



# QT-5100A Module

## Description

This document describes the use of the QT-5100A transmitter.

## History

|       |          |
|-------|----------|
| Rev 1 | Original |
|       |          |
|       |          |
|       |          |
|       |          |
|       |          |

## FCC Notices:

### ***Information to users:***

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
- (2.) This device must accept any interference received, including interference that may cause undesired operation.

NOTE: 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 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.

**Warning: Changes or modifications not expressly approved by Quantum5X Systems Inc, could void the user's authority to operate the equipment.**

**Warning: This module has been designed to operate with only the supplied integrated antenna or the supplied SSMA antenna for the 802.15.4 Radio. Replacing or modifying these antennas is strictly prohibited.**

## Innovation, Science and Economic Development Canada (ISED)

This device complies with ISED's license-exempt RSSs. 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;
2. L'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Cet équipement est conforme Canada limites d'exposition aux radiations dans un environnement non contrôlé. Cet équipement doit être installé et utilisé à distance minimum de 20cm entre le radiateur et votre corps.

This radio transmitter (**IC: 4614A-QT5100A**) has been approved by ISED to operate with the antenna types listed below with the maximum permissible gain 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 (**IC: 4614A-QT5100A**) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci dessous et ayant un gain admissible maximal. Les types d'antenne non inclus dans cette liste, et dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

### Approved antenna and connectors

| Antenna / Connector Type | Manufacture         | Connector Type | Max Gain |
|--------------------------|---------------------|----------------|----------|
| Integrated Antenna       | Q5X                 | NA             | 3dBi     |
| SSMA Whip Antenna        | Sam Woo Electronics | SSMA           | 0 dB     |

## ***RF Exposure Compliance:***

The QT-5100A Module is granted with a modular approval for mixed mobile and portable applications. The module is to be used by Quantum5X in their final products without additional FCC/ISED (Innovation, Science and Economic Development Canada) certification if they meet the following conditions. Otherwise, additional FCC/ISED approvals must be obtained.

### ***Mobile Application:***

- 1) This equipment complies with radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.
- 2) This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
- 3) To comply with FCC and ISED regulations limiting both maximum RF output power and human exposure to RF radiation, the maximum antenna gain including cable loss in a mobile-only exposure condition must not exceed the 3 dBi.
- 4) For the 802.15.4 Radio, only approved antenna type with the maximum permissible gain can be used with this device, such as the supplied fixed antenna or the SSMA whip antenna with a max gain of 3 dBi.
- 5) For Canada, the EIRP power shall not to be greater than 250mW to meet ISED regulations (Conducted power plus antenna gain)

### ***Portable Application:***

This low power module when used in the specified host configurations listed below complies with applicable RF exposure requirements that meet FCC/ISED for a portable device, which are approved with this filing. For this application see the output power reduction settings in specification table page 8.

PlayerMicS  
PlayerMic  
AquaMic  
RefMic  
RefMicHD  
Incognito  
BeltMic

## ***Module Integration into Host End Products***

The QT-5100A Module Transmitter has been designed by Quantum5X Systems Inc. to be used by Quantum5X as a building block for their wireless audio transmitter products. The module, as designed, is

a standalone unit that is ready for integration into final form factor with the limitation for mobile use as specified in RF Exposure compliance. For proper usage of the module, the module integrator must ensure that the input power and input audio signal do not exceed the specified limits as outlined in the specification section. Failure to do so will result in damage to the module.

Final product(s) after integration with this module shall be tested to comply with all applicable FCC requirements and Unintentional radiators (FCC section 15.107, 15.109 and ISSED ICES-003) before declaring compliance to Part 15 of the FCC Rules and ISSED ICES-003.

***The module integrator may not:***

- 1) Alter, modify or remove the module case.
- 2) Make changes to the Circuit Card Assembly of the module.
- 3) Remove, change or alter the integrated UHF antenna or the 802.15.4 antenna.

Failure to comply with these restrictions will result in violation of the FCC certification.

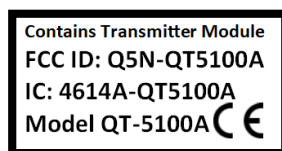
***Labeling of the End Products:***

The modular transmitter must be equipped with either a permanently affixed label.

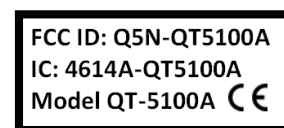
The modular transmitter must be labeled with its own FCC identification number, and, if the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: “Contains Transmitter Module” or “Contains “. Any similar wording that expresses the same meaning may be used.

Below are Sample Module and Product labels that must be used for the Module and the Product.

Product Label



Module Label



## Out-of-the-Box Setup

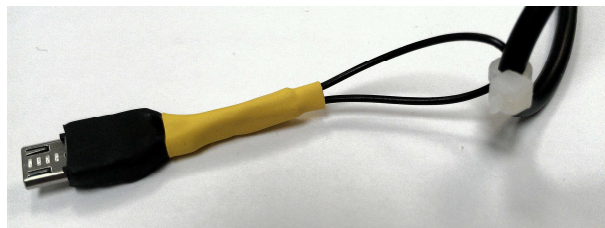
Ensure the QT-5100A Module has a sufficient charge level by immediately inserting the micro USB charger.

### Note:

The QT-5100A Module should only be charged with the supplied charger and attached Ferrite clamp on the AC Cord. Failure to use the supplied charger could cause damage the unit or result in violation of the FCC certification.

### *Using the Reset Key*

Occasionally the QT-5100A has an issue where the unit may occasionally need to be reset after being connected to a charger. The Reset Key is a small male USB device with a yellow shrink wrap to identify it.



Use this only if the transmitter becomes unresponsive. The transmitter has 2 microprocessors and occasionally one may become locked. The Reset Key (which is typically attached to the cable of the charger) should be inserted into the charge port, held for 1 second, and then removed.

After the Reset Key is removed, the Status LED will blink green 3 times.

### **There are 2 LED indicators on the QT-5100A Module, Status and Charge.**

#### *Charge LED Color*

When connected to a charger, the color of the Charge LED will indicate the progress of the charging cycle. The LED is located on the front of the TX.



**GREEN** - The battery is charged and ready for use.



**AMBER** - The battery level low, but can be used for short term use, such as setup or quick audio tests.



**RED** - The battery level is unusable and must be charged.

**Note: After the LED changes from Amber to Green, it is recommended it be charged for 15 more minutes while the trickle charge completes.**

## Status LED

The Status LED indicates 2 conditions;

- 1) one condition (On/Off) via the LED *blink pattern*.
- 2) the second condition (Battery Level) via the LED *color*.

## Status LED Color

The color of the Status LED indicates the battery charge level;

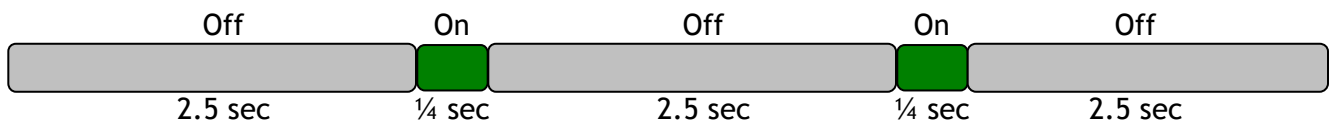
Note: The meaning of the Status LED's color is slightly different than the Charge LED's color. See the following:

-  **GREEN** - The battery level is over 50%.
-  **AMBER** - The battery level is less than 50%.
-  **RED** - The battery level is unusable and must be charged.

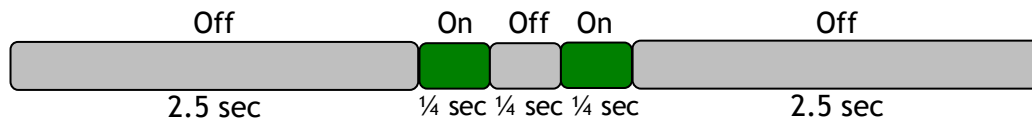
## Status LED Blink Patterns

The blink pattern of the Status LED indicates the mode of the QT-5100A.

**OFF Mode** (*no RF, no audio*) – The LED is off for 2.5 seconds and on for ¼ of a second, and repeats.



**ON Mode** (*RF on, may have audio, unless the transmitter has been audio muted*) – The LED is off for 2.5 seconds and blinks on twice for ¼ of a second, and repeats.



## On/Off Pushbutton

The pushbutton is used to turn the QT-5100A on and off. If the transmitter is Off, press and hold the pushbutton for 3 seconds to turn the transmitter On. If the transmitter is On, press and hold the pushbutton for 5 seconds to turn the transmitter Off.

## ***Technical Data UHF Radio***

**RF Carrier Frequency Range:** 470.250 MHz – 550 MHz

**Working Range** – 500m (line of sight, outdoors for a single system with appropriate receive antennas)

Note: Actual working range depends on receiver antenna configuration, RF signal absorption, reflection and interference.

**RF Power Output:** see table below

| Item # | Product Name                      | Max RF Power |
|--------|-----------------------------------|--------------|
| 1      | QT-5100A Module                   | 250 mw       |
| 2      | PlayerMic (Body Mounted Only)     | 100 mw       |
| 3      | PlayerMicL (Body Mounted Only)    | 100 mw       |
| 4      | AquaMic (Body Mounted Only)       | 100 mw       |
| 5      | RefMic (Body Mounted Only)        | 100 mw       |
| 6      | RefMicHD (Body Mounted Only)      | 250 mw       |
| 7      | Incognito (Body and head Mounted) | 100 mw       |
| 9      | BeltMic (Body Mounted Only)       | 100 mw       |

## ***Technical Data 802.15.4 Radio***

**RF Power Output:** 18 dBm (max)

**RF Carrier Frequency Range:** 2.405GHz – 2.480GHz

## ***Technical Data QT-5100A Module***

**Power Requirements:** 3.7V Internal Lion battery (non-removable - rechargeable)

**Max Input Audio Signal:** 1V RMS

**Audio Gain Adjustment Range:** 0 dB to 30 dB

**Overall Dimensions:** 35mm X 35mm X 5mm

**Net Weight:** depends on model