

IEEE 802.11b/g/n 1T/1R SDIO WiFi Module With Bluetooth v2.1/v3.0/v4.1/v4.2

Model Number: WCT0TR1001

(Realtek RTL8821CS)

DESIGN	CHECK	APPROVAL
A	B	C

Document revision history

Revision	Date	Approved by	Remarks
Version 1.0	2020-11-28	C	Release

1. General Description

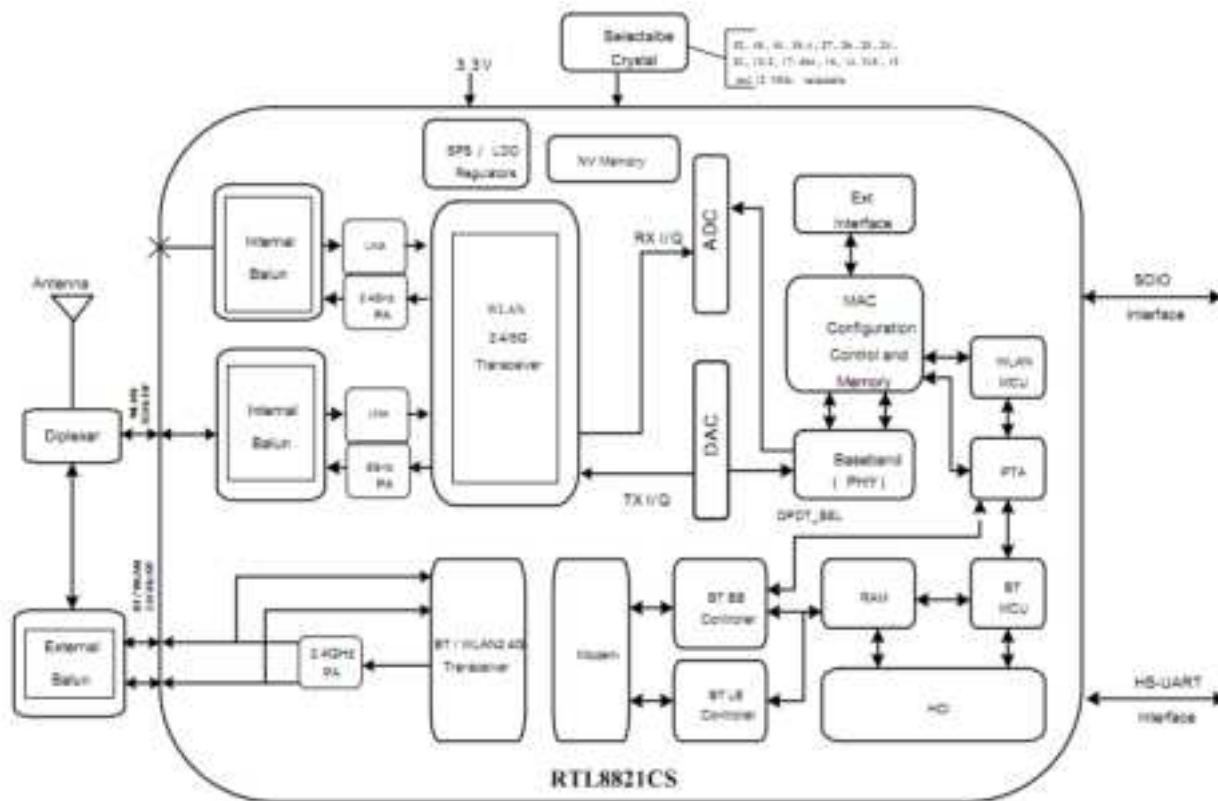
This document is to specify the product requirements for 1T1R 802.11 b/g/n Module and also for Bluetooth .This Module is based on RTL8821CS chipset that complied with IEEE 802.11b/g/n standard for 2.4GHz. It can be used to provide up to 54Mbps for IEEE 802.11g, 11Mbps for IEEE 802.11b,150Mbps for IEEE 802.11n to connect your wireless LAN. The Bluetooth part supports latest v4.2 specification.

2. Features

- SDIO(SDIO 1.1/2.0/3.0 compliant)for WiFi
- Compatible with IEEE 802.11b standard to provide wireless 11Mbps data rate.
- Compatible with IEEE 802.11 g standard to provide wireless 54Mbps data rate.
- Compatible with IEEE 802.11n standard to provide wireless 150Mbps data rate.
- Operation at 2.4~2.5GHz frequency band to meet worldwide regulations
- Maximum reliability,throughput and connectivity with automatic data rate switching
- Support WEP/WPA/WPA2
- Bluetooth v2.1/v3.0/v4.1/v4.2
- 20MHz and 40MHz bandwidth at 2.4G,20MHz ,40MHz
- RoHS compliant.

3. Application Diagrams

3.1 Functional Block Diagram



3.2 General Requirements

3.2.1 IEEE 802.11b Section

	Feature	Detailed Description
3.2.1.1	Standard	IEEE 802.11b
3.2.1.2	Radio and Modulation Schemes	DQPSK , DBPSK and CCK with DSSS
3.2.1.3	Operating Frequency	2400 ~ 2483.5MHz ISM band
3.2.1.4	Channel Numbers	13 channels for Worldwide
3.2.1.5	Data Rate	at most 11Mbps
3.2.1.6	Media Access Protocol	CSMA/CA with ACK
3.2.1.7	Transmitter Output Power at Antenna Connector	- Typical RF Output Power at each RF chain,and at room Temp. 25°C 17±1 dBm
3.2.1.8	Receiver Sensitivity at Antenna Connector	- Typical Sensitivity at each RF chain. @Frame (1000-byte PDUs) Error Rate<8% at room Temp 25°C -83 dBm for 11Mbps

3.2.2 IEEE 802.11g Section

	Feature	Detailed Description
3.2.2.1	Standard	IEEE 802.11g
3.2.2.2	Radio and Modulation Type	QPSK , BPSK , 16QAM ,64QAM with OFDM
3.2.2.3	Operating Frequency	2400 ~ 2483.5MHz ISM band
3.2.2.4	Channel Numbers	13 channels for Worldwide
3.2.2.5	Data Rate	at most 54Mbps
3.2.2.6	Media Access Protocol	CSMA/CA with ACK
3.2.2.7	Transmitter Output Power at Antenna Connector	- Typical RF Output Power at each RF chain, at room Temp. 25°C 12±1 dBm
3.2.2.8	Receiver Sensitivity at Antenna Connector	- Typical Sensitivity at each RF chain. @Frame(1000-byte PDUs)Error Rate<10% at room Temp 25°C -71 dBm at 54Mbps

3.2.3 IEEE 802.11n Section

	Feature	Detailed Description
3.2.4.1	Standard	IEEE 802.11n
3.2.4.2	Radio and Modulation Type	BPSK , QPSK , 16QAM ,64QAM with OFDM
3.2.4.3	Operating Frequency	2.4GHz :2400 ~ 2483.5MHz for ISM band
3.2.4.4	Data Rate	at most 150Mbps
3.2.4.5	Media Access Protocol	CSMA/CA with ACK
3.2.4.6	Transmitter Output Power at Antenna Connector	Typical RF Output Power at each RF chain,and at roomTemp. 25°C
		2.4GHz Band/HT20 12±1dBm
		2.4GHz Band/HT40 12±1dBm
3.2.4.7	Receiver Sensitivity at Antenna Connector	Typical Sensitivity at each RF chain. @Frame(1000-byte PDUs)Error Rate=10% and at room Temp. 25°C
		2.4GHz Band/HT20 -68dBm at MCS7
		2.4GHz Band/HT40 -66dBm at MCS7

3.2.4 Bluetooth Specification Conditions:

Main chipset	Realtek RTL8821CS
Operating frequency	2402MHz-2480Mhz
Standards	v2.1+EDR/V3.0/v4.1/v4.2
Modulation	8DPSK, $\pi/4$ DQPSK ,GFSK
PHY data rates	1Mbps for Basic Rate 2,3 Mbps for Enhanced Data Rate
Media Access Control	AFH,Time Division
Network Architecture	Pico Net,Scatter Net
Security	Simple Paring
Host interface	UART

4. Electrical and Thermal Characteristics

4.1 General Section

	Feature	Detailed Description
4.1.1	Antenna Type	external
4.1.2	Operating Voltage	3.3V$\pm$10%
4.1.3	Interface	- SDIO 1.1/2.0/3.0 interface for WLAN - UART interface for BT

4.2 Software Requirements

Driver	Windows, Linux, Android
Security	64/128-bits WEP, WPA, WPA2

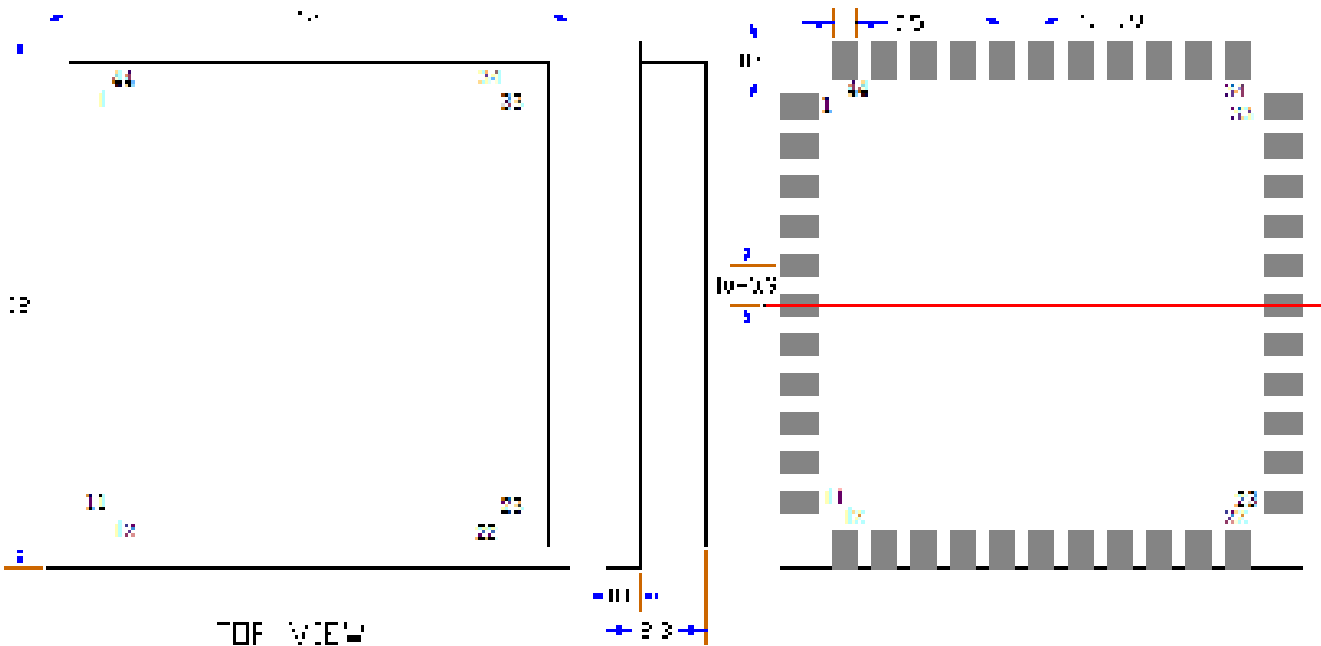
4.3 Environment Requirements:

Parameter	Minimum	Maximum	Units
Storage Temperature	-40	+80	°C
Ambient Operating Temperature	0	60	°C
Junction Temperature	0	125	°C

4.4 Mechanical Requirements

	Feature	Detailed Description
4.4.1	Length	• 15mm
4.4.2	Width	• 13mm
4.4.3	Height	• 0.8mm(PCB)

4.5 Mechanical Dimensions(unit:mm)



尺寸误差范围:

DIM(MM)	Tolerance(MM)
0-5	±0.15
5-10	±0.20
10-50	±0.30

4.6 Pin Definitions

Pin	Symbol	Type	Description	Pin	Symbol	Type	Description
1	GND	-	Ground	25	PCM_OUT	O	PCM_DATA_OUTP UT
2	RF	-	RF	26	PCM_CLK	I/O	PCM_CLOCK
3	GND	-	Ground	27	PCM_IN	I	PCM_DATA_INPU T
4	NC	-	Not Connected	28	PCM_SYNC	I/O	PCM_ Synchronize
5	NC	-	Not Connected	29	NC	-	Not Connected
6	HOST_WA KE_BT	I	Host Wakeup BT	30	NC	-	Not Connected
7	BT_WAKE_ HOST	O	BT Wakeup Host	31	GND	-	Ground
8	NC	-	Not Connected	32	NC	-	Not Connected
9	VCC	P	3.3V	33	GND	-	Ground
10	NC	-	Not Connected	34	BT_DIS_N	I	BT_EN
11	NC	-	Not Connected	35	VBAT_EN	I	Battery LDO enabled
12	SD_RESET	I	WL_REG_ON	36	GND	-	Ground
13	SD_WAKE	O	WL_WAKE_HOST	37	NC	-	Not Connected
14	SD_D2	I/O	SDIO _Data2	38	NC	-	Not Connected
15	SD_D3	I/O	SDIO _Data3	39	NC	-	Not Connected
16	SD_CMD	I/O	SDIO _CMD	40	NC	-	Not Connected
17	SD_CLK	I/O	SDIO _Clock	41	UART_RTS	O	BT_uart_interface
18	SD_D0	I/O	SDIO _Data0	42	UART_TX	O	BT_uart_interface
19	SD_D1	I/O	SDIO _Data1	43	UART_RX	I	BT_uart_interface
20	GND	-	Ground	44	UART_CTS	I	BT_uart_interface
21	NC	-	Not Connected	45	TP1	-	Not Connected
22	VDDIO	P	I/O voltage supply input	46	TP2	-	Not Connected
23	NC	-	Not Connected	47	TP3	-	Not Connected
24	SUSCLK	I	Shared with EECS. External 32K or RTC clock input				

支持CCX V4，但不支持CCX的认证。

FCC Certification Requirements.

According to the definition of mobile and fixed device is described in Part 2.1091(b), this device is a mobile device.

And the following conditions must be met:

1. This Modular Approval is limited to OEM installation for mobile and fixed applications only. The antenna installation and operating configurations of this transmitter, including any applicable source-based time-averaging duty factor, antenna gain and cable loss must satisfy MPE categorical Exclusion Requirements of 2.1091.
2. The EUT is a mobile device; maintain at least a 20 cm separation between the EUT and the user's body and must not transmit simultaneously with any other antenna or transmitter.
3. A label with the following statements must be attached to the host end product: This device contains FCC ID: HD5-WCT0TR1001.
4. To comply with FCC regulations limiting both maximum RF output power and human exposure to RF radiation, maximum antenna gain (including cable loss) must not exceed:

Antenna Type	Frequency Band (GHz)	Antenna Gain (dBi)	
		With Cable	Without Cable
PCB Antenna	2.4~2.5	1.99	
Dipole Antenna	2.4~2.5	1.90	5.00

5. This module must not transmit simultaneously with any other antenna or transmitter
6. The host end product must include a user manual that clearly defines operating requirements and conditions that must be observed to ensure compliance with current FCC RF exposure guidelines.

For portable devices, in addition to the conditions 3 through 6 described above, a separate approval is required to satisfy the SAR requirements of FCC Part 2.1093

If the device is used for other equipment that separate approval is required for all other operating configurations, including portable configurations with respect to 2.1093 and different antenna configurations.

For this device, OEM integrators must be provided with labeling instructions of finished products. Please refer to KDB784748 D01 v07, section 8. Page 6/7 last two paragraphs:

A certified modular has the option to use a permanently affixed label, or an electronic label. For a permanently affixed label, the module must be labeled with an FCC ID - Section 2.926 (see 2.2 Certification (labeling requirements) above). The OEM manual must provide clear instructions explaining to the OEM the labeling requirements, options and OEM user manual instructions that are required (see next paragraph).

For a host using a certified modular with a standard fixed label, if (1) the module's FCC ID is not visible when installed in the host, or (2) if the host is marketed so that end users do not have straightforward commonly used methods for access to remove the module so that the FCC ID of the module is visible; then an additional permanent label referring to the enclosed module: "Contains Transmitter Module FCC ID: HD5-WCT0TR1001" or "Contains FCC ID: HD5-WCT0TR1001" must be used. The host OEM user manual must also contain clear instructions on how end users can find and/or access the module and the FCC ID.

The final host / module combination may also need to be evaluated against the FCC Part 15B criteria for unintentional radiators in order to be properly authorized for operation as a Part 15 digital device.

The user's manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. In cases where the manual is provided only in a form other than paper, such as on a computer disk or over the Internet, the information required by this section may be included in the manual in that alternative form, provided the user can reasonably be expected to have the capability to access information in that form.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference

by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/ TV technician for help.

ISED Statement

RSS-GEN

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Radiation Exposure Statement:

The EUT is a mobile device; maintain at least a 20 cm separation between the EUT and the user's body and must not transmit simultaneously with any other antenna or transmitter.

Déclaration d'exposition aux radiations:

L'EST est un appareil mobile; maintenir une distance d'au moins 20 cm entre l'EST et le corps de l'utilisateur et ne pas émettre simultanément avec une autre antenne ou un autre émetteur.

To comply with IC regulations limiting both maximum RF output power and human exposure to RF radiation, maximum antenna gain (including cable loss) must not exceed:

Pour se conformer aux réglementations IC limitant à la fois la puissance de sortie RF maximale et l'exposition humaine au rayonnement RF, le gain d'antenne maximal (y compris la perte de câble) ne doit pas dépasser:

Antenna Type	Frequency Band (GHz)	Antenna Gain (dBi)	
		With Cable	Without Cable
PCB Antenna	2.4~2.5	1.99	
Dipole Antenna	2.4~2.5	1.90	5.00

The host product shall be properly labelled to identify the modules within the host product.

The Innovation, Science and Economic Development Canada certification label of a module shall be clearly visible at all times when installed in the host product; otherwise, the host product must be labeled to display the Innovation, Science and Economic Development Canada certification number for the module, preceded by the word "Contains" or similar wording expressing the same meaning, as follows: "Contains IC: 1693B-WCT0TR1001" or "where: 1693B-WCT0TR1001 is the module's certification number".

Le produit hôte doit être correctement étiqueté pour identifier les modules dans le produit hôte. L'étiquette de certification d'Innovation, Sciences et Développement économique Canada d'un module doit être clairement visible en tout temps lorsqu'il est installé dans le produit hôte; sinon, le produit hôte doit être étiqueté pour afficher le numéro de certification d'Innovation, Sciences et Développement économique Canada pour le module, précédé du mot «Contient» ou d'un libellé similaire exprimant le même sens, comme suit: Contient IC: 1693B-WCT0TR1001 ou "où: 1693B-WCT0TR1001 est le numéro de certification du module".

PD43 | PC43d | PC43t

Wi-Fi/Bluetooth Module Installation Instructions

Wi-Fi/Bluetooth 模块安装说明

Wi-Fi/Bluetooth 模組安裝說明

Instructions d'installation du module Wi-Fi/Bluetooth

Installationsanleitung für Wi-Fi/Bluetooth-Modul

Petunjuk Pemasangan Modul Wi-Fi/Bluetooth

Istruzioni per l'installazione del modulo Wi-Fi/Bluetooth

Wi-Fi/Bluetooth 모듈 설치 안내

Instruções de Instalação do Módulo Wi-Fi/Bluetooth

Инструкции по установке модуля Wi-Fi/Bluetooth

Instrucciones para instalar el módulo de Wi-Fi/Bluetooth

Wi-Fi/Bluetooth Modül Kurulum Talimatları

Turn the printer off and disconnect the power cable before you begin.

The illustrations show how to install the module in a PC43d printer. The module position is different in the PD43 and PC43t printers as shown in Step 4.



Follow standard electrostatic discharge (ESD) guidelines to avoid damaging equipment.

开始前，请先关闭打印机并断开电源电缆连接。

该示意图说明在 PC43d 打印机中安装模块的方法。如步骤 4 中所示，在 PD43 和 PC43t 打印机中，模块的安装位置不同。



按照标准静电放电（ESD）安全准则进行操作，避免损坏设备。

開始前，先關閉印表機並拔下電源線。

此圖示顯示如何在 PC43d 印表機中安裝模組。如步驟 4 所示，PD43 和 PC43t 印表機中的模組有不同的位置。



依照標準的靜電放電 (ESD) 規定以避免設備損壞。

Éteignez l'imprimante et débranchez le câble d'alimentation avant de commencer. Les illustrations montrent comment installer le module dans une imprimante PC43d. La position du module est différente dans les imprimantes PD43 et PC43t, comme illustré à l'étape 4.



Suivez les consignes standard relatives aux décharges électrostatiques pour éviter d'endommager l'équipement.

Den Drucker ausschalten und vor dem Beginnen das Netzkabel abziehen. Die Abbildungen zeigen die Installation des Moduls in einem PC43d-Drucker. Die Modulposition unterscheidet der Drucker PD43 und PC43t unterscheidet sich (siehe Schritt 4).



Standardrichtlinien zur elektrostatischen Entladung (ESD) einhalten, um eine Beschädigung der Geräte zu vermeiden.

Matikan printer dan lepaskan kabel listrik sebelum memulai.

Ilustrasi ini menunjukkan cara memasang modul di printer PC43d. Posisi modul pada printer PD43 dan PC43t berbeda, seperti ditunjukkan pada Langkah 4.



Ikuti panduan pelepasan listrik statis (ESD) standar untuk menghindari rusaknya peralatan.

Prima di iniziare, spegnere la stampante e scollegare il cavo di alimentazione.

Le illustrazioni mostrano come installare il modulo in una stampante PC43d. La posizione del modulo è diversa nelle stampanti PD43 e PC43t come illustrato al punto 4.



Seguire le indicazioni standard sul rischio di scarica elettrostatica per prevenire danni all'apparecchiatura.

시작하기 전에 프린터를 끄고 전원 케이블 연결을 해제합니다 .

이 그림은 PC43d 프린터에 모듈을 설치하는 방법을 보여줍니다 . 모듈 위치는 4단계에 표시된 대로 PD43 및 PC43t 프린터에서 서로 다릅니다.



장비 손상을 방지하려면 표준 ESD(정전 방전) 지침을 준수합니다 .

Antes de começar, desligue a impressora e desconecte o cabo elétrico.

As ilustrações mostram como instalar o módulo na impressora PC43d. A posição do módulo nas impressoras PC43d e PC43t é diferente, conforme mostrado na Etapa 4.



Para evitar danos ao equipamento, siga as diretrizes padrão referentes à descarga eletrostática (ESD).

Прежде чем начать, выключите принтер и отсоедините шнур питания.

На рисунках показан порядок установки модуля в принтер PC43d. Положение модуля в принтерах PD43 и PC43t отличается, как показано на этапе 4.



Следуйте стандартным нормативам по предотвращению электростатического разряда (ESD), чтобы избежать повреждения оборудования.

Apague la impresora y desconecte el cable de alimentación antes de comenzar.

Las figuras le muestran cómo instalar el módulo en una impresora PC43d. La posición del módulo es diferente en las impresoras PD43 y PC43t, como se ilustra en el paso 4.



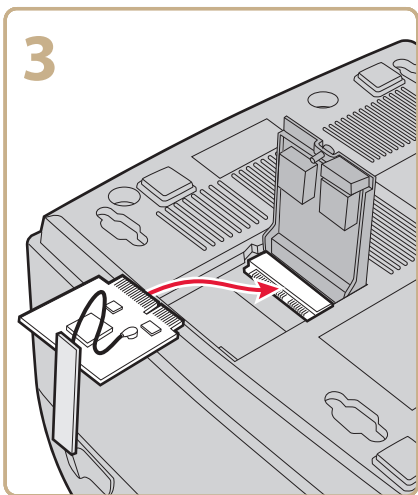
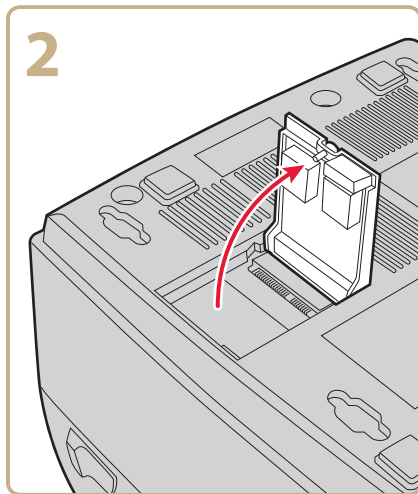
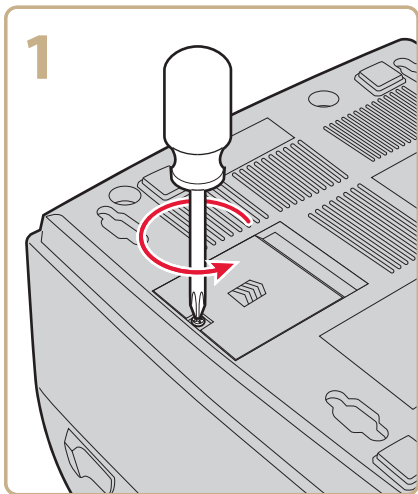
Siga las pautas estándar de maneja de cargas electrostáticas para evitar daños al equipo.

Başlamadan önce yazıcıyı kapatın ve güç kablosunu prizden çekin.

Çizimler, modülün PC43d yazıcısına nasıl kurulacağını gösterir. 4. adımda gösterildiği gibi PC43d ve PC43t yazıcılarda modülün pozisyonu farklıdır.

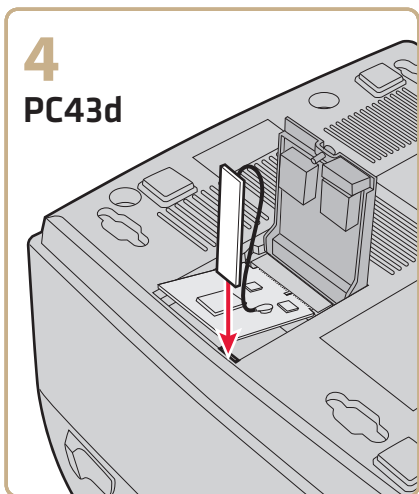


Cihazın zarar görmesini engellemek için standart elektrostatik boşalım (ESD) yönergelerini izleyin.

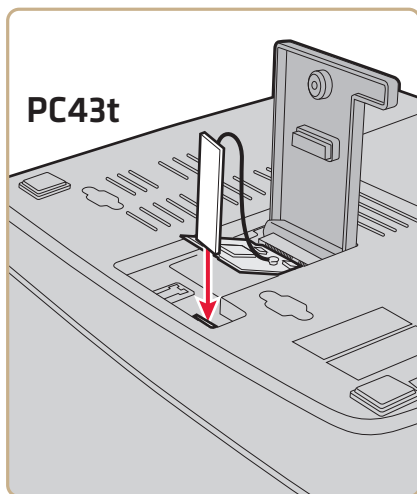


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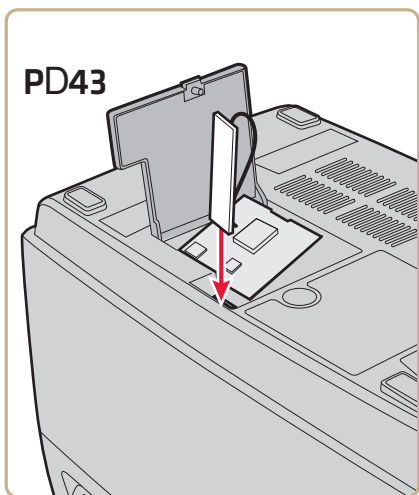
PC43d

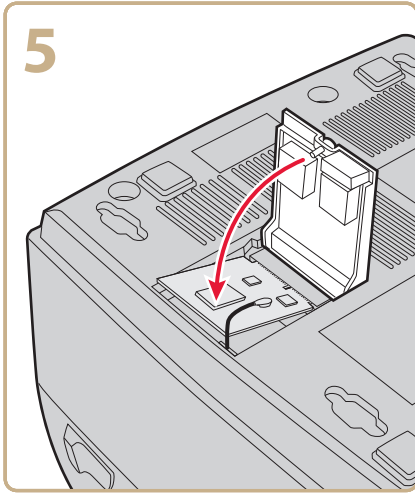


PC43t



PD43





Route the antenna cable to keep clear of the access door.

合理布置天线电缆，避开检修门。

佈置天線纜線以清空存取門。

Acheminez le câble de l'antenne de sorte à dégager la porte d'accès.

Das Antennenkabel beim Verlegen von der Fachklappe fernhalten.

Disporre il cavo dell'antenna in modo da non ostacolare lo sportello di accesso.

Atur kabel antena agar tidak mengganggu pintu akses.

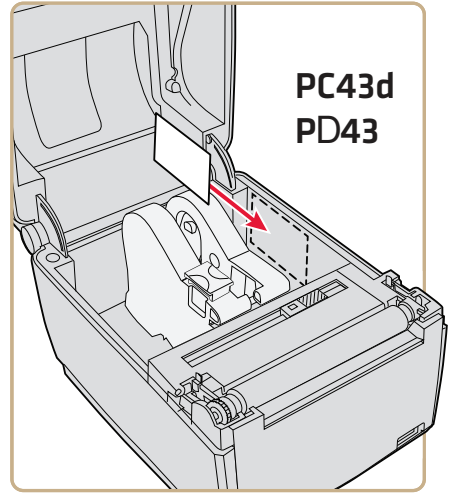
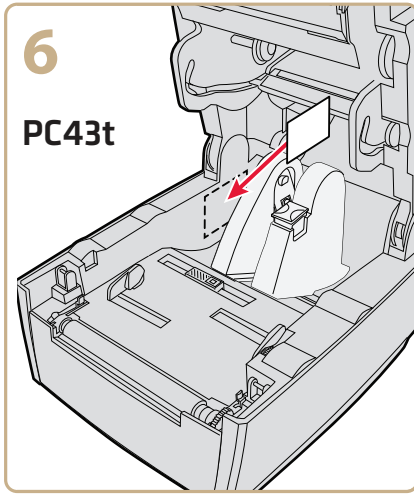
접속부에서 떨어지도록 안테나 케이블 방향을 정합니다 .

Disponha o cabo da antena de modo que a tampa de acesso fique desimpedida.

Протяните кабель антенны так, чтобы крышка гнезда беспрепятственно открывалась.

Tienda el cable de la antena de manera que no interfiera con la puerta de acceso.

Anten kablosunu giriş kapağının önü açık olacak şekilde yerleştirin.



For more information, see the *PD43 and PC43 Desktop Printer User Manual*.

有关详细信息，请参阅 PD43 和 PC43 桌面型打印机用户手册。

關於詳細資訊，請參閱 PD43 及 PC43 桌上型印表機使用者手冊。

Pour plus d'informations, consultez le manuel d'utilisation des imprimantes de bureau PD43 et PC43.

Weitere Informationen entnehmen Sie bitte der *PD43 und PC43-Desktop-Druckeranleitung*.

Untuk informasi lebih lanjut, bacalah *PD43 and PC43 Desktop Printer User Manual*.

Per ulteriori informazioni consultare il *manuale dell'utente della stampante desktop PD43 e PC43*.

자세한 내용은 PD43 및 PC43 데스크톱 프린터 사용 설명서를 참조하십시오.

Para obter mais informações, consulte o *Manual do Usuário da Impressora para Desktop PD43 e PC43*.

Дополнительная информация содержится в *руководстве пользователя настольных принтеров PD43 и PC43*.

Para obtener más información, consulte el *manual del usuario para la impresora de escritorio PD43 y PC43*.

Daha fazla bilgi için, *PD43 and PC43 Desktop Printer User Manual*.



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PD43, PC43d and PC43t Wi-Fi/Bluetooth Module Installation Instructions



P/N 931-091-002