LoRaWAN® EU Supplementary Device Info Questionnaire

LoRa Alliance®

Supplementary information for EU Devices in the LoRaWAN® Showcase catalogue. Version 1.0

Version of Questionnaire form from the Customer/ Device Manufacturer

Version	Date	Author	Update
1.0			Initial release from manufacture

Supplementary Information on certified device

1	Supplementary information	
1.1 Manufacturer or Brand name		Milesight
1.2 Website		www.milesight-iot.com
1.3 Sales / Marketing contact person, email:		ivete@milesight.com
1.4 Technical contact person, email:		near_lxj@milesight.com
1.5 Commercial Product name		Smart Button
1.6 Product code used when ordering / article number		

1.7   Product Version :
    Hardware version:
    Firmware version:
		V1
		V1.1
		V1.03

1.8 In what countries is the product available		worldwide
1.9 What date was / is the market introduction for this device / product?		2022/5
1.10 Is the device already working on a public LoRaWAN network. If yes specify at which public operator, country and number of deployed devices on that network:		☒ Yes: ☐ No
1.11 What functionality does the device provide and which sensor(s) does it contain?		Use case: WS101 is a LoRaWAN® based smart button for wireless controls, triggers and alarms. WS101 supports multiple press actions, all of which can be defined by the user to control devices or trigger scenes. Besides, Milesight also provides a red button version that is primarily used for emergency situation. Compact and battery-powered, WS101 is easy to install and carry everywhere. WS101 can be widely used in smart homes, smart offices, hotels, schools, etc. Short behavior description: Sensor data are transmitted in real-time using the standard LoRaWAN protocol. LoRaWAN enables encrypted radio transmissions over long distances while consuming very little power. The user can get

	alarm through Milesight IoT Cloud or through the user's own Application Server.
1.12 Accuracy & resolution for every sensor or measurement made by the device	
Name: sensor accuracy (incl. unit): +/- resolution (incl. unit): measurement parameter: measurement range	
1.13 Uplinks are: Periodic: Period: Explanation: Keep alive message period: Event triggered how:	☒ 1080 min 10 presses per day)
1.14 Parameter configuration of device (e.g. transmission or measurement interval, threshold levels, etc.)	☒ Remotely: ☒ Over-the-air with LoRaWAN data downlinks ☐ Specify if other: ☐ Locally: ☐ Via CLI: specify type of connector: ☒ Via NFC: ☐ Specify if other:
1.15 Does the application server send downlinks to the devices?	☒ Yes: (why/how often/typical size) ☐ No
1.16 Operating temperature of device - x °C to + x °C	Minimum -20 °C Maximum +60 °C
1.17 Is the payload structure available for decoding?	☐ Yes: ☒ No Please attach the payload structure (+example of decoded payload)
1.18 Is there a decode-API available	☐ Yes: ☒ No Please attach the API documentation
1.19 Is the firmware upgradeable and how?	☒ Yes: (how)
1.20 How can the device be reset to factory default settings?	Reset via PC Software;Reset via Button
1.21 How can the device be forced to re-initiate the join procedure?	via Smartphone APP;via PC Software;via Button
1.22 Product certifications (IP rating, ATEX, ...)	1. IP rating: IP30 2. ATEX compliance: Other:
1.23 Which regulatory certifications are available (RED, CE, EMC)?	☒ RED ☒ CE

	☒ EMC Attach proof of certification to the mail in which this document is sent to a public operator
1.24 Power Supply	☐ External power supply: connection: voltage: amperage: ☒ Internal battery: battery type: 1650 mAh Li-SoCl2 battery chemical composition: Li-SoCl2 Battery self-discharge (%/year): Battery shelf life: >5year capacity: 1650 mAh weight: rechargeable: ☐ Yes: ☒ No
1.25 Powering device on and off How is the device turned ON ? How is the device turned OFF ?	Turn ON via Smartphone APP;Turn ON via PC Software;Turn ON via Button Turn OFF via Smartphone APP;Turn OFF via PC Software;Turn OFF via Button
1.26 Dimensions of device (Length x width x height)	5.0× 5.0× 1.8cm
1.27 Weight of full device	g
1.28 Mounting of device 1. How to mount? 2. How to mount for best antenna propagation	On the flat surfaces with screws or 3M tapes, Lanyard 3M Tapes Fix: Paste 3M tape to the back of the button, then tear the other side and place it on a flat surface. Screw Fix: Remove the back cover of the button, screw the wall plugs into the wall and fix the cover with screws on it, then install back the device. Screw Fix: Remove the back cover of the button, screw the wall plugs into the wall and fix the cover with screws on it, then install back the device.

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2 LoRaWAN Device Information

2.1 DevEUI Range (IEEE Compliance)	From :24E1240000000000 To : 24E124FFFFFFFFFF
2.2 LoRaWAN Class	☒ Class A ☐ Class B ☐ Class C
2.3 For Class C Device: Device Under Test restores previous RF settings at boot?	☐ Yes ☐ No
2.4 In what LoRaWAN region/frequency ranges is the product available	☒ EU863-870 ☐ US902-928 ☐ AS923 ☐ IN865-867 ☐ KR920-923 ☐ Other
2.5 Is the LoRaWAN test mode supported?	☒ Yes ☐ No, why not
2.6 Tested and certified against which LoRaWAN Specification(s)	☐ V1.0 ☐ V1.0.1 ☒ V1.0.2 revB ☐ V1.0.3 ☐ V1.1.x ☐ Other :
2.7 Link to document on the LoRa Alliance website	Link:
2.8 Which TX power is used in production devices by default? - if LW 1.0.2 rev A or older is used: - if LW 1.0.2 rev B or newer is used	 ☐ TXPower 0 (20dBm) ☐ TXPower 1 (14dBm) ☐ TXPower 2 (11dBm) ☐ TXPower 3 (8dBm) ☐ TXPower 4 (5dBm) ☐ TXPower 5 (2dBm) ☐other TXPower (dBm) ☒ TXPower 0 (MaxEIRP) ☐ TXPower 1 (MaxEIRP-2dB) ☐ TXPower 2 (MaxEIRP-4dB) ☐ TXPower 3 (MaxEIRP-6dB) ☐ TXPower 4 (MaxEIRP-8dB) ☐ TXPower 5 (MaxEIRP-10dB) ☐ TXPower 6 (MaxEIRP-12dB) ☐ TXPower 7 (MaxEIRP-14dB) ☐other TXPower (Max EIRP : 16 dB)

2.9 Which TX powers are supported by the device in production - if LW 1.0.2 rev A or older is used: - if LW 1.0.2 rev B or newer is used	☐ TXPower 0 (20dBm) ☐ TXPower 1 (14dBm) ☐ TXPower 2 (11dBm) ☐ TXPower 3 (8dBm) ☐ TXPower 4 (5dBm) ☐ TXPower 5 (2dBm) ☐ other TXPower (dBm) ☒ TXPower 0 (MaxEIRP) ☒ TXPower 1 (MaxEIRP-2dB) ☒ TXPower 2 (MaxEIRP-4dB) ☒ TXPower 3 (MaxEIRP-6dB) ☒ TXPower 4 (MaxEIRP-8dB) ☒ TXPower 5 (MaxEIRP-10dB) ☒ TXPower 6 (MaxEIRP-12dB) ☒ TXPower 7 (MaxEIRP-14dB) (Max EIRP : 16 dB)
2.9 Which LoRaWAN Specification is currently supported on the production devices?	☐ V1.0 ☐ V1.0.1 ☐ V1.0.2 revA ☒ V1.0.2 revB ☐ V1.0.4 ☐ V1.1.x ☐ Other:
2.10 Will you re-certify your device when a new major LoRaWAN specification version is released	☐ Yes. ☒ No, why :
2.11 Has Interoperability prequalification testing been done?	☒ Yes. ☐ No, why : Which Network Servers ☒ Actility ☒ Loriot ☒ TTI ☐ Other: Specify: Please attach all the test reports.
2.12 Is Activation Type OTAA the default	☒ Yes. ☐ No, why :
2.13 For OTAA, is AppKey unique for each device?	☐ Yes. ☒ No.

2.14 Is ADR implemented? Recommendation: ADR should always be activated. Exceptions can be made for moving devices but will need to be explained.	☒Activated ☐Deactivated, why : ☐Configurable by user (recommendation: Activated by default) ☐Mixed, explain:
2.15 What values did you implement for: - ADR_ACK_LIMIT: - ADR_ACK_DELAY:	64recommended value: 64 32recommended value: 32
2.16 Do you use unconfirmed and/or confirmed uplinks and what is the data rate, timing and power back off algorithm? Upon reception of a confirmed downlink message, is the next uplink sent immediately after the downlink ?Answers (radio buttons)	☐unconfirmed ☐confirmed, when and why: ☒Both, which is used when and why: When confirmed mode is enabled Data rate, timing and power back-off algorithm (only if you use confirmed uplinks): ☐Yes. ☒No, why :
2.17 Is the device doing a periodical rejoin? (only for OTAA)	☐Yes (frequency): ☒No. Why? How to trigger a rejoin? Use the restart button
2.18 Is the first join request sent on SF12?	☐Yes. ☒No, why: Because of the duty cycle Explain the JoinRequest sequence if no JoinAccept is received - data rate, timing and power back-off algorithm.
2.19 On what SF and power setting is the first uplink (after join procedure) done?	SF: SF10 TXPower: TXPower0
2.20 Are you doing periodically reset of Uplink frame counter?	☐Yes (frequency/why): ☒No.
2.21 If LoRaWAN 1.0.x, DevNonce behaviour :	☒ Based on a random value ☐ Monotonically increasing never-wrapping counter
2.22 Uplink DataRate (0-7 supported)	Min: 0 Max: 5
2.23 RX1 Data Rate Offset	☒Default LoRaWAN in regards of ISM band ☐Other:
2.24 RX1 Delay	☒Default LoRaWAN in regards of ISM band ☐Other:
2.25 RX2 Data Rate	☒Default LoRaWAN in regards of ISM band ☐Other:

2.26 RX2 Frequency	☒Default LoRaWAN in regards of ISM band ☐Other:
2.27 RX1 Delay on JoinRequest (OTAA devices only)	☒Default LoRaWAN in regards of ISM band ☐Other:
2.28 Mobility Profile (how your device moves)	☒Near static ☐Walking speed ☐Vehicle speed ☐Random
2.29 Frame Counters Up To 32-bits	☒Frame counter-up ☐Frame counter-down
2.30 Which MAC commands does the device support	☒LinkCheckReq / LinkCheckAns ☒TXParamSetupReq / TXParamSetupAns ☒LinkADRReq / LinkADRAns ☒DutyCycleReq / DutyCycleAns ☒RXParamSetupReq /RXParamSetupAns ☒DevStatusReq / DevStatusAns ☒NewChannelReq / NewChannelAns ☒TXTimingSetupReq / TXTimingSetupAns
2.31 LoRaWAN Stack Type (optional)	☒Semtech/Stackforce ☐Semtech/Stackforce with modifications ☐IBM ☐IBM with modifications ☐Proprietary- Other, name it:
2.32 LoRaWAN Stack Version (optional)	V1.0.2
2.33 LoRa Radio Hardware (optional)	☒Proprietary: SX chip used: SX1262 ☐LoRaWAN Modem/Module: Manufacturer: Part Number: Firmware revision:
2.34 Multicast support (optional)	☐Yes: Multicast DevAddr: Multicast AppSKey: Multicast NwkSKey: Payload: Port: ☒No.

3 Radio Frequency Information

3.1 Type of Antenna	☐Wire ☐PCB ☐External ☒Other: (which type) Spring antenna
3.2 Antenna gain [dBi or dBd]	1dBi or 　　　dBd
3.3 Did you measure and take into account the loss between the modem and the antenna?	☐Yes,　　　dB loss ☒No, why: We have match the impedance between the moderm and the antenna.
3.4 For LW 1.0.2 rev A or older devices: which TXPower setting should be used on the network for your device*:	☐ TXPower 0 (20dBm) ☐ TXPower 1 (14dBm) ☐ TXPower 2 (11dBm) ☐ TXPower 3 (8dBm) ☐ TXPower 4 (5dBm) ☐ TXPower 5 (2dBm) ☒other txpower 0 (16dBm)
3.5 Did you calibrate your device with the antenna gain and measured loss in between the chipset and antenna? This so that your device emits with maximal power when using TXPower 1 for LW 1.0.2 rev A or older devices (= 14dBm) and TXPower 0 for LW 1.0.2 rev B or newer devices (= MaxEIRP or 16.15dBm EIRP)*.	☒Yes, 0 dB loss ☐No, why:

4 Battery and TX Power Information

Please indicate if you do not want Section 4 displayed on the LoRa Alliance Website ☐Yes
If yes please supply contact details for the operators to request the information for Section 4

<table>
<tr>
<td>4.1 Battery consumption of the device (including modem, sensors and all other electronics</td>
<td colspan="4">TX current: 100mA
RX current: 6.2 mA
Idle time current: 0.01mA</td>
</tr>
<tr>
<td rowspan="2">4.2 Estimated battery life in years based on the number of transmissions (including sensor readings) at SF7, SF10 & SF12 with your battery self-discharge and aging over time taken into account.

Assumptions:
- Product shelf life before use: Maximum 1 year.
- At an environment temperature of 20°C.</td>
<td colspan="4">Battery life in years</td>
</tr>
<tr>
<td></td>
<td>SF7</td>
<td>SF10</td>
<td>SF12</td>
</tr>
</table>

Transmission Periodicity (transmissions/day)	SF7	SF10	SF12
144	5.42	1.95	0.59
96	6.33	2.61	0.84
48	7.60	3.93	1.43
24	8.46	5.25	2.22
12	8.96	6.32	3.06
4	9.33	7.30	4.11
1	9.48	7.76	4.70

- LoRaWAN specification used for battery life calculation:

☐LW1.0.1
☐LW1.0.2 revA
☒LW1.0.2 revB
☐Other :

- TX power setting (txpower) used for battery life calculation:

☐LW1.0.1
☐LW1.0.2 revA
☒LW1.0.2 revB
☐Other :

- Payload size used for battery life calculation (should be average payload size of production device):

11 bytes

- Additional assumptions or comments on battery life (Typical usage

4.3 Which TX power setting (TXPower) was used in the RF test? - If LW 1.0.2 rev A or older device:	☐ TXPower 0 (20dBm) ☐ TXPower 1 (14dBm) ☐ TXPower 2 (11dBm) ☐ TXPower 3 (8dBm) ☐ TXPower 4 (5dBm) ☐ TXPower 5 (2dBm) ☐ other TXPower (dBm)
- If LW 1.0.2 rev B or newer device:	☐ TXPower 0 (MaxEIRP) ☐ TXPower 1 (MaxEIRP-2dB) ☐ TXPower 2 (MaxEIRP-4dB) ☐ TXPower 3 (MaxEIRP-6dB) ☐ TXPower 4 (MaxEIRP-8dB) ☐ TXPower 5 (MaxEIRP-10dB) ☐ TXPower 6 (MaxEIRP-12dB) ☐ TXPower 7 (MaxEIRP-14dB) ☒ other TXPower 16 (MaxEIRP- dBdBm)
4.4 Is this the same TX power setting (TXPower) used by default in production devices (before network ADR)?	☒ Yes, Txpower0 ☐ No, why:
4.5 Maximum ERP measured: (ERP = EIRP - 2.15 dB; LoRaWAN allows 14 dBm ERP)	16 dBm
4.6 TRP measured: (TRP is based on EIRP) This gives an idea about the directivity of the antenna.	16 dBm
3.10 TIS measured on RX1:	For RX1-SF12BW125 on 868.3MHz -137 dBm
3.11 TIS measured on RX2	For RX2-SF12BW125 on 869.525 MHz: -137 dBm