

How long will my HX280E battery last?

A question we are often asked is how long will the battery in my VHF hand portable radio last with normal usage?

This question is very common in the Land Mobile Radio industry and there is a convention used there that gives a very good indication. It is based on what is called the 5:5:90 ratio. This means that for 5% of the time the radio is in Transmit mode, 5% of the time in active Receive mode, and 90% of the time in Standby (i.e. squelched) mode.

The answer is easy to work out and depends on the capacity of your battery, the current drawn by your radio in Receive, Transmit and Standby mode.

Using the figures for the HX280E handheld transceiver specification, we can list the following:

Receive Mode	320.0 mA
Standby Mode	50.0 mA
Standby with Battery Save	10.0 mA
Transmit Mode Hi Power (6W)	1600.0 mA
Transmit Mode Lo Power (1W)	700.0 mA
Battery Capacity	1650.0 mAh

So applying the % to these figures gives the following values

Mode	Value	%	Value	Comment
Receive Mode	320mA	5%	16mA	(320 * 0.05)
Standby Mode	50mA	90%	45mA	(50 * 0.90)
Standby Mode w Batt. Save	10mA	90%	9mA	(9 * 0.90)
Transmit Mode Hi Power	1600mA	5%	80mA	(80 * 0.05)
Transmit Mode Lo Power	700mA	5%	35mA	(35 * 0.05)

Applying these to a table of possible configurations gives the following current consumptions:

Mode		RX Normal & TX Hi Power	RX Normal & TX Lo Power	RX Batt. Save & TX Hi Power	RX Batt Save & TX Low Power
Receive Mode	mA	16	16	16	16
Standby Mode	mA	45	45		
Standby Mode w Batt Save	mA			9	9
Transmit Mode Hi Power	mA	80		80	
Transmit Mode Lo Power	mA		35		35
Total Consumption v Mode	mA	141	96	105	60
Divided Total Consumption by Battery capacity [1650mAh] to give usage in hours.		11.70hr	17.18hr	15.71hr	27.5hr

So this means that using normal Receive mode and Hi Power and Transmitting only 5% of the time [for 3 minutes in every hour] the battery would last 11.7 hours or just under $11\frac{3}{4}$ Hrs.

Switching to Low Power would extend the operational time battery life before another charge is needed by an additional $5\frac{1}{2}$ hours to just under $17\frac{1}{4}$ Hrs.

Enabling Battery save mode and still using Lo Power would extend the battery life by a massive 10 hours to $27\frac{1}{2}$ hours.

Switching to Hi power and using Battery save would give you nearly 16 hours.

Not all Marine Hand portable VHF radios have battery save mode, but using it with those that do and using low power can extend the operational time battery life between charges by 157% compared to the no battery save and high power mode of $11\frac{3}{4}$ Hrs.

These figures are calculated values only and will be affected by the capacity of the battery and actual usage. An old battery that is not fully charged will obviously not have as much capacity as a new fully charged one. Transmitting on full power for more than the 5% time will obviously increase the draw on the battery and reduce the overall time between the charge.