TAPCO
Safe travels.

RADIO 150450 USER GUIDE

VERSION 0.2

Table Of Contents

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

RADIO 150450 TRANSCEIVER

The compact Radio 150450 900MHz transceiver replaces miles of cable in harsh industrial environments. Using field-proven ISM technology, which needs no additional FCC licensing in the Americas, OEMs can easily make existing systems wireless with little or no RF expertise.

This device complies with USA FCC part 15.247 and CA RSS-247.

OVERVIEW

The Radio 150450 is a cost effective, high performance, spread spectrum transceiver designed for integration into OEM systems operating in the 900 MHz ISM band.

All frequency hopping, synchronization, and RF system data transmission/reception is programmed in the factory and is performed by the transceiver, transparent to the OEM host.

The manufacturer is responsible for ensuring the final product meets all appropriate regulatory agency requirements listed herein before shipping any product.

Note: Unless mentioned specifically by name, the Radio 150450 modules are referred to as the radio or transceiver. Individual naming is used to differentiate product-specific features.

The host (any device to which the Radio 150450 is connected, such as a PC) are referred to as OEM host.

FEATURES

- Standard IO - 2 digital input, 2 digital output lines, host serial lines for OTA serial.
- Options - 10 additional IO/serial communication lines are available for customization via custom factory firmware modification.
- Up to 500kbaud over the air datarates.

Ratings

- Operating Temperature -40 to 80C
- Operating Voltage 5VDC at Vin relative to ground
- Operating Voltage on all io/serial lines is 0V to 3.3V DC.
- Serial data rate is 19.2kBaud.
- Green LED signaling RF Transmission and Timekeeper Beacons.
- RED LED signaling RF Packet Reception.
- -135dB link budget!***
- When operating outdoors use an appropriately rated enclosure to prevent moisture from contacting the module.
- Maximum RF output is 25.3dBm.
- RF Frequency range is 902M f z to 928Mhz.

FCC INFORMATION

NOTICE

- This equipment is approved only for mobile and base station transmitting devices. Antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.
- Radio 150450 Module may be used only with Approved Antennas that have been tested with this module.

Warnings

- Radio 150450 is intended to be installed in a fixed location.
- A minimum separation distance ≥ 20 cm is required between the antenna and radiating structures of the device and nearby persons.
- Radio 150450 will be sold with fixed power levels respective of the antenna that is provided and network data rate that is programmed into the radio by the manufacturer.
- The user shall not make changes or modifications to Radio 150450 unless expressly approved by TAPCO or the consequences could void the user's authority to operate the equipment.

Applicable FCC Transmitter Rules:
USA: FCC 15.247
FCC ID: 2ANWN-RM150450
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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.
For more details go to:
https://apps.fcc.gov/oetcf/kdb/forms/FTSSearchResultPage.cfm?switch=P&id=44637

Applicable ISED Transmitter Rules:
CA: RSS-247
Industry Canada IC ID: 25608-RM150450
This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following three conditions:

1. This device may not cause interference,
2. this device must accept any interference, including interference that may cause undesired operation of the device, and
3. Radio 150450 and available antenna options must be used at a distance greater than 20cm from the user.

Le present appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence.
L'exploitation est autorisee aux deux conditions suivantes:

- l'appareil ne doit pas produire de brouillage, et
- l'utilisateur de l'appareil doit accepter tout brouillage radioelectrique subi, meme si le brouillage est susceptible d'en compromettre le fonctionnement
- La Radio 150450v et les options d'antenna disponibles doivent être utilisées à une distance supérieure à 20 cm de l'utilisateur.

Le present appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence.
L'exploitation est autorisee aux deux conditions suivantes:

Ratings	Min.	Nom.	Max.
Vin	3.6V	4V	5.2V
Din1	0V	3.3V	5V
Dout1/2	0V	3.3V	5V
TermTx/Rx	0V	3.3V	5V
RSSI	0V	3.3V	5V

HOST CONDITIONS FOR INTEGRATION

1. FCC and ISED certifications are valid for the list of approved antennas shown below with the inclusion of antennas of the same type with equal or lower gain and same in-band and out of band characteristics. Any antennas of different type or higher gain require separate approval.
2. This equipment is approved only for mobile and base station transmitting devices.
3. Antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operated in conjunction with any other antenna or transmitter.
4. The integrator is responsible for meeting the requirements of KDB 996369, D04 and KDB 996369 clause 2.8 15.21, 15.19, 15.105 and RSS-GEN 6.8 and 8.4
5. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
6. To satisfy ISED Canada RF exposure requirements, Radio 150450 and available antenna options must be used at a distance greater than 20 cm from the user.

HOST INTEGRATOR TESTING REQUIREMENTS

1. This modular transmitter is only authorized for the FCC and ISED transmitter rules listed above. The host product manufacturer (integrator) is responsible for compliance to any other rules that apply to the host not covered by the modular transmitter grant of certification. The integrator is responsible for testing the final host product to applicable requirements for the combined product including host and module. For example, US 47 CFR Part 15 Subpart B and/or CA ICES-003 (or ICES-001) host equipment compliance testing is required with the modular transmitter installed when the host equipment contains unintentional-radiator digital circuity.

2. The integrator is responsible for verifying emissions of this modular transmitter when mounted in the host do not exceed applicable requirements. For additional requirements, see FCC KDB 996369 D04 Module Integration Guide.

3. The integrator should contact TAPCO for information regarding test modes or configuration options for testing the modular transmitter with host equipment.

4. Integrator is recommended to use FCC KDB 996369 D04 Module Integration Guide "best practice" RF design engineering testing and evaluation to verify that module placement to host components does not generate non-compliant limits. For standalone mode, reference the guidance in D04 Module Integration Guide and for simultaneous mode; see D02 Module Q&A Question 12, which permits the host manufacturer to confirm compliance.

HOST LABELING REQUIREMENTS

Completed host products must include an ID label which displays the certification numbers of the module. The host device in which the module is installed shall have on its label, the statements:

Contains FCC ID: 2ANWN-RM150450
Contains IC: 25608-RM150450

The prefix Contains may be replaced by any text conveying similar meaning. If the host product is separately subject to certification, the host product's FCC ID shall not utilize the "Contains" prefix text.

If using electronic labeling, the electronic labeling scheme shall display the content within 3 steps of the associated application's main menu, and shall be accessible without passwords or other access credentials. When using electronic labeling a temporary label is required to be attached to the host product, or the product's packaging.

The host product label shall also include 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.

If the product is too small or of a design which precludes the addition of this statement, then it may be included in the host product's user manual.

HOST PRODUCT USER MANUAL REQUIREMENTS

The host product's users manual shall include the following required legal statements:

FCC Required Statements

1. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

2. 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.

3. Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

ISED Required Statements:
This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's license-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique 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'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

ORDERING INFORMATION

This radio transmitter 25608-150450 has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Product Part Number: Radio 150450 – Radio Transceiver Module

Available Antennas For Sale*:

- TAPCO Part No: 146299, Max 4dBi 50 Ohms, Dome Style Antenna Kit with 24" COAX
- TAPCO Part No: 149096, Max 5.15dBi 50 Ohms, Halfwave Omni Base Station Antenna
- TAPCO Part No: 101962, Max 1.2dBi 50 Ohms, Dipole Whip Antenna
- TAPCO Part No: 1343-00006, Max 10.65dBi 50 Ohms, Yagi Antenna

Antenna Accessories:

- Lightning Arrestor, L-com Model AL-NFNFB
- L-Com Cable Model CA-RSPNMA002

Antennas with connectors that do not meet the requirement of a non-standard antenna connector will have an adapter permanently connected with industrial epoxy, "Loctite" or solder to make the connection permanent prior to shipping.

*Antennas available for immediate sale are listed above. For a complete list of antennas contact TAPCO for all options.

This radio transmitter IC ID: 25608-RM150450 has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed above, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Le présent émetteur radio IC ID: 25608-RM150450 a été approuvé par Innovation, Sciences et Développement économique 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 pour tout type figurant sur la liste, sont strictement interdits pour l'exploitation de l'émetteur.

TAPCO is a leader in the design and manufacture of customized, performance-critical products for wireless and other advanced electronics applications. TAPCO partners with its customers to provide solutions for various applications such as:

- Intelligent Warning Systems
- Traffic Signals and Intelligent Transportation Systems
- Cloud-based Traffic Device Management
- Parking and Security Systems
- Custom Traffic Signs and Accessories
- Streetscape Decoratives
- Signmaking and Inventory
- Sign Post Anchoring
- Federal Applications

TAPCO offers its customers unique product solutions, dedication to research and development, as well as a seamless network of manufacturing and customer support facilities across the globe.

Information furnished by TAPCO in this specification is believed to be accurate. Devices sold by TAPCO are covered by the warranty and patent indemnification provisions appearing in its Terms of Sale only. TAPCO makes no warranty, express, statutory, and implied or by description, regarding the information set forth herein. TAPCO reserves the right to change specifications at any time and without notice. TAPCO's products are intended for use solely in normal commercial and industrial applications. Applications requiring unusual environmental requirements such as military, medical life-support or life-sustaining equipment are specifically not recommended without additional testing for such application.

TAPCO®
Safe travels®

For technical support, call TAPCO® at 800-236-0112 or email customerservice@tapconet.com.

8 am–5 pm (CST) Monday through Friday

For faster service, have the serial number on the TAPCO® cabinet label ready.

(800) 236-0112 TAPCOnet.com

1020-148221 03/17/25