

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 Scene Panel   |
| 1.6 Product code used when ordering / article number  |   |
| 1.7 Product Version :<br>Hardware version:<br>Firmware version:   | V1<br>V1.2<br>V1.04   |
| 1.8 In what countries is the product available  | worldwide   |
| 1.9 What date was / is the market introduction for this device / product?   | 2022/3  |
| 1.10 Is the device already working on a public LoRaWAN network.<br>If yes specify at which public operator, country and number of deployed devices on that network: | <input checked="" type="checkbox"/> Yes: <input type="checkbox"/> No  |
| 1.11 What functionality does the device provide and which sensor(s) does it contain?  | <p>Use case: WS156 is a LoRaWAN based smart panel for wireless controls, triggers and alarms. Without any additional cable, WS156 can be easily installed anywhere and control devices via LoRaWAN or Milesight LoRa D2D communication protocol. Besides, it's equipped a user-definable E-ink screen to suit different scenes. WS136 &amp; WS156 can be widely used in smart home, smart office, hotel, school, etc.</p> <p>Short behavior description: WS156's equipped a user-defined E-ink screen to suit different scenes. Compliant with Milesight LoRaWAN gateway and Milesight IoT Cloud solution, WS136 &amp; WS156 can be linked to control another Milesight devices without any development. WS156 can be widely used for wireless control in smart office, smart home and hotel multi-scene controls, etc.</p> |

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| <p>1.12 Accuracy &amp; resolution for every sensor or measurement made by the device</p> <p>Name:<br/>                 sensor accuracy (incl. unit): +/-<br/>                 resolution (incl. unit):<br/>                 measurement parameter:<br/>                 measurement range</p> |  |
| <p>1.13 Uplinks are:</p> <p>Periodic:<br/>                 Period:<br/>                 Explanation:<br/>                 Keep alive message period:<br/>                 Event triggered how:</p>  | <p><input checked="" type="checkbox"/> 1080 min<br/>                 20 presses per day</p>  |
| <p>1.14 Parameter configuration of device (e.g. transmission or measurement interval, threshold levels, etc.)</p>   | <p><input checked="" type="checkbox"/> Remotely:<br/> <input checked="" type="checkbox"/> Over-the-air with LoRaWAN data downlinks<br/> <input type="checkbox"/> Specify if other:<br/><br/> <input type="checkbox"/> Locally:<br/> <input type="checkbox"/> Via CLI: specify type of connector:<br/><br/> <input checked="" type="checkbox"/> Via NFC:<br/><br/> <input type="checkbox"/> Specify if other:</p> |
| <p>1.15 Does the application server send downlinks to the devices?</p>  | <p><input checked="" type="checkbox"/> Yes: (why/how often/typical size)<br/> <input type="checkbox"/> No</p>  |
| <p>1.16 Operating temperature of device<br/>                 - x °C to + x °C</p>   | <p>Minimum -10 °C<br/>                 Maximum +50 °C</p>  |
| <p>1.17 Is the payload structure available for decoding?</p>  | <p><input type="checkbox"/> Yes: <input checked="" type="checkbox"/> No<br/>                 Please attach the payload structure (+example of decoded payload)</p>   |
| <p>1.18 Is there a decode-API available</p>   | <p><input type="checkbox"/> Yes: <input checked="" type="checkbox"/> No<br/>                 Please attach the API documentation</p>   |
| <p>1.19 Is the firmware upgradeable and how?</p>  | <p><input checked="" type="checkbox"/> Yes: (how)</p>  |
| <p>1.20 How can the device be reset to factory default settings?</p>  | <p>Reset via PC Software;Reset via Button</p>  |
| <p>1.21 How can the device be forced to re-initiate the join procedure?</p>   | <p>via Smartphone APP;via PC Software;via Button</p>   |
| <p>1.22 Product certifications (IP rating, ATEX, ...)</p>   | <p>1. IP rating: IP30<br/>                 2. ATEX compliance:<br/>                 Other:</p>   |
| <p>1.23 Which regulatory certifications are available (RED, CE, EMC)?</p>   | <p><input checked="" type="checkbox"/> RED<br/> <input checked="" type="checkbox"/> CE</p>   |

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|  | <input checked="" type="checkbox"/> EMC<br>Attach proof of certification to the mail in which this document is sent to a public operator   |
| 1.24 Power Supply  | <input type="checkbox"/> External power supply:<br>connection:<br>voltage:<br>amperage:<br><br><input checked="" type="checkbox"/> Internal battery:<br>battery type: 2 x 590 mAh CR2450 Lithium Coin Cell Batteries<br>chemical composition: Lithium<br>Battery self-discharge (%/year):<br>Battery shelf life: 3year<br>capacity: 590 mAh<br>weight:<br>rechargeable: <input type="checkbox"/> Yes: <input checked="" type="checkbox"/> No |
| 1.25 Powering device on and off<br>How is the device turned ON ?<br>How is the device turned OFF ? | Turn ON via Smartphone APP; Turn ON via PC Software; Turn ON via Button<br>Turn OFF via Smartphone APP; Turn OFF via PC Software; Turn OFF via Button  |
| 1.26 Dimensions of device<br>(Length x width x height)   | 8.6x 8.6x 1.4cm  |
| 1.27 Weight of full device   | g  |
| 1.28 Mounting of device<br>1. How to mount?<br>2. How to mount for best antenna propagation        | Desktop, 3M Tape Mounting, 86 Box Mounting<br>Fixed by 3M Tapes:<br>Paste 3M tape to the back of the panel, then tear the other side and place it on a flat surface. Please note the screen direction when installing.<br><br>Fixed by 86 Box:<br>Remove the back cover of the panel, screw the back cover to the 86 box with two M4 mounting screws, then install back the panel. Please note the screen direction when installing.         |

2 LoRaWAN Device Information

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| 2.1 DevEUI Range (IEEE Compliance)   | From :24E1240000000000<br>To : 24E124FFFFFFFFFFFF  |
| 2.2 LoRaWAN Class  | <input checked="" type="checkbox"/> Class A<br><input type="checkbox"/> Class B<br><input type="checkbox"/> Class C  |
| 2.3 For Class C Device: Device Under Test restores previous RF settings at boot?   | <input type="checkbox"/> Yes<br><input type="checkbox"/> No  |
| 2.4 In what LoRaWAN region/frequency ranges is the product available   | <input checked="" type="checkbox"/> EU863-870 <input type="checkbox"/> US902-928 <input type="checkbox"/> AS923 <input type="checkbox"/> IN865-867<br><input type="checkbox"/> KR920-923 <input type="checkbox"/> Other  |
| 2.5 Is the LoRaWAN test mode supported?  | <input checked="" type="checkbox"/> Yes<br><input type="checkbox"/> No, why not  |
| 2.6 Tested and certified against which LoRaWAN Specification(s)  | <input type="checkbox"/> V1.0 <input type="checkbox"/> V1.0.1 <input checked="" type="checkbox"/> V1.0.2 revB <input type="checkbox"/> V1.0.3<br><input type="checkbox"/> V1.1.x <input type="checkbox"/> Other :  |
| 2.7 Link to document on the LoRa Alliance website  | Link:  |
| <p>2.8 Which TX power is used in production devices by default?</p> <p>- if LW 1.0.2 rev A or older is used:</p> <p>- if LW 1.0.2 rev B or newer is used</p> | <p><input type="checkbox"/> TXPower 0 (20dBm)<br/> <input type="checkbox"/> TXPower 1 (14dBm)<br/> <input type="checkbox"/> TXPower 2 (11dBm)<br/> <input type="checkbox"/> TXPower 3 (8dBm)<br/> <input type="checkbox"/> TXPower 4 (5dBm)<br/> <input type="checkbox"/> TXPower 5 (2dBm)<br/> <input type="checkbox"/> other TXPower (        dBm)</p> <p><input checked="" type="checkbox"/> TXPower 0 (MaxEIRP)<br/> <input type="checkbox"/> TXPower 1 (MaxEIRP-2dB)<br/> <input type="checkbox"/> TXPower 2 (MaxEIRP-4dB)<br/> <input type="checkbox"/> TXPower 3 (MaxEIRP-6dB)<br/> <input type="checkbox"/> TXPower 4 (MaxEIRP-8dB)<br/> <input type="checkbox"/> TXPower 5 (MaxEIRP-10dB)<br/> <input type="checkbox"/> TXPower 6 (MaxEIRP-12dB)<br/> <input type="checkbox"/> TXPower 7 (MaxEIRP-14dB)</p> <p><input type="checkbox"/> other TXPower<br/> (Max EIRP :        dB)</p> |



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

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

**3 Radio Frequency Information**

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| <p>3.1 Type of Antenna</p>   | <p><input type="checkbox"/> Wire<br/> <input checked="" type="checkbox"/> PCB<br/> <input type="checkbox"/> External<br/> <input type="checkbox"/> Other: (which type) Spring antenna</p>   |
| <p>3.2 Antenna gain [dBi or dBd]</p>   | <p>0dBi or<br/> dBd</p>   |
| <p>3.3 Did you measure and take into account the loss between the modem and the antenna?</p>   | <p><input type="checkbox"/> Yes,        dB loss<br/> <input checked="" type="checkbox"/> No, why: We have match the impedance between the modem and the antenna.</p>  |
| <p>3.4 For LW 1.0.2 rev A or older devices: which TXPower setting should be used on the network for your device*:</p>  | <p><input type="checkbox"/> TXPower 0 (20dBm)<br/> <input checked="" type="checkbox"/> TXPower 1 (14dBm)<br/> <input type="checkbox"/> TXPower 2 (11dBm)<br/> <input type="checkbox"/> TXPower 3 (8dBm)<br/> <input type="checkbox"/> TXPower 4 (5dBm)<br/> <input type="checkbox"/> TXPower 5 (2dBm)<br/> <input type="checkbox"/> other txpower 0 (16dBm)</p> |
| <p>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)*.</p> | <p><input checked="" type="checkbox"/> Yes, 0 dB loss<br/> <input type="checkbox"/> No, why:</p>  |

**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

| <p>4.1 Battery consumption of the device (including modem, sensors and all other electronics)</p>   | <p>TX current: 95mA<br/>                 RX current: 7.4 mA<br/>                 Idle time current: 0.013mA</p>  |  |                       |  |  |     |      |      |     |      |      |      |    |      |      |      |    |      |      |      |    |      |      |      |    |      |      |      |   |      |      |      |   |      |      |      |
|---|--|--|-----------------------|--|--|-----|------|------|-----|------|------|------|----|------|------|------|----|------|------|------|----|------|------|------|----|------|------|------|---|------|------|------|---|------|------|------|
| <p>4.2 Estimated battery life in years based on the number of transmissions (including sensor readings) at SF7, SF10 &amp; SF12 with your battery self-discharge and aging over time taken into account.</p> <p><b>Assumptions:</b></p> <ul style="list-style-type: none"> <li>- Product shelf life before use: Maximum 1 year.</li> <li>- At an environment temperature of 20°C.</li> <li>- LoRaWAN specification used for battery life calculation:</li> <li>- TX power setting (txpower) used for battery life calculation:</li> <li>- Payload size used for battery life calculation (should be average payload size of production device):</li> <li>- Additional assumptions or comments on battery life (Typical usage</li> </ul> | <table border="1"> <thead> <tr> <th rowspan="2">Transmission Periodicity (transmissions/day)</th> <th colspan="3">Battery life in years</th> </tr> <tr> <th>SF7</th> <th>SF10</th> <th>SF12</th> </tr> </thead> <tbody> <tr> <td>144</td> <td>3.38</td> <td>1.40</td> <td>0.46</td> </tr> <tr> <td>96</td> <td>3.89</td> <td>1.85</td> <td>0.66</td> </tr> <tr> <td>48</td> <td>4.57</td> <td>2.80</td> <td>1.18</td> </tr> <tr> <td>24</td> <td>5.01</td> <td>3.72</td> <td>1.95</td> </tr> <tr> <td>12</td> <td>5.26</td> <td>4.45</td> <td>2.88</td> </tr> <tr> <td>4</td> <td>5.44</td> <td>5.12</td> <td>4.24</td> </tr> <tr> <td>1</td> <td>5.52</td> <td>5.43</td> <td>5.14</td> </tr> </tbody> </table> <p><input type="checkbox"/> LW1.0.1<br/> <input type="checkbox"/> LW1.0.2 revA<br/> <input checked="" type="checkbox"/> LW1.0.2 revB<br/> <input type="checkbox"/> Other :</p> <p><input type="checkbox"/> LW1.0.1<br/> <input type="checkbox"/> LW1.0.2 revA<br/> <input checked="" type="checkbox"/> LW1.0.2 revB<br/> <input type="checkbox"/> Other :</p> <p>bytes</p> | Transmission Periodicity (transmissions/day) | Battery life in years |  |  | SF7 | SF10 | SF12 | 144 | 3.38 | 1.40 | 0.46 | 96 | 3.89 | 1.85 | 0.66 | 48 | 4.57 | 2.80 | 1.18 | 24 | 5.01 | 3.72 | 1.95 | 12 | 5.26 | 4.45 | 2.88 | 4 | 5.44 | 5.12 | 4.24 | 1 | 5.52 | 5.43 | 5.14 |
| Transmission Periodicity (transmissions/day)  | Battery life in years  |  |                       |  |  |     |      |      |     |      |      |      |    |      |      |      |    |      |      |      |    |      |      |      |    |      |      |      |   |      |      |      |   |      |      |      |
|   | SF7  | SF10   | SF12                  |  |  |     |      |      |     |      |      |      |    |      |      |      |    |      |      |      |    |      |      |      |    |      |      |      |   |      |      |      |   |      |      |      |
| 144   | 3.38   | 1.40   | 0.46                  |  |  |     |      |      |     |      |      |      |    |      |      |      |    |      |      |      |    |      |      |      |    |      |      |      |   |      |      |      |   |      |      |      |
| 96  | 3.89   | 1.85   | 0.66                  |  |  |     |      |      |     |      |      |      |    |      |      |      |    |      |      |      |    |      |      |      |    |      |      |      |   |      |      |      |   |      |      |      |
| 48  | 4.57   | 2.80   | 1.18                  |  |  |     |      |      |     |      |      |      |    |      |      |      |    |      |      |      |    |      |      |      |    |      |      |      |   |      |      |      |   |      |      |      |
| 24  | 5.01   | 3.72   | 1.95                  |  |  |     |      |      |     |      |      |      |    |      |      |      |    |      |      |      |    |      |      |      |    |      |      |      |   |      |      |      |   |      |      |      |
| 12  | 5.26   | 4.45   | 2.88                  |  |  |     |      |      |     |      |      |      |    |      |      |      |    |      |      |      |    |      |      |      |    |      |      |      |   |      |      |      |   |      |      |      |
| 4   | 5.44   | 5.12   | 4.24                  |  |  |     |      |      |     |      |      |      |    |      |      |      |    |      |      |      |    |      |      |      |    |      |      |      |   |      |      |      |   |      |      |      |
| 1   | 5.52   | 5.43   | 5.14                  |  |  |     |      |      |     |      |      |      |    |      |      |      |    |      |      |      |    |      |      |      |    |      |      |      |   |      |      |      |   |      |      |      |

