iTINT OPERATING INSTRUCTIONS

Any window to be tested should be clean and free from grease, finger marks and dust. If necessary, the window should be cleaned and dried using a lint free cloth.

Note that the high-power magnets used in iTINT Optical Head are brittle. Do not drop them or bang them together. They will shatter. Do not force either of the magnets against another magnetic pole of the same polarity – their strength may be weakened.

For storage, slowly bring together the LAMP and photo-CELL magnets of the Optical Head. Do not place the LAMP or CELL near computer disks, their magnetic fields may corrupt the disks.

QUICK GUIDE

- Switch ON using the slide-switch located on the end panel.
- The iTINT blue OLED screen will guide you through the tint testing procedure. Operation is controlled by a single button marked OK. To go to the next step, just click OK. To abandon any operation and go back to the start, hold the OK button for more than one second, then release. To branch to an alternative operation such as printing or review, double click the OK button.
- When ready the display will show iTINT, together with the time, battery voltage and calibration due date.
- If the display does not appear the battery might be discharged. Switch OFF using the slide switch and connect the 12 Volt battery charger to the power jack socket marked +12V on the end panel. A green LED on the front panel will illuminate. It will go off when the battery is fully charged after 4 to 5 hours.
- If the battery voltage is low, the display will show Low Battery and you will not be allowed to do any more tests until it is recharged. You can use iTINT while recharging, though the recharge time will be considerably longer. Therefore, it is best to recharge fully whilst switched off at the slide switch.
- If iTINT needs calibrating, the display will show Calibration required. By clicking OK, you will still be able to continue to do more tint tests. The instrument should be recalibrated every year against reference glasses whose photopic transmissions have been measured to International Standards.
- Connect the LAMP, identified by the red sleeve on its cable, to the lamp jack socket and the smaller photo-CELL to the photocell socket. The lamp jack socket is identified by a red marker.
- If you wrongly connect the cables, the display will warn you and the instrument will go to sleep. Correct the connection and click OK. Make sure both jacks are fully inserted.
- To just review previous results, there is no need to connect the LAMP or CELL.
- If OK has not been clicked for more than 5 minutes, iTINT will go to sleep to conserve its battery. To wake up, click OK. It will not go to sleep if its Wi-Fi is being used for communications or to serve web pages. Sleep is preceded by 10 short beeps from the buzzer. if iTINT is not to be used for a while, it is recommended you switch OFF using the slide-switch. Sleeping still draws a small residual current that will eventually drain the battery.
- Switch OFF at the slide switch when finished.

TINT TESTING

To use the iTINT instrument, connect the LAMP and CELL to the readout unit with the colour coded jack connectors. Check the colours match and the connectors are pushed in firmly. The LAMP has a red marking on its cable. No damage will be done if the connectors are mistakenly swapped and the instrument will warn you so.

The instrument will then guide you through the tint test in a semi-automated sequence. The blue text below will be shown on the iTINT blue OLED display. The first steps are to determine the 100% spacer and reference glass transmissions. This will ensure the most accurate results. You can repeat a test without redoing these reference measurements. You can abandon a tint test at anytime by holding and then releasing the OK button.

- When ready, the display will show iTINT, together with the time, battery voltage and calibration due date.
- Click OK.
- The display will prompt you to insert the 100% spacer ring between the LAMP and CELL. It will also show the identifying test number. When inserted and you are ready Click OK.
- The instrument will the automatically determine the 100% transmission. The process takes about 10 seconds and the display will indicate the zeroing…, stabilizing… and measuring… stages. The zero light background is measured during zeroing, then the lamp is turned on and allowed to stabilize with the display showing the bulb voltage in milli-Volts. Finally, the transmitted light intensity is measured. The bulb voltage should be about 2550 mV (± 50 mV).
- When completed, the display will prompt you to insert the REF reference glass between the LAMP and CELL. Remove the 100% space first. When inserted and you are ready Click OK.
- The instrument will the automatically determine the reference glass transmission. Like the 100% spacer, the process takes about 10 seconds and the display will indicate zeroing…, stabilizing… and measuring… stages.
- The reference glass will be labelled with its % transmission measured when the iTINT was last calibrated. Its measurement provides a useful check that all is well. The REF reading should be within ± 1.5% of the calibrated value.

Next, measure the transmission of the windscreen or glass under test. You will be prompted to make four measurements at different locations on the glass. The average value of these transmission readings will be calculated together with their standard deviation.

Attach the LAMP and CELL to either side of the window to be measured, if necessary, use the captive suckers to secure to vertical windows. The LAMP and CELL should self-align magnetically. On raked windscreens, attach the CELL to the inside of the glass hanging from its sucker. When the LAMP is placed on the outside of the windscreen, the magnetic attraction between the two should automatically draw the CELL to the windscreen.

For large vehicles, 5 or 10 metre extension cables are available for the CELL.

Before taking a reading, visually check that the LAMP and CELL are concentrically aligned and firmly against the window.

- For the first reading the display will prompt you with -1-. Click OK when ready and the 1st transmission reading will be determined using the zeroing, stabilizing, measuring sequence.
- When the display prompts you with -2-, move the Source and Detector to another part of the glass and click OK.
- Repeat for the 3rd and 4th readings, -3- and -4-.
- When the tint test is completed, the display will indicate the average of the four readings, their standard deviation, the vehicle ID and the iTINT test number.

These test results, identified by the test number, are automatically stored in the iTINT memory. Up to 4001 tests can be stored.

If you are not satisfied with the result, click OK to redo the four measurements on the same glass without having to repeat the 100% and REF measurements.

Note that the test number has two parts, the actual test ID number and a test index in square brackets []. The test number is between 0 and 4000 and auto-increments after every test, the test index starts at [0] and increments by 1 every 4001 tests.

At anytime you can abandon the tint test by holding OK for more than 1 second and then releasing.

PRINTING

Please use the thermal ticket printer supplied with iTINT.

To print the test results in the form of a *"ticket"*, simply double click the OK button while the results are displayed on the screen. Make sure the printer is switched on (its red power light should be illuminated) and the correct printer address (BDA) has previously been entered in the iTINT settings.

iTINT will begin Searching for the BLE printer and, when found, will connect to it. This process can take several seconds, please be patient. The display will also show the BDA address of the printer iTINT is searching for, check this address if the connection cannot be established. A typical printout is illustrated.

To print another copy of the tint test simply double click OK again. Alternatively, single click OK to move to the next previous test for comparative review. Double click to print that and so on. Note you cannot redo a test once you have started the printing mode.

The red power light on the printer will turn blue when it is connected to iTINT. It will remain connected until printing is abandoned. To abandon, hold and release OK. Note that when the printer is connected, the iTINT Wi-Fi is disabled. Once the printing has been abandoned, the Wi-Fi will reconnect automatically.

Note that if you are using a Wi-Fi Smart-Device to enhance your iTINT, you can print tickets directly from that without disconnecting the Wi-Fi. Please see instructions on page 13 below for more information. To use the ticket printer via your Smart-Device you must have downloaded and installed the Turnkey Print Service App from the Google Store (Android devices only). This App also provides a Geo-Location service for iTINT.

REVIEW

To review stored results just double click OK while the display is showing iTINT. The review will start at the last completed test. Single click OK again to move to the previous test and so on.

To print a stored tint test, simply double click OK when the results are displayed as described in the PRINTING instructions above. Double click again to print another copy. Single click OK to move to the previous test. Hold and release OK to abandon the review.

iTINT disconnects the Wi-Fi when connected to a Bluetooth printer. Hold and release the OK button to disconnect the printer and re-enable the Wi-Fi.

A more comprehensive review of the stored results can be done with the aid of a Wi-Fi smart device. You can also print directly from Android smart-devices. Please see below for more information.

Connecting iTINT to a Smart-Device

iTINT may be used with Android or iOS smart devices as well as desktop PCs and laptops.

1. Switch on iTINT with the slide switch.
2. Go to your smart-device's *Settings>Wi-Fi* menu.
3. To configure, connect your smart-device (iOS or Android) to the Wi-Fi access point called iTINT-xx, where xx are the last 2 digits of the iTINT's unique ID (see label on back). The password is **Pass2018**.
4. Use your smart-device's web browser to navigate to IP address **192.168.4.1** and here you will find the iTINT micro-site. This has seven pages (see below) which may be explored using the screen buttons on the left. It can serve multiple devices at the same time.
5. To connect as a station of an existing Wi-Fi network, navigate to the **Bluetooth & Wi-Fi** page. Then check **Connect iTINT as Wi-Fi station** and enter your **Wi-Fi SSID** and **Password.** Then click **SAVE** and restart iTINT by powering off and on.
6. Your network's DNS will allocate iTINT an IP address, normally of the form 192.168.xxx.xxx. This will be visible on the OLED display after restart and on the **Bluetooth & Wi-Fi** page.
7. Note you can also give your iTINT a station name that will be used by your network's DNS, the default is iTINT. Be aware it may take several reconnections before your DNS registers the station name but, when done, you can connect by simply using the IP address iTINT.

To save battery, if iTINT is not connected to a smart device or network and the **OK** button has not been pressed for 5 minutes, it will enter a low power sleep mode. To wake up, click the **OK** button or switch off and on. It will only sleep if the **Allow to Sleep** flag has been set in the configuration program.

iTINT will stop further tests being done if the battery voltage drops below 3.5 Volts, it will go to sleep if it falls below 3.4 Volts. The Lithium battery can be charged using a 9 to 12 Volt DC power supply. The one provided with the printer works fine. iTINT uses a single cell LiPo battery, its fully charged voltage is about 4.2 Volts.

The printer Bluetooth Device Address (BDA) should be in the form xx:xx:xx:xx:xx:xx and match that of the supplied thermal printer. It will have been set up before shipment.

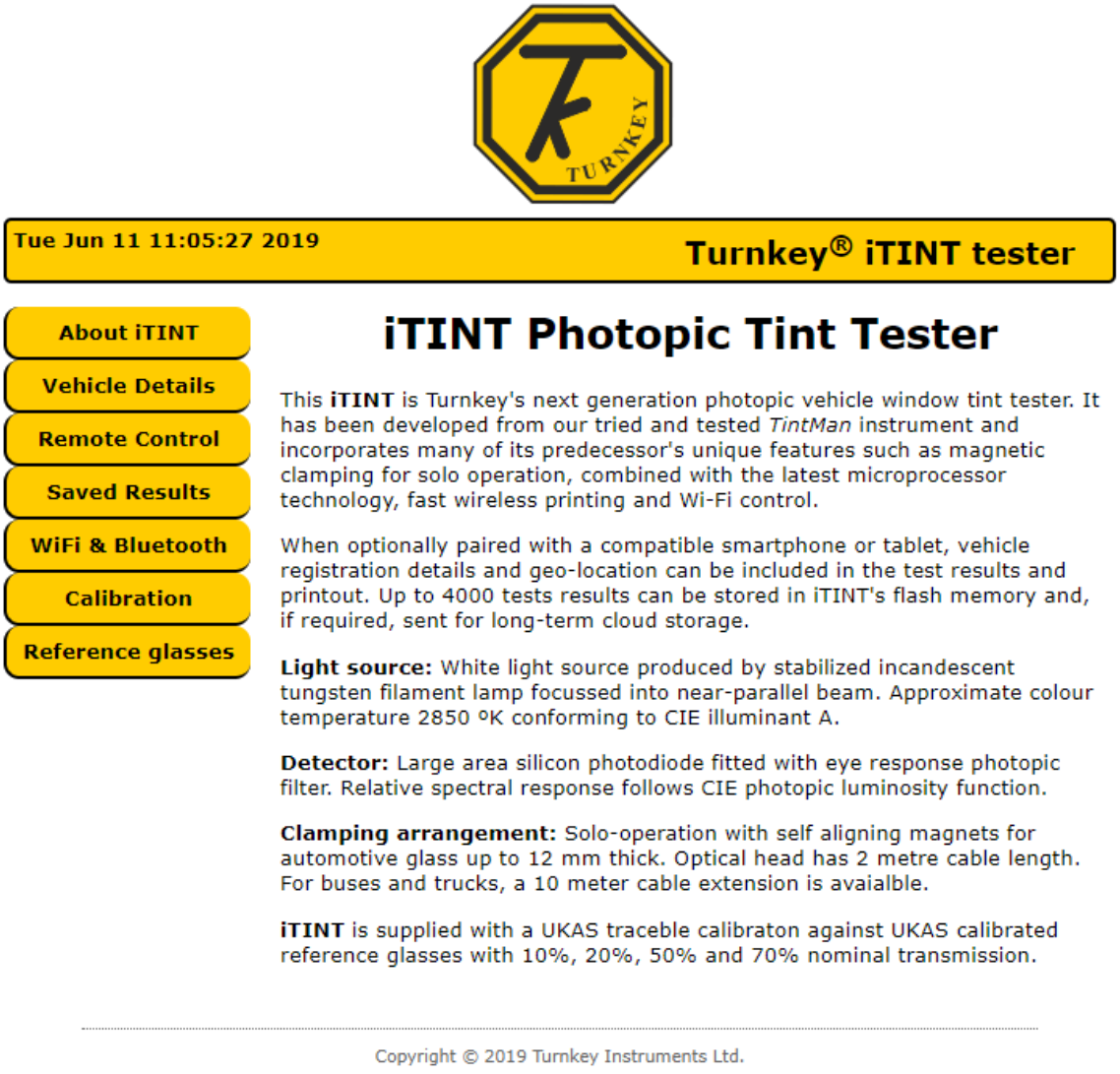
iTINT Website

You can enhance the versatility of iTINT by linking it via Wi-Fi to its interactive web site on a smartphone or tablet. Both iOS (iPhone) and Android devices are supported, though Android offers the greatest flexibility for printing.

For example, the smart device allows you to input the vehicle details, test conditions, notes on window being tested etc., and the geo-location of the tint test. This additional information is recorded with the test and will appear on the subsequent printout.

As well as giving a more detailed review of the stored test results, you can also operate iTINT remotely from the smart-device. The website is suitable for mobile or fixed devices.

The iTINT interactive website has seven pages which are accessed by clicking or tapping one of the seven buttons on the left hand side of the index page shown below.

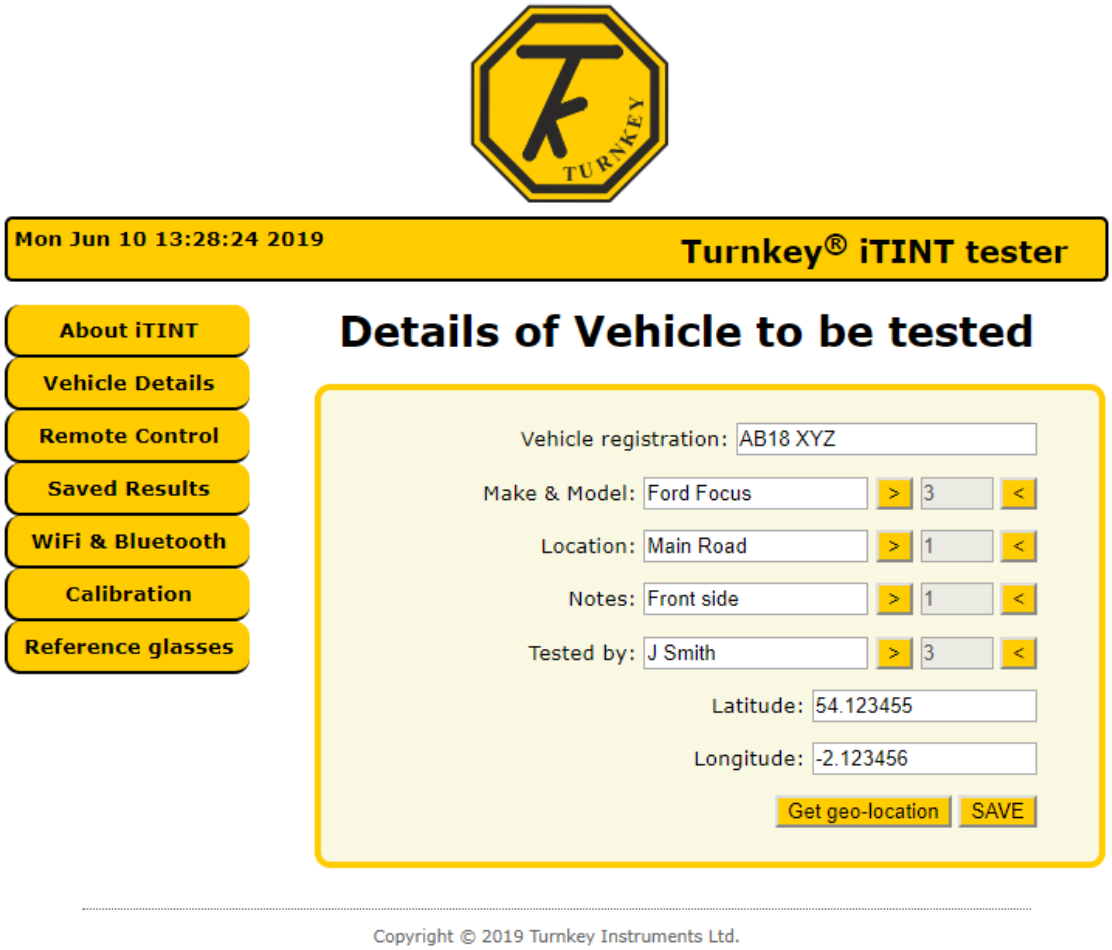


VEHICLE DETAILS

This page is used to input the vehicle registration or ID together with other information about the test. The vehicle registration can have up to 31 characters.

By clicking on the left or right arrow buttons, other details can be preloaded from information already in iTINT. You can set-up 99 Make and Models, 99 Locations, 32 Notes, and 16 Operators; the selected number of the respective text is shown between the arrows. Each text line can have up to 16 characters and can be edited and saved as required. This scheme reduces the amount of data entry required from the smart device.

The Notes could include information about the window being tested. For example, windscreen, front side window and so on.



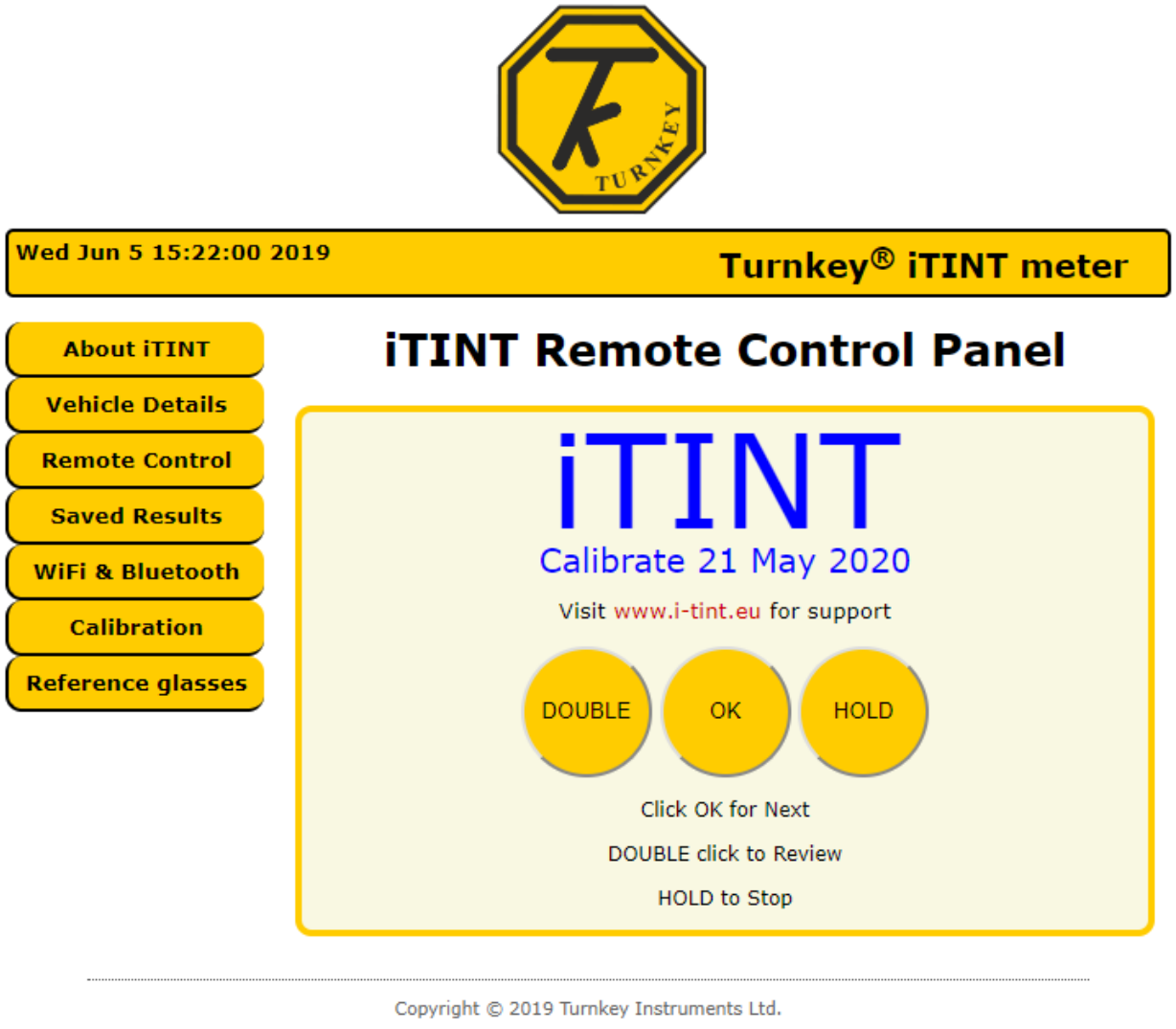
Click geo-location to get the latest GPS latitude and longitude, you will need to have the Turnkey Print Service App installed from Google or Apple.

When finished, click **SAVE** and all the information will be sent to iTINT ready for the next tint test

REMOTE CONTROL

This page lets iTINT be operated remotely. It replicates the Click, Double Click, and Hold functions of the OK button on the actual iTINT instrument. The blue text shows what's appearing on its blue OLED display.

Note you cannot print using this Remote Control panel.



SAVED RESULTS

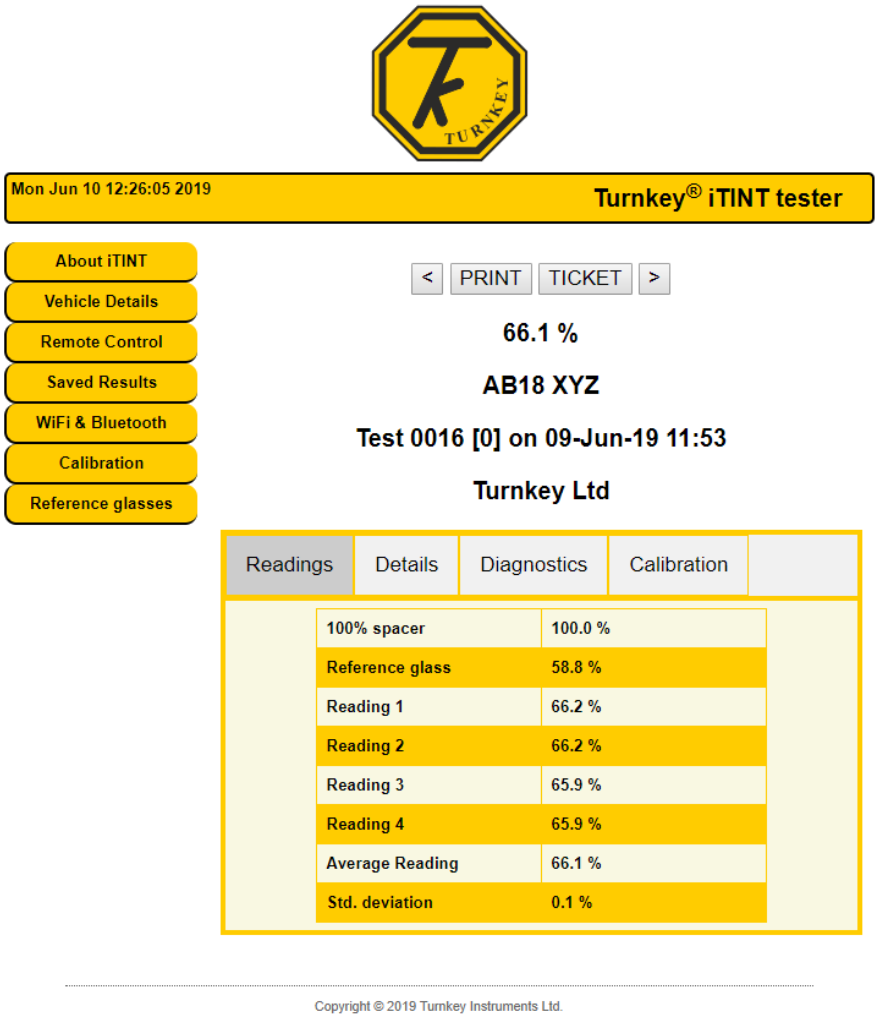
This page is used to review the saved tint tests. Up to 4001 tests with identifying numbers between 0000 and 4000 can be saved. There are four *"tabs"* of details, preceded by the average transmission measured, the vehicle registration or ID, the number and time of the test, and the name of the organisation doing the test.

Use the left and right arrows to move between tests, don't forget to click on the relevant tab to activate.

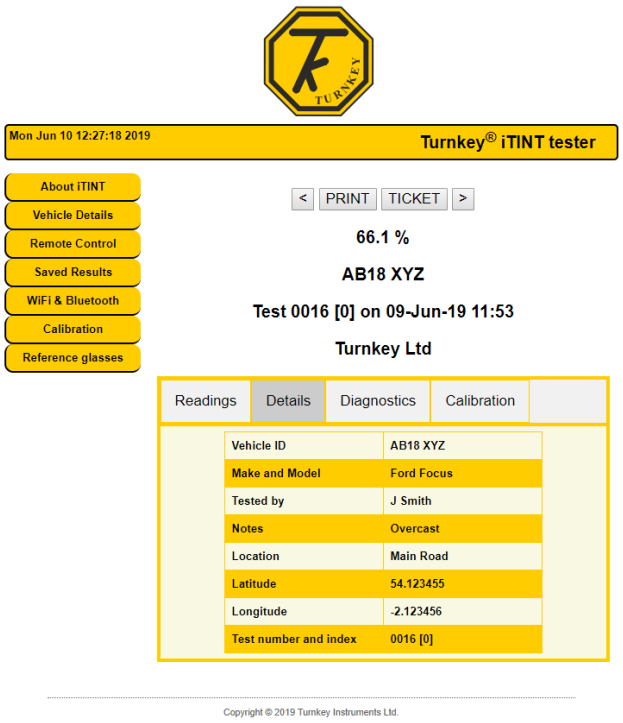
The **Readings** tab shows the results of the measurements.

The 100% spacer ring reading should be 100%.

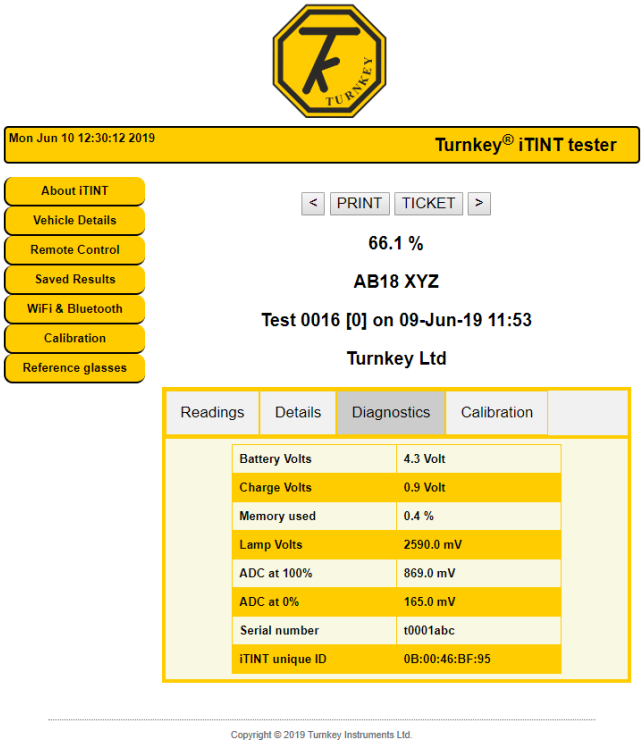
The Reference glass (REF) reading should be within ±1.5 % of that on its label.



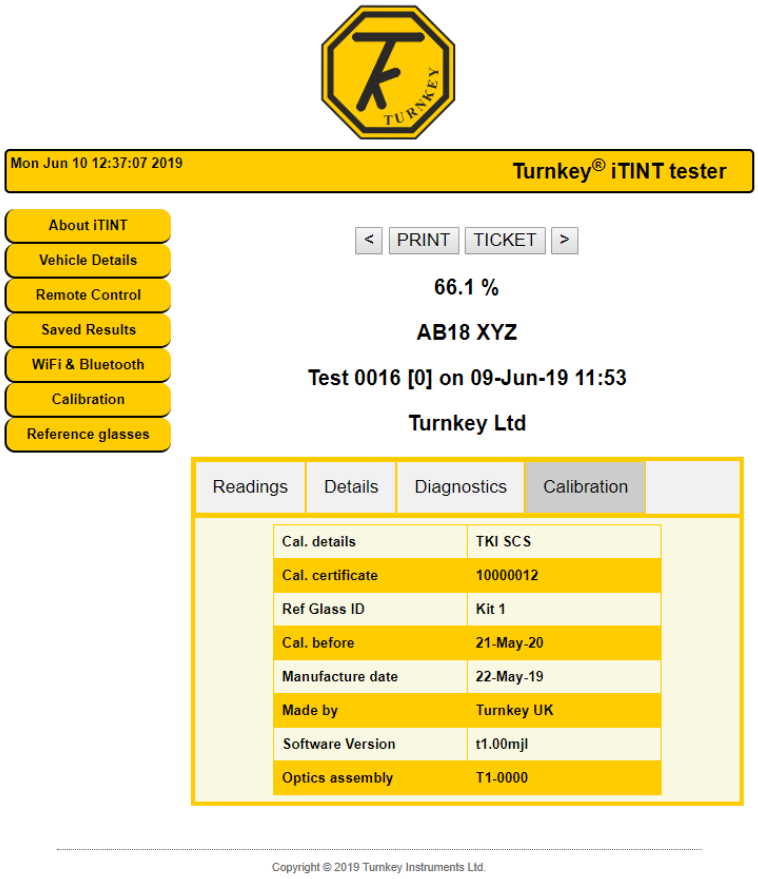
The **Details** tab shows information about the test, you may choose to specify the window type in the notes



The **Diagnostics** tab shows information that helps to validate that iTINT was working correctly



Finally, the **Calibration** tab gives a summary of the instrument's calibration.



If you click the **PRINT** button, any of the individual tabs can be printed from your browser using an installed printer. You will be prompted to select a printer.

Alternatively, if you click the TICKET button, a summary of the test will be produced in a new window in the form of a ticket. A typical ticket is shown below, it is similar to the printed ticket produced by the thermal printer supplied with iTINT.

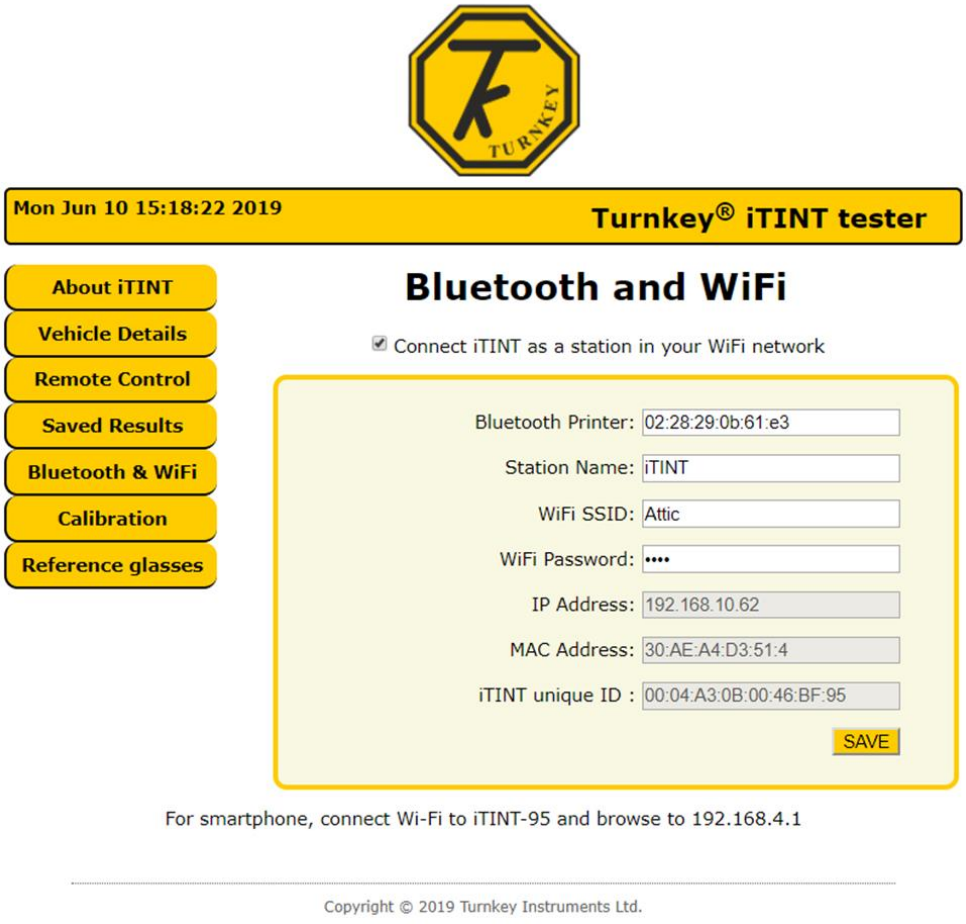
If you click or tap anywhere on the ticket it will print to your chosen printer. The time you printed it is shown at the bottom. Just close the ticket window when finished.

You can use the thermal printer supplied with iTINT to print from the browser ticket window. You must install the **Turnkey Print Service App** first. At the moment this App is only available for Android devices via the Google Store.

Note that the number in square [] brackets after the test number is the test index. This starts at [0] for a new instrument and increases by one after every 4001 tests. It is designed to help distinguish large numbers of historic tests.

BLUETOOTH and WI-FI

This page is used to configure the Bluetooth and Wi-Fi connections of your iTINT. The Bluetooth Printer address should have been set by the factory, you'll only need to change this if you change the printer.



Check the checkbox if you want to connect iTINT as a station of an existing network and enter the correct SSID and Password. For security, the password is not echoed back. When connected the IP and MAC address of the station are shown. You can also use the station name (default iTINT) as the station's address on your network. It may

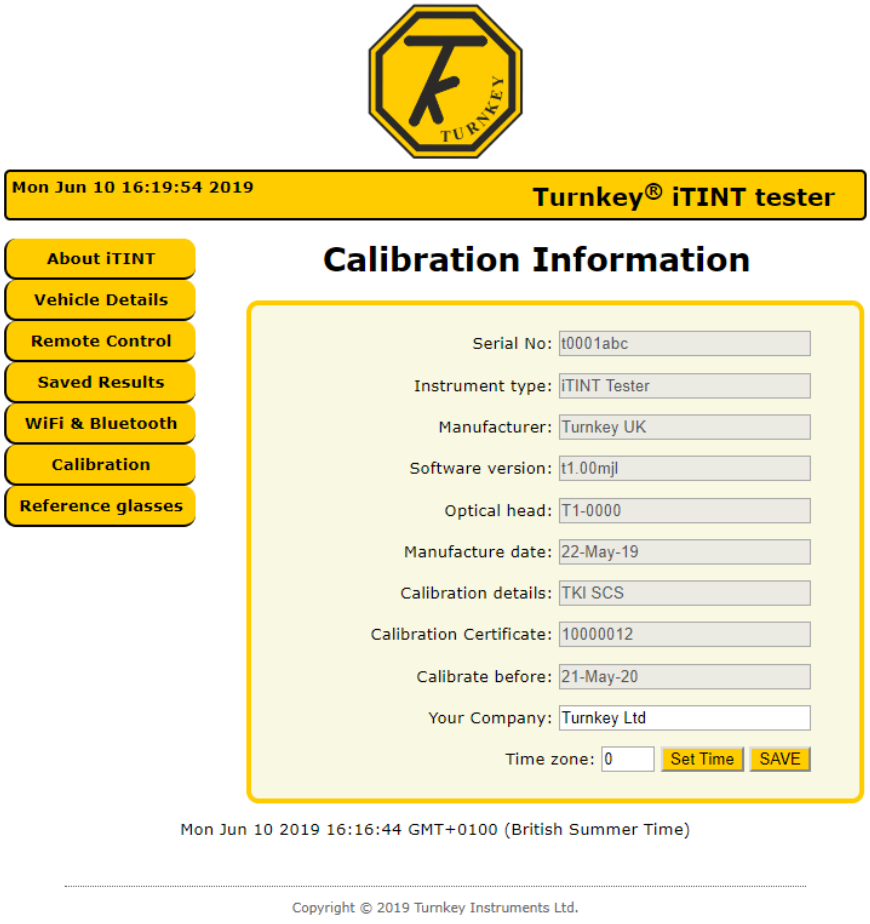
take several reconnects before the station name is registered with your network's DNS.

Click **SAVE** to save any changes in the iTINT flash memory. You must restart iTINT via the slide switch after changing the SSID or Password.

Each iTINT has a unique 64-bit ID and is shown at the bottom of this page. The last two digits are combined into the iTINT's hotspot name, in this case its **iTINT-95**. Search for this name in your smart-devices *Settings>Wi-Fi* menu and connect your browser to page 192.168.4.1, you should then see the index page of the iTINT website.

CALIBRATION

This page just summarizes the calibration details of the instrument.



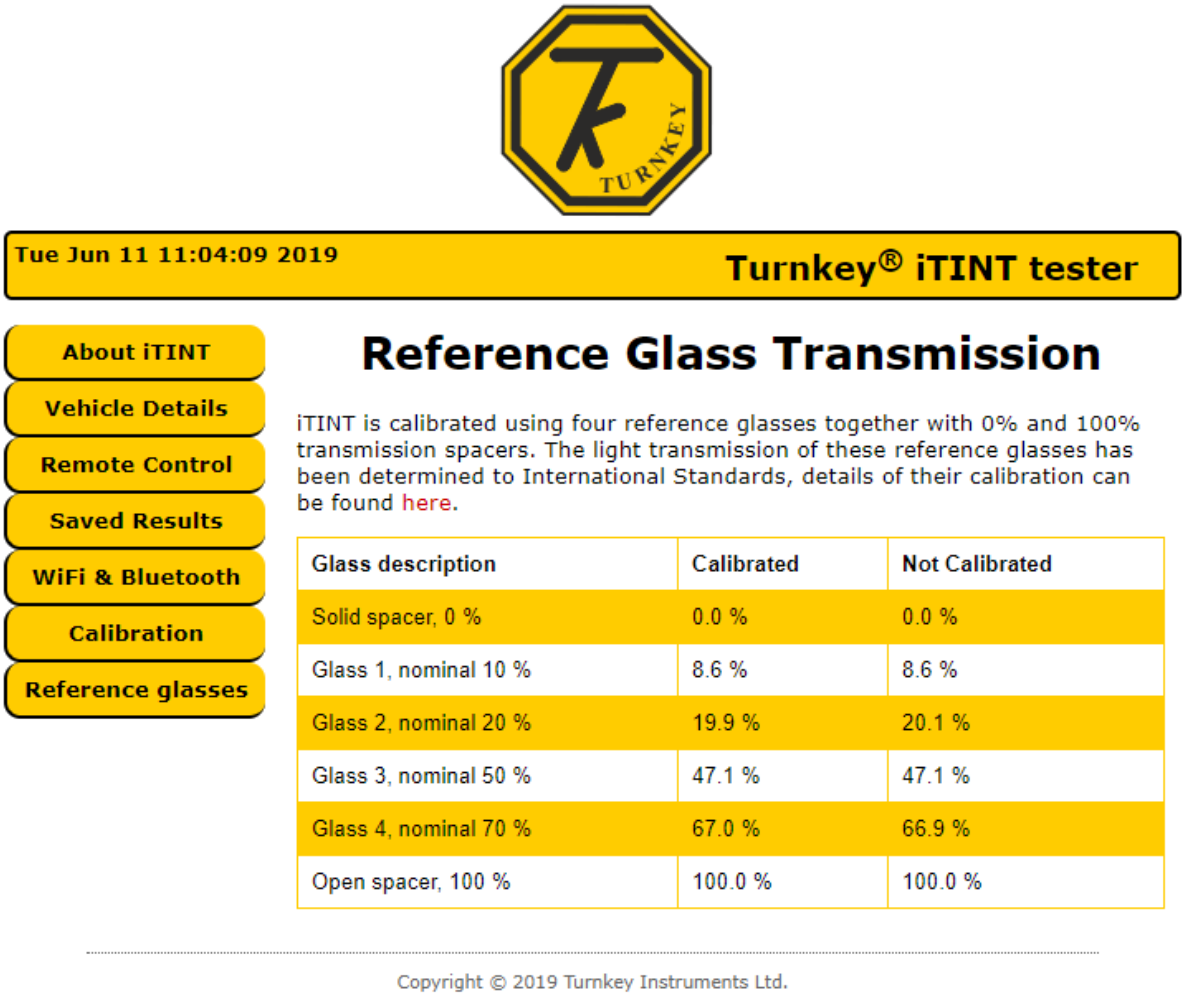
Your company or organisation name will appear with the test results and on the printout. Click **Set Time** to set the time and date of your iTINT, use the time zone entry to set up daylight saving etc.

Click **SAVE** to save any changes in the iTINT flash memory.

REFERENCE GLASSES

For calibration purposes, iTINT uses 4 reference glasses with nominal transmissions of 10 %, 20 %, 50 % and 70 %. The exact transmission value of each glass has been determined to International Standards by a UKAS certified laboratory and is shown in the table below. Calibration certificates are available for these glasses.

During calibration the transmission of each glass is measured by iTINT, together with that of 0% and 100 % transmission spacers. These values are shown in the right hand column below.



When all the measurements have been taken, iTINT creates and saves its own calibration curve between 0 % and 100 % transmission. This curve consists of five linear segments or splines, 0% to Glass 1, Glass 1 to Glass 2, and so on to Glass 4 to 100 %. This ensures unprecedent accuracy for the readings from iTINT.

iTINT should be factory re-calibrated annually.

THERMAL PRINTER INSTRUCTIONS

Model	MTP-II/PT210/PT200
Dimension	79*110*45mm
Print method	Line thermal printer
Paper width	57mm
Print width	48mm
Weight(g)	235(not including the paper roll)
Max diameter of paper roll	40mm
Dot per lie	384 dots/line
internal characters	ASCII CH(8x16,9x17,9x24,12x24); GB18030(16x16,24x24)
Print speed	50~80mm/s
Life cycle time	50km(printing density under 12.5%)/100 million pulses
text and graphic Support	English,figure,symbol,Chinese,graph,curve,icon pre-stored, barcode(CODE 39EAN 13EAN 8CODABARCODE 12CODE 93ITF) QR code,PDF417
Dot pitch (resolution)	203DPI/8 dots/mm
interface	bluetooth,Mini USB
Power	1500mAh 7.4V 11.1Wh rechargeable Lithium battery
Recharge adapter	Stand by recharging / AC adapter
Self-check	Without paper / cover open
Black mark test	Supported
Paper feeding	Easy paper loading
commands	ESC/POS compatible with order sets
Paper cut	By hands
operate setting	Temperature -10°C~40°C , Humidity 20%~85%
Recharge Setting	Temperature 5°C~40°C , Humidity 20%~85%
Storage Setting	Temperature -20°C~70°C , Humidity 5%~95%
Standard accessories	Long-term preservable paper,AC,adapter,li-ion battery,USB cable
Optional accessories	Serial interface cable/leather coat/CD

Note:

1. The printer can not be placed in the phone, not long exposure to water
2. The printing process can not open the paper bin, or the printer does not work
3. In the battery charger as far as fast charging after use, so you can ensure that the battery life of the printer
4. Long-term storage must fight printers and batteries separately, or else lead to cell damage
5. Please use our configuration charger, different charger can result in damage to the printer
6. The print head is dirty, use rubbing alcohol
7. The print head is dirty, use rubbing alcohol

1. MTP-II an excellent performance of portable Bluetooth receipt printer ,which support Android and IOS handsets(Details can consult to our sales representatives when buying).
2. Warranty: 1 Year
3. Lifetime Service
   Technical Services: Skype: live: 409879867
4. Emial: andrew.hu@jprt.com.cn
   Whatsapp:+86 13696988194

1.1 Power on

When the printer is power off, the【POWER】key ispressed 2s , the printer will be power on and enter into working status,power LED(red) is light.
Notice: it is mean the electricity of the printer will run out when the printer FEED LED (blue) is blink and not paper out , Please replace the battery or chargeas soon as possible if you continue using it.

1.2 Power off

When the printer is power on, the【POWER】key ispressed 2s, the printer will be power off , all LEDs is not light.

1.3 Test page

The method of test page as follows : the printer is power off , then hold on to press the 【FEED】keyfirst,and press the【POWER】key,you can loosen key when hear a "Di"rings, one test page will be printed , test page includes current the status of the printer and the set of the printer and the example of the printer.

1.4 LED Indicators and beep signal

The printer has a buzzer and two LED Indicators ,they are use to point out the status of the printer . LED Indicators is use to point out the current status of the printer , buzzer is use to point out the changeof the printer's status . One LED is function indicators ,the other one is charge indicators:

Feed LED (blue)	Power LED (red)	The printer's status	Buzzer
Fast blink	Not light	Charging	
Slow blink	Not light	Electricity shortage	
Light all the time	Not light	Charge over	
Not light	Light all the time	Power on	
Slow blink	Slow blink	Paper out	Sing a sound
Not light	Slow blink	Sleeping	

1.5 Handset app Bluetooth connection operation

Open handset Bluetooth, find the name of MTP-II Andoid ersion), MTP-II-4Apple version), click to match, matching password 0000, shows matching OK, then open APP of handset, connect to matched printers, then you can click on the printing operation. App name:caysnprinter

Android app download: www.xmjprt.com

Apple app download: Apple Store Enter printer-x

1.6 Printer USB connect to PC operation

Install Windoes driver , then use USB to connect the computer, Open POS driver, choose corresponding printer POS58 series or POS80 series, choose correct port (How to find your port : Open 'My computer', right-hand button choose 'Management', choose 'Device management', choose 'Port', Baud rate chooses 9600, flow control chooses 'XonXoff', then click 'OK'.

Open control panel of computer, choose 'Device and printer', find installed printer, right-hand button 'Printer property', choose 'Port', check port right or wrong(if wrong, click right port and click apply), then choose 'Regular', click 'printing test page', the printer will automatically print out test page.

Download: www.xmjprt.com www.xmjprinter.com

Package:

Printer X1 Charger X1 Thermal Paper X1 Instructions X1

Battery X1 Case X1 CDX1 USBX1 Warranty card X1

CERTIFICATION

TCB

GRANT OF EQUIPMENT AUTHORIZATION

Certification
Issued Under the Authority of the
Federal Communications Commission
By:

TCB

Bay Area Compliance Laboratory Corp.
1274 Anvilwood Avenue
Sunnyvale, CA 94089

Date of Grant: 11/30/2016
Application Dated: 11/30/2016

ESPRESSIF SYSTEMS (SHANGHAI) PTE LTD
456 Bibo Road Room A201
Shanghai, 201203
China

Attention: Minjie Cai

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:	2AC7Z-ESPWROOM32
Name of Grantee:	ESPRESSIF SYSTEMS (SHANGHAI) PTE LTD
Equipment Class:	**Digital Transmission System**
Notes:	**Wi-Fi & Bluetooth Module**
Modular Type:	**Single Modular**

Grant Notes	FCC Rule Parts	Frequency Range (MHZ)	Output Watts	Frequency Tolerance	Emission Designator
	15C	2402.0 - 2480.0	0.004		
	15C	2412.0 - 2462.0	0.046		

Modular approval. Output power listed is conducted. This grant is valid only when the module is sold to OEM or OEM integrators. Modular approval for use as a module in mobile-only RF exposure conditions. The antenna(s) used for this device must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located with any other transmitters, except in accordance with FCC multi-transmitter product procedures. Compliance of this device in all final host configurations is the responsibility of the Grantee. End-users must be provided with specific information required to satisfy RF exposure compliance for the final host device. Installation of this device into portable RF Exposure category host devices requires the submission of a Class II permissive change or new application. The device supports 20 MHz and 40 MHz bandwidth modes.

Type Examination Certificate

BACL Bay Area Compliance Labs Corp.

USA: TCB, ISED: FCB
Japan: RCB, OFCA: FCB, IMDA: CAB
Notify Body RED Directive 2014/53/EU
Notify Body EMCD Directive 2014/30/EU

DIRECTIVE 2014/53/EU
EU TYPE EXAMINATION CERTIFICATE
NOTIFIED BODY: 1313

Certificate No.:	B1803062
Date of Issue:	2018-03-16
Manufacturer:	ESPRESSIF SYSTEMS (SHANGHAI) PTE LTD Suite 204, Block 2, 690 Bibo Road, Zhang Jiang Hi-Tech Park, Shanghai, China (201203)
Trade Name:	ESPRESSIF
Product Designation:	ESP-WROOM-32, ESP32-WROOM-32
Product Description:	WIFI & Bluetooth Module

Essential Requirements		Examined Documentation	Results
RED Article 3.2	Radio	Technical documentation & Test report	Conform
RED Article 3.1(b)	EMC	Technical documentation & Test report	Conform
RED Article 3.1(a)	Safety	Technical documentation & Test report	Conform
RED Article 3.1(a)	Health	Technical documentation & Test report	Conform

This EU-Type Examination Certificate is issued in according with Annex III, Module B of Council Directive 2014/53/EU of 16 April, 2014 and is only valid in conjunction with the attached Appendixes.

The scope of EU Type Examination only relates to the submitted documentation.

Marking: The product shall be marked with the CE marking as required in the Council Directive 2014/53/EU

Number of Appendixes to this certificate: 1

Bay Area Compliance Laboratories Corp. (BACL)
1274 Anvilwood Avenue, Sunnyvale, CA 94089, USA
Tel: 1 (408) 732-9162 Fax: 1 (408) 732-9164 Web: www.baclcorp.com

CE

Authorized by: _____
Alvin Huang
Certifier

CI021-C

BACL BACL BACL BACL BACL B

Appendix of Type Examination Certificate
Certificate No.: B1803062

APPENDIX A OF TYPE EXAMINATION CERTIFICATE

Product Characteristics

TX Frequency:	Wi-Fi: 2412-2472 MHz/2422-2462 MHz Bluetooth/BLE: 2402-2480 MHz
RX Frequency:	Wi-Fi: 2412-2472 MHz/2422-2462 MHz Bluetooth/BLE: 2402-2480 MHz
ITU Designation:	G1D, D1D, F1D
Output Power:	Wi-Fi: 16.62 dBm (802.11b), 16.23 dBm (802.11g) 16.45 dBm (802.11n20), 16.02 dBm (802.11n40) Bluetooth: 8.31 dBm; Bluetooth LE: 6.67 dBm
Modulation:	Wi-Fi: DSSS, OFDM Bluetooth: GFSK, π/4-DQPSK, 8-DPSK
Antenna:	PCB Antenna, 2.0 dBi

Conformity Details

Requirement	Standard, Test Report Number, Date & Laboratory
Radio Spectrum	EN 300 328 V2.1.1 (2016-11) Test Report RSHA180116002-01A issued on 2018-02-23 by BACL, Kunshan EN 300 328 V2.1.1 (2016-11) Test Report RSHA180116002-01B issued on 2018-02-23 by BACL, Kunshan EN 300 328 V2.1.1 (2016-11) Test Report RSHA180116002-01C issued on 2018-02-23 by BACL, Kunshan
EMC	EN 301 489-1 V2.2.0 (2017-03), EN 301 489-17 V3.2.0 (2017-03) Test Report RSHA180116002-02 issued on 2018-02-27 by BACL, Kunshan
Safety	EN 60950-1: 2006 + A11: 2009 + A1: 2010 + A12: 2011 + A2: 2013 Test Report RSHA180116002-03 issued on 2018-03-03 by BACL, Kunshan
Health	EN 62311: 2008 Test Report RSHA180116002-01D issued on 2018-02-23 by BACL, Kunshan

***** End of Appendix *****

Bay Area Compliance Laboratories Corp. (BACL)
1274 Anvilwood Avenue, Sunnyvale, CA 94089, USA
Tel: 1 (408) 732-9162 Fax: 1 (408) 732-9164 Web: www.baclcorp.com

Wi-Fi CERTIFIED™ Interoperability Certificate

This certificate lists the features that have successfully completed Wi-Fi Alliance interoperability testing.
Learn more: www.wi-fi.org/certification/programs

Certification ID: WFA78954 — **Page 1 of 2**

Date of Last Certification	August 24, 2018
Company	Espressif Inc.
Product	Wi-Fi & Bluetooth Internet of Things Module
Model Number	ESP32-WROOM-32
Product Identifier(s)	
Category	Gaming, Media & Music
Subcategory	Digital Audio - Stationary (speakers, receiver, MP3 player)
Hardware Version	Product: V2.0.0, Wi-Fi Component: V2.0.0
Firmware Version	Product: V1.0.0, Wi-Fi Component: V1.0.0
Operating System	Proprietary / Other: FreeRTOS , version: V8.2.0
Frequency Band(s)	2.4 GHz

Summary of Certifications

CLASSIFICATION	PROGRAM
Connectivity	Wi-Fi CERTIFIED™ b, g, n
	WPA™ – Enterprise, Personal
	WPA2™ – Enterprise, Personal
Optimization	WMM®
Access	Wi-Fi Protected Setup™

Wi-Fi CERTIFIED™ Interoperability Certificate

Certification ID: WFA78954 — **Page 2 of 2**

Security

WPA™ – Enterprise, Personal
WPA2™ – Enterprise, Personal
EAP Type(s)
EAP-TLS
EAP-TTLS/MSCHAPv2
PEAPv0/EAP-MSCHAPv2

Wi-Fi CERTIFIED™ b

Wi-Fi CERTIFIED™ g

Wi-Fi CERTIFIED™ n

2.4 GHz
1 Spatial Stream 2.4 GHz
Short Guard Interval
TX A-MPDU
STBC Receive
40 MHz operation in 2.4 GHz, with coexistence mechanisms
Reduced Interframe Space (RIFS)

WMM®

Wi-Fi Protected Setup™

2.4 GHz
PIN
Push-Button (PBC)

NOTES

For help and assistance, visit ***i-TINT.eu*** or ***www.turnkey-instruments.com***

FCC ID: 2AC7Z-ESPWROOM32

CE: 1313

Revision history

- Issue1, original, June 2019
- Issue 2, certification added, July 2019