CUSTOMER : Standard

DATE : 2020. 06. 22

REV : Rev. 1.0

REBE-TZ42F

Model	Part Number	Customer P/N
LED 4.2” 3-Color Graphic	REBE-TZ42F	-

RoHS
Compliant

APPROVAL	REMARK	APPENDIX

DESIGNED	CHECKED	APPROVED
2020.06.19	2020.06.19	2020.06.22
K.S.AN	H.H.HAN	I.U.KIM

ATEC AP

SPECIFICATION			
MODEL	REBE-TZ42F	REV. No.	Rev. 1.0
REG. DATE	2020.06.22	PAGE	26
REV. DATE	2020.06.22	-	-

Revision History

Revision	Date	Contents of Revision Change	Remark
1.0	’20.06.22	First release	H.H.Han

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1. Application

This Specification is applied to ATEC AP Wireless Electronic Shelf Label. (REBE-TZ42F)
REBE-TZ42F is used by retailers for displaying product pricing on shelves. Typically, electronic display modules are attached to the front edge of retail shelving. These modules use Electrophoretic Display (EPD) or similar screen technologies to show the current product price to the customer.

A communication network allows the price display to be automatically updated whenever a product price is changed.

2. Quality

Quality should meet each condition which mentioned on this specification. However, the items which are not mentioned on this specification follow the inspection agreements and standards which are agree with both companies.

3. Appearance and Characteristics

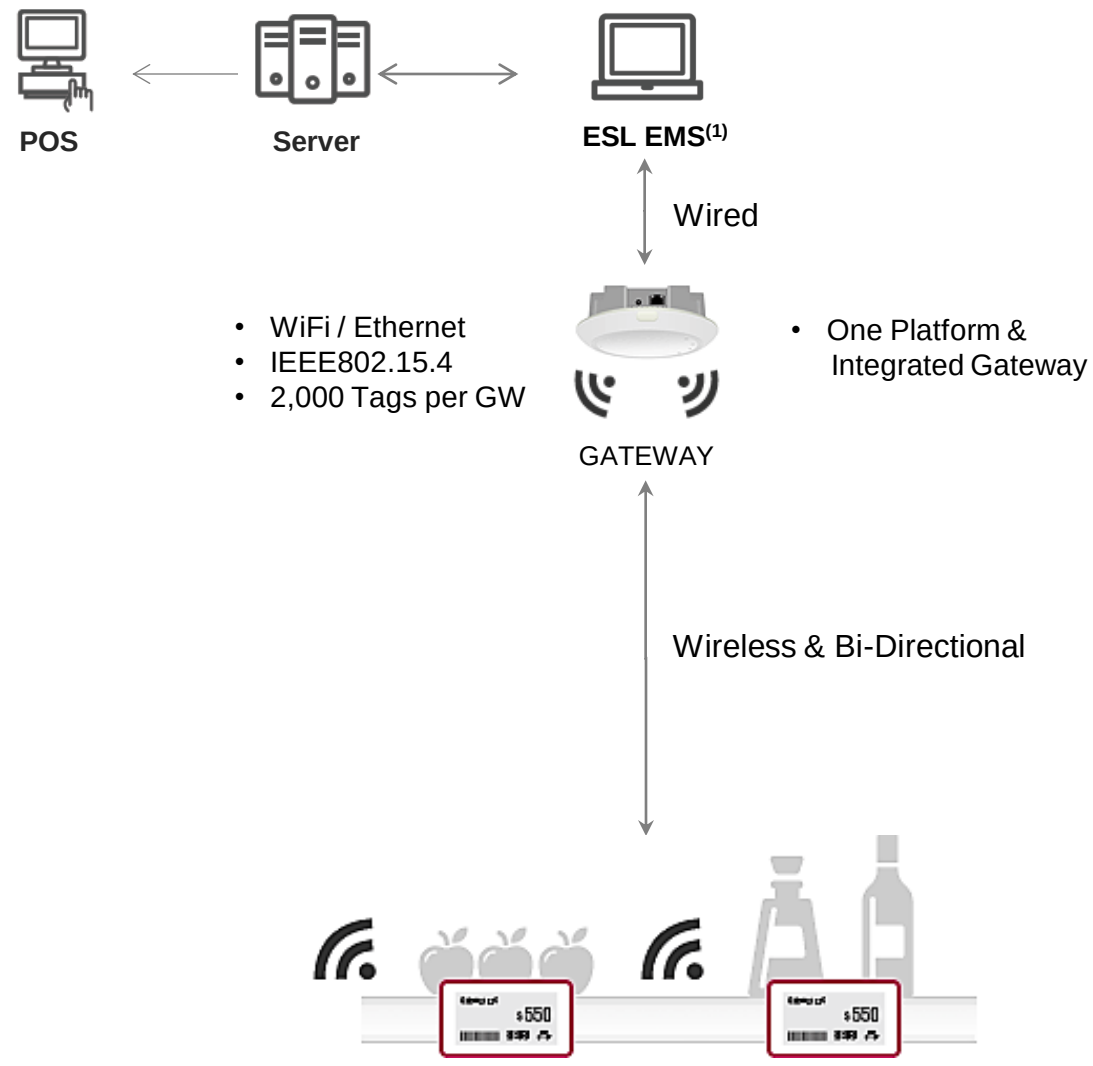
3.1. Appearance

Appearance should not be contaminated by harmful materials and should not have cracks, etc. Mechanical dimensions should meet the contents of clause 9.

3.2. Characteristic

Electrical Characteristics should meet the contents of clause 7.

4. Overall Service Scenario



2.4GHz Wireless Tags

(Battery / Power Line)

(1) EMS : ESL Management Software

5. General Features

5.1. Description

Item		Description
Size		103.0 × 96.0 × 12.0 mm
Weight		Typ. 95.5g (Include Battery - Battery 21g)
Digital Display		Type : Electrophoretic Display Size / DPI : 91(H) x 77(V) (mm) / 120
Display Color		3-Color (Red/Black/White) (1)
Power		Rate : 3.0 V / 100 mA CR2450 Coin Battery 3in1 PKG* 1 set (Removable) Battery Capacity : Max. 1,650 mAh Battery life time: 5 year at 23℃ and 55% RH (2) (Image update 2 times per day)
NFC		Operating frequency of 13.56 MHz
Network	802.15.4	2.4GHz IEEE802.15.4 compliant RF Transceiver
	Security	Robust wireless network (ATEC AP own protocol)
	Protocol	Compatible with ATEC AP protocol communication devices
	Comm. Range	Max. 30m (Under LoS) (3)(4)

[Notice] (1) If the background of display is red, display quality can be decreased.
Generally, we recommend that the portion of red color has less than 50%.
(2) The battery life time depends on operating conditions
(Temperature, humidity, wireless environment, image update count…etc)
(3) LoS (Line of Sight) : Without any sort of an obstacle between a gateway and end devices.
(4) Communication Range depends on surrounding environment.

6. Absolute Maximum Rating

6.1. Environmental Conditions

The normal operating environmental conditions are those as below. In such conditions, ESL must be in conformity with the present specification. The conformity to such requirement must be certified by the manufacturer.

Parameter	Condition	Min.	Typ.	Max.	Unit
Operating Environment	Temperature	10	23	30	℃
	Humidity	45	55	65	%RH
Storage Environment	Temperature	0	23	40	℃
	Humidity	45	55	65	%RH

[Notice]

(1) Tag can operate at 0~40℃. But only assure the image quality of EPD at 10~30℃.

(2) Depending on the characteristic of the EPD, it may become reddish by passing time.

(3) Moisture and liquid can damage the tag and reduce its life time.

(4) Getting a magnetic close to the tag can be degraded the performance. (wireless communication, remote controller, etc)

(5) When storing the tag, change it to a white screen, and maintain the proper temperature and humidity.

(6) After receiving the product, it should be installed within 3 months.

(7) The display glass may break when it is dropped or bumped on a hard surface. (fragile by external impact)

6.2. Electrical Conditions

The operating electrical conditions are those as below. In such conditions the ESL must be in conformity with the present specification. All devices can be damaged or non-operated over the specification as below. The conformity to such requirement must be certified by the manufacturer.

Parameter	Condition	Min	Typ.	Max	Unit
Supply Voltage	DC Power Supply	2.3	3.0	3.3	V
Power Consumption	@ 3.0~3.3V	-	-	100	mA
ESD Protection	Air Condition @Soft Fail	-8	-	+8	kV

7. Electrical Specification

7.1. IEEE802.15.4

The REBE-TZ42F supports IEEE802.15.4.

7.2. General Specification

- Standard : Only IEEE802.15.4 PHY
- Frequency : 2405 ~ 2480MHz
- Channel : 16CH. (5MHz Spacing)
- Modulation : DSSS/O-QPSK
- Max. Data Rate : 250Kbps

7.3. Electrical Specification

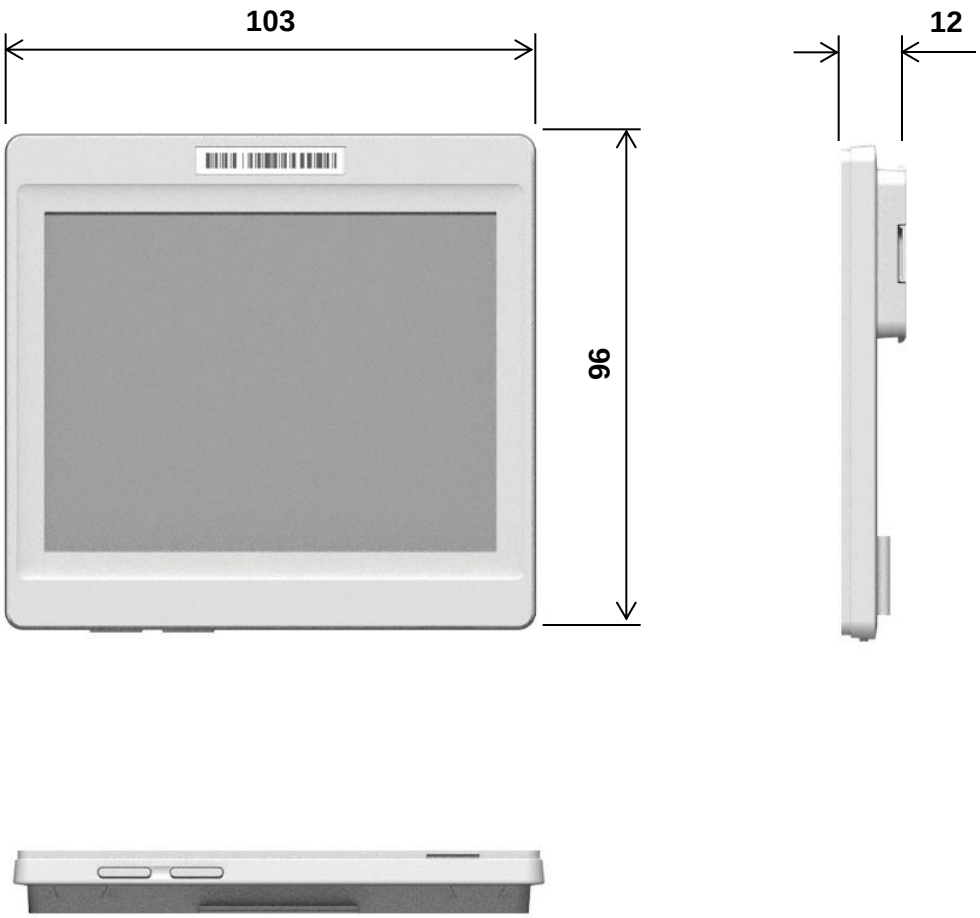
- Channel power depend on each country regulations (EX. KC, etc)
- The electrical specification which is shown below is ATEC AP internal specification.
- All values depend on surrounding environment and current statement of access point

RF Performance					
Parameter	**Condition**	**Min**	**Typ**	**Max**	**Unit**
Output Power	-	-24	-	-	dBm
Receiver Sensitivity	PER=1% (Required -85dBm)	-85	-	-	dBm
Maximum Input Level	PER=1% (Required -20dBm)	-	-	-20	dBm
Frequency Tolerance	Required Max. ±75kHz	-75	-	75	kHz
Error Vector Magnitude	Required Max. 22%	-	14	22	%

8. Mechanical Information

8.1. Mechanical Dimension

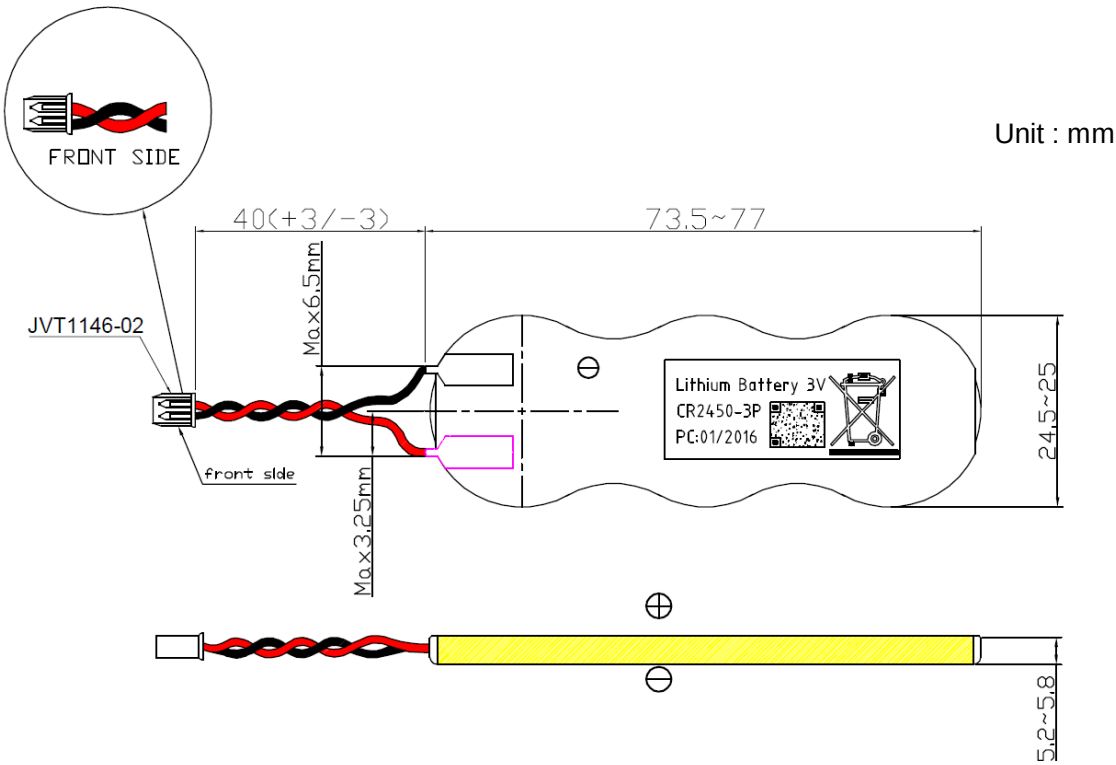
Size	103.0 x 96.0 x 12.0 mm
Weight	Typ. 95.5g (Include Battery - Battery 21g)



8. Mechanical Information

8.2. Battery Dimension

Unit : mm

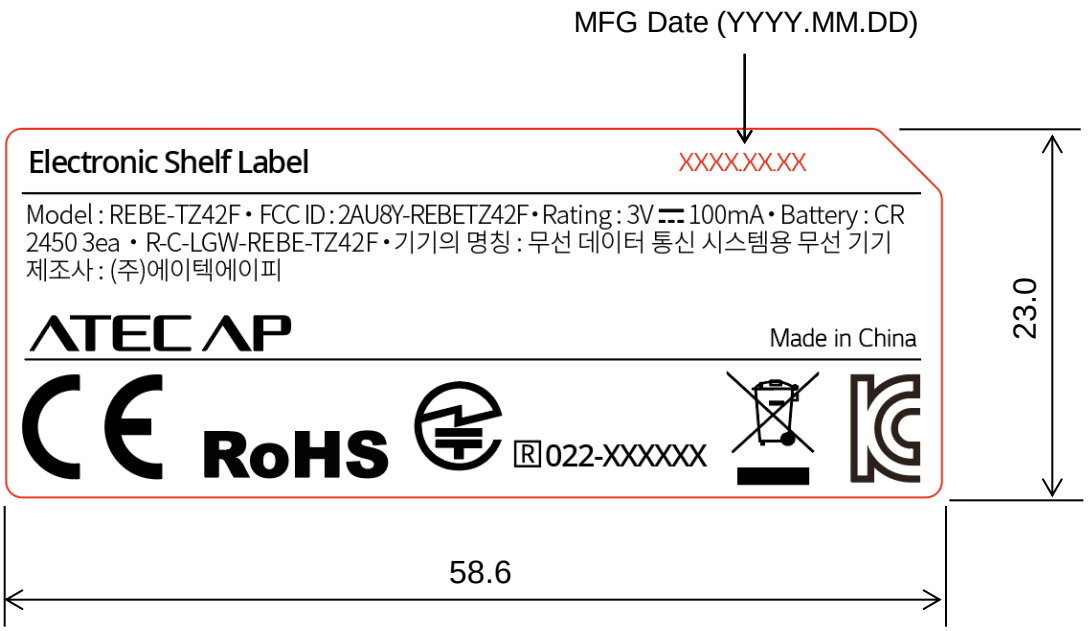


Item	Description
Dimensions	MAX 77 x 25 x 5.8(mm)
Capacity	1650mAh

8.3. Label Specification

8.3.1. Product Labeling Specification

unit : mm



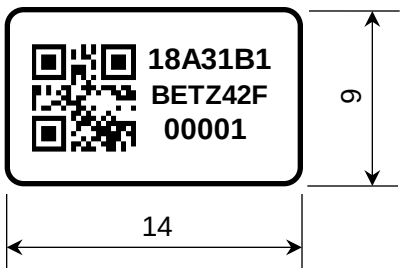
8.3.2. MAC Barcode Labeling Specification

Unit : mm

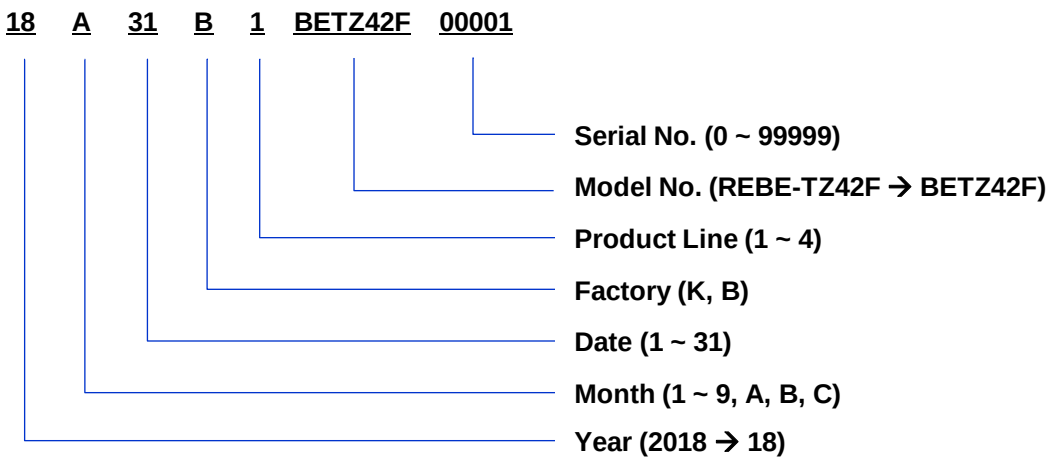
Label Size : 28 x 5mm
Barcode Size : 23 x 3mm

8.3.3. FID Label Specification

Unit : mm

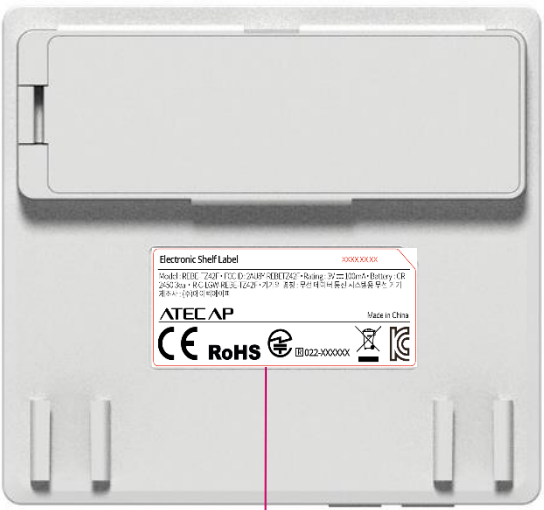


Serial Information (19-codes)



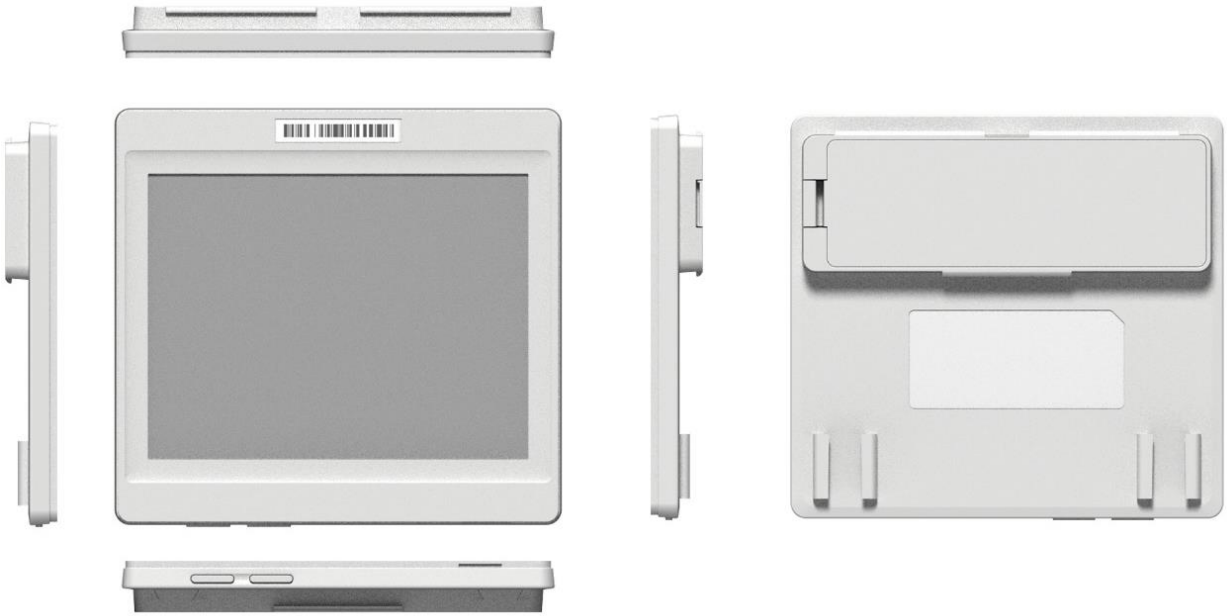
8.3.4. Labeling Specification

MAC Barcode Label



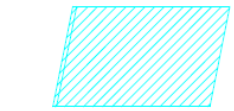
Product Label

8.4. Rendering

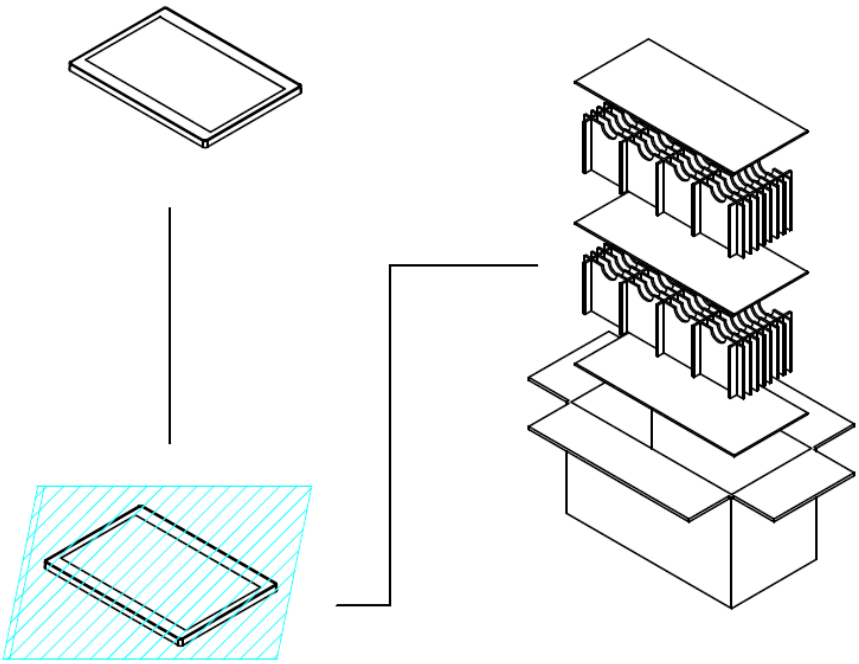


9. Packaging

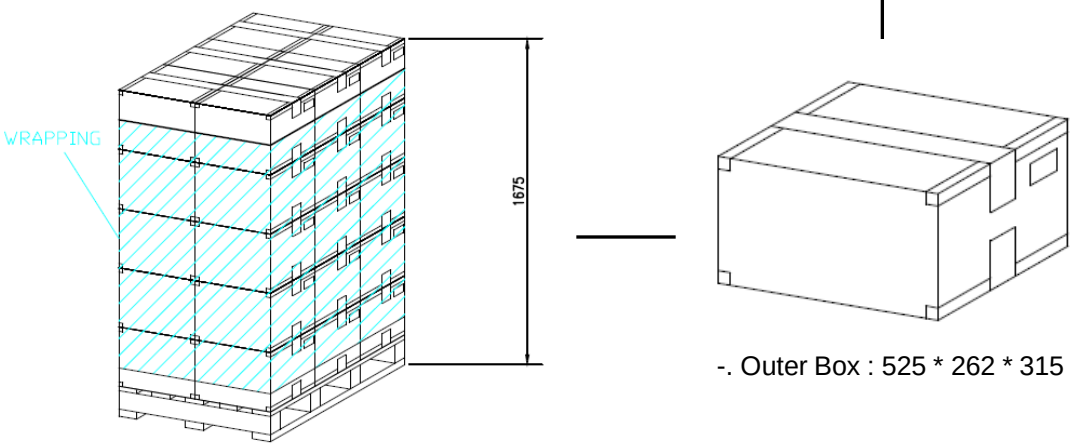
9.1. Packaging Specification



-. PE Bag : 180 * 170



Item	Q'ty of Tag	Max. Weight	Ways of Packing
Outer Box	64 EA	8.0Kg	-
Pallet	1,920 EA	240Kg	30 Outer Boxes / Pallet

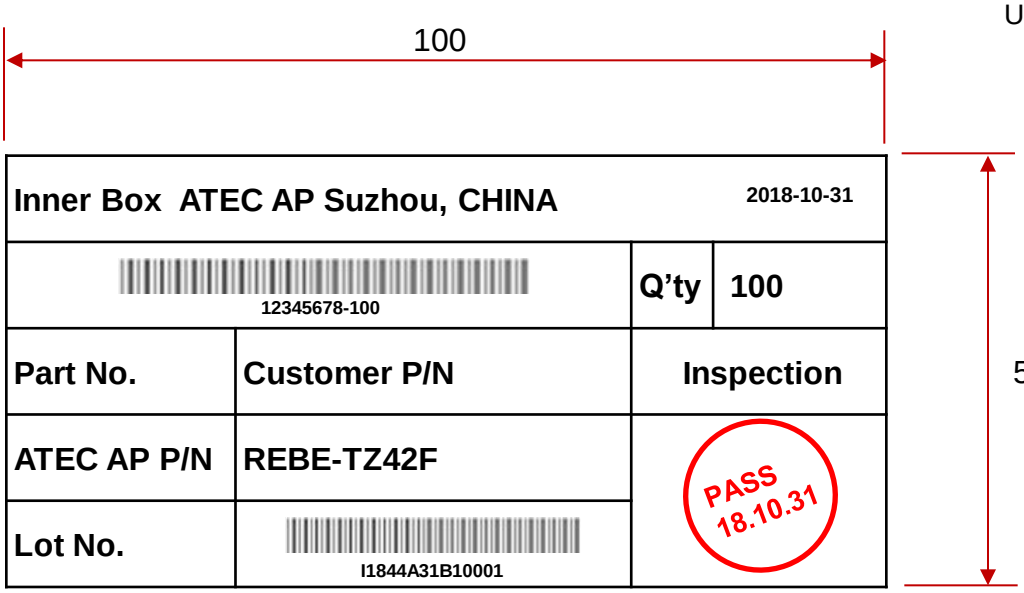


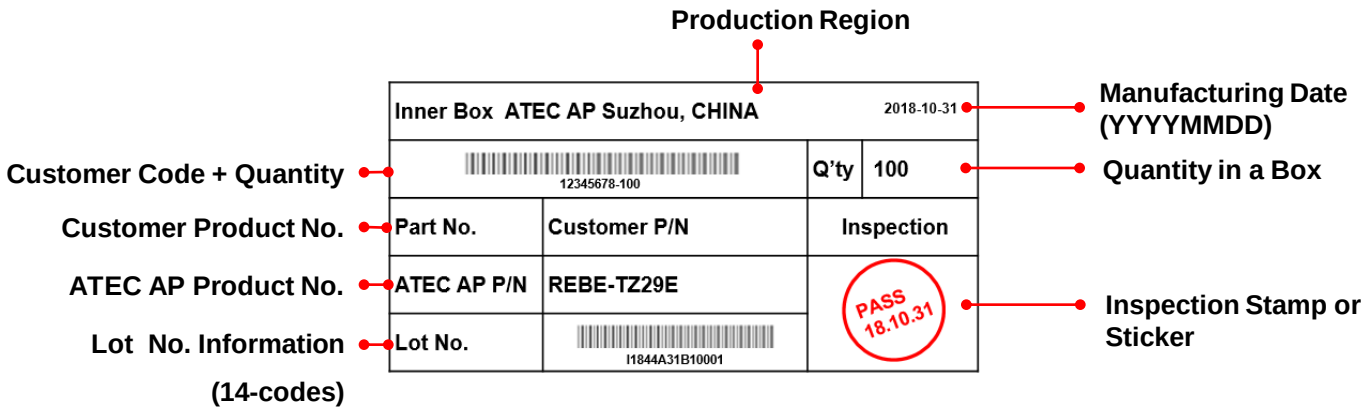
-. Outer Box : 525 * 262 * 315

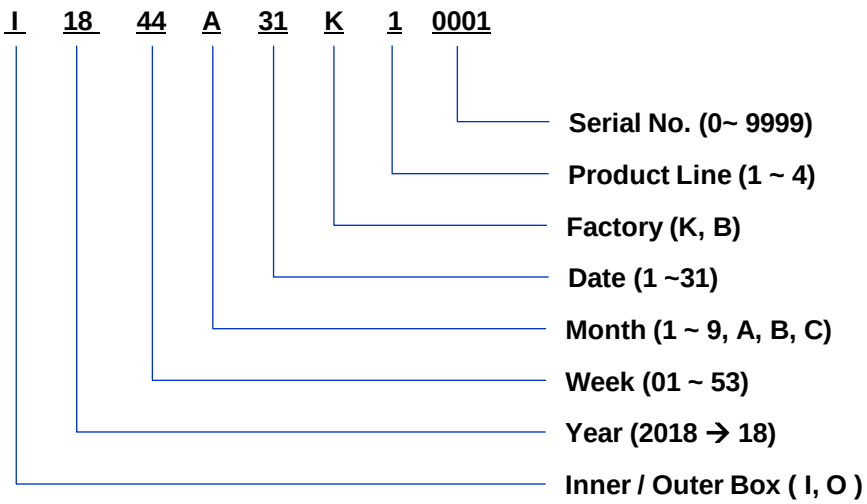
9.2. Packaging Label Specification

9.2.1. Inner Box Label Specification

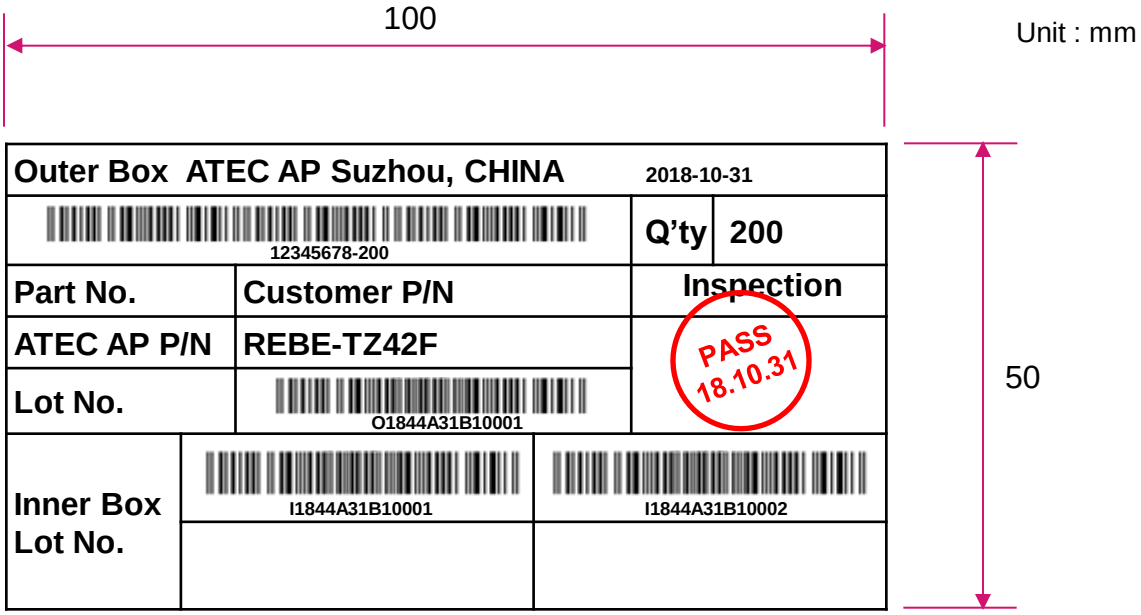
Unit : mm

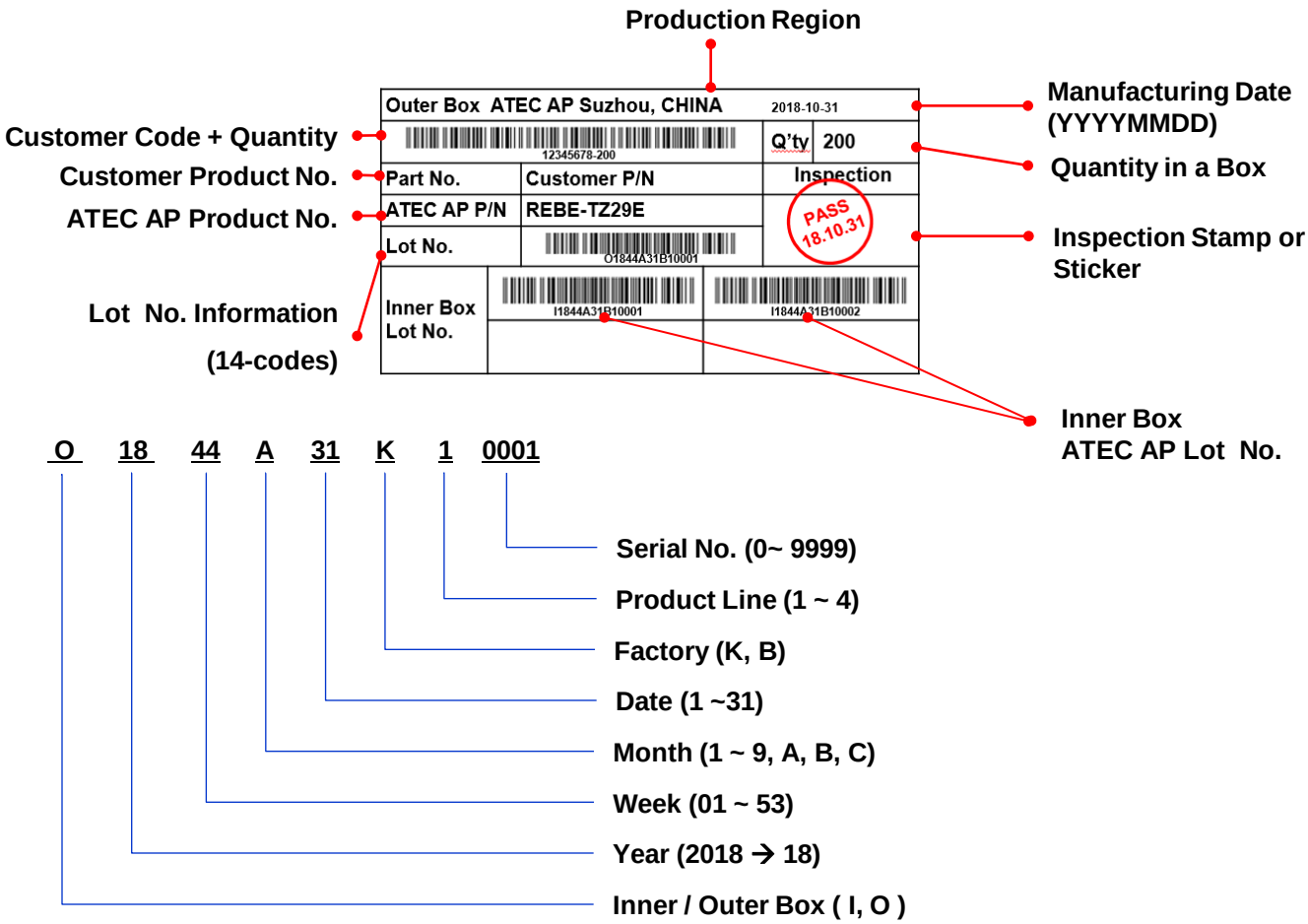






9.2.2. Outer Box Label Specification





10. User Quick Manual

10.1. Tag Information

Symbol	Mode	Function	Image
	Deep Sleep	Initial Mode	
	Connected	Connected to Gateway	
	Disconnected	Disconnected to Gateway	
	Low Battery	Battery replacement alarm	
	Empty Battery	Battery Discharged	
	Busy	Ready to image download	

[Notice]

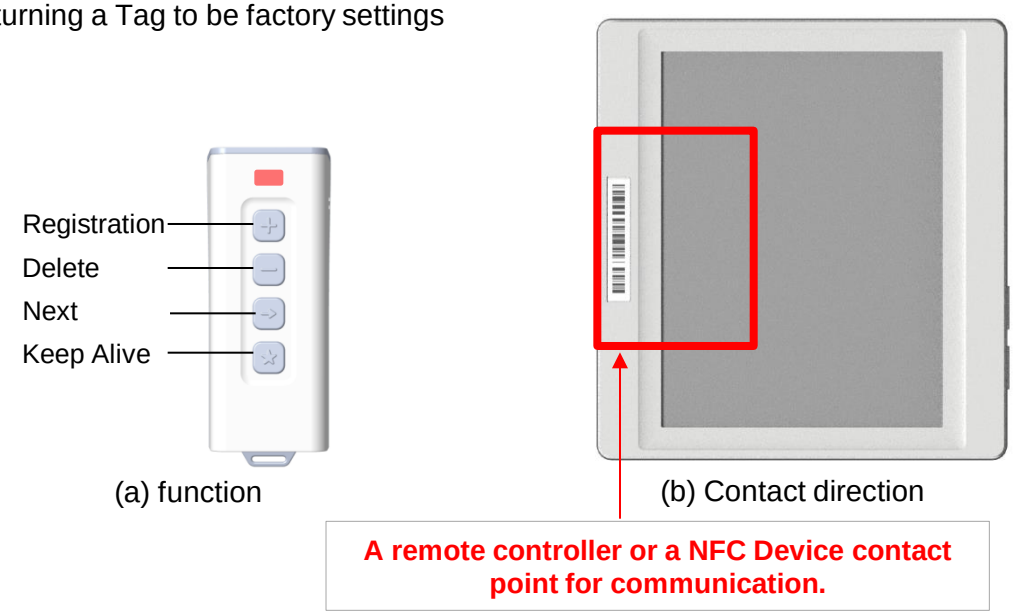
*** In this status of low battery, we can not ensure any normal operations.**

*** After change battery, the tag's display will be changed to normal status within next keep alive interval**

10.2. Description & Key Function

Remote control device provides customer with several functions as below

- Waking Tag up from sleep mode
- Updating new purchase image on Tag
- Deleting purchase image on Tag
- Returning a Tag to be factory settings



< Remote control device>

10.2.2. Button Function

Two buttons provide customer with several functions as below

- Waking Tag up from sleep mode
- Updating new purchase image on Tag
- Changing purchase image on Tag

< Button Function>

11. RoHS Compliance

REBE-TZ42F devices meet the requirements of Directive 2002/95/EC of the European Parliament and of the Council on the Restriction of Hazardous Substance (RoHS)

12. Related Certification

- KC, FCC, CE, JP-MIC

12.1 KC (Korean Certification)

955D-9842-DA71-8D4C

방송통신기자재등의 적합인증서

Certificate of Broadcasting and Communication Equipments

상호 또는 성명 *Trade Name or Applicant*	엘지이노텍 (주)
기자재명칭(명칭) *Equipment Name*	특정소출력 무선기기(무선데이터통신시스템용 무선기기)
기본모델명 *Basic Model Number*	REBE-TZ75E
파생 *Series M*	TBD
인증 *Certifi*	
제조자/제조국가 *Manufacturer/ Country of Origin*	엘지이노텍 (주) / 한국, 중국
인증연월일 *Date of Certification*	2018-08-30
기타 *Others*	

위 기자재는「전파법」제58조의2 제2항에 따라 인증되었음을 증명합니다.

It is verified that foregoing equipment has been certificated under the Clause 2, Article 58-2 of Radio Waves Act.

2018년(Year) 08월(Month) 30일(Day)

국립전파연구원장 국립전파연구원장인

Director General of National Radio Research Agency

※ 인증 받은 방송통신기자재는 반드시 "적합성평가표시"를 부착하여 유통하여야 합니다.
위반시 과태료 처분 및 인증이 취소될 수 있습니다.

12.2 FCC (Federal Communications Commission)

TCB **TCB**

GRANT OF EQUIPMENT AUTHORIZATION

Certification

Issued Under the Authority of the

Federal Communications Commission

By:

MiCOM Labs
575 Boulder Court
Pleasanton, CA 94566

Date of Grant: 11/29/2018

Application Dated: 11/29/2018

LG Innotek Co., Ltd.
26, Hanamsandan 5beon-ro Gwangsan-gu
P.O. Box 506-
Gwangju, 506-
South Korea

Attention: Jeo

TBD

Grant Notes	FCC Rule Parts	Frequency Range (MHZ)	Output Watts	Frequency Tolerance	Emission Designator
20	15C	2405.0 - 2480.0	0.006		

The antennas used with this transmitter must be installed to provide a minimum separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter, except in accordance with FCC multi-transmitter product procedures. End-users must be provided with operating procedures for satisfying RF exposure compliance.

20: All electrical and mechanical devices employed for spurious radiation suppression, including any modifications made during certification testing, must be incorporated in each unit marketed.

12.3 CE (Conformity European)

EU DECLARATION OF CONFORMITY [1]

LG Innotek

Number [2]

DoC_LGIT_REBE-TZ75E_180830

Name and address of the Manufacturer [3]

LG Innotek Co., Ltd.
(Jangduk-dong) 26, Hanamsandan 5beon-ro, Gwangsan-gu, Gwangju, 62229, Korea

This declaration of conformity is issued under the sole responsibility of the manufacturer. [4]

Object of t
Product in

Product n

Additional

Firmware

TBD

The object
legislation
- Reference to
which conf

Radio Equipment Directive 2014/53/EU	*RoHS Directive 2011/65/EU*
EN 300 328 V2.1.1, EN300 330 V2.1.1 *EN 62479:2010* *EN 301 489-1 V2.1.1, EN 301 489-3 V2.1.1, EN 301 489-17 V3.1.1* *EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013*	*EN 50581:2012*

The notified body [10] *MiCOM Labs, Inc.* **performed** *a conformity assessment of the technical construction files*

and issued the certificate

Additional information [7]

Frequency bands: 2405 MHz ~ 2480 MHz for Zigbee, 13.56 MHz for NFC (Receiving only)
Maximum transmit power: 10 dBm for Zigbee

Signed for and on behalf of: [11] *LG Innotek Co., Ltd.*

Senior Research Engineer/ Donghyun Yoon

D.H. Yoon

Signature of Authorized person

Date of issue: *Aug 30, 2018*

EU Representative: LG Innotek Co., Ltd. Am Limespark 2 (Innovapark) 65843 Sulzbach am Taunus, Germany
http://www.lginnotek.com/en/compliance-information/

12.4 TELEC (Technical Regulations Conformity Certification)

BUREAU VERITAS

工事設計認証書

TBD

認	
特 定	
電波の	
特定無線設備の型式又は名称	REBE-TZ75E
特定無線設備の製造者名	LG INNOTEK CO., LTD.
工事設計認証番号	022-180124
認証をした年月日	平成30年10月12日
備考	

上記のとおり、電波法第38条の24第1項の規定に基づく工事設計認証を行ったものであることを証する。

平成30年10月12日

ビューローベリタスジャパン株式会社

13. Disclaimers

-. *ATEC AP* is not responsible for any damages caused by any accidents or operational environments exceeding the absolute maximum ratings.

-. Consultation with *ATEC AP* is recommended for unassured environments or operations to avoid any possible malfunctions or damages of the products or risk of life or health.

-. Any unauthorized, without prior written consents from *ATEC AP*, disassembly is prohibited if purposed for reverse-engineering. All defected devices must be reported to *ATEC AP* and not to be disassembled or analyzed.

-. The product information can be modified and upgraded without prior notice.

14. Ordering Information

[Big Class] Big Class

RE	ESL System

[Product Type] Middle Class

G	Gateway
D	Set-Adapter Type
B	Set-Battery Type
P	PCB Type
A	Accessory

[LCD] Small Class (LCD type)

E	Bistable	Graphic	Electrophoretic Display

[Color] Color [Color]

X	Not Used
M	Mono
T	3-Color
F	4-Color
I	5-Color~
A	Full Color

[Version](**A~Z**)

[Inch] Display Size

	Display Size
XX	Not Used
01~09	0.1” ~ 1.0”
10~19	1.0” ~ 2.0”
20~29	2.0” ~ 3.0”
30~39	3.0” ~ 4.0”
40~49	4.0” ~ 5.0”
50~59	5.0” ~ 6.0”
60~69	6.0” ~ 7.0”
70~79	7.0” ~ 8.0”
80~89	8.0” ~ 9.0”
90~99	9.0” ~ 10.0”
A0~A9	10.0” ~ 11.0”
B0~B9	11.0” ~ 12.0”
C0~C9	12.0” ~ 13.0”
D0~D9	13.0” ~ 14.0”
↓	↓
Z0~Z9	35.0” ~

[Chip] Main Chip [RF]

X	Not Used
Z	802.15.4

※ Example
REBE-TZ29G
: 2.9 Inch 3-color ESL
Version G

12.2 FCC (Federal Communications Commission)

Regulation Information

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.

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.

Caution:

Any changes or modifications to the equipment not expressly approved by the party responsible for compliance could void user's authority to operate the equipment. This appliance and its antenna must not be co-located or operation in conjunction with any other antenna or transmitter.

A minimum separation distance of 20 cm must be maintained between the antenna and the person for this appliance to satisfy the RF exposure requirement.