

CUSTOMER APPROVAL SHEET

Company Name	4SEILS Co., Ltd.
Product	VIVA AP
Model	AP100
CUSTOMER APPROVAL	

- ☐ **APPROVAL FOR SPECIFICATIONS ONLY (Spec. Ver. 1.2)**
- ☐ **CUSTOMER REMARK:**

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VIVA-AP Datasheet

VIVA-AP (Smart Electronic Information Label System)

REV 1.2

2026-06-18

Summary

This datasheet presents the general performance and specifications of VIVA Tag for ESL (Smart Electronic Information Label) System.

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Document History

REV	Date	Revision History	Page
1.0	11-Dec-23	Initial release	
1.1	24-Jun-24	Address change	
1.2	18-Jun-26	Added FCC Compliance Statement	

1 General Description

The VIVA-AP is a part of 4SEILS VIVA (For Electronic Information Label) System, also consisting of VIVA Tags. The VIVA system is a system that automatically displays information through wireless communication instead of traditionally printed on paper in retails, logistics, and factories. The VIVA AP receives data from the ESL server and wirelessly transmits the new data to VIVA Tags. The VIVA tags displays are automatically updated with the new information.

The VIVA-AP is based on 2.4Ghz General purpose RF for low power wireless communication applications. It consists of multiple modems with multiple antennas. The power supply method of the VIVA-AP uses PoE or adapter.

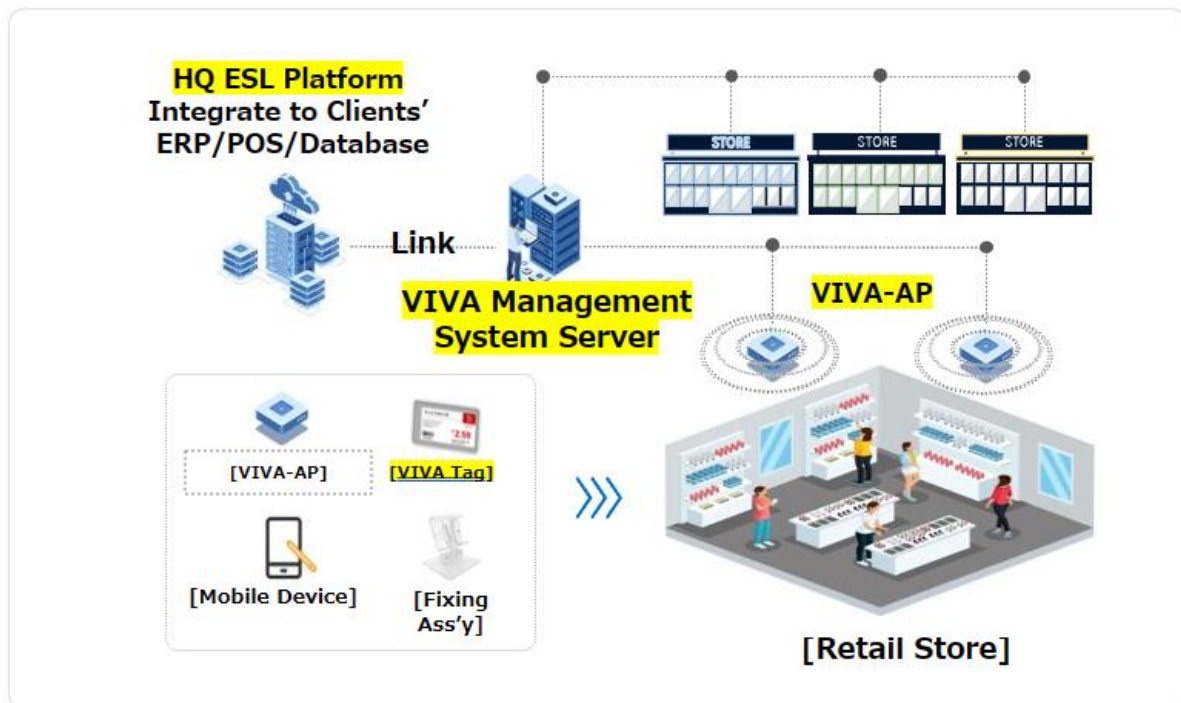


Figure 1. VIVA System

1.1 Features

- Operating System (OS): Embedded Linux. supports OTA upgrade.
- RF system: Operating on 2.4GHz Unlicensed ISM band for 2.4Ghz RF six RF modules and antennas for diversity function.
- Diversity: Communicate through the optimal route by selecting the best signal
- Compatibility: Supports all 4SEILS Tags, including LCD.
- Management configuration: Support Web configuration.
- Network protocol: gRPC, HTTP
- LED indicator: operates status indication.

1.2 Typical Application

- Retail, factory, logistic industry with electronic displays, platforms, solutions and services.
- Intelligently communicating, managing, and optimizing price and product information.

1.3 Appearance

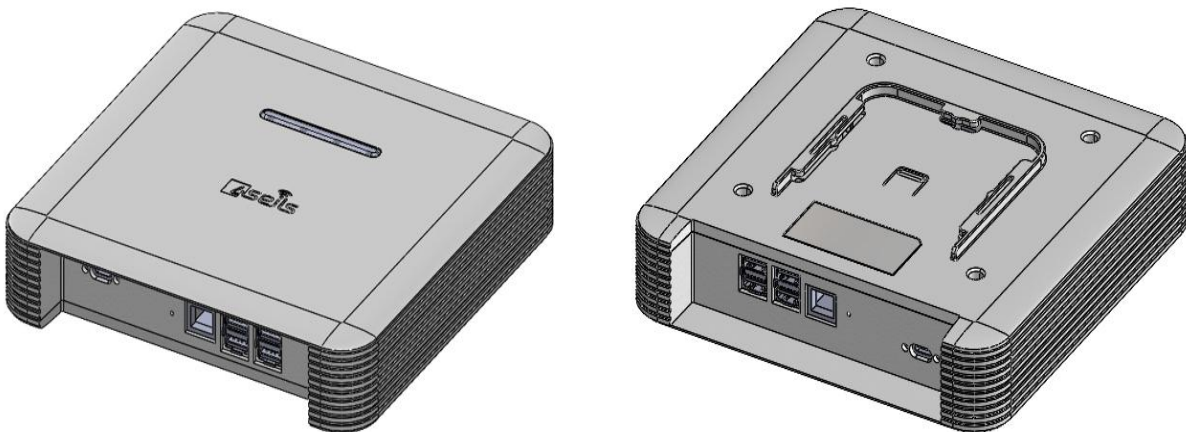


Figure 2. Appearance

2 Specification

2.1 Product Specification

ITEM		Description
Size (W x H x D)		200 mm x 200 mm x 39.5 mm
Weight		440.0g (Not including install accessories & package)
Power Source	Main	PoE (Power over Ethernet (IEEE802.3af), Class 0)
		1) Input Voltage Range:36~57VDC
		2) Nominal Input Voltage: 48VDC
		3) Output Voltage: 5VDC±5%
		4) Max Current: 2.0A
	AUX	DC Adapter (5V, 3A)
Antenna type		Internal antenna
Communication		2.4GHz Unlicensed ISM band (2401~2482MHz, 82ch)
Modulation / Data rate		GFSK / 1Mbps
Communication Distance		Radius 25m (Line of Sight)

2.2 Radio (RF) Specification

Item	Parameter	SPEC			Unit	Condition
		Min	Typ	Max		
TX	Transmit Power	-4	1.5	3	dBm	
	Error Vector Magnitude	-	10	28	%	When measured for 100 chips
	Frequency Error	-96	-	+96	%	
RX	Receiver Sensitivity	-90	-	-	dBm	PER <1%

** Test Channel : 2480MHz

2.3 Temperature Specification

Parameter	Specification				
	Min	Typ	Max	Unit	Condition
Operation Temperature	0		40	℃	@20~60% RH
Storage Temperature	-25		40	℃	

2.4 Mechanical Drawing

2.4.1 Case Dimension

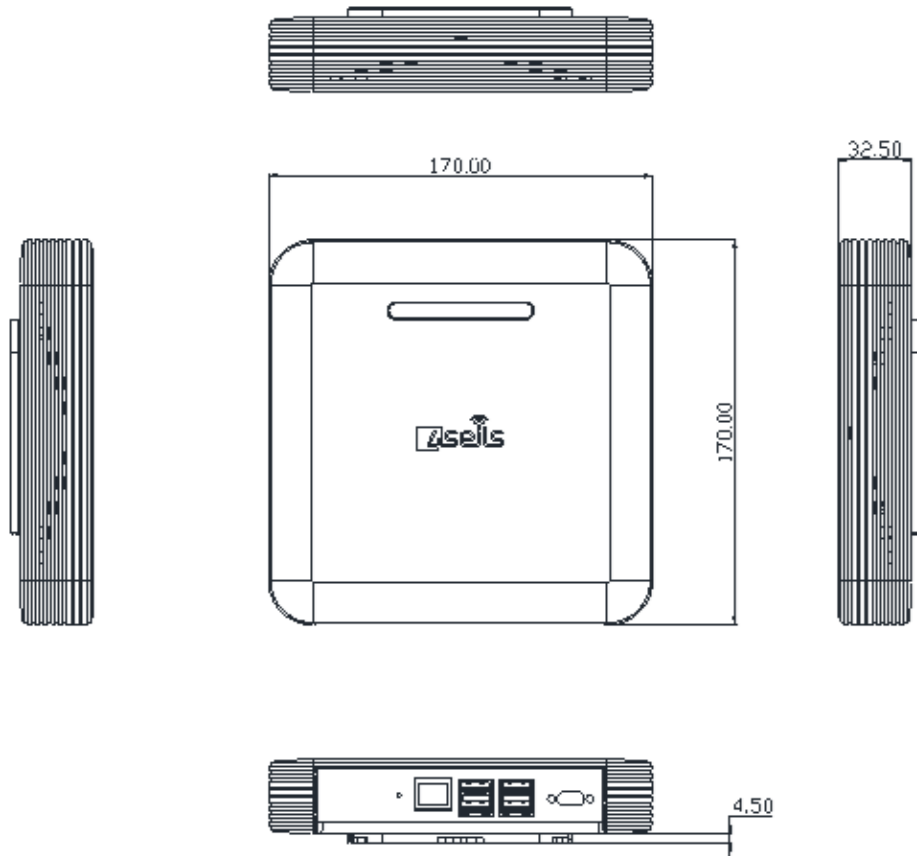
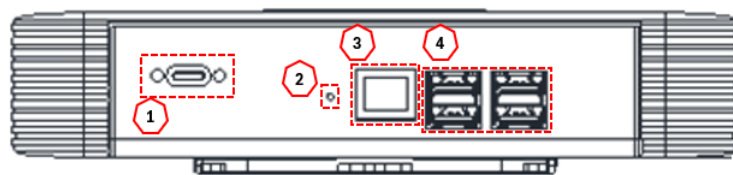


Figure3. AP100 Mechanical Dimension

2.4.2 Port Description



1. USB Power
2. Reset Switch
3. Gigabit Ethernet port (supports PoE)
4. USB 4 Ports (Not in use)

2.5 Label Marking

2.5.1 Serial Number Information

Serial Code Value

Digit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Code	①					②		③	④	⑤	⑥						

① Product: Product Model

(AP100 : Gateway for ESL, APD10 : USB-Gateway for ESL, etc)

② Revision: Review changes or upgrades

(AA: Default, etc)

③ Production Site : Product manufacturer and location

(A : Factory 1, B: Factory 2, etc)

④ Year: Manufacturing year

Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Code	A	B	C	D	E	F	G	H	J	K
Year	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Code	M	N	P	Q	R	S	T	U	V	W

⑤ Month: Manufacturing month

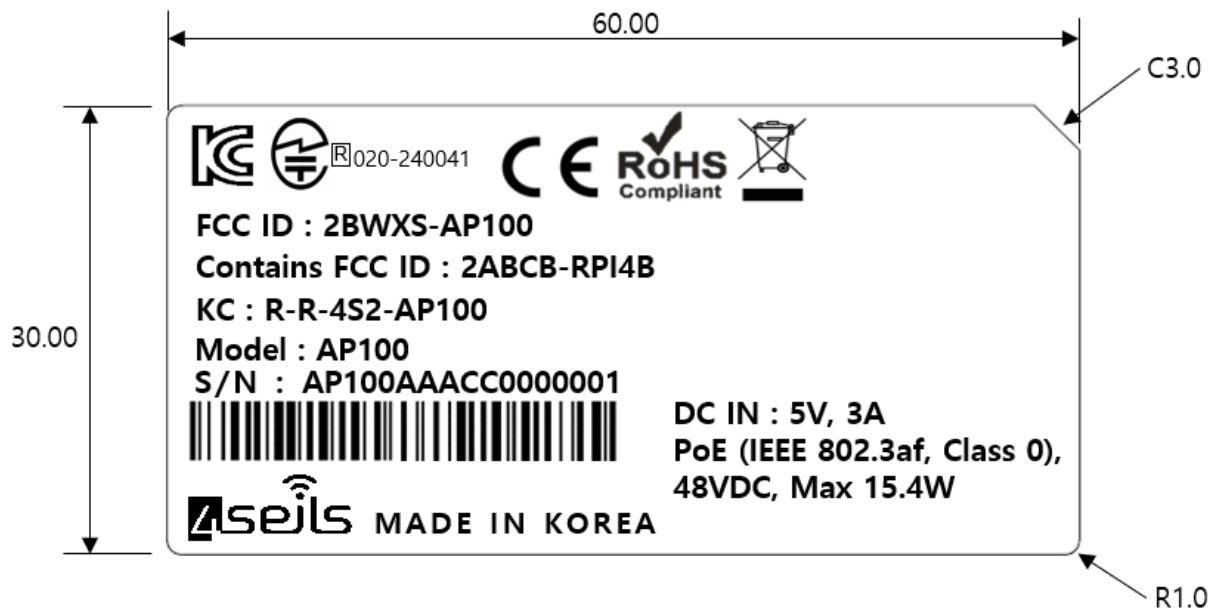
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	A	B	C

⑥ Serial No.: Manufacturing Serial Number

(0000001 ~ 9999999)

2.5.2 Product Label

Product information is indicated on the sticker label of the VIVA Tags & AP. The information consists of MODEL (model name), S/N (serial number), Manufacturer (4SEILS).



- 1) Model Name: AP100
- 2) S/N: Serial Number Information (See Section 2.5.1)

3 Power Source

3.1 Adapter Power source

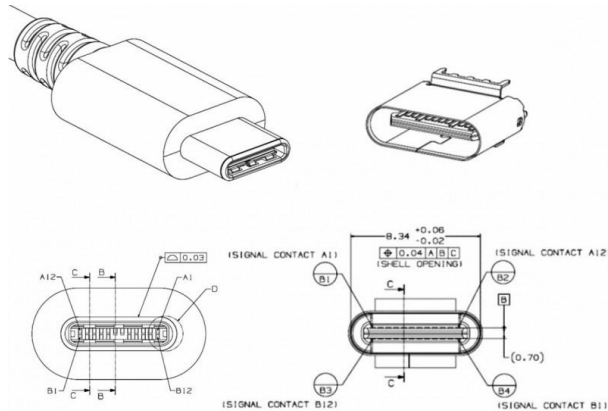
3.1.1 Electrical Characteristics

Voltage	Min. Load	Rated Load	Output power	Remarks
5Vdc	0.01A	3A	15W	

※ No adapter is provided. When using an adapter, ensure that it is CE-certified and rated at 100W or less.

3.1.2 Drawing

Type C



3.2 PoE (Power over Ethernet) Source

3.2.1 PoE (Power over Ethernet) Features

- IEEE802.3af Compliant
- Input Voltage Range: 36V to 57V
- 1500V Isolation (Input to Output)

3.2.2 Description

ESL AP PoE section is designed to extract power from a conventional twisted pair Category 5 Ethernet cable, conforming to the IEEE 802.3af Power-over-Ethernet (PoE) standard.

The ESL AP PoE section's signature and control circuit provides the PoE compatibility signature and power classification required by the Power Sourcing Equipment (PSE) before applying up to 15W power to the port.

It provides a Class 0 signature *

* Class 0: 0.44 Watts to 12.95 Watts

Nominal Output Voltage	Maximum Output Power *
5.0 V	10 Watts

* At 25°C with Vin = 48V

3.2.3 Electrical Characteristics for PoE

► Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Units
DC Supply Voltage	Vcc	-0.3	60	V
DC Supply Voltage Surge for 1ms	Vsurge	-0.6	80	V

Exceeding the above ratings may cause permanent damage to the product. Functional operation under these conditions is not implied. Maximum ratings assume free airflow.

► Recommended Operating Conditions

Parameter	Symbol	Min	Typ	Max	Units
Input Supply Voltage *	Vin	36	48	57	V
Under Voltage Lockout	VLOCK	30		36	V

* With minimum load

► DC Electrical Characteristics

Parameter	Symbol	Min	Typ	Max	Units	Test Comments
Nominal Output Voltage *	+VDC	4.9	5.0	5.1	V	
Output Current (Vin=48V)	PWR			2	A	
Line Regulation	VLINE			±0.5	%	From min. Vin to max. Vin, constant load
Load Regulation	VLOAD			±1	%	From no load to maximum load
Output Ripple and Noise	VRN		100		mVp-p	(Vin : Rated, Io : Max., BW : 20MHz, use the external capacitor(1uF) between +Vo and -Vo)
Maximum Input Current	Iin		380		mA	Vin : rated, Io : 100%
Efficiency @ 80% Load	EFF		80		%	

3.2.4 Isolation Characteristics

Parameter	Symbol	Min	Typ	Max	Units	Test Comments
Withstand Voltage				500	Vac	AC500V, 1minute
Isolation Resistance	Riso	100			MΩ	DC500V at 25°C and 70%RH

4 Explanation of LED Status

4.1 LED Status Definition

LED	Normal status	Remarks
1. POWER	Always On (Blue)	ESL AP power on status
2. Ethernet	On (Green)	Ethernet link connected / off: disconnected network
3. ESL Service	On (Green)	ESL processing On / off: halted
4. Modem service	On (Green)	ESL Modem processing On / off: halted



* In normal operation, LED lights are clear. LED lights may dim by lack of power or fault.

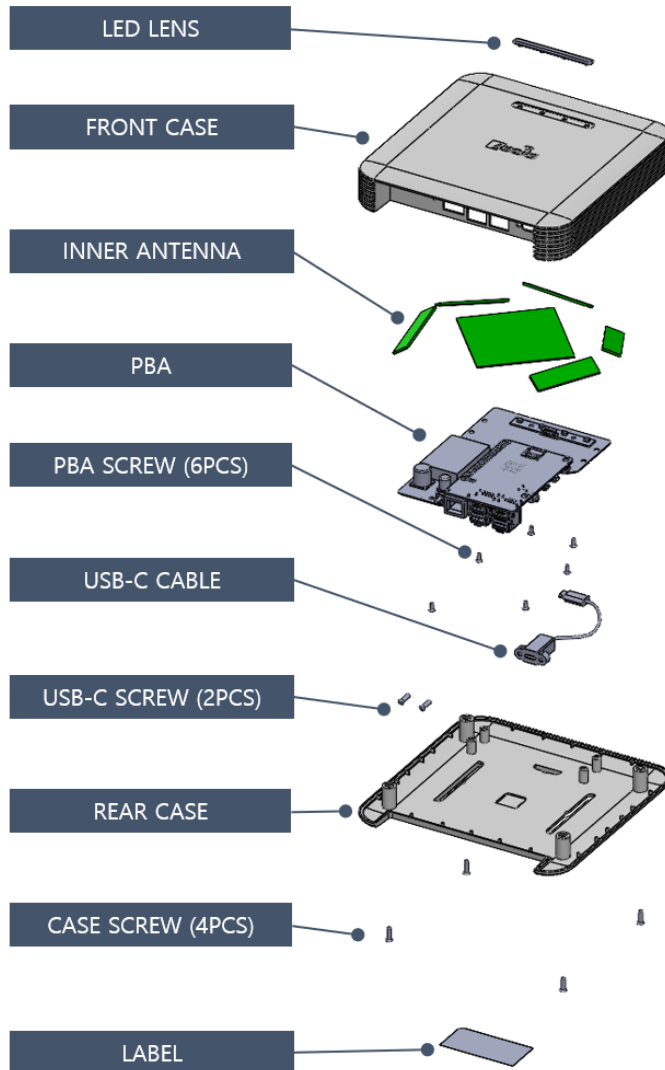
* In initial start, 4 lights will be on then power/Ethernet lights are on.

During operation, Wakeup and Sil lights will be blinking continuously.

During update, DATA light will be blinking.

5 Assembly and Installation

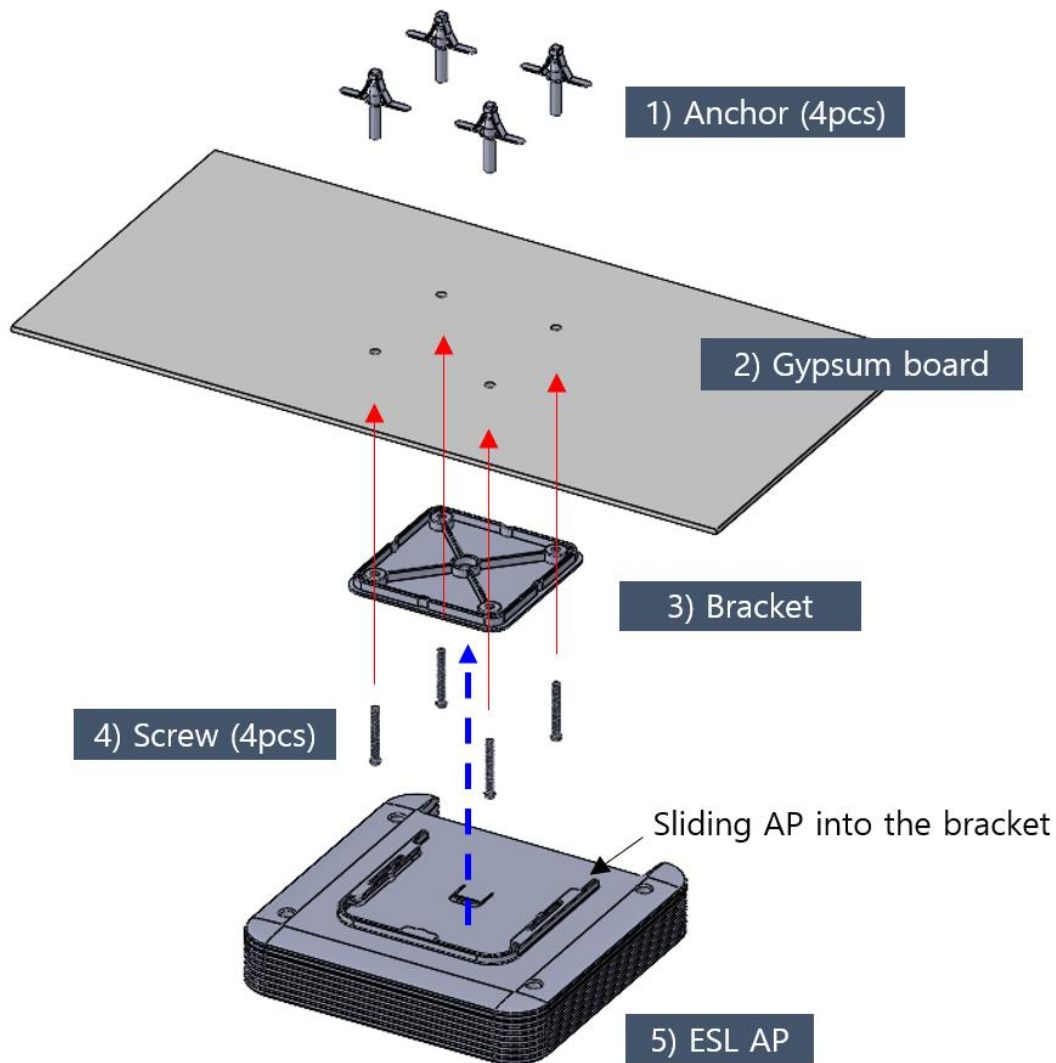
5.1 Assembly



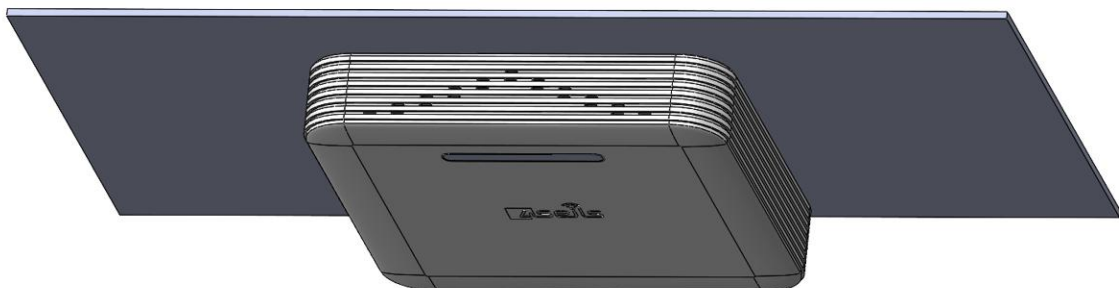
	Nomenclature	Material	Color
1	LED LENS	PC	Transparent
2	FRONT CASE	ABS	White
3	INNER ANTENNA	FR4	Green
4	PBA	FR4	Green
5	PBA SCREW	-	-
6	USB-C CABLE	-	-
7	USB-C SCREW	-	-
8	REAR CASE	ABS	White
9	CASE SCREW	-	-
10	LABEL	N.Y.	White

5.2 Installation

5.2.1 Installation order



5.2.2 Installation complete



6 Cautions for Treatment

Provisions should be made to protect against any damage to the product caused by improper handling. The purchaser assumes any responsibility for damage to the product caused by improper handling.

It is highly recommended that the product should be installed within 3 months from the date of arrival in the logistics hub. Recommended storage condition is -20~60 Celsius degree, 20-60% RH environment.

6.1 Usage Environment

Take extra cautions when using this RF device in the vicinity of other electronic devices and appliances. Most electronic devices and appliances use electromagnetic waves. Electromagnetic waves emitted by this RF device can affect other electronic devices and appliances.

If using the device in an explosion hazard area, follow all safety regulations, instructions, and signals

6.2 Storage and Use

- Do not disassemble, modify, or attempt to repair the product. Unauthorized disassembly or modification may result in product damage and void the warranty. If the product requires service, or repair, please contact the manufacturer or an authorized service provider.
- Moisture and liquids can damage internal parts and circuit boards if allowed to enter into the device itself.
- Do not place or store the product on a sloped surface. The product may slide and fall off the surface and damaged.
- Use the product in temperatures ranging from 0°C to +40°C. Parts and circuits may be damaged if operating or stored in extreme temperature.
- Avoid areas with strong magnetism or subject to magnetism.
- Contact between the device and a magnetic object can lead to malfunctions.
- Do not place the product near heat-producing kitchen appliances like a stove or a microwave or in the vicinity of highly pressurized containers.
- External impact to the product, such as from being dropped, can damage the product.
- Twisting and bending the product can damage the exterior casing and the internal components.
- This product uses 2.4GHz frequency band for wireless communication network. Radio communications can be limited or affected by other applications that share the same frequency band, such as WiFi, Bluetooth, Zigbee, etc.

7 FCC Information to User

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 of the device.

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

THE GRANTEE IS NOT RESPONSIBLE FOR ANY CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE.

SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

IMPORTANT NOTE : FCC RF Radiation Exposure Statement

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment.

This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.