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Mobile Ham Radios: Strenuous conditions

In amateur radio, a “mobile radio” is a radio that is designed to operate from a vehicle or as a base station in a house (Turner 10-11). These machines have special design considerations for their purpose. In this paper, I will focus on the Yaesu FT-2900R mobile radio, as that is a well-known mobile radio designed to operate on the 2-metre band (Witte).

The purpose of the FT-2900R, and actually all radios, is to convert signal input into radio waves for transmission. The signal input used is different based on the radio, but the most common type is phone, or voice input. The radio is responsible for converting this input into electrical, tuned to specific frequencies. The signal is then sent up an antenna, creating radio waves.

Designing products for amateur radio operators is challenging. “Hams” as amateur radio operators are affectionately known, often enjoy taking apart their equipment and re-engineering it (Witte). Thus, a radio’s designs must be inherently open and subject to change. So, the designers responded by making the radio easy to disassemble and reassemble. Also, wiring diagrams were included in the packaging, which was intended to make modifications more convenient for experienced hams.

Another design concern for this radio is temperature. Cars often get hot, which can damage electronics. Therefore, the radio had to operate at temperatures far exceeding what would be expected. The design compensated for this by including several large heat-removal coils in the top of the radio, in fact; the radio does not use a fan at all. This design decision allows the radio to use less power when the radio is off - an important concern when the radio is operating when the engine is off and reliant on battery charge.

Power presents another problem for the FT-2900R. The radio is designed to run off of a 13.8 V battery unit in a vehicle. However, the radio needs to use as little power as possible, as the battery is required for the starter to work. When the amount of power available to the starter drops below a certain point, the starter will not work. Therefore, the radio has to ensure that the battery lasts as long as possible, by using as little power as possible.

The unit itself was designed build by Vortex Standard Co, LTD. Which is based in Tokyo, Japan ("Yaesu FT-2900R Operating Manual"). It costs about \$150 United States Dollars.

Overall, the considerations of a mobile radio tranciever are diverse and important. The Yaesu FT-2900R meets these concerns, and is a very popular radio for Hams. It is also a well-designed machine.

Works Cited

Turner, Stu WØSTU. *Technical License Class*. 1st Edition. 2012. Print. <<http://hamradioschool.com>>.

Witte, Bob KØR. Personal Interview. 26 Oct 2012.

"Yaesu FT-2900R Operating Manual." Yaesu FT-2900R Operating Manual. China: 2009.