TECHNICAL BULLETIN

PRODUCT: WORCESTER WAVE

WORCESTER WAVE ROUTER CONNECTION TROUBLESHOOTING:

> **The following Technical Bulletin has been written to provide troubleshooting advice on network connection issues with the Worcester Wave. It is designed to be read alongside the Wave manufacturer's instructions.**

General Troubleshooting of Start-up: Wave reports No Wi-Fi Connection or No Internet Connection

In order to connect the Worcester Wave to a home network, select the user's Wi-Fi network name. The Wave will display the first characters and the last characters of a network name in the network list. If the Wi-Fi network is not visible on the network list:

► Check the network SSID has been set to visible (See 3). Once the connection is made, the SSID can be hidden again to suit the user's original preference. Refer to the router manufacturer's instructions for further guidance.

► The Wave can connect to routers broadcasting on **802.11 b/g** frequencies (See 2). If these have been disabled they will need to be turned on. Refer to the router manufacturer's instructions for further guidance.

In cases of connection issues to a presented network SSID proceed to check the following:

► If a router is broadcasting on **802.11 ac** on the same SSID as the **802.11 b/g/n** network the Wave may attempt connection to the higher frequency SSID which will fail. The frequencies can be given different SSIDs so that the Wave can be set to connect to the SSID broadcasting on the right frequency. Refer to the router manufacturer's instructions for further guidance.

► If an IP Address error is presented, the Wave has been unable to assign itself an IP Address on the network. Check to see if the DHCP Server facility is enabled on the router. If it is enabled check how many IP Address are being used, a larger DHCP Server IP Address pool may need to be assigned if it is insufficient. Refer to the router manufacturer's instructions for further guidance.

In cases where the Wave will not accept the network password:

► Check the password is spelt correctly. The password can typically be found on the reverse of the router box or through the router's settings.

► The Wave is not compatible with networks using WEP 64-Bit encryption (See 1). The Wave can connect to the following encryption types: Open, WEP 128-Bit, WPA and WPA2. Refer to the router manufacturer's instructions for further guidance.

► The Wave is not compatible with Wi-Fi network passwords which include the dollar symbol ($). Refer to the router manufacturer's instructions for further guidance.

If the Wave has successively connected to the home network but is failing to connect to the internet, these additional checks may highlight the issue:

► Check the router is connected to the internet and displaying connectivity. Contact the user's Internet Service Provider and/or refer to the router manufacturer's instructions for further guidance.

► Check the status of the Bosch servers. Call Technical Support on 0330 123 3366.

► The router may be preventing the Wave connecting to the Bosch servers through its firewall (See 6). Refer to the router manufacturer's instructions for further guidance.

► Check that the router's **UPnP** is enabled (See 7). Refer to the router manufacturer's instructions for further guidance.

In other cases, the location of the Wave may need to be changed:

► Check the signal strength indication next to the network name on the Wave. **802.11 b/g** frequencies have a lower operating radius than **802.11 n** and **802.11 ac**. Most phones and laptops use higher frequencies and should not be used as a comparison. The Wave may need to be relocated.

► Identify any large electrical appliances, such as TVs, fridges or microwaves etc. are not in close proximity to the Wave as these may cause interference. The Wave may need to be relocated.

> **These steps are summarised in the below Wave Network Compatibility Check-List:**

► Wi-Fi network encryption type is set to either: Open, WEP 128-Bit, WPA or WPA2 (See 1)

► Wi-Fi network is broadcasting on **802.11 b/g** frequencies (See 2)

► Wi-Fi network SSID is visible (See 3)

► DHCP Server is enabled (See 5)

► UPnP is enabled (See 7)

► Wave is located within operating radius of router

► Wave is not located next to large electrical appliances such as fridges, TVs or Microwave etc.

More information and footnotes on the following pages

You can find this, and all issued technical bulletins on the Worcester website at: http://www.worcester-bosch.co.uk/tb
or http://www.worcester-bosch.ie/tb

1   **Worcester, Bosch Group, Cotswold Way, Warndon, Worcester WR4 9SW**
Technical Services Tel: 0330 123 3366, Fax: 01905 752741, email: technical-advice@uk.bosch.com   TECHNICAL BULLETIN TB 0104 a (2016/01)

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Specific Wave-Router Troubleshooting

► **BT Home Hub 5**

► **Talk-Talk Super Router and Super Router 2**

These routers broadcast on **802.11 b/g/n** and **802.11 ac** by default on the same SSID (See 2 and 3). The Wave is compatible with **802.11 b/g** but may attempt to connect to the higher frequencies. The frequencies can be given different SSIDs so that the Wave can be set to connect to the SSID broadcasting on the compatible frequency. Refer to the router manufacturer's instructions for further guidance.

► **BT Home Hub (White Unit)**

This router's default encryption type is set to WEP 64-Bit. The Wave is compatible with the following encryption types: Open, WEP 128-Bit, WPA and WPA2. Refer to the router manufacturer's instructions for further guidance.

References

1. Encryption
Most Wi-Fi networks are encrypted. There are varying levels of encryption that a router can use. Routers may use different types of encryption depending on the age, manufacturer's default settings or the user's preference.

► **1.1.** Encryption Type: **Open**
This Wi-Fi network is not encrypted and does not require a password to access. Most commonly found on public Wi-Fi networks and some mobile hotspots.

► **1.2.** Encryption Type: **WEP 64-Bit**
WEP 64-Bit is typically found on older router models. This can normally be identified by the password style. It will be 10 characters long made up of letters A to F and/or numbers 0 to 9 for example: **A6-F2-86-94-D7-DC**

► **1.3.** Encryption Type: **WEP 128-Bit**
WEP 128-Bit is typically found on older router models. This can normally be identified by the password style. It will be 26 characters long made up of letters A to F and/or numbers 0 to 9. For example:
4C-72-F0-8A-E1-9D-57-A3-FF-6B-26-00-37

► **1.4.** Encryption Type: **WPA and WPA-PSK**
WPA and WPA-PSK are common on recent router models and mobile hotspots. The password is between 8-63 characters long and will be made up of letters A-Z, numbers 0-9 and/or special characters such as $, #, @ etc.

► **1.5.** Encryption Type: **WPA2 and WPA2-PSK**
WPA2 and WPA2-PSK are common on modern routers and mobile hotspots. The password is between 8-63 characters long and will be made up of letters A-Z, numbers 0-9 and/or special characters such as $, #, @ etc.

2. Wireless Network Frequency
Wireless networks are broadcast on a range of frequencies. Different frequencies have different operating radiuses, strength and speed. Different Wi-Fi enabled devices may only be able to connect on certain frequencies meaning some devices can connect further away than others. Routers are typically set to operate on all available frequencies, however users may have chosen to disable certain frequencies.

► **2.1. 802.11 b/g/n**
802.11 b/g/n operates with the 2.4GHz bandwidth. 802.11 b/g is typically found on older routers, 802.11 b/g/n is found on more recent router models.

► **2.2. 802.11 ac**
802.11 ac operates within the 5GHz bandwidth. 802.11 ac is found on modern router models.

3.0 SSID
The SSID is the broadcasted name of your router network. By default the SSID is typically the Internet Service Providers name and a unique identifier; i.e. BT-1548651a or Virgin-Media 6451684. The SSID can be changed depending on the user's preferences or to split networks.

The SSID can be set to hidden to prevent the name showing up in device lists.

4.0 IP Address
An IP Address is a location within a network. Most routers can handle upwards of 50+ IP Addresses. IP addresses are assigned by the router or by the user depending on the router settings (See 5).

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5.0 DHCP Server
Typically a router will assign an IP Address to a device when it connects to the router, this facility is called a DHCP Server. When using a DHCP server a device's IP Address may change each time it connects.

When the DHCP Server is turned off IP address must be manually assigned and the IP Address will be static.

A user or router manufacturer may choose to turn the DHCP Server off to work with some devices, such as home security cameras, or allow the user to open specific ports in the firewall for a specific device.

6.0 Firewall and Ports
A router has a firewall to protect the customer and allow certain types of access from outside the network. Ports can be opened in the firewall to allow specific connections from outside the network to communicate with devices in the network. This can be done manually or automatically with UPnP (see 7).

7.0 UPnP or Universal Plug and Play
UPnP is a facility that allows devices connected on a network to open its own ports within the firewall without manual intervention. This is enabled by default on most routers, however a manufacturer may choose not to activate this function or a user may disable it for increased security.

You can find this, and all issued technical bulletins on the Worcester website at: http://www.worcester-bosch.co.uk/tb or http://www.worcester-bosch.ie/tb

Worcester, Bosch Group, Cotswold Way, Warndon, Worcester WR4 9SW
3   Technical Services Tel: 0330 123 3366, Fax: 01905 752741, email: technical-advice@uk.bosch.com   TECHNICAL BULLETIN TB 0104 a (2016/01)