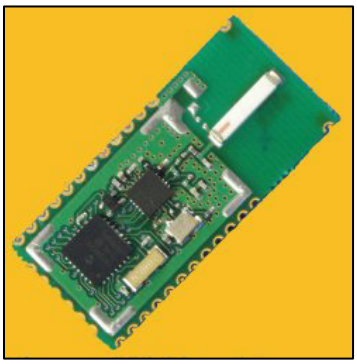
SeyWave® Wireless Module
Model: 11-115-0000 & 11-115-0001



- Worldwide 2.4GHz ISM band operation
- Ultra low power operation
- Runtime measured in years with normal AA batteries
- Automatic packet handling
- Automatic packet retry modes
- On board voltage regulator

Product Description

The SeyWave® RF module is an ultra low power wireless module designed for low to mid data rate applications. The module is small, surface mount and has an integrated crystal, internal voltage regulator, matching circuitry and two different antenna options. The module operates in the worldwide non-licensed 2.4GHz band and is FCC and IC compliant.

The SeyWave® RF module has received modular approval in the United States (FCC) and Canada (IC). This allows the end user to incorporate the module into their finished product and bypass the need for regulatory testing for an intentional radiator (RF Transmitter). **See "Regulatory Approval"** for further information.

Electrical Charecteristics

Operating Specifications				
Parameter	Min	Typ	Max	Unit
Supply Voltage	2.4	3	5	VDC
Supply for Digital I/O	-	2.0	-	VDC
Sleep Current	-	2	-	uA
TX Current	-	14	-	mA
RX Current	-	17	-	mA

(TA = 25C, VDD = 3.3V)

Receiver Specifications				
Parameter	Min	Typ	Max	Unit
RF Input Frequency	2.402	-	2.481	GHz
RF Sensitivity	-	-94	-	dBm

Transmitter Specifications				
Parameter	Min	Typ	Max	Unit
RF Carrier Frequency	2.402	-	2.481	GHz
Maximum Output Power	-	0	-	dBm
RF Power Control Range	16	18	20	dB
RF Power Accuracy			+-4	dB

Regulatory Approval

The SeyWave® RF module has received regulatory approvals for modular devices in the United States and Canada. Modular approval allows the end user to place the SeyWave module inside a finished product and not require regulatory testing for an intentional radiator (RF transmitter), provided no changes or modifications are made to the module circuitry. Changes or modifications could void the user's authority to operate the equipment. The end user must comply with all of the instructions provided by BTR Controls, Inc., which indicate installation and/or operating conditions necessary for compliance. (FCC Code of Federal Regulations Title 47 Part 15.21)

The integrator may still be responsible for testing the end product for any additional compliance requirements when this module is installed (unintentional radiation) specific to the country where the end device will be marketed.

United States
The end product user manual should also contain the following statement:

"This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation."*

Canada
This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

These radio transmitters 11-115-0001 & 11-115-0000 have been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Le présent émetteur radio 11-115-0001 & 11-115-0000
a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

Antennas approved for use with 11-115-0001 SeyWave RF Module

Approved Antennas for use with 11-115-0001				
Part Number	Type	Gain	Application	Impedance
AA02-TC2M2M10N	Dipole (half wave articulated) RPSMA	2 dBi	Fixed	50 Ohms

Antennas approved for use with 11-115-0000 SeyWave RF Module

Approved Antennas for use with 11-115-0001				
Part Number	Type	Gain	Application	Impedance
2450AT45A100	Chip Ceramic SMT	3.0dBi Peak	Fixed	50 Ohms

Label instructions for End Product

The SeyWave® module has been labeled with its own FCC & IC identification numbers, and, if these numbers are not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a permanently affixed label referring to the enclosed module. This exterior label can use wording such as the following:

"Contains Transmitter Modules FCC ID: RDF-SEYWAVE
IC: 10823A-SEYWAVE"

-or-

"Contains FCC ID: RDF-SEYWAVE
IC: 10823A-SEYWAVE."

(FCC regulation - FCC Code of Federal Regulations 47 Part 15.212 (a)(1)(vi)(A))