

## WiFi 7 (802.11BE) 2x2 MU-MIMO 2.4+5GHz Dual Band Dual Concurrent Wireless Module

**Model: WLE7002E25D | WLE7002E25DF**



### KEY FEATURES

- Qualcomm QCN6224/6274 'Waikiki' series for Commercial Grade
- Qualcomm QCN9274-I 'Waikiki' series for Industrial Grade
- 2.4GHz, 2x2 MU-MIMO, up to 688 Mbps physical data rate
- 5GHz, 2x2 MU-MIMO, up to 4324 Mbps physical data rate
- Dual-Band Concurrent 2.4+5GHz WiFi 7 (802.11be)
- MiniPCIe Interface with PCIe 3.0
- Based on WK03.2 reference design
- Supports up to 4096-QAM
- -20°C to 70°C operating temperature for commercial grade
- -40°C to 85°C operating temperature for industrial grade

## Specifications

Chipset	Qualcomm QCN6224/6274 'Waikiki' series for Commercial grade Qualcomm QCN9274-I 'Waikiki' series for Industrial grade
System Memory	2Mbit serial I <sup>2</sup> C bus EEPROM
Reference Design	WK03.2
Host Interface	MiniPCIe Interface with PCIe 3.0
Operating Voltage	3.3V
Power Consumption	TBD
Wireless	2x2 2.4GHz 802.11b/g/n/ax/be, max 20dBm per chain 2x2 5GHz 802.11a/n/ax/be, max 18dBm per chain 2 x U.FL Connectors
Frequency Range	2.4 GHz: 2.412~2.472GHz 5 GHz: 5.150~5.825GHz
Modulation Techniques	OFDMA: BPSK, QPSK, DBPSK, DQPSK, 16-QAM, 64-QAM, 256-QAM, 1024QAM, 4096QAM
Channel Spectrum Widths for WLAN	Supports 20/40MHz at 2.4GHz Supports 20/40/80/160/240MHz at 5GHz
Operating Systems	Linux
Certification	REACH & RoHS Compliance
Environmental Temperature	Operating(Commercial Grade): -20°C to 70°C, Storage: -40°C to 90°C Operating(Industrial Grade): -40°C to 85°C, Storage: -40°C to 90°C
Environmental Humidity, Non-Condensing	Operating: 5% to 95%, Storage: Max. 90%
Dimensions (W x H x D) in mm	30 X 50.8 X 13 mm

\*Configurations are subject to change without notifications.

\*\*Can be requested from respective sales executive.

## RF Performance Table at 2.4GHz

	Data Rate	TX Power (per chain)	TX Power (2 chains)	Tolerance		Data Rate	RX Specifications Sensitivity	Tolerance
2.4GHz 802.11be EHT20	MCS 0	20dBm	23dBm	±2dB	2.4GHz 802.11be EHT20	MCS 0	TBD	±2dB
	MCS 1	20dBm	23dBm	±2dB		MCS 1	TBD	±2dB
	MCS 2	20dBm	23dBm	±2dB		MCS 2	TBD	±2dB
	MCS 3	20dBm	23dBm	±2dB		MCS 3	TBD	±2dB
	MCS 4	19dBm	22dBm	±2dB		MCS 4	TBD	±2dB
	MCS 5	19dBm	22dBm	±2dB		MCS 5	TBD	±2dB
	MCS 6	19dBm	22dBm	±2dB		MCS 6	TBD	±2dB
	MCS 7	18dBm	21dBm	±2dB		MCS 7	TBD	±2dB
	MCS 8	18dBm	21dBm	±2dB		MCS 8	TBD	±2dB
	MCS 9	17dBm	20dBm	±2dB		MCS 9	TBD	±2dB
	MCS 10	16dBm	19dBm	±2dB		MCS 10	TBD	±2dB
	MCS 11	16dBm	19dBm	±2dB		MCS 11	TBD	±2dB
	MCS 12	15dBm	18dBm	±2dB		MCS 12	TBD	±2dB
	MCS 13	15dBm	18dBm	±2dB		MCS 13	TBD	±2dB
2.4GHz 802.11be EHT40	MCS 0	20dBm	23dBm	±2dB	2.4GHz 802.11be EHT40	MCS 0	TBD	±2dB
	MCS 1	20dBm	23dBm	±2dB		MCS 1	TBD	±2dB
	MCS 2	20dBm	23dBm	±2dB		MCS 2	TBD	±2dB
	MCS 3	20dBm	23dBm	±2dB		MCS 3	TBD	±2dB
	MCS 4	19dBm	22dBm	±2dB		MCS 4	TBD	±2dB
	MCS 5	19dBm	22dBm	±2dB		MCS 5	TBD	±2dB
	MCS 6	19dBm	22dBm	±2dB		MCS 6	TBD	±2dB
	MCS 7	18dBm	21dBm	±2dB		MCS 7	TBD	±2dB
	MCS 8	18dBm	21dBm	±2dB		MCS 8	TBD	±2dB
	MCS 9	17dBm	20dBm	±2dB		MCS 9	TBD	±2dB
	MCS 10	16dBm	19dBm	±2dB		MCS 10	TBD	±2dB
	MCS 11	16dBm	19dBm	±2dB		MCS 11	TBD	±2dB
	MCS 12	15dBm	18dBm	±2dB		MCS 12	TBD	±2dB
	MCS 13	15dBm	18dBm	±2dB		MCS 13	TBD	±2dB

## RF Performance Table at 2.4GHz with LTE Coexistence Filter

	Data Rate	TX Power (per chain)	TX Power (2 chains)	Tolerance		Data Rate	RX Specifications Sensitivity	Tolerance
2.4GHz 802.11be EHT20	MCS 0	20dBm	23dBm	±2dB	2.4GHz 802.11be EHT20	MCS 0	TBD	±2dB
	MCS 1	20dBm	23dBm	±2dB		MCS 1	TBD	±2dB
	MCS 2	20dBm	23dBm	±2dB		MCS 2	TBD	±2dB
	MCS 3	20dBm	23dBm	±2dB		MCS 3	TBD	±2dB
	MCS 4	19dBm	22dBm	±2dB		MCS 4	TBD	±2dB
	MCS 5	19dBm	22dBm	±2dB		MCS 5	TBD	±2dB
	MCS 6	19dBm	22dBm	±2dB		MCS 6	TBD	±2dB
	MCS 7	18dBm	21dBm	±2dB		MCS 7	TBD	±2dB
	MCS 8	18dBm	21dBm	±2dB		MCS 8	TBD	±2dB
	MCS 9	17dBm	20dBm	±2dB		MCS 9	TBD	±2dB
	MCS 10	16dBm	19dBm	±2dB		MCS 10	TBD	±2dB
	MCS 11	16dBm	19dBm	±2dB		MCS 11	TBD	±2dB
	MCS 12	15dBm	18dBm	±2dB		MCS 12	TBD	±2dB
	MCS 13	15dBm	18dBm	±2dB		MCS 13	TBD	±2dB
2.4GHz 802.11be EHT40	MCS 0	20dBm	23dBm	±2dB	2.4GHz 802.11be EHT40	MCS 0	TBD	±2dB
	MCS 1	20dBm	23dBm	±2dB		MCS 1	TBD	±2dB
	MCS 2	20dBm	23dBm	±2dB		MCS 2	TBD	±2dB
	MCS 3	20dBm	23dBm	±2dB		MCS 3	TBD	±2dB
	MCS 4	19dBm	22dBm	±2dB		MCS 4	TBD	±2dB
	MCS 5	19dBm	22dBm	±2dB		MCS 5	TBD	±2dB
	MCS 6	19dBm	22dBm	±2dB		MCS 6	TBD	±2dB
	MCS 7	18dBm	21dBm	±2dB		MCS 7	TBD	±2dB
	MCS 8	18dBm	21dBm	±2dB		MCS 8	TBD	±2dB
	MCS 9	17dBm	20dBm	±2dB		MCS 9	TBD	±2dB
	MCS 10	16dBm	19dBm	±2dB		MCS 10	TBD	±2dB
	MCS 11	16dBm	19dBm	±2dB		MCS 11	TBD	±2dB
	MCS 12	15dBm	18dBm	±2dB		MCS 12	TBD	±2dB
	MCS 13	15dBm	18dBm	±2dB		MCS 13	TBD	±2dB

## RF Performance Table at 5GHz

	Data Rate	TX Power (per chain)	TX Power (2 chains)	Tolerance
5GHz 802.11be EHT20	MCS 0	18dBm	21dBm	±2dB
	MCS 1	18dBm	21dBm	±2dB
	MCS 2	18dBm	21dBm	±2dB
	MCS 3	17dBm	20dBm	±2dB
	MCS 4	17dBm	20dBm	±2dB
	MCS 5	16dBm	19dBm	±2dB
	MCS 6	16dBm	19dBm	±2dB
	MCS 7	15dBm	18dBm	±2dB
	MCS 8	15dBm	18dBm	±2dB
	MCS 9	14dBm	17dBm	±2dB
	MCS 10	14dBm	17dBm	±2dB
	MCS 11	14dBm	17dBm	±2dB
	MCS 12	13dBm	16dBm	±2dB
	MCS 13	13dBm	16dBm	±2dB
5GHz 802.11be EHT40	MCS 0	18dBm	21dBm	±2dB
	MCS 1	18dBm	21dBm	±2dB
	MCS 2	17dBm	20dBm	±2dB
	MCS 3	16dBm	19dBm	±2dB
	MCS 4	16dBm	19dBm	±2dB
	MCS 5	15dBm	18dBm	±2dB
	MCS 6	15dBm	18dBm	±2dB
	MCS 7	14dBm	17dBm	±2dB
	MCS 8	14dBm	17dBm	±2dB
	MCS 9	14dBm	17dBm	±2dB
	MCS 10	13dBm	16dBm	±2dB
	MCS 11	13dBm	16dBm	±2dB
	MCS 12	13dBm	16dBm	±2dB
	MCS 13	13dBm	16dBm	±2dB
5GHz 802.11be EHT80	MCS 0	18dBm	21dBm	±2dB
	MCS 1	18dBm	21dBm	±2dB
	MCS 2	17dBm	20dBm	±2dB
	MCS 3	16dBm	19dBm	±2dB
	MCS 4	16dBm	19dBm	±2dB
	MCS 5	15dBm	18dBm	±2dB
	MCS 6	14dBm	17dBm	±2dB
	MCS 7	14dBm	17dBm	±2dB
	MCS 8	14dBm	17dBm	±2dB
	MCS 9	13dBm	16dBm	±2dB
	MCS 10	13dBm	16dBm	±2dB
	MCS 11	13dBm	16dBm	±2dB
	MCS 12	12dBm	15dBm	±2dB
	MCS 13	12dBm	15dBm	±2dB

	Data Rate	RX Specifications Sensitivity	Tolerance
5GHz 802.11be EHT20	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 8	TBD	±2dB
	MCS 9	TBD	±2dB
	MCS 10	TBD	±2dB
	MCS 11	TBD	±2dB
	MCS 12	TBD	±2dB
	MCS 13	TBD	±2dB
5GHz 802.11be EHT40	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 8	TBD	±2dB
	MCS 9	TBD	±2dB
	MCS 10	TBD	±2dB
	MCS 11	TBD	±2dB
	MCS 12	TBD	±2dB
	MCS 13	TBD	±2dB
5GHz 802.11be EHT80	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 8	TBD	±2dB
	MCS 9	TBD	±2dB
	MCS 10	TBD	±2dB
	MCS 11	TBD	±2dB
	MCS 12	TBD	±2dB
	MCS 13	TBD	±2dB

## RF Performance Table at 5GHz

	Data Rate	TX Power (per chain)	TX Power (2 chains)	Tolerance		Data Rate	RX Specifications Sensitivity	Tolerance
5GHz 802.11be EHT160	MCS 0	18dBm	21dBm	±2dB	5GHz 802.11be EHT160	MCS 0	TBD	±2dB
	MCS 1	18dBm	21dBm	±2dB		MCS 1	TBD	±2dB
	MCS 2	17dBm	20dBm	±2dB		MCS 2	TBD	±2dB
	MCS 3	16dBm	19dBm	±2dB		MCS 3	TBD	±2dB
	MCS 4	15dBm	18dBm	±2dB		MCS 4	TBD	±2dB
	MCS 5	15dBm	18dBm	±2dB		MCS 5	TBD	±2dB
	MCS 6	14dBm	17dBm	±2dB		MCS 6	TBD	±2dB
	MCS 7	14dBm	17dBm	±2dB		MCS 7	TBD	±2dB
	MCS 8	13dBm	16dBm	±2dB		MCS 8	TBD	±2dB
	MCS 9	13dBm	16dBm	±2dB		MCS 9	TBD	±2dB
	MCS 10	12dBm	15dBm	±2dB		MCS 10	TBD	±2dB
	MCS 11	12dBm	15dBm	±2dB		MCS 11	TBD	±2dB
	MCS 12	11dBm	14dBm	±2dB		MCS 12	TBD	±2dB
	MCS 13	11dBm	14dBm	±2dB		MCS 13	TBD	±2dB

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## RF Performance Table at 5GHz with LTE Coexistence Filter

	Data Rate	TX Power (per chain)	TX Power (2 chains)	Tolerance		Data Rate	RX Specifications Sensitivity	Tolerance
5GHz 802.11be EHT20	MCS 0	18dBm	21dBm	±2dB	5GHz 802.11be EHT20	MCS 0	TBD	±2dB
	MCS 1	18dBm	21dBm	±2dB		MCS 1	TBD	±2dB
	MCS 2	18dBm	21dBm	±2dB		MCS 2	TBD	±2dB
	MCS 3	17dBm	20dBm	±2dB		MCS 3	TBD	±2dB
	MCS 4	17dBm	20dBm	±2dB		MCS 4	TBD	±2dB
	MCS 5	16dBm	19dBm	±2dB		MCS 5	TBD	±2dB
	MCS 6	16dBm	19dBm	±2dB		MCS 6	TBD	±2dB
	MCS 7	15dBm	18dBm	±2dB		MCS 7	TBD	±2dB
	MCS 8	14dBm	17dBm	±2dB		MCS 8	TBD	±2dB
	MCS 9	13dBm	16dBm	±2dB		MCS 9	TBD	±2dB
	MCS 10	13dBm	16dBm	±2dB		MCS 10	TBD	±2dB
	MCS 11	13dBm	16dBm	±2dB		MCS 11	TBD	±2dB
	MCS 12	12dBm	15dBm	±2dB		MCS 12	TBD	±2dB
5GHz 802.11be EHT40	MCS 13	12dBm	15dBm	±2dB	5GHz 802.11be EHT40	MCS 13	TBD	±2dB
	MCS 0	18dBm	21dBm	±2dB		MCS 0	TBD	±2dB
	MCS 1	17dBm	20dBm	±2dB		MCS 1	TBD	±2dB
	MCS 2	16dBm	19dBm	±2dB		MCS 2	TBD	±2dB
	MCS 3	16dBm	19dBm	±2dB		MCS 3	TBD	±2dB
	MCS 4	16dBm	19dBm	±2dB		MCS 4	TBD	±2dB
	MCS 5	15dBm	18dBm	±2dB		MCS 5	TBD	±2dB
	MCS 6	14dBm	17dBm	±2dB		MCS 6	TBD	±2dB
	MCS 7	14dBm	17dBm	±2dB		MCS 7	TBD	±2dB
	MCS 8	14dBm	17dBm	±2dB		MCS 8	TBD	±2dB
	MCS 9	13dBm	16dBm	±2dB		MCS 9	TBD	±2dB
	MCS 10	12dBm	15dBm	±2dB		MCS 10	TBD	±2dB
	MCS 11	12dBm	15dBm	±2dB		MCS 11	TBD	±2dB
MCS 12	12dBm	15dBm	±2dB	MCS 12	TBD	±2dB		
5GHz 802.11be EHT80	MCS 13	12dBm	15dBm	±2dB	5GHz 802.11be EHT80	MCS 13	TBD	±2dB
	MCS 0	18dBm	21dBm	±2dB		MCS 0	TBD	±2dB
	MCS 1	17dBm	20dBm	±2dB		MCS 1	TBD	±2dB
	MCS 2	16dBm	19dBm	±2dB		MCS 2	TBD	±2dB
	MCS 3	16dBm	19dBm	±2dB		MCS 3	TBD	±2dB
	MCS 4	16dBm	19dBm	±2dB		MCS 4	TBD	±2dB
	MCS 5	15dBm	18dBm	±2dB		MCS 5	TBD	±2dB
	MCS 6	14dBm	17dBm	±2dB		MCS 6	TBD	±2dB
	MCS 7	14dBm	17dBm	±2dB		MCS 7	TBD	±2dB
	MCS 8	14dBm	17dBm	±2dB		MCS 8	TBD	±2dB
	MCS 9	13dBm	16dBm	±2dB		MCS 9	TBD	±2dB
	MCS 10	12dBm	15dBm	±2dB		MCS 10	TBD	±2dB
	MCS 11	12dBm	15dBm	±2dB		MCS 11	TBD	±2dB
MCS 12	12dBm	15dBm	±2dB	MCS 12	TBD	±2dB		
MCS 13	12dBm	15dBm	±2dB	MCS 13	TBD	±2dB		

## RF Performance Table at 5GHz with LTE Coexistence Filter

	Data Rate	TX Power (per chain)	TX Power (2 chains)	Tolerance
5GHz 802.11be EHT160	MCS 0	18dBm	21dBm	±2dB
	MCS 1	17dBm	20dBm	±2dB
	MCS 2	16dBm	19dBm	±2dB
	MCS 3	16dBm	19dBm	±2dB
	MCS 4	16dBm	19dBm	±2dB
	MCS 5	15dBm	18dBm	±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
	MCS 12	11dBm	14dBm	±2dB
	MCS 13	11dBm	14dBm	±2dB

	Data Rate	RX Specifications Sensitivity	Tolerance
5GHz 802.11be EHT160	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 8	TBD	±2dB
	MCS 9	TBD	±2dB
	MCS 10	TBD	±2dB
	MCS 11	TBD	±2dB
	MCS 12	TBD	±2dB
	MCS 13	TBD	±2dB

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## Component Map

U.FL Connectors

CH0

CH1

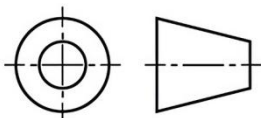
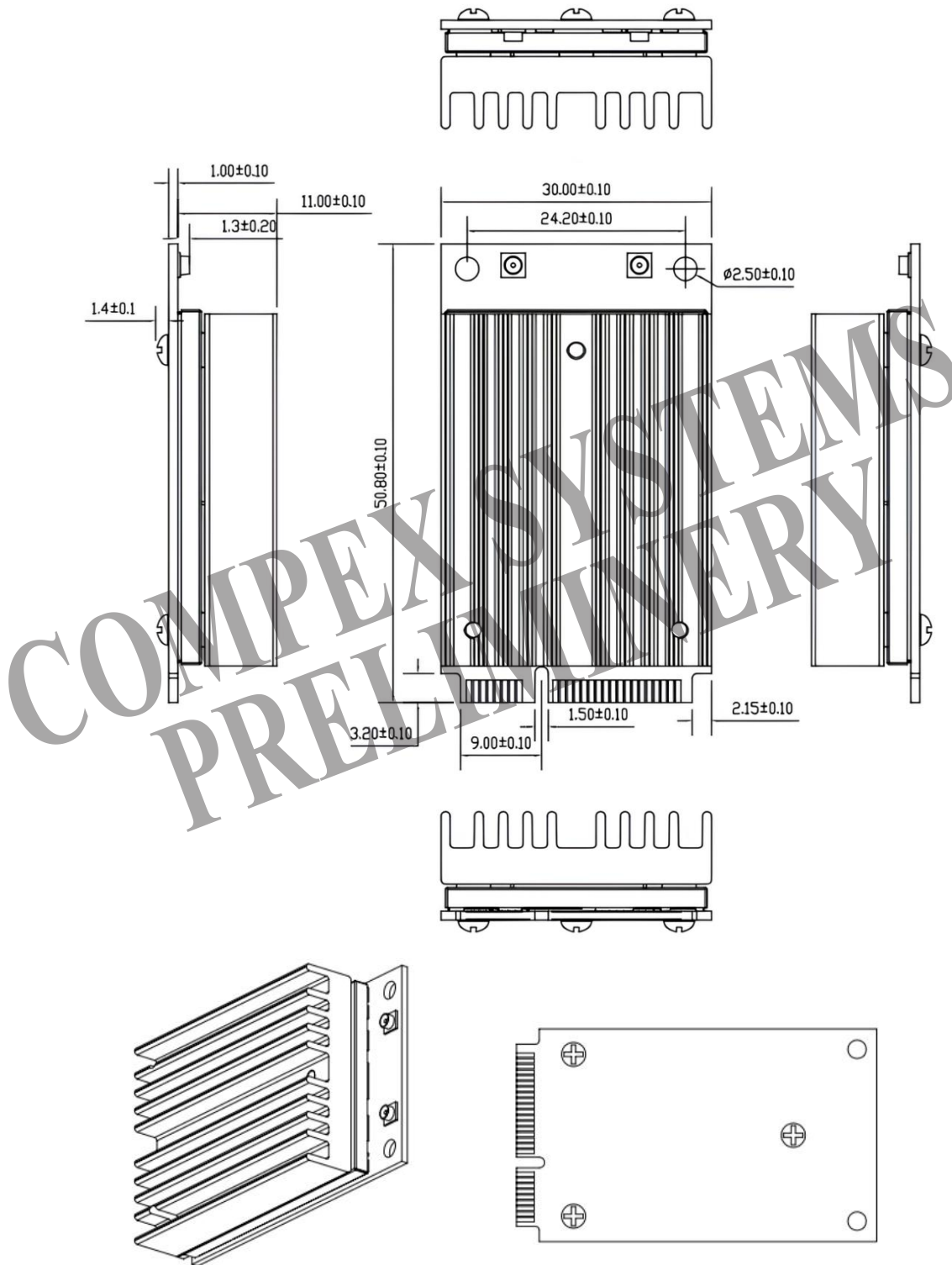


Mini PCI Express 3.0 Standard

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## Mechanical Dimensions



All dimensions are in mm

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## Ordering Configuration

Item Code	Model	Description
WLE7002E25D 7A0624XN-TE	WLE7002E25D	QCN6224 2x2 802.11a/b/g/n/ac/ax/be support 2.4+5GHz Dual-Band Concurrent MiniPCIe interface with PCIe 3.0 Module
WLE7002E25D 7B0974XN-I-TE	WLE7002E25D-I	QCN9274-I 2x2 802.11a/b/g/n/ac/ax/be support 2.4+5GHz Dual-Band Concurrent MiniPCIe interface with PCIe 3.0 Module
WLE7002E25D 7A0674XA-TE	WLE7002E25DF	QCN6274 2x2 802.11a/b/g/n/ac/ax/be support 2.4+5GHz Dual-Band Concurrent MiniPCIe interface with PCIe 3.0 Module with LTE Coexistence Filter
WLE7002E25D 7B0974XA-I-TE	WLE7002E25DF-I	QCN9274-I 2x2 802.11a/b/g/n/ac/ax/be support 2.4+5GHz Dual-Band Concurrent MiniPCIe interface with PCIe 3.0 Module with LTE Coexistence Filter

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## Chipsets Comparisons

		QCN6224	QCN6274	QCN9274
Band Operation	4 Single Band	✓	✓	✓
	2+2 Dual Band	✓	✓	✓
	2.4GHz	✓	✓	✓
	4.9GHz	-	-	✓
	5GHz	✓	✓	✓
	6GHz	-	✓	✓
	Channel Support	Up to 160MHz at 5GHz	Up to 320MHz at 6GHz	Up to 320MHz at 6GHz
Performance	4K QAM	✓	✓	✓
	#clients	128	256	512
	#OFDMA users	8	16	37
	DL OFDMA + TxBF	-	✓	✓
	DL/UL MU-MIMO	✓	✓	✓
Advanced 11be Features	WFA certified MLO	✓	✓	✓
	Puncture	Static	Static	Static & Dynamic
Others	DPD	✓	✓	✓
	FIPS	-	-	✓
Software Packages	Provisioned Multi Link	✓	✓	✓
	Dense Deployment	✓	✓	✓
	Location & RF Sensing	✓	✓	✓