



Specification  
For  
Bluetooth 4.0 BLE Module  
TWR0153  
Rev. 1.00

2012-2014 Pulse(Suzhou) Wireless Products Co., Ltd

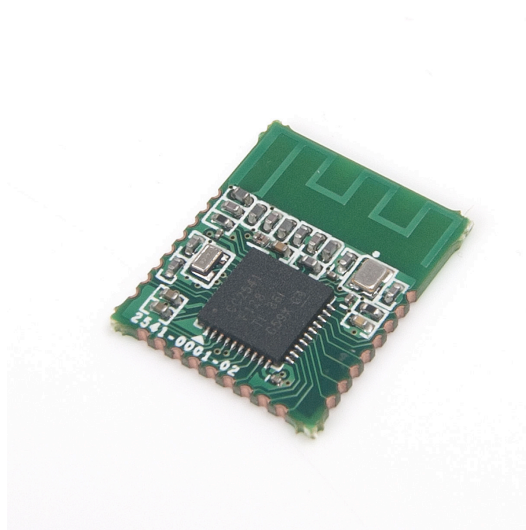
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## ■ Introduction

The TWR0153 is a high performance Bluetooth 4.0 BLE, (Bluetooth Low Energy) module using TI's CC2541 SOC chip. The module is suitable for smart hand-held device low power accessories.

The TWR0153 can support ultra-low-power batteries and sensor-based data collection framework. The Bluetooth 4.0 BLE is the technology adapted wide-ranging deployment in various computing & communication application fields.



## ■ Feature

TWR0153 build-in 8051 MCU, in-system software stack programmable flash memory, 8-KB RAM, and many multiple configuration options other powerful supporting features and peripherals, including UART, IIC and GPIO.

TWR0153 is 25-pin I/O interface (with back size 9 pin) to bring UART, I2C or GPIO data to wireless through Bluetooth BLE protocol. BT0001 build-in the hi-efficiency PCB antenna for compact and easy assembly application.

The TWR0153 is highly suited for systems where allowing ultralow power consumption is required. It is good applications to run on the system specified by various operating modes. short transition's network application.

TWR0153 offers absolute interoperability with different vendors' Bluetooth through the Bluetooth low energy and peripheral Roles proprietary 2.4-GHz applications. It enables robust network nodes to be built with low power consumption

To speed up the design process, TWR0153 provide user friendly library for both iOS ,Android, PC Windows and MAC developer. The App designer can focus on their application topic, it is not necessary for her/him to distract on wireless communication issue. In addition, we also provide software and hardware develop kit for engineer firmware development and upgrade.

## ■ Property

Main Chipset	Realtek RTL8821AE
WiFi	IEEE 802.11b, IEEE 802.11g, IEEE 802.11n
Bluetooth	2.1, 3.0 and 4.0
Host interface	WiFi PCIE, Bluetooth USB:1.1
Antenna	Ante 1: WiFi TX/RX + Bluetooth Ante 2: WiFi TX/RX + Bluetooth
Frequency	WiFi: 2.4GHz (2.412 ~ 2.4835GHz) and 5GHz (5.15 ~ 5.875 GHz) Bluetooth: 2400 ~ 2483.5 GHz
WiFi Modulation Technique	WiFi : DSSS with CCK, DQPSK, BPSK OFDM with BPSK, QPSK, 16QAM, 64QAM BT: GFSK, DQPSK, 8DPSK
Transfer throughput	802.11b: Up to 11Mbps 802.11g: Up to 54Mbps 802.11n: Up to 150Mbps 802.11a: Up to 54Mbps 802.11ac:Up to 433Mbps
Transmit Power	WiFi: 802.11 b: 16dBm +/- 2dBm 802.11 g: 14dBm +/- 2dBm 802.11 n@ 2.4 G(HT 20 MCS7): 13 dBm +/- 2dBm 802.11 n@ 2.4 G (HT 40 MCS7) : 13 dBm +/- 2dBm 802.11 n@ 5 G(HT 20 MCS7): 12 dBm +/- 2dBm 802.11 n@ 5 G (HT 40 MCS7) : 12 dBm +/- 2dBm 802.11 a @ 5G: 13 dBm +/- 2dBm 802.11 ac@ 5 G(HT 80 MCS7): 12 dBm +/- 2dBm 802.11 ac@ 5 G (HT 80 MCS9) : 10 dBm +/- 2dBm

	Bluetooth: -4 ~ 4 dBm
Sensitivity	WiFi: 802.11b: <= -75 dBm 802.11g: <= -65 dBm 802.11n @2.4G(HT 20 MCS7): <= -64 dBm 802.11n @2.4G(HT 40 MCS7): <= -60 dBm 802.11n @5G(HT 20 MCS7): <= -64 dBm 802.11n @5G(HT 40 MCS7): <= -60 dBm 802.11a @5G: <= 65 dBm 802.11ac: <= 51 dBm (VHT80 MCS9)  Bluetooth: -70 dBM
Antenna Connector	IPEX connector *2
Power Supply	3.3V / 0.5 A input

Environment	Operation Temperature: 0°C ~ +55°C Storage Temperature: -5°C ~ +65°C  Operating Humidity 10% ~ 90%, non-condensing  Storage Humidity 5%~90%, non-condensing
PCB Size	22(W) x 30(L) x 2.5 (H) mm (with shielding case)
Environment Compliance	RoHS

## ■ Pin definition

Pin no	Name	Type	Function
1	GND	G	Ground pin
2	VDD33		3.3V power-supply
3	USB D+	I/O	USB, D+, differrnial singal
4	VDD33		3.3V power-supply
5	USB D-	I/O	USB, D-, differrnial singal
6	LED WLAN	O	LED Signal
7	GND	G	Ground pin
8	NC		Non Connection, Floating
9	NC		Non Connection, Floating
10	NC		Non Connection, Floating
11	NC		Non Connection, Floating
12	NC		Non Connection, Floating
13	NC		Non Connection, Floating
14	NC		Non Connection, Floating
15	NC		Non Connection, Floating
16	LED BT	O	BT LED Signal
17	NC		Non Connection, Floating
18	GND	G	Ground pin
19	NC		Non Connection, Floating
20	NC		Non Connection, Floating
21	NC		Non Connection, Floating
22	NC		Non Connection, Floating
23	NC		Non Connection, Floating
24	NC		Non Connection, Floating
25	NC		Non Connection, Floating
26	NC		Non Connection, Floating
27	NC		Non Connection, Floating
28	NC		Non Connection, Floating
29	NC		Non Connection, Floating
30	NC		Non Connection, Floating
31	NC		Non Connection, Floating
32	NC		Non Connection, Floating
33	GND	G	Ground pin
34	NC		Non Connection, Floating
35	HSIP	I	Differential receive

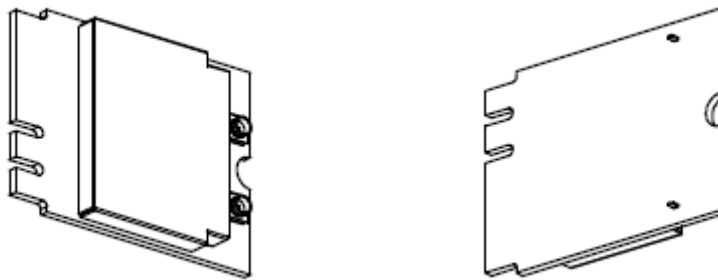
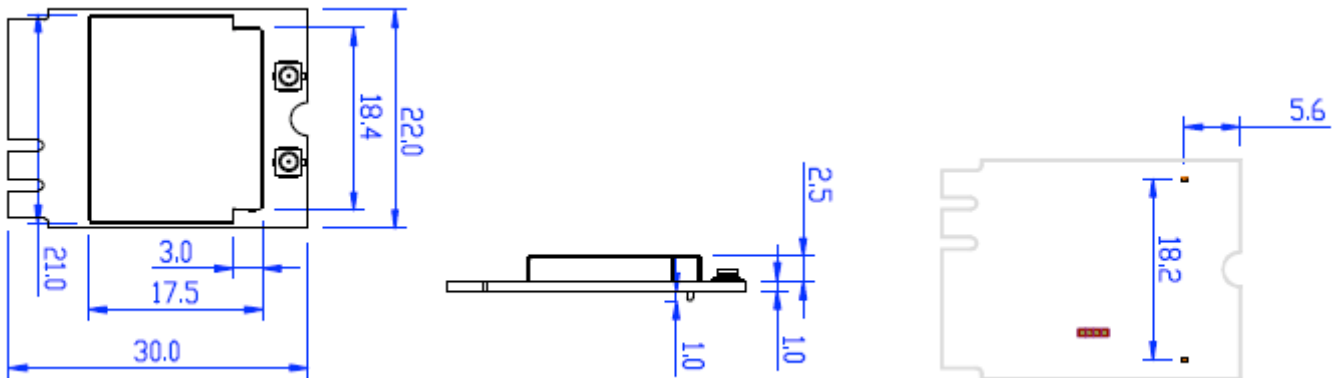
36	NC		Non Connection, Floating
37	HSIN	I	Differential receive
38	NC		Non Connection, Floating
39	GND	G	Ground pin
40	NC		Non Connection, Floating
41	HSOP	O	PCIE transmit differential signal
42	NC		Non Connection, Floating
43	HSON	O	PCIE transmit differential signal
44	NC		Non Connection, Floating
45	GND	G	Ground pin
46	NC		Non Connection, Floating
47	REFCLK+	I	Differential reference clock
48	NC		Non Connection, Floating
49	REFCLK-	I	Differential reference clock
50	SUSCLK		32KHz
51	GND	G	Ground pin
52	PERSTn	I	PCIE Reset Signal, Active Low
53	CLKREQ	O	Reference Clock request
54	BT DISABLE	I	BT Disable: Low, BT Enable: High, PW0001 's Bluetooth can be disable by pull-Low, USB interface also disable.
55	WAKE#	PCIE	PCIE wake up, Active Low to wake up system from Sleep/Suspend
56	WLAN DISABLE	I	WLAN, Low Disable, High Enable
57	GND	G	Ground pin
58	NC		Non Connection, Floating
59	NC		Non Connection, Floating
60	NC		Non Connection, Floating
61	NC		Non Connection, Floating
62	NC		Non Connection, Floating
63	GND	G	Ground pin
64	NC		Non Connection, Floating
65	NC		Non Connection, Floating
66	NC		Non Connection, Floating
67	NC		Non Connection, Floating

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68	NC		Non Connection, Floating
69	GND	G	Ground pin
70	NC		Non Connection, Floating
71	GPIO2	I/O	GPIO
72	NC		Non Connection, Floating
73	GPIO3	I/O	GPIO
74	NC		Non Connection, Floating
75	GND	G	Ground pin

## ■ Module PCB Dimension



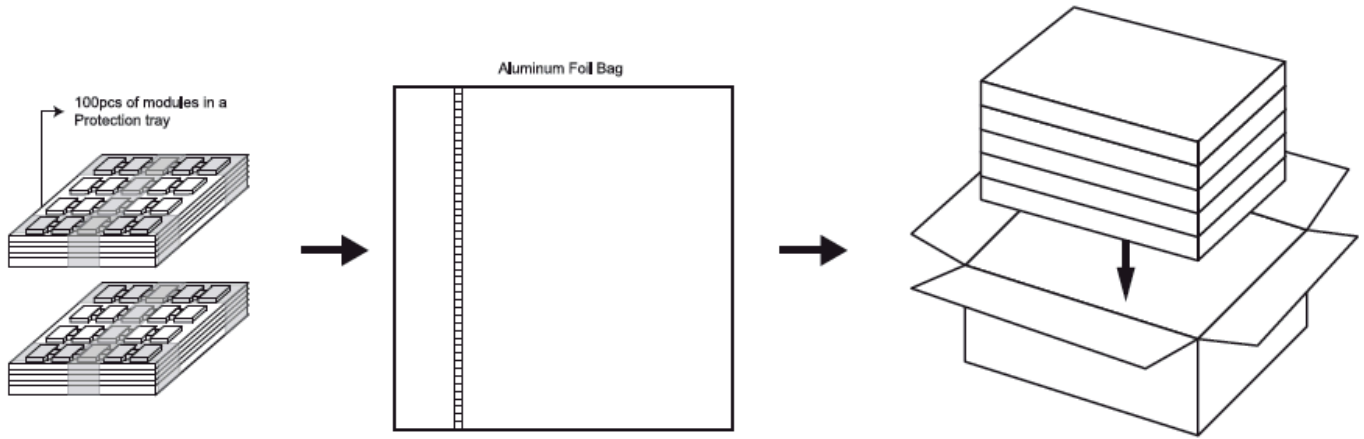


## ■ Certification

CE: Pass  
 FCC, TELEC, KCC, NCC Module applying

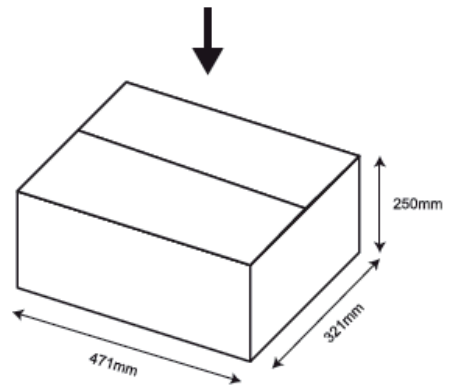
## ■ Module Packing





1. Pack 2 Protection trays (200pcs of modules) into an Aluminum Foil Bag. Seal the Aluminum Foil Bag.

2. Pack 5 Aluminum Foil Bags with the modules into a carton box (1000pcs in total).



Carton Size: 471 x 321 x 250mm  
Q'TY: 1000 pcs

**Carton Box  
Packing Instruction**

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