cNODE® Maxi
Battery lifetime estimation

The information given in this document is valid for all cNODE Maxi transponders with lithium battery used in SSBL or LBL positioning. The estimated values are approximate values and are only intended as indications, not as exact or true values. All values in the tables below are derivated from the typical maximum battery capacity for a cNODE Maxi transponder with sensor, Cymbal acoustics, TX power level = High and update rate = 1 sec.

Extending the battery lifetime
Reduce the TX power level of the transponder or increase the update rate (interrogation) to extend battery lifetime.

The cNODE Maxi battery lifetime estimation is calculated using the below methods
Battery used estimate, Used [%]:
This is how much the battery has been used, in percentage, in the operation until now.

Used [%] = Used active mode [%] + Used quiescent mode [%]

Used active mode [%] = (total time in active mode [days] / max battery lifetime active mode [days]) * 100%,
('max battery lifetime active mode' is specified for each transponder type and the used configuration in the tables below)
Used quiescent mode [%] = (total time in quiescent mode [days] / max battery lifetime quiescent mode [days]) * 100%
('max battery lifetime quiescent mode' is specified in the tables below)

Remaining battery lifetime estimate, Remaining lifetime [days]:
This is how many days left for a specific operation.

Remaining lifetime [days] = ((100 – Used) / 100) * max battery lifetime active mode [days]

('Used' is the battery used estimate, 'max battery lifetime active mode' is specified for each transponder type and the wanted configuration in the tables below)

Tables of max battery lifetime [days]:
- cNODE transponder type: cNODE Maxi 34-180 series, cNODE Maxi 34-30V30H series, cNODE Maxi 34-30V series
- Acoustic mode: Cymbal, FSK
- TX power level: Min, Low, High, Max (Default TX power level: Cymbal - Low, FSK - High)
- Update rate: 1 sec – 10 sec

Max battery liftetime active mode [days]:
cNODE Maxi 34-30V30H series and cNODE Maxi 34-30V series, Cymbal :

Update rate/ TX power level	1 sec	2 sec	3 sec	4 sec	5 sec	10 sec
Min	95	101	102	103	104	105
Low	59	76	84	89	92	99
High	23	38	48	56	62	78
Max	6	11	16	21	25	40

cNODE Maxi 34-180 series, Cymbal :

Update rate/ TX power level	1 sec	2 sec	3 sec	4 sec	5 sec	10 sec
Min	95	101	102	103	104	105
Low	71	85	91	95	97	101
High	36	54	65	72	77	89
Max	10	18	25	32	37	55

cNODE Maxi 34-30V30H series and cNODE Maxi 34-30V series, FSK:

Update rate/ TX power level	1 sec	2 sec	3 sec	4 sec	5 sec	10 sec
Min	167	172	174	175	175	176
Low	125	147	156	161	164	170
High	61	91	109	121	129	149
Max	18	34	46	57	66	96

cNODE Maxi 34-180 series, FSK:

Update rate/ TX power level	1 sec	2 sec	3 sec	4 sec	5 sec	10 sec
Min	167	172	174	175	175	176
Low	141	157	163	167	169	173
High	88	118	133	142	148	161
Max	30	51	67	80	90	119

Max battery lifetime quiescent mode [days]:
All cNODE, both FSK and Cymbal

Quiescent mode	913

Example:
cNODE transponder type: cNODE Maxi 34-30V30-R
Total time in active mode = 30 days, total time in quiescent mode = 30 days

Used configuration: Cymbal , TX power level = High, Update rate = 3 sec
Used [%] = Used active mode [%] + Used quiescent mode [%] = (30/48)*100 + (30/913)*100 = 65,8 %

Wanted application: Cymbal, TX power level = Low, Update = rate 5 sec
Remaining lifetime [days] = ((100 - Used) /100) * max battery lifetime active mode [days]
$\qquad$ = ((100 - 65,8)/100)*92 = 31,5 days