



**XR90**

# Hardware User Guide



**SIERRA**  
WIRELESS®

41114245  
Rev 2

## Important Notice

Due to the nature of wireless communications, transmission and reception of data can never be guaranteed. Data may be delayed, corrupted (i.e., have errors) or be totally lost. Although significant delays or losses of data are rare when wireless devices such as the Sierra Wireless modem are used in a normal manner with a well-constructed network, the Sierra Wireless modem should not be used in situations where failure to transmit or receive data could result in damage of any kind to the user or any other party, including but not limited to personal injury, death, or loss of property. Sierra Wireless accepts no responsibility for damages of any kind resulting from delays or errors in data transmitted or received using the Sierra Wireless modem, or for failure of the Sierra Wireless modem to transmit or receive such data.

## Safety and Hazards

Do not operate the Sierra Wireless modem in areas where blasting is in progress, where explosive atmospheres may be present, near medical equipment, near life support equipment, or any equipment which may be susceptible to any form of radio interference. In such areas, the Sierra Wireless modem **MUST BE POWERED OFF**. The Sierra Wireless modem can transmit signals that could interfere with this equipment.

Do not operate the Sierra Wireless modem in any aircraft, whether the aircraft is on the ground or in flight. In aircraft, the Sierra Wireless modem **MUST BE POWERED OFF**. When operating, the Sierra Wireless modem can transmit signals that could interfere with various onboard systems.

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*Note: Some airlines may permit the use of cellular phones while the aircraft is on the ground and the door is open. Sierra Wireless modems may be used at this time.*

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The driver or operator of any vehicle should not operate the Sierra Wireless modem while in control of a vehicle. Doing so will detract from the driver or operator's control and operation of that vehicle. In some states and provinces, operating such communications devices while in control of a vehicle is an offence.

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## Revision History

Revision number	Release date	Changes
1	May 2021	Created
2	July 2021	Updated title Updated Important Information for Users in Canada and the U.S.A—updated description, removed subheads, updated Table 2-1 (removed WLAN/BT entries)

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# >> 1: Specifications

## Wi-Fi

- Tri-band Wi-Fi:
  - 4x4 MIMO (5 GHz) + 4x4 MIMO (5 GHz) + 4x4 MIMO (2.4 GHz).
  - All bands configurable as AP or STA
  - Protocols:
    - 2.4 GHz: 802.11 ax/n/g/b
    - 5 GHz: 802.11 ax/ac/a
- Captive portal support
- WPA2 Enterprise (RSA) with AES encryption
- 4 SSIDs with separately configurable security, bandwidth, and QOS
- Up to 128 clients can connect simultaneously

Table 1-1: Wi-Fi Channels Supported—2.4 GHz Operation

Channel	Frequency (GHz)	Channel Width	
		20 MHz	40 MHz
1	2.412	Y	—
2	2.417	Y	—
3	2.422	Y	Y
4	2.427	Y	Y
5	2.432	Y	Y
6	2.437	Y	Y
7	2.442	Y	Y
8	2.447	Y	Y
9	2.452	Y	Y
10	2.457	Y	—
11	2.462	Y	—

Table 1-2: Wi-Fi Channels Supported—5 GHz Operation

Channel	Freq. (GHz)	Channel Width			Channel	Freq. (GHz)	Channel Width			Channel	Freq. (GHz)	Channel Width		
		20 MHz	40 MHz	80 MHz			20 MHz	40 MHz	80 MHz			20 MHz	40 MHz	80 MHz
36	5.180	Y	—	—	102	5.510	—	Y	—	136	5.680	Y	—	—
38	5.190	—	Y	—	104	5.520	Y	—	—	138	5.690	—	—	Y
40	5.200	Y	—	—	106	5.530	—	—	Y	140	5.700	Y	—	—
42	5.210	—	—	Y	108	5.540	Y	—	—	142	5.710	—	Y	—
44	5.220	Y	—	—	110	5.550	—	Y	—	144	5.720	Y	—	—
46	5.230	—	Y	—	112	5.560	Y	—	—	149	5.745	Y	—	—
48	5.240	Y	—	—	116	5.580	Y	—	—	151	5.755	—	Y	—
52	5.260	Y	—	—	118 <sup>a</sup>	5.590	—	Y	—	153	5.765	Y	—	—
54	5.270	—	Y	—	120 <sup>a</sup>	5.600	Y	—	—	155	5.775	—	—	Y
56	5.280	Y	—	—	122 <sup>a</sup>	5.610	—	—	Y	157	5.786	Y	—	—
58	5.290	—	—	Y	124 <sup>a</sup>	5.620	Y	—	—	159	5.795	—	Y	—
60	5.300	Y	—	—	126 <sup>a</sup>	5.630	—	Y	—	161	5.805	Y	—	—
62	5.310	—	Y	—	128 <sup>a</sup>	5.640	Y	—	—	165	5.825	Y	—	—
64	5.320	Y	—	—	132	5.660	Y	—	—					
100	5.500	Y	—	—	134	5.670	—	Y	—					

a. Channels under approval

## Bluetooth Support

The XR90 provides the following Bluetooth functionality:

- User selectable Bluetooth 4.x Classic or Bluetooth LE

## >> 2: Regulatory Information

### Important Information for Users in Canada and the U.S.A

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 a 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.

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1. L'appareil ne doit pas produire de brouillage;
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

In Canada, this device is restricted to indoor use only when operating in 5150 MHz to 5250 MHz frequency range.

This device has been tested and certified using the antenna model(s) listed below:

- Panorama Antennas LGMQM4-6-60-24-58

Non-certified antennas are not permitted for use with the XR90 platform.

Antennas must be installed such that the following separation distances are maintained:

- Minimum 20 cm between the WiFi-A and WiFi-B antennas
- Minimum 20 cm between the antennas and the user

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**Warning:** *This product is only to be installed by qualified personnel.*

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**Warning:** *Changes or modifications to this device not expressly approved by Sierra Wireless could void the user's authority to operate the device.*

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This device can operate in collocation with cellular radios not exceeding the specifications in the following table.

**Table 2-1: Collocated Devices—Antenna Gain and Radio Transmitter Specifications**

Band	Tx Freq Range (MHz)	Max Time-Avg Cond Power (dBm)	Antenna Gain Limit (dBi)	Source-based Time-Avg Max EIRP (dBm)
WCDMA Band 2	1850–1910	24.5	4	28.5
WCDMA Band 4	1710–1755	24.5	3.5	28.0
WCDMA Band 5	824–849	24.5	1.5	26.0
LTE B2	1850–1910	24.0	4	28.0
LTE B4	1710–1755	24.0	3.5	27.5
LTE B5	824–849	24.0	1.5	25.5
LTE B7	2500–2570	24.8	4.5	29.3
LTE B12	699–716	24.0	1.5	25.5
LTE B13	777–787	24.0	1.5	25.5
LTE B14	788–798	24.0	2	26.0
LTE B17	704–716	24.0	1.5	25.5
LTE B25	1850–1915	24.0	4	28.0
LTE B26	814–849	24.0	2	26.0
LTE_B30	2305–2315	24.0	0	24.0
LTE_B38	2570–2620	24.8	4.5	29.3
LTE B41	2496–2690	24.8	3	27.8
LTE B41-HPUE	2496–2690	26.0	3	29.0
LTE_B42/43	3550–3650	24.8	-1.8	23.0
LTE B48	3550–3700	24.8	-1.8	23.0
LTE B66	1710–1780	24.0	3.5	27.5
LTE B71	663–698	24.0	1	25.0
5G NR n2	1850–1910	24.5	4	28.5
5G NR n5	824–849	24.5	1.5	26.0
5G NR n41	2496–2690	24.5	3	27.5
5G NR n66	1710–1780	24.5	3.5	28.0
5G NR n71	663–698	24.5	1	25.5