

# 802.11AX WIRELESS MODULES

### Qualcomm's QCA6391 2.4GHz + 5GHz DBS Dual Band Dual Concurrent 802.11ax with Bluetooth Milan Designed for WLAN/BT and Low-Energy Communications



Model: WLT639

#### KEY FEATURES

- Supports 2x2 multiple input, multiple output (MIMO) with two spatial streams.
- Supports IEEE 802.11a/b/q/n/ac/ax WLAN standards.
- Enables seamless integration of WLAN/ Bluetooth and low energy technology.
- Provides a highly integrated System-on-Chip (SoC) for 802.11ax WiFi, Bluetooth (BT) Milan.
- Supports Bluetooth 5.1 + ANT+ IC and Bluetooth Milan ready and backward compatibility with BT 1.2 and BT 2.X + enhanced data rate.
- Supports BT-WLAN coexistence and 5G/ ISM coexistence

### **Specifications**

	coexistence
Specifications  Chipset	Qualcomm Atheros QCA6391 'Hastings' Series
WLAN Host Interface	PCIe Gen 2
Bluetooth Host Interface	HCI UART Interface
Host Interface	M.2 2230, Key E
Operating Voltage	3.3V DC power supply and I/O supply of 1.8V or 3.3V
WLAN Frequency Range	2.412GHz to 2.483GHz, 5.150GHz to 5.850GHz, *Subject to local regulations
Standards for WLAN	IEEE 802.11ax/ac/a/b/g/n (2T2R)
Standards for Bluetooth	Bluetooth 5.1
Channel Spectrum Widths for WLAN	Supports 20/40MHz at 2.4GHz Supports 20/40/80MHz at 5GHz
Data Rates for WLAN	802.11b: 11Mbps 802.11a/g: 54Mbps 802.11n: MCS 0 to MCS 7 802.11ac: MCS 0 to MCS 9 802.11ax: MCS 0 to MCS 11

<sup>\*</sup>Configurations are subject to change without notifications.



# 802.11AX WIRELESS MODULES

## **Specifications**

... Continued from Page 1.

Max Data Rates for WLAN	573.6Mbps on 2.4GHz 802.11ax networks 1201Mbps on 5GHz 802.11ax networks
Data Rates for Bluetooth	2Mbps
Antenna	2x MHF4 Connectors Support WiFi/ Bluetooth coexistence
Modulation Techniques	802.11b: DSSS (DBPSK, DQPSK, CCK) 802.11a/g: OFDM (BPSK, QPSK, 16-QAM, 64-QAM) 802.11n: OFDM (BPSK, QPSK, 16-QAM, 64-QAM) 802.11ac: OFDM (BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM) 802.11ax: OFDMA (DPSK, QPSK, 16-QAM, 64-QAM, 256-QAM, 1024-QAM)
Certification	REACH & RoHS Compliance
Power Consumption	TX: 798.12 mA RX: 196.8 mA
Driver Support	Linux, Windows 7/8.1/10
Security	64/128-bits WEP, WPA, WPA2, 802.1X
Environmental Temperature	Operating: TBD, Storage: -40°C to 85°C
Environmental Humidity, non-condensing	Operating: 5% to 95%, Storage: 5% to 90%
Dimensions (W × H × D)	22mm × 30mm × 2.8mm
*Configurations are subject to change with	out notifications.



<sup>\*</sup>Configurations are subject to change without notifications.

# WIRELESS MODULES



### RF Performance Table at 2.4GHz

	Data Rate	TX Power (per chain)	TX Power (2 chains)	Tolerance
	1 Mbps	16dBm	19dBm	±2dB
2.4GHz	2 Mbps	16dBm	19dBm	±2dB
802.11b	5.5 Mbps	16dBm	19dBm	±2dB
	11 Mbps	16dBm	19dBm	±2dB
	6 Mbps	15dBm	18dBm	±2dB
	9 Mbps	15dBm	18dBm	±2dB
	12 Mbps	15dBm	18dBm	±2dB
2.4GHz	18 Mbps	15dBm	18dBm	±2dB
802.11g	24 Mbps	14dBm	17dBm	±2dB
	36 Mbps	14dBm	17dBm	±2dB
	48 Mbps	14dBm	17dBm	±2dB
	54 Mbps	14dBm	17dBm	±2dB
	MCS 0	15dBm	18dBm	±2dB
	MCS 1	15dBm	18dBm	±2dB
	MCS 2	15dBm	18dBm	±2dB
2.4GHz 802.11n	MCS 3	15dBm	18dBm	±2dB
HT20	MCS 4	14dBm	17dBm	±2dB
	MCS 5	14dBm	17dBm	±2dB
	MCS 6	14dBm	17dBm	±2dB
	MCS 7	14dBm	17dBm	±2dB
	MCS 0	15dBm	18dBm	±2dB
	MCS 1	15dBm	18dBm	±2dB
(	MCS 2	15dBm	18dBm	±2dB
2.4GHz 802.11n	MCS 3	15dBm	18dBm	±2dB
602.1111 HT40	MCS 4	14dBm	17dBm	±2dB
	MCS 5	14dBm	17dBm	±2dB
	MCS 6	14dBm	17dBm	±2dB
	MCS 7	14dBm	17dBm	±2dB
	MCS 0	15dBm	18dBm	±2dB
	MCS 1	15dBm	18dBm	±2dB
	MCS 2	15dBm	18dBm	±2dB
	MCS 3	15dBm	18dBm	±2dB
	MCS 4	14dBm	17dBm	±2dB
2.4GHz 802.11ax HE20	MCS 5	14dBm	17dBm	±2dB
	MCS 6	14dBm	17dBm	±2dB
	MCS 7	14dBm	17dBm	±2dB
	MCS 8	13dBm	16dBm	±2dB
	MCS 9	13dBm	16dBm	±2dB
	MCS 10	12dBm	15dBm	±2dB
	MCS 11	12dBm	15dBm	±2dB

1 Mbps			DV 0	
2.4GHz 802.11b		Data Rate	RX Specifications Sensitivity	Tolerance
### State		1 Mbps	TBD	±2dB
11 Mbps	2.4GHz	2 Mbps	TBD	±2dB
## STAND ## STANDD ##	802.11b	5.5 Mbps	TBD	±2dB
9 Mbps		11 Mbps	TBD	±2dB
2.4GHz 802.11g  24 Mbps  TBD  42 dB  48 Mbps  TBD  42 dB  54 Mbps  TBD  42 dB  MCS 0  TBD  42 dB  MCS 1  TBD  42 dB  MCS 2  TBD  42 dB  MCS 2  TBD  42 dB  MCS 3  TBD  42 dB  MCS 5  TBD  42 dB  MCS 6  TBD  42 dB  MCS 7  TBD  42 dB  MCS 7  TBD  42 dB  MCS 1  TBD  42 dB  MCS 6  TBD  42 dB  MCS 7  TBD  42 dB  MCS 1  TBD  42 dB  MCS 1  TBD  42 dB  MCS 1  TBD  42 dB  MCS 2  TBD  42 dB  MCS 1  TBD  42 dB  MCS 2  TBD  42 dB  MCS 1  TBD  42 dB  MCS 2  TBD  42 dB  MCS 3  TBD  42 dB  MCS 4  TBD  42 dB  MCS 5  TBD  42 dB  MCS 6  TBD  42 dB  MCS 6  TBD  42 dB  MCS 7  TBD  42 dB  MCS 6  TBD  42 dB  MCS 7  TBD  42 dB  MCS 6  TBD  42 dB  MCS 1  TBD  42 dB  MC		6 Mbps	TBD	±2dB
2.4GHz 802.11g  24 Mbps TBD  24 Mbps TBD  24 Mbps TBD  24 B  36 Mbps TBD  42 dB  48 Mbps TBD  42 dB  54 Mbps TBD  42 dB  MC\$ 0 TBD  42 dB  MC\$ 1 TBD  42 dB  MC\$ 2 TBD  42 dB  MC\$ 2 TBD  42 dB  MC\$ 3 TBD  42 dB  MC\$ 4 TBD  42 dB  MC\$ 5 TBD  42 dB  MC\$ 6 TBD  42 dB  MC\$ 7 TBD  42 dB  MC\$ 7 TBD  42 dB  MC\$ 1 TBD  42 dB  MC\$ 6 TBD  42 dB  MC\$ 6 TBD  42 dB  MC\$ 7 TBD  42 dB  MC\$ 1 TBD  42 dB  MC\$ 1 TBD  42 dB  MC\$ 1 TBD  42 dB  MC\$ 2 TBD  42 dB  MC\$ 1 TBD  42 dB  MC\$ 2 TBD  42 dB  MC\$ 1 TBD  42 dB  MC\$ 2 TBD  42 dB  MC\$ 3 TBD  42 dB  MC\$ 3 TBD  42 dB  MC\$ 6 TBD  42 dB  MC\$ 1 TBD  42 dB		9 Mbps	TBD	±2dB
802.11g		12 Mbps	TBD	±2dB
36 Mbps	2.4GHz	18 Mbps	TBD	±2dB
### A Mbps	802.11g	24 Mbps	TBD	±2dB
S4 Mbps		36 Mbps	TBD	±2dB
MCS 0 TBD ±2dB  MCS 1 TBD ±2dB  MCS 2 TBD ±2dB  MCS 3 TBD ±2dB  MCS 4 TBD ±2dB  MCS 5 TBD ±2dB  MCS 6 TBD ±2dB  MCS 7 TBD ±2dB  MCS 1 TBD ±2dB  MCS 1 TBD ±2dB  MCS 1 TBD ±2dB  MCS 1 TBD ±2dB  MCS 2 TBD ±2dB  MCS 2 TBD ±2dB  MCS 2 TBD ±2dB  MCS 3 TBD ±2dB  MCS 4 TBD ±2dB  MCS 5 TBD ±2dB  MCS 6 TBD ±2dB  MCS 6 TBD ±2dB  MCS 6 TBD ±2dB  MCS 6 TBD ±2dB  MCS 7 TBD ±2dB  MCS 6 TBD ±2dB  MCS 7 TBD ±2dB  MCS 1 TBD ±2dB  MCS 1 TBD ±2dB  MCS 2 TBD ±2dB  MCS 5 TBD ±2dB  MCS 6 TBD ±2dB  MCS 1 TBD ±2dB  MCS 2 TBD ±2dB  MCS 2 TBD ±2dB  MCS 3 TBD ±2dB  MCS 3 TBD ±2dB  MCS 6 TBD ±2dB  MCS 6 TBD ±2dB  MCS 6 TBD ±2dB  MCS 7 TBD ±2dB  MCS 6 TBD ±2dB  MCS 7 TBD ±2dB  MCS 7 TBD ±2dB  MCS 8 TBD ±2dB  MCS 9 TBD ±2dB  MCS 9 TBD ±2dB  MCS 9 TBD ±2dB		48 Mbps	TBD	±2dB
MCS 1 TBD ±2dB  MCS 2 TBD ±2dB  MCS 3 TBD ±2dB  MCS 4 TBD ±2dB  MCS 5 TBD ±2dB  MCS 6 TBD ±2dB  MCS 7 TBD ±2dB  MCS 1 TBD ±2dB  MCS 7 TBD ±2dB  MCS 1 TBD ±2dB  MCS 1 TBD ±2dB  MCS 2 TBD ±2dB  MCS 2 TBD ±2dB  MCS 2 TBD ±2dB  MCS 3 TBD ±2dB  MCS 4 TBD ±2dB  MCS 5 TBD ±2dB  MCS 6 TBD ±2dB  MCS 6 TBD ±2dB  MCS 7 TBD ±2dB  MCS 6 TBD ±2dB  MCS 7 TBD ±2dB  MCS 7 TBD ±2dB  MCS 1 TBD ±2dB  MCS 1 TBD ±2dB  MCS 2 TBD ±2dB  MCS 3 TBD ±2dB  MCS 6 TBD ±2dB  MCS 1 TBD ±2dB  MCS 1 TBD ±2dB  MCS 1 TBD ±2dB  MCS 2 TBD ±2dB  MCS 2 TBD ±2dB  MCS 1 TBD ±2dB  MCS 2 TBD ±2dB  MCS 3 TBD ±2dB  MCS 6 TBD ±2dB  MCS 7 TBD ±2dB  MCS 6 TBD ±2dB  MCS 7 TBD ±2dB  MCS 7 TBD ±2dB  MCS 8 TBD ±2dB  MCS 9 TBD ±2dB  MCS 9 TBD ±2dB  MCS 9 TBD ±2dB		54 Mbps	TBD	±2dB
## ACS 2 TBD  # 2dB ## ACS 3 TBD  # 2dB ## ACS 3 TBD  # 2dB ## ACS 4 TBD  # 2dB ## ACS 5 TBD  # 2dB ## ACS 6 TBD  # 2dB ## ACS 7 TBD  # 2dB ## ACS 802.11n ## ACS 802.11n ## ACS 802.11n ## ACS 9 TBD  # 2dB		MCS 0	TBD	±2dB
2.4GHz 802.11n HT20  MCS 4  MCS 5  TBD  ±2dB  MCS 6  TBD  ±2dB  MCS 7  TBD  ±2dB  MCS 7  TBD  ±2dB  MCS 7  TBD  ±2dB  MCS 1  TBD  ±2dB  MCS 1  TBD  ±2dB  MCS 2  TBD  ±2dB  MCS 2  TBD  ±2dB  MCS 3  TBD  ±2dB  MCS 3  TBD  ±2dB  MCS 4  TBD  ±2dB  MCS 5  TBD  ±2dB  MCS 6  TBD  ±2dB  MCS 6  TBD  ±2dB  MCS 7  TBD  ±2dB  MCS 1  TBD  ±2dB  MCS 1  TBD  ±2dB  MCS 1  TBD  ±2dB  MCS 1  TBD  ±2dB  MCS 2  TBD  ±2dB  MCS 1  TBD  ±2dB  MCS 2  TBD  ±2dB  MCS 3  TBD  ±2dB  MCS 3  TBD  ±2dB  MCS 3  TBD  ±2dB  MCS 3  TBD  ±2dB  MCS 6  TBD  ±2dB  MCS 7  TBD  ±2dB  MCS 9  TBD  ±2dB  MCS 9  TBD  ±2dB		MCS 1	TBD	±2dB
MCS 4	1	MCS 2	TBD	±2dB
HT20   MCS 4   TBD		MCS 3	TBD	±2dB
MCS 5 TBD ±2dB  MCS 7 TBD ±2dB  MCS 7 TBD ±2dB  MCS 0 TBD ±2dB  MCS 1 TBD ±2dB  MCS 1 TBD ±2dB  MCS 2 TBD ±2dB  MCS 2 TBD ±2dB  MCS 3 TBD ±2dB  MCS 4 TBD ±2dB  MCS 5 TBD ±2dB  MCS 6 TBD ±2dB  MCS 7 TBD ±2dB  MCS 7 TBD ±2dB  MCS 1 TBD ±2dB  MCS 2 TBD ±2dB  MCS 2 TBD ±2dB  MCS 3 TBD ±2dB  MCS 3 TBD ±2dB  MCS 1 TBD ±2dB  MCS 3 TBD ±2dB  MCS 3 TBD ±2dB  MCS 6 TBD ±2dB  MCS 6 TBD ±2dB  MCS 7 TBD ±2dB  MCS 6 TBD ±2dB  MCS 7 TBD ±2dB  MCS 8 TBD ±2dB  MCS 9 TBD ±2dB  MCS 9 TBD ±2dB  MCS 9 TBD ±2dB		MCS 4	TBD	±2dB
MCS 7 TBD ±2dB  MCS 0 TBD ±2dB  MCS 1 TBD ±2dB  MCS 2 TBD ±2dB  MCS 2 TBD ±2dB  MCS 3 TBD ±2dB  MCS 4 TBD ±2dB  MCS 5 TBD ±2dB  MCS 6 TBD ±2dB  MCS 7 TBD ±2dB  MCS 7 TBD ±2dB  MCS 1 TBD ±2dB  MCS 1 TBD ±2dB  MCS 1 TBD ±2dB  MCS 2 TBD ±2dB  MCS 1 TBD ±2dB  MCS 2 TBD ±2dB  MCS 2 TBD ±2dB  MCS 3 TBD ±2dB  MCS 6 TBD ±2dB  MCS 6 TBD ±2dB  MCS 7 TBD ±2dB  MCS 6 TBD ±2dB  MCS 7 TBD ±2dB  MCS 7 TBD ±2dB  MCS 8 TBD ±2dB  MCS 9 TBD ±2dB  MCS 9 TBD ±2dB	20	MCS 5	TBD	±2dB
MCS 0 TBD ±2dB  MCS 1 TBD ±2dB  MCS 2 TBD ±2dB  MCS 3 TBD ±2dB  MCS 4 TBD ±2dB  MCS 5 TBD ±2dB  MCS 6 TBD ±2dB  MCS 7 TBD ±2dB  MCS 1 TBD ±2dB  MCS 1 TBD ±2dB  MCS 7 TBD ±2dB  MCS 1 TBD ±2dB  MCS 1 TBD ±2dB  MCS 1 TBD ±2dB  MCS 2 TBD ±2dB  MCS 2 TBD ±2dB  MCS 3 TBD ±2dB  MCS 3 TBD ±2dB  MCS 4 TBD ±2dB  MCS 4 TBD ±2dB  MCS 4 TBD ±2dB  MCS 5 TBD ±2dB  MCS 6 TBD ±2dB  MCS 7 TBD ±2dB  MCS 7 TBD ±2dB  MCS 8 TBD ±2dB  MCS 9 TBD ±2dB  MCS 9 TBD ±2dB		MCS 6	TBD	±2dB
MCS 1 TBD ±2dB  MCS 2 TBD ±2dB  MCS 3 TBD ±2dB  MCS 3 TBD ±2dB  MCS 4 TBD ±2dB  MCS 5 TBD ±2dB  MCS 6 TBD ±2dB  MCS 7 TBD ±2dB  MCS 1 TBD ±2dB  MCS 2 TBD ±2dB  MCS 2 TBD ±2dB  MCS 3 TBD ±2dB  MCS 3 TBD ±2dB  MCS 3 TBD ±2dB  MCS 4 TBD ±2dB  MCS 5 TBD ±2dB  MCS 6 TBD ±2dB  MCS 6 TBD ±2dB  MCS 7 TBD ±2dB  MCS 6 TBD ±2dB  MCS 7 TBD ±2dB  MCS 7 TBD ±2dB  MCS 7 TBD ±2dB  MCS 8 TBD ±2dB  MCS 9 TBD ±2dB  MCS 9 TBD ±2dB  MCS 9 TBD ±2dB		MCS 7	TBD	±2dB
2.4GHz 802.11n HT40  MCS 3  MCS 4  MCS 4  MCS 5  MCS 6  MCS 7  TBD  ±2dB  MCS 1  MCS 1  TBD  ±2dB  MCS 1  TBD  ±2dB  MCS 1  TBD  ±2dB  MCS 1  TBD  ±2dB  MCS 2  TBD  ±2dB  MCS 2  TBD  ±2dB  MCS 3  TBD  ±2dB  MCS 3  TBD  ±2dB  MCS 3  TBD  ±2dB  MCS 3  TBD  ±2dB  MCS 4  TBD  ±2dB  MCS 5  TBD  ±2dB  MCS 6  TBD  ±2dB  MCS 7  TBD  ±2dB  MCS 7  TBD  ±2dB  MCS 7  TBD  ±2dB  MCS 9  TBD  ±2dB  MCS 9  TBD  ±2dB		MCS 0	TBD	±2dB
MCS 3		MCS 1	TBD	±2dB
### MCS 4		MCS 2	TBD	±2dB
HT40         MCS 4         TBD         ±2dB           MCS 5         TBD         ±2dB           MCS 6         TBD         ±2dB           MCS 7         TBD         ±2dB           MCS 0         TBD         ±2dB           MCS 1         TBD         ±2dB           MCS 2         TBD         ±2dB           MCS 3         TBD         ±2dB           MCS 4         TBD         ±2dB           MCS 4         TBD         ±2dB           MCS 5         TBD         ±2dB           MCS 6         TBD         ±2dB           MCS 7         TBD         ±2dB           MCS 8         TBD         ±2dB           MCS 9         TBD         ±2dB           MCS 10         TBD         ±2dB	_	MCS 3	TBD	±2dB
MCS 5 TBD ±2dB  MCS 6 TBD ±2dB  MCS 7 TBD ±2dB  MCS 0 TBD ±2dB  MCS 1 TBD ±2dB  MCS 1 TBD ±2dB  MCS 2 TBD ±2dB  MCS 3 TBD ±2dB  MCS 3 TBD ±2dB  MCS 4 TBD ±2dB  MCS 4 TBD ±2dB  MCS 5 TBD ±2dB  MCS 6 TBD ±2dB  MCS 7 TBD ±2dB  MCS 7 TBD ±2dB  MCS 7 TBD ±2dB  MCS 8 TBD ±2dB  MCS 9 TBD ±2dB  MCS 9 TBD ±2dB		MCS 4	TBD	±2dB
MCS 7 TBD ±2dB  MCS 0 TBD ±2dB  MCS 1 TBD ±2dB  MCS 1 TBD ±2dB  MCS 2 TBD ±2dB  MCS 3 TBD ±2dB  MCS 3 TBD ±2dB  MCS 4 TBD ±2dB  MCS 5 TBD ±2dB  MCS 5 TBD ±2dB  MCS 6 TBD ±2dB  MCS 7 TBD ±2dB  MCS 7 TBD ±2dB  MCS 8 TBD ±2dB  MCS 9 TBD ±2dB  MCS 9 TBD ±2dB		MCS 5	TBD	±2dB
MCS 0 TBD ±2dB  MCS 1 TBD ±2dB  MCS 2 TBD ±2dB  MCS 3 TBD ±2dB  MCS 3 TBD ±2dB  MCS 4 TBD ±2dB  MCS 4 TBD ±2dB  MCS 5 TBD ±2dB  MCS 6 TBD ±2dB  MCS 7 TBD ±2dB  MCS 7 TBD ±2dB  MCS 8 TBD ±2dB  MCS 9 TBD ±2dB  MCS 9 TBD ±2dB  MCS 9 TBD ±2dB		MCS 6	TBD	±2dB
MCS 1 TBD ±2dB  MCS 2 TBD ±2dB  MCS 3 TBD ±2dB  MCS 4 TBD ±2dB  MCS 4 TBD ±2dB  MCS 5 TBD ±2dB  MCS 6 TBD ±2dB  MCS 7 TBD ±2dB  MCS 7 TBD ±2dB  MCS 8 TBD ±2dB  MCS 9 TBD ±2dB  MCS 9 TBD ±2dB  MCS 9 TBD ±2dB		MCS 7	TBD	±2dB
MCS 2 TBD ±2dB  MCS 3 TBD ±2dB  MCS 4 TBD ±2dB  MCS 4 TBD ±2dB  MCS 5 TBD ±2dB  MCS 6 TBD ±2dB  MCS 7 TBD ±2dB  MCS 7 TBD ±2dB  MCS 8 TBD ±2dB  MCS 9 TBD ±2dB  MCS 9 TBD ±2dB  MCS 9 TBD ±2dB		MCS 0	TBD	±2dB
MCS 3   TBD		MCS 1	TBD	±2dB
2.4GHz 802.11ax HE20  MCS 5  TBD  ±2dB  MCS 6  TBD  ±2dB  MCS 6  TBD  ±2dB  MCS 7  TBD  ±2dB  MCS 7  TBD  ±2dB  MCS 8  TBD  ±2dB  MCS 9  TBD  ±2dB  MCS 9  TBD  ±2dB  MCS 9  TBD  ±2dB		MCS 2	TBD	±2dB
2.4GHz 802.11ax HE20  MCS 6  MCS 7  TBD  ±2dB  MCS 7  TBD  ±2dB  MCS 7  TBD  ±2dB  MCS 8  TBD  ±2dB  MCS 8  TBD  ±2dB  MCS 9  TBD  ±2dB  MCS 9  TBD  ±2dB  MCS 9  TBD  ±2dB		MCS 3	TBD	±2dB
802.11ax HE20		MCS 4	TBD	±2dB
HE20         MCS 6         TBD         ±2dB           MCS 7         TBD         ±2dB           MCS 8         TBD         ±2dB           MCS 9         TBD         ±2dB           MCS 10         TBD         ±2dB		MCS 5	TBD	±2dB
MCS 7         TBD         ±2dB           MCS 8         TBD         ±2dB           MCS 9         TBD         ±2dB           MCS 10         TBD         ±2dB		MCS 6	TBD	±2dB
MCS 9         TBD         ±2dB           MCS 10         TBD         ±2dB		MCS 7	TBD	±2dB
MCS 10 TBD ±2dB		MCS 8	TBD	±2dB
		MCS 9	TBD	±2dB
MCS 11 TRD +2dR		MCS 10	TBD	±2dB
		MCS 11	TBD	±2dB



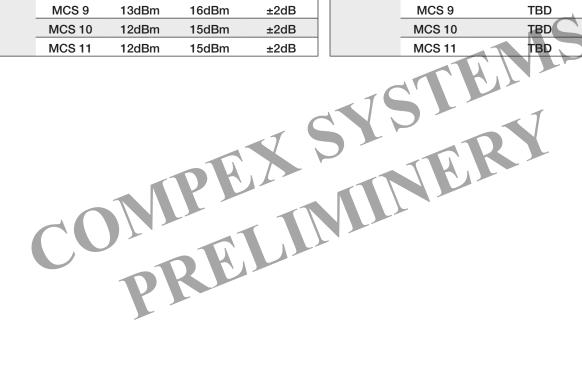


# WIRELESS MODULES

#### RF Performance Table at 2.4GHz

	Data Rate	TX Power (per chain)	TX Power (2 chains)	Tolerance
	MCS 0	15dBm	18dBm	±2dB
	MCS 1	15dBm	18dBm	±2dB
	MCS 2	15dBm	18dBm	±2dB
	MCS 3	15dBm	18dBm	±2dB
	MCS 4	14dBm	17dBm	±2dB
2.4GHz	MCS 5	14dBm	17dBm	±2dB
802.11ax HE40	MCS 6	14dBm	17dBm	±2dB
	MCS 7	14dBm	17dBm	±2dB
	MCS 8	13dBm	16dBm	±2dB
	MCS 9	13dBm	16dBm	±2dB
	MCS 10	12dBm	15dBm	±2dB
	MCS 11	12dBm	15dBm	±2dB

	Data Rate	RX Specifications Sensitivity	Tolerance
	MCS 0	TBD	±2dB
	MCS 1	TBD	±2dB
	MCS 2	TBD	±2dB
	MCS 3	TBD	±2dB
	MCS 4	TBD	±2dB
2.4GHz	MCS 5	TBD	±2dB
802.11ax HE40	MCS 6	TBD	±2dB
	MCS 7	TBD	±2dB
	MCS 8	TBD	±2dB
	MCS 9	TBD	±2dB
	MCS 10	TBD	±2dB
	MCS 11	TBD	±2dB









### RF Performance Table at 5GHz

	Data Rate	TX Power (per chain)	TX Power (2 chains)	Tolerance
	6Mbps	15dBm	18dBm	±2dB
	9Mbps	15dBm	18dBm	±2dB
	12Mbps	15dBm	18dBm	±2dB
5GHz	18Mbps	15dBm	18dBm	±2dB
802.11a	24Mbps	14dBm	17dBm	±2dB
	36Mbps	14dBm	17dBm	±2dB
	48Mbps	14dBm	17dBm	±2dB
	54Mbps	14dBm	17dBm	±2dB
	MCS 0	15dBm	18dBm	±2dB
	MCS 1	15dBm	18dBm	±2dB
	MCS 2	15dBm	18dBm	±2dB
5GHz	MCS 3	15dBm	18dBm	±2dB
802.11n/ac	MCS 4	14dBm	17dBm	±2dB
VHT20	MCS 5	14dBm	17dBm	±2dB
	MCS 6	14dBm	17dBm	±2dB
	MCS 7	14dBm	17dBm	±2dB
	MCS 8	13dBm	16dBm	±2dB
	MCS 0	15dBm	18dBm	±2dB
	MCS 1	15dBm	18dBm	±2dB
	MCS 2	15dBm	18dBm	±2dB
	MCS 3	15dBm	18dBm	±2dB
5GHz 802.11n/ac	MCS 4	14dBm	17dBm	±2dB
VHT40	MCS 5	14dBm	17dBm	±2dB
	MCS 6	14dBm	17dBm	±2dB
	MCS 7	14dBm	17dBm	±2dB
	MCS 8	13dBm	16dBm	±2dB
	MCS 9	13dBm	16dBm	±2dB
	MCS 0	15dBm	18dBm	±2dB
	MCS 1	15dBm	18dBm	±2dB
	MCS 2	15dBm	18dBm	±2dB
	MCS 3	15dBm	18dBm	±2dB
5GHz	MCS 4	14dBm	17dBm	±2dB
802.11ac HT80	MCS 5	14dBm	17dBm	±2dB
11100	MCS 6	14dBm	17dBm	±2dB
	MCS 7	14dBm	17dBm	±2dB
	MCS 8	13dBm	16dBm	±2dB
	MCS 9	13dBm	16dBm	±2dB

		DV 0 - 15 - 11	
	Data Rate	RX Specifications Sensitivity	Tolerance
	6Mbps	TBD	±2dB
	9Mbps	TBD	±2dB
	12Mbps	TBD	±2dB
5GHz	18Mbps	TBD	±2dB
802.11a	24Mbps	TBD	±2dB
	36Mbps	TBD	±2dB
	48Mbps	TBD	±2dB
	54Mbps	TBD	±2dB
	MCS 0	TBD	±2dB
	MCS 1	TBD	±2dB
	MCS 2	TBD	±2dB
5GHz	MCS 3	TBD	±2dB
802.11n/ac	MCS 4	TBD	±2dB
VHT20	MCS 5	TBD	±2dB
1	MCS 6	TBD	±2dB
	MCS 7	TBD	±2dB
	MCS 8	TBD	±2dB
	MCS 0	TBD	±2dB
	MCS 1	TBD	±2dB
	MCS 2	TBD	±2dB
	MCS 3	TBD	±2dB
5GHz 802.11n/ac	MCS 4	TBD	±2dB
VHT40	MCS 5	TBD	±2dB
	MCS 6	TBD	±2dB
	MCS 7	TBD	±2dB
	MCS 8	TBD	±2dB
	MCS 9	TBD	±2dB
	MCS 0	TBD	±2dB
	MCS 1	TBD	±2dB
	MCS 2	TBD	±2dB
	MCS 3	TBD	±2dB
5GHz	MCS 4	TBD	±2dB
802.11ac HT80	MCS 5	TBD	±2dB
	MCS 6	TBD	±2dB
	MCS 7	TBD	±2dB
	MCS 8	TBD	±2dB
	MCS 9	TBD	±2dB







### RF Performance Table at 5GHz

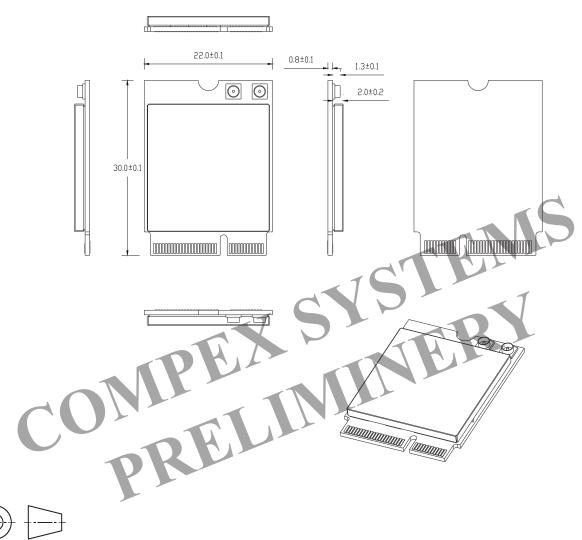
	Data Rate	TX Power (per chain)	TX Power (2 chains)	Tolerance
	MCS 0	15dBm	18dBm	±2dB
	MCS 1	15dBm	18dBm	±2dB
	MCS 2	15dBm	18dBm	±2dB
	MCS 3	15dBm	18dBm	±2dB
	MCS 4	14dBm	17dBm	±2dB
5GHz 802.11ax	MCS 5	14dBm	17dBm	±2dB
602.11ax HE20	MCS 6	14dBm	17dBm	±2dB
	MCS 7	14dBm	17dBm	±2dB
	MCS 8	13dBm	16dBm	±2dB
	MCS 9	13dBm	16dBm	±2dB
	MCS 10	12dBm	15dBm	±2dB
	MCS 11	12dBm	15dBm	±2dB
	MCS 0	15dBm	18dBm	±2dB
	MCS 1	15dBm	18dBm	±2dB
	MCS 2	15dBm	18dBm	±2dB
	MCS 3	15dBm	18dBm	±2dB
	MCS 4	14dBm	17dBm	±2dB
5GHz	MCS 5	14dBm	17dBm	±2dB
802.11ax HE40	MCS 6	14dBm	17dBm	±2dB
	MCS 7	14dBm	17dBm	±2dB
	MCS 8	13dBm	16dBm	±2dB
	MCS 9	13dBm	16dBm	±2dB
	MCS 10	12dBm	15dBm	±2dB
	MCS 11	12dBm	15dBm	±2dB
	MCS 0	15dBm	18dBm	±2dB
	MCS 1	15dBm	18dBm	±2dB
	MCS 2	15dBm	18dBm	±2dB
	MCS 3	15dBm	18dBm	±2dB
	MCS 4	14dBm	17dBm	±2dB
5GHz	MCS 5	14dBm	17dBm	±2dB
802.11ax HE80	MCS 6	14dBm	17dBm	±2dB
	MCS 7	14dBm	17dBm	±2dB
	MCS 8	13dBm	16dBm	±2dB
	MCS 9	13dBm	16dBm	±2dB
	MCS 10	12dBm	15dBm	±2dB
	MCS 11	12dBm	15dBm	±2dB

	Data Rate	RX Specifications Sensitivity	Tolerance
	MCS 0	TBD	±2dB
	MCS 1	TBD	±2dB
	MCS 2	TBD	±2dB
	MCS 3	TBD	±2dB
	MCS 4	TBD	±2dB
5GHz 802.11ax	MCS 5	TBD	±2dB
HE20	MCS 6	TBD	±2dB
	MCS 7	TBD	±2dB
	MCS 8	TBD	±2dB
	MCS 9	TBD	±2dB
	MCS 10	TBD	±2dB
	MCS 11	TBD	±2dB
	MCS 0	TBD	±2dB
	MCS 1	TBD	±2dB
1	MCS 2	TBD	±2dB
	MCS 3	TBD	±2dB
	MCS 4	TBD	±2dB
5GHz	MCS 5	TBD	±2dB
802.11ax HE40	MCS 6	TBD	±2dB
\	MCS 7	TBD	±2dB
	MCS 8	TBD	±2dB
	MCS 9	TBD	±2dB
	MCS 10	TBD	±2dB
	MCS 11	TBD	±2dB
	MCS 0	TBD	±2dB
	MCS 1	TBD	±2dB
	MCS 2	TBD	±2dB
	MCS 3	TBD	±2dB
	MCS 4	TBD	±2dB
5GHz	MCS 5	TBD	±2dB
802.11ax HE80	MCS 6	TBD	±2dB
	MCS 7	TBD	±2dB
	MCS 8	TBD	±2dB
	MCS 9	TBD	±2dB
	MCS 10	TBD	±2dB
	MCS 11	TBD	±2dB





### **Mechanical Dimensions**

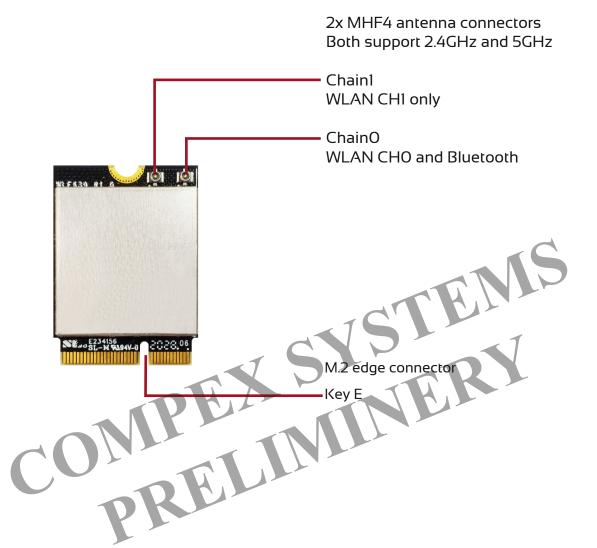






# WIRELESS MODULES

### **Component Map**



### **Ordering Configuration**

Item Code	Model	Description
WLT639 6A0000 1.0-TE	WLT639	2x2 802.11a/b/g/n/ac/ax support dual band dual concurrent PCle M.2 module

