

# Smiley Box LoRa v2 Product Brief

## Table of Content

- SMILEY BOX LORA V2 PRODUCT BRIEF .....1**
- DOCUMENT INFORMATION.....3**
- EU DECLARATION OF CONFORMITY .....4
- COMPLIANCE TO FCC US/CAN .....5
- ENVIRONMENTAL RECOMMENDATIONS .....7**
- WARNINGS .....7**
- .....8
- 1.1 PRODUCT OVERVIEW .....9
- 2 PRODUCT FEATURES .....10**
- 2.1 HIGH LEVEL FUNCTIONAL SPECIFICATIONS .....10
- 2.2 TECHNICAL SPECIFICATION .....11
- 2.3 GENERAL CHARACTERISTICS .....11
- 2.4 BATTERY REPLACEMENT PROCEDURE .....11

## Information

---

**Document information**

---

<b>Title</b>	Smiley Box Lora V2 product brief
<b>Subtitle</b>	UG v1.0 – Firmware 2.0
<b>Document type</b>	Hardware integration and software management manual
<b>Document status</b>	

This document applies to the following products

<b>Name</b>	<b>Reference</b>	<b>Firmware version</b>
<b>Smiley box V2 EU</b>	8354A	v2.0
<b>Smiley box V2 US/CAN</b>	8354B	v2.0

## EU Declaration of Conformity

### WE

FeedbackNow-Forrester Switzerland GmbH  
22b rue du lac  
1020 Renens- Switzerland

**Declare that the DoC is issued under our sole responsibility and belongs to the following product:**

Apparatus model/Product: Smiley box V2  
Type: 8354A

**Object of the declaration:**



The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:

**Directive 2014/53/UE (RED)**

**The following harmonised standards and technical specifications have been applied:**

<b>Title:</b>	<b>Date of standard/specification</b>
EN 300 220-2 V3.1.1	2017/02
EN 301 489-1 V2.1.1	2016/11
EN 301 489-3 V2.1.0	2016/09
EN 62368-1	2014
EN 62479	2010

October 29<sup>th</sup>,2019

Jean-Guilhem Chiariny

## **COMPLIANCE TO FCC US/CAN**

This device complies with part 15 of the FCC rules and Industry Canada licence-exempt RSS standard(s).

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 instruction, may cause harmful interference to radiocommunication. 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.
- CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY ADEUNIS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lower) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be chosen so that the equivalent isotropically radiated power (e.i.r.p.) is not superior than necessary for successful communication.

### **WARNING ! FOR MOBILE DEVICE USAGE**

This radiation element complies with FCC RF radiation exposure limits set forth for general population.

This radiation element must be installed to provide a separation distance of at least 20cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that permitted for successful communication.”

#### Identification :

- FCC ID : U3Z-A8354
- IC : 7016A-A8354

Product reference: USA/CANADA: 8354B

Authorised representative in Canada

FeedbackNow-Forrester Research Ltd

Ce dispositif est conforme aux règles de la FCC part 15 and à la norme CNR-210 d'Industrie Canada applicable aux appareils radio exempts de licence. Son fonctionnement est sujet aux deux conditions suivantes : (1) le dispositif ne doit pas produire de brouillage préjudiciable, et (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

Cet équipement a été testé et déclaré conforme aux limites d'un appareil numérique de classe B, conformément à la partie 15 des règles de la FCC. Ces limites sont conçues pour fournir une protection raisonnable contre les interférences nuisibles dans une installation résidentielle. Cet équipement génère, utilise et peut émettre de l'énergie radiofréquence et, s'il n'est pas installé et utilisé conformément aux instructions, peut causer des interférences nuisibles aux radiocommunications. Il est cependant toujours possible que des interférences se produisent dans le cadre d'une installation particulière.

Si cet appareil produit des interférences nuisibles à la réception des programmes de radio et de télévision –détectables lors de la mise hors tension ou en tension de l'appareil-l'utilisateur est encouragé à mettre en œuvre une ou plusieurs des mesures suivantes pour remédier à ces interférences :

- Réorienter ou déplacer l'antenne de réception.
- Augmenter la distance entre l'équipement et le récepteur.
- Branchez le matériel à une sortie sur un circuit différent de celui auquel le récepteur est branché.
- Prendre conseil auprès du commerçant ou d'un technicien de radio/TV expérimenté.

Tout changement ou modification non expressément approuvé par la partie responsable des mesures de conformité peut amener l'utilisateur à se voir interdire l'usage de l'appareil.

Cet appareil est limité à l'exploitation des fréquences autorisées Partie 15, et ne peut pas être configuré par des utilisateurs finaux ou des installateurs professionnels à fonctionner en dehors des bandes autorisées.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

**ATTENTION !  
POUR UTILISATION DE DISPOSITIF MOBILE**

l'élément radio est conforme aux limites d'exposition aux rayonnements RF de la FCC établies pour la population générale. l'élément radio doit être installé de manière à assurer une distance de séparation d'au moins 20 cm de tout personnes et ne doivent pas être co-localisés ou fonctionner en conjonction avec toute autre antenne ou émetteur.

Pour réduire le brouillage radioélectrique potentiel causé aux autres utilisateurs, le type d'antenne et son gain doivent être choisis de manière à ce que la puissance rayonnée isotropiquement équivalente (par exemple) ne soit pas supérieure à celle autorisée pour une communication réussie. "

**Identification :**

- FCC ID : U3Z-A8354
  - IC : 7016A-A8354
- Reference produit: USA/CANADA: 8354B  
Representant canadien  
FeedbackNow-Forrester Research Ltd

## Environmental recommendations

All superfluous packaging materials have been eliminated. We have done everything possible to make it easy to separate the packaging into three types of materials: cardboard (box), expanded polystyrene (filler material) and polyethylene (packets, foam protective sheets). Your device is composed of materials that can be recycled and reused if it is dismantled by a specialist company. Please observe local regulations concerning the manner in which waste packaging material, used batteries and your obsolete equipment are disposed of.

## Warnings

Valid for the product Smiley Box v2 8354A, 8354B



Read the instructions in the manual



The safety of this product is only guaranteed when it is used in accordance with its purpose. Maintenance should only be carried out by qualified persons.



Please note, do not install the equipment close to a heat source or in damp conditions.



Risk of explosion if the battery is removed with an incorrect type. Contact FeedbackNow for more information if needed.

Please note: When the equipment is open, do not carry out any operations other than the ones set out in this document.



it.

Please note: for you own safety, you must ensure that equipment is switched off before carrying out any work on



Warnina: Do not open the product. risk of electric shock

## Recommendations regarding use

- Before using the system, check that the power supply voltage shown in the user manual corresponds to your supply. If it doesn't, please consult your supplier.
- Place the device against a flat, firm and stable surface.
- The device must be installed in a location that is sufficiently ventilated so that there is no risk of internal heating and it must not be covered with objects such as newspapers, cloths, curtains, etc.
- The device's aerial must be free and at least 10 cm away from any conducting material.
- The device must never be exposed to heat sources such as heating equipment.
- Do not place the device close to objects with naked flames such as lit candles, blowtorches, etc.
- The device must not be exposed to aggressive chemical agents or solvents likely to damage the plastic or corrode the metal parts.

**Disposal of waste by users in private households within the European Union**

This symbol on the product or on its packaging indicates that this product must not be disposed off with your other household waste. Instead, it is your responsibility to dispose of your waste by taking it to a collection point designated for the recycling of electrical and electronic appliances. Separate collection and recycling of your waste at the time of disposal will contribute to conserving natural resources and guarantee recycling that respects the environment and human health. For further information concerning your nearest recycling centre, please contact your nearest local authority/town hall offices, your household waste collection company or the shop where you bought the product.



Attention: There is a risk of explosion if the battery is replaced by an incorrect type. Throwing away the used batteries according to instructions. When changing batteries, reassembled correctly and completely the product.



Switzerland IMPORTANT: Annex 4.10 of SR 814.013 standard is applicable to batteries



## 1.1 Product overview

This document describes the functionalities and characteristics of Smiley Box LoRa v2 products and provides a user guide of the product.



There are currently 2 versions of this product:

- EU Product - ARF8354A compliant with the Europe radio directives and LoRa protocol for EU market. This product is mainly composed of:
  - an electronic card embedding the radio part LoRa 868 MHz ADEUNIS
  - a LoRa software stack compliant with LoRa specification
  - a software dedicated to fulfilling product application
- US Product - ARF8354B compliant with the United States/Canada rules and LoRa protocol for United State/Canada market and composed of:
  - an electronic card embedding the radio part LoRa 915 MHz ADEUNIS
  - a LoRa software stack compliant with LoRa specification
  - a software dedicated to fulfilling product application

## 2 Product features

### 2.1 High level functional specifications

- **Functionalities**

- Collect Votes from End User through 3 color Red/Orange/Green buttons
- 3 LEDs color to confirm to End User that Vote has been registered by the Product for analysis
- Integrated radio link quality check mechanism at network join process completion
- Keep Alive radio frame sent daily to monitor radio link
- Configurable Parameters locally or remotely to optimize Product performance with use case
- Battery monitoring and low-level alarm
- Product architecture based on ADEUNIS IoT HW/SW architecture for optimum performance
- Radio link fully compliant with LoRaWAN 1.0.2 specifications

- **Functional interfaces**

Interface	Functions
3 Buttons: Red, Orange, Green	<b>For end user:</b> provide a way to feedback its satisfaction level on a product or a service by pushing the appropriate button. <b>For technician:</b> provide a physical interface to configure the Product and set-up the appropriate parameters with the user case. Installation procedure is described in the following section. This interface is called "local interface" when used for Product configuration
3 LEDs: Red, Orange, Green	<b>For end user:</b> provide a confirmation to end user that its satisfaction level feedback has been registered. <b>For technician:</b> provide a confirmation on installation mode and parameters. Installation procedure is described the following section
LoRa "Uplink" radio link	Link to send satisfaction level feedback of end user to Customer.
LoRa "Downlink" radio data link	Product configuration remote link. Provide customer or technician with a mean to change some Product parameters (see following sections for detailed list)

- **Radio interface**

Feature	Description	
Emission power	US Product: up to 20 dbm	EU Product: up to 14 dbm
LoRa geographical zones	US Product: US902-928	EU Product: EU868
LoRa Pairing protocol	OTAA (Over The Air Activation)	
Data frame size	11 bytes - applicable for all Products version (US, EU and "extended APAC" versions)	
LoRa transmission mode	<b>Data (vote) frame:</b> LoRa transmission mode is configurable in <b>Confirmed or Unconfirmed</b> mode (see section below) <b>KA frame:</b> Confirmed mode only.	
LoRa "Downlink" radio data link	Product configuration remote link. Provide customer or technician with a mean to change some Product parameters (see following sections for detailed list)	
LoRa Adaptive Data Rate	Adaptive Data Rate (ADR) is a mechanism for optimizing data rates, airtime and energy consumption in the network	

## 2.2 Technical Spécification

Parameter	Value
Operating voltage	3V
Consumption Tx max	150mA
Power supply	NX power L92 Battery Lithium(x2)
Operating temperature	0/+45°C
Dimensions	126 x 50 x 18 mm

## 2.3 General characteristics

- Regulation compliancy
  - EU Product - 8354A : RED directive
  - US Product - 8354B: FCC title 47 CFR part 15 and RSS-247 issue 2
- Environmental conditions
  - Product operating temperature: Min: 0°c, Max: 45°c
  - Product storage temperature: Min: -20°c, Max: 60°c
  - Electronic card protected with a conformal coating
- Battery specification: 1 custom Lithium batteries pack composed of 2 AAA Lithium batteries NX power L92 not rechargeable

## 2.4 Battery replacement procedure

If the technician must proceed to a battery replacement as soon as a battery low alert has been received from the product.

The following step-by-step procedure must be followed to proceed to a battery replacement:

1. **Uninstall** the Product (if installed) : the product is then in **Storage** state
2. Open Product mechanical enclosure
3. Disconnect battery pack from electronic board by unplugging battery connectors on both side (connectors at the end of a red wire and a black wire)
4. Remove battery pack
5. Press Green and Orange buttons simultaneously, and KEEP these buttons pressed until Green AND Orange LEDs turn off. It may happen that LEDs do not turn on. In this case, go to step 6 directly.
6. Release buttons, then press Green and Orange buttons again to check that no more LED turn on:
  - a. If one LED turns on: go back to step #4
  - b. If no LED turn off: go to step #6
7. Connect a new battery pack:
  - a. Black wire on – connector (check ‘-’ symbol on electronic board)
  - b. red wire on + connector ((check ‘+’ symbol on electronic board)
8. To check that battery is properly connected the technician can do short press on Green, Orange, Red buttons, in this order: all the LEDs must blink 3 times in response.

Note: as the battery replacement procedure is executed when the Product is in Storage state, then all Product parameters are saved