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CDMA WIRELESS Image & Display & Data Communication Bridge System

SKYBRIDGE SB-200

FCC ID: 2AOJBSKYBRIDGESB200

USER MANUAL
(Ver. 1.0)

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WARNING & PRECAUTION

This user manual is the basic manual for installation and operation and made for correct application of SKYBRIDGE WIRELESS BRIDGE product with CDMA technology. All users who install and use this CDMA wireless communication 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 CDMA wireless products and cannot 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 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 wireless CDMA 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 SKYBIDGE Wireless CDMA 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.

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Federal Communications Commission (FCC) Statement

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 equipment 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.

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 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.

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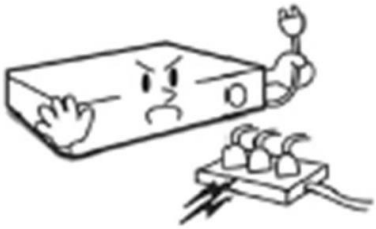
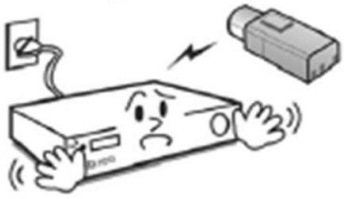
The input voltage of wireless CDMA SKYBRIDGE products should be connected 48V DC and the input current should be supplied more than 1.5A. The power outlet must be grounded and never used with a heating device, air conditioner, magnetic field and radio wave generator Never use it with an electric motor, 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 CDMA SKYBRIDGE 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 CDMA 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.



Wireless CDMA SKYBRIDGE 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 dropped, 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.

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Product Introduction

KEY FEATURE OF SKYBRIDGE® WIRELESS CDMA

- CSMA / CA + CDMA / TDMA
  - Convergence & multiple mobile communication technology
  - High-speed digital data wireless transmission and massive data wireless transmission

- High secured quality & unique IP security solution for ISM/WLAN Band range
  - WORLD First Wireless Solution Encrypted with Powerful Wireless CDMA Signal
  - Highly secured AES256/ARIA Encryption applied for all of wireless Data

- High efficiency CDMA Signal & Low RF frequency Competition
  - World first & only CDMA SOLUTION applied in the ISM BAND / WLAN band
  - Simultaneous application with WLAN, Bluetooth and ZigBee, mixed with other RF

- Support all of multimedia data & flexible A/V real-time image & data (QoS)
  - Wireless CDMA supply multi control function for various traffic of many piconet
  - Highly QoS requirement for real-time(30fps) high quality real-time image

- Multi-control for Various communication speed & wireless capacity
  - Making stable wireless network circumstance among each digital devices
  - Support UHD 4K, FULL HD(1080p/1080i), HD(960p/720p) + Audio + DATA

- High quality real-time image & data transmission for long & wide range
  - Transmits data of any size from 1km (3300ft) to maximum 10km by antenna devices

- Support all kinds & all brand of IPC & NVR & IP Devices
  - Independent wireless network circumstance without AP or TRX Tower or other antenna
  - Making secured & encrypted wireless solution for all kinds of digital products

PACKAGE CONTENTS

SB-200
Main
device

Power Adaptor
DC 48V 1.5A

Ethernet
LAN Cable

User
Manual

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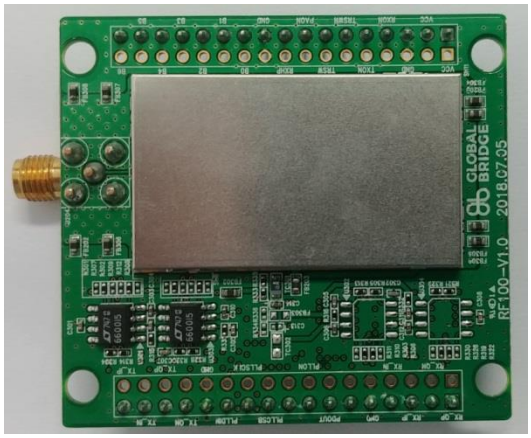
Module Information

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.

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Product Description

Front side of product

SIGNAL : BLUE

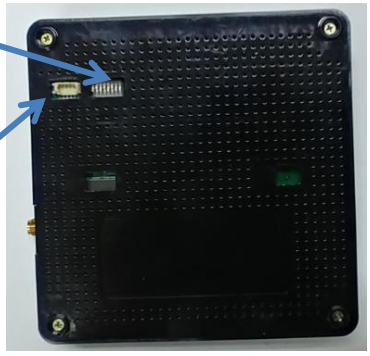
LINK : YELLOW

POWER : RED

Rear side of product

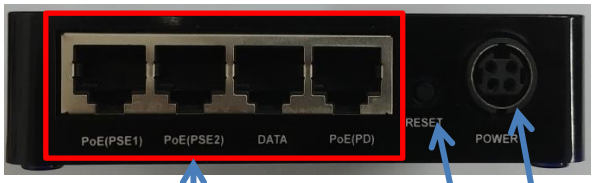
DIP Switch for setting

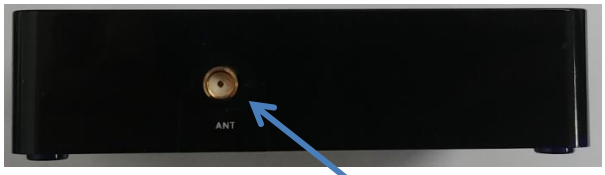
UART Connector for S/W Control



Directional Bracket

Top/Bottom side of product





POWER: DC48V/1.5A Recommended

ANT: RF Antenna connector (SMA Type) Antenna of end product is attached to the mainframe by bonding.

WAN: RJ45 CAT5/CAT6 with POE function (for IP CAMERA/NVR or digital IP Products)

RESET : Auto Pairing ((Initialize all of function & system)

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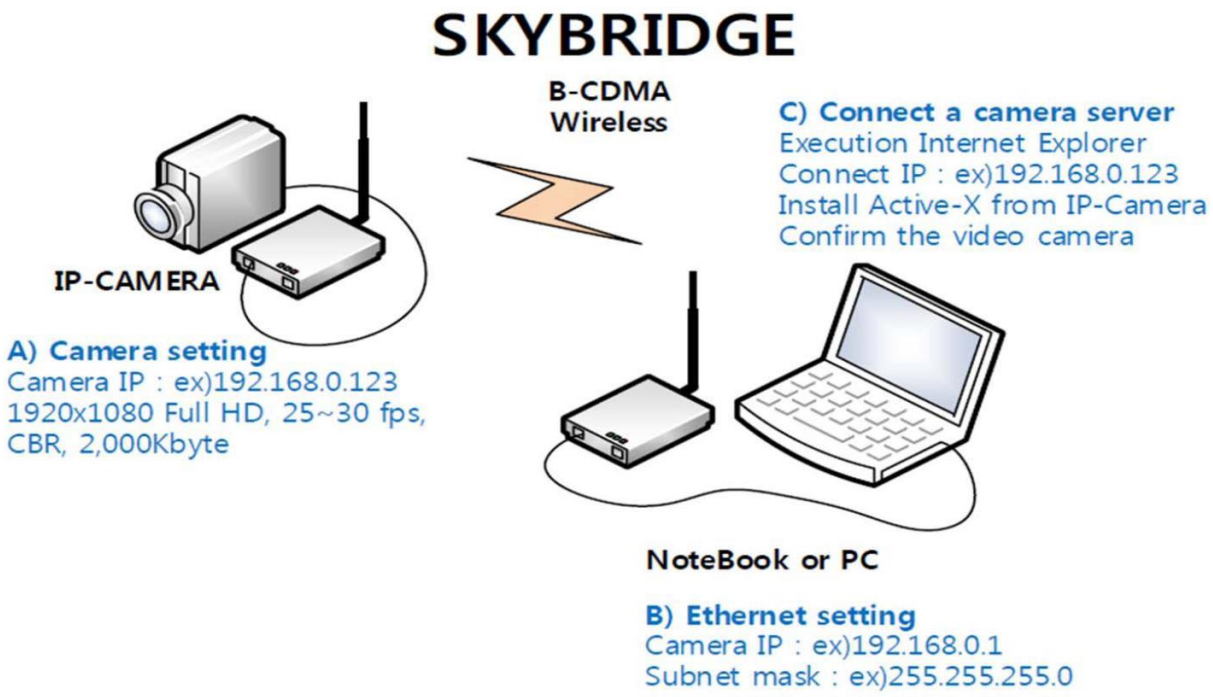
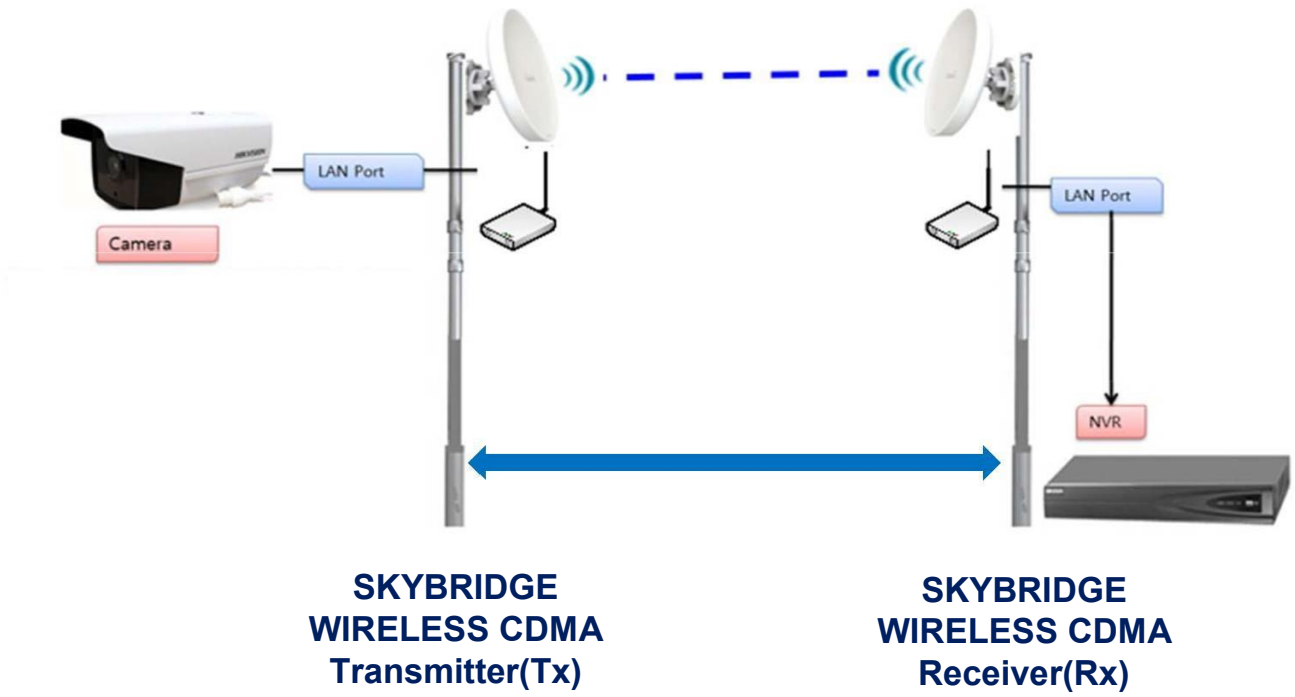
System map of wireless connection



Sample map of Installation (1 : 1)



*** Please pre-test & pre-check Tx-Rx devices before installation on the ground.
** Please connect & turn on MASTER(Rx) first and then SLAVE(Tx) next for stable connection
* Please following its procedure for quick & easy connection

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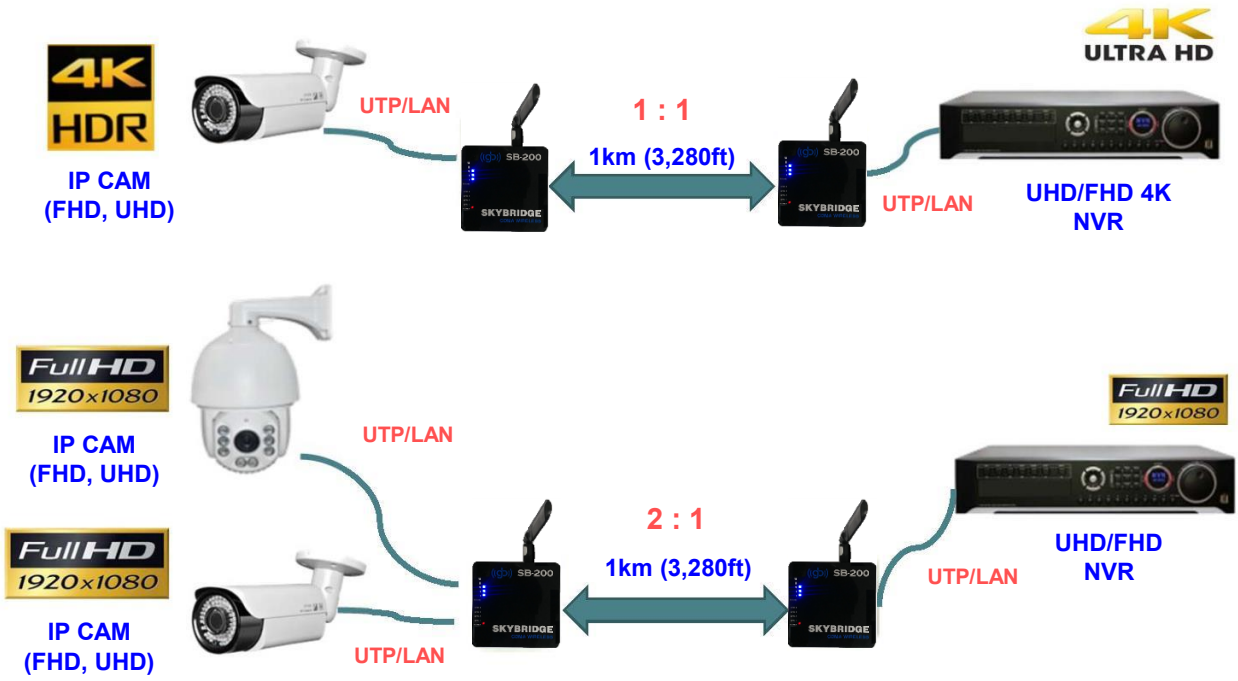
System Configuration



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Description of Connection & Installation

• SKYBRIDGE® WIRELESS CDMA SYSTEM

◇ Checking power connection and advance operation

1) Before installation, be sure to connect the output power plug of the adapter supplied with the product to the DC jack of the wireless product so that the LED of each part normally operates as shown below.

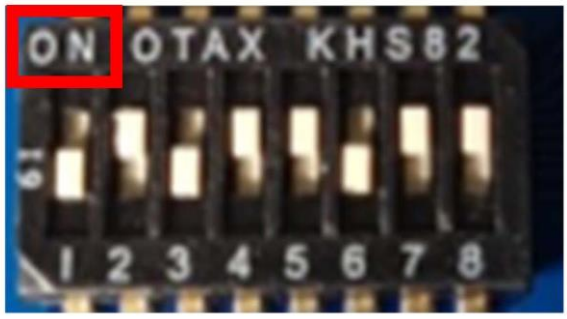
2) Be sure to disconnect the power supply before connecting other wireless devices or digital devices.

3) Connect other wireless devices or digital devices first, and finally connect the power again.
   * Please note that you will not receive any free warranty service from the manufacturer for any damage or loss of the product caused by using a power adapter other than the supplied Power Adapter.

SKYBRIDGE WIRELESS CDMA POWER ON

SKYBRIDGE WIRELESS CDMA POWER OFF

◇ 8Pin DIP SWITCH Setting for control Wireless CH



UP = ON
Function/Setting

CAUTION WARNING

DOWN = OFF
Function/Setting

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◇ Configuration of Wireless CH & Function setting

• 8Pin DIP SWITCH Setting for each function

DIP SW	Function	ON	OFF	GPIO Pin Allocation
1	Wireless Connection Control Setting	AUTO	MANUAL	GPIO 10
2	Master(Rx) / Slave(Tx) Allocation Setting	Master (Rx)	Slave (Tx)	GPIO 9
3	RF CH MODE Setting	AUTO/FLEXIBLE	MANUAL/FIXED	GPIO 8
4	RF CH Frequency Setting DIP SW No.4	Set the combination of DIP SW for channel setting like the below,		GPIO 7
5	RF CH Frequency Setting DIP SW No.5			GPIO 6
6	RF CH Frequency Setting DIP SW No.6			GPIO 5
7	Multi Connection setting	Master 1 : 1 Slave	Master 1 : N Slave	GPIO 4
8	Frequency Selection setting	2.4GHz	5.8GHz	GPIO 3

• DIP SWITCH Setting only for WIRELESS CHANNEL CONTROL

	DETAIL DIP SWITCH Number only for RF CH Setting		
CHANNEL	4	5	6
CH1 (2.410GHz/5.733GHz)	ON	ON	ON
CH2 (2.426GHz/5.749GHz)	ON	ON	OFF
CH3 (2.442GHz/5.765GHz)	ON	OFF	ON
CH4 (2.458GHz/5.781GHz)	ON	OFF	OFF
CH5 (2.474GHz/5.797GHz)	OFF	ON	ON
CH6 (5.813GHz)	OFF	ON	OFF

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Specification of products

Product Model : SKYBRIDGE® (Model : SB-200)

Host Interface

- Binary CDMA+ QPSK, DQPSK, 16/32/64QAM+TCM Modulation
- Single-Chip MAC and Baseband Processor system structure
- 16-bit, 60MHz DACs for Tx output & Differential ADCs for Rx input
- AMBA 2.0 Compliant Multi-bus System + KSX4650-1 Compliant
- High Speed/Full Speed/Huge Data Wireless Bridge - Max. 55MB
- 16/32 Configurable Local Bus I/F for External Processor Built-in
- Digital Tx-Rx Automatic Gain Control(AGC) system

Medium Access Controller & External Memory I/F

- Hardware-Based MAC Access Protocol Management
- Hardware-Based Tx-Rx Automatic Frame Parsing
- Hardware-Based Automatic Immediate recognition
- Hardware-Based Strongest Encryption/Decryption support

Using CCM(CTR+CBC-MAC) Mode - AES128/256 & ARIA

- Cipher Algorithm supports different clock domain btw MAC & PHY
- Dedicated MAC DMA for real-time MAC data processing
- Dynamic Auto-Allocation of TX & RX memory blocks
- Dynamic RF-Channel Automatic searching & allocation
- Automatic REBOOT system & RESET power control
- Automatic LNA/RF AGC Control - Max. 55MB at 30m / Max. 12.5MB at 1km
- Dynamic Link Quality Control - Watch-dog Channel & Auto CH selection
- External Flash, RAM and Slave Devices support
- Programmable 8/16/32bits Memory Data Bus Width Per Each Bank

System & Baseband Processing

- ISO IEC JTC1 SC6 N24771 Compliant
- Variable Data Rate : RATE1 ~ RATE8 Flexible (1Mbps ~ MAX 54Mbps)
- Single-Chip MAC and Baseband Processing Structure
- 2-ch SPI for Serial EEPROM Interface
- 16C550 Compatible 2-ch UART
- 21-ch Interrupt Controller
- 32-bit Watch-dog Timer
- 4-ch 32-bit Counters/Timers
- Configurable up to 32 GPIO Signals with Interrupt Capability
- 1ch I2C serial interface Support
- Real Time Clock Timer Support
- Max. 16bit Host Address Support
- DC offset cancelation, Symbol Timing Automatic Recovery
- Channel EQU, TCM Decoder, Binary CDMA Decoder Built-in
- External Crystal or Oscillator for Clock Source
- Wide working Temperature: -30C° ~ +80C°
- Surge Protection & Reverse Polarity Protection
- Power Management Control for Low Power (DC 48V / 1.5A Max.)

SkyWatch® S/W for SKYBRIDGE®

- Variable Data Rate viewer program for Laptop/Desktop
- RF Data viewer program for checking stable RF circumstance
- Support CCA mode(Checking for Energy level and RSSI Level)
- Viewer of RF Link Quality of Signal Level(QoS Level)
- Checking S/W for LNA/RF AGC Control Level

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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

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CDMA(Code Division Multiple Access) Technology

SKYBRIDGE®

The Beginning of Iron-wall Wireless Security World

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USER MANUAL (Ver. 1.0)

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