

1. SECURE LIVE MR LOGGER OVERVIEW

The SECURE Live MR logger is a wireless data logger for measuring, and recording various environmental conditions, such as temperature. Data is logged on the SECURE Live MR logger in defined intervals, when in proximity of a SkyCell gateway the data is uploaded to the SkyCell cloud.

SECURE Live MR Logger



Figure 1: Secure MR Logger



Figure 2: Secure MR Logger Label

Product Name:	SECURE Live MR
Product Model(s):	810 (Temperature Logger) 811 (Temperature & Ambient Light Logger) 812 (Dry Ice Temperature Logger)
Product Description:	Wireless data logger
Wireless connection:	LoRa, 2.4 GHz, max. 12.5 dBm/ 17.8 mW TX power
Power supply:	Internal button cell battery, CR2450/ CR2477 3 Volt, 540/ 950 mAh max. 160/ 270 mg lithium content
Temperature range:	-40 .. 78.5 °C operational, storage, transport
Size:	60 mm x 35 mm x 20 mm
Weight:	35 g
Manufacturer:	SkyCell AG Hardturmstrasse 11, 8005 Zurich, Switzerland

SkyCell Gateway

Different gateways can be used:

- SkyCell MR Gateway
- Any LoRaWAN, 2.4 GHz compatible Gateway, that can be configured to forward packages to the SkyCell cloud

Further instructions are provided in the according gateway user manual.

SkyCell Cloud

Depending on the application, multiple SkyCell front ends/ applications are provided to view/ process the logged data:

- SkyNet web application
- SkyCenter mobile app
- SkyCell SECURE web application
- SkyShip mobile app

Further instructions are provided in the according front end/ application user manual.

2. DEFINITIONS AND ABBREVIATIONS

LoRa	Low-power wide-area network modulation technique
LoRaWAN	Communication protocol specification for the LoRa modulation
RF	Radio frequency
DGR	IATA Dangerous Goods Regulations
PED	Portable electronic device
EIRP	Equivalent isotropically radiated power

3. REFERENCES

- Radio Equipment Directive 2014/53/EU, European Union (EU)
- Part 15 - Radio Frequency Devices, Federal Communications Commission (FCC)
- DO-160, Environmental Conditions and Test Procedures for Airborne Equipment, RTCA
- UL 1642, Safety Lithium Batteries, UL Standard
- UN 38.3, UN manual of tests and criteria, United Nations

4. OPERATING INSTRUCTIONS

Storage of Logger

If not in use and to preserve battery lifetime, store the sensor at room temperature.

Start Logging/ Configuration

To configure and start the logging functionality, the logger has to be initialized using the according application. During the configuration process, when requested by the application, the button on the logger has to be pressed to trigger the download of the configuration and start of the logging.

Data Logging/ Read Out

Depending on the SECURE Live MR model different sensor types are available (see section 1).

Data of the sensors is logged and stored on the SECURE Live MR logger in defined intervals. The logger can store data of at least 1 month (at a 10 min logging interval) without a connection to a gateway.

If a connection to the SkyCell gateway can be established, the stored data is uploaded to the SkyCell cloud.

The range of a gateway can reach across multiple rooms (up to 100 meters) depending on the set-up (e.g. obstruction, as walls or other objects, that attenuated the signal).

Battery Lifetime/ Battery Exchange

The battery lifetime depends on the configuration and use case. The design can guarantee 12 months operation, depending on the use case a specific life time can be specified on request.

Battery exchange is only allowed by authorized and trained personnel.

5. MOUNTING INSTRUCTIONS

The SECURE Live MR logger can be mounted in the dedicated compartments of the SkyCell containers/ packaging.

It is also possible to attach the logger securely in a sensor pouch directly to a shipment.

6. DISPOSAL

Please return the device to the next SkyCell representative for refurbishing or recycling.



Dispose of the product at the end of its service life cycle must occur in accordance with applicable laws. Batteries shall be removed prior to disposal and discarded according to local laws and procedures.



Correct disposal of this product will help save valuable resources and prevent any potential negative effects to human health or the environment, which could arise from inappropriate waste handling.

7. EU – DECLARATION OF CONFORMITY

SkyCell AG declares that SECURE Live MR logger complies with the essential requirements and other relevant provisions of directive 2014/53/EU (Radio Equipment Directive - RED) and 2014/30/EU (Electromagnetic Compatibility - EMC). Compliance is shown by testing acc. the applicable European norms (EN).

8. FCC COMPLIANCE STATEMENT

FCC ID: 2A2SN-SKYCELL810

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: 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.

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.

9. FCC RF EXPOSURE STATEMENT

This equipment complies with the FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and any part of your body.

10. AIRLINE APPROVAL

Airline approvals for the SECURE Live MR logger are in progress. A detailed list of airline approvals can be provided upon request.

Power

The SECURE Live MR logger operates with one internal standard Lithium coin cell battery, type CR2450/ CR2477, depending on the model. As the coin cell has a lithium metal content less than 1 g the logger is not subject to the provisions of the IATA DGR or ICAO TIs.

No requirement for special marking or documentation on the air way bill apply.

The CR2450/ CR2477 coin cell battery is certified according to UL 1642 and the UN38.3 standard for safe transport. Documentation can be provided upon request.

Radio Frequency Transmission

The SECURE Live MR logger is categorized as a portable electronic device (PED).

SkyCell AG declares that SECURE Live MR logger uses low-powered wireless communication with an EIRP < 100 mW / 20 dBm. Hence it does not require radio suspension in flight.

SkyCell AG declares that SECURE Live MR logger meets, independent from its mode of operation, the RF radiated emissions limits defined in RTCA DO-160, Section 21, Category H. Therefore the RF systems and sensors of an aircraft are not interfered with.

11. CHANGE HISTORY

Document No.	Date	Changes
V01.00	19-JAN-2022	Document created
V01.01	03-FEB-2022	Section “EU – DECLARATION OF CONFORMITY” added
V02.00	22-MAR-2022	Logger renamed from “SkyCell 5G MR” to “SECURE Live MR”
V02.01	07-APR-2022	Label, size, weight and mounting instructions added
V02.02	19-APR-2023	FCC statement added Ambient temperature specification updated