




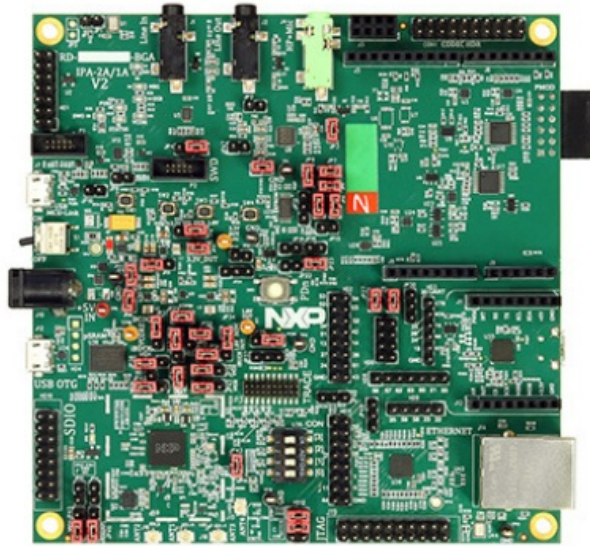
[Home](#) » [NXP Semiconductors](#) » **NXP Semiconductors UM11797 Wi-Fi and Bluetooth Debug Feature Configuration Board User Manual** 

Contents [[hide](#)]

- [1 NXP Semiconductors UM11797 Wi-Fi and Bluetooth Debug Feature Configuration Board](#)
- [2 Product Information](#)
- [3 Product Usage Instructions](#)
- [4 About this document](#)
- [5 Wi-Fi debug features and configurations](#)
- [6 Bluetooth LE debug features and configurations](#)
- [7 Abbreviations](#)
- [8 Legal information](#)
- [9 Frequently Asked Questions](#)
- [10 Documents / Resources](#)
 - [10.1 References](#)



NXP Semiconductors UM11797 Wi-Fi and Bluetooth Debug Feature Configuration Board



Product Information

Specifications:

- **Product Name:** NXP Wi-Fi and Bluetooth Debug Feature Configuration for RW61x Evaluation Board
- **Model:** RW61x
- **Version:** Rev. 2.0
- **Date:** 16 April 2025

Product Usage Instructions

Wi-Fi Debug Features and Configurations

This section provides information on how to configure and utilize the Wi-Fi debug features of the RW61x Evaluation Board.

Wi-Fi Debug Configurations:

To enable Wi-Fi debug logs, follow these steps:

1. Identify the debug macros listed in the table provided in the user manual.
2. Add the necessary macros to the source file for enabling specific debug logs.
3. For example, to enable error logs, add the following line in wifi_config.h file `#define CONFIG_ENABLE_ERROR_LOGS 1`

The table in the manual details various debug configurations and their descriptions to

help you customize the debug logs as needed.

Document information

Information	Content
Keywords	Debug configurations, RW610, RW612, RW61x, EVK board
Abstract	Describes the debug configurations to generate various Wi-Fi driver/feature logs and Bluetooth protocol debugging methods

About this document

Purpose and scope

This document describes the debug configurations to generate various Wi-Fi driver/feature logs and Bluetooth LE protocol debugging methods. It details Wi-Fi/Bluetooth LE sample application using RW61x EVK board for debugging. The purpose of this document is to provide more flexibility to the user for the debug configurations and a quick understanding of the debugging techniques.

Considerations

This document does not include RW61x product information, hardware interconnection, board settings, bringup, IDE setup, SDK download, as these are covered in the following user manuals:

- Getting Started with Wireless on RW61x Evaluation Board Running FreeRTOS (ref.[1])
- NXP Wi-Fi and Bluetooth Demo Applications for RW61x (ref.[2]) UM11797

Wi-Fi debug features and configurations

This section shows the list of user-configurable Wi-Fi debug macros available in RW61x MCUXpresso SDK and how to get different Wi-Fi debug logs based on the features by enabling/defining these macros at the time of application execution.

Wi-Fi debug configurations

To enable the debug logs, use the macros listed in the table below along with the source

file name. Some of the debug macros are already defined and others can be defined in the header file.

For example, to define CONFIG_ENABLE_ERROR_LOGS macro, add the following line in wifi_config.h file.

```
#define CONFIG_ENABLE_ERROR_LOGS 1
```

Table 1. Wi-Fi debug log configuration

Debug macros	Default macro value	File name	Details
CONFIG_ENABLE_ERROR_LOGS	1	wifi_config.h	Enable error logs for Wi-Fi (Includes DHCPD, lwIP, os [port], WLCM, Wi-Fi driver modules)
CONFIG_ENABLE_WARNING_LOGS	1	wifi_config.h	Enable warning logs for Wi-Fi (Includes DHCPD, WLCM, Wi-Fi driver modules)
CONFIG_WLCMGR_DEBUG	Undefined	wifi_config.h	Enable wireless connection manager debug logs
CONFIG_WIFI_EXTRA_DEBUG	Undefined	wifi_config.h	Additional debugging information for the Wi-Fi driver
CONFIG_WIFI_EVENTS_DEBUG	Undefined	wifi_config.h	Dump event codes received from the Wi-Fi firmware
CONFIG_WIFI_CMD_RESP_DEBUG	Undefined	wifi_config.h	Enable host command and response debug logs (no hex dump)
CONFIG_WIFI_PKT_DEBUG	Undefined	wifi_config.h	Enable data packet debug logs

CONFIG_WIFI_SCAN_DEBUG	Undefined	<i>wifi_config.h</i>	Enable scan debug logs
CONFIG_WIFI_IO_INFO_DUMP	Undefined	<i>wifi_config.h</i>	Enable information dump about input/output data packets
CONFIG_WIFI_IO_DEBUG	Undefined	<i>wifi_config.h</i>	Enable IO debug logs
CONFIG_WIFI_IO_DUMP	Undefined	<i>wifi_config.h</i>	Enable send/receive dump
CONFIG_WIFI_MEM_DEBUG	Undefined	<i>wifi_config.h</i>	Enable Wi-Fi module memory related debug logs like allocation and free
CONFIG_WIFI_AMPDU_DEBUG	Undefined	<i>wifi_config.h</i>	Enable AMPDU debug level logs
CONFIG_WIFI_TIMER_DEBUG	Undefined	<i>wifi_config.h</i>	Enable timer debug level logs
CONFIG_WIFI_FW_DEBUG	Undefined	<i>wifi_config.h</i>	Enable Wi-Fi Firmware debug logs

Bluetooth LE debug features and configurations

This section shows the steps to capture HCI logs for Bluetooth using peripheral_host application. The HCI logs are used to analyze the communication between Bluetooth Host and Controller.

Bluetooth LE debug configurations

To enable the debug logs, use the macros listed in the table below along with the source file name.

For example, to define CONFIG_BT_SNOOP macro, add the following line in app_config.h file.

```
#define CONFIG_BT_SNOOP 1
```

Table 2. Bluetooth LE debug log configurations

Debug macros	Default macro value	File name	Details
CONFIG_BT_SNOOP	Undefined	app_config.h	Enable the HCI logs capturing and store data in USB driver
CONFIG_BT_DEBUG	Undefined	app_config.h	Enable the debug print feature.
CONFIG_BT_DEBUG_HCI_CORE	Undefined	app_config.h	Enable the debug prints for HCI interface.
CONFIG_BT_DEBUG_CONN	Undefined	app_config.h	Enable the debug prints for connection.
CONFIG_BT_DEBUG_GATT	Undefined	app_config.h	Enable the debug prints for GATT module.
CONFIG_BT_DEBUG_ATT	Undefined	app_config.h	Enable the debug prints for ATT module.
CONFIG_BT_DEBUG_L2CAP	Undefined	app_config.h	Enable the debug prints for L2CAP module
CONFIG_BT_DEBUG_KEYS	Undefined	app_config.h	Enable the debug prints for Bluetooth security keys
CONFIG_BT_DEBUG_RPA	Undefined	app_config.h	Enable the debug prints for RPA module
CONFIG_BT_DEBUG_SETTINGS	Undefined	app_config.h	Enable the debug prints for Bluetooth storage

CONFIG_BT_DEBUG_SMP	Undefined	app_config.h	Enable the debug prints for SMP module
CONFIG_BT_DEBUG_SERVICE	Undefined	app_config.h	Enable the debug prints for Bluetooth services

Capture and analyze HCI logs

This section describes the use of peripheral_ht application on RW61x EVK board to capture Bluetooth HCI logs.

For more details on peripheral_ht application usage and configuration, see ref.[2].

1. Software download and RW61x image setup

For the SDK download and image setup steps, see ref.[1].

2. Pre-requisites before running the application

- Add CONFIG_BT_SNOOP macro definition to app_config.h file in peripheral_ht project
- Build and flash peripheral_ht image to RW61x EVK
- Connect the USB Flash Drive

Plug the USB drive in the USB OTG (J12) slot on i.MX RW61x EVK board. Since J12 is a Micro USB slot, use a USB drive with a Micro USB to USB converter.

Note: Format a USB 2.0 drive as a Fat32 disk. Other types like NTFS are not supported.

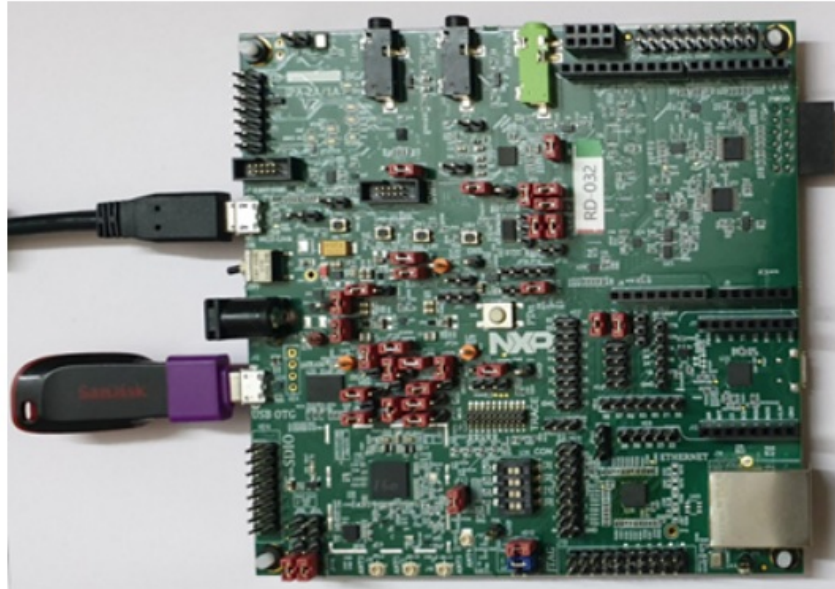


Figure 1. USB drive plugged into RW61x EVK board

- Install and launch the IoT Toolbox application on the smartphone IoT Toolbox can be downloaded from Google and Apple application store.
- Set up Wireshark tool
The Wireshark tool is required to open and analyze the HCI logs.
Download and install Wireshark tool for Windows and Mac OS (ref.[3]).

The following are the steps to install Wireshark tool on a computer running Linux

Ubuntu: `sudo add-apt-repository ppa:wireshark-dev/stable`

`sudo apt update`

`sudo apt install wireshark`

Run the Bluetooth demo application

This section describes how to capture the Bluetooth HCI logs saved in the USB drive plugged into RW61x EVK board. The `peripheral_ht` application exposes the health thermometer (HT) GATT Service by default. Peer devices that subscribe to receive temperature indications get temperature readings every second.

Once `peripheral_ht` image is flashed to the board, power reset the RW61x EVK board.

Bluetooth LE Device Role

- HT thermometer: `peripheral_ht` application running on RW61x EVK

- HT collector: IoT Toolbox application running on the smartphone

Run peripheral_ht application on RW61x EVK

Bluetooth initialized

Advertising successfully started

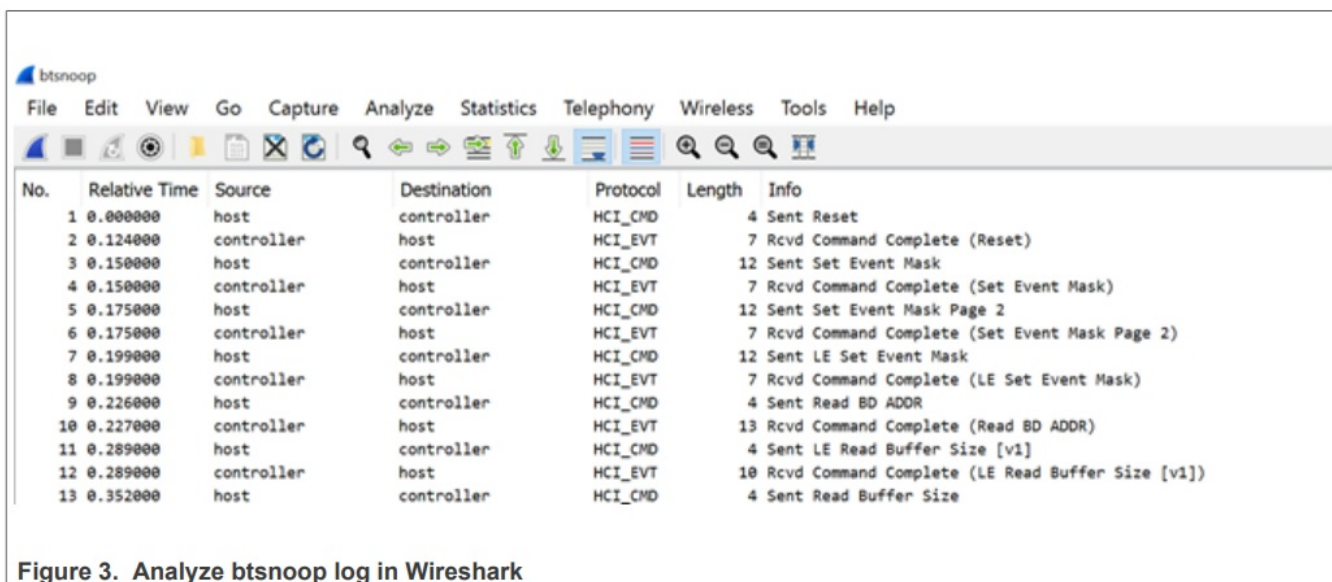
Select Thermometer on IoT Toolbox application to scan the available devices using the Health Thermometer service and connect a peer device.



Figure 2. IoT Toolbox application

Unplug the USB drive from RW61x EVK and connect the drive to the Laptop.

The file named btsnoop is available in the USB drive. The Wireshark tool can be used to open the file and analyze the logs.



Note about the source code in the document

The example code shown in this document has the following copyright and BSD-3-Clause license:

Copyright 2022, 2025 NXP Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials must be provided with the distribution.
3. Neither the name of the copyright holder nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY

THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Abbreviations

Table 3. Abbreviations

Abbreviation	Definition
AMPDU	Aggregate – MAC protocol data unit
EVK	Evaluation kit
HCI	Host controller interface
IDE	Integrated development environment
OTG	On the go
RPA	Resolvable Private Address
SDIO	Secure digital I/O
SDK	Software development kit
SMP	Security Manger Protocol
USB	Universal serial bus
WLCM	Wireless connection manager

References

- User manual – UM11798: Getting Started with Wireless on RW61x Evaluation Board Running FreeRTOS
- User manual – UM11799: NXP Wi-Fi and Bluetooth Demo Applications for RW61x (link)

- Webpage – Wireshark (link)

Revision history

Document ID	Release date	Description
UM11797 v.2.0	16 April 2025	<ul style="list-style-type: none">• Document access changed to public. No other changes.
UM11797 v.1.0	9 May 2022	<ul style="list-style-type: none">• Initial version

Legal information

Definitions

Draft — A draft status on a document indicates that the content is still under internal review and subject to formal approval, which may result in modifications or additions. NXP Semiconductors does not give any representations or warranties as to the accuracy or completeness of information included in a draft version of a document and shall have no liability for the consequences of use of such information.

Disclaimers

Limited warranty and liability — Information in this document is believed to be accurate and reliable. However, NXP Semiconductors does not give any representations or warranties, expressed or implied, as to the accuracy or completeness of such information and shall have no liability for the consequences of use of such information. NXP Semiconductors takes no responsibility for the content in this document if provided by an information source outside of NXP Semiconductors.

In no event shall NXP Semiconductors be liable for any indirect, incidental, punitive, special or consequential damages (including – without limitation – lost profits, lost savings, business interruption, costs related to the removal or replacement of any products or rework charges) whether or not such damages are based on tort (including negligence), warranty, breach of contract or any other legal theory.

Notwithstanding any damages that customer might incur for any reason whatsoever,

NXP Semiconductors' aggregate and cumulative liability towards customer for the products described herein shall be limited in accordance with the Terms and conditions of commercial sale of NXP Semiconductors.

Right to make changes — NXP Semiconductors reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.

Suitability for use — NXP Semiconductors products are not designed, authorized or warranted to be suitable for use in life support, life-critical or safety-critical systems or equipment, nor in applications where failure or malfunction of an NXP Semiconductors product can reasonably be expected to result in personal injury, death or severe property or environmental damage. NXP Semiconductors and its suppliers accept no liability for inclusion and/or use of NXP Semiconductors products in such equipment or applications and therefore such inclusion and/or use is at the customer's own risk.

Applications — Applications that are described herein for any of these products are for illustrative purposes only. NXP Semiconductors makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.

Customers are responsible for the design and operation of their applications and products using NXP Semiconductors products, and NXP Semiconductors accepts no liability for any assistance with applications or customer product design. It is customer's sole responsibility to determine whether the NXP Semiconductors product is suitable and fit for the customer's applications and products planned, as well as for the planned application and use of customer's third party customer(s). Customers should provide appropriate design and operating safeguards to minimize the risks associated with their applications and products.

NXP Semiconductors does not accept any liability related to any default, damage, costs or problem which is based on any weakness or default in the customer's applications or products, or the application or use by customer's third party customer(s). Customer is responsible for doing all necessary testing for the customer's applications and products

using NXP Semiconductors products in order to avoid a default of the applications and the products or of the application or use by customer's third party customer(s). NXP does not accept any liability in this respect.

Terms and conditions of commercial sale — NXP Semiconductors products are sold subject to the general terms and conditions of commercial sale, as published at <https://www.nxp.com/profile/terms>, unless otherwise agreed in a valid written individual agreement. In case an individual agreement is concluded only the terms and conditions of the respective agreement shall apply. NXP Semiconductors hereby expressly objects to applying the customer's general terms and conditions with regard to the purchase of NXP Semiconductors products by customer.

Export control — This document as well as the item(s) described herein may be subject to export control regulations. Export might require a prior authorization from competent authorities.

Suitability for use in non-automotive qualified products — Unless this document expressly states that this specific NXP Semiconductors product is automotive qualified, the product is not suitable for automotive use. It is neither qualified nor tested in accordance with automotive testing or application requirements. NXP Semiconductors accepts no liability for inclusion and/or use of non-automotive qualified products in automotive equipment or applications.

In the event that customer uses the product for design-in and use in automotive applications to automotive specifications and standards, customer (a) shall use the product without NXP Semiconductors' warranty of the product for such automotive applications, use and specifications, and (b) whenever customer uses the product for automotive applications beyond NXP Semiconductors' specifications such use shall be solely at customer's own risk, and (c) customer fully indemnifies NXP Semiconductors for any liability, damages or failed product claims resulting from customer design and use of the product for automotive applications beyond NXP Semiconductors' standard warranty and NXP Semiconductors' product specifications.

HTML publications — An HTML version, if available, of this document is provided as a courtesy. Definitive information is contained in the applicable document in PDF format. If

there is a discrepancy between the HTML document and the PDF document, the PDF document has priority.

Translations — A non-English (translated) version of a document, including the legal information in that document, is for reference only. The English version shall prevail in case of any discrepancy between the translated and English versions.

Security — Customer understands that all NXP products may be subject to unidentified vulnerabilities or may support established security standards or specifications with known limitations. Customer is responsible for the design and operation of its applications and products throughout their lifecycles to reduce the effect of these vulnerabilities on customer's applications and products. Customer's responsibility also extends to other open and/or proprietary technologies supported by NXP products for use in customer's applications. NXP accepts no liability for any vulnerability. Customer should regularly check security updates from NXP and follow up appropriately.

Customer shall select products with security features that best meet rules, regulations, and standards of the intended application and make the ultimate design decisions regarding its products and is solely responsible for compliance with all legal, regulatory, and security related requirements concerning its products, regardless of any information or support that may be provided by NXP.

NXP has a Product Security Incident Response Team (PSIRT) (reachable at PSIRT@nxp.com) that manages the investigation, reporting, and solution release to security vulnerabilities of NXP products.

NXP B.V. — NXP B.V. is not an operating company and it does not distribute or sell products.

Trademarks

Notice: All referenced brands, product names, service names, and trademarks are the property of their respective owners.

NXP — wordmark and logo are trademarks of NXP B.V.

Amazon Web Services, AWS, the Powered by AWS logo, and FreeRTOS— are trademarks of Amazon.com, Inc. or its affiliates.

Bluetooth — the Bluetooth wordmark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by NXP Semiconductors is under license.

Please be aware that important notices concerning this document and the product(s) described herein, have been included in section 'Legal information'.

© 2025 NXP B.V.

For more information, please visit: <https://www.nxp.com>

All rights reserved.

Document feedback

Date of release: 16 April 2025 Document identifier: UM11797

Frequently Asked Questions


Q: How can I enable Wi-Fi debug logs on the RW61x Evaluation Board?

A: To enable Wi-Fi debug logs, refer to section 2.1 of the user manual and follow the instructions provided for configuring the debug macros.

Q: What is the purpose of the Wi-Fi debug configurations described in the document?

A: The Wi-Fi debug configurations allow users to generate various Wi-Fi driver/feature logs and utilize Bluetooth LE protocol debugging methods for effective debugging on the RW61x EVK board.

Documents / Resources

	<p>NXP Semiconductors UM11797 Wi-Fi and Bluetooth Debug Feature Configuration Board [pdf] User Manual</p> <p>RW610, RW612, RW61x, UM11797 Wi-Fi and Bluetooth Debug Feature Configuration Board, UM11797, Wi-Fi and Bluetooth Debug Feature Configuration Board, Bluetooth Debug Feature Configuration Board, Feature Configuration Board, Configuration Board, Board</p>
-----------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

References

- [User Manual](#)

📁 NXP Semiconductors

🔍 Bluetooth Debug Feature Configuration Board, Board, Configuration Board, Feature Configuration Board, NXP Semiconductors, RW610, RW612, RW61x, UM11797, UM11797 Wi-Fi and Bluetooth Debug Feature Configuration Board, Wi-Fi and Bluetooth Debug Feature Configuration Board

Leave a comment

Your email address will not be published. Required fields are marked *

Comment *

Name

Email

Website

☐ Save my name, email, and website in this browser for the next time I comment.

Post Comment

Search:

e.g. whirlpool wrf535swhz

Search

[Manuals+](#) | [Upload](#) | [Deep Search](#) | [Privacy Policy](#) | [@manuals.plus](#) | [YouTube](#)

This website is an independent publication and is neither affiliated with nor endorsed by any of the trademark owners. The "Bluetooth®" word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. The "Wi-Fi®" word mark and logos are registered trademarks owned by the Wi-Fi Alliance. Any use of these marks on this website does not imply any affiliation with or endorsement.