RF Signal Generator Review

Wesley Cardone, N8QM

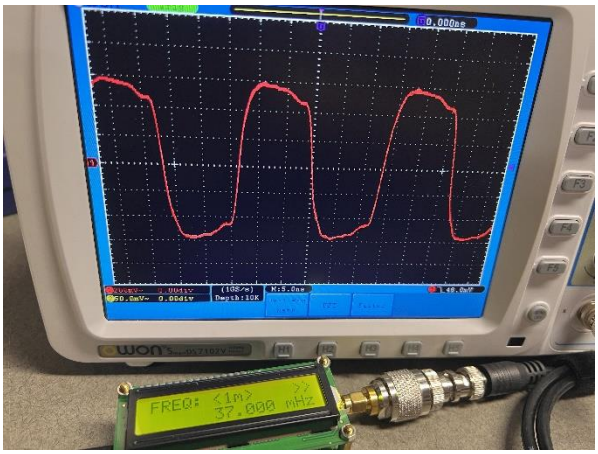
November, 2021

Up for review is an RF Signal Generator purchased from Amazon. This unit is specified to produce signals from 35MHz to 4400MHz. The output is specified to be a square wave and the device is powered via a USB cable. I paid $29 for this device although at the time of this writing it is priced at $40.

For this rudimentary review I looked at some primary concerns. Of greatest concern is the nature of the output signal. What we would really like is a sine wave out but it is specified to be square.

In the first photo we see an indication of 37 MHz. It was a little difficult for me to grapple with the lower case m representing a “mega” coefficient. It was very confusing for me until I figured out this nuance. The “>>” indication on the display means that the device is putting out a signal. The absence of this indication means that there is no signal being pushed out the output port. The indication on the left, “FREQ: <1M>” means that when you push the – and ++ buttons, the output frequency will be bumped down or up by 1 MHz. This can be changed by pressing one of the keypad buttons. It could be, for example, 1 kHz. To set the signal we use the numeric portion of the key pad simply entering numbers. For example, to set the 37 MHz that we see in the photo we press 3, 7, 0, 0, 0. There is no decimal key to press. All this was a little confusing to learn. There were no instructions that came with the unit to explain this functionality.

Let’s first look a a simple output. To minimize error, the output frequency was dialed in relatively low—37 MHz. An oscilloscope with 100 MHz capability was hooked to the device via 50 Ohm characteristic impedance cabling. See the photo.



In the photo it can be seen that the signal out is precisely 37 MHz. The O-scope representation indicated 37.037 MHz which should be considered at the limits of the o-scope. Thus we will say that the output frequency is simply “right on.”

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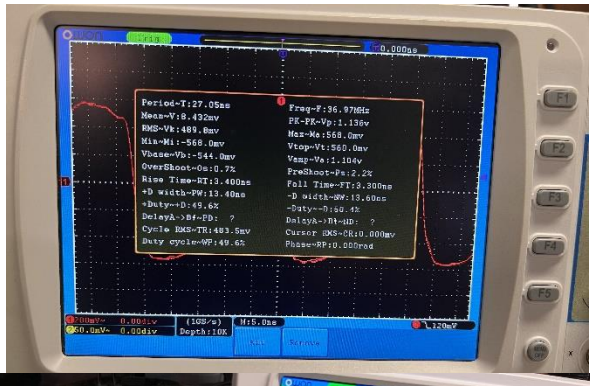
This particular o-scope has a simple measurement capability shown in the next photo where the various characteristics of the input signal are quantified. We can see that the frequency is indicated at 36.97 MHz to validate our “right on” claim. We see that the peak-to-peak amplitude is 1.1 Volts, duty cycle is 49.6%, and so on.



However, the nature of the signal is harmonic rich as we can qualitatively conclude from the same photo.

The next step is to quantify the harmonics. To do this we call upon the FFT functionality of the same o-scope as shown in the next photo. Here we are seeing a horizontal resolution of 50 MHz per division. Thus we are seeing harmonics very evenly distributed out to 500 MHz.

Our conclusion is, don’t buy this unit. There are other units that cost a little bit more with considerable more functionality. Most notably we can report that there is no capability to specify an output amplitude.