1. Overview

WiZ 8285 1517PT is an embedded Wi-Fi module with built-in a PCB antenna based on ESP8285.

Table 1-1. WiZ 8285 1517PT specification

| Categories	Items	Specifications
Hardware	Operating Voltage	Min. 2.7VDC, Max. 3.6VDC
	Operating Current	Avg. 120mA, Max. 240mA
	Operating Temperature	-10°C ~ 105°C
	Size	17.3 x 15 x 2.3mm
	Interfaces	5 x GPIO, 1 x ADC, 1 x UART
	Dimming Control	PWM @ 200Hz, Logic level
Wi-Fi	Protocols	802.11 b/g/n, WPA2
	Frequency	2412-2462MHz
Software	Encryption	Wi-Fi: WPA2, TCP: TLS1.2
	Network Protocols	IPv4, TCP/UDP, HTTPS, MQTT
	Upgrade	Automated and transparent, from Cloud
	User Control	Smart Application, Cloud control, Voice control (Amazon Alexa, Google Home)
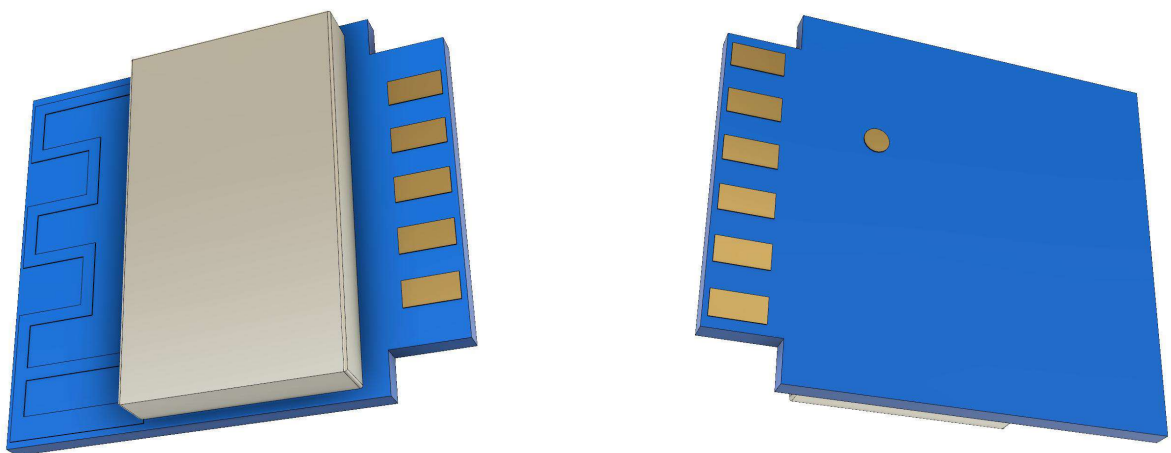
Figure 1-1. Appearance
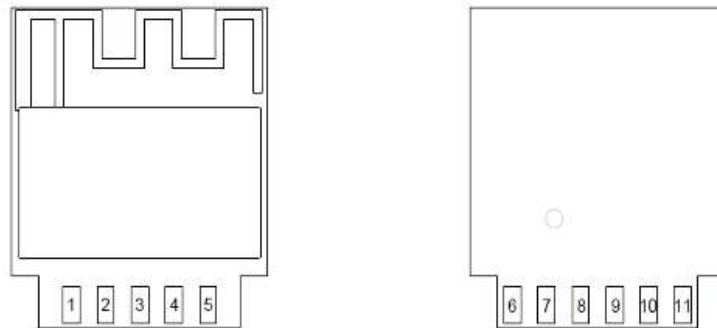
2. Pin Description

Figure 2-1. WiZ 8285 1517PT Pin Connection Layout

Table 2-1. WiZ 8285 1517PT Pin Definitions

Pin Number	Pin Name	Function Description (Lamp configure)	Function Description (Plug configure)
1	RST	External reset signal, Active Low	External reset signal, Active Low
2	AD	ADC pin	ADC pin
3	GPIO13	PWM – B or I2C - SDA	Button, input, active low
4	GPIO4	PWM - G	Wifi status, active low
5	GPIO5	PWM – R or I2C - SCL	Relay status, output, active low
6	VDD	Power input, 3.3V	Power input, 3.3V
7	GND	Power Ground	Power Ground
8	RXD0	UART_Rx	UART_Rx
9	TXD0	UART_Tx	UART_Tx
10	GPIO12	PWM – WW or CCT	Relay drive, output, active high
11	GPIO14	PWM – CW or DIM or DW	nc

3. Functional Description

3.1 Interface Description

Table 3-1. Interface Description for Lamp configure

Interface	Pin	Function Description
PWM	PWM – CW PWM – WW PWM – R / G / B	Currently the PWM interface has five channels. PWM interface can realize the control of LED lights directly.
PWM	PWM – DIM PWM - CCT	The DIM & CCT are PWM signal. The DIM control the dimming ratio and CCT control the CW / WW ratio for the LED lamp.
PWM	PWM – DW	The PWM signal for dimmable white lamp.
I2C	SDA SCL	The I2C (master) signal for dimming control of RGB LED. The LED driver should be an I2C slave to
ADC	ADC	Tests the input voltage of the ADC pin.
UART	UART_Rx UART_Tx	Communicates with the UART device.

Table 3-2. Interface Description for Plug configure

Interface	Pin name	Function Description
Digital Output	Wifi status	An IO to indicate the Wifi activity. When Wifi is active, this pin will pull low to sink a current. The sink is 20mA max.
Digital Output	Relay status	An IO to indicate the Relay status. When Relay is on, this pin will pull low to sink a current. The sink is 20mA max.
Digital Output	Relay drive	An output signal to control the Relay. An output high to control the relay on. An output low to control the relay off.
Digital Input	Button	Connect to the press button for control. The press button is required to connect between this IO and Ground. A pull high resistor of normally 10K is required to connect to this IO to function properly.
ADC	ADC	Tests the input voltage of the ADC pin.
UART	UART_Rx UART_Tx	Communicates with the UART device.

4. Electrical Characteristics

4.1 Electrical Characteristics

Table 4-1. Electrical Characteristics

Parameter	Symbol	Min	TYP	Max	Unit
Storage temperature	-	−40	-	125	℃
Operating temperature	-	−40	25	105	℃
Maximum soldering temperature (Condition: IPC/JEDEC J-STD-020)	-	-	-	260	℃
Supply voltage	VDD	2.7	3.3	3.6	V
Input logic level low	V_{IL}	−0.3	-	0.25 VDD	V
Input logic level high	V_{IH}	0.75 VDD	-	VDD + 0.3	V
Output logic level low	V_{OL}	-	-	0.1 VDD	V
Output logic level high	V_{OH}	0.8 VDD	-	-	V

4.2 WiFi Radio

Table 4-2. Wi-Fi Radio Characteristics

Description	Min	TYP	Max	Unit
Input frequency	2412	-	2462	MHz
Input reflection	-	-	−10	dB
Output Power				
PA output power in 802.11b/g/n mode	17.4	20	22.16	dBm
Sensitivity				
DSSS, 1 Mbps	-	−98	-	dBm
CCK, 11 Mbps	-	−91	-	dBm
6 Mbps (1/2 BPSK)	-	−93	-	dBm
54 Mbps (3/4 64-QAM)	-	−75	-	dBm
HT20, MCS7 (65 Mbps, 72.2 Mbps)	-	−72	-	dBm
Adjacent channel rejection				
OFDM, 6 Mbps	-	37	-	dB
OFDM, 54 Mbps	-	21	-	dB
HT20, MCS0	-	37	-	dB
HT20, MCS7	-	20	-	dB

4.3 Power Consumption

The following power consumption data were obtained from the tests with a 3.3V power supply and a voltage stabilizer, in 25°C ambient temperature. All data are based on 50% duty cycle in continuous transmission mode.

Table 4-3. Power Consumption

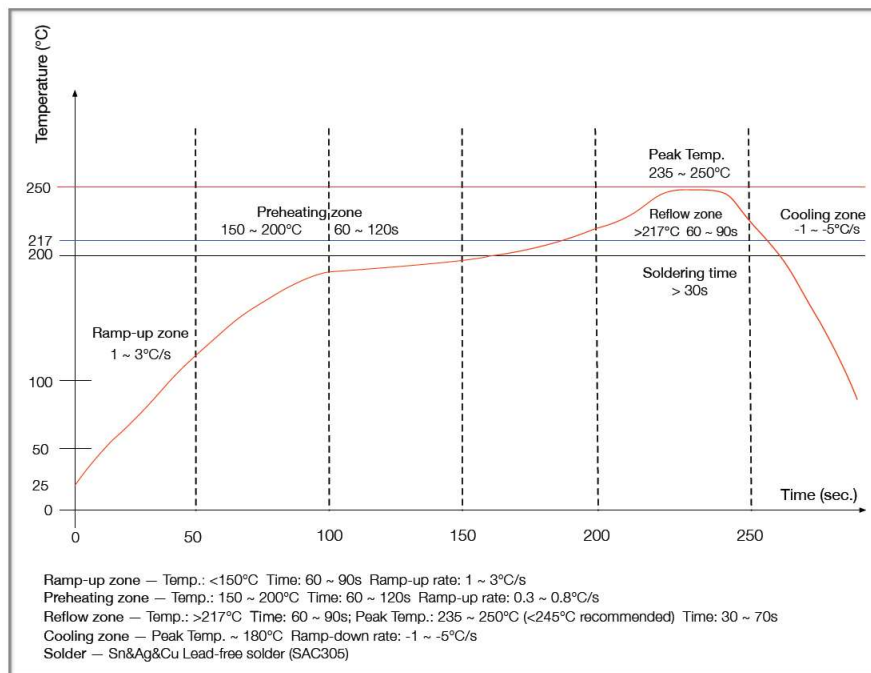| Modes	Min	TYP	Max	Unit
Tx 802.11b, CCK 11 Mbps, POUT = +17 dBm	-	170	-	mA
Tx 802.11g, OFDM 54 Mbps, POUT = +15 dBm	-	140	-	mA
Tx 802.11n, MCS7, POUT = +13 dBm	-	120	-	mA
Rx 802.11b, 1024 bytes packet length , −80 dBm	-	50	-	mA
Rx 802.11g, 1024 bytes packet length , −70 dBm	-	56	-	mA
Rx 802.11n, 1024 bytes packet length , −65 dBm	-	56	-	mA

4.4 Reflow Profile

Figure 4-1. WiZ 8285 1517PT Reflow Profile

4.5 Electrostatic Discharge

Table 4-4. Electrostatic Discharge Parameters

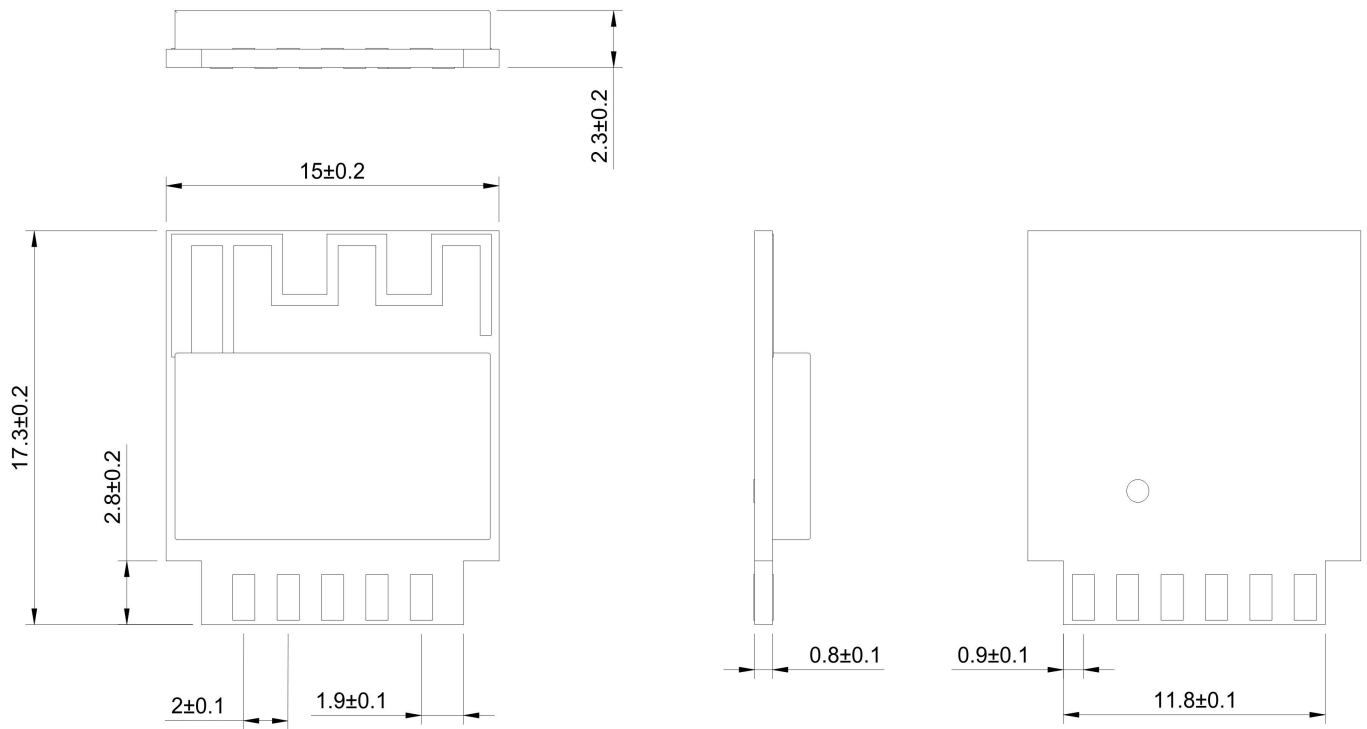| Name	Symbol	Reference	Level	Max	Unit
Electrostatic Discharge (Human - Body Model)	V_{ESD} (HBM)	Temperature: 23 ± 5℃ Based on ANSI/ESDA/JEDEC JS - 001 - 2014	2	2000	V
Electrostatic Discharge (Charged - Device Model)	V_{ESD} (CDM)	Temperature: 23 ± 5℃ Based on JEDEC EIA/JESD22 - C101F	C2	500	V

5. Dimensions

Figure 5-1. WiZ 8285 1517PT Dimensions

Regulatory Module Integration Instructions

2.2 List of applicable FCC rules

This device complies with part 15.247 of the FCC Rules.

2.3 Summarize the specific operational use conditions

This module can be applied in household electrical appliances as well as lighting equipments. . The input voltage to the module should be nominally 2.7-3.6 V DC ， typical value 3.3V DC and the ambient temperature of the module should not exceed 105℃.

This module using PCB antenna with maximum gain is 2.0dBi.Other antenna arrangement is not covered by this certification.
If the antenna needs to be changed，the certification should be re-applied.

2.4 Limited module procedures

Not applicable

2.5 Trace antenna designs

Not applicable

2.6 RF exposure considerations

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment .This equipment should be installed and operated with minimum distance 20cm between the radiator&your body. If the device built into a host as a portable usage，the additional RF exposure evaluation may be required as specified by 2.1093.

2.7 Antennas

Module contains one PCB antenna.

2.8 Label and compliance information

The outside of final products that contains this module device must display a label referring to the enclosed module. This exterior label can use wording such as: "Contains Transmitter Module FCC ID: 2AUOF-1517PT " ， or "Contains FCC ID: 2AUOF-1517PT "，Any similar wording that expresses the same meaning may be used.

2.9 Information on test modes and additional testing requirements

a)The modular transmitter has been fully tested by the module grantee on the required number of channels， modulation types， and modes， it should not be necessary for the host installer to re-test all the available transmitter modes or settings. It is recommended that the host product manufacturer， installing the modular transmitter， perform some investigative measurements to confirm that the resulting composite system does not exceed the spurious emissions

limits or band edge limits (e.g.，where a different antenna may be causing additional emissions).

b)The testing should check for emissions that may occur due to the intermixing of emissions with the other transmitters， digital circuitry， or due to physical properties of the host product (enclosure). This investigation is especially important when integrating multiple modular transmitters where the certification is based on testing each of them in a stand-alone configuration. It is important to note that host product manufacturers should not assume that because the modular transmitter is certified that they do not have any responsibility for final product compliance.

C)If the investigation indicates a compliance concern the host product manufacturer is obligated to mitigate the issue. Host products using a modular transmitter are subject to all the applicable individual technical rules as well as to the general conditions of operation in Sections 15.5， 15.15， and 15.29 to not cause interference. The operator of the host product will be obligated to stop operating the device until the interference has been corrected

The 2.4G WIFI Module is based on ESP8285 chip .
Below are steps for TX verification：
tx_contin_en 1   // return： wifi tx continuous test!
wifitxout ＜parameter 1＞
： Send channel option and allowed number is 1~11.
： Send data rate option, the relationship between input parameters and rates is shown in table 1.
： Send power attenuation, which is 8 bits directed number and 0.25 dB unit.

2.10 Additional testing， Part 15 subpart B disclaimer

The final host / module combination 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 host integrator installing this module into their product must ensure that the final composite product complies with the FCC requirements by a technical assessment or evaluation to the FCC rules， including the transmitter operation and should refer to guidance in KDB 996369.

Frequency spectrum to be investigated

For host products with certified modular transmitter， the frequency range of investigation of the composite system is specified by rule in Sections 15.33(a)(1) through (a)(3)， or the range applicable to the digital device， as shown in Section 15.33(b)(1)， whichever is the higher frequency range of investigation.

Operating the host product

When testing the host product， all the transmitters must be operating.The transmitters can be enabled by using publicly-available drivers and turned on， so the transmitters are active. In certain conditions it might be appropriate to use a technology-specific call box (test set) where accessory devices or drivers are not available.

When testing for emissions from the unintentional radiator， the transmitter shall be placed in the receive mode or idle mode， if possible. If receive mode only is not possible then， the radio shall be passive (preferred) and/or active scanning. In these cases， this would need to enable activity on the communication BUS (i.e.， PCIe， SDIO， USB) to ensure the unintentional

radiator circuitry is enabled. Testing laboratories may need to add attenuation or filters depending on the signal strength of any active beacons (if applicable) from the enabled radio(s). See ANSI C63.4， ANSI C63.10 and ANSI C63.26 for further general testing details.

The product under test is placed into a normal 'paired' mode with another BLE device， as per the normal intended use of the product (for example， transferring data).

FCC Statement

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
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.

ISED RSS Warning:

This device complies with Innovation, Science and Economic Development 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'ISED applicables aux appareils radio exempts de licenceL'exploitationestautoriséeauxdeuxconditions 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.

ISED RF exposure statement:

This equipment complies with ISED radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator& your body.This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Le rayonnement de la classe b repecte ISED fixaient un environnement non contrôlés.Installation et mise en œuvre de ce matériel devrait avec échangeur distance minimale entre 20 cm tonon corps.Lanceurs ou ne peuvent pas coexister cette antenne ou capteurs avec d'autres.

IC Label Instructions:

The outside of final products that contains this module device must display a label referring to the enclosed module. This exterior label can use wording such as:

"Contains Transmitter Module IC: 25479-1517PT",or "Contains IC: 25479-1517PT", Any similar wording that expresses the same meaning may be used.

Instructions d'étiquetage IC:

L'extérieur des produits finis contenant ce module doit afficher une étiquette faisant référence au module inclus. Cette étiquette extérieure peut utiliser des libellés tels que: contient le module émetteur IC: 25479-1517PT "ou" contient: IC: 25479-1517PT", tout libellé similaire exprimant le même sens peut être utilisé.