating:	Input: DC 5V, 20mA by USB Port

The radio equipment meets the following essential requirements		Compliled
Article 3(1)(a) ■ Safety	EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013	Yes
Article 3(1)(a) ■ Health	EN 62479:2010	Yes
Article 3(1)(b) ■ EMC	Draft ETSI EN 301 489-1 V2.2.0 (2017-03) EN 55032: 2015 EN 55024: 2010+A1: 2015 Draft ETSI EN 301 489-17 V3.2.0 (2017-03)	Yes
Article 3(2) ■ Radio	Draft ETSI EN 300 328 V2.2.0 (2017-11)	Yes

Note: The attached Annex forms part of this certificate which consists of 2 pages.

ANBOTEK Anbotek CERTIFICATION

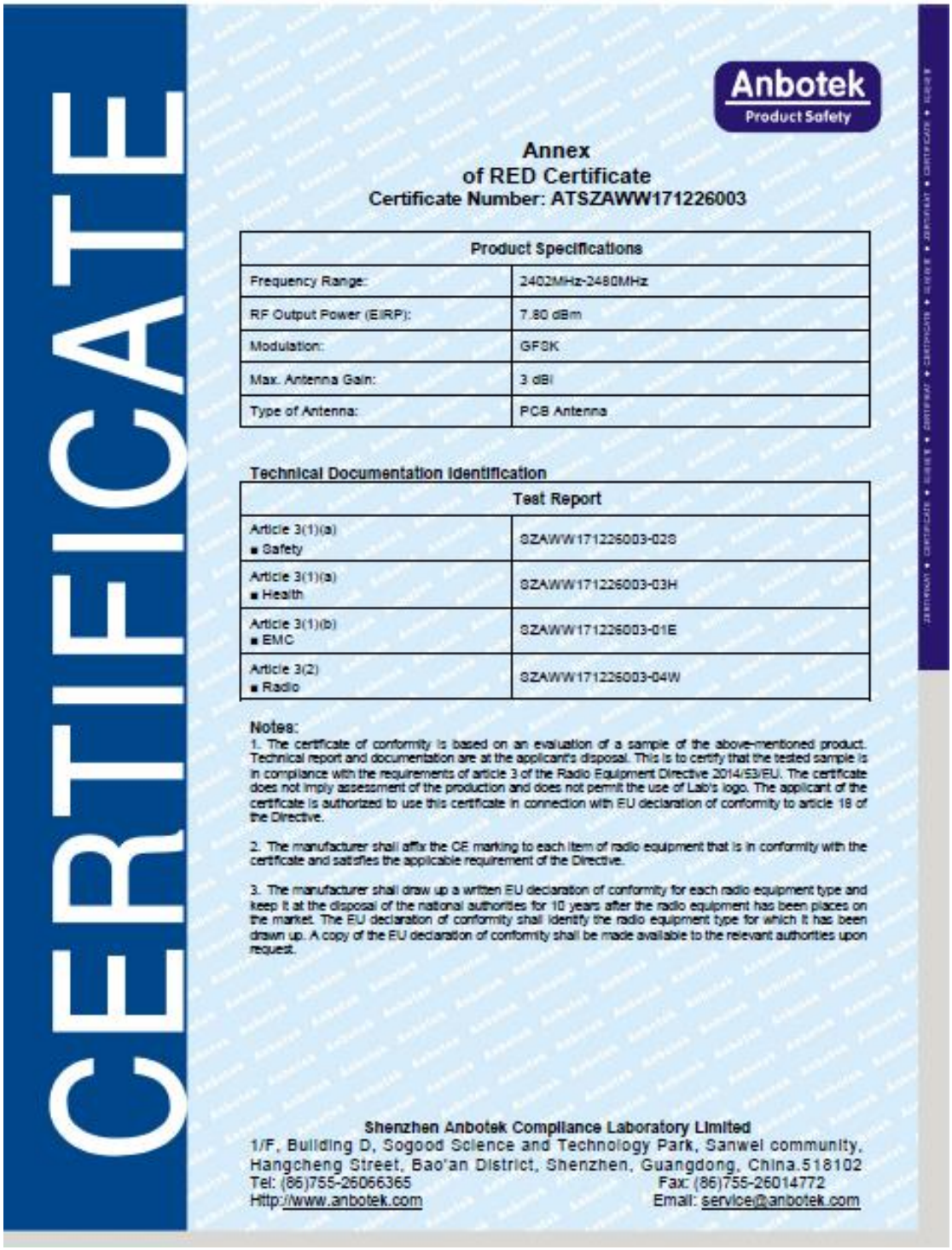
Certified by
Tom Chen
Manager

Jan. 05, 2018
Date

CE The CE Marking may only be used if all relevant and effective EU Directives are complied with CE

Shenzhen Anbotek Compliance Laboratory Limited
1/F, Building D, Sogood Science and Technology Park, Sanwei community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.518102
Tel: (86)755-26066365 Fax: (86)755-26014772
Http://www.anbotek.com Email: service@anbotek.com

图 10　CE 认证（1）



CERTIFICATE

Anbotek
Product Safety

Annex
of RED Certificate
Certificate Number: ATSZAWW171226003

Product Specifications	
Frequency Range:	2402MHz-2480MHz
RF Output Power (EIRP):	7.80 dBm
Modulation:	GFSK
Max. Antenna Gain:	3 dBi
Type of Antenna:	PCB Antenna

Technical Documentation Identification

Test Report	
Article 3(1)(a) ■ Safety	SZAWW171226003-02S
Article 3(1)(a) ■ Health	SZAWW171226003-03H
Article 3(1)(b) ■ EMC	SZAWW171226003-01E
Article 3(2) ■ Radio	SZAWW171226003-04W

Notes:

1. The certificate of conformity is based on an evaluation of a sample of the above-mentioned product. Technical report and documentation are at the applicant's disposal. This is to certify that the tested sample is in compliance with the requirements of article 3 of the Radio Equipment Directive 2014/53/EU. The certificate does not imply assessment of the production and does not permit the use of Lab's logo. The applicant of the certificate is authorized to use this certificate in connection with EU declaration of conformity to article 18 of the Directive.

2. The manufacturer shall affix the CE marking to each item of radio equipment that is in conformity with the certificate and satisfies the applicable requirement of the Directive.

3. The manufacturer shall draw up a written EU declaration of conformity for each radio equipment type and keep it at the disposal of the national authorities for 10 years after the radio equipment has been places on the market. The EU declaration of conformity shall identify the radio equipment type for which it has been drawn up. A copy of the EU declaration of conformity shall be made available to the relevant authorities upon request.

Shenzhen Anbotek Compliance Laboratory Limited
1/F, Building D, Sogood Science and Technology Park, Sanwei community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.518102
Tel: (86)755-26066365 Fax: (86)755-26014772
Http://www.anbotek.com Email: service@anbotek.com

图 11　CE 认证（2）

FCC 认证：

TCB

GRANT OF EQUIPMENT AUTHORIZATION

Certification

Issued Under the Authority of the Federal Communications Commission By:

TCB

MET Laboratories, Inc.
914 W. Patapsco Avenue
Baltimore, MD 21230-3432

Date of Grant: 01/22/2018

Application Dated: 01/22/2018

Wi-linktech Communication Technologies (Shanghai) Co.,Ltd
Room217, 518Bibo Road, Pudong New District
Shanghai,
China

Attention: Sean Zhou , General Manager

NOT TRANSFERABLE

EQUIPMENT AUTHORIZATION is hereby issued to the named GRANTEE, and is VALID ONLY for the equipment identified hereon for use under the Commission's Rules and Regulations listed below.

FCC IDENTIFIER: 2AOO6-WLT8266BM
Name of Grantee: Wi-linktech Communication Technologies (Shanghai) Co.,Ltd
Equipment Class: Digital Transmission System
Notes: BT 4.2 single
Modular Type: Limited Single Modular

Grant Notes	FCC Rule Parts	Frequency Range (MHZ)	Output Watts	Frequency Tolerance	Emission Designator
	15C	2402.0 - 2480.0	0.0061		

Limited modular approval. Output Power listed is peak conducted.

图 12　FCC 认证

BQB 蓝牙 5.0 认证：

Bluetooth

Project Details

< td>

Project Name	WLT82XX moudle
Product Type	End Product
TCRL Version:	TCRL 2018-1
Referenced Qualified Design(s)	
Previously Qualified Design Used in this Qualification(s)	113548
Listing Date	2018-08-16
Declaration ID	D040342

Product Listing(s)

Name	Website	Category	Publish Date	Model Number	Description
WLT82XX moudle	http://www.wi-linktech.com/	Unique Products	8/16/2018 12:00:00 AM	WLT8266BM	BT 5.0 single

Member Company	Wi-linktech communication technologies (Shanghai) Co., Ltd.

Declaring Member Contact / Listing Contact Person

Name	zhou sean
Address	Room207,No.518 Bibo Road,
City	Shanghai
State	Shanghai
Country	China
Postal Code	201203

Complete the Project and Submit Product(s) for Qualification

By typing my name or other symbol of my signature into the "Signature" field below, I agree on behalf of Wi-linktech communication technologies (Shanghai) Co., Ltd. ("Company") to Bluetooth Launch Studio Terms of Use, and I make the following representations and warranties personally and on behalf of Company. The following representations and warranties, together with all project information and the Bluetooth Launch Studio Terms of Use, are the Supplier Declaration of Conformity and Declaration of Compliance described in the Program Reference Document (PRD) and Declaration Process Document (DPD).

- ☑ I am authorized by Company to submit all of the information included in this project and all information is complete and accurate.
- ☑ Company does not, by its governing documents or other applicable law, require more than one signatory, a stamp or seal, or a witnessed signature to be legally bound.
- ☑ I agree on behalf of Company to contract in English and electronically, and adopt the characters and symbols input in the signature field below as my signature, with the same effect as an ink signature.
- ☑ The products included in this project are owned and distributed by Company under a Product name that identifies Company as the source of the Product. Company has the right to use and reference all Qualified Designs referenced in the project, and the products and referenced Qualified Designs comply with the version of the Bluetooth Specification identified in the project submission.
- ☑ The product(s) included in this project and the corresponding Qualified Designs comply with the Bluetooth Launch Studio Terms of Use.

If any of the foregoing is not correct or you do not agree, you must exit this form without signing.

图 13　BQB 蓝牙 5.0 认证