

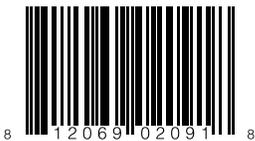
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E61 Class, Series F

MPN

AFX-QCA6174-NC

UPC



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PRODUCT PAGE

EVALUATION / RFQ



Request Now

SAMPLES

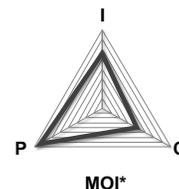


@ OxfordTEC

867Mbps Two Chain, Dual Band 802.11ac/abgn WLAN combo with Bluetooth v5.0 Low Energy, M.2 - 2230 Socketed NGFF Module

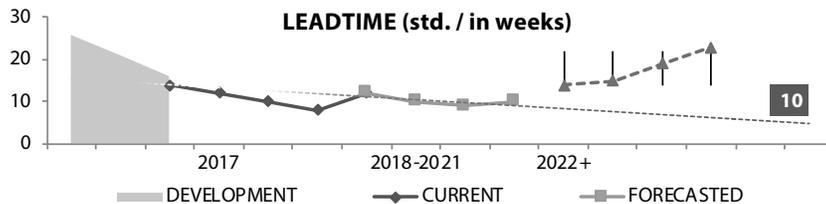
a.k.a. QUALCOMM Atheros Reference Design QCNFA364A (Rome)

DATASHEET



B	B	B	3	4	8 weeks
TECHPOINT	LIFESPOT	VAROD	VERTICALS	DCO	ELT

* Page 2 for key legend. Commercial data refresh: August 2019



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Revision History

Releases	Date	Notes	Prepared	Approved
Version 0.9	2017/02/20	Final Draft Version	Joanna	LTu
Version 1.0	2019/01/10	Label information updated	A Stamatis	LTu
Version 1.1	2019/08/05	Revised pictures and minor corrections	Frank K.	LTu
Version 1.2	2019/08/29	BT5.0 compliance, refreshed descriptives	Andy C.	LTu
Version 1.3	2019/10/22	Refreshed pictures, added COO & MLS	Frank K.	LTu

* Commercial Key Legend

Indicators that assess the specific product for its position in the technology curve and the supply chain responsiveness it enjoys. They combine an inner-outer view: both from outside factors and from internal corporate and production support.

- MOI [Market Orientation Index]** A value calculated from the grading of the factors below. Used as a rule-of-thumb to aid design-in and procurement evaluation. MOI depicts the present product affinity to Innovation (I), Customer Empathy (C) and Price Focus (P).
- TECHPOINT** The position of the product within the specific technology-innovation curve for its class. VALUES: Advanced (A), Barring (B), Common (C), Dissolving (D).
- LIFESPOT** Estimated lifespan indicator. VALUES: Agonist (A), Bold (B), Current (C), Distressed (D); the earlier the letter the earlier the position in the specific product lifecycle.
- VAROD [Variants On-Demand]** An indicator of the depth and difficulties On-Demand product variations can reach and encounter. VALUES: Auxiliary (A), Basic (B), Core (C), Deep (D).
- VERTICALS** It is an index of the spread of product applications in different vertical markets. VALUES: 1 to 4; the more the target markets the higher the number, the less the product specificity to markets.
- DCO [Design Cost Orientation]** Commodity index related to the cost point for the product’s design conception. VALUES: 1 to 4; the higher the number the more cost aware is the core design.
- ELT [Effective Lead Time]** Adjusted lead-time in weeks. This is a compound value based on the timeframe for the fulfillment of the 90% of unscheduled orders received accounting also for the industrial lead-time and internal inventory buffering. VALUE: number of ELT weeks.



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E61 CLASS, SERIES F	1
867MBPS TWO CHAIN, DUAL BAND 802.11AC/ABGN WLAN COMBO WITH BLUETOOTH V5.0 LOW ENERGY, M.2 - 2230 SOCKETED NGFF MODULE	1
REVISION HISTORY	2
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11AC Wave2 Dual Band (DB) + BT5.0 Module: the AFX-QCA6174 (E61F) Series is powered by a single-die combo Qualcomm chipset that features wireless local area network (WLAN) connectivity, conformant to the IEEE 802.11ac/abgn WiFi standard in coexistence with BT 5.0. It a fully-featured, cost-efficient solution in a small footprint and low z-height design that can be ideally suited for demanding applications. Connect two antennas for high performance throughput upto 867Mbps and Wave2 MU-MIMO wireless links.

World Compliance: the E61F Series comes with module-level world regulatory approvals, full compatibility with the latest industry standards, RoHS3 and material safety declarations.

As a dedicated Qualcomm Licensee, we provide tightly controlled product guidance to fully and reliably leverage approvals and product materials. Utilize our in-house regulatory expertise to back your certification strategy, specification management, component selection, design-in checks, SKU consolidation, system approvals and to find beneficial aid when certification extensions might be required. Benefit from design-to-market and regulatory lifecycle support.

Optimized power consumption: both WLAN and BT function with saving modes implemented, like MIMO-PS, UAPSD, Green-Tx, host power offload, Packet-power-save (PHY-NAP), early beacon termination. The module is also using low power PCIe 2.1 communication interface protocols to enhance power conservation.

1. Top Features



- IEEE 802.11ac Wave2 Dual Band, highly integrated with BT5.0
- Supports BT-WLAN coexistence and ISM-LTE coexistence
- Support for DirectConnect / Wi-Fi CERTIFIED Direct® and Miracast®
- Modular World Regulatory Certification (50+ domains)



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2. Specifications

SOLUTION DESIGN	Chipset	Qualcomm Atheros QCA6174A-5
	Standard	IEEE 802.11 a/b/g/n/ac Wi-Fi Bluetooth 5.0 with BLE and ANT+, backwards compatible with BT4.x, BT3.x+HS, BT2.x+EDR
	Industrial Reference	Qualcomm Atheros reference design NFA364A
APPEARANCE	Communications Interface	PCI Express Standard 2.1 host I/O Bluetooth via USB 1.1 with connections mapped to assigned PCIE PINs
	Form Factor	M.2 / NGFF (New Generation Form Factor), 2230 (22mm x 30mm) – Small size card
ANTENNA	Configuration	Two Spatial Streams (2 chains), 2x2, 2 Connectors, MU-MIMO Wave2 Client Compliant with Interference Suppression
	Type	Two on board HSC / IPEX (IPX) MHF4 receptacle coaxial connectors: Rx/Tx with WLAN and BT co-existence
WIRELESS PARAMETERS	Frequency Band	WLAN: 2.4 GHz ISM Bands 2.412-2.472 GHz, 2.484 GHz 5.15-5.25 GHz (FCC UNII-low band) for US/Canada, Japan and Europe 5.25-5.35 GHz (FCC UNII-middle band) for US/Canada and Europe 5.47-5.725 GHz for Europe 5.725-5.825 GHz (FCC UNII-high band) for US/Canada * 4.9 Ghz bands are supported; calibration on request. BT: 2402MHz~2480MHz
	Data Transfer Rates	WLAN 2.4GHz: 11n: Up to 150Mbps (PHY dynamic) 11g: Up to 54Mbps (PHY dynamic) 11b: Up to 11Mbps (PHY dynamic) WLAN 5GHz: 11ac: Up to 867Mbps (PHY dynamic) (UDP 362, TCP 304) 11n: Up to 150Mbps (PHY dynamic) 11a: Up to 54Mbps (PHY dynamic) BT: 1 Mbps, 2Mbps and Up to 3Mbps EDR)
	Media Access Control	CSMA/CA with ACK
	Channel	2.4GHz: 1-13 (14 only for Japan) 5GHz: 36-48 149-165 Ultra-Fast Channel Switch (FTS): 100us within and 150us across bands Optimized Multi-channel concurrency
	Bandwidth Support	5Mhz, 10Mhz, 20Mhz 40Mhz, 80Mhz
	Channel Spacing	5MHz



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	Spreading / Modulation	WLAN: 802.11ac/g/n: OFDM (BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM) 802.11b: CCK (11, 5.5Mbps), DQPSK (2Mbps), DBPSK (1Mbps)																														
		BT: Header GFSK, Payload 2M: 4-DQPSK, Payload 3M: 8DPSK																														
	RF Output Power (Typical - Conductive)	<table border="0"> <tr> <td>802.11a:</td> <td>15.5 dBm at 54M</td> <td>±2 dBm</td> </tr> <tr> <td>802.11b:</td> <td>18 dBm at 11M</td> <td>±2 dBm</td> </tr> <tr> <td>802.11g:</td> <td>15.5 dBm at 54M</td> <td>±2 dBm</td> </tr> <tr> <td>802.11n 5G HT20 :</td> <td>17 dBm at MCS0 15 dBm at MCS7</td> <td>±2dBm</td> </tr> <tr> <td>802.11n 5G HT40 :</td> <td>16 dBm at MCS0 14 dBm at MCS7</td> <td>±2dBm</td> </tr> <tr> <td>802.11n 2.4G HT20 :</td> <td>18 dBm at MCS0 16 dBm at MCS7</td> <td>±2dBm</td> </tr> <tr> <td>802.11n 2.4G HT40 :</td> <td>17 dBm at MCS0 15 dBm at MCS7</td> <td>±2dBm</td> </tr> <tr> <td>802.11ac 5G VHT20 :</td> <td>15 dBm at MCS0 12 dBm at MCS8</td> <td>±2dBm</td> </tr> <tr> <td>802.11ac 5G VHT40 :</td> <td>14 dBm at MCS0 11 dBm at MCS8</td> <td>±2dBm</td> </tr> <tr> <td>802.11ac 5G VHT80 :</td> <td>14 dBm at MCS0 11 dBm at MCS8</td> <td>±2dBm</td> </tr> </table>	802.11a:	15.5 dBm at 54M	±2 dBm	802.11b:	18 dBm at 11M	±2 dBm	802.11g:	15.5 dBm at 54M	±2 dBm	802.11n 5G HT20 :	17 dBm at MCS0 15 dBm at MCS7	±2dBm	802.11n 5G HT40 :	16 dBm at MCS0 14 dBm at MCS7	±2dBm	802.11n 2.4G HT20 :	18 dBm at MCS0 16 dBm at MCS7	±2dBm	802.11n 2.4G HT40 :	17 dBm at MCS0 15 dBm at MCS7	±2dBm	802.11ac 5G VHT20 :	15 dBm at MCS0 12 dBm at MCS8	±2dBm	802.11ac 5G VHT40 :	14 dBm at MCS0 11 dBm at MCS8	±2dBm	802.11ac 5G VHT80 :	14 dBm at MCS0 11 dBm at MCS8	±2dBm
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802.11ac 5G VHT80 :	14 dBm at MCS0 11 dBm at MCS8	±2dBm																														
	BT: (Class 2 Device) +2 dBm ≤ Output Power ≤ +6 dBm																															
	RF Receive Sensitivity (Typical - Conductive)	<table border="0"> <tr> <td>802.11a:</td> <td>54M less than 74 dBm</td> <td></td> </tr> <tr> <td>802.11b:</td> <td>11M less than 89 dBm</td> <td></td> </tr> <tr> <td>802.11g:</td> <td>54M less than 75 dBm</td> <td></td> </tr> <tr> <td>802.11n 2.4G:</td> <td>HT20 MCS7 less than 75 dBm</td> <td>92 dBm at MCS0</td> </tr> <tr> <td></td> <td>HT40 MCS7 less than 72 dBm</td> <td>89 dBm at MCS0</td> </tr> <tr> <td>802.11n 5G:</td> <td>HT20 MCS7 less than 74 dBm</td> <td>91 dBm at MCS0</td> </tr> <tr> <td></td> <td>HT40 MCS7 less than 71 dBm</td> <td>88 dBm at MCS0</td> </tr> <tr> <td>802.11ac 5G:</td> <td>HT80 MCS9 less than 68 dBm</td> <td>85 dBm at MCS0</td> </tr> </table>	802.11a:	54M less than 74 dBm		802.11b:	11M less than 89 dBm		802.11g:	54M less than 75 dBm		802.11n 2.4G:	HT20 MCS7 less than 75 dBm	92 dBm at MCS0		HT40 MCS7 less than 72 dBm	89 dBm at MCS0	802.11n 5G:	HT20 MCS7 less than 74 dBm	91 dBm at MCS0		HT40 MCS7 less than 71 dBm	88 dBm at MCS0	802.11ac 5G:	HT80 MCS9 less than 68 dBm	85 dBm at MCS0						
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802.11n 5G:	HT20 MCS7 less than 74 dBm	91 dBm at MCS0																														
	HT40 MCS7 less than 71 dBm	88 dBm at MCS0																														
802.11ac 5G:	HT80 MCS9 less than 68 dBm	85 dBm at MCS0																														
	BT: BER < 0.1% (Anritsu 8852B Tx -83Bm)																															
	Open Space: ~300 m; Indoor: ~100 m (Coverage vary according to environment, antenna and topography)																															
	Wireless Security	WEP 64-bit and 128-bit encryption WPA / WPA2 (Wi-Fi Protected Access), WAPI / WAPI full rate AES GCMP / CCMP, TKIP 802.1x																														
ADVANCED FEATURES	MU-MIMO Client, 11ac TxBF (Transmission Beamforming), STBC, Superior BT/WIFI Coexistence, LTE Coexistence, Spectrum Analysis, Channel Agility, Locationing, Traffic Classification, Congestion Control, Ultra-low Power Modes.																															
WORKING MODES	Infrastructure, Client, Bridge, Ad-hoc, BT Stack Modes																															
SAFETY, EMISSION & REGULATORY	C Pre-scan/scan reports on request following Atheros NFA364A certifications. Almost 50 domain modular certification available, including DFS, FCC, CE RED, IC and TELEC (optional MKK). Compliant with RoHS3.																															
PROTOCOLS	IEEE WLAN Network	802.11ac, 802.11n , 802.11g, 802.11b, 802.11a, 802.11d, 802.11e, 802.11h, 802.11i, 802.11j, 802.11k, 802.11r, 802.11u, 802.11v, 802.11w, 802.11z and 802.11ae																														
	Other Standards	Universal Serial Bus (USB) 1.1 Bluetooth 5.0 Low Energy (BLE), BT 5.x ANT+, Bluetooth High Speed (BHS), Bluetooth Enhanced Data Rate (EDR)																														



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	Industry Standards	Wi-Fi Alliance CERTIFIED: Direct®, Miracast®, WMM, TDLS Hotspot 2.0, WHQL, Microsoft WCN Router
HOST SYSTEM REQUIREMENTS	Operating System	WLAN: Linux, Linux Open Source (Kernel v4.0+), Windows (32 & 64 bits) XP/Vista/7/8/10, OSX, Chrome OS (Android) Bluetooth: Any upper layer Bluetooth stack. GNU/Linux BlueZ as the basis for its Bluetooth host stack.
ENVIRONMENT	Operating Temperature	-10° ~ +70° Celsius
	Storage Temperature	-45° ~ +85° Celsius
	Operating Humidity	10%~95% non-condensing
	Storage Humidity	10%~95% non-condensing
ELECTRICAL	I/O Voltage	3.3V +/-10%
	Power Consumption	WLAN: Transmit Packet Test HT 40*: 405 mA Receiver Packet Test HT 40*: 200 mA * Measurements with BT disabled, on DC battery power, Win7 x64 system. BT: Transmit Packet: 64.5 mA Receiver Packet: 22.5 mA
MECHANICAL	Dimensions	22mm x 30mm x 2.0mm (+/-5mm with shielding)
	Weight	2.5 g
PACKAGING	Packing style	ESD Sleeves in Carton Bulk Package
	Package Contents	AFX-QCA6174-NC IEEE 802.11 ac/abgn+BT5.0 NGFF module

3. Ratings / Characteristics

4-1. Absolute Maximum Ratings

Symbol	Parameter	Max. Rating	Unit
V _{dd33}	Maximum I/O supply voltage	3.465	V
R _{Fin}	Maximum RF input (reference to 50 Ω)	+10	dBm
T _{store}	Storage temperature	-45~+85	°C

4-2. Recommended Operating Conditions

Symbol	Parameter	Rating	Unit
V _{dd33}	I/O voltage	3.135~3.465	V

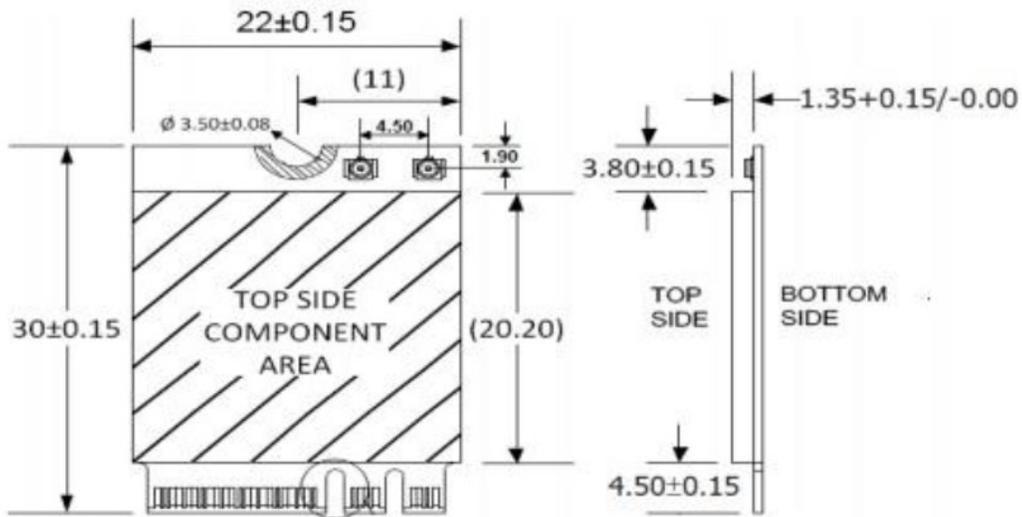


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4-3. GPIO Interface Characteristics

Signal Name (To chip GPIO PIN)	Mini PCI-E PIN	Type	Driver	PU/DPResistance
WLAN_LED	6	O	24 mA (Max)	None-PU
WLAN_RF_KILL	56	I	—	100 KΩ PU

4. Mechanical Drawing

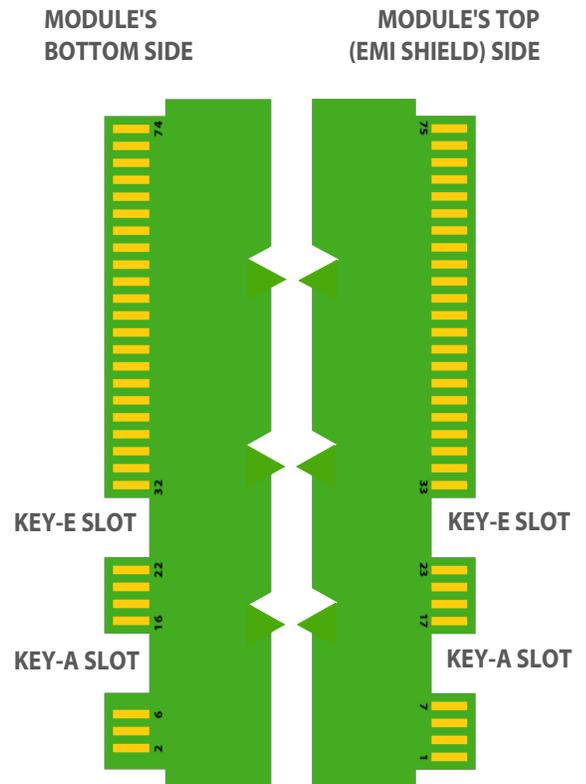


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5. Connector Pin-out Definitions

Pin #	Definition	Basic Description	Type
1	GND	Ground	GND
2	VCC_3.3V	3.3V Power Supply	Power
3	USB_DP(BT)	USB Differential signal (No connect. Should be left open.)	I/O
4	VCC_3.3V	3.3V Power Supply	Power
5	USB_DN(BT)	USB Differential signal (No connect. Should be left open.)	I/O
6	WLAN_LED	Active signal. The signal is used to provide WLAN status indicators via LED	Output
7	GND	Ground	GND
16	BT_LED	Bluetooth PCM_CLK signal	Input
18	GND	Ground	GND
33	GND	Ground	GND
35	PCIE_RX_P	Differential receive	AI
37	PCIE_RX_N	Differential receive	AI
39	GND	Ground	GND
41	PCIE_TX_P	Differential transmit	AO
43	PCIE_TX_N	Differential transmit	AO
45	GND	Ground	GND
46	COEX1	LTE co-existence signal	NC
47	PCIE_REFCLK_P	PCIE Reference Clock	AI
48	COEX2	LTE co-existence signal	NC
49	PCIE_REFCLK_N	PCIE Reference Clock	AI
51	GND	Ground	GND
52	PCIE_RST_L	PCI Express reset with weak pull-down	PD
53	PCIE_CLKREQ_L	Reference to clock request	OD
54	BT_RF_KILL	Bluetooth disable control	Input
55	PCIE_WAKE_L	PCIe Wake	YES
56	WLAN_RF_KILL	WLAN Disable Control. Low Disable WLAN	Input
57	GND	Ground	GND

Interface type	Bus Signaling	Standard
NGFF Edge Connector	PCIe USB 1.1	PCI-SIG v1.1 PCI-SIG v1.1

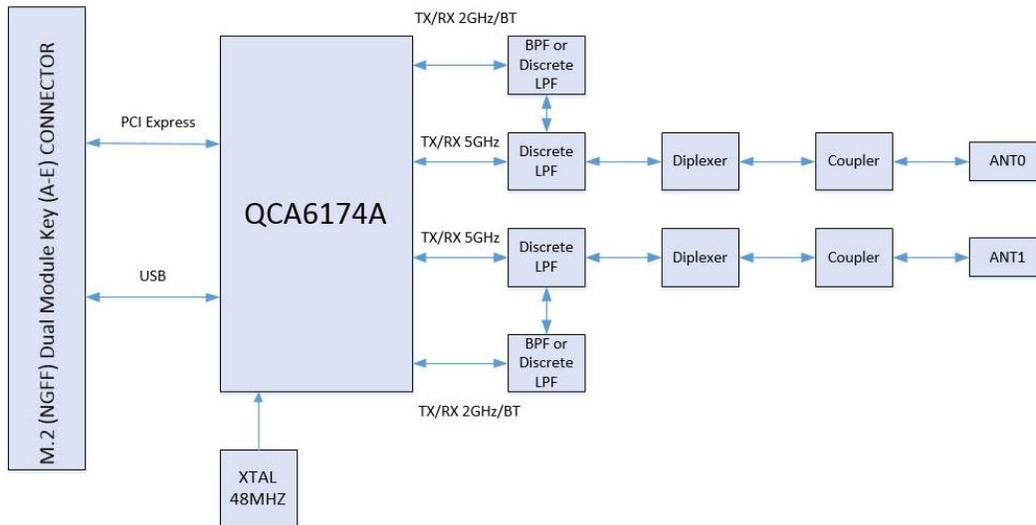


*PD: Input signals with weak internal pull-down, to prevent signals from floating when left open



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6. Block diagram



7. Environmental Performance Qualification

Throughput test at controlled thermal conditions with 70dB attenuation: PENDING

8. Standard Domain Code & Identification

The Regulatory Domain pre-programmed as standard is 0x6A [wide open world mode].
 Other regulatory domain codes can be pre-programmed on-request at production batch level.
 Implemented as standard are identifiers following Qualcomm Atheros NFA435 reference design:

	Vendor ID (VID)	Subsystem Vendor ID (SVID)	Device ID (DID)	Subsystem ID (SSID)
STANDARD WLAN	0x168C	0x168C	0x00	0x31

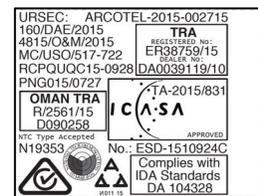


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9. Product Label

10-1. Front (Shield) Side Label

Standard label is shown here. It pull-opens to reveal full content and it does include the required marking for the following regulatory areas: FCC (USA), ETSI (Europe), KCC (South Korea), TELEC (Japan), NCC (Taiwan), Industry Canada, China MIIT, ETA (India), TRA (UAE), ANATEL (Brazil), CNC (Argentina), RCPATAR (Mexico), ICASA (South Africa), C-TICK (Australia & New Zealand), SDPPI (Indonesia), NTC (Philippines), GOST-R (Russia), TKC (Ukraine), PTA (Pakistan), NTRA (Egypt), MOC 51-31312 (Israel), plus all the further countries requiring identification on the module level.

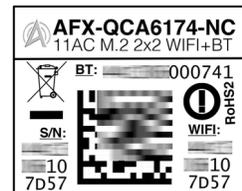


10-2. Back (Flat) Side Regulatory Labels

Standard label is shown here. It includes the required marking for the following regulatory areas: EU Safety & Environmental.

Wireless LAN NIC MAC ID label (human legible and barcode).

Serial Number label (human legible and barcode) plus Variant Number.



10-3. On-Demand Labeling

Labels can be tailored to report customer's part number and regulatory compliance following Qualcomm Atheros NFA435 reference design certifications for any of the countries and domains required.

10. ESD Processes

Serial Number label (human legible and barcode) plus Variant Number.
 See Notices appended.



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11. Standard Packaging, Storage & Shipping

ESD Sleeve, Inner Box & Outer Carton level standard packing schematic * :



	Module in ESD Sleeve	Inner Box Kit (K)	Master Carton (M)
CONTENT (UNITS)	1	60	960
INVENTORY SKU	AFX-QCA6174-NC	AFX-QCA6174-NC -K	AFX-QCA6174-NC -M
OUTER DIMENSIONS	70 x 60 x 1.5 mm	204 x 165 x 65 mm	430 x 350 x 285 mm
GROSS WEIGHT	2.2 gr	230 gr	4000 gr
PICK & PACK METHOD	Padded envelope or carton box depending on quantity. Padded & separated.	In outer carton packaging.	
PACKAGING COMPLIANCE **	ANSI/ESD S20.20, IEC 61340-5-1, MLS2, RoHS3	MLS1, RoHS3	MLS1, RoHS3
HTS CODE (HS)	8517.62	8517.62	8517.62
NAFTA / ECCN	On request	On request	On request
COUNTRY OF ORIGIN	TAIWAN (R.O.C)	TAIWAN (R.O.C)	TAIWAN (R.O.C)

* Packaging modality and artwork can be designed as per customer’s requirements.

** The Packaging modality and the selection of its materials is made with environmental responsibility and commitment to resource preservation. Please reuse and recycle where possible.

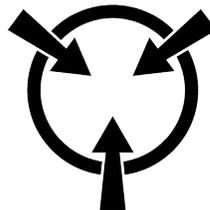
The AFX-QCA6174 constitutes a sensitive electronic device and caution is required when handling it. ESD handling, shipment and storage notices apply:



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**DO NOT OPEN OR
HANDLE EXCEPT AT A
STATIC-FREE
WORKSTATION**



**DO NOT SHIP OR STORE NEAR
STRONG ELECTROSTATIC,
ELECTROMAGNETIC OR
RADIOACTIVE FIELDS**

12. Ordering information:

	Ordering P/N	Variant IDs	Description
STANDARD PRODUCT	AFX-QCA6174-NC	C / 00	- Standard product - Standard packaging



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13. NOTICES

STORAGE: The product shall be stored without opening the packing according to storage environmental conditions noted within this datasheet. - The product shall be stored in non corrosive gas (Cl₂, NH₃, SO₂, Nox, etc.). - Any excess mechanical shock including, but not limited to, sticking the packing materials by sharp object and dropping the product, shall not be applied in order not to damage the packing materials.

SHELVE LIFE: Product left more than two years after reception needs to be confirmed to its specifications before use.

HANDLING: Be careful in handling or transporting products because excessive stress or mechanical shock may break products. - Handle with care if products may have cracks or damages on their terminals, the characteristics of products may change. Do not touch products with bare hands as such may result in electrostatic damage. - Since the application of static electricity or overvoltage may cause defect in the product or deterioration of its reliability, caution must be taken against exposure to any static electricity generated by electrified items such as workbenches, soldering irons, tools, carrying containers, etc.

LAND PATTERN & DIMENSIONS: All the ground terminals should be connected to the ground patterns. Furthermore, the ground pattern should be provided between IN and OUT terminals. Please refer to the specifications for the standard land dimensions.

MECHANICAL PLACEMENT: When mounting products connected to other components, products may be stressed and broken by uneven forces. To prevent products from damages, be sure to follow the specifications for the tools and interfaces being used.

CLEANING: Since this Product is Moisture Sensitive, any cleaning is not permitted.

OPERATIONAL ENVIRONMENTAL CONDITIONS: Products are designed to work for electronic products under normal environmental conditions (ambient temperature, humidity and pressure). If products are used under the following circumstances, it may damage products and leakage of electricity and abnormal temperature may occur:

- In an atmosphere containing corrosive gasses (Cl₂, NH₃, SO_x, NO_x) or combustible and volatile gases - Dusty place - Direct sunlight place - Water splashing place - Humid place where water condenses - Freezing place - etc.

If there are possibilities for products to be used under the preceding clause, consult with AIRETOS before actual use. As it might be a cause of degradation or destruction to apply static electricity to products, do not apply static electricity or excessive voltage while assembling and measuring.

INPUT POWER CAPACITY: Products shall be used in the input power capacity as specified in this specification. Discuss with AIRETOS beforehand, in need that the components are used beyond such input power capacity range.

LIMITATION OF APPLICATIONS: The product is designed and manufactured for consumer application only and is not available for any application listed below which requires especially high reliability for the prevention of such defect as may directly cause damage to the third party's life, body or property.

- Aircraft equipment - Aerospace equipment - Undersea equipment - Power plant control equipment - Medical equipment - Transportation equipment (vehicles, trains, ships, etc.) - Traffic signal equipment - Disaster prevention / crime prevention equipment - Data-processing equipment - Application of similar complexity and/ or reliability requirements to the applications listed in the above.

In case the product is to be used in equipment or electric circuit that requires high safety or reliability function or performances, sufficient reliability evaluation check for safety shall be performed before commercial shipment and moreover, due consideration to install a protective circuit is strongly recommended at customer's design stage. Please provide and appropriate fail-safe function on your product to prevent any damages that may be caused by the abnormal function or the failure of our product.

QUALITY CONTROL: Testing and other quality control techniques are used to the extent AIRETOS deems necessary. Unless mandated by government requirements, AIRETOS does not necessarily test all parameters of each product.

LIFECYCLE: Please note that we may discontinue the manufacture of products, due to reasons such as end of supply of materials and/or components from our suppliers.

CONFORMITY: Please make sure that your product has been evaluated and confirmed against your specifications when our product is mounted to your product. Please conduct validation and verification of the products in actual condition of mounting and operating environment before commercial shipment of the equipment. All the items and parameters in this product specification have been prescribed on the premise that our product is used for the purpose, under the condition and in the environment agreed upon between you and us. You are requested not to use our product deviating from such agreement. We consider it not appropriate to include other terms and conditions for transaction warranty in product specifications, drawings or other technical documents. Therefore, even if your original part of this product specification includes such terms and conditions as warranty clause, product liability clause, or intellectual property infringement liability clause, we are not able to accept such terms and conditions in this product specification unless they are based on the governmental regulation or what we have agreed otherwise in a separate contact. We would like to suggest that you propose to discuss them under negotiation of contract.

DISCLAIMER: Please note that the only warranty that AIRETOS (DBA part of the VoxMicro LTD Group) provides regarding the products is its conformance to the specifications provided herein. Accordingly, AIRETOS shall not be responsible for any defects in products or equipment incorporating such products, which are caused under the conditions other than those specified in this specification.

AIRETOS HEREBY DISCLAIMS ALL OTHER WARRANTIES REGARDING THE PRODUCTS, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, THAT THEY ARE DEFECT-FREE, OR AGAINST INFRINGEMENT OF INTELLECTUAL PROPERTY RIGHTS. YOU AGREE TO INDEMNIFY AND DEFEND AIRETOS AND ITS AFFILIATES AGAINST ALL CLAIMS, DAMAGES, COSTS, AND EXPENSES THAT MAY BE INCURRED, INCLUDING WITHOUT LIMITATION, ATTORNEY FEES AND COSTS, DUE TO THE USE OF PRODUCTS.

AIRETOS's liability under this warranty shall be limited to products that are returned during the warranty period to the address designated by AIRETOS and that are determined by AIRETOS not to conform to such warranty. If AIRETOS elects to repair or replace such products, AIRETOS shall have reasonable time to repair such products or provide replacements. Repaired products shall be warranted for the remainder of the original warranty period. Replaced products shall be warranted for a new full warranty period.

For avoidance of doubt, AIRETOS shall not be liable for any defects that are caused by neglect, misuse or mistreatment by an entity other than AIRETOS including improper installation or testing, or for any products that have been altered or modified in any way by an entity other than AIRETOS. Moreover, AIRETOS shall not be liable for any defects that result from your or third party's design, specifications or instructions for such products.



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