



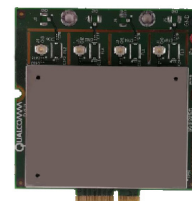
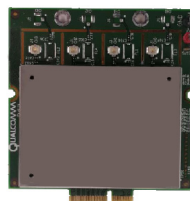
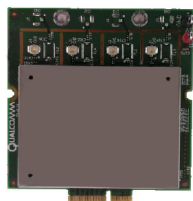
Wireless Module

Catalogue



Revision: 110520

802.11ax (WiFi 6)



HARDWARE SPECIFICATIONS

TYPE OF CARD	4 x 4 MU-MIMO 802.11ax	4 x 4 MU-MIMO 802.11ax	4 x 4 MU-MIMO 802.11ax
MU-MIMO	4 x 4	4 x 4	4 x 4
MODEL	PN02.7	PNO2.1	PN01.1
CHIPSET	QCN9074	QCN9074	QCN9074
STANDARD	802.11a/n/ac/ax	802.11a/n/ac/ax	802.11b/g/n/ax
THEORETICAL RATE	4949Mbps	4949Mbps	1147Mbps
FORM FACTOR	M.2 E Key	M.2 E Key	M.2 E Key
SPECTRUM	5.925 - 7.125GHz	5.150 - 5.950GHz	2.412 - 2.472GHz
REFERENCE DESIGN	PN02.7	PNO2.1	PN01.1
HOST INTERFACE	M.2	M.2	M.2
OPERATING VOLTAGE	5V	5V	5V
POWER (PER CHAIN)	23dBm @ 6GHz	23dBm @ 5GHz	23dBm @ 2.4GHz
POWER CONSUMPTION	TBD	TBD	TBD
CHANNEL SUPPORT	Supports 20/40/80/160MHz at 6GHz	Supports 20/40/80/160MHz at 5GHz	Supports 20/40MHz at 2.4GHz
ANTENNA CONNECTOR	4x U.FL Connectors	4x U.FL Connectors	4x U.FL Connectors
MODULATION TECHNIQUES	OFDMA: BPSK, QPSK, DBPSK, DQPSK,16-QAM, 64-QAM, 256-QAM,1024-QAM, 4096-QAM	OFDMA: BPSK, QPSK, DBPSK, DQPSK, 16-QAM, 64-QAM, 256-QAM, 1024-QAM, 4096-QAM	OFDMA: BPSK, QPSK, DBPSK, DQPSK,16-QAM, 64-QAM, 256-QAM, 1024-QAM
OPERATING ENVIRONMENT	-20°C to 70°C	-20°C to 70°C	-20°C to 70°C
CERTIFICATION	TBD	TBD	TBD
DIMENSIONS (W x H x D) in mm	57 x 60 x 3.2	57 x 60 x 3.2	57 x 60 x 3.2

WLAN + BLE (WiFi 5)



HARDWARE SPECIFICATIONS

TYPE OF CARD	System-on-chip (SoC) 1 x 1 WLAN and Bluetooth	M.2 2230 2 x 2 MU-MIMO 802.11ac
MIMO	1 x 1	2 x 2
MODEL	WSD377	WLT674
CHIPSET	QCA9377-3	QCA6174A-5
STANDARD	802.11a/b/g/n/ac	802.11a/b/g/n/ac
THEORETICAL RATE	433Mbps	867Mbps
FORM FACTOR	Single-die	M.2 2230, IKey A+E
SPECTRUM	2.412 - 2.472GHz 5.180 - 5.825GHz	2.412 - 2.472GHz 5.150 - 5.850GHz
REFERENCE DESIGN	x	x
HOST INTERFACE	SDIO	M.2
OPERATING VOLTAGE	3.3V DC	3.3V DC
POWER (PER CHAIN)	16dBm @ 2.4GHz 11dBm @ 5GHz	18dBm @ 2.4GHz 10.5dBm @ 5GHz
POWER CONSUMPTION	3.83W (Max)	TX: 610mA RX: 280mA
CHANNEL SUPPORT	20 / 40MHz @ 2.4GHz 20 / 40 / 80MHz @ 5GHz	20 / 40MHz @ 2.4GHz 20 / 40 / 80MHz @ 5GHz
ANTENNA CONNECTOR	SDIO	2x U.FL connectors
MODULATION TECHNIQUES	OFDM: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM	OFDM: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM
OPERATING ENVIRONMENT	-20°C to 70°C	-20°C to 70°C
CERTIFICATION	CE RED, REACH & RoHS Compliance	CE, FCC, IC, REACH & RoHS Compliance
DIMENSIONS (W x H x D) in mm	12 x 12 x 2.5	22 x 30 x 3

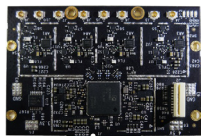
802.11ac Wave 2 (WiFi 5)



HARDWARE SPECIFICATIONS

TYPE OF CARD	Standard size 4 x 4 MU-MIMO 802.11ac Wave 2	Standard size 4 x 4 MU-MIMO 802.11ac Wave 2	Standard size 4 x 4 MU-MIMO 802.11ac Wave 2	Standard size 4 x 4 MU-MIMO 802.11ac Wave 2	Wide Size 4 x 4 MU-MIMO 802.11ac Wave 2	Standard size 4 x 4 MU-MIMO 802.11n
MIMO	4 x 4	4 x 4	4 x 4	4 x 4	4 x 4	4 x 4
MODEL	WLEI216VX-1	WLEI216VX	WLEI216V5-20	WLEI216V5-20-1	WLEI216V5-23	WLEI216V2-20
CHIPSET	QCA9994	QCA9984	QCA9984	QCA9994	QCA9984	QCA9984
STANDARD	802.11a/b/g/n/ac	802.11a/b/g/n/ac	802.11a/n/ac	802.11a/n/ac	802.11a/n/ac	802.11b/g/n/ac
THEORETICAL RATE	800Mbps @ 2.4GHz 1733Mbps @ 5GHz	800Mbps @ 2.4GHz 1733Mbps @ 5GHz	1733Mbps	1733Mbps	1733Mbps	800Mbps
FORM FACTOR	Standard size	Standard size	Standard size	Standard size	Wide size	Standard size
SPECTRUM	2.412 - 2.472GHz, 5.180 - 5.825GHz	2.412 - 2.472GHz, 5.180 - 5.825GHz	5.180 - 5.825GHz	5.180GHz - 5.825GHz	5.180 - 5.825GHz	2.412 - 2.472GHz
REFERENCE DESIGN	x	x	x	x	CUS239	x
HOST INTERFACE	MiniPCIe 2.0	MiniPCIe 2.0	MiniPCIe 2.0	MiniPCIe 2.0	MiniPCIe 2.0	MiniPCIe 2.0
OPERATING VOLTAGE	3.3V DC	3.3V DC	3.3V DC	3.3V DC	5V DC	3.3V DC
POWER (PER CHAIN)	20dBm @ 2.4GHz 19dBm @ 5GHz	20dBm @ 2.4GHz 19dBm @ 5GHz	20dBm @ 5GHz	20dBm @ 5GHz	23dBm @ 5GHz	20dBm @ 2.4GHz
POWER CONSUMPTION	9W (Max)	9W (Max)	8.5W (Max)	8.5W (Max)	13W (Max)	6.68W (Max)
CHANNEL SUPPORT	20 / 40 / 80 / 80+80MHz	20 / 40 / 80 / 80+80MHz	20 / 40 / 80 / 80+80MHz	20 / 40 / 80 / 80+80MHz	20 / 40 / 80 / 80+80MHz	20 / 40MHz
ANTENNA CONNECTOR	4x U.FL	4x U.FL	4x U.FL	4x U.FL	4x U.FL	4x U.FL
MODULATION TECHNIQUES	CCK, OFDM: BPSK, QPSK, 16-QAM, 64- QAM, 256-QAM	CCK, OFDM: BPSK, QPSK, 16-QAM, 64- QAM, 256-QAM	OFDM: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM	OFDM: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM	OFDM: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM	CCK, OFDM: BPSK, QPSK, 16-QAM, 64- QAM
OPERATING ENVIRONMENT	-40°C to 85°C	-20°C to 70°C	-20°C to 70°C	-40°C to 85°C	-20°C to 70°C	-20°C to 70°C
CERTIFICATION	REACH & RoHS Compliance	REACH & RoHS Compliance	FCC, CE, REACH & RoHS Compliance	FCC, CE, REACH & RoHS Compliance	REACH & RoHS Compliance	FCC, CE, REACH & RoHS Compliance
DIMENSIONS (W x H x D) in mm	29.9 x 50.8 x 12.9	29.9 x 50.8 x 12.9	29.9 x 50.8 x 12.9	29.9 x 50.8 x 12.9	73.7 x 51.0 x 5.5	29.9 x 50.8 x 12.9

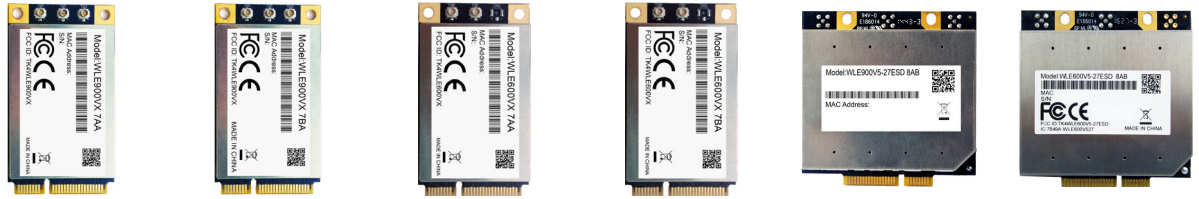
802.11ac Wave 2 (WiFi 5)



HARDWARE SPECIFICATIONS

TYPE OF CARD	Standard size 4 x 4 MU-MIMO 802.11ac Wave 2	Wide size 4 x 4 MU-MIMO 802.11n	Standard size 3 x 3 MU-MIMO 802.11ac Wave 2	Standard size 2 x 2 MU-MIMO 802.11ac Wave 2	Standard size 2 x 2 MU-MIMO 802.11ac Wave 2
MIMO	4 x 4	4 x 4	3 x 3	2 x 2	2 x 2
MODEL	WLEI216V2-20-I	WLEI200V2-22	WLEI000V5-20	WLE650V5-25A	WLE650V5-18A
CHIPSET	QCA9994	QCA9980	QCA9982	QCA9888	QCA9888
STANDARD	802.11b/g/n/ac	802.11b/g/n/ac	802.11a/n/ac	802.11a/n/ac	802.11a/n/ac
THEORETICAL RATE	800Mbps	600Mbps	1300Mbps	867Mbps	867Mbps
FORM FACTOR	Standard size	Wide size	Standard size	Standard size	Standard size
SPECTRUM	2.412 - 2.472GHz	2.412 - 2.472GHz	5.180 - 5.825GHz	5.180 - 5.825GHz	5.180 - 5.825GHz
REFERENCE DESIGN	✘	CUS260	✘	✘	✘
HOST INTERFACE	MiniPCIe 2.0	MiniPCIe 2.0	MiniPCIe 2.0	MiniPCIe 2.0	MiniPCIe 1.2
OPERATING VOLTAGE	3.3V DC	5V DC	3.3V DC	3.3V and 5V DC	3.3V DC
POWER (PER CHAIN)	20dBm @ 2.4GHz	22dBm @ 2.4GHz	20dBm @ 5GHz	25dBm @ 5GHz	18dBm @ 5GHz
POWER CONSUMPTION	6.68W (Max)	15W (Max)	8.5W (Max)	9.49W (Max)	5.6W (Max)
CHANNEL SUPPORT	20 / 40MHz	20 / 40MHz	20 / 40 / 80MHz	20 / 40 / 80 / 80+80MHz	20 / 40 / 80 / 80+80MHz
ANTENNA CONNECTOR	4x U.FL	8x U.FL	3x U.FL	2x MMCX	2x U.FL
MODULATION TECHNIQUES	CCIK, OFDM: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM	OFDM: BPSK, QPSK, 16-QAM, 64-QAM DSSS: DBPSK, DQPSK, CCK	OFDM: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM	OFDM: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM	BPSK, QPSK, DBPSK, DQPSK, 16-QAM, 64-QAM, 256-QAM
OPERATING ENVIRONMENT	-40°C to 85°C	-20°C to 70°C	-20°C to 70°C	-20°C to 70°C	-20°C to 70°C
CERTIFICATION	FCC, CE, REACH & RoHS Compliance	REACH & RoHS Compliance	REACH & RoHS Compliance	REACH & RoHS Compliance	REACH & RoHS Compliance
DIMENSIONS (W x H x D) in mm	29.9 x 50.8 x 12.9	70.3 x 51 x 5.5	29.9 x 50.8 x 12.7	29.9 x 50.8 x 12.2	29.9 x 50.8 x 10.4

802.11ac Wave 1 (WiFi 5)



HARDWARE SPECIFICATIONS

TYPE OF CARD	Standard size 3 x 3 MIMO 802.11ac	Standard size Industrial Grade 3 x 3 MIMO 802.11ac	Standard size 2 x 2 MIMO 802.11ac	Standard size Industrial Grade 2 x 2 MIMO 802.11ac	Wide card High Power 2 x 2 MIMO 802.11ac	Wide card High Power 2 x 2 MIMO 802.11ac
MIMO	3 x 3	3 x 3	2 x 2	2 x 2	3 x 3	2 x 2
MODEL	WLE900VX	WLE900VX-I	WLE600VX	WLE600VX-I	WLE900V5-27ESD	WLE600V5-27ESD
CHIPSET	QCA9880	QCA9890	QCA9882	QCA9892	QCA9880	QCA9882
STANDARD	802.11a/b/g/n/ac	802.11a/b/g/n/ac	802.11a/b/g/n/ac	802.11a/b/g/n/ac	802.11a/n/ac	802.11a/n/ac
THEORETICAL RATE	1300Mbps	1300Mbps	867Mbps	867Mbps	1300Mbps	867Mbps
FORM FACTOR	Standard size	Standard size	Standard size	Standard size	Wide size	Wide size
SPECTRUM	2.412 - 2.472GHz 5.180 - 5.825GHz	2.412 - 2.472GHz 4.920 - 5.825GHz	2.412 - 2.472GHz 5.180 - 5.825GHz	2.412 - 2.472GHz 4.920 - 5.825GHz	5.180 - 5.825GHz	5.180 - 5.825GHz
REFERENCE DESIGN	XB140	XB140	XB140	XB140	CUS223 (High Power)	✘
HOST INTERFACE	MiniPCIe 1.1	MiniPCIe 1.1	MiniPCIe 1.1	MiniPCIe 1.1	MiniPCIe 1.2	MiniPCIe 1.2
OPERATING VOLTAGE	3.3V DC	3.3V DC	3.3V DC	3.3V DC	3.3V and 5V DC	3.3V and 5V DC
POWER (PER CHAIN)	21dBm @ 2.4GHz 20dBm @ 5GHz	21dBm @ 2.4GHz 20dBm @ 5GHz	21dBm @ 2.4GHz 20dBm @ 5GHz	21dBm @ 2.4GHz 20dBm @ 5GHz	27dBm @ 5GHz	27dBm @ 5GHz
POWER CONSUMPTION	5W (Max)	5W (Max)	3.5W (Max)	3.5W (Max)	10W (Max)	7.5W (Max)
CHANNEL SUPPORT	20 / 40 / 80MHz	20 / 40 / 80MHz	20 / 40 / 80MHz	20 / 40 / 80MHz	20 / 40 / 80MHz	20 / 40 / 80MHz
ANTENNA CONNECTOR	3x U.FL	3x U.FL	2x U.FL	2x U.FL	3x MMCX	2x MMCX
MODULATION TECHNIQUES	OFDM: BPSK, QPSK, DBPSK, DQPSK, CCK, 16-QAM, 64-QAM, 256-QAM	OFDM: BPSK, QPSK, DBPSK, DQPSK, CCK, 16-QAM, 64-QAM, 256-QAM	OFDM: BPSK, QPSK, DBPSK, DQPSK, 16-QAM, 64-QAM, 256-QAM	OFDM: BPSK, QPSK, DBPSK, DQPSK, CCK, 16-QAM, 64-QAM, 256-QAM	BPSK, QPSK, DBPSK, DQPSK, 16-QAM, 64-QAM, 256-QAM	BPSK, QPSK, DBPSK, DQPSK, 16-QAM, 64-QAM, 256-QAM
OPERATING ENVIRONMENT	-20°C to 70°C	-40°C to 70°C*	-20°C to 70°C	-40°C to 70°C*	-20°C to 70°C with normal heatsink, -40°C to 80°C with large heatsink	-20°C to 70°C with normal heatsink, -40°C to 85°C with large heatsink
CERTIFICATION	FCC, CE, REACH & RoHS	FCC, CE, REACH & RoHS Compliance	FCC, CE, REACH & RoHS Compliance	FCC, CE, REACH & RoHS Compliance	REACH & RoHS Compliance	FCC, CE, IC, REACH & RoHS Compliance
DIMENSIONS (W x H x D) in mm	30 x 50.9 x 3.2	30 x 50.9 x 3.2	30 x 50.9 x 3.2	30 x 50.9 x 3.2	50 x 51 x 12.5 with normal heatsink, 95 x 51 x 13 with large heatsink	50 x 51 x 12.5 with normal heatsink, 95 x 51 x 13 with large heatsink

*The wireless module can operate up to 90°C. For long term reliability, it is recommended that a 20°C safety margin be maintained.

802.11n (WiFi 4)



HARDWARE SPECIFICATIONS

TYPE OF CARD	Standard size 2 x 2 MIMO 802.11n	Half size 2 x 2 MIMO 802.11n
MIMO	2 x 2	2 x 2
MODEL	WLE200NX	WLE200N2
CHIPSET	AR9280	AR9287
STANDARD	802.11a/b/g/n	802.11b/g/n
THEORETICAL RATE	300Mbps	300Mbps
FORM FACTOR	Standard size	Half size
SPECTRUM	2.412 - 2.484GHz 5.150 - 5.875GHz	2.412 - 2.484GHz
REFERENCE DESIGN	XB92	HB97
HOST INTERFACE	MiniPCIe 1.1	MiniPCIe 1.1
OPERATING VOLTAGE	3.3V DC	3.3V DC
POWER (PER CHAIN)	18dBm @ 2.4GHz 17dBm @ 5GHz	16dBm @ 2.4GHz
POWER CONSUMPTION	3.7W (Max)	1.9W
CHANNEL SUPPORT	20 / 40MHz	20 / 40MHz
ANTENNA CONNECTOR	2x U.FL	2x U.FL
MODULATION TECHNIQUES	OFDM: BPSK, QPSK, 16-QAM, 64-QAM	OFDM: BPSK, QPSK, 16-QAM, 64-QAM DSSS: DBPSK, DQPSK, CCK
OPERATING ENVIRONMENT	-20°C to 70°C	-20°C to 70°C
CERTIFICATION	FCC, CE, REACH & RoHS Compliance	IC, CE, FCC, REACH & RoHS Compliance
DIMENSIONS (W x H x D) in mm	30 x 50.9 x 3.2	30 x 26.8 x 3.2