

Low power QRSS beacon: measurements

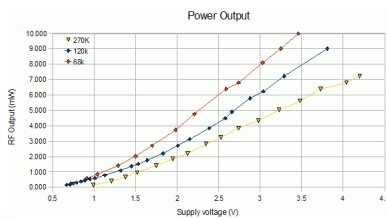
Written by Hans Summers

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Here are some detailed measurements about the performance of the transmitter with respect to supply voltage. NOTE: This very simple transmitter has no low pass filtering. Therefore the output waveform contains harmonic energy as well as the wanted output. The antenna is tuned to 40m and so the actual amount of radiated harmonic energy will be somewhat less than when operating into the 50-ohm dummy load. The output power and efficiency data presented here should be considered somewhat approximate, because of the presence of these unfiltered harmonics.

Power output

The first chart shows power output in milliwatts, with respect to supply voltage. Three different curves are provided, for different values of the resistor between the oscillator transistor base and collector: 68K (highest power output), 120K, 270K (lowest output).



Efficiency

This second chart shows efficiency of the transmitter, with respect to supply voltage. The efficiency was calculated by measuring supply voltage, current consumption, and power output. The current consumption is the whole transmitter, including the FSK astable multivibrator. Three different curves are provided, for different values of the resistor between the oscillator transistor base and collector: 68K, 120K, 270K. It can be seen that higher efficiencies are possible with the larger resistor values, which also unfortunately provide less output power. Nevertheless I am impressed by the high efficiencies attained by this simple circuit.



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