

Integration instruction

Reader and Communication Controller

RCC 6470

vingcard
ASSA ABLOY

Experience a safer
and more open world

Integration instruction for host product manufacturers

FCC and ISED (IC) statements and integration instruction

FCC statements

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.

Caution: 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 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

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

List of applicable FCC Rules

the FCC ID: Y7V-RCC6470C1 has been tested and found in compliance with the § 15.247 of the Federal Regulation and with RSS-247 Industry Canada for BLE and Zigbee communication operating within band 2400-2483.5 MHz and with § 15.225 and §15.209 of the Federal Regulation and RSS-210 Industry Canada for NFC communication operating within the band 13.110-14.010 MHz.

Exposure statement

This device with its antenna complies with FCC RF exposure limits for general population/uncontrolled exposure. The antenna used for this device must not be co-located or operating in conjunction with any other antenna or transmitter. The FCC ID: Y7V-RCC6470C1 has been evaluated to FCC 1.1307(b) and has been found to be exempt from SAR Evaluation with separation distance of 20cm. The host product should be operated with a minimum distance of 20 cm between radiator and the nearby persons.

Specific Operational Use Conditions

In addition to the FCC/ISED statements previously reported, the following restrictions apply: ASSA ABLOY Global Solutions is the Grantee of the FCC ID: Y7V-RCC6470C1 and the module is intended to be installed only in *ASSA ABLOY Global Solutions Norway AS* hosts, the FCC ID: Y7V-RCC6470C1 is not sold separately to third parties. If in the future the module will be integrated in other non-similar hosts the LMA will be expanded to include the new hosts after an appropriate assessment to the FCC rules.

Limited module procedures

The FCC ID: Y7V-RCC6470C1 compliance with FCC requirements based on Limited Modular procedure as the radio part of the 13.56MHz RFID transceiver does not have its own shielding. The module is limited to the specific ASSA ABLOY Global Solutions, vingcard ASSA ABLOY hosts, and any installation or operation that does not follow the hosts manual will require further evaluation. For additional hosts other than the specific host originally granted with a limited module, a Class II permissive change is required on the module grant to register the additional host as a specific host also approved with the module.

Trace Antenna Design

N/A

Antennas

The BLE and Zigbee use the same antenna type SMD operating in 2.4GHz frequency. The RFID radio part use a loop antenna operating at 13.56MHz. Modification the antenna design may need additional testing and evaluation.

Name/Model	Gain	Impedance
2.4MHz SMD antenna	< 5dBi	50'Ω
13.56MHz Loop antenna	N/A	50'Ω

Label and compliance information

The Reader and Communication Controller module, model RCC 6470, must be labeled to say **FCC ID: Y7V-RCC1601C1**.

The concerned end product must be labeled to say **Contains FCC ID: Y7V-RCC1601C1**.

Information on test modes and additional testing requirements

Test Objective: Verify the electromagnetic emissions of the Product (BLE and Zigbee).

Specifications:

- Transmit peak output power according to FCC Part 15.247(b), with limits of 1 W conducted and 4 W EIRP.
- Spurious unwanted emissions according to FCC Part 15.247(c) and limits of 15.209.

Setup:

- Place the Product on the turn platform within the anechoic chamber.
- Position the measurement antenna on the antenna mast at a distance of 3 meters from the Product.
- For fundamental power set transmitter to operate in continuous mode on the highest aggregate power, and highest power spectral density to confirm continued compliance.
- For band edge compliance, set the transmitter to operate in continuous mode on the widest and the narrowest bandwidths per modulation type.
- For radiated spurious emissions up to 10th harmonic the following three parameters should be tested:
 - widest bandwidth,
 - highest aggregate power, and
 - highest power spectral density.
- If according to the radio module's initial test report these conditions do not all combine in the same mode, then multiple modes should be tested: set transmitter to operate in continuous mode at low, mid and top channels with all the supported modulations, data rates and channel bandwidths until the modes with these three parameters have been tested and confirmed.

Rotation and Elevation:

- Rotate the turn platform 360 degrees.
- Gradually raise the antenna from 1 to 4 meters.
- Purpose: Maximize emissions and verify compliance with Quasi-peak limits below 1 GHz and Peak/Average limits above 1 GHz; and compare with the appropriate limits.

Frequency Scans:

- Initial scan: Cover frequency ranges from 30 MHz to 1 GHz.
- Subsequent scan: Change measurement setup for above 1 GHz measurements.

Extended Scans:

- Continue scanning for frequency ranges:
 - 1–18 GHz
 - 18–25 GHz (up to 10th harmonic of fundamental)

Verification:

- Verify fundamental emission levels, according to FCC Part 15.247 within passband 2400–2483.5 MHz.
- Check harmonics according to FCC Part 15.209 against quasi-peak, peak and average limits where applicable.

RFID:**Specifications:**

- Transmit peak output power according to FCC Part 15.225, with limits of 15.848 uV/m @30m .
- Spurious unwanted emissions according to FCC Part 15.209.

Setup:**For Radiated emission below 30MHz**

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak or Average Detects Function and Specified Bandwidth with Maximum Hold Mode.

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

For Radiated emission above 30MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz

Verification:

- Verify fundamental emission levels, according to FCC Part 15.225 within passband 13.553–13.567 MHz.
- Check harmonics according to FCC Part 15.209 against quasi-peak, peak and average limits where applicable.

Additional Testing, Part 15 Subpart B Disclaimer

The module is limited to the specific ASSA ABLOY Global Solutions, vingcard ASSA ABLOY hosts. All the hosts where the module will be integrated are not bearded of radio parts but only by unintentional radiator portions consisting of electromechanical parts.

The final host product manufactured by ASSA ABLOY Global Solutions Norway AS, with the modular transmitter model: RCC 6470 installed inside the product, requires compliance with FCC Rule CFR 47, Part 15, Subpart B, Unintentional Radiators

EMI consideration

Spot cheking test should be performed on the host product using as reference *KDB Publication 996368 D04 Module integration Guide*.

ISED (IC) statements

This device complies with Industry Canada licence-exempt RSS standard CAN ICES-3 (B)/NMB-3(B) B. 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.

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.

The radio transmitter IC: 9514A-RCC6471C1 has been approved by Industry Canada to operate with the antenna type listed below with the indicated maximum permissible gain and required antenna impedance. 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.

Name/Model	Gain	Impedance
2.4MHz SMD antenna	< 5dBi	50 Ω
13.56MHz Loop antenna	N/A	50 Ω

The term "IC" before the equipment certification number only signifies that the Industry Canada technical specifications were met.

The Reader and Communication Controller module, model RCC 6470, must be labeled to say IC: 9514A-RCC6470C1.

The concerned end product must be labeled to say Contains IC: 9514A-RCC6470C1.

Déclarations d'ISED (IC)

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.

Conformément aux réglementations d'Industry Canada, cet émetteur radio peut uniquement fonctionner à l'aide d'une antenne dont le type et le gain maximal (ou minimal) pour cet émetteur est approuvé par Industry Canada. Pour réduire le risque d'interférence éventuelle pour les autres utilisateurs, le type et le gain de l'antenne doivent être choisis de manière à ce que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne soit pas supérieure à la puissance nécessaire à une bonne communication.

L'émetteur radio IC : 9514A-RCC1601C1 a été approuvé par Industry Canada pour une utilisation avec les types d'antenne indiqués ci-dessous avec le gain maximum autorisé indiqué et l'impédance d'antenne requise. Il est strictement interdit d'utiliser avec cet appareil un type d'antenne ne figurant pas dans cette liste ou ayant un gain supérieur au gain maximum indiqué pour ce type.

Appellation/Modèle	Gain	Impédance
2.4MHz SMD antenna	< 5dBi	50 Ω
13.56MHz Loop antenna	N/A	50 Ω

Le terme "IC" devant le numéro de certification signifie seulement que les spécifications techniques Industrie Canada ont été respectées.

Le module Modèle RCC 6470 doit porter une étiquette avec la mention : IC : 9514A-RCC6470C1.

Le produit final concerné doit porter une étiquette avec la mention : Contient IC : 9514A-RCC6470C1

Overview

The Reader and Communication Controller (RCC) model: RCC 6470 is an electronic module consisting of a PCB and its components encapsulated in a five sides plastic enclosure and fully potted from the sixth accessible side.

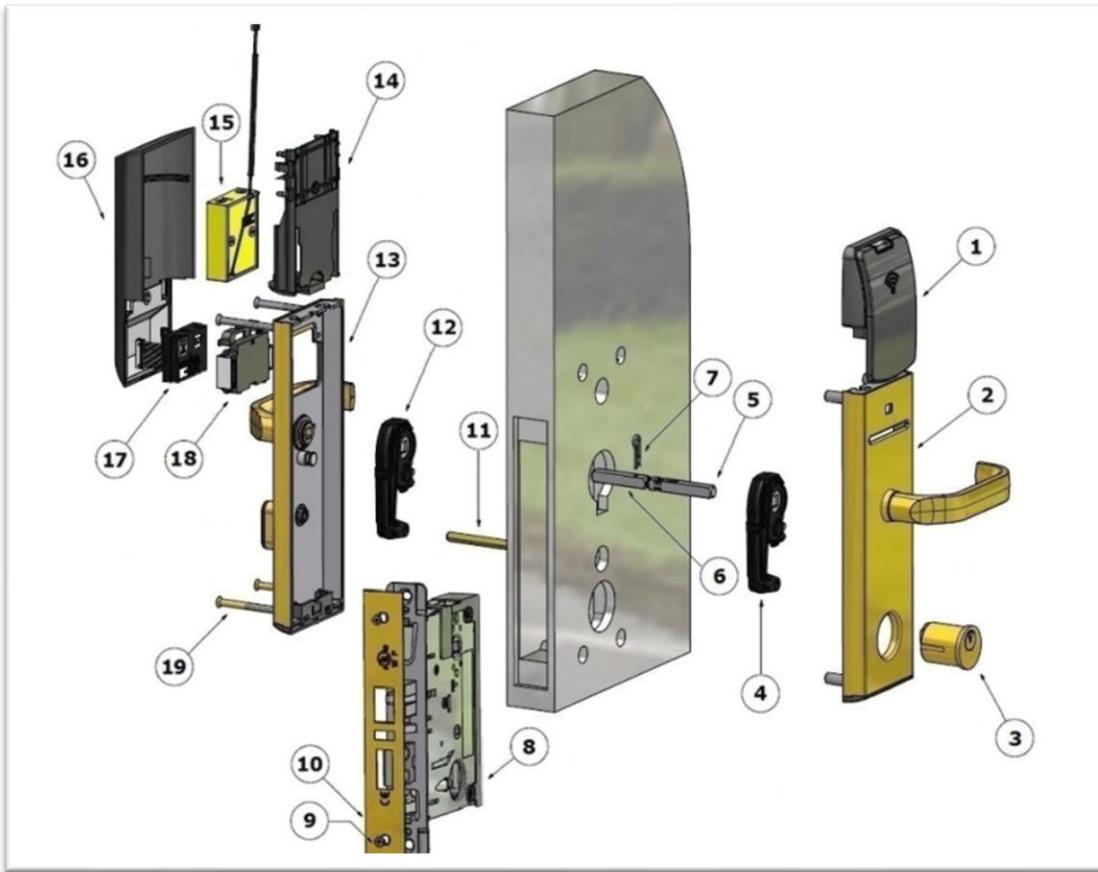
- Mass: 35.1g
- Dimensions (W x D x H): 62.5 x 33.4 x 10.9 mm.



- To be operating, the RCC 6470 must be mounted on an ASSA ABLOY Global Solutions electronic product that works as a host system. The interface with the host is by the connector that allows data communication and provide 4,5VDC power to the module.
- Three radio technologies RFID, BLE and Zigbee are mainly used for card access, mobile device access and local system monitoring respectively. LED indication as user interface and USB-C as service connector are other functions of the module.
- The module RCC 6470 can only be integrated in the ASSA ABLOY Global Solutions hosts placing it in a specific position by mechanical fixing and by the dedicated connector to the electromechanical part of the host.
- Once the end product is installed and the module is physically embedded in the end product, take place the commissioning process to initialize the communication with the host and with a compatible local or cloud based service.
- The installation and commissioning process is performed or monitored by ASSA ABLOY Global Solutions personell using ASSA ABLOY Global Solutions software and hardware tools.
- A configuration check is performed after installation.

Installation

The figure show the exploded view of a representative host including the module location. Some of the parts are pre assembled so the installation requires less operations.



The module is contained inside the part identified in Pos 1.

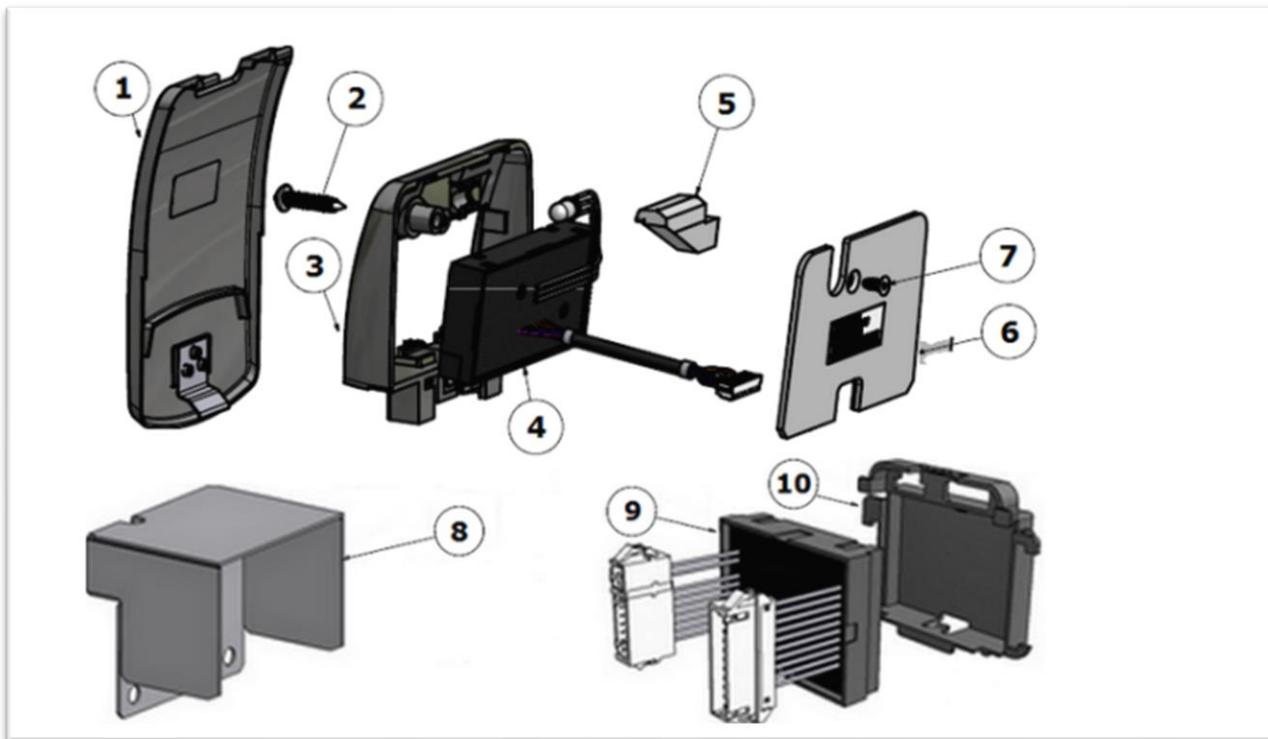
Pos	Description
1	Module
2	Escutcheon outside
3	Cylinder assy
4	Handle retainer
5	Upgrade plate
6	Safety pin
7	Outside spindle

Pos	Description
8	Inside spindle
9	Lock case
10	Lock front screw
11	Lock front
12	Thumbtturn spindle
13	Handle retainer
14	Escutcheon inside

Pos	Description
15	Bracket
16	Battery cassette
17	Classic battery lid,
18	Lock case controller LCC
19	Adapter for LCC
20	Escutcheon screw

Module detailed installation exploded view

Positions from 1-7 showed in the exploded view represent the location, the module and the mechanical fixing. Positions 8-10 represent the location of the Lock Case Controller part of the host.



The RCC 6470 identify in position 4

Pos	Description
1	Front cover assy
2	Screw
3	Frame

Pos	Description
4	RCC 6470
5	Light pipe
6	Shield plate

Pos	Description
7	Screw
8	Upgrade plate
9	Lock case controller (LCC)
10	Adapter for LCC