

## Regulatory Requirements

You are required to obtain regulatory approval of products that integrate the Boomer II OEM wireless modem into a host device or terminal. The specific details for achieving regulatory approval vary from country to country.

Worldwide, government regulatory agencies for communications have established standards and requirements for products that incorporate fixed, mobile, and portable radio transmitters. The Boomer-II OEM modem is certified in specific regional markets to levels of compliance appropriate for an integrated device.

### Modem Only Certification

The non-integrated modem meets the regulatory requirements for the countries listed below (but related certification does not necessarily exist):

Country	Regulation Agency	Modem Model	Related Requirements	Approval Number
Australia	Australian Communications Authority (ACA)	Boomer-II	FCC compliance is accepted	In process
Canada	Industry Canada (IC)	Boomer-II	RSS119 – Radio Performance	In process
United States	Federal Communications Commission (FCC)	Boomer-II	FCC CFR Title 47, Part 15 Conducted and Emitted Radiation Class B FCC Part 90 – Radio Performance	In process

### Full Product Certification

As the integrator, you must determine what additional specific regulatory requirements are required for the country in which your product is sold. This means, your product must be individually certified, even though the Boomer II OEM Modem Module may already be approved. The certification process includes submittal of prototype products and acceptable test results.

Integrators can use Boomer II OEM Modem Module certifications to facilitate this integrated-product approval process. Upon request, Wavenet can send copies of the certifications and related information.

Be prepared for the certification process for your product to take from a few weeks to several months. Its duration can be affected by safety requirements, the type of product, and the country in which you are seeking approval.

### Country Requirements

The country requirements given below are provided as a general guide to the certification processes in the regions and countries given. You are strongly encouraged to use the services of a consultant or a full-

service test house if you have limited expertise in meeting the regulatory requirements of a specific country.

All certification tests must be made by a qualified laboratory to ensure that the equipment complies with the applicable technical standards.

### United States of America

The Federal Communications Commission (FCC) requires application for certification of digital devices in accordance with CFR Title 47, Part 2 and Part 15. A Wavenet Boomer-II OEM Modem Module is part of a complete system and certain testing is necessary for the integrated product.

**FCC Part 15, Class B certification** must be performed with the maximum configuration use and include all peripherals of the integrated product. The application for certification must refer to the approval data on file for the particular Boomer-II Modem Module, as shown in the following example. Include the following language in user documentation inserting the name of the integrated product in place of xxx below:

“The Wavenet Boomer-II OEM modem module is a subassembly of xxx and has FCC Identifier PQS-BM28001”  
(or PQS-BM29001 as appropriate)

**FCC Part 2 certification** requires all integrated products to have routine environmental evaluation for radio-frequency (RF) exposure prior to equipment authorization or use in accordance with FCC rules 2.1091 and 2.1093 and FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields, OET Bulletin 65 and its Supplement C.

For “**portable devices**”, defined in accordance with FCC rules as transmitting devices designed to be used within 20 cm of the user body under normal operating conditions, Specific Absorption Rate (SAR) testing must be performed. An exposure limit of 1.6 W/kg will apply to most OEM integrated applications.

For “**mobile or fixed devices**”, defined as transmitting devices designed to be generally used such that a separation distance of at least 20 cm is maintained between the body of the user and the transmitting radiated structure, Maximum Permissible Exposure (MPE) limits may be used with field strength or power density limit of 0.54 mW/cm<sup>2</sup> (at 806 MHz).

Wavenet submitted module specific information and test reports for generic MPE compliance. The antennae used for FCC certification were:

- For the 800 MHz modem: Radiall/Larsen - Whip Standard  
¼ wave SPWH20832
- For the 900 MHz modem: Radiall/Larsen - Whip Standard  
¼ wave SPWH20918

If the Boomer-II OEM Modem Module is used in a mobile or fixed application and if the integrator uses one of the above antennae with an antenna lead length exceeding 150mm, the MPE limits will not be exceeded. In this case following clause should be included in installation and user documentation:

"To satisfy FCC RF exposure requirements a separation distance of 30 cm or more should be maintained between the antenna of this device and persons during device operation. To ensure compliance, operations at closer than this distance is not recommended."

If a different antenna is used to that which was tested by Wavenet for FCC approval, then the integrated product must be re-tested as a complete unit and submitted with its own FCC ID.

It is mandatory for portable integrated products such as handheld and body-worn devices to comply with FCC RF radiation requirements with respect to the SAR limit. The submission should include end product information, end product SAR/MPE test report, and a reference to the Wavenet Boomer-II OEM Modem Module FCC ID for all other Part 90 requirements.

It is a requirement for integrated product certification that you provide the following statement in user documentation:

**“Regulatory Notice of Compliance**

This equipment has been tested and found to comply within the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.”

## Labelling

The FCC requires the integrated product to be labelled as shown here:

“This product contains a type-accepted transmitter approved under FCC ID: PQS-BM2xxxxx.”

Refer to FCC CFR 47, Part 2, Subpart J for information on obtaining an FCC grantee code, FCC identifier requirements, label requirements, and other equipment authorisation procedures.

The FCC does not permit use of an FCC identifier until a Grant of Equipment Authorisation is issued. If you display a device at a trade show before the FCC has issued a grant, the following statement must be prominently displayed:

“This device has not been approved by the Federal Communications Commission. This device is not, and may not be, offered for sale or lease, sold or leased until the approval of the FCC has been obtained.”

## Canada

Industry Canada (IC), formerly the Department of Communications, requires certification for all radio transceivers as either type-approved or technically accepted.

If you do not make any physical or electrical changes to the Boomer II OEM modem and you add an antenna externally to your host product, you are not required to make a formal application to Industry Canada, because Boomer II OEM modems continue to be covered under the original Radio Equipment Certificate of Type Approval.

Most of the tests required for FCC applications can be used for Industry Canada applications. IC requires additional tests, which distinguishes their certification process as unique.

The Radio Standards Procedure RSP-100 describes the procedure for obtaining certification of radio equipment and labelling requirements. These documents are available upon request from Industry Canada in Ottawa.

## Labelling

IC requires OEM products to be labelled as

109 BXXXX

Where XXXX represents the number supplied to the OEM by IC.

## Air Interface Protocols

Data exchange protocols transport data between the host device or terminal and the network. Within the radio portion of the network, between the device and the base station, specialized RF protocols (RD-LAP or MDC4800) carry the data. These radio protocols are typically transparent to wireless applications.

The modem communicates over radio frequency channels using the RD-LAP 9.6, RD-LAP 19.2, or MDC 4800 protocols and an internal 800, or 900MHz radio to operate over 12.5 or 25kHz RF channels. The network-specific configuration is constant for all like devices on the network and includes the channel list and the system ID.

The modem has dual protocol capability on DataTAC 4000 systems in the United States and Canada. The modem's RF protocol is based on the attributes specified by the configured channel list, and dynamic channel information from the network.

On DataTAC 5000 systems, only the RD-LAP protocol is supported. The modem performs auto-roaming (that is, auto-scanning, channel selection, and registration on a new channel). Battery-save operation (Power Save protocol) is supported within most DataTAC networks.

## RD-LAP Network Operation

The RD-LAP 9.6 and 19.2 protocols are used by DataTAC 4000 and 5000 networks. The modem supports both continuously keyed, multiple channel (MFR) and intermittently keyed, SFR (single frequency reuse) network configurations, depending on the network type. The RD-LAP protocol specifications provide the reference RF protocol link-access procedures supported by the wireless modem.

While on the network, the modem performs auto-roaming and battery-save (Power Save protocol) functions.

**Note:** *On Motient and Bell Mobility networks the modem operates in either MDC 4800 mode or RD-LAP 19.2 mode, as provided by local coverage.*

## MDC 4800 Network Operation

The MDC 4800 protocol is available exclusively on Motient (United States) and Bell Mobility (Canada) networks. The modem supports intermittently keyed, SFR network operation.