

### **Product functional description.**

The Scanmarker Air, Model 2.0 from Topscan Ltd., referred to as EUT in this report, is a portable hand-driven scanner to capture one string of printed text per passage and send it to a host (Windows, OS/X, iOS or Android platform) either through USB or Bluetooth LE link for farther processing and storing. After passing the OCR engine (Optical Character Recognition) the scanned text can be processed, using any common text editors, translated to more than 50 languages with speak option, and archived. The processing performs either locally or in the cloud environment.

### **Operation description.**

Scanner is activated by pressing tips of light guide against surface carrying the scanned image. Every 0.5 ms (2,000 times per second) the output of each 128 pixels of image sensor are sampled, binarized and data, after compression, are sent to Bluetooth SoC. Then data is aired to a host where they converted into full text string and fed a text editor.

Radio operates in ISM band with output transmitting power 0 dBm, using SMT ceramic antenna with average gain -0.5 dBm (XZ-V). The through-air data rate is 1 Mbps, modulation format GFSK.

The PCB includes ground plane, all free areas on CS and PS are copper-filled with multiple vias to ground plane. The case of USB connector is connected to common ground. The tracks in the area, where the radio is placed, have controlled impedance 50 Ohm.

### **Product specification.**

- The length of string i.e. the number of captured characters isn't limited but de facto a limitation is imposed by regularly used printing technics and standards.
- The scanner is rated for move at speed of 5 to 20 cm/s
- Maximum longitude of one scan is limited to 5 seconds.
- The minimum recognizable font size is 3 pt (about 1.06 mm)
- The maximum allowable font size is 22 pt (about 7.8 mm)
- Optical resolution 350 dpi
- The scanner is built on STM32 uC from STMicroelectronics. The microcontroller is based on ARM Cortex-M4 32-bit CPU.
- Interface type:
  - USB 2.0 full speed, micro USB
  - 2.4 GHz Bluetooth Low Energy 4.0 compliant
- USB cable length 1.5 m
- Maximum distance between scanner and a host 10 m
- Powering schemas:
  - External power supplied by host USB port or by wall-mount AC/DC adaptor
  - Internal power from LiPo battery, charging from USB port or from wall-mount AC/DC adaptor
- Power supplies rating:
  - External 5 V, 300 mA max (including internal battery charge current)
  - Internal 3.7 V, 200 mA max
- Dimensions 26 x 16 x 136 mm (W x H x L)
- Weight 70 g (2.5 ounce)