User manual (Installation manual)

This module should be installed in the host device according to the interface specification (installation procedure).
For the details about this module, please refer to the specification sheet of module.

The following information must be indicated on the host device of this module;

[for FCC]

Contains FCC ID: T82-HRF2403

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 it is difficult to describe this statement on the host product due to the size, please describe in the User's manual.

[for IC]

Contains IC: 10608A-HRF2403

The following statements must be described on the user manual of the host device of this module;

[for FCC]

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

This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines. This equipment has very low levels of RF energy that is deemed to comply without maximum permissive exposure evaluation (MPE).

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines. This equipment has very low levels of RF energy that is deemed to comply without testing of specific absorption rate(SAR).

[for IC]

This device complies with Industry Canada's applicable licence-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.

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment and meets RSS-102 of the IC radio frequency (RF) Exposure rules. This equipment has very low levels of RF energy that is deemed to comply without maximum permissive exposure evaluation (MPE).

Cet équipement est conforme aux limites d'exposition aux rayonnements énoncées pour un environnement non contrôlé et respecte les règles d'exposition aux fréquences radioélectriques (RF) CNR-102 de l'IC. Cet équipement émet une énergie RF très faible qui est considérée comme conforme sans évaluation de l'exposition maximale autorisée (MPE).

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment and meets RSS-102 of the IC radio frequency (RF) Exposure rules. This equipment has very low levels of RF energy that is deemed to comply without testing of specific absorption rate (SAR).

Cet équipement est conforme aux limites d'exposition aux rayonnements énoncées pour un environnement non contrôlé et respecte les règles d'exposition aux fréquences radioélectriques (RF) CNR-102 de l'IC. Cet équipement émet une énergie RF très faible qui est considérée comme conforme sans évaluation du débit d'absorption spécifique (DAS).

The following statement is for host manufacturer, therefore isn't described on the user manual of the host device.

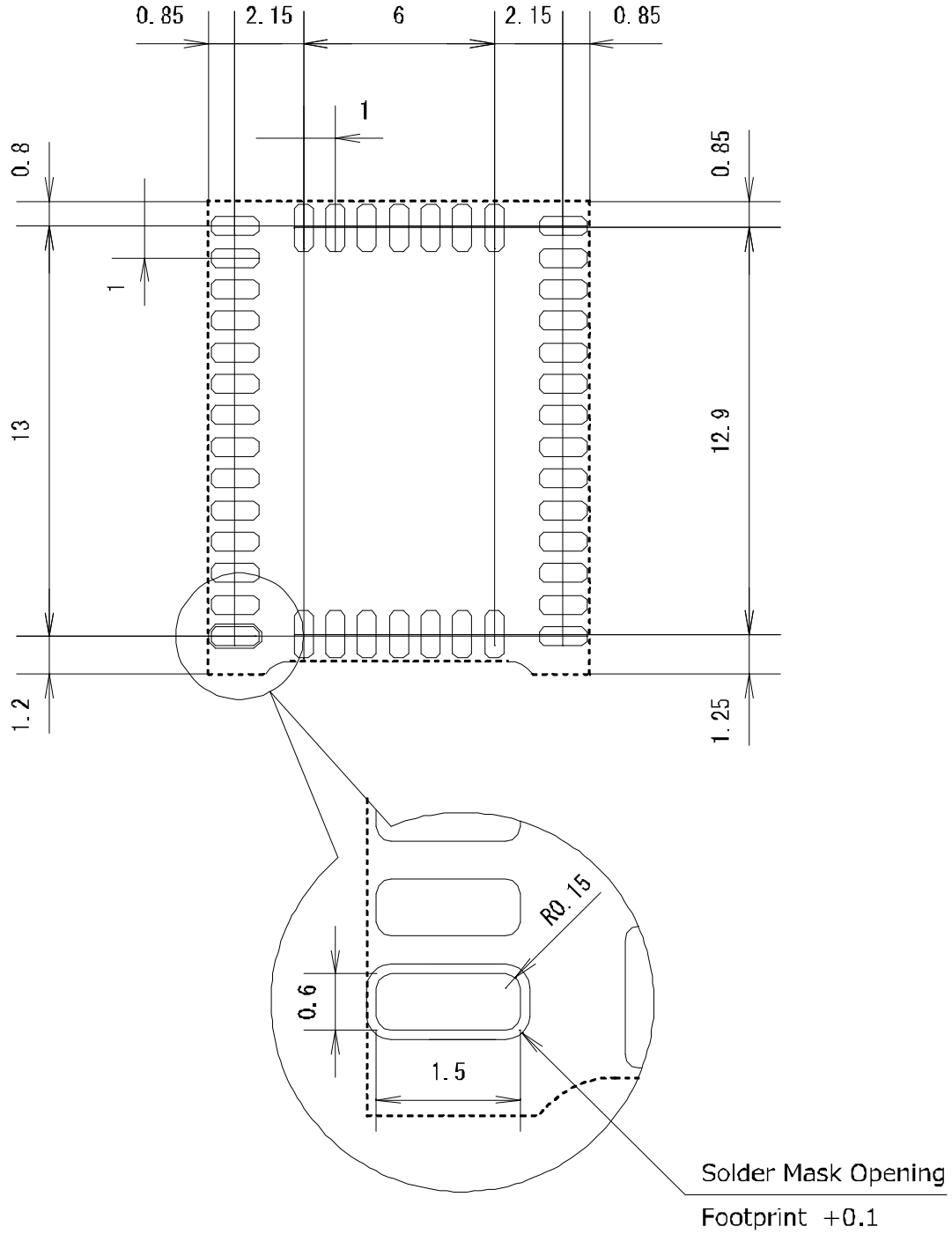
This radio transmitter (10608A-HRF2403) identify the device by certification number or model number if Category II) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.
Antenna type:1/4λ Monopole chip antenna Gain: Layout A 0.55dBi / Layout B 0dBi
Antenna type:1/2λ Dipole PIFA Gain: 0.9dBi
Antenna type:1/2λ Dipole antenna Gain: 2.0dBi

Le présent émetteur radio (10608A-HRF2403) 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.
Type d'antenne:1/4λ Monopole chip antenna Gain: Layout A 0.55dBi / Layout B 0dBi
Type d'antenne:1/2λ Dipole PIFA Gain: 0.9dBi
Type d'antenne:1/2λ Dipole antenna Gain: 2dBi

1. PCB layout (unit:mm)

① Footprint dimensions on PCB layout (Layout A)

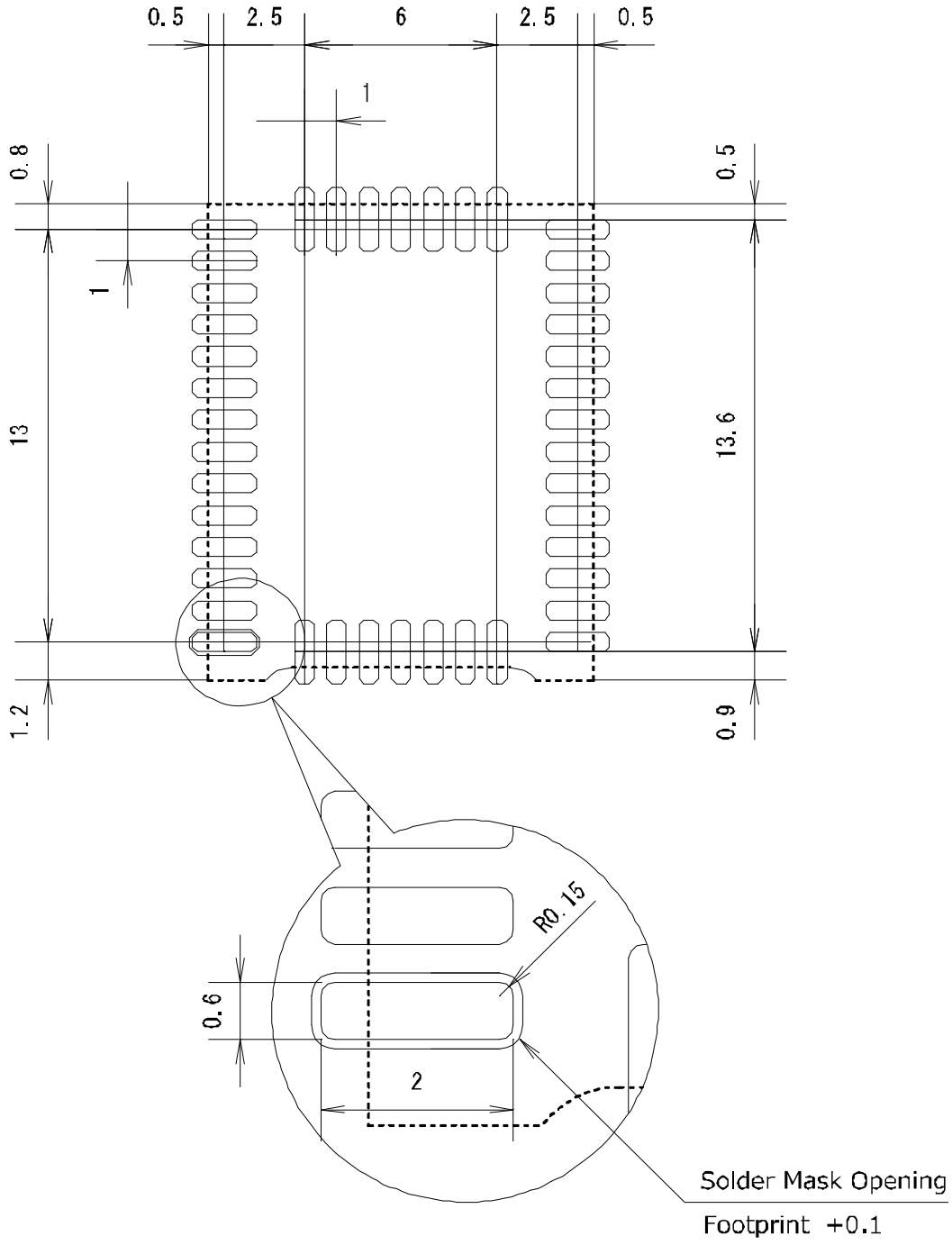
Layout A : Small footprint.
Mounted in the smallest area.



② Footprint dimensions on PCB layout (Layout B)

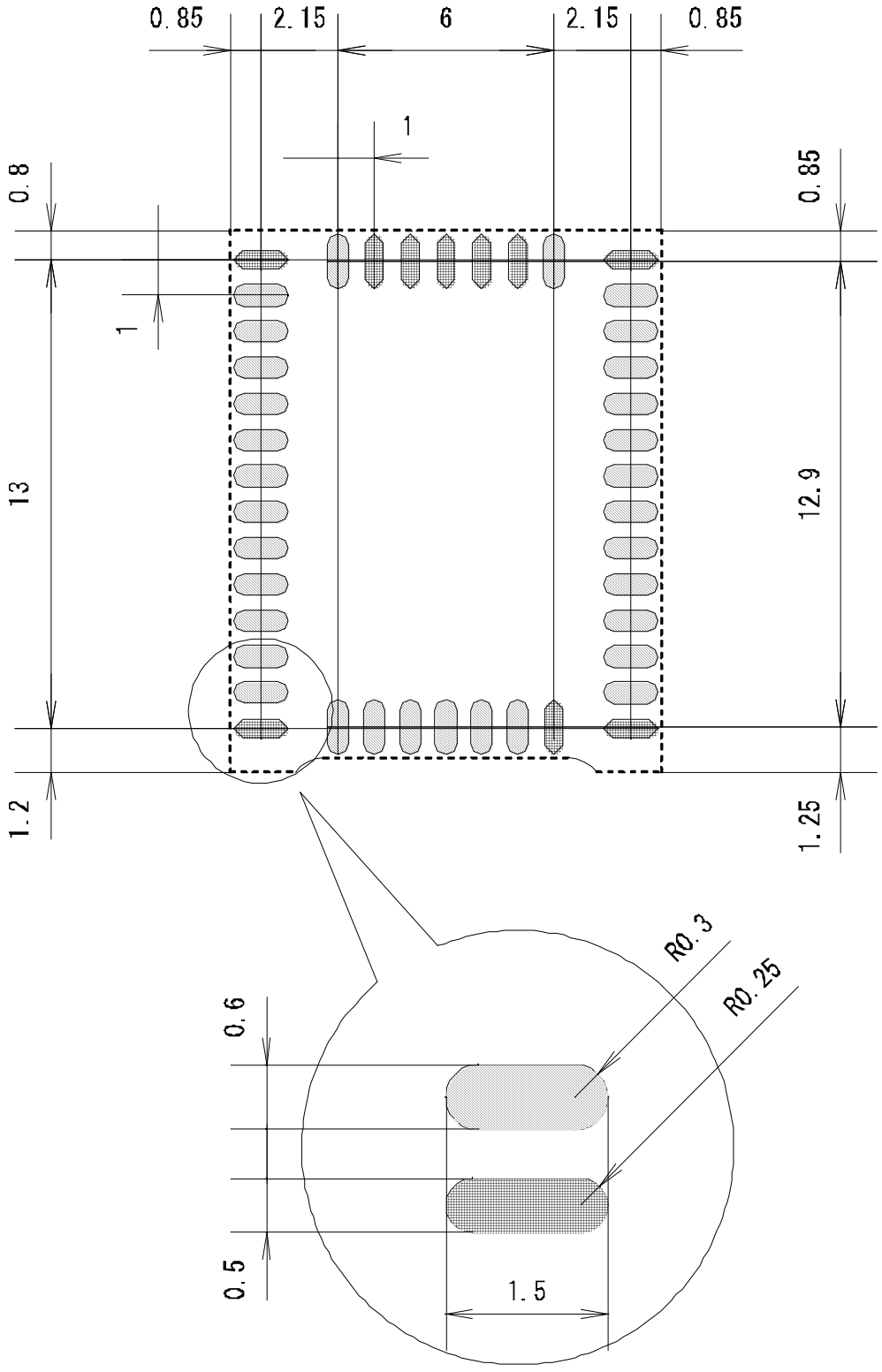
Layout B :The footprint is exposed on the outside of the module.

Although the mounting area is large, input / output can be checked with a tester.

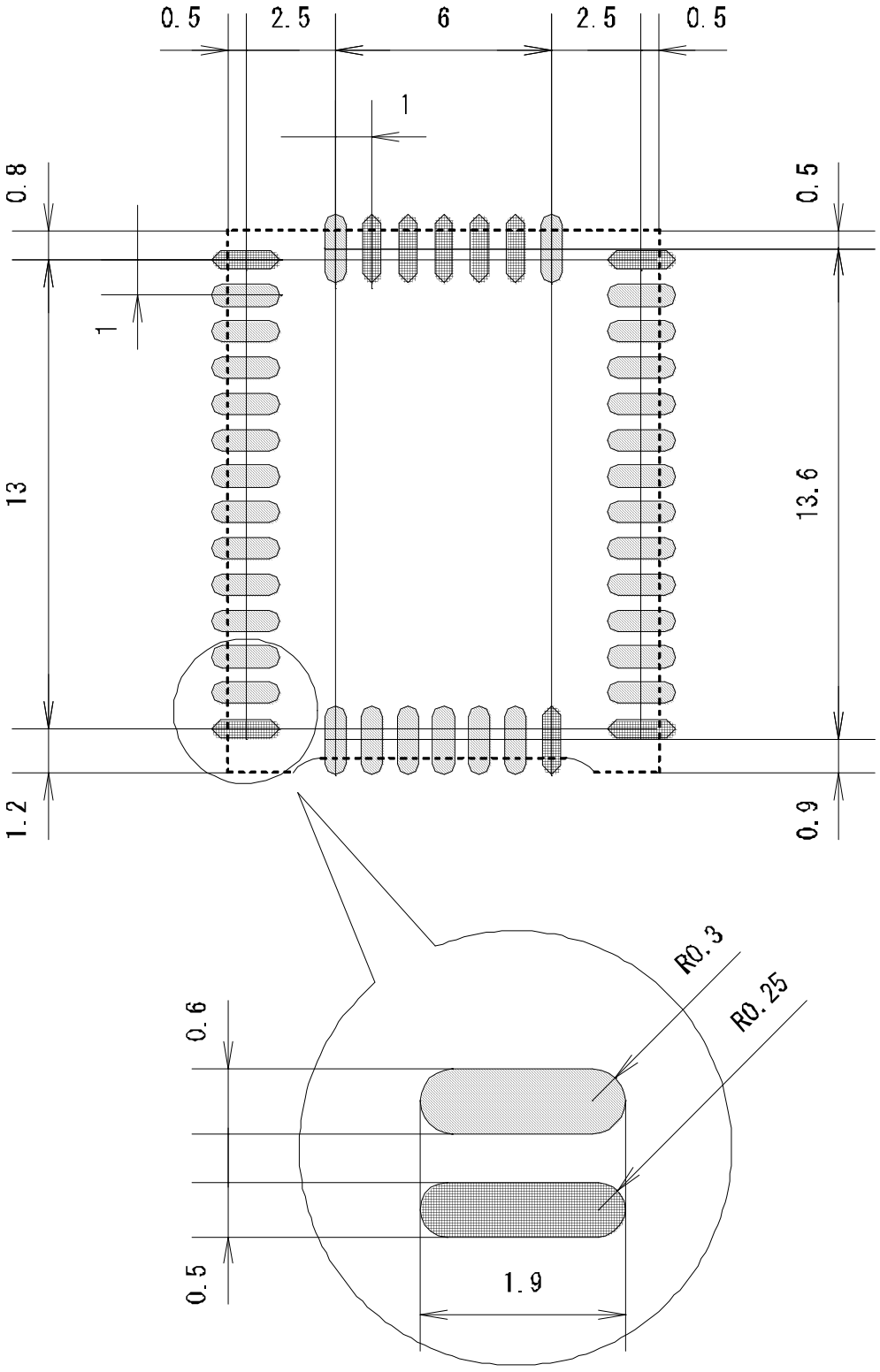


2. Stencil Openings (unit:mm)

① Layout A



② Layout B



3. About antenna installation

Note: The antenna cannot be used except for ① to ③ below.

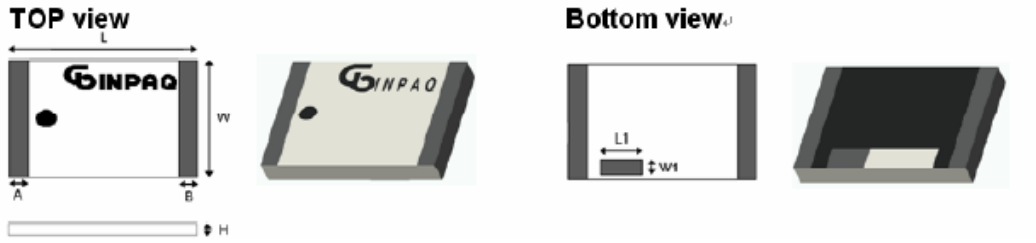
① 1/4λ Monopole Chip Antenna

・The chip antenna is mounted on the board on which the module is mounted.
・Chip antenna is mounted in either layout A or layout B
・Layout A requires a large clearance area but has a higher gain than Layout B.
・Layout B can have a narrower clearance area, but the gain is smaller than Layout A.

■Antenna Information

Item	Layout A	Layout B
Part Number	ACA-5036-A2-CC-S	
Manufacture	INPAQ Technology Co., LTD	
Shape	λ/4 Monopole	
Frequency	2.40GHz～2.50GHz	
Impedance	50Ω	
VSWR	Less than 2.5	
Peak Gain	0.55dBi	0dBi
Connector type	SMD Mounting	

■Antenna Dimension

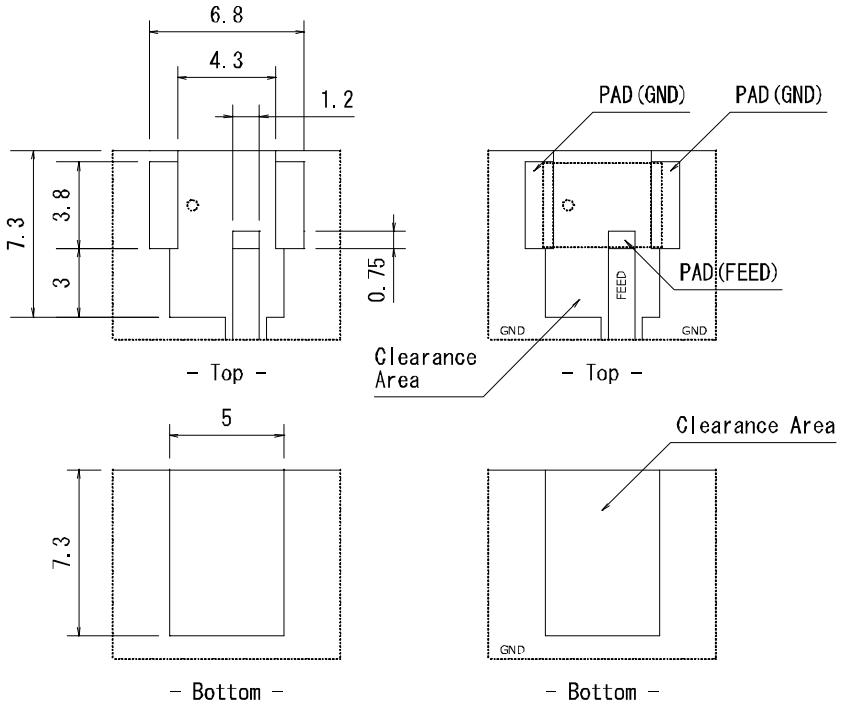


Chip Antenna	L	W	A	B	L1	W1	H
ACA5036	5.2±0.3	3.7±0.3	0.45±0.25	0.45±0.25	1.1±0.20	0.55±0.20	0.70±0.15

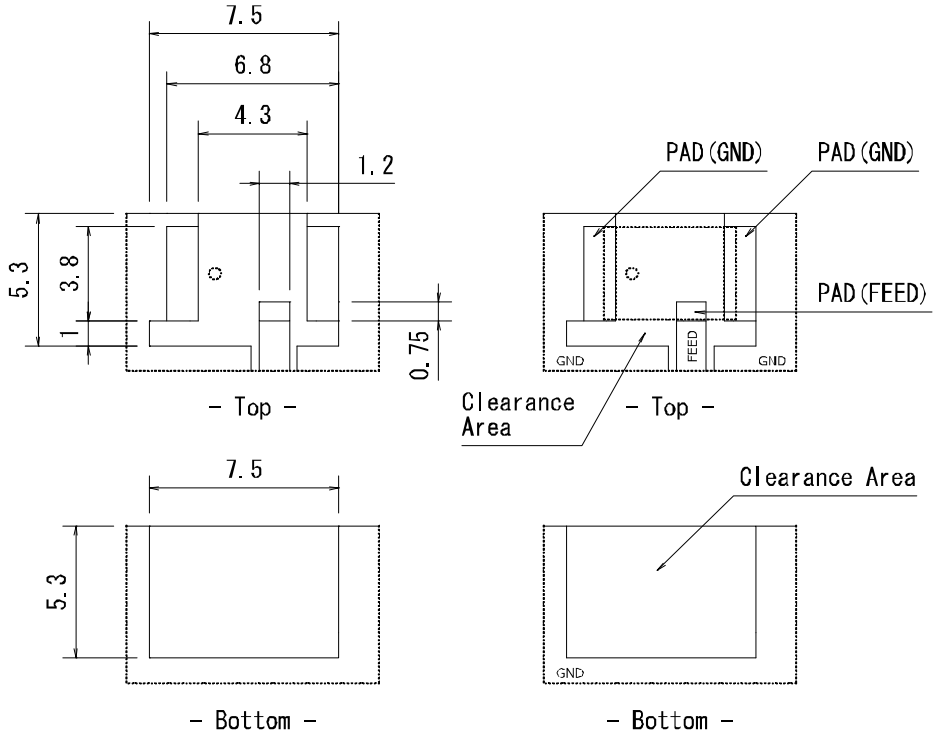
(unit:mm)

■PCB layout (unit:mm)

<Layout A>



<Layout B>



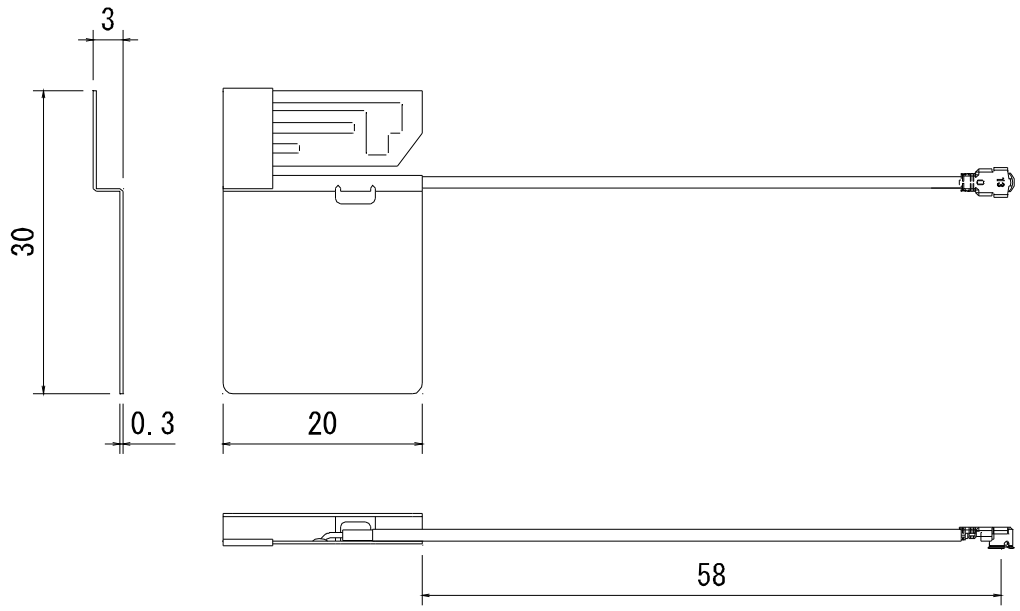
② 1/2λ Dipole PIFA

・PIFA is a planar inverted F antenna.
・Connect to the coaxial connector of HRF-2403,
・The antenna is fixed to the inside of the housing with double-sided tape.
・It cannot be used for metal housings.

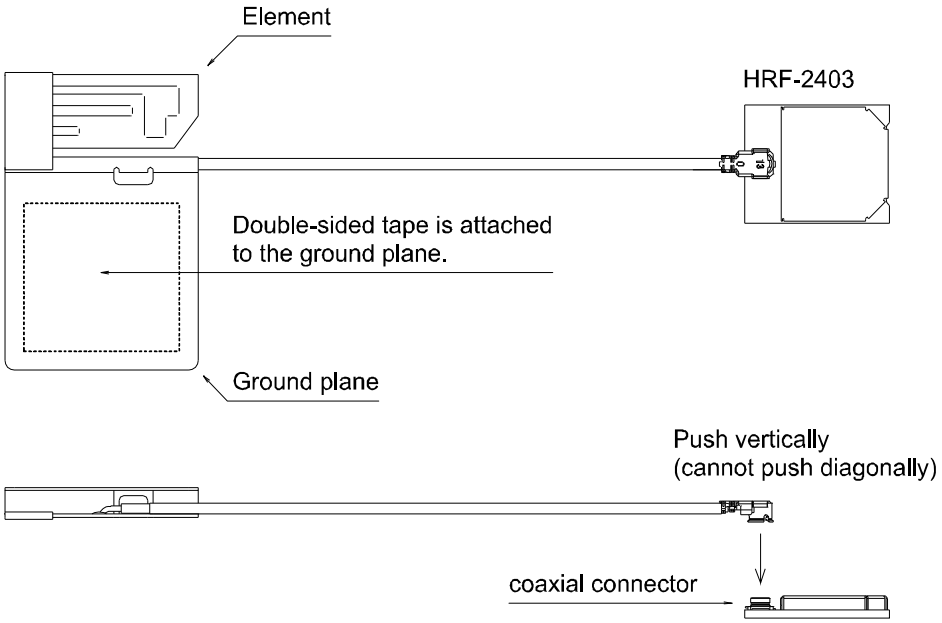
■Antenna Information

Item	Layout A
Part Number	ANTP1431-161C/M-AB-58B
Manufacture	NISSEI ELECTRIC Co., LTD
Shape	METAL PIFA λ/2 Dipole
Frequency	2.40GHz～2.50GHz
Impedance	50Ω
VSWR	Less than 1.5
Peak Gain	0.90dBi
Connector type	UFL

■Antenna Dimension (unit:mm)



■Installation



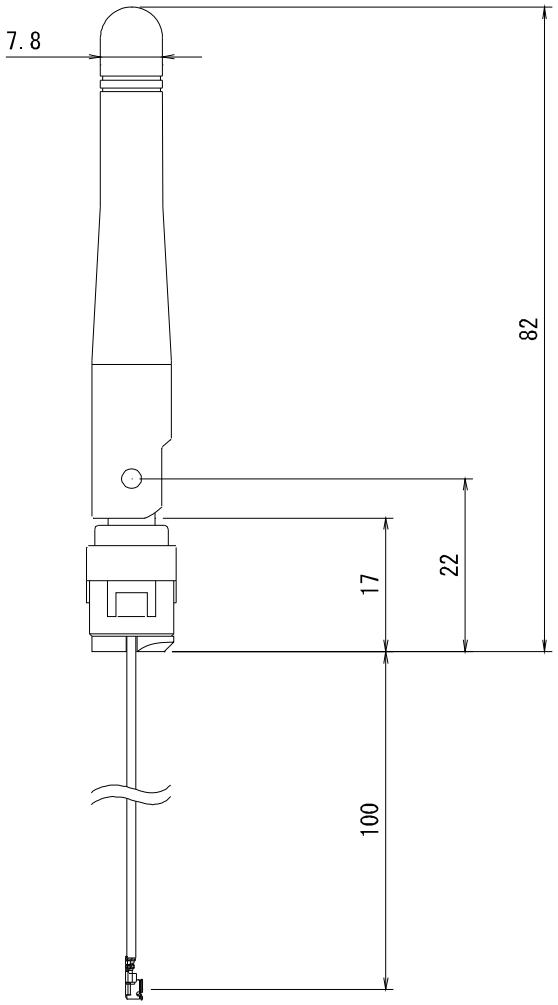
③ 1/2λ Dipole Antenna

・This antenna is fixed by making a hole in the housing. (Panel Mount / Snap-In)
・Connect to the coaxial connector of HRF-2403,
・Can be used for plastic and metal housings.

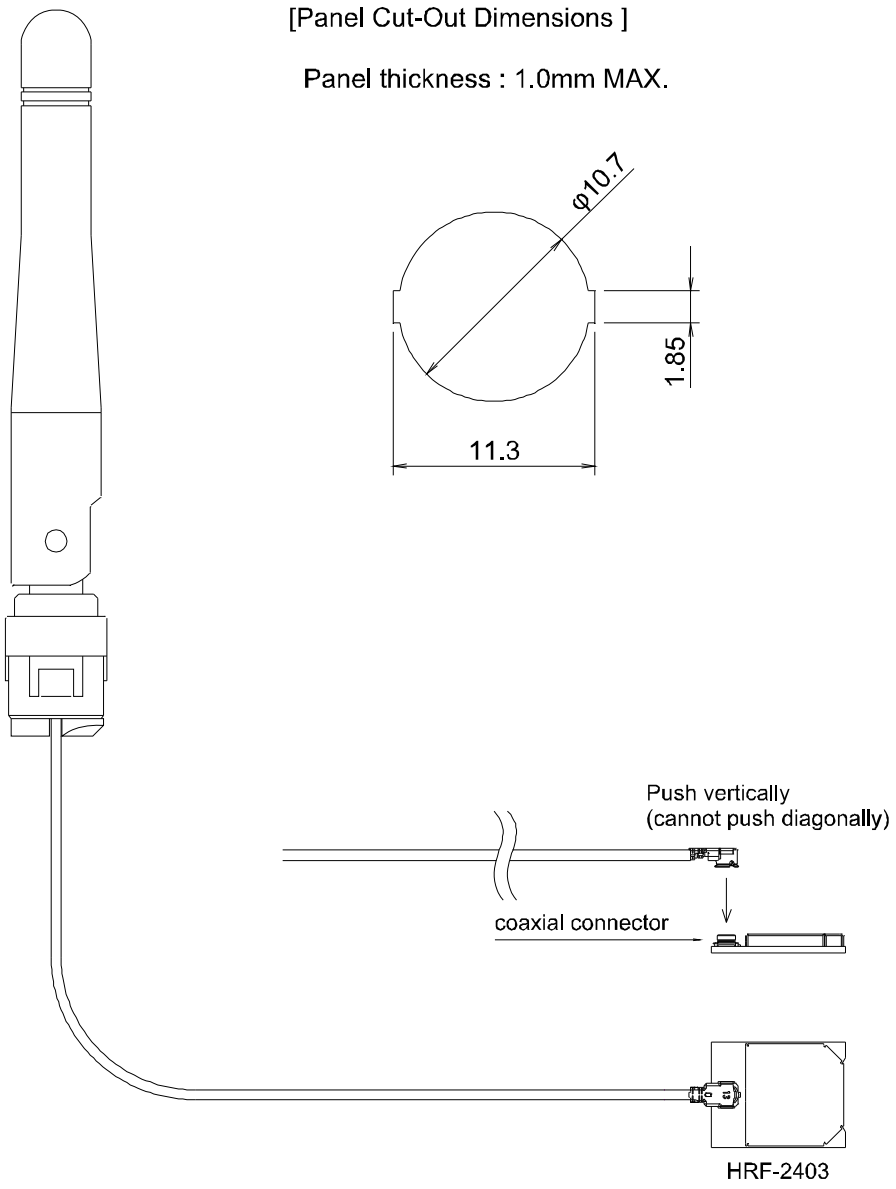
■Antenna Information

Item	Layout A
Part Number	M35-FL-113-100-IPEX
Manufacture	Tekfun Co., LTD
Shape	λ/2 Dipole
Frequency	2.40GHz～2.50GHz
Impedance	50Ω
VSWR	Less than 2.0
Peak Gain	2.0dBi
Connector type	UFL

■Antenna Dimension (unit:mm)



■Installation (unit:mm)



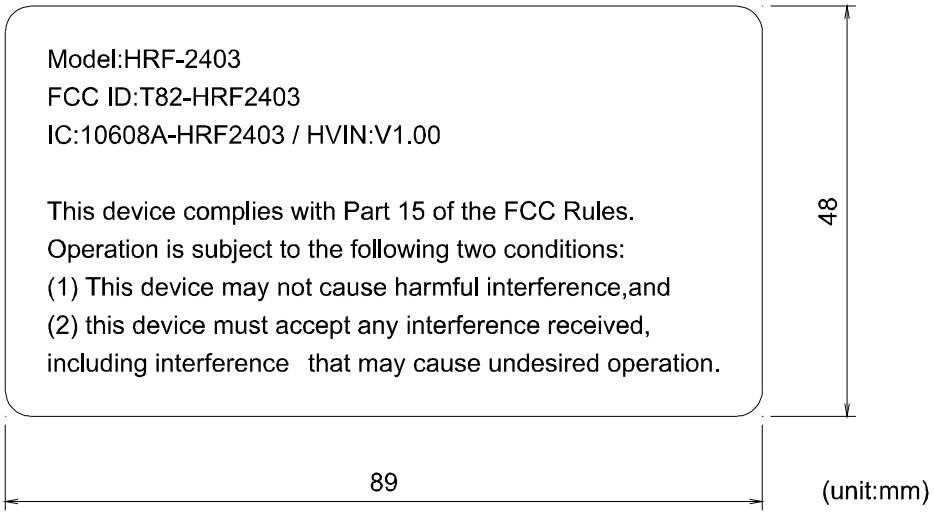
4. Label

Since there is no space to put the FCC ID / IC on the label at product, the following contents are also written on the package.

FCC ID : T82-HRF2403
IC : 10608A-HRF2403

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.

■Sample Label on the package



■Sample Location