LoRaWAN® EU Supplementary Device Info Questionnaire

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	24.09.2020	J. Haldemann OXON AG	Initial release from manufacture

Supplementary Information on certified device

1 Supplementary information	
1.1 Manufacturer or Brand name	OXON AG
1.2 Website	www.oxon.ch
1.3 Sales / Marketing contact person, email:	tg@oxon.ch
1.4 Technical contact person, email:	jh@oxon.ch
1.5 Commercial Product name	Buttonboard
1.6 Product code used when ordering / article number	OXO-AF3300
1.7 Product Version : Hardware version: Firmware version:	AF3300 1.5.0 1.2.8
1.8 In what countries is the product available	Switzerland
1.9 What date was / is the market introduction for this device / product?	Autumn 2020
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: X
1.11 What functionality does the device provide and which sensor(s) does it contain?	Use case: Flexible ordering or event triggering with up to 6 options Short behavior description: When pressing one of the 6 touch sensor buttons for > 1s, an uplink is sent with all the device sensor data (pressed button, app mode, event type, battery level, temperature & accelerations)
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	Accelerometer: - Low power - Resolution: 12 or 14 Bit - Data Rate: 1.6 – 1600Hz - Full Scale: +/- 2g, +/- 4g, +/- 8g, +/- 16g
Name: sensor accuracy (incl. unit): +/- resolution (incl. unit): measurement parameter: measurement range	Temperature Sensor: - +/- 2°C - Resolution: 12 Bit
Name: sensor accuracy (incl. unit): +/- resolution (incl. unit): measurement parameter: measurement range	Battery measurement: - +/- 2% - Resolution: 10 Bit ADC
Name: sensor accuracy (incl. unit): +/- resolution (incl. unit): measurement parameter: measurement range	
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:	Pressing a touch sensor button
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: Locally with BLE or remotely witch LoRa downlinks

1.15 Does the application server send downlinks to the devices?	Yes: (why/how often/typical size) Only when configuring the device remotely No
1.16 Operating temperature of device - x °C to + x °C	Minimum 5 °C Maximum 35 °C
1.17 Is the payload structure available for decoding?	Yes: X No: Please attach the payload structure (+example of decoded payload) -> http://oxobutton.ch/products/button-board/documentation#uplink
1.18 Is there a decode-API available	Yes: No: X Please attach the API documentation
1.19 Is the firmware upgradeable and how?	Yes: (how) Mobile app via BLE
1.20 How can the device be reset to factory default settings?	Mobile app via BLE
1.21 How can the device be forced to re-initiate the join procedure?	Reset the device by pressing the reset button within the case or holding the 2 most outer buttons for > 6s to enter BLE mode. Push any button in BLE mode to reset (and re-enter app mode). Then trigger an uplink (join) again by pressing a touch sensor button for >1s.
1.22 Product certifications (IP rating, ATEX, ...)	1. IP rating: IP53 2. ATEX compliance: Other:
1.23 Which regulatory certifications are available (RED, CE, EMC)?	RED CE -> X (in progress) 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: CP405050 chemical composition: Li-MnO2 Battery self-discharge (%/year): 2 Battery shelf life: 10y capacity: 2400mAh weight: 35g rechargeable: Yes: No: X

1.25 Powering device on and off How is the device turned ON ? How is the device turned OFF ?	Sliding switch within the case. Sliding switch within the case. Sleep mode otherwise (~15uA)
1.26 Dimensions of device (Length x width x height)	100 x 162 x 9.4mm
1.27 Weight of full device	161g
1.28 Mounting of device 1. How to mount? 2. How to mount for best antenna propagation	Portable device. No mounting required. See ButtonBoard specifications for measured antenna performance

2 LoRaWAN Device Information

2.1 DevEUI Range (IEEE Compliance)	From : 745BC53000000000 To : 745BC53FFFFFFFFF
2.2 LoRaWAN Class	Class A: X 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: X US902-928 AS923 IN865-867 KR920-923 Other
2.5 Is the LoRaWAN test mode supported?	Yes: X No, why not
2.6 Tested and certified against which LoRaWAN Specification(s)	V1.0 V1.0.1 V1.0.2 revB: X 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): X (14dBm) 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 : 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): X (14dBm) 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 : 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: X V1.0.4 V1.1.x Other: (V1.0.3)
2.10 Will you re-certify your device when a new major LoRaWAN specification version is released	Yes: X (if requested by customer) No, why :
2.11 Has Interoperability prequalification testing been done?	Yes: X (with a test gateway and tools from Swisscom) No, why : Which Network Servers Actility Loriot TTI Other: Specify: Swisscom Please attach all the test reports.
2.12 Is Activation Type OTAA the default	Yes: X No, why :
2.13 For OTAA, is AppKey unique for each device?	Yes: X (random generated) 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): X (activated by default) Mixed, explain:
2.15 What values did you implement for: - ADR_ACK_LIMIT: - ADR_ACK_DELAY:	recommended value: 64 recommended 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: Configurable by the user; In every uplink; Only few uplinks per day (defined use cases) Data rate, timing and power back-off algorithm (only if you use confirmed uplinks): A max of 7 conf. re-transmissions can be configured Yes: X No, why :

2.17 Is the device doing a periodical rejoin? (only for OTAA)	Yes (frequency): No. Why? How to trigger a rejoin? When not joined & button press
2.18 Is the first join request sent on SF12?	Yes: X No, why: Explain the JoinRequest sequence if no JoinAccept is received - data rate, timing and power back-off algorithm. SF12; First rejoin after 10s; Second after 40s; Third after 130s;
2.19 On what SF and power setting is the first uplink (after join procedure) done?	SF: 12 TXPower: 14dBm
2.20 Are you doing periodically reset of Uplink frame counter?	Yes (frequency/why): No: X
2.21 If LoRaWAN 1.0.x, DevNonce behaviour :	Based on a random value: X 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: X Other:
2.24 RX1 Delay	Default LoRaWAN in regards of ISM band: X Other:
2.25 RX2 Data Rate	Default LoRaWAN in regards of ISM band: X Other:
2.26 RX2 Frequency	Default LoRaWAN in regards of ISM band: X Other:
2.27 RX1 Delay on JoinRequest (OTAA devices only)	Default LoRaWAN in regards of ISM band: X Other:
2.28 Mobility Profile (how your device moves)	Near static: X Walking speed Vehicle speed Random
2.29 Frame Counters Up To 32-bits	Frame counter-up: X Frame counter-down

2.30 Which MAC commands does the device support	LinkCheckReq / LinkCheckAns: X TXParamSetupReq / TXParamSetupAns: X LinkADRReq / LinkADRAns: X DutyCycleReq / DutyCycleAns: X RXParamSetupReq /RXParamSetupAns: X DevStatusReq / DevStatusAns: X NewChannelReq / NewChannelAns: X TXTimingSetupReq / TXTimingSetupAns: X
2.31 LoRaWAN Stack Type (optional)	Semtech/Stackforce: X Semtech/Stackforce with modifications IBM IBM with modifications Proprietary- Other, name it: STM32CubeExpansion_LRWAN (AT slave)
2.32 LoRaWAN Stack Version (optional)	V1.0.3
2.33 LoRa Radio Hardware (optional)	Proprietary: SX chip used: LoRaWAN Modem/Module: Manufacturer: Murata Electronics Part Number: CMWX1ZZABZ-078 Firmware revision: V1.3.1
2.34 Multicast support (optional)	Yes: Multicast DevAddr: Multicast AppSKey: Multicast NwkSKey: Payload: Port: No: X

3 Radio Frequency Information

3.1 Type of Antenna	Wire PCB: X External Other: (which type) Surface mount chip antenna
3.2 Antenna gain [dBi or dBd]	-1.5 dBi or dBd
3.3 Did you measure and take into account the loss between the modem and the antenna?	Yes, see results from antenova dB loss No, why:
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 (dBm)
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, see results from antenova dB loss No, why: