



**MODEL NO : WTM1B15 Transmitter of WPC QI EPP  
ENGINEERING SPECIFICATION SHEET**

**ECS**

**Purpose:** This specification document represents the design criteria of the product identified herein, for the approval of the designated recipient (customer). Prior to production and delivery of this product by CWT, the customer shall endorse its approval of this specification document, upon review of the detailed information provided herein. The customer's endorsement (approval) verifies that the product description is determined to be fully compliant to the customer's design requirements. If one or more samples are included with this specification, the customer's endorsement (approval) further verifies that the product has been tested by the customer, for which the product satisfactorily meets all aesthetic, mechanical, electrical, and operating requirements for its intended usage with the customer's suitable indoor equipment or applications.

**To Approve:** An authorized employee or agent of the customer shall endorse approval of this specification. Please sign & date this cover-page, and initial each subsequent page in the lower left corner to signify all sections have been read and found to be acceptable. A completed, original copy (signed, dated, initialed) of this specification must be returned to CWT to record the approved customer design. The customer shall keep one or more copies for its records. Upon receipt, CWT shall manufacture the product to the approved customer design. If design revisions are otherwise required, a revised specification and/or modified samples shall be provided by CWT for the endorsement (approval) by the customer.

<b>Approved</b>

**Customer Signed**

<b>Issued</b>	<b>Checked</b>	<b>Planned</b>
YC		Leo Chen

**Channel Well Technology Co., Ltd.**

ISSUE DATE: 2020-2-19	Revision No.: 0.1	
Specification No: <b>WTM1B15</b>	Page: 1 of 16	



**MODEL NO : WTM1B15 Transmitter of WPC QI EPP  
ENGINEERING SPECIFICATION SHEET**

**SPEC. Revision History**

Date	Revision No.	Change Information	
		Previous version	Current version
20200720	0.1		Advance

ISSUE DATE: 2020-2-19	Revision No.: <b>0.1</b>	
Specification No: <b>WTM1B15</b>	Page: 2 of 16	



**TABLE OF CONTENTS**

**1 SCOPE..... 4**

1.1 GENERAL DESCRIPTION ..... 4

**2 ELECTRICAL SPECIFICATION..... 4**

2.1 DESIGN STANDARDS ..... 4

2.2 INPUT REQUIREMENT ..... 5

2.3 OUTPUT REQUIREMENT ..... 5

2.4 NO LOAD CONSUMPTION ..... 5

2.5 EFFICIENCY..... 5

2.6 FREQUENCY ..... 5

2.7 INTERFACE SURFACE ..... 6

    2.7.1 *Distance* ..... 6

    2.7.2 *WITHOUT metal* ..... 6

2.8 LED INDICATE ..... 6

**3 ENVIRONMENTAL SPECIFICATION..... 7**

3.1 COOLING ..... 7

3.2 TEMPERATURE ..... 7

3.3 HUMIDITY..... 7

3.4 CALCULATED MEAN TIME BETWEEN FAILURES (MTBF) ..... 7

3.5 WEIGHT ..... 7

**4 REGULATORY COMPLIANCE..... 7**

4.1 EMC SPECIFICATION ..... 7

    4.1.1 *FCC requirements*..... 7

    4.1.2 *CISPR requirements*..... 8

4.2 AGENCIES CERTIFICATIONS ..... 8

    4.2.1 *Product safety compliance* ..... 8

**5 MECHANICAL ..... 8**

**6 CABLE(BOARD TO CONNECTOR) ..... 9**

**7 COIL(SPEC) ..... 9**

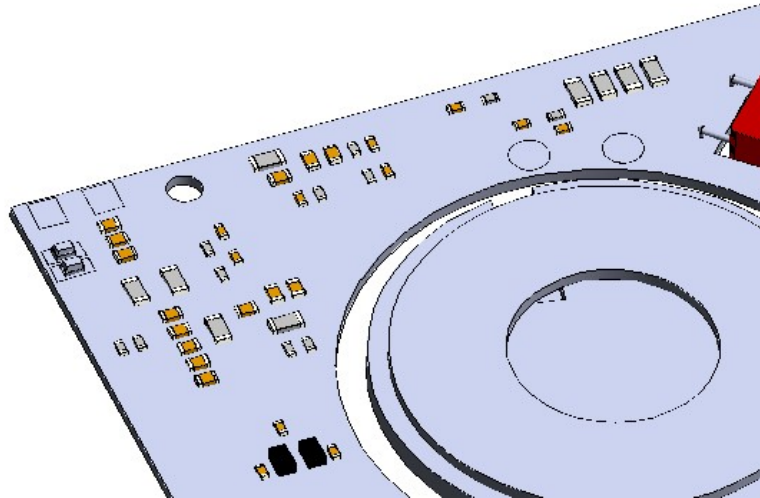
ISSUE DATE: 2020-2-19	Revision No.: 0.1	
Specification No: <b>WTM1B15</b>	Page: 3 of 16	



## 1 SCOPE

This document describes the basic electrical characteristics of WTM1B15 wireless power transmitter module. WTM1B15 is designed based on the technology of electromagnetic induction.

It is a widely used module for many different applications. This is a new concept of charging devices without any wires and cords.



### 1.1 GENERAL DESCRIPTION

WTM1B15 is a Wireless Power Consortium (WPC) Qi 1.2.4 compatible wireless power transmitter module. This transmitter module is Qi certified and can function with devices compatible to Qi standard. This excellent and highly integrated transmitter module is using magnetic induction process technology with stable performance and high reliability. This specification defines the performance characteristics ( include electrical function, EMC, safety, and product test requirements and so on) of a internal signal coil wireless charger (transmitter), which provide configurable charging mode to support WPC Qi 1.2.4 standard.

## 2 ELECTRICAL SPECIFICATION

### 2.1 DESIGN STANDARDS

WTM1B15 with follow WPC Qi Wireless Power Transfer System Power Class 0 Specification Power Transmitter MP-A11.

ISSUE DATE: 2020-2-19	Revision No.: 0. 1	
Specification No: <b>WTM1B15</b>	Page: 4 of 16	



**MODEL NO : WTM1B15 Transmitter of WPC Qi EPP  
ENGINEERING SPECIFICATION SHEET**

**2.2 INPUT REQUIREMENT**

The power supply must operate on a DC input voltage 19V with  $\pm 5\%$  tolerance. Input current should lower than 1A.

Input Range	Minimum	Nominal	Maximum	Unit
	18.05	19	19.95	Vdc

Table 1 - Input Voltage Range

**2.3 OUTPUT REQUIREMENT**

The wireless charger can support WPC qi V1.2.4 EPP 15W , downward support BPP 5W, Apple 7.5W, Samsung Fast Charge. The following specifications are defined with RX- WRM1A15 12V/1.25A 15W Output.

**2.4 NO LOAD CONSUMPTION**

Vin	Load	Power consumption
19V	No Receiver	< 0.5W

Table 2 - No load consumption

**2.5 EFFICIENCY**

The efficiency shall be  $\geq 75\%$  at 19V maximum loading, 12V/1.25A efficiency measurements are performed at coil center with 2mm vertical distance between TX coil and RX IDT P9221 COIL.

Load	Efficiency	Receiver
15W	75%	IDT P9221

Table 3 - Efficiency

**2.6 FREQUENCY**

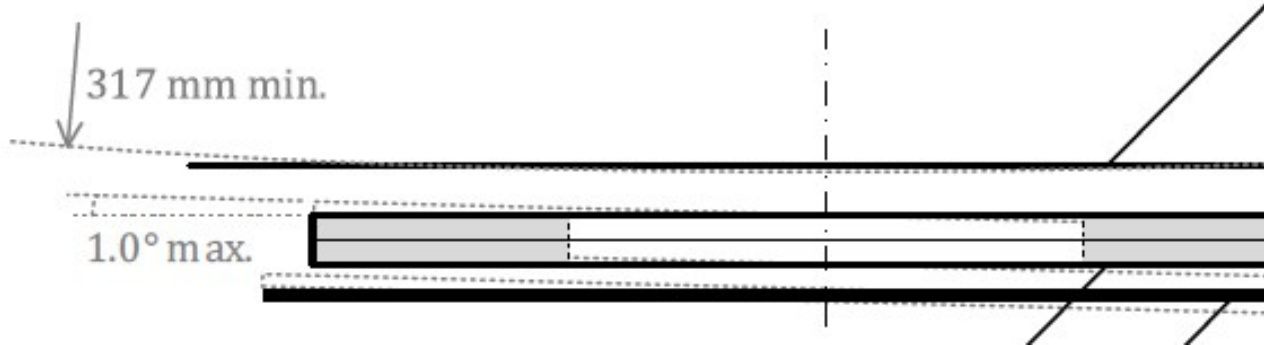
The Operating Frequency is 120~130 kHz

Parameter	Minimum	Target	Maximum	Unit
$f_{on}$	120	125	130	kHz

ISSUE DATE: 2020-2-19	Revision No.: 0.1	
Specification No: <b>WTM1B15</b>	Page: 5 of 16	



**2.7 INTERFACE SURFACE**



**2.7.1 DISTANCE**

Distance from the Primary Coil to the Interface Surface of the Base Station is  $dz = 2.0 \text{ mm}$  across the top face of the Primary Coil.

**2.7.2 WITHOUT METAL**

The Interface Surface of the Base Station extends at least 5.0 mm beyond the outer dimensions of the Primary Coil.

**2.8 LED INDICATE**

LED*/Color	Standby	Transfer	Charge Complete	Fault Condition	FOD (Foreign Object Detection)	Overheat
LED1-Amber	OFF	OFF	OFF	Fast Flash (1 second period) for 5 cycles.	Slow flash (2 second period) for 60 seconds	Solid ON for 60 seconds
LED2-Blue	OFF	BREATH (2-3 sec period) for 60 seconds, then shut OFF LED.	BREATH (1 sec period) for 3 cycles.	OFF	OFF	OFF

Table 4 - LED indicate

ISSUE DATE: 2020-2-19	Revision No.: 0.1	
Specification No: <b>WTM1B15</b>	Page: 6 of 16	



### **3 ENVIRONMENTAL SPECIFICATION**

#### **3.1 COOLING**

Natural Air Cooling

#### **3.2 TEMPERATURE**

Operation within specification: -10 to 50 degrees C.

Storage: -20 to 85°C

Short Duration Storage Temperature Limits (ie. Shipping) -40 to +85°C

#### **3.3 HUMIDITY**

Operation: 10% to 85% relative humidity, non-condensation.

Storage: 10% to 85% relative humidity, including condensation.

#### **3.4 CALCULATED MEAN TIME BETWEEN FAILURES (MTBF)**

Power Bank shall have a calculated MTBF of greater than 400,000 hours, calculated utilizing MIL-HDBK-217F with the following assumptions:

Output load: Rated full load

Ambient temperature: 25 degrees C

#### **3.5 WEIGHT**

<100g

### **4 REGULATORY COMPLIANCE**

#### **4.1 EMC SPECIFICATION**

##### **4.1.1 FCC REQUIREMENTS**

WTM1B15 shall comply with the radiated and conducted emission requirements for FCC Part 15 Class B.

ISSUE DATE: 2020-2-19	Revision No.: 0.1	
Specification No: <b>WTM1B15</b>	Page: 7 of 16	



**MODEL NO : WTM1B15 Transmitter of WPC QI EPP  
ENGINEERING SPECIFICATION SHEET**

**4.1.2 CISPR REQUIREMENTS**

WTM1B15 shall comply with the radiated and conducted emission requirements for CISPR 22 Class B.

**4.2 AGENCIES CERTIFICATIONS**

The WTM1B15 is designed to meet Comply to WPC QI V1.2.4 EPP compliance testing, and will also be tested by the relevant verification unit

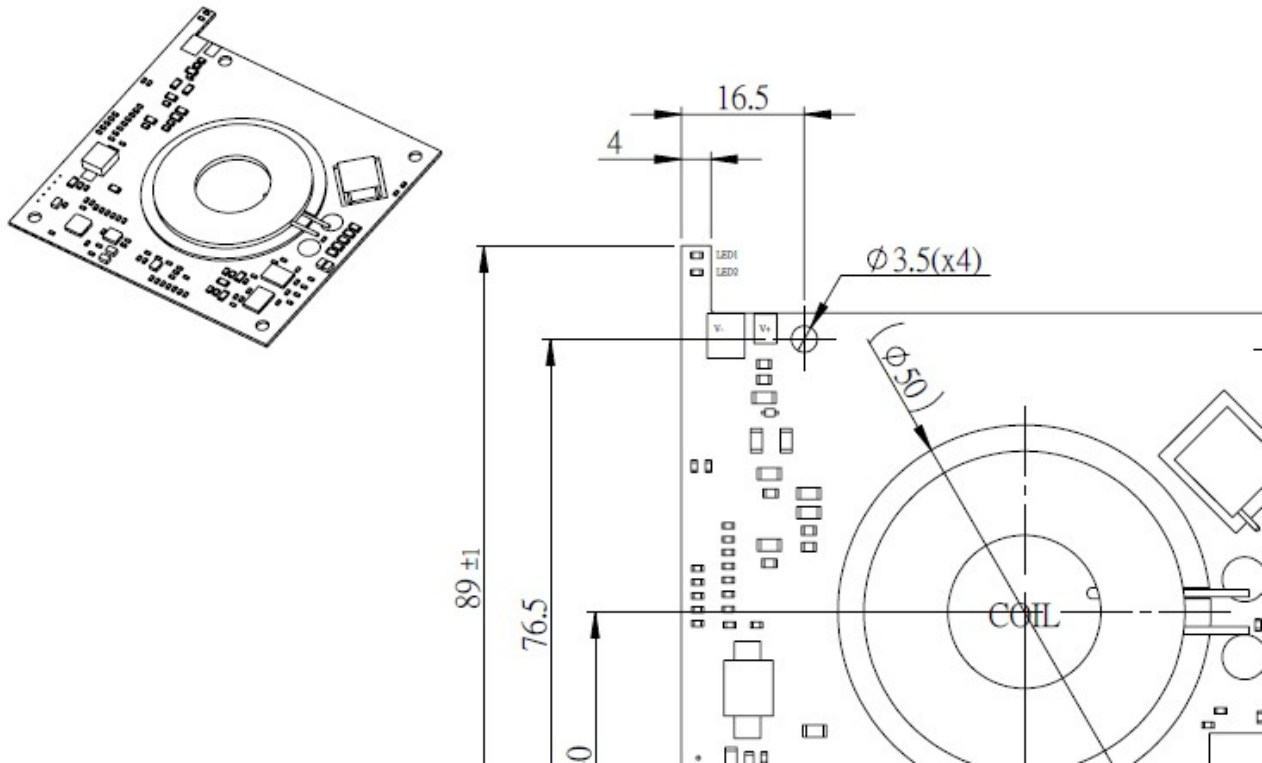
**4.2.1 PRODUCT SAFETY COMPLIANCE**

Certification	Certification
FCC(option)	CE(option)
NCC(option)	BSMI(option)
	WPC QI EPP(option)

Table 5 - safety compliance

**5 MECHANICAL**

Refer to drawing

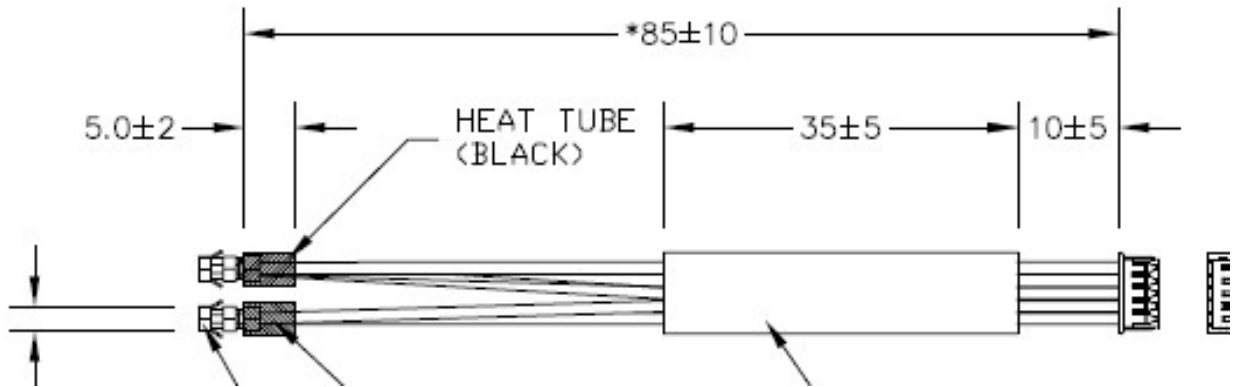


ISSUE DATE: 2020-2-19	Revision No.: 0, 1	
Specification No: <b>WTM1B15</b>	Page: 8 of 16	

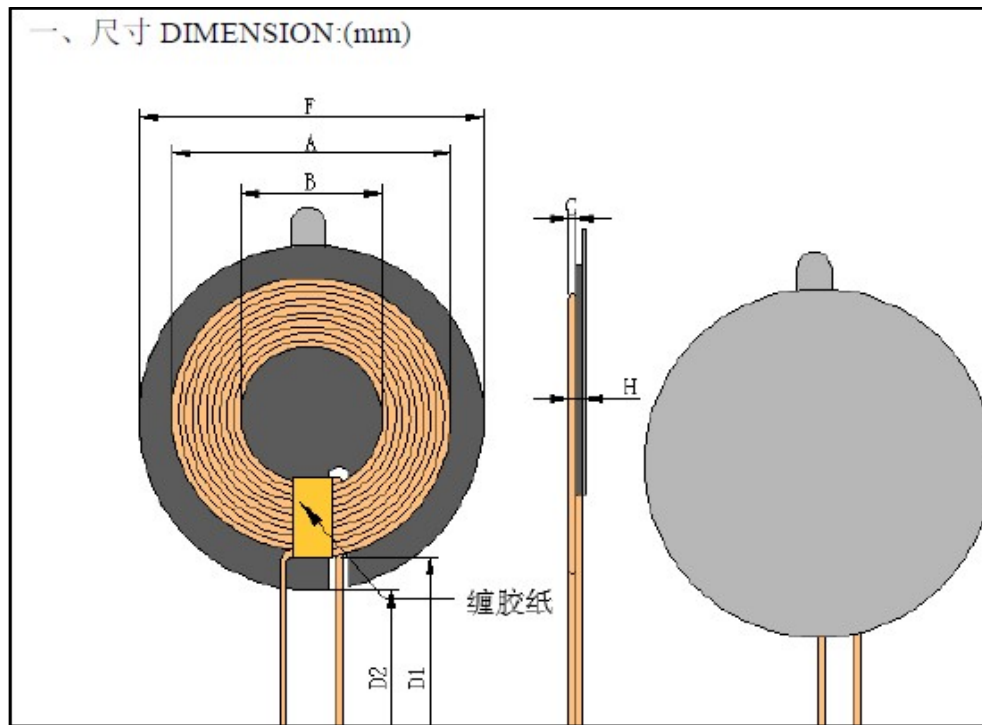




6 CABLE(BOARD TO CONNECTOR)



7 COIL(SPEC)



- a.) OPERATING TEMPERATURE RANGE:  $-25^{\circ}\text{C} \sim +85^{\circ}\text{C}$
- b.) STORAGE TEMPERATURE RANGE:  $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$

ISSUE DATE: 2020-2-19	Revision No.: 0.1	
Specification No: <b>WTM1B15</b>	Page: 9 of 16	



**MODEL NO : WTM1B15 Transmitter of WPC QI EPP  
ENGINEERING SPECIFICATION SHEET**

**NCC**

取得審驗證明之低功率射頻器材，非經核准，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

低功率射頻器材之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。

前述合法通信，指依電信管理法規定作業之無線電通信。低功率射頻器材須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

**LABEL OF THE END PRODUCT:**

The final end product must be labeled in a visible area with the following” Contains TX  
FCC ID: 2AC3UWTM1B15”.

此模組若安裝於其他平台內時，該平台標籤需標明：

此平台內建無線模組



此處平台為,廠牌: Intel 型號: 參考後面附件

ISSUE DATE: 2020-2-19	Revision No.: <b>0.1</b>	
Specification No: <b>WTM1B15</b>	Page: 10 of 16	



## **FCC**

### **Federal Communications Commission (FCC) Statement**

15.19

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 of the device.

15.21

You are cautioned that changes or modifications not expressly approved by the part responsible for compliance could void the user's authority to operate the equipment.

15.105(b)

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

### **Additional testing, Part 15 Subpart B disclaimer**

The modular transmitter is only FCC authorized for the specific rule parts (i.e., FCC transmitter rules) listed on the grant, and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification.

### **Applicable rule part**

The final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.

This module has been tested and found to comply with the following requirements for Modular Approval.

- Part 15.209 – Radiated emission limits; general requirements.
- Part 15.215 – Additional provisions to the general radiated emission limitations.

ISSUE DATE: 2020-2-19	Revision No.: <b>0.1</b>	
Specification No: <b>WTM1B15</b>	Page: 11 of 16	



### **Test Modes**

This device uses various test mode programs for test set up which operate separate from production firmware. Host integrators should contact the grantee for assistance with test modes needed for module/host compliance test requirements.

### **Limited Module**

This modular is a limited single modular as without its own RF shielding. This module must be evaluated when being installed in hosts that to ensure compliance of rule Part 15 B and C; host manufacturer have to consult with module manufacturer for the module limiting conditions when integrate the module in the host. Module manufacturer should reviews detailed test data or host designs prior to giving the host manufacturer approval.

### **Antenna**

A permanently attached coil antenna is approved for use with this module.

### **FCC RF Radiation Exposure Statement:**

1. This Transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
2. This equipment complies with RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 15 cm between the radiator and your body.

### **LABEL OF THE END PRODUCT:**

The final end product must be labeled in a visible area with the following” Contains TX FCC ID: 2AC3UWTM1B15”.

此模組若安裝於其他平台內時，該平台標籤需標明：

此平台內建無線模組



此處平台為,廠牌: Intel 型號: 參考後面附件

ISSUE DATE: 2020-2-19	Revision No.: 0.1	
Specification No: <b>WTM1B15</b>	Page: 12 of 16	



**MODEL NO : WTM1B15 Transmitter of WPC QI EPP  
ENGINEERING SPECIFICATION SHEET**

低功率射頻模組(組件)組裝之最終產品外觀照片

辦理登錄日期：

中華民國 109 年 10 月 14 日

低功率射頻模組(組件) 器材名稱： Product Name of Module:		Intel® wifi 6 AX201 D2W		低功率射頻模組(組件)廠牌： Brand of Module:	Intel
低功率射頻模組(組件) 型式認證號碼： NCC ID of Module:				低功率射頻模組(組件)型號： Model Number/Name of Module:	AX201 D2W
編號 Item	最終產品類別 Type of Host	最終產品 廠牌 Brand of Host	最終產品型號 Model Number/Name of Host	最終產品市場行銷名稱/機型 Produce Marking Name of Host	
1	Intel(R) Client Systems	Intel	NUC11PAQ	NUC11PAQi7	
2	Intel(R) Client Systems	Intel	NUC11PAH	NUC11PAHi7	
3	Intel(R) Client Systems	Intel	NUC11PAK	NUC11PAKi7	
4	Intel(R) Client Systems	Intel	NUC11PAQ	NUC11PAQi5	
5	Intel(R) Client Systems	Intel	NUC11PAH	NUC11PAHi5	
6	Intel(R) Client Systems	Intel	NUC11PAK	NUC11PAKi5	
7	Intel(R) Client Systems	Intel	NUC11PAQ	NUC11PAQi3	
8	Intel(R) Client Systems	Intel	NUC11PAH	NUC11PAHi3	
9	Intel(R) Client Systems	Intel	NUC11PAK	NUC11PAKi3	

註：請放入平台照片於空白處 (含貼紙)

ISSUE DATE: 2020-2-19	Revision No.: 0.1	
Specification No: <b>WTM1B15</b>	Page: 13 of 16	



**MODEL NO : WTM1B15 Transmitter of WPC Qi EPP  
ENGINEERING SPECIFICATION SHEET**

**intel** Intel® NUC 迷你电脑  
 INTEL CORPORATION  
 2200 Mission College Blvd.  
 Santa Clara, CA 95054 USA

型号/Product code:  
 机种型号/Regulatory Model:  
 直流输入/  
 Electrical Rating: 19V 4.74A  
 制造日期/  
 Date of Manufacture:  
 中国制造/Made In China  
 Board S/N:  
 CAN ICES-3 (B)/NMB-3(B)  
 This product contains an Approved module,  
 Model No.: AX201D2W  
 Contiene Módulo CNC ID: C-22445  
 IFETEL No.: RCPINAX18-2065

使用前请仔细阅读“用户指南”注意事项  
 Use only power supplies listed in the user instructions

NOM NYCE 10 UL LISTED I.T.E E210882  
 FCC CE EAC  
 MCMC CIDF15000181  
 ICA-SA TA-2019/2315 Approved  
 R-R-CPU-NUC10FNH  
 R-C-INT-AX201D2W  
 Complies with IMDA Standards DB02941  
 TRA REGISTRATION No. xxxxxxxxxx  
 DEALER No. xxxxxxxxxx

QR 9\*9mm  
 中国节能认证 Energy Conservation Certification



ISSUE DATE: 2020-2-19	Revision No.: 0.1	
Specification No: <b>WTM1B15</b>	Page: 14 of 16	



**MODEL NO : WTM1B15 Transmitter of WPC Qi EPP  
ENGINEERING SPECIFICATION SHEET**



ISSUE DATE: 2020-2-19	Revision No.: 0.1	
Specification No: <b>WTM1B15</b>	Page: 15 of 16	



**MODEL NO : WTM1B15 Transmitter of WPC Qi EPP  
ENGINEERING SPECIFICATION SHEET**



ISSUE DATE: 2020-2-19	Revision No.: 0.1	
Specification No: <b>WTM1B15</b>	Page: 16 of 16	