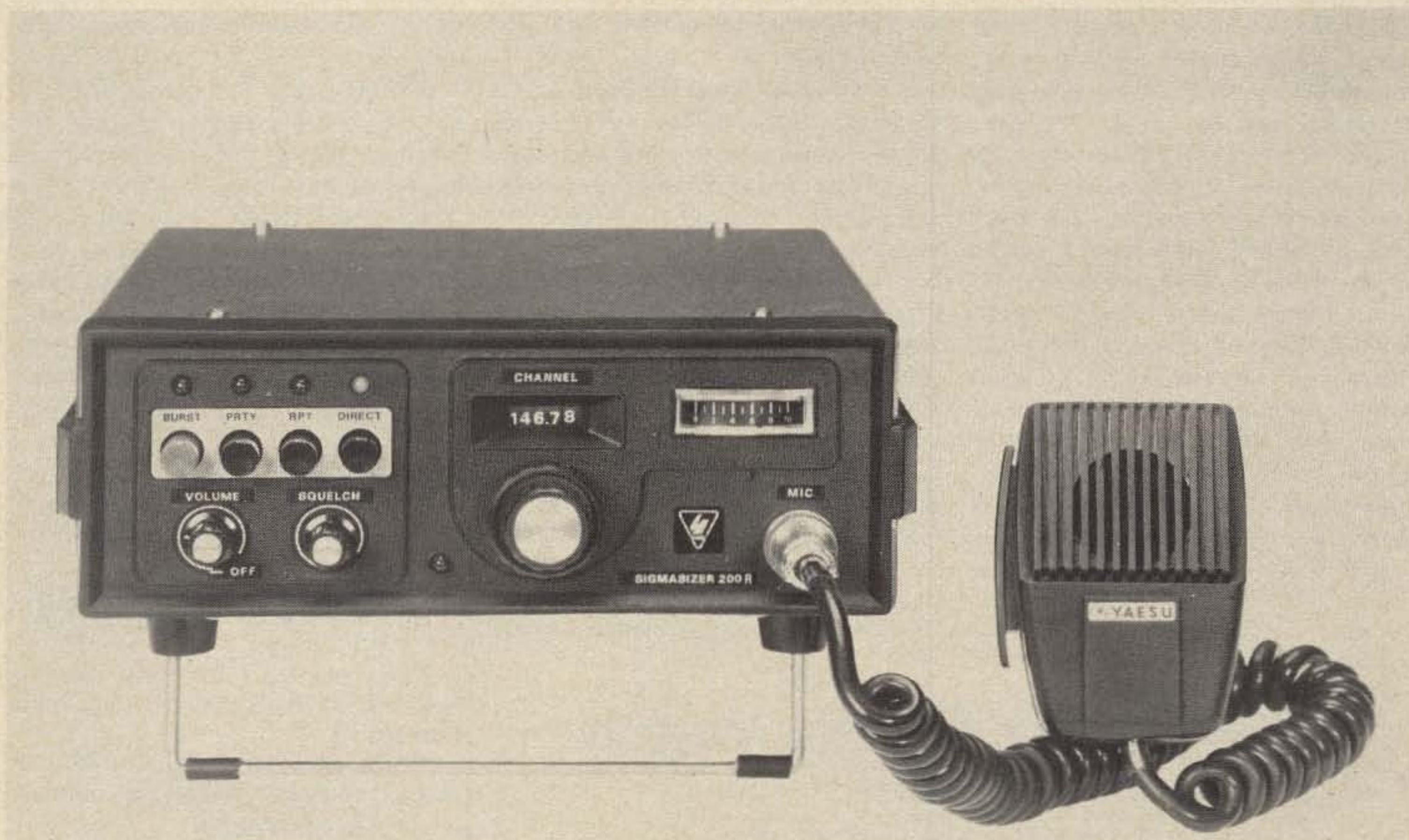




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The Remarkable Yaesu Sigmasizer

You want to go synthesizer-FM. The reality that buying 12 sets of crystals could have bought you two synthesizers has finally sunk in. Now, a new problem . . . which synthesizer? You could get a Clegg Crystiplexer or one of the newer external synthesizers like the GLB or RP. To add to the growing confusion, Yaesu has just announced their new synthesized transceiver — The Sigmasizer.

The Sig, as we'll call it, is about half the height of your common Clegg and about one inch wider. It has an output of 10 Watts and one Watt in low power. Like the Clegg, it uses some crystals (included) for synthesization (say that three times fast!). The Sig covers 146-147.99 MHz in ten kHz steps, with a five kHz mod in the not too distant future. Both the frequency readout and quote 'S' meter are illuminated. No tuning is required. You just set the dial to your desired channel and you're on. From there, you can operate Simplex (direct) on

the dialed frequency or activate the RPT button which will automatically offset your transmitter 600 kHz down in the 146 range or 600 kHz up in the 147 segment. The Sig has a priority position into which you can put crystals for your favorite repeater making QSY to that channel quick and easy. Just push the PRTY button. LEDs are provided to tell you if the rig is operating SMPLX, RPT or PRTY and if the unit is transmitting low power. Additionally, another LED lets you know when you're transmitting. The 200R has a built-in tone burst oscillator with variable time delay, frequency, and amplitude, making it useful for PL and other applications. The unit comes ready to go with molded cigarette lighter plug and microphone. No worry about alternator whine, as the Sig incorporates a built-in toroidal alternator whine filter. Antenna troubles? Don't fret. The Sig has an swr protection circuit which disables the transmitter at

higher than a 1.8:1 vswr. Unlike other protection circuits, the disable mode is made obvious to the operator by the transmit LED shutting off one second after pushing the PTT button.

Setting frequency is simple. Two concentric knobs do all the work. The inner knob sets the MHz and 100 kHz digit, and the outer knob sets the 10 kHz increment. The frequency is then displayed on the illuminated dial. No worry about the readouts burning out because it's mechanical. Of course, common features like external speaker jack and plug-in mike have not been forgotten.

Time to get technical. The specifications provided with my prototype were, believe it or not, in Japanese, so I took a few of my own. Sensitivity measured an unbelievable .13 uV for 20 dB quieting. Intermodulation products were down compared to other transceivers we have tested. This might be attributed to the Sig's dual-

filter design with filters in both the high and low i-fs. A Murata 'E' filter keeps things tight but is easily changeable to an 'F' if much splinter operating will be done. The Sig's speaker is bolted to the bottom cover for minimum vibration at low frequencies. Receive quality was good and the unit's audio amp provided plenty of push in the noisy mobile.

The transmitter put out 10.1 Watts at 13.8 volts. It dropped only to 8 Watts at 11 volts and put out 13 Watts when subjected to 15 volts. Audio was good with the provided 600 Ohm dynamic mike (which is directly interchangeable with the FT-101B mike).

It looks like Yaesu's done it again. A synthesized transceiver for the serious FMer.

Construction-wise, the Sigmasizer is excellent. Opening the lid, you see three separately shielded sub-assemblies. The rf compartment is also separately shielded making TVI virtually non-existent. Operating the Sig right on top of my Sylvania color set resulted in slight bars on channel two. When subjected to the same test, my TR22 (one tenth the power) wiped out the picture.

Temperature changes barely fazed our Sig. When subjected to my mobile environment, which varies from 20

degrees F to about 75 with the heater on, the Sig never wandered more than 300 Hz.

Summing up, the Sig is quite a little box — versatile, easy to operate, and offering many features that more expensive rigs don't. Don't pass it up when it comes your turn to get sick of buying crystals. The price tag? How about 449 bucks, about what you'd expect to pay for a fully crystallized rice box.

Many thanks to Harrison Radio, Farmingdale, for providing our test Sigmasizer.

...WB2PVH

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The Quartz Digital Watch

an electronic marvel

How many times have you missed a MARS net check-in or an important sked with that W6 across the country? In several cases it was probably because your \$19.95 drug store special thought there were 63 minutes in an hour instead of 60. I have had this problem on more than one occasion and I think I have found a cure for it. It's called a quartz digital electronic watch. These electronic marvels boast the amazing accuracy of better than five seconds a month. My particular model, an LED type, lights up when a command button is pushed and displays the time in hours, minutes, seconds and also tells me the day and the month (very useful during those long weekends contests).

Operating Principles

Most of the quartz digital watches on the market today operate with the same basic principles. Divide the output from a crystal oscillator down to a one Hz signal to be used to control several types of displays. In most cases, the crystal oscillates between 30 and 1000 kHz (in this particular case, 32,768 Hz). This 32,768 kHz signal is then applied to a divider chain which divides 32 kHz down to 1 Hz. This 1 Hz signal is applied to control logic that routes this 1 Hz pulse to other divide circuits or counters. These counters divide the 1 Hz signal into minutes, hours, days and months (that's a lot of dividing). The outputs

from these counters are then applied to decoders. These decoders take the information that once was a 32,768 kHz signal and transform it into signals usable in a seven segment display. All this oscillating, dividing, controlling and decoding is done on a single integrated circuit chip about 150 mils square, and drawing only about 8 microamps.

Most of the work is done by a single CMOS integrated circuit containing over 1500 transistors (another amazing feat). There is even a built-in provision for increasing the brightness of the display when the ambient light level is high. During high light levels, PC1, a photocell, lowers its resistance causing the integrated circuit to increase the duty cycle of the multiplexed seven segment display outputs. The only other parts in the watch are the crystal oscillator circuit components, two 1.5 volt silver oxide batteries, two command switches, the display driver transistors and, of course, the four digit seven segment display itself.

Put all this together and you indeed have an electronic marvel, guaranteed to tell you time and date with 5 seconds per month accuracy, and to run for a year on one set of batteries. Now it looks as though I will have to find a new excuse for missing my next net check in.

...TENHULZEN

Ham Help

This column is for those needing help in obtaining their amateur radio license.

If you are interested, send 73 your name, address and phone number.

Eugene Neigoff
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Schaumburg, Ill 60172

Johnnie David Twine
T-44 4ATAF
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Mr. William Prago
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Fort Lee NJ 07024
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SPECIAL THANK YOU TO MY ANONYMOUS BENEFACTOR

I cannot tell you how deeply I appreciate your concern for me, as evidenced by the trouble you went to by placing an ad for me in the "Ham Help" column of 73 Magazine.

I hate to disillusion you but I am presently Vice President of Engineering of WSNL-TV here in Central Islip, operating on UHF Channel 67, with a power of 5,000,000 Watts e.r.p. I am a member of SMPTE (Society of Motion Picture and Television Engineers), AES (Audio Engineering Society), and a member of the Board of Directors of the SBE (Society of Broadcast Engineers), and have been engaged in Broadcast Engineering for a mere 18 years! I have been a licensed ham since 1956, first as KN2VGD, and now with Advanced call letters of K2VGD (since 1957).

I don't mean to sound ungrateful, but your concern is not only unnecessary... but... unwanted.

P.S. I am very willing to render any assistance to any person who is interested in obtaining a license.

...Edwin T. Karl K2VGD