

# 1. General Outline

## 1.1 Overview

S-Label EPD-TAG is the product for RF transmission solution ideal for ZigBee and other low cost, low power IEEE 802.15.4 RF transmission applications. S-Label EPD-TAG consists of RF Transceiver, RF circuitry and 8051-compatible MCU offering ZigBee network protocol and 802.15.4 MAC protocol and other peripheral devices.

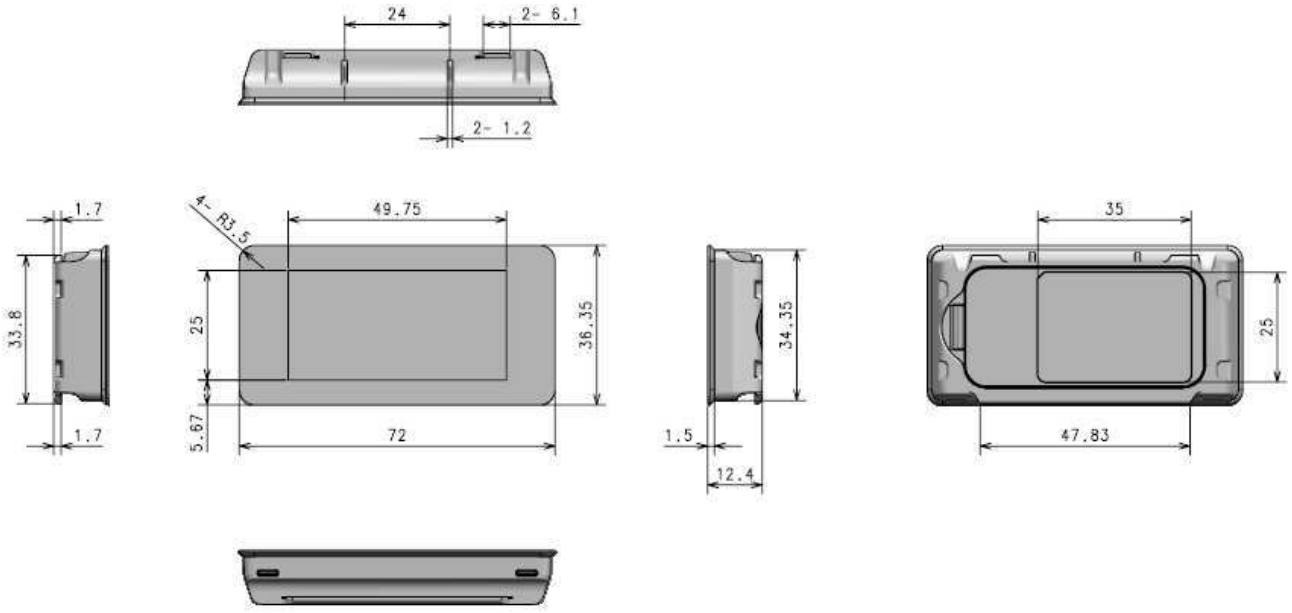
## 1.2 Features

- Display : EPD PANEL (Graphic type)
- Communication : Wireless communication based on IEEE 802.15.4
- Operating on 2.4GHz Unlicensed ISM band for ZigBee
- Low Power Consumption
- External Wakeup : RF Wakeup(using ISM Band(2.4GHz))
- Outline Dimension : 72.0 mm x 36.3 mm x 12.4 mm
- Active Area : 48.16 x 20.16 mm
- No additional anti-theft locking structure : Rail Mounted only
- RoHS compliant

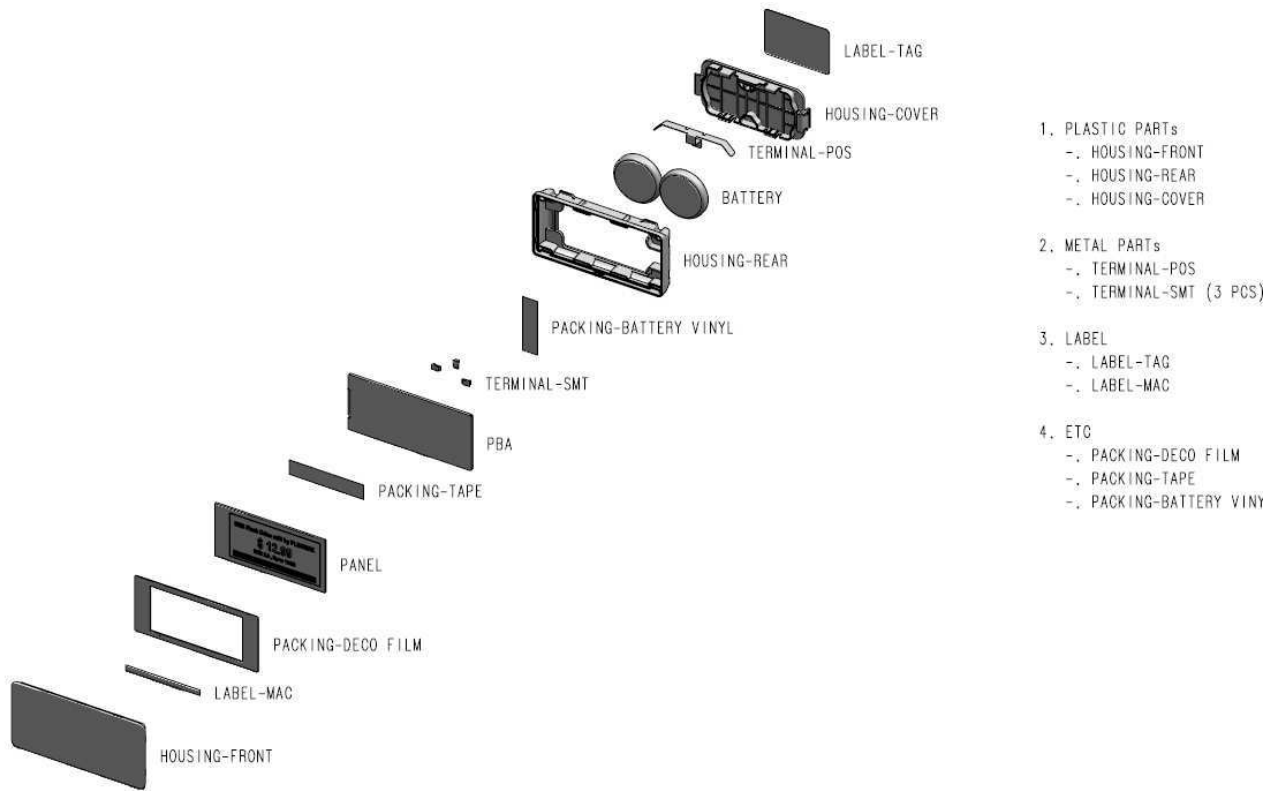
## 1.3 Application

- Retail industry with the electronic display and platform, solutions, and services
- Intelligently communicating, managing, and optimizing price and product informations.

### 1.4 Physical Dimension (mm)



### 1.5 Exploded View of EPD TAG



1. PLASTIC PARTs
  - HOUSING-FRONT
  - HOUSING-REAR
  - HOUSING-COVER
2. METAL PARTs
  - TERMINAL-POS
  - TERMINAL-SMT (3 PCS)
3. LABEL
  - LABEL-TAG
  - LABEL-MAC
4. ETC
  - PACKING-DECO FILM
  - PACKING-TAPE
  - PACKING-BATTERY VINYL

## 2. Specifications

### 2.1 Product

Item	Description
Size	72.0 x 36.35 x 12.4 mm
Battery	CR2450 Lithium Battery (3V, 2ea) 2.4 ~ 3.3Vdc(condition : In active status)
Display	EPD PANEL display (Graphic type)
Information display	Price, Unit, Discount, etc.
Communication	IEEE802.15.4 2.4GHz ISM Band (2405MHz ~ 2480MHz)
Distance	Radius 20m (Indoor, Line of Sight)
Operation Temp.	5 ~ 40 °C
Etc.	No additional anti-theft locking structure : Rail Mounted only

### 2.2 Radio (RF)

#### 2.2.1 R&D Characteristic & OQC

Items	Parameter	spec.			Units	Condition
		Min	Typ	Max		
TX	Transmit Power	-5	0	5	dBm	
	Error Vector Magnitude		10	30	%	When measured for 100 chips
	Tx Current		-	40	mA	Total current at max Tx Power
RX	Receiver Sensitivity	-90	-	-	dBm	PER < 1%

#### 2.2.2 Production Characteristic

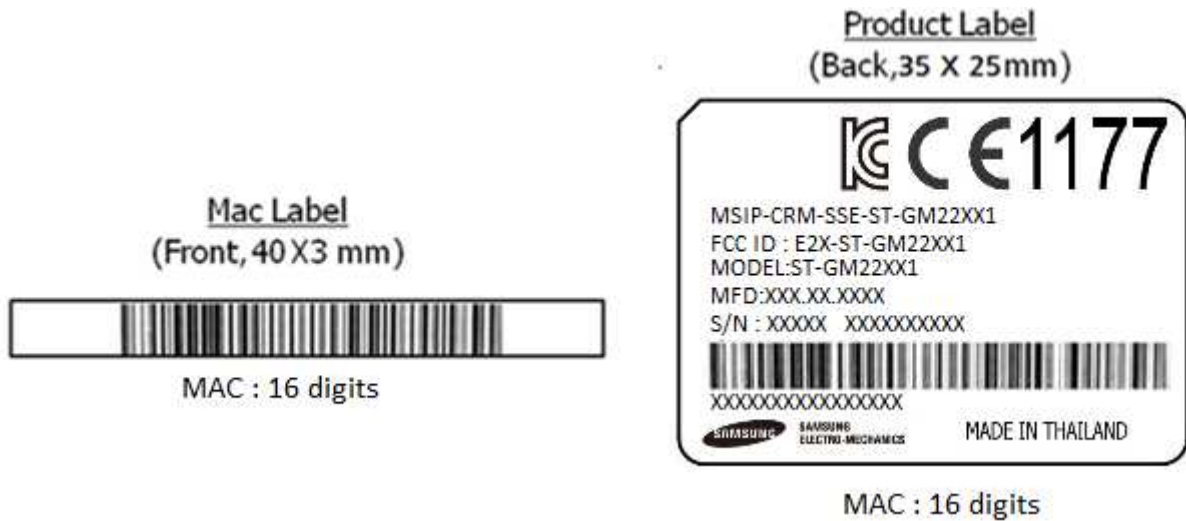
Items	Parameter	spec.			Units	Condition
		Min	Typ	Max		
TX	Transmit Power	-3	0	5	dBm	
	Error Vector Magnitude		10	28	%	When measured for 100 chips
	Tx Current		-	37	mA	Total current at max Tx Power
RX	Receiver Sensitivity	-90	-	-	dBm	PER < 1%

\* Test Channel : 2480MHz

(RX Test Channel can be changed according to the environment)

\* The contents in the grayed cells are not necessary to manage by Cpk.

### 2.3 MAC Label drawing & example (Front, Back)



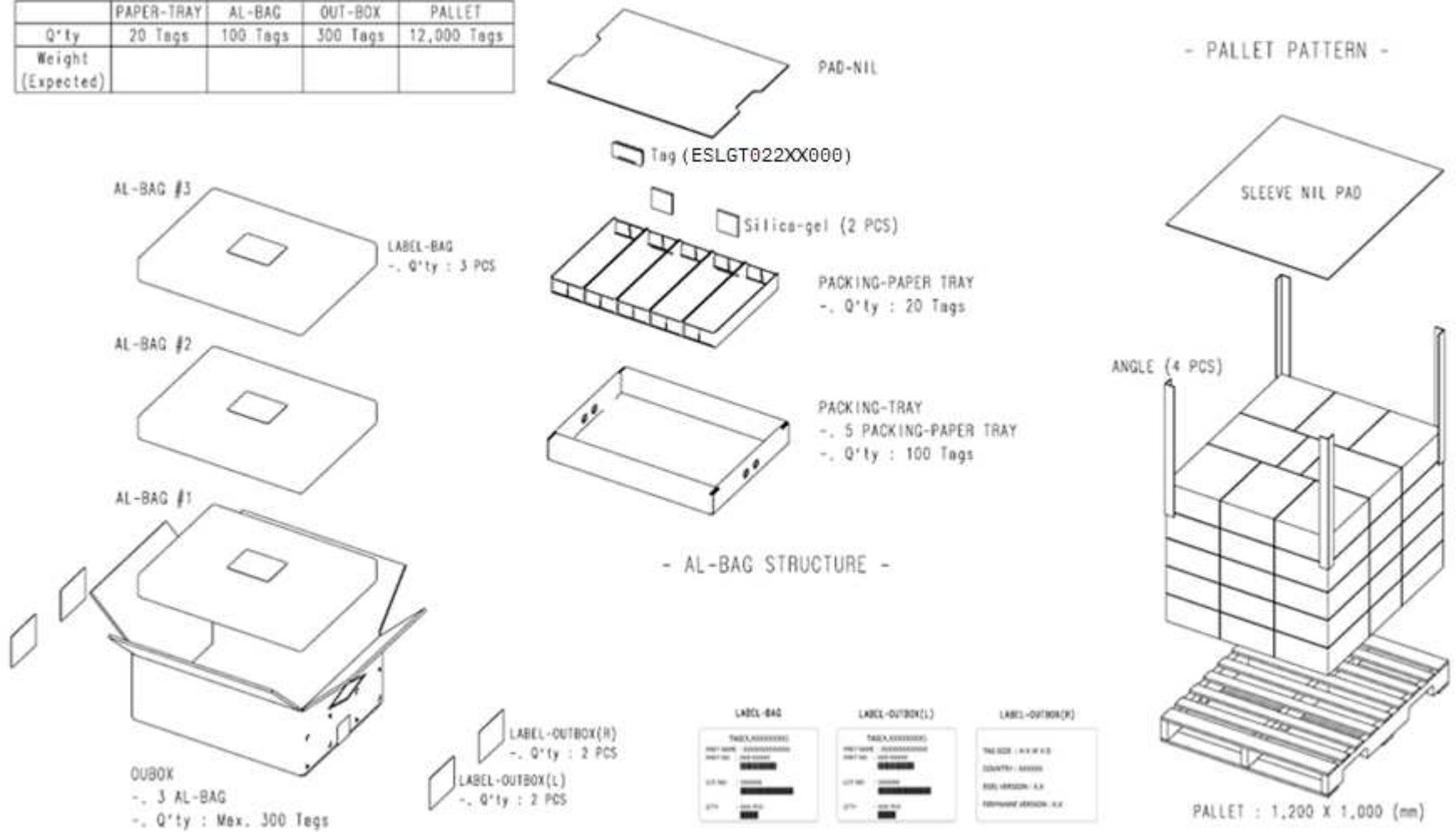
· Product information is indicated in a printed sticker label. The information consists of MODEL(model name), MFD(manufacturing date), S/N(serial number), MAC(MAC address), CE certification mark, and Manufacturer(SEMCO).

- 1) Model Name : ST-GM22XX1
- 2) MFD : (month).(date).(year) ex) SEP.25.2013
- 3) S/N : numeric & barcode & barcode number(hexadecimal 10 digit)
- 4) MAC : barcode & barcode number(hexadecimal 16 digit)
  - 6 digits(1st ~ 6th) : xxxxxx (Company code)
  - 6 digits(7th ~ 12th) : xxxxxx (Increasing number : 000000 ~ FFFFFFFF)
  - 4 digits(13th ~ 16th) : 2201

### 3. Package Specifications

#### PACKING-DIAGRAM (ESLGT022XX000)

	PAPER-TRAY	AL-BAG	OUT-BOX	PALLET
Q'ty	20 Tags	100 Tags	300 Tags	12,000 Tags
Weight (Expected)				



## 4 Cautions for Treatment

Provisions should be made to protect against any 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 in 5-40 Celsius degree, 20-60% RH environment.

This RF device operates on the 2.4GHz frequency band and can produce radio interference. The device, therefore, may not be used for applications where safety of human lives is concerned.

### 4.1 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.

### 4.2 Storage and Use

- 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 +5°C to +40°C. Parts and circuits may be damaged if used or stored under temperature extremes.
- The display panel needs extra care when handling.
  - Do not apply any impacts on outside since e-Paper display is fragile.
  - Continuous exposure to excessive moisture (over 60% RH) or UV makes display lifetime shortened.
  - Ghosting image may be appeared in temperature conditions of less than 15 Celsius degree.
  - 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.
- If this product operates abnormally in eliminating battery vinyl or replacing battery, you should discharge it by contacting battery terminal (+) and (-).
- This product uses 2.4GHz frequency band for wireless communication network. Radio communications can be limited or affected by other applications which share same frequency band, such as WiFi, Bluetooth, Zigbee, etc.
- Frequent communications, updates and screen renewals may reduce battery life time.

**WARNING** : This equipment may generate or use radio frequency energy. Changes or modifications to this equipment may cause harmful interference unless the modifications are expressly approved in the instruction manual. The user could lose the authority to operate this equipment if an unauthorized change or modification is made.

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.

**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.