

Global Bridge  
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# 2.4G/5G Dual-band RF Transceiver Module for CDMA Wireless Communication

## SKYBRIDGE RF-100

FCC ID: 2AOJB-SKYBRIDGERF100

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User Manual  
(Ver. 1.0)

## WARNING & PRECAUTION

This user manual is the basic manual for installation and operation and made for correct application of SKYBRIDGE RF-100 wireless product with CDMA technology. All users who install and use this 2.4/5G Dual-band RF Transceiver Module products must read and understand the contents of this manual. In addition, user must observe all safety warnings and precautions in order to prevent from any problem or malfunction and to avoid from physical danger or damage to property of the customer.

Be sure to keep it after installation.

- This User manual describes only for our 2.4/5G Dual-band RF Transceiver Module products and can not be used without permission at any time.
- Please note that manufacturer is not responsible for any loss or damage caused by using this product for any purpose other than its intended use.
- Do not disassemble the equipment at any time to change the function or repair SKYBRIDGE. You must contact the place of purchase and seek professional help.
- Note: All SKYBRIDGE RF-100 wireless products comply with the regulations for wireless digital devices in the KC, CE, and FCC regulations.
- SKYBRIDGE wireless CDMA products may generate, use and radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause interference with certain other wireless communications.
- SKYBRIDGE RF-100 wireless products may cause interference in all wireless installation environments. If interference from radio (TV, radio) reception occurs due to the use of wireless CDMA products, the following problems may be solved.
  - 1) Change the direction or position of the transmit / receive antenna.
  - 2) Separate the distance between the wireless device and the receiver (at least 15 meters away).
  - 3) Connect the device to an outlet on a different line than the one to which the receiver is connected.
  - 4) Contact your dealer or a wireless device / CCTV technician for assistance.
  - 5) Wireless connection may be disconnected by various external wireless circumstances at each places.



### Precautions before Installation (Warnings and Cautions for Safety)

Be sure to read and understand the contents of this manual before using SKYBRIDGE RF-100 Wireless products in order to eliminate safety and product problems and malfunctions.

Please read this manual carefully to ensure that the product is used correctly to protect the user's physical safety and property damage.



WARNING: Caution is required and incorrect installation may cause problems.



WARNING: This is expected to result in death or serious injury.

CAUTION: This is a potential for injury or material damage to persons.

## Federal Communications Commission (FCC) Statement

- The title page indicate "OEM/Integrators Installations Manual"
- The module is limited to OEM installation ONLY
- The OEM integrators is responsible for ensuring that the end-user has no manual instructions to remove or install module
- The module is limited to installation in mobile or fixed applications, according to Part 2.1091(b)
- The separate approval is required for all other operating configurations, including portable configurations with respect to Part 2.1093 and different antenna configurations
- Antenna information:

As indicate in the FCC KDB 996369 D03 OEM Manual v01:

"A list of antennas included in the application for certification must be provided in the instructions. ... The antenna list shall also identify the antenna types (monopole, PIFA, dipole, etc. (note that for example an "omni-directional antenna" is not considered to be a specific "antenna type"))."

- Grantees are responsible for the continued compliance of their modules to the FCC rules. This includes advising host product manufacturers that they need to provide a physical or e-label stating "Contains FCC ID" with their finished product. See Guidelines for Labeling and User Information for RF Devices – KDB Publication 784748

15.21 You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the 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 interference and
- 2) this device must accept any interference, including interference that may cause undesired operation of the device.

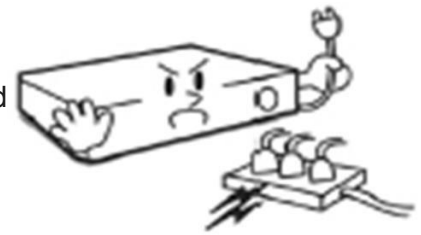
15.105(b) This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can 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.

## FCC RF Radiation Exposure Statement:

This module complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

The input voltage of wireless SKYBRIDGE RF-100 products should be connected 3.3V DC and the input current should be supplied more than 800mA. The power outlet must be grounded and never used with a heating device, air conditioner, magnetic field and radio wave generator. Never use it with an electric motor, a generator, an antenna using another frequency, or a radio wave generator.



To prevent damage caused by lightning accident or external electric shock, be sure to use protective equipment or protection device together. It may cause fire, electric shock and personal injury.



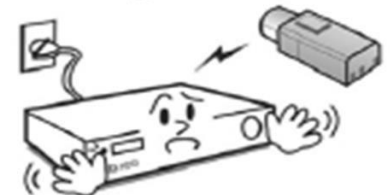
Never disassemble or disassemble the wireless SKYBRIDGE RF-100 product, and do not repair or modify it by yourself for any reason.

\*It may cause fire and electric shock.

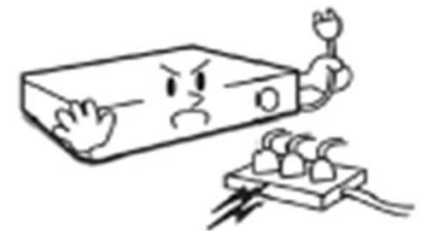


Be sure to turn off the power of the wireless SKYBRIDGE RF-100 device before connecting the camera or antenna, and never connect additional equipment while the product is running. Connect all equipment and devices, then power on.

\*It may cause fire, electric shock and personal injury.



The input voltage of wireless SKYBRIDGE RF-100 products should be connected 3.3V DC and the input current should be supplied more than 800mA. The power outlet must be grounded and never used with a heating device, air conditioner, magnetic field and radio wave generator. Never use it with an electric motor, a generator, an antenna using another frequency, or a radio wave generator.



Wireless SKYBRIDGE RF-100 products should never be installed in places with high humidity, dust, heat, etc. Be sure to check environment of installation site beforehand to prepare measures for protection against moisture, water and heat.

\* It may cause fire, electric shock, lightning accident, personal injury.



In any of the following cases, immediately turn off the power to the unit, and then contact the place of purchase for repair.

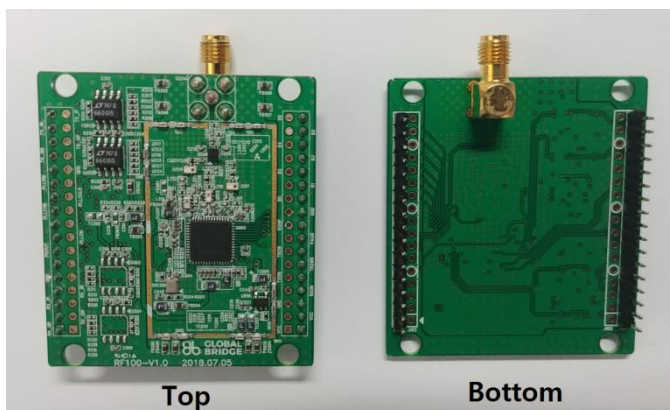
- 1) If the power supply, connector, or outer shape is damaged.
- 2) When rain or water enters the equipment
- 3) If liquid has been spilled on the device or an abnormal substance
- 4) If the unit does not operate as described in this manual (operation may be damaged if operated in a manner other than those specified in the Manual).
- 5) If the unit is dropped or thrown, the product is damaged.
- 6) If there is a sharp change in performance
- 7) Damage caused by natural disasters such as lightning, user mistakes, errors or carelessness will be repaired by the user at their own expense even during the warranty period.

# Product Introduction

## KEY FEATURE OF **SKYBRIDGE® RF-100**

- Useful for CSMA / CA + CDMA / TDMA wireless communication system
  - Convergence & multiple mobile communication technology
  - High-speed digital data wireless transmission and massive data wireless transmission
- Can use as 2.4G/5.8G dual-band RF solution for ISM/WLAN
- Applied AL7230S as RF Transceiver IC
  - Is a highly integrated RF transceiver IC for 2.4 GHz and 5 GHz dual band, and combines all functions of the transceiver in a single chip.
  - Integrates on chip PA and PLL with embedded loop filter to minimize the use of external components to design an RF subsystem.
  - Receiver with 34/32 dB RF selectable gain range and 60 dB baseband variable gain range
  - Integrated baseband filter s with programmable bandwidth for Transmit and Receive
  - Three wire interface for transceiver control
  - Integrate PA with 20dBm output power for 11b, 17dBm for 11g, and 15dBm for 11a
  - Integrated PLL with on chip loop filter
  - Single ended LNA input without the need of external balun
  - On chip DC offset correction
  - Embedded IQ mismatch calibration
- Support 17 x 2 pins connector for external host interface
  - Independent wireless network circumstance without AP or TRX Tower or other antenna

## PACKAGE CONTENTS



RF-100 Module



User Manual

# Product Description

## 1. Module Information

Division	Description
Model Name	SKYBRIDGE RF-100
Product Overview	2.4G/5G Dual-band RF Transceiver Module for Wireless Communication
Image	
Operating Frequency	2410 ~ 2474 MHz / 5733 ~ 5813 MHz
Antenna information	Type: Dipole antenna Peak gain: 2.4GHz- 2.5dBi / 5GHz- 4dBi
Size	50mm x 55mm
RF Connector	SMA Female Type for antenna connection
Input Voltage/Current	3.3V / 2.4GHz = 290 mA Typ. / 5GHz = 370 mA Typ.
Tx Power (OFDM mode, EVM<5.6%)	2.4GHz = 17 mA max. / 5GHz = 14 mA max.

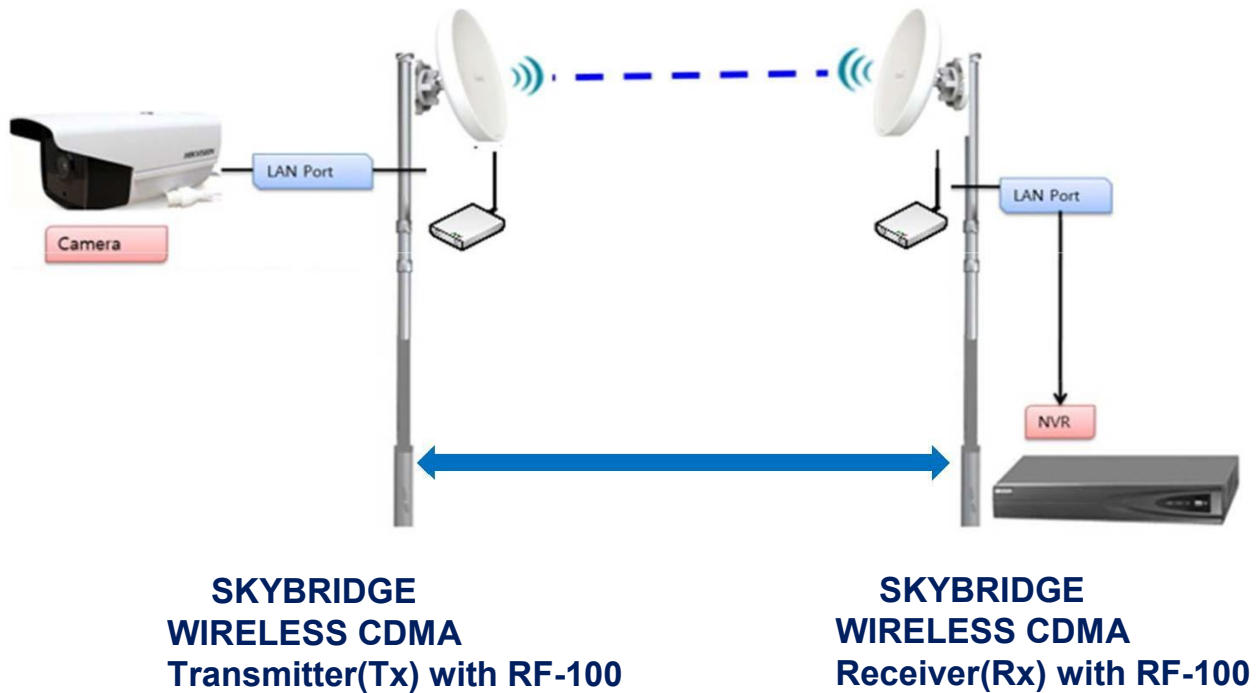
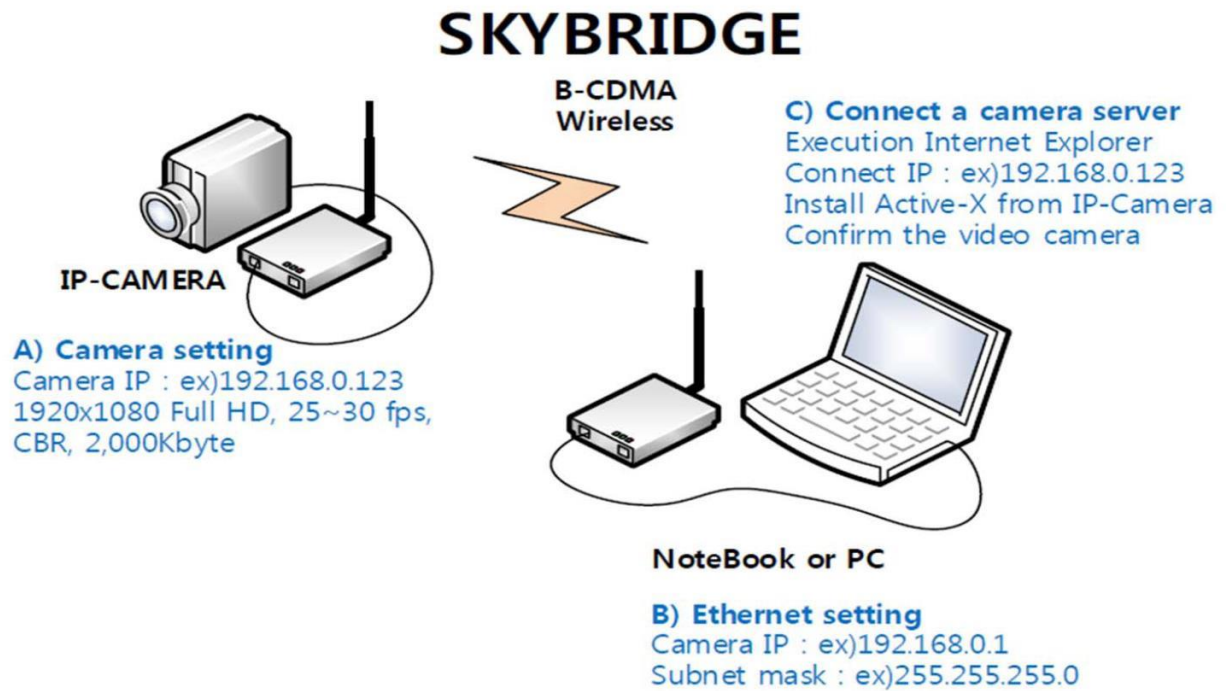
Connector					
J101			J104		
PIN No.	SIGNAL	DESCRIPTION	PIN No.	SIGNAL	DESCRIPTION
1	RX_BBQP	Output, Differential Analog, RX BB output	1	VDD	Supply Voltage 3.3 Volts
2	RX_BBQN	Output, Differential Analog, RX BB output	2	VDD	Supply Voltage 3.3 Volts
3	RX_BBIP	Output, Differential Analog, RX BB output	3	GND	Ground
4	RX_BBIN	Output, Differential Analog, RX BB output	4	RX_ON	Input, Digital Control, RX Timing Control
5	GND	Ground	5	TX_ON	Input, Digital Control, TX Timing Control
6	NC	Not Connected	6	TR_SWN	Input, Digital Control, RF Switch control
7	PD_OUT	Output, Analog, Power Detector output	7	TR_SW	Input, Digital Control, RF Switch control
8	PLL_ON	Input, Digital Control, PLL Timing Control	8	PA_ON	Input, Digital Control, PA Timing Control
9	NC	Not Connected	9	RX_HP	Input, Digital Control, RX DCO HPF BW control
10	PLL_CSB	Input, Digital Control, 3-wire Serial Interface	10	GND	Ground
11	PLL_SCLK	Input, Digital Control, 3-wire Serial Interface	11	AGC_B0	Input, Digital Control, RX BB AGC gain control / TX AGC gain control
12	PLL_DIN	Input, Digital Control, 3-wire Serial Interface	12	AGC_B1	Input, Digital Control, RX BB AGC gain control / TX AGC gain control
13	GND	Ground	13	AGC_B2	Input, Digital Control, RX BB AGC gain control / TX AGC gain control
14	TX_BBQN	Input, Differential Analog, TX BB input	14	AGC_B3	Input, Digital Control, RX BB AGC gain control / TX AGC gain control
15	TX_BBQP	Input, Differential Analog, TX BB input	15	AGC_B4	Input, Digital Control, RX BB AGC gain control / TX AGC gain control
16	TX_BBIN	Input, Differential Analog, TX BB input	16	AGC_B5	Input, Digital Control, RX RF gain control / TX AGC gain control
17	TX_BBIP	Input, Differential Analog, TX BB input	17	AGC_B6	Input, Digital Control, RX RF gain control

**\* Absolute Maximum Ratings**

RF-100 could be damaged by any stress in excess of the absolute maximum ratings listed below.

ITEM	MIN.	MAX.
Power supply voltage (Vcc)	-0.3V	3.6V
Pin voltage	-0.3V	3.6V
Maximum power dissipation	-	2W
Operating temperature	-40°C	+85°C
Storage temperature	-65°C	+150°C

# Application System map of wireless connection

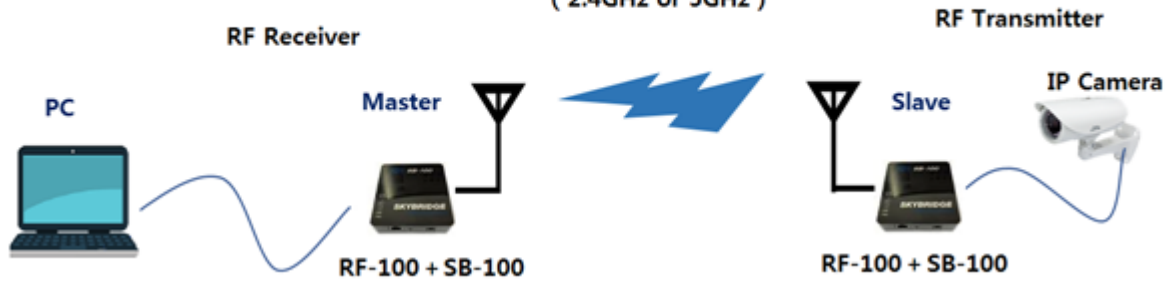




# Example for Wireless connection

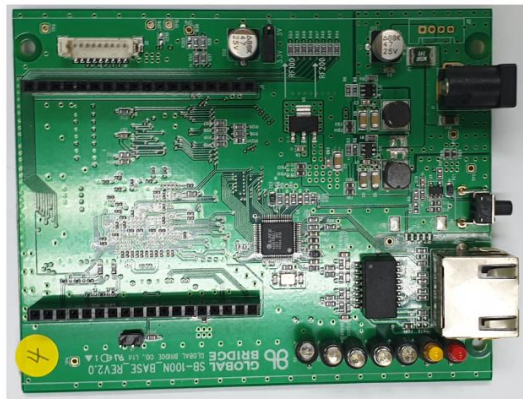
## B-CDMA Wireless Communication

( 2.4GHz or 5GHz )



RF-100

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SKYBRIDGE SB-100



In accordance with the Consumer Damage Compensation Regulations,  
we guarantee the following wireless products.

Serial No.	
	year                  month                  date

About Warranty Service by Manufacturer:

- Free Warranty period : 1 year

## Free Service

## Paid Service

1. If the free warranty period has passed
2. In the event of product malfunction due to customer's fault
3. (including during warranty period)
4. In case of malfunction due to carelessness, repair or modification
5. If the product is repaired by a specialist or unauthorized person of our product,
6. In the event of malfunction or damage caused by negligence or mistake
7. Other cases - In the event of a failure due to natural disasters

■ Service Center :

■ TEL :

■ FAX :

■ E-Mail :

■ <http://www.globalbridge.co.kr>

Global Bridge

**CDMA(CODE DIVISION MULTIPLE ACCESS) TECHNOLOGY**

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**SKYBRIDGE®**

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**THE BEGINNING OF IRON-WALL WIRELESS SECURITY WORLD**