PD67 Operational Description

The PD67 is a battery operated, handheld device used primarily for reading and writing HF and UHF RFID tags, and reading barcodes. UHF frequency ranges include FCC (902.75MHz – 927.25MHz) as well as EU (865MHz – 868MHz), depending on the region of operation. HF operates at 13.56MHz for all regions.

Region is selected and locked during manufacturing to prevent end user from operating in non-compatible regions (different regions require different settings for compliance). The device is provisioned for a specific region, and the typical end user cannot change the region.

When transmitting for RFID reading, the UHF Transmitter has a max output power of 30dB. Its duty cycle while transmitting is not constant. It is calculated and adjusted every read based on factors such as tag response and reflected power. The duty cycle is limited in firmware to 50%. In practice, the demonstrated maximum duty cycle is 30%.

When operating in regions governed by the FCC, the UHF RFID function utilizes frequency hopping and digital modulation in compliance with applicable sections of FCC Part 15.247. It utilizes 50 frequencies at 500 kHz intervals. Maximum dwell time on any one channel is less than 0.4 second. The Pseudo Random Hopping Sequence is controlled entirely by firmware, and ensures that all channels are used once and only once per hopping sequence.

RFID tags response through backscatter linking, and the transmitter and receiver both reside in the same component in the PD67, therefore synchronization of the frequencies is guaranteed. The firmware does indeed incorporate intelligence to detect interference introduced by other users within the spread spectrum band, but it incorporates no method of coordination with other users.

The user interfaces with the device via 3 buttons, as well as a capacitive touch LCD. The device runs Android as its operating system. The PD67 is also capable of WiFi and Bluetooth communication. This is implemented through a pre-certified radio module and antenna combination. Battery Charging is accomplished by a USB C connector.

The device includes a GPS Radio (receive only) that utilizes an on-chip antenna. It does not use an external antenna.

1.) UHF Radio Information
    a. ST25RU3992-BQFT (STMicro)
    b. Modulation Type: PR-ASK
    c. Amplitude Control via internal attenuator (-13dBm – 7dBm)
    d. Additional external power amplifier (hardware limited to 30dB)
    e. End User output power controlled by application (SDK provided by Turck)
    f. Feedback and control provided via directional coupler and Balun feeding back to radio

2.) HF Radio Information
    a. ST25R3911B (STMicro)
    b. Modulation Type: OOK
    c. Hardware limited to 1.4W
    d. Direct drive to antenna (no external power amp)
    e. No end user power control

3.) Barcode Scanner Information
    a. Manufacturer: CodeCorp
    b. Model Number: CR8222

4.) Wi-Fi/Bluetooth Radio Information

a. FCC ID: TFB-TIWI1-01
b. Manufacturer: Laird Connectivity
c. Manufacturer Model Number: TIWIBLE
d. Antenna Manufacturer: Taoglas
e. Antenna Model Number: FXP831.07.0100C

5.) Battery Information
a. Lithium Ion
b. Manufacturer: Molicel
c. Model Number MCR-1821J
d. 2.4Ah, 7.4VDC, 17.76Wh

6.) GPS Radio Info
a. Manufacturer: u-blox
b. Model Number: CAM-M8C-0