

SNAP ON AIR Device main specification document - Draft - V: 1.1

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SHORT DESCRIPTION OF THE SNAP ON AIR COMMUNICATION DEVICE

SNAP_ON_AIR is a handheld device that works with or without your smartphone to keep you connected when there is no cell service or if you do not want to rely on a telcos SIM card.

Main functions are:

1. **VOICE (Device to Device):** When 2 communicators can see each other in direct, talkie walkie like mode is activated.
2. **Text messages (SMS like)** with 4 different modes:
 3. Device2Device Direct,
 4. Device2Device via MESH hops
 5. Device2Gateway,
 6. Device2Internet,
 7. Device2Telco2G/3G
8. **Chat conference and broadcast messaging**
9. **GPS Location**
10. **Crypto:** 256-bit AES symmetric key encryption to keep messages confidentiality
11. **Magnetometer compass**
12. **Mercury Tilt meter:** Shock, accident, abnormal move
13. **Position sensor:** (detection of motionless user, Lying down position detector)
14. **Alert beacon transceiver**

List of design features

Can work standalone and remain in the pocket

Can work attached to an Iphone/Galaxy Android phones (Bluetooth links) via a specific case.

- Can use the smartphone's internet connection to forward messages
- Smart phone can use SNAPONAIR keyboard and LCD to save its own battery: avoids the smartphone's OLED display to be powered up and preserves battery.

List of software functions

- Short messages (TXT) editor with keyboard interface driver functions.
- LCD screen driver functions - Handling icons, txt, LCD colors ...
- Contact directory, with search functions
- Neighborhood user sensor: finds the near SNAPONAIR reachable devices with identification
- Neighborhood gateway sensor: finds the near Gateways, types and protocol
- Opensource (but opensource) VOICE conference function
- Opensource VOICE broadcast function
- Opensource VOICE User 2 User function
- Opensource TXT conference function: User2Users group communications
- Opensource TXT broadcast function: User2 any SNAPONAIR owner communication (citizen band mode)
- Opensource TXT chat function: User2user communication (with/without encryption)
- Opensource MESH server/repeater daemon function
- Lorawan server/repeater daemon function
- Car/truck broadcast software to warn other drivers: event, speedometer, accident... (waze like app) with GPS position, speed, ...
- Bluetooth communication with phone function
- Personalized alert button
- LCD Background RGB color changes depending on device status: red = emergency, battery low, pink = happy event, green= battery full etc
- Personalized music for paging alerts (MIDI)
- Personalized power-on graphic boot screen (bitmap or JPG)

List of hardware functions

- Big LCD Screen - Dot Matrix
- 3000 or 4000 mAh Li-Ion rechargeable battery
- Blackberry like mechanical keyboard
- Buzzer
- Small microphone
- Small speaker
- Press to talk button
- Samsung standard headphone/mike female plug to improve phone quality (mike/speaker)

- Button to switch off buzzer
- Button to switch off pager
- Button to switch off LCD light (power saving mode)
- Button to switch off Bluetooth and Smartphone interaction
- Button to switch to FLIGHT MODE
- Button to hide GPS position
- Emergency button (sends a predefined txt message)
- USB connector for charging the device and to exchange data with other devices
- Connector to iPhone/Android phones through a specific case
- Compatibility with car phone holders
- Compatibility with goPro accessories for holding the pager

List of circuits

- Main telecommunication circuit: Cortex M0+ or ESP32
- UHF circuit: 868 Mhz 430 Mhz (Europe , other countries), 905 (USA) - Circuit 1 for voice
- UHF circuit: 868 Mhz 430 Mhz (Europe , other countries), 905 (USA) - Circuit 1 for digital text, gateway functions
- Vibration motor circuit
- Analog to Digital Voice then Analog circuit + speakers-mike/headphones: walkie talkie functions
- GPS - Speed - Position circuit - Tilt circuit
- Battery charger circuit
- I2C SD card circuit for storing messages or documents (option: with USB charging plug, modification of the device to also be a small USB Key - Possibility to copy/paste the MSG database onto another device or computer - Click and Drag like with a classic USB key) - SD card can also store personalized music for the beeper.
- Bluetooth communication circuit
- Keyboard interface and buttons circuit
- LCD display driving circuit