Wet Sounds A-Link Mk2
Preliminary ID concepts provided by Wet Sounds
Eleven Engineering Inc.
072519

Wet Sounds A-Link Mk2
Mech Overview
Eleven Engineering Inc.
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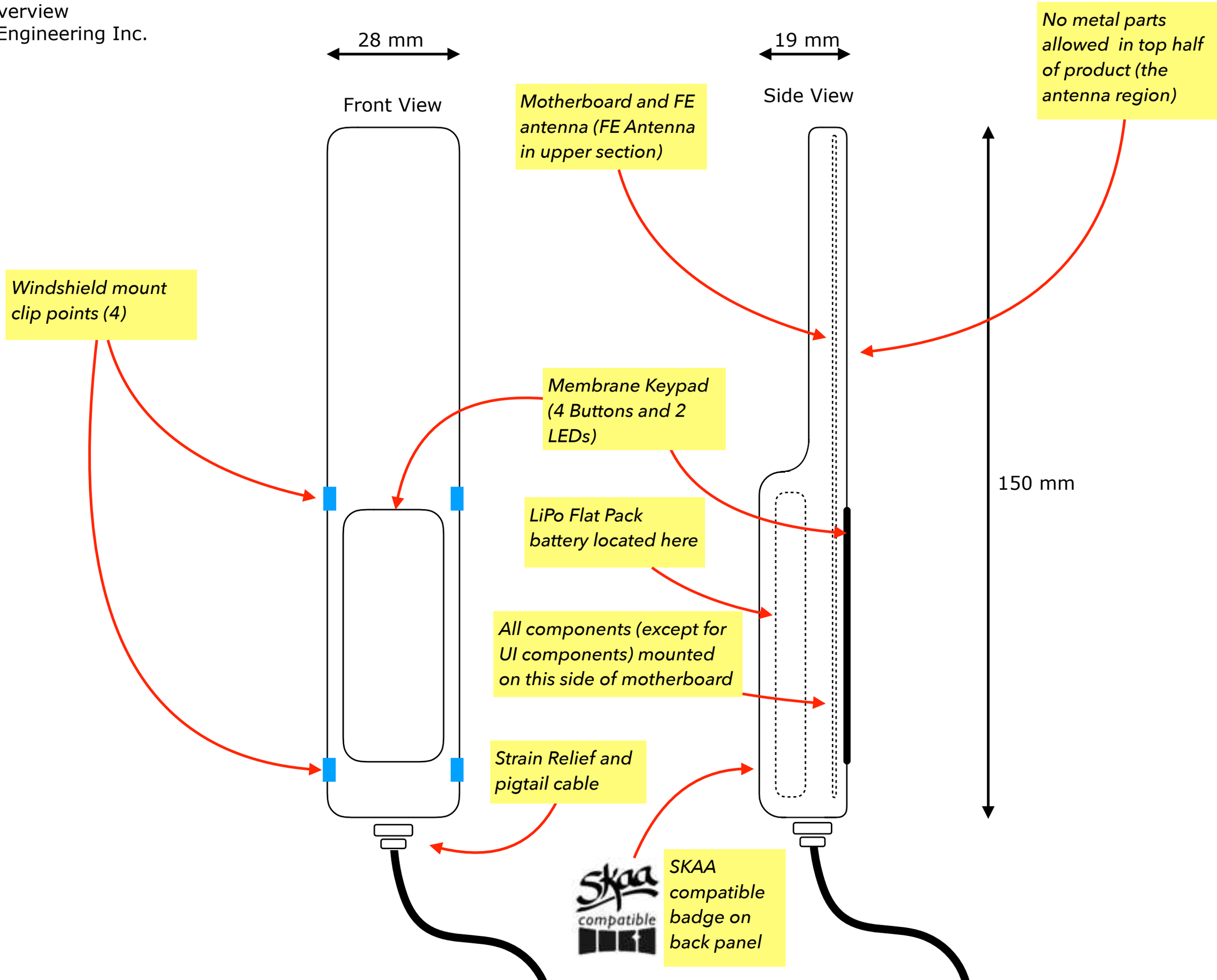

Wet Sounds A-Link Mk2
Motherboard PCB footprint and Batt dimensions
Eleven Engineering Inc.
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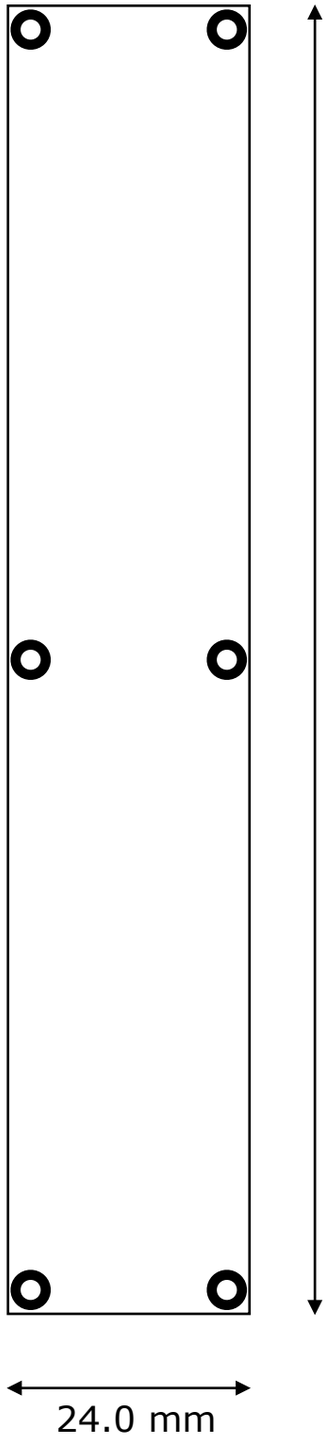
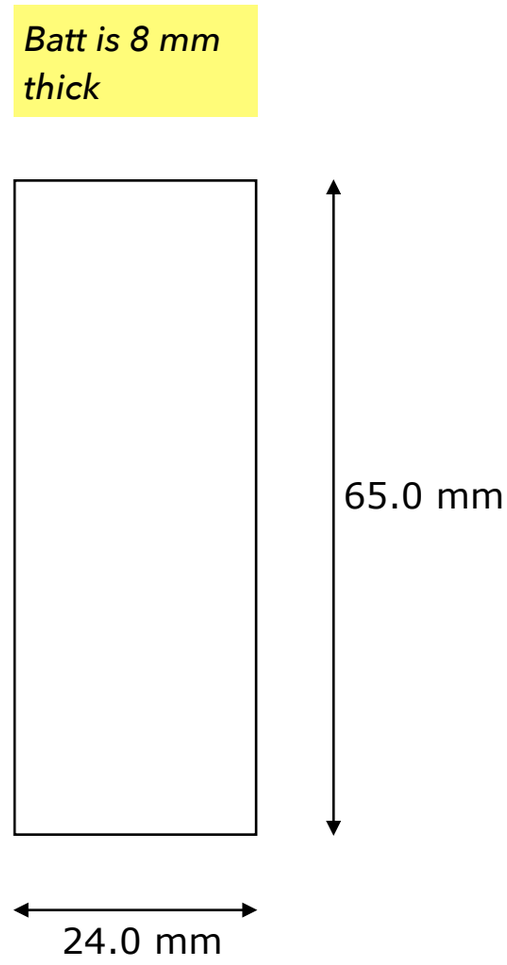
PCB is 1.6 mm thick

Components top side, buttons and LEDs bottom side



Batt is 8 mm thick



Wet Sounds A-Link Mk2
Windshield mount and pigtail detail
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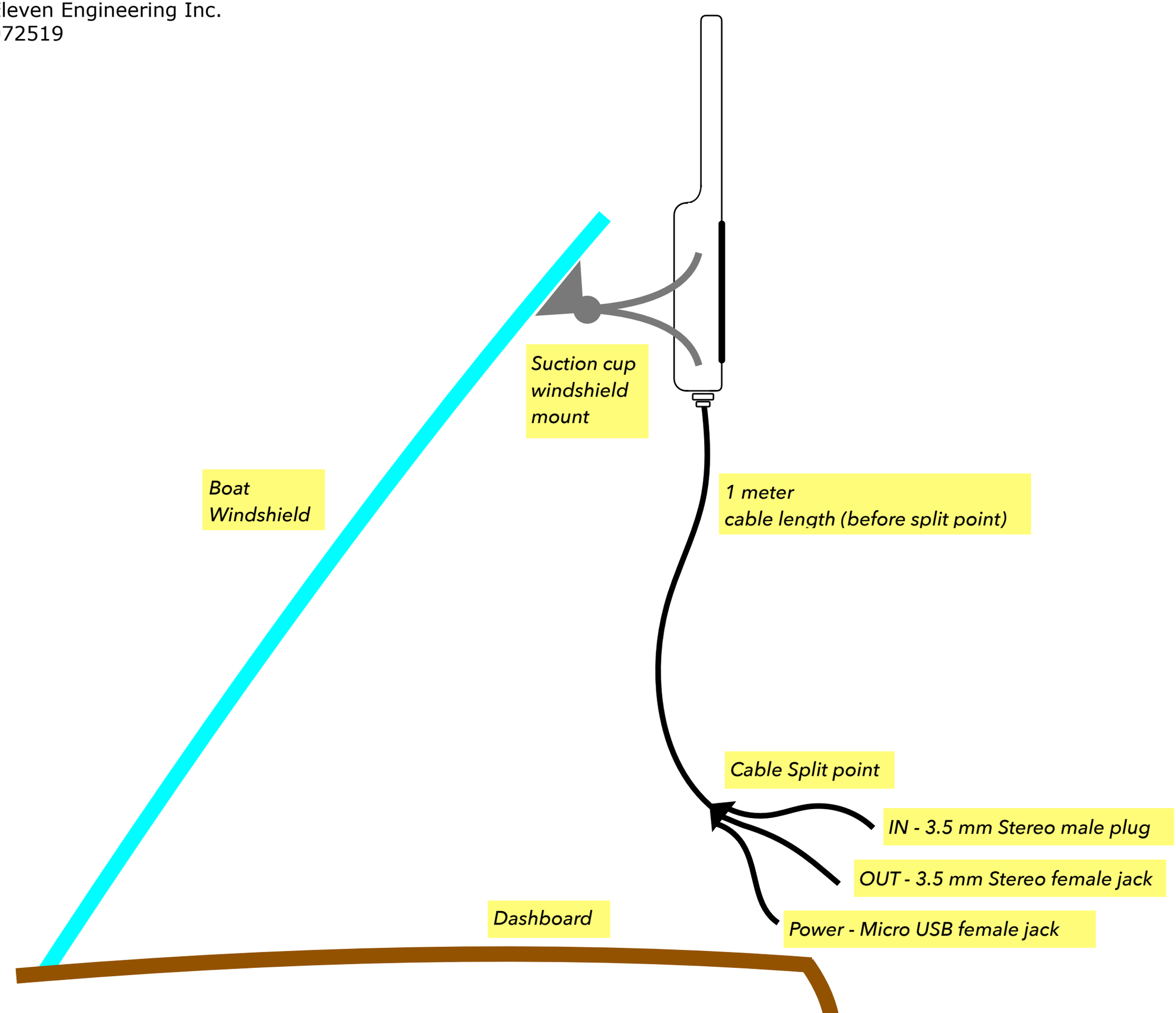

Wet Sounds A-Link Mk2
Keypad UI configuration
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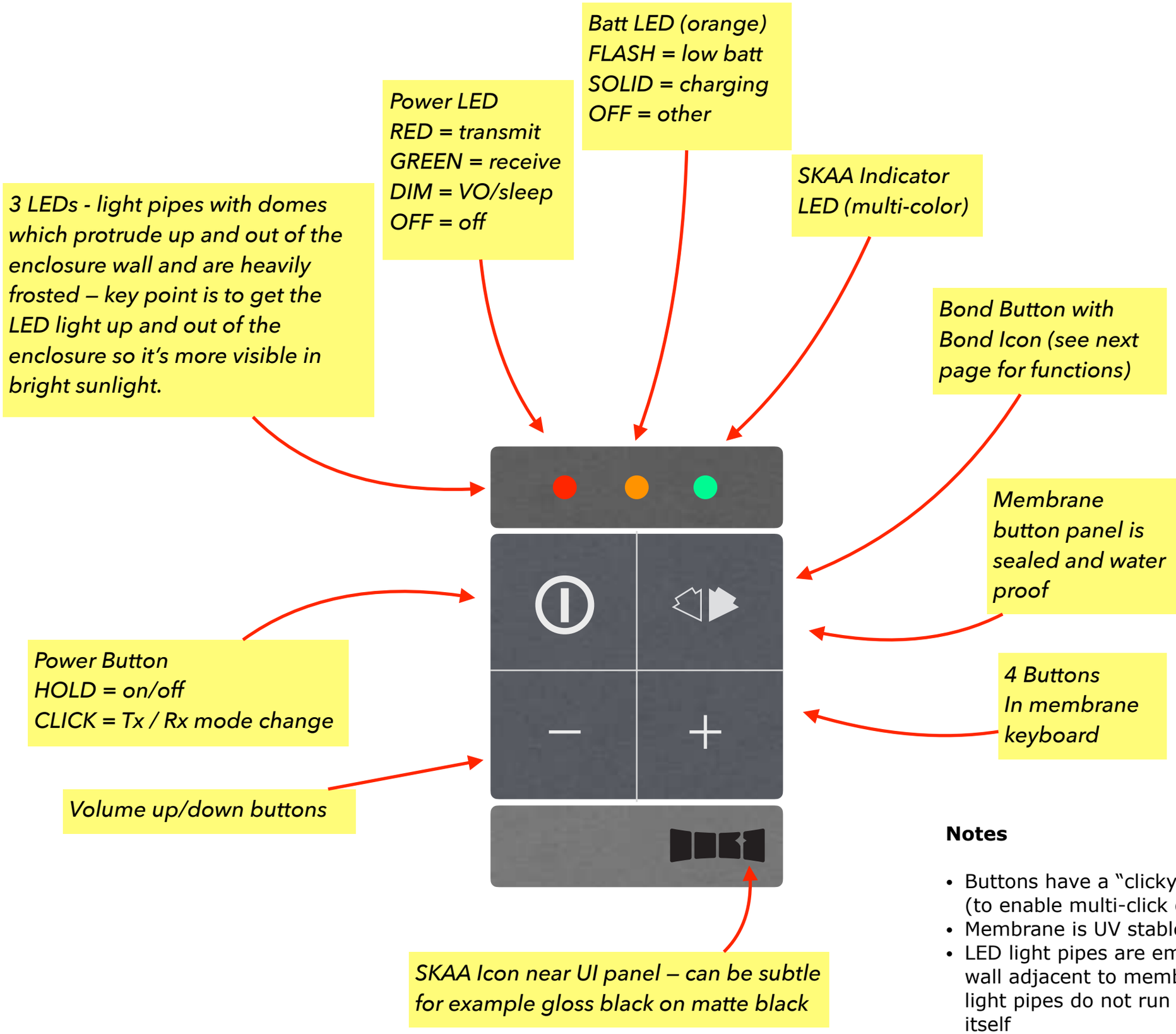


Notes

- Buttons have a "clicky" , responsive tactile feel (to enable multi-click commands)
- Membrane is UV stable, sealed and water proof
- LED light pipes are embedded in enclosure wall adjacent to membrane keypad — these light pipes do not run through the membrane itself

SKAA Bond Button / SKAA Indicator
Standard Definition
Eleven Engineering Inc.
021418

Essentials

Bond Button	*Command*	*Indicator Meaning*
Hold a few seconds	Add / Delete Manually add / delete the current transmitter to / from your Green List	● to ● = Added ● (flash) = Deleted
-	Auto Add SKAA will automatically add the current Amber transmitter to your Green List if you listen to it for 30 minutes	● to ● = Added
1 Click	Green Mode Rotate through your list of *favourite* transmitters (Green List) — when a favourite transmitter is found, the search stops and audio plays from that transmitter	● (dim) = Hunting ● (flash) = Next one ● (bright) = Bonded
2 Clicks	Amber Mode *Explore* for new, unknown transmitters (ones which are not already on your Green List)	● (dim) = Hunting ● (bright) = Bonded

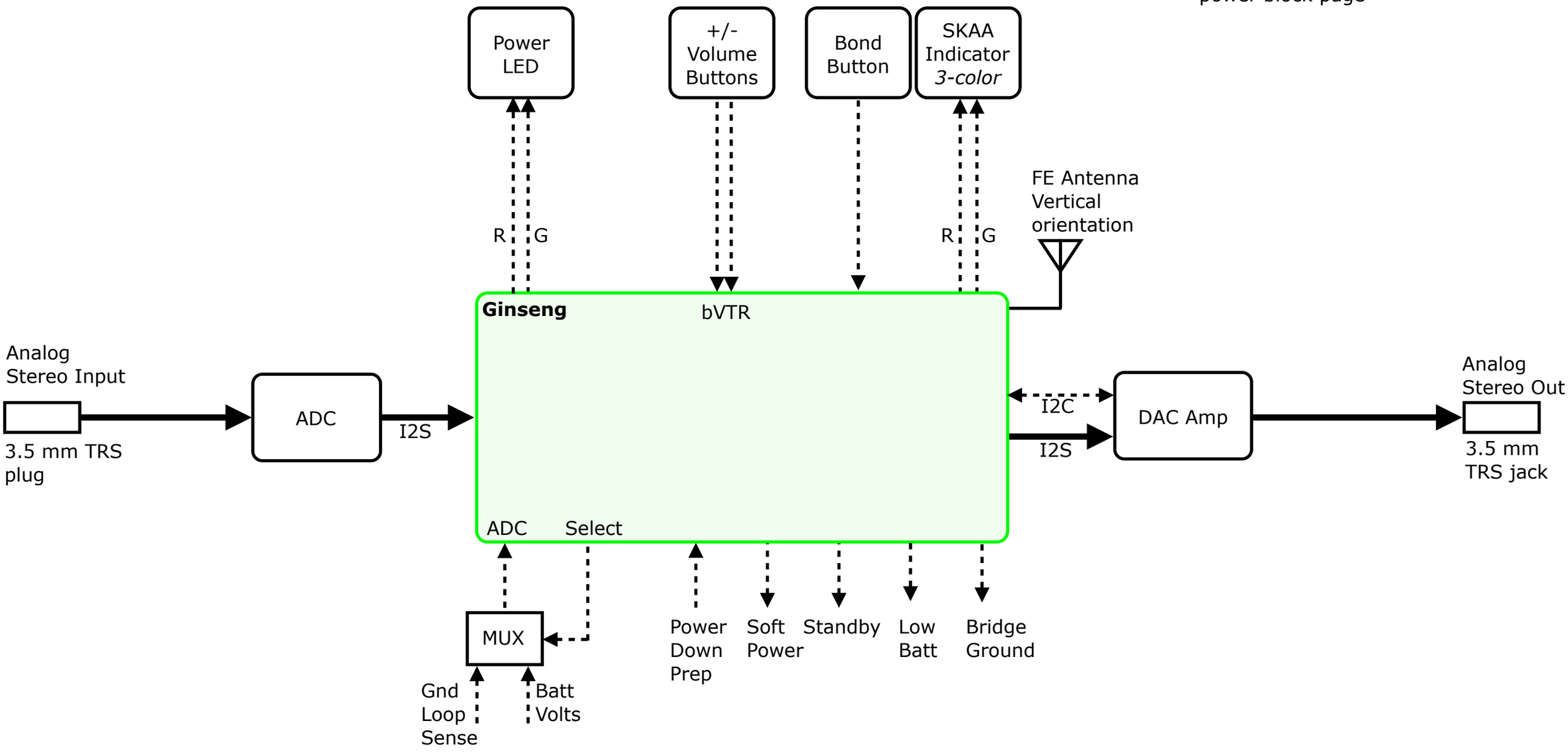
Other Commands

Bond Button	*Command*	*Indicator Meaning*
3 Clicks	Mute do again to Unmute; any Click command will first Unmute and then do its function	●, ● or ● = Muted (slow flash)
4 Clicks	Red Mode If you have 2 or more transmitters on your Green List, power on just the one you want to hear and it plays automatically.	● (dim) = Hunting ● (bright) = Bonded
6 Clicks	Factory Reset Clear Green List. Start Over!	● (flash) = Reset Done
Hold during power on	Make a Cluster of Receivers: 1. Power off all transmitters and receivers 2. Power on the Master receiver while holding down its Bond Button—hold the button down until the Indicator begins to flash Red 3. With the remaining receivers within 3 meters of the Master receiver, power on the first one, wait for its Indicator to flash Red and then power on the second one; continue until all of them are powered on 4. Once all of the Indicators stop flashing (turn solid Red), power off all of the receivers	● (flash) = Receiver has entered 'Cluster Up' mode ● (bright) = The Cluster has been successfully made

Wet Sounds A-Link Mk2
Eleven Engineering Inc.
Signal Block Diagram
072519

Notes

- The BATT LED is shown on the power block page
- The POWER BUTTON is shown on the power block page



How SKAA Volume Works

80% (hVOL) X 50% (bVTR) = 40% (nVOL) → volume curve → I2C volume command to DAC

hVOL is "Global" volume which mirrors the host device volume whenever possible. It is maintained and stored in the SKAA transmitter.

bVTR is "Local" volume which is stored in the SKAA Receiver. The +/- volume buttons always affect bVTR.

nVOL is transformed through a volume table (customizable) residing inside the Ginseng and the resulting value is sent out to the DAC via I2C as a hardware volume control command

Skaa compatible

Wet Sounds A-Link Mk2
Eleven Engineering Inc.
Power Block Diagram
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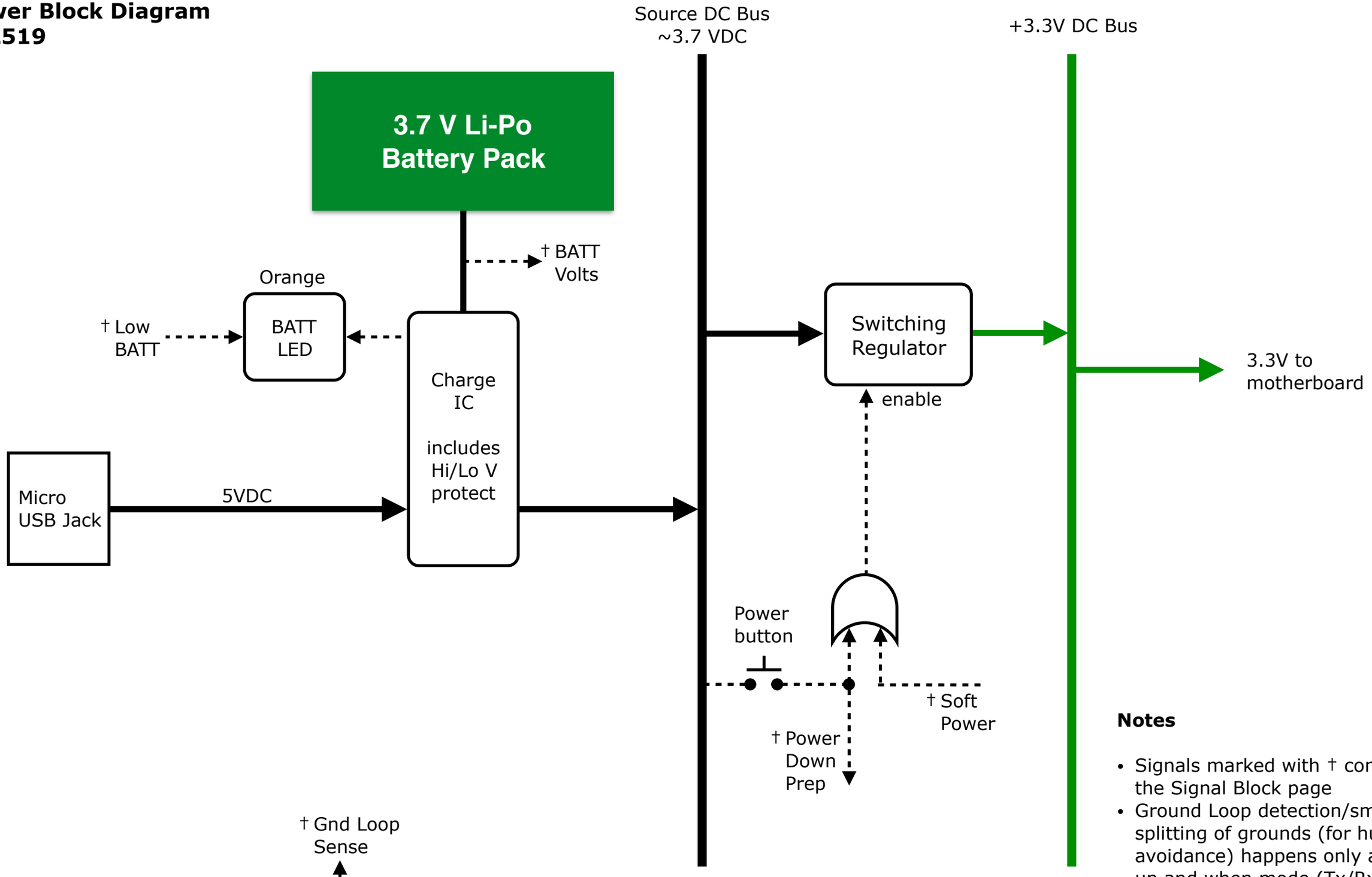

Notes

- Signals marked with † connect to the Signal Block page
- Ground Loop detection/smart splitting of grounds (for hum/buzz avoidance) happens only at power up and when mode (Tx/Rx) is toggled
- The unit is configured to be able to operate in either Tx or Rx mode while charging
- Some users may opt to keep their units connected to 5V power at all times — this mode of operation is supported

Wet Sounds A-Link Mk2
Eleven Engineering Inc.
Power States
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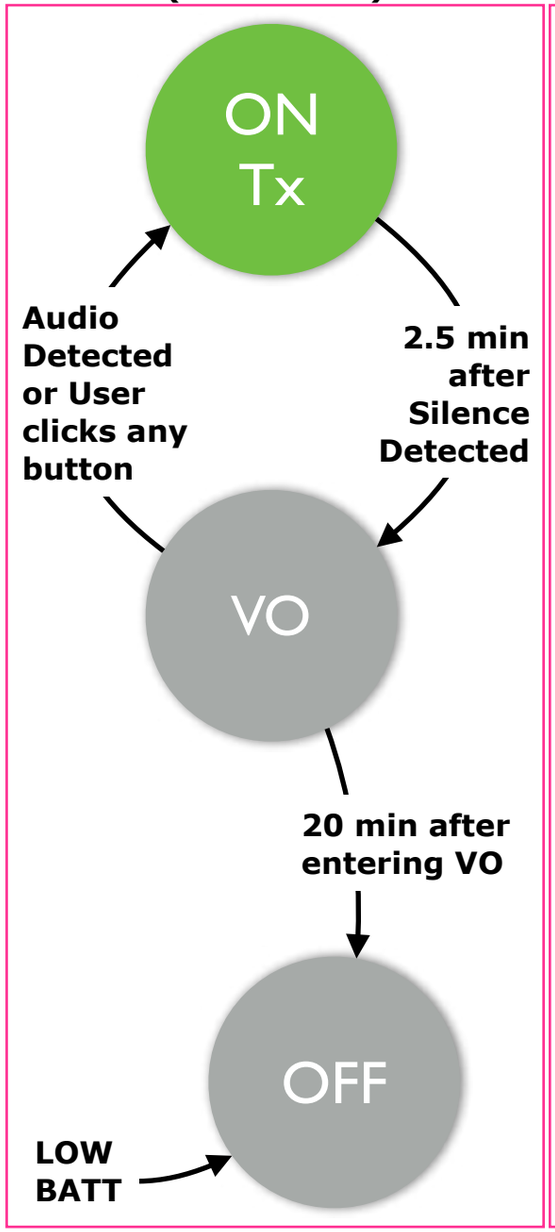
Notes

- "VO" means Virtual Off —this is a power saving state for SKAA transmitters, triggered by lack of audio (silence).
- In VO state, Ginseng's RF section is shut off causing all Bonds to drop (all Bonded SKAA receivers are dropped)
- "Standby" is a power saving state for SKAA receivers.
- in Standby state, Ginseng shuts off the ADC, DAC and buffers
- "Sleep" is a power saving state for SKAA receivers. Sleep is triggered by a loss of Bond.
- In Sleep state, the SKAA receiver improves on the power saving performance of Standby state by also duty cycling the SKAA radio. You can tell the unit has gone to sleep when the SKAA indicator shuts off and the Power LED dims
- Powering off certain chips will be effected by holding them in RESET
- ON/OFF is achieved by a press & hold of the Power Button by the user (this transition is not shown in these power state diagrams)

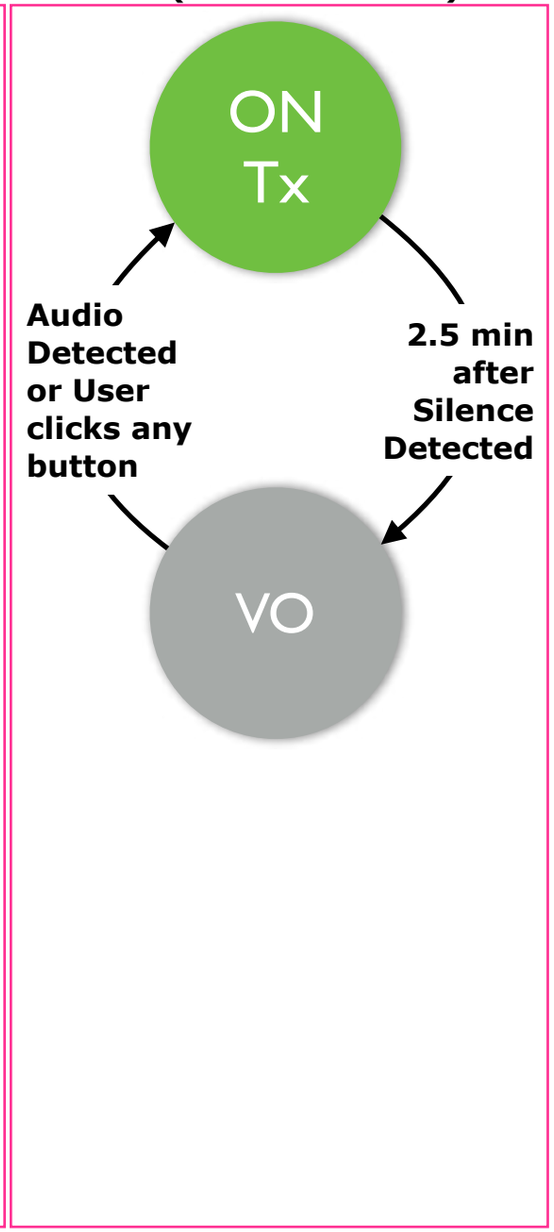
Chip Power

Chip:	Ginseng	ADC	DAC	SKAA Indicator	Power LED
ON Tx	√	√	-	-	Bright Red
VO	RF off	√	-	-	Dim Red
ON Rx	√	-	√	√	Bright Green
Standby	√	-	-	√	Bright Green
Sleep	RF 33% duty cycle	-	-	-	Dim Green
OFF	-	-	-	-	-

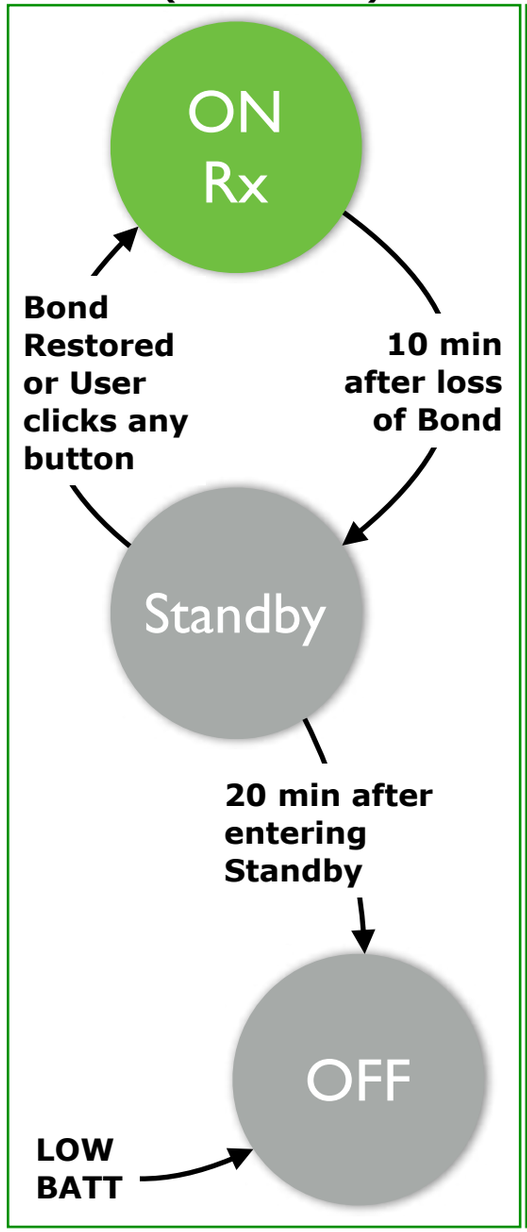
Tx mode (Batt Power)



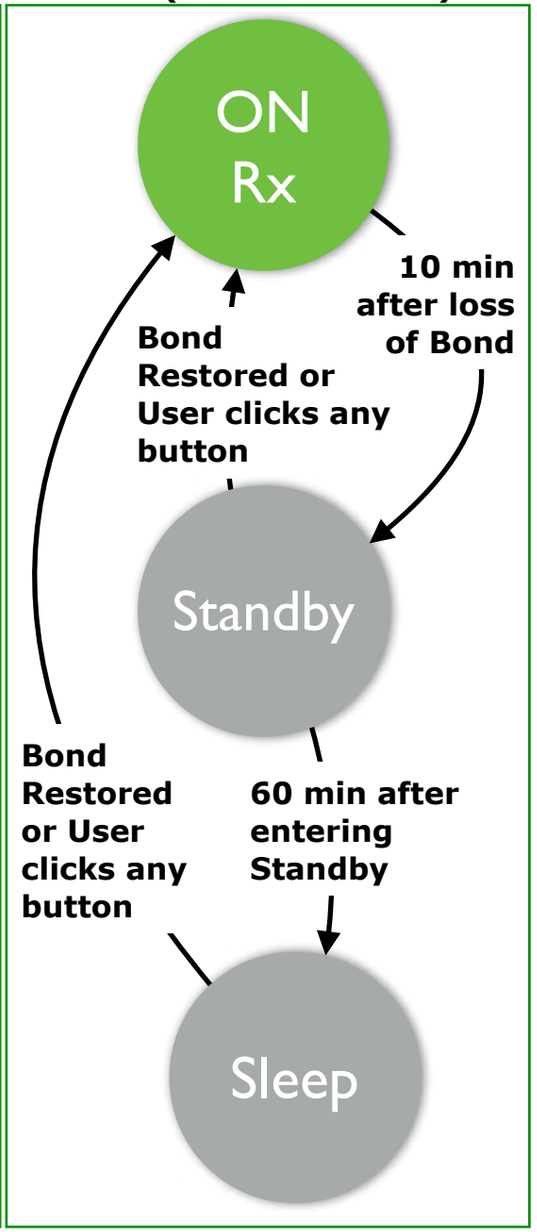
Tx mode (External Power)



Rx mode (Batt Power)



Rx mode (External Power)



Wet Sounds A-Link Mk2
Battery Life Calculation
Eleven Engineering Inc.
072519

Supply

Li-Po Battery	
Capacity 1 cell (mAh)	600
Nominal Volts 1 cell	3.7
Energy 1 cell (mWh)	2220
Qty Cells in Pack	1
Energy in Pack (mWh)	2220
Reg. Efficiency (%)	90%
Available Energy (mWh)	1998

Demand

Operational Mode	Transmit	Receive
Ginseng SiP (mW)	220	150
ADC (mW)	30.5	
DAC Amp (mW)		60
Other (mW)	30	30
Whole Product (mW)	280.5	240
Est. Run Time (hours)	7.1	8.3

Notes

- Dimensions of the LiPo flat pack battery are shown in mech detail slide early in this document

Wet Sounds A-Link Mk2
Per Unit Budget
Eleven Engineering Inc.
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BOM

Component	Mk2
Ginseng	6.50
ADC	1.05
DAC	0.45
Batt Charge Chip	0.75
PCB	1.00
3.3 V Regulator	0.50
LiPo Battery	2.50
Buttons and LEDs	0.35
Pigtail cable, SR, Y & connectors	1.50
FE Antenna	0.50
Enclosure	1.50
Windshield Clip / Mounting Clip	0.70
Other Electrical	1.75
Other Mechanical	1.00
Total	20.05

Manufacturing / Testing

SKU	Cost
Mk2 2-pack	40.10
Packaging & Manual	1.30
LOP at 18%	7.45
Total (manufactured 2-pack)	48.85

Notes

1. All figures are USD
2. Costs are estimates only
3. Charging Adapters and cables are not included (we assume the user has plenty of those already)
4. Allocations for master carton are not included

Wet Sounds A-Link Mk2
Audio Specs
Eleven Engineering Inc.
112019

Parameter	Spec Value
Input full scale	1.0 VRMS
Input impedance	10 k ohms
Output full scale	1.0 VRMS
Minimum load required at output	1k ohms
Frequency Range	20 Hz - 20 kHz
THD	< 0.03%
SNR	≥ 88 dB A-weighted
Audio channels	2
Digital Resolution	16 bits x 48 kHz
Max receivers per transmitter	4
Latency	36 ms
SKAA Pro mode (2 receivers, 18 ms)	Yes - Rx mode only