

*Operating frequencies and transmit power settings depend on national regulatory limits.	
TS-524 VLANs	802.1 Q tagged VLANs, access or trunk
TS-524 Management	Telnet, SSH, HTTP, HTTPS, or serial console
TS-524 Uplink ports	2 x IEEE 802.3 10/100/1000MB auto-sensing via RJ45
TS-524 UTP ports	1 x RJ21 for PBX connection, 1 x RJ21 for downstream VDSL2

Wireless Interface	TW-522: Dual radio; 802.11a/b/g/n/ac; 2.4GHz and 5GHz TW-521: Single radio; 802.11a/b/g/n; 2.4GHz or 5GHz
LAN Ethernet port	2 x IEEE 802.3 10/100MB auto-sensing via RJ45
Uplink UTP	1 x VDSL2 via RJ11
Pass through phone port	Filtered RJ11 port
Medium	DSSS, OFDM, MIMO
Network Standards	802.11a/b/g/n, 802.11i, 802.11-2007, 802.11ac (TW-522 only)
Data rates	802.11b: 1, 2, 5.5, 11Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11a: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: MCS 0-15, up to 300Mbps 802.11ac: MCS 0-9, up to 400Mbps (TW-522 only)
Operating frequencies*	2.4GHz: 2400 to 2483.5MHz 5GHz: 5150 to 5250MHz, 5725 to 5850MHz
Transmit power settings*	1 to 20dBm in 1dBm increments
Antenna configuration	Two internal omni-directional, 1x2 or 2x2 MIMO operation 4dBi peak @ 2.4GHz, 5dBi @ 5GHz

TS-524 and TW-5xx Specifications

Installing In-line Filters

The TW-5xx Wallplate features a built-in *Plain Old Telephone Service* (POTS) and Line Power filter for the desk phone. Install an in-line filter on all other phone jacks that will have a phone connected.

The terminated filter has a clipped RJ11 connector. This is purposely done to comply with EN60950 requirements. Use a small flat blade screwdriver to lift the tab if attempting to remove the filter.



If installing a filter on a bathroom phone, use the unterminated filter. Remove the bathroom wall plate and terminate the filter in the wall box using wire beans.



- This equipment should only be installed by qualified professional installers.
- Read all installation instructions and site survey reports, and verify correct equipment installation before installing this equipment.
- Remove jewelry and watches before installing this equipment.
- Verify proper wiring and grounding for each installation location .
- Verify there is adequate ventilation around the device, and that ambient temperatures meet equipment operation specifications (0° to 40°C / 32° to 104°F except TW-522 which is 0° to 35°C / 32° to 95°F).

Warnings

WARNING! Indicates a condition or procedure that could result in personal injury or equipment damage.

CAUTION Care is required. Disregarding a caution can result in data loss or equipment malfunction.

NOTE Tips, hints, or special requirements that you should take note of.

The following graphical alerts are in this document to indicate notable situations:

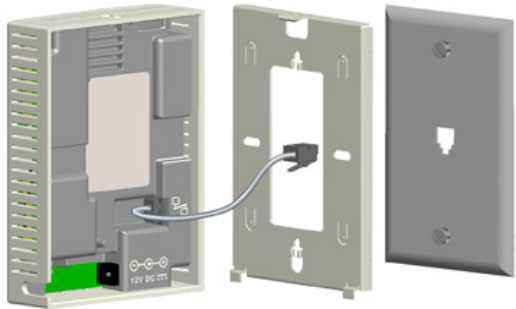
Document Conventions

The TW-5xx Series Wired/Wireless WallPlate is designed for multi-tenant buildings such as hotels, healthcare facilities, apartments, and dormitory housing. The TW-5xx is designed to leverage the in-building telephone wiring to deploy Ethernet and wireless LAN networks without the effort and expense of re-wiring with structured cabling.

This installation guide applies to TS-524 (P/N TS-0524-WR), TW-522 (P/N TW-0522-67030-US, -EU, -WR), TW-511 (P/N TW-0511-60010-US, -EU, -WR), and TW-510 (P/N TW-0510-WR).

Installing the TW-5xx WallPlate

1. Loosen the screws on the existing wall plate to create a gap of 6mm (1/4 in).
2. Attach the mounting adapter using the keyhole slots.



3. Tighten the screws until the mounting adapter is securely attached.

CAUTION Do not over tighten.

4. Connect the supplied 10cm cable between the TW-5xx bottom mounted RJ11 jack and the existing RJ11 jack.
5. Hook the bottom tabs on the mounting adapter to the TW-5xx. Rotate and snap the TW-5xx onto the adapter.



Network Configuration (TS-524)

The following will enable all ports and configure one wireless LAN:

Serial Console Connection	Default IP Address
Speed: 19200 Data Bits: 8 Parity: None Stop Bit: 1 Flow Control: None	192.168.1.3

Log in to the system using Telnet, SSH, HTTP, or Serial Console using the default username and password:

Username: **admin**
Password: **admin123**

Enter the following commands:

```
config
password admin <enter your new password>
country-code <xx = your country>
hostname <enter your hostname>
interface vlan1 ip-address 192.168.1.1/24
wlan Guest
exit
int dsl1-24 no shutdown
int radio1-24.1
channel 6
power 18
wlan Guest
no shutdown
exit
```

Enabling Line Power

Line power should be enabled after the filters and TW-5xx WallPlate have been installed. Line power is safe for use with telephony equipment but it will ring the phones if the filters are not installed first.

To enable line power, enter the following commands into the CLI:

```
interface dsl1-24 line-power
write memory
```

Regulatory Information

This guide applies to Model Numbers: TS-524, TW-510, TW-511, and TW-522.

All Zebra devices are designed to be compliant with rules and regulations in locations where they are sold and will be labeled as required.

Local language translations are available at the following website:
www.zebra.com/support

Any changes or modifications to Zebra equipment, not expressly approved by Zebra, could void the user's authority to operate the equipment. When Zebra devices are professionally installed, the Radio Frequency Output Power will not exceed the maximum allowable limit for the country of operation.

Antennas: Use only the supplied or an approved replacement antenna. Unauthorized antennas, modifications, or attachments could cause damage and may violate regulations.

Radio Modules

The **TW-511** contains an approved radio module. This module is identified below:
802.11 a/b/g/n WLAN, Type: TW-5

Wireless Device Country Approvals (TW-511 and TW-522 Only)

Regulatory markings, subject to certification, are applied to the device signifying the radio(s) is/are approved for use in the following countries: United States, Canada, Japan, China, S. Korea, Australia, and Europe. Please refer to the *Declaration of Conformity* (DoC) for details of other country markings. This is available at www.zebra.com/doc.

Note: Europe includes, Austria, Belgium, Bulgaria, Czech Republic, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

Operation of the device without regulatory approval is illegal.

Country Selection

Select only the country in which you are using the device. Any other selection will make the operation of this device illegal. The US version of the Access Point will operate only if US country code is selected. The US version will be sold / used in the US protectorates: American Samoa, Guam, Northern Marianas, Puerto Rico, US Virgin Islands.

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Zebra Technologies Corporation
Lincolnshire, IL 60069 USA

Frequency of Operation - FCC and IC

5 GHz Only

The use in the UNII (Unlicensed National Information Infrastructure) band 1 (5150-5250 MHz) is restricted to Indoor Use Only; any other use will make the operation of this device illegal.

Industry Canada Statement:

Caution: The device for the band 5150-5250 MHz is only for indoor usage to reduce potential for harmful interference to co-Channel mobile satellite systems. High power radars are allocated as primary users (meaning they have priority) of 5250-5350 MHz and 5650-5850 MHz and these radars could cause interference and/or damage to LE-LAN devices.

Avertissement: Le dispositif fonctionnant dans la bande 5150-5250 MHz est réservé uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux.

Les utilisateurs de radars de haute puissance sont désignés utilisateurs principaux (c.-à-d., qu'ils ont la priorité) pour les bandes 5250-5350 MHz et 5650-5850 MHz et que ces radars pourraient causer du brouillage et/ou des dommages aux dispositifs LAN-EL

2.4 GHz Only

The available channels for 802.11 b/g operation in the US are Channels 1 to 11. The range of channels is limited by firmware.

Health and Safety Recommendations



General Safety Warnings

TS-524 Only

WARNING: For installation only in a Restricted Access Location by trained service personnel.

WARNING: Equipment must be connected to an earthed mains socket-outlet.

WARNING: To reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cord.

WARNING: Voltages present which are above TNV-3 (POTS) limits. A cover must be installed over the punch down blocks with a HV (High Voltage) warning label (supplied).

WARNING: The maximum operating ambient temperature is 40 degrees Celcius. When installing the Switch in an equipment rack, consider the following potential hazards:

Elevated Operating Ambient Temperature - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than the room ambient. Therefore consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (Tmra).

Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Reliable Earthing - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g., use of power strips).

(7)

Product designed to be used below 2000 meters altitude.

仅适用于海拔2000米以下地区安全使用

TW-510, TW-511 and TW-522

When using your telephone equipment, basic safety precautions should always be followed to reduce the risk of fire, electric shock and injury to persons, including the following:

1. Do not use this product near water, for example, near a bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement or near a swimming pool.
2. Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.
3. Do not use the telephone to report a gas leak in the vicinity of the leak.

Warnings for Use of Wireless Devices

Please observe all warning notices with regard to the usage of wireless devices.

Potentially Hazardous Atmospheres - Fixed Installations

You are reminded of the need to observe restrictions on the use of radio devices in fuel depots, chemical plants etc. and areas where the air contains chemicals or particles (such as grain, dust, or metal powders).



Safety in Hospitals

Wireless devices transmit radio frequency energy and may affect medical electrical equipment. When installed adjacent to other equipment, it is advised to verify that the adjacent equipment is not adversely affected.

Pacemakers

Pacemaker manufacturers recommended that a minimum of 15cm (6 inches) be maintained between a handheld wireless device and a pacemaker to avoid potential interference with the pacemaker. These recommendations are consistent with independent research and recommendations by Wireless Technology Research.

Persons with Pacemakers:

- Should ALWAYS keep the device more than 15cm (6 inches) from their pacemaker when turned ON.
- Should not carry the device in a breast pocket.
- Should use the ear furthest from the pacemaker to minimize the potential for interference.
- If you have any reason to suspect that interference is taking place, turn OFF your device.

Other Medical Devices

Please consult your physician or the manufacturer of the medical device, to determine if the operation of your wireless product may interfere with the medical device.

(8)



RF Exposure Guidelines (TW-511 and TW-522 Only)

Safety Information

Reducing RF Exposure - Use Properly

Only operate this device in accordance with the instructions supplied.

International (TW-511 and TW-522 Only)

The device complies with internationally recognized standards covering human exposure to electromagnetic fields from radio devices. For information on "International" human exposure to electromagnetic fields refer to the Declaration of Conformity (DoC) at www.zebra.com/doc.

For further information on the safety of RF energy from wireless devices, see <http://responsibility.zebra.com/index.php/downloads/> located under Wireless Communications and Health

EU (TW-511 and TW-522 Only)

Remote and Standalone Antenna Configurations

To comply with EU RF exposure requirements, antennas that are mounted externally at remote locations or operating near users at stand-alone desktop of similar configurations must operate with a minimum separation distance of 20 cm from all persons.

US and Canada (TW-511 and TW-522 Only)

Co-located statement

To comply with FCC RF exposure compliance requirement, the antenna used for this transmitter must not be co-located or operating in conjunction with any other transmitter/antenna except those already approved in this filing.

Remote and Standalone Antenna Confiugrations

To comply with FCC RF exposure requirements, antennas that are mounted externally at remote locations or operating near users at stand-alone desktop of similar configurations must operate with a minimum separation distance of 20 cm from all persons.

Radio Frequency Interference Requirements - FCC

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Radio Transmitters (Part 15) - (TW-511 and TW-522 Only)

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.

Radiation Exposure Statement
This equipment complies with FCC and IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body. Déclaration d'exposition aux radiations:
Cet équipement est conforme aux limites d'exposition aux rayonnements FCC et IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.

(9)

The use of 5 GHz WLAN's, for use in the US , have the following restrictions

- Notched Band 5.60 - 5.65 GHz

Radio Frequency Interference Requirements - Canada

This Class A digital apparatus complies with Canadian ICES-003.

Radio Transmitters - (TW-511 and TW-522 Only)

For RLAN Devices:

The use of 5 GHz RLAN's, for use in Canada, have the following restrictions:

- **Restricted Band 5.60 - 5.65 GHz**
L'utilisation de RLAN de 5 GHz, pour utilisation au Canada est soumise aux restrictions suivantes:
- Bande Restreinte de 5,60 à 5,65 GHz

This device complies with RSS 210 of Industry Canada. 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.

Ce dispositif est conforme à la norme CNR-210 d'Industrie Canada applicable aux appareils radio exempts de licence. Son fonctionnement est sujet aux deux conditions suivantes: (1) le dispositif ne doit pas produire de brouillage préjudiciable, et (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

Label Marking: The Term "IC:" before the radio certification only signifies that Industry Canada technical specifications were met.

Marking and European Economic Area (EEA)

WARNING: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

The use of 2.4GHz RLAN's, for use through the EEA, have the following restrictions:

- Maximum radiated transmit power of 100 mW EIRP in the frequency range 2.400 -2.4835 GHz.
- Italy requires a user license for outside usage.

Statement of Compliance for Wireless Devices (TW-511 and TW-522 Only)

Zebra hereby declares that this device is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC. A Declaration of Conformity may be obtained from www.zebra.com/doc

Statement of Compliance for Non-Wireless Devices (TS-524 and TW-510)

Zebra hereby declares that this device is in compliance with all the applicable Directives, 2004/108/EC and 2006/95/EC. A Declaration of Conformity may be obtained from www.zebra.com/doc

(10)



Waste Electrical and Electronic Equipment (WEEE)

English: For EU Customers: All products at the end of their life must be returned to Zebra for recycling. For information on how to return product, please go to: www.zebra.com/weee.

Français: Clients de l'Union Européenne: Tous les produits en fin de cycle de vie doivent être retournés à Zebra pour recyclage. Pour de plus amples informations sur le retour de produits, consultez ; www.zebra.com/weee.

Español: Para clientes en la Unión Europea: todos los productos deberán entregarse a Zebra al final de su ciclo de vida para que sean reciclados. Si desea más información sobre cómo devolver un producto, visite: www.zebra.com/weee.

Български: За клиенти от ЕС: След края на ползения им живот всички продукти трябва да се връщат на Zebra за рециклиране. За информация относно връщането на продукти, моля отидете на адрес: www.zebra.com/weee.

Deutsch: Für Kunden innerhalb der EU: Alle Produkte müssen am Ende ihrer Lebensdauer zum Recycling an Zebra zurückgesandt werden. Informationen zur Rücksendung von Produkten finden Sie unter www.zebra.com/weee.

Italiano: per i clienti dell'UE: tutti i prodotti che sono giunti al termine del rispettivo ciclo di vita devono essere restituiti a Zebra al fine di consentirne il riciclaggio. Per informazioni sulle modalità di restituzione, visitare il seguente sito Web: www.zebra.com/weee.

Português: Para clientes da UE: todos os produtos no fim de vida devem ser devolvidos à Zebra para reciclagem. Para obter informações sobre como devolver o produto, visite: www.zebra.com/weee.

Nederlands: Voor klanten in de EU: alle producten dienen aan het einde van hun levensduur naar Zebra te worden teruggezonden voor recycling. Raadpleeg www.zebra.com/weee voor meer informatie over het terugzenden van producten.

Polski: Klienci z obszaru Unii Europejskiej: Produkty wycofane z eksploatacji należą zwrócić do firmy Zebra w celu ich użycizacji. Informacje na temat zwrotu produktów znajdуй się na stronie internetowej www.zebra.com/weee.

Čeština: Pro zákazníky z EU: Všechny produkty je nutné po skončení jejich životnosti vrátit společnosti Zebra k recyklaci. Informace o způsobu vrácení produktu najdete na webové stránce: www.zebra.com/weee.

Eesti: EL klientidele: kõik tooted tuleb nende eluea lõppedes tagastada taaskasutamise eesmärgil Zebra'ile. Lisainformatsiooni saamiseks toote tagastamise kohta külastage palun aadressi: www.zebra.com/weee.

Magyar: Az EU-ban vásárlóknak: Minden tönkrement termékét a Zebra vállalatához kell eljuttatni újrahasznosítás céljából. A termék visszajuttatásának módjával kapcsolatos tudnivalóként látogasson el a www.zebra.com/weee weboldalra.

(11)

Svenska: För kunder inom EU: Alla produkter som uppnått sin livslängd måste returneras till Zebra för återvinning. Information om hur du returnerar produkten finns på www.zebra.com/weee.

Suomi: Asiakkaat Euroopan unionin alueella: Kaikki tuotteet on palautettava kierätettäväksi Zebra-yhtiöön, kun tuotetta ei enää käytetä. Lisätietoja tuotteiden palauttamisesta on osoitteessa www.zebra.com/weee.

Dansk: Til kunder i EU: Alle produkter skal returneres til Zebra til recirkulering, når de er udtjent. Læs oplysningerne om returnering af produkter på: www.zebra.com/weee.

Ελληνικά: Για πελάτες στην Ε.Ε.: Όλα τα προϊόντα, στο τέλος της διάρκειας ζωής τους, πρέπει να επιστρέφονται στην Zebra για ανακύκλωση. Για περισσότερες πληροφορίες σχετικά με την επιστροφή ενός προϊόντος, επισκεφθείτε τη διεύθυνση www.zebra.com/weee στο Διαδίκτυο.

Malta: Għal klijenti fl-UE: il-prodotti kollha li jkunu waslu fl-aħħar tal-hajja ta' l-użu tagħhom, iridu jiġu rritornati għand Zebra għar-riċiklaġġ. Għal aktar tagħrif dwar kif għandek tirritorna l-prodott, jekk jogħġbok żur: www.zebra.com/weee.

Românesc: Pentru clienții din UE: Toate produsele, la sfârșitul duratei lor de funcționare, trebuie returnate la Zebra pentru reciclare. Pentru informații despre returnarea produsului, accesați: www.zebra.com/weee.

Slovenski: Za kupce v EU: vsi izdelki se morajo po poteku življenjske dobe vrniti podjetju Zebra za reciklažo. Za informacije o vračilu izdelka obiščite: www.zebra.com/weee.

Slovenčina: Pre zákazníkov z krajín EU: Všetky výrobky musia byť po uplynutí doby ich životnosti vrátené spoločnosti Zebra na recykláciu. Blížšie informácie o vrátení výrobkov nájdete na: www.zebra.com/weee.

Lietuvių: ES vartotojams: visi gaminiai, pasibaigus jų eksploatacijos laikui, turi būti grąžinti utilizuoti į kompaniją „Zebra“. Daugiau informacijos, kaip grąžinti gaminį, rasite: www.zebra.com/weee.

Latviešu: ES klientiem: visi produkti pēc to kalpošanas mūža beigām ir jānogādā atpakaļ Zebra otrreizējai pārstrādei. Lai iegūtu informāciju par produktu nogādāšanu Zebra, lūdzu, skatiet: www.zebra.com/weee.

Türkçe: AB Müşterileri için: Kullanım süresi dolan tüm ürünler geri dönüştürme için Zebra'ya iade edilmelidir. Ürünlerin nasıl iade edileceği hakkında bilgi için lütfen şu adresi ziyaret edin: www.zebra.com/weee.

Turkish WEEE Statement of Compliance

EEE Yönetmeliğine Uygundur

(12)

Japan (VCCI) - Voluntary Control Council for Interference

この装置は、クラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。 VCCI－A

Chinese Warning Statement for Class A ITE

警告

此为A级产品，在生活环境中，该产品可能会造成无线电干扰。在这种情况下，可能需要用户对于干扰采取切实可行的措施。

Other Countries

Australia

Use of 5 GHz RLAN's in Australia is restricted in the following band 5.50 - 5.65GHz.

Brazil

Declarações Regulamentares para TW-511 - Brazil

Nota: A marca de certificação se aplica ao Transceptor, modelo TW-511. Este equipamento opera em caráter secundário, isto é, não tem direito a proteção contra interferência prejudicial, mesmo de estações do mesmo tipo, e não pode causar interferência a sistemas operando em caráter primário.

Para maiores informações sobre ANATEL consulte o site: www.anatel.gov.br

Mexico

Mexico

Restrict Frequency Range to: 2.450 - 2.4835 GHz.

La operación de este equipo está sujeta a las siguientes dos condiciones: (1) es posible que este equipo o dispositivo no cause interferencia perjudicial y (2) este equipo o dispositivo debe aceptar cualquier interferencia, incluyendo la que pueda causar su operación no deseada.

(13)

Support

If you have a problem with your equipment, contact support for your region.

Contact information is available at: www.zebra.com/support.

When contacting Support, please provide the following information:

- *Serial number of the unit*
- *Model number or product name*
- *Software type and version number*

Support responds to calls by e-mail, telephone, or fax within the time limits set forth in support agreements. If you purchased your product from a business partner, contact that business partner for support.

Web Site

The Support Web site, located at: www.zebra.com/support provides information and online assistance including developer tools, software downloads, product manuals and online repair requests.

Manuals

www.zebra.com/support

(14)