



June 7, 2012

Federal Communications Commission
Office of Engineering and Technology Laboratory Division
7435 Oakland Mills Road
Columbia, MD 21046-1609

Subject: Request for Modular Approval FCC ID: PPD-WCN3660

Qualcomm Atheros respectfully requests that the WCN3660 802.11n + BT Adapter be certified as a Limited Split-Module per the provisions of FCC Rule Section 15.212 and OET Knowledge Database (KDB) Number 996369 D01 Module Certification Guide v01r03.

The device meets each of the applicable requirements in Rule Section 15.212(a)(1) and (a)(2), as detailed below:

General Module Requirements of Section 15.212(a)(1)

i. The radio elements must have the radio frequency circuitry shielded;

WCN3660 includes an RF shield. Please refer to the photos associated with the application.

ii. The module must have buffered modulation/data inputs;

WCN3660 has buffered modulation/data inputs. This is ensured by the host processor.

iii. The module must contain power supply regulation on the module;

WCN3660 includes an LDO voltage regulator on board.

iv. The module must contain a permanently attached antenna, or contain a unique antenna connector, and be marketed and operated only with specific antenna(s), per Sections 15.203, 15.204(b), 15.204(c), 15.212(a), 2.929(b);

Host systems using WCN3660 will include a unique antenna connector. This is made clear in the Integrator Instructions provided by Qualcomm Atheros

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v. The module must demonstrate compliance in a stand-alone configuration;

WCN3660 was tested in a stand-alone configuration and demonstrated compliance. Please refer to the test report, including the test setup photos.

vi. The module must be labeled with its permanently affixed FCC ID label;

WCN366 will have an FCC ID label permanently affixed per the submitted labeling exhibit.

vii. The module must comply with all specific rules applicable to the transmitter including all the conditions provided in the integration instructions by the grantee;

Qualcomm Atheros will advise, assist and monitor the activities of each system integrator to ensure that their end systems comply with the FCC's Part 15 rules. The process that Qualcomm Atheros will follow is well documented in the Integrator Instructions.

viii. The module must comply with RF exposure requirements (see discussions below);

The module complies with FCC RF exposure requirements as a Mobile category device as documented in the submitted test reports. In addition, the grantee will ensure that each host system undergoes applicable RF evaluation and permissive change submission, including evaluation of all colocated radios, as applicable.

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Additional Split-Module Requirements of Section 15.212(a)(2)

i. Only the radio front-end must be shielded. The interface between the split sections of the modular system must be digital, with a minimum signaling amplitude of 150 mV peak-to-peak;

The radio front end (WCN3660) is shielded as noted above.

The interface between the split sections is comprised of:

- **Digital lines between the radio front end and host processor which control radio functions AND**
- **Two differential pair, analog I/Q lines which send/receive baseband data between the radio front end and host processor. The signaling amplitude of these lines is less than 150mV peak-to-peak.**

Since an alternative to this clause has been implemented, Limited Split-Modular approval is applicable and compliance of host systems with Part 15 rules will be ensured as documented in the Integrator Instructions.

ii. Control information and other data may be exchanged between the transmitter control elements and radio front-end;

As detailed in item (i) directly above, the interface between the radio front end and host processor includes I/Q baseband data and control signaling.

iii. The sections of a split-modular transmitter are installed for testing on a host platform that is representative of the platform(s) intended for use. It is the responsibility of the applicant to demonstrate the appropriateness of the test platform for compliance to a widespread range of common host platforms, i.e. not restricted to a specific host. For example, compliance may be demonstrated on an open (not within a specific host enclosure) reference design board to demonstrate conformity independent of the host environment. Therefore, note that when compliance is tested with the module enclosed in a specific host, then the split module must be limited;

The WCN3660 was tested in a standalone configuration (outside of a host) to demonstrate conformity independent of the host environment. In addition, each host system will be tested for compliance with Part 15 radiated emissions as described in the Integrator Instructions.

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iv. The radio front-end and transmitter control element must be certified as amalgamated elements by the responsible party. The responsible party must demonstrate the authentication method to guarantee that only this coupling will operate the radio. Manufacturers may use means including, but not limited to, coding in hardware and electronic signatures in software to meet these requirements, and must describe the methods in their application for equipment authorization;

The WCN3660 split module is designed to operate using only Qualcomm host processors. Proprietary microcode and architecture makes it impossible for non-Qualcomm processors to function with the WCN3660 radio front end. Qualcomm Atheros only offers for sale the WCN3660 and host processors pursuant to a license agreement with a limited number of customers/integrators. The module and host processors are not available for sale through any other channel.

Qualcomm Atheros is aware of the applicable FCC requirements and works directly with each system integrator to ensure only authorized combinations of Qualcomm host processors are implemented with Qualcomm radio front end modules.

Regards,

A handwritten signature in black ink that reads 'Michael Green'.

Michael Green / Manager, Global Product Compliance

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