Radiometrix TR2I-464-5-12.5K RF Module Implementation Guide

Purpose: This guide is intended as guidance document to ensure that the radio module identified is installed implemented in an appropriate manner so as to comply with the conditions of the original FCC grant and IC certificate.

Applicability: RF module FCC ID.: ITQ-TR2I, IC: 3598A-TR2I

Use of External Antennas: The module was certified for use with the following antennas. These antennas or antennas of the same design but lower gain may be used in the final installation.

Antenna Type	Gain (dBi)	Manufacturer's P/N	Manufacturer
¼ Wave Whip	0	EXC450SM	Laird Technologies

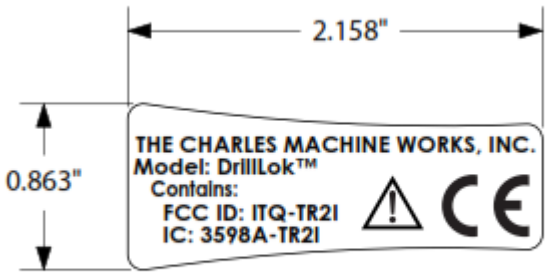
Final assembly antenna connection: The final assembly must have non-standard antenna connection such as a reverse gender connector or means must be provided for permanent connection of the antenna to the final assembly. A standard rf connector may not be used.

Final assembly labeling: The final assembly must contain a label notifying the user that the device contains a certified rf module that is identified by the following product approval numbers:

FCC ID.: ITQ-TR2I

IC: 3598A-TR2I

An example of such a label is shown below.



Human exposure to Radio Frequency (RF) energy: The module referenced in this document was evaluated to determine compliance with ANSI C.95 (USA) and Safety Code 6 (Canada). Unless specifically approved in a particular product use under this filing, this module can only be used in final assemblies that are used in a mobile environment where the radiating element is located a minimum of 20 cm. from the user or nearby persons. This module must not be used in a final product that is used in an environment where the radiated element may be expected to be closer than 20 cm. from the user or nearby persons.

The DrillLok Remote US and Canadian products (CMW product numbers 220-2405 and 220-2439) use the TR2I-464-5-12.5K radio module and have undergone Specific Absorption Rate (SAR) testing in accordance with KDB 447498 and RSS-102 standards to determine the safety of near human body use. SAR test reports for these specific products are included in this filing. These reports indicate the acceptable distance these products can be from the human body when operating. The FCC and Industry Canada specific statements below will be modified for these products to indicate these distances.

Any future uses of the TR2I-464-5-12.5K radio module in a product intended for use closer than 20 cm to the human body must be tested in that product configuration. These SAR test reports must be submitted as part of a Class II permissive change to the FCC and/or Industry Canada.

Co-location with other radio modules: The radio module referenced may not be co-located with other radio modules except as provided in the FCC guidance for use of multiple radio modules.

Unintentional emission requirements: The final product must be tested for unintentional emissions in accordance with the following regulations.

USA – CFR 47, Part 15, Subpart B

Canada – ICES-003, Issue 4

Modification: The rf module referenced in this document must not be modified without the express consent of the party responsible for certification of the module.

RF Power and channel assignment: The rf module is programmed to operate only in the following channels and with the specified rf power output.

Final Product User Guide Statements: The user guide for the final product must have the following statements to inform the user of proper operation and implementation of the product.

<u>FCC specific statements:</u>

> This equipment has been tested and found to comply with 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 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.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

~~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.~~

RF Exposure warning: This device must be operated with a minimum separation distance of 20 cm between the radiating elements and the user or nearby persons.

Industry Canada specific statements (**in both English and French**):

- ~~The device for operation in the band 5150-5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems~~
- This device has been designed to operate with the antennas listed below, and having a maximum gain of 0 dBi. Antennas not included in this list or having a gain greater than 0 dBi are strictly prohibited for use with this device. The required antenna impedance is 50 ohms.

Band (GHz)	Gain dBi	Manufacturer's P/N	Manufacturer
0.450-0.470	0	EXC450SM	Laird Technologies

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 permitted for successful communication.

~~This device complies with Industry Canada licence-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.~~

~~“Cet appareil est conforme avec Industrie Canada exempts de licence standard RSS (s). Son fonctionnement est soumis aux deux conditions suivantes: (1) cet appareil ne doit pas provoquer d'interférences et (2) cet appareil doit accepter toute interférence, y compris celles pouvant causer un mauvais fonctionnement de l'appareil.”~~

Devices with removable antennas:

“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, cet émetteur radio ne peut fonctionner à l'aide d'une antenne d'un type et maximum (ou moins) Gain approuvé pour l'émetteur par Industrie Canada. Pour réduire le risque d'interférence avec d'autres utilisateurs, le type d'antenne et son gain doivent être choisis afin que la puissance isotrope rayonnée équivalente (PIRE) ne dépasse pas ce qui est nécessaire pour une communication réussie.”

“This radio transmitter (identify the device by certification number) has 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.”

Cet émetteur radio (identify the device by certification number) a été approuvé par Industrie Canada pour fonctionner avec les types d'antennes énumérés ci-dessous avec le gain maximal admissible et l'impédance d'antenne requise pour chaque type d'antenne indiqué. Types d'antennes ne figurent pas dans cette liste, ayant un gain supérieur au gain maximum indiqué pour ce type, sont strictement interdites pour une utilisation avec cet appareil.”

RF Exposure warning: This device must be operated with a minimum separation distance of 20 cm between the radiating elements and the user or nearby persons.

Avertissement d'exposition RF: Cet appareil doit être utilisé à une distance minimale de séparation de 20 cm entre les éléments rayonnants et l'utilisateur ou les personnes à proximité.