DOUBLE SIDEBAND JUNIOR

A 20-WATT DSB TRANSMITTER FOR 3.8-4.0 MEGACYCLES

Get started on a rapidly growing double sideband with this simple, junior-sized—but complete—transmitter designed by K2GZT (ex-W6AHM). If this little rig looks familiar, you've one of literally thousands of radio amateurs who have examined it personally at ARRL conventions, and club meetings, during the past several months.

—Lighthouse Larry

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To say that radio amateurs have been expressing considerable interest in the double sideband, suppressed carrier transmission systems could be considered a understatement. This has been amply confirmed by the interest in the literature of the understate. This has been obvious from the number of articles on the subject to recent electronics journals (see bibliography on page 8); also from the steady flow of requests for more infor-}

**DOUBLE SIDEBAND JUNIOR**

![Diagram of double sideband transmission system](image)

**CIRCUIT DETAILS**

In a double sideband transmitter, the modulation process occurs at a low frequency. The image of the transmitted signal is a copy of the image of the original signal with a frequency, and is therefore not transmitted. The carrier frequency is a copy of the original signal with a frequency, and is therefore not transmitted. The carrier frequency is a copy of the original signal with a frequency, and is therefore not transmitted. The carrier frequency is a copy of the original signal with a frequency, and is therefore not transmitted. The carrier frequency is a copy of the original signal with a frequency, and is therefore not transmitted. The carrier frequency is a copy of the original signal with a frequency, and is therefore not transmitted. The carrier frequency is a copy of the original signal with a frequency, and is therefore not transmitted. The carrier frequency is a copy of the original signal with a frequency, and is therefore not transmitted. 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MECHANICAL DETAILS

The transmitter shown on page 1 was constructed on a 7 x 13 x 3-inch aluminum chassis (Blud AC-308). A smaller chassis, or utility box, will easily hold the RF and audio components, especially if the power supply is constructed on a separate chassis. Of course, if a suitable high voltage supply already is available, use of the chassis is optional.

The same relative locations for major parts, as shown in the assembly diagram, Fig. 5, should be followed. If the audio preamplifier for low output microphone phases is to be included, the tube socket should be placed in the location indicated on this diagram. The

Fig. 2. Schematic diagram for the complete 20-watt double sideband transmitter. The high voltage power supply, shown within dotted lines, may be constructed in a suitable supply already available. The optional audio preamplifier appears in the upper left-hand corner. Capacitances given in white numbers are wire, 500 volts working, those in dấus are disc ceramics, 500 volts working. Resistors are 1/2 watt unless otherwise specified.
**DRILLING LEGEND**

"A" drill—No. 93 for miniature tube socket hardware.

"B" drill—No. 24 for fastening terminal eyes and larger connectors.

"C" drill—\( \frac{3}{16} \) in. dia. in dimen-
sion for \( J_1 \).

"D" drill—\( \frac{3}{16} \) in. dia. in di-
mension for controls, switches, etc.

"E" socket punch—\( \frac{3}{16} \) in. dia. in di-
meter for \( \Phi \)-pin-socket tubes.

"F" socket punch—\( \frac{3}{16} \) in. dia. in di-
meter for \( \Phi \)-pin-socket tubes and grenades, etc.

"G" socket punch—\( \frac{3}{16} \) in. dia. in di-
meter for \( \Phi \)-pin-socket tubes.

Fig. 3. Chassis deck and front panel drilling diagram for the double-wideband transmitter. Dimensions are from the edges of a 7 x 12 x 3-inch deep chassis. Tube sockets should be mounted with pin 1 in the position indicated at each socket hole. The socket for the optional audio preamplifier tube \( \Phi_1 \) and gain control \( \Phi_3 \) are located as shown.

Fig. 4. Top view of the double wideband transmitter, showing the locations of major parts on chassis deck. Check to see that sufficient space is provided for components which differ in size and shape from those listed. The audio filter inductor \( L_1 \) and the microphone transformer \( T_2 \) should be oriented in the positions shown to prevent inductive hum pickup from the power transformer \( T_2 \).

Fig. 5. Bottom view of the chassis, showing placement of smaller parts on the foil, sockets and terminal strips. Power wiring is run in corners and across face of center of the chassis for the connecting audio and RF circuits should be made as short as possible.
matching transformer for a carbon microphone, T1, is not...referred. The...be located directly from the matching holes on each...the drawings...be located in the holes. Rubber...front of the chassis, as indicated on the drawing...be located...fronts of these parts are assembled in the...locations shown in the top view photo, Fig. 4.

The smaller parts beneath the chassis are fastened...between tube socket lugs and lugs on other parts, or...lug-type terminal strips (Ciesch-Jones 2000 series). Most of the...as shown in the bottom view photo, Fig. 3. Note that the...capacitors fit neatly into unused portions of the chassis.

Use of metal can type capacitors will require crowning of some components on the chassis deck.

All power and audio circuit wiring was run with No. 20 stranded, insulated hookup wire. Heavy timed...pin connector was used for the leads between the 6AQ5...passes the 6AQ5 plate lugs to the socket for L3, and...small insulated banana jacks were mounted on one end...with a usable chassis type coaxial cable connector may...The audio preamplifier stage, which may be...transmitter at any time, was constructed on a...in the photo of Fig. 2. There is adequate...As for the rest of the assembly, the 15- or 25-watt, 115-volt incandescent lamp bulb...power and insert a crystal for the 3.8- to 4.0-megacycle phone band. Depress the microphone push-

to talk switch.

1. Adjust L3 to resonance while observing the final...grid current on a milliammeter inserted at J1. A grid current of 3 to 4 milliamperes is required for proper operation.

2. Set R4 to mid-point. Adjust L2 for closest...Whistle into the microphone. Successively...adjust the output coupling and clipping level (R4) for maximum output volume consistent with linearity.

3. Upon successful completion of testing with a...the transmitter may be connected to a...transmitting antenna. The antenna should preferably be a low impedance tuned antenna, such as a dipole or...The video output...modulation. When the transmitter is connected to the antenna, step 1 above should be performed...decrease of 20 MHz, then...modulation may be metered at...The plate current will have a resting value...of about 30 mA and will rise to about 40 mA with modulation.

Although the basic transmitter in crystal controlled, the output of a variable frequency oscillator may be...amplifier with a length of 500-

Ohm tweedle. It is important that this external...oscillator have an initial stage between it and V2 to...prevent frequency modulation of the signal. The VFO...should have good long-term frequency stability. Otherwise, the other participants in a round-table QSO...will keep reminding you to get back on frequency.

DOUBLE SIDEBAND JUNIOR has sufficient RF...output to drive a...output circuit to the...across the...of 300- to 400-ohm tweedle. It is important that this external...oscillator have an initial stage between it and V2 to...prevent frequency modulation of the signal. The VFO...should have good long-term frequency stability. Otherwise, the other participants in a round-table QSO...will keep reminding you to get back on frequency.

Fig. 4. Detail views of the audio preamplifier stage constructed on a turret type 9-pin miniature tube socket (Vector No. 8-N-97). Terminals to which external connections are made have been labeled.
EDISON RADIO AMATEUR AWARD
1957 WINNER
James E. Harrington, KSBQT

JUDGES:
E. Roland Hanlon, Chairmen
American National Red Cross
Rudolph K. Hyde, Convener
Federal Communications Commission
Goodwin L. Dooland, President
American Radio Relay League

HEROIC TDO (LEFT RIGHT)—James E. Harrington, KSBQT, winner of General Electric's 1957 Edison Radio Amateurs Award, is shown with his key, which he says he is going to use as a wedding ring. With him is his wife, Mrs. Harrington, and his son, Michael, who also operates KSBQT. They are shown with their operating gear and key at their home station. (Above) Harrington's wife, Mrs. Harrington, shows her new call sign, KSBQT, while their son, Michael, looks on.

HEROIC TDO (RIGHT)—James E. Harrington, KSBQT, winner of General Electric's 1957 Edison Radio Amateurs Award, is shown with his key, which he says he is going to use as a wedding ring. With him is his wife, Mrs. Harrington, and their son, Michael, who also operates KSBQT. They are shown with their operating gear and key at their home station. (Above) Harrington's wife, Mrs. Harrington, shows her new call sign, KSBQT, while their son, Michael, looks on.
READERS!  
I NEED YOUR HELP!  
Since amateur radio is a rapidly growing and continuously changing hobby, I would like to know more about your current interests. Please take a minute or two to read the questions below and mark your answers on the coupon at the bottom of this page. Then clip the coupon, seal return address above it, paste it securely on a postal card, and send it to me. Your cooperation will help me plan articles on your favorite subjects for future issues of G-E HAM NEWS.

—Lighthouse Larry

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| 5. What items of your station equipment are: a. Home built? b. Manufactured? (check proper box on answer coupon below) |
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| 7. Or are you a student of Electronics? Other? |
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(clip along dotted lines)

—Lighthouse Larry
General Electric Company
Electronic Components Division
Building 267-2
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G-E HAM NEWS READER SURVEY

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Sweeping the Spectrum

NEXT MEETING—John E. Welch, KIGET, took a
beauyul's birthday from his profession as electrical de-
gen and procured a phample of the device of
the American Radio Relay League, Department of
New York. Withdraw the "Double Sideband Junior" transmitter in this issue.

Some measure of Jack's enthusiasm for double side-
band can be gauged from his many presentations on
this subject at amateur shows, amateur radio forums,
and club meetings. Of course, this little trans-
mitter usually accompanies him as his favorite "con-
versation piece."

First licensed as W6ASH in Kansas during 1947,
Jack's association with electronics includes AM broad-
casting and the U.S. Army Signal Corps. Before joining
General Electric. Although he has tried "in all—CW.
FM. AM and SSB—Jack can now be found on 14-
megacycle phone putting a pair of QL-614's a s-
you guessed it—double sideband rig"

H H H

When the judges for the 1937 Edison Award met late
in January, they not only chose EROE as the prin-
cipal winner, but drafted a public service commenda-
tion to be awarded to the following officially nominated
candidates for the 1937 award:

W1MCL, W1WSY, W1SM, W1RUP, K1EGJ, K1-
EMY, W1ECP, W1XJ, W1DEC, W1PUS, W1-
RUL, W1X90, W1X8R, W1X8R, W1RUD, W1RUD,
W1PSE, W1YBW, W1SW, W1SY, W1SBE, W1-
DUT, W1X8A, W1X8A, W1X8A, W1X8A, W1X8A,
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