



# HAM HUM

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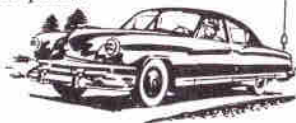
February 1968

## February 9th - Membership Tour

Plan to attend a tour of the AT&T plant, located at 19th and Douglas Streets, Omaha, on February 9th at 8:00 P.M. Try to be prompt so we can enter as a group as there are general security precautions.

Some of the highlights of the tour include a look-see of the private line board to monitor calls, the television operating center which feeds network television to the local stations, microwave systems and toll switching. Bring a guest Ham with you for this tour!

**HAM HUM** is the official organ of the Ak-Sar-Ben Radio Club, Inc., of Omaha, Nebraska, mailed monthly to all members and to others upon request.



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## AUCTION - APRIL 12

The Club's annual auction is scheduled for April 12th. Clean out the shack or break loose with some of the gear you'll never use but hope to.

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## HUMOR???

Last year's Club secretary, Royce Johnson, WAØKIL, left his mark behind in an amusing manner.

On the outside of the secretary's file box is pasted this note: "Property of the Ak-Sar-Ben Radio Club, Inc. Please leave it alone. Royce C. Johnson, Secretary."

Inside the lid, another note reads: "If your name isn't Royce C. Johnson, you have no business rambling in here."

Inside another smaller box containing the membership file, a third note reads: "Leave this alone, please. I can foul it up real good all by myself. Royce C. Johnson."

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## HIGHLIGHTS OF JANUARY MEETING

President Bob Lockwood, WAØDHU, kicked off the meeting by looking down the road and giving the Club a light charge for future activity. All in all, we're looking forward to a successful year.

Jim Droege, WØYCP, gave an excellent presentation on the Story of the FM two-meter Repeater. The slides, furnished to us by Bob Atkeisson, WØIQC, and narrated by Jim Droege, gave us first-hand experience on how much equipment and work is necessary and some of the problems of running a Repeater Station.

The film, *Flying Colors* was a special treat for those who enjoy armchair traveling and QSOs. It was a beautiful and interesting journey by jet from the Golden Gate to the Statue of Liberty.

Our absentminded professor forgot something, so we have no pictorial highlights!

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## NOTES FROM THE BOARD By Bob Lockwood, WAQDHU

The Board of Trustees of Ak-Sar-Ben Radio Club, Inc. met at the home of Dave Moses, WAQCD, on January 23, 1968. Following is a brief rundown of the business discussed.

The Board selected Dick L. Eilers, WQYZV, to fill the unexpired term created by the election of David C. Moses, WAQGED, as Vice President. This selection will be presented to the members for approval at the February meeting.

Members of the Board started looking way ahead to plan programs for our monthly meetings. Several tours were discussed as well as material for regular meetings. We are getting in touch with the appropriate persons in an effort to secure our Field Day and picnic sites. Also, we discussed our annual ham auction and have a good start in planning it.

We also discussed possible locations which might be secured as our meeting place. We have possibilities and are in the process of checking them out.

At this meeting we accepted the responsibility of supplying communications and mobile stations for the Heart Fund Drive to be held February 25th. Anyone having a six meter mobile station and who wishes to participate in the Heart Fund Drive please notify me or any member of the Board.

I will try to keep you up to date on the activities of your Board of Trustees by a monthly report. I remind you that your Board serves

you, the individual member. If you have any ideas which you feel should be called to the attention of the Board, feel free to call any member. We welcome your comments.

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Wisdom is acquired by eye and ear but seldom through your own mouth.

WQVLI

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### FIELD DAY 1968

Many amateur radio clubs are thinking about the upcoming 1968 Field Day. It does seem a bit early to think about and plan for Field Day as after all, June is several months away. Don't let it fool you; time passes quicker than we think and now is the time for WQEQU to start planning for the big day.

You know how successful Field Day was for the Ak-Sar-Ben Radio Club last year. We hit eleventh place in the nation because Club members made an all out effort. WQEQU racked up the points.

Now we are approaching Field Day 1968. If we really get behind this thing and push together, we can do even better this year. It is time now for each of us to ask ourself this question; "What part can I play at Field Day this year?" We need operators, loggers, cooks, general handymen and above all, we need you. See you at Field Day 1968

Bob Lockwood, WQDHU  
Field Day Chairman

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## AK-SAR-BEN RADIO CLUB FIGHTS HEART DISEASE

Our Ak-Sar-Ben Radio Club, Inc. will participate in an attack being waged across the nation against heart disease. We will do our part on February 25th by working on a mobile drive picking up donations, handling traffic and communications from the Heart Fund Headquarters to other workers, and coordinating amateur radio with a successful drive. Those with mobile units should meet at Red Cross Headquarters, 39th and Dewey Streets at 4:00 P.M. on Sunday, February 25th. From 4:00 to 7:00 P.M. seems to be a better time to coordinate mobile communications with wrapping up the drive.

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Get the job done, let the credit fall where it may.

WØVLI

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**OFFICIAL BULLETIN NR 149  
FROM ARRL HEADQUARTERS  
NEWINGTON CONN JANUARY 4  
1968 TO ALL RADIO AMATEURS BT**

The United States has concluded a reciprocal operating agreement with Finland, effective last December 27. Amateurs of one country visiting or residing in the other may obtain permission to operate their own amateur stations there. This 33rd reciprocal agreement supplements the list appearing on page 79 of January QST AR

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## FORMAL COURSE FOR AMATEUR RADIO LICENSE

Another all-out effort is being made to help Hams upgrade their Amateur Radio license. A no-credit class is being organized at the Technical Institute, University of Omaha, for Hams to review their theory and code this Spring, beginning on Saturday, February 24, 8:00 to 10:00 a.m., Room Engr. 259. This is for both beginners and more experienced amateurs requiring study in the theory of transmitter circuits, etc., in preparation for the amateur radio general license. Our goal is to help Hams obtain a higher class license. Dan Fahrlander, WØLGT, instructor of the Technical Institute, will be the Class Coordinator. An attempt at team teaching will be made, since Hams with varying competence will be trying to upgrade their license. Some may need more emphasis on code; others on theory.

The cost to each student will be \$35.00 tuition for the 15-week course; and a minimum enrollment of 20 students is necessary to conduct the course. If you are interested, this is your opportunity to upgrade your license or to earn a license if you do not have one. Please contact any member of your Board of Trustees, or Mr. Fahrlander for information to make arrangements to enroll. Let us get on the "key" and make this a successful class!

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A rolling stone is lost motion.

WØVLI

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President Bob Lockwood, WAØDHU, and Vice President Dave Moses, WAØGED, busily enjoy directing the Club's activities as Ed Kilton, KØEYR, takes up his pen to record the minutes as Club Secretary.

Dave Moses, WAØGED, demonstrates some gear in his new QTH workshop. Bob Lockwood, WAØDHU, Ed Kilton, KØEYR, and Jim Knudsen, WAØMHF, observe and heckle him with harmonics. Hi!



## Using FM in V.H.F. Amateur Communications

For several years there has been a nationwide trend toward the use of fixed-frequency FM communications equipment in the 2 and 6 meter amateur bands.

I feel that this is a very worthwhile trend inasmuch as it tends to increase the population and frequency usage of the high ends of both the 2 and the 6 meter bands. We should mention right at the start that whereas the CW, AM and SSB operation is generally confined to the low ends of both these bands, the frequencies usually chosen for FM operation have been within the upper 2 mcs. of each band. As an example: the national FM calling frequency is 146.94 mcs. In some of our highly populated areas there have been some very real problems from too many stations using a common repeater station. (Some of these will be covered in another article written by Ralph Anderson, KØNL, which we shall try to run in next Ham Hum.)

Using the high end of the bands is desirable for these reasons: (1) FM operation is *not* compatible with any of the other modes and going higher in frequency will get out of the hair of the CW-SSB DX operators. They would appreciate this kindness...even though the legal requirement doesn't exist.

(2) The commercial equipment which is used in the 2 meter band doesn't require as much modification or "padding" to place it in the high end of the band. In com-

mercial service this equipment is used on frequencies from 150 to 165 mcs. approximately.

The present day uses of this equipment are well known to almost everyone. At least I hope the hams have some concept of what is going on in other parts of the radio spectrum besides the ham bands. Sometimes, I'm not so sure that we do.

We know that among the pioneers in the use of FM 2 way radio were the Police or Public Safety radio services and the taxicab radio service. The use of VHF FM for this relatively short range (up to 30 or 40 miles) of communications has been eminently successful over the last 20 years.

Now for years the Amateur Radio Service has been faced with increased QRM on the HF bands and many efforts to move some of this activity into the VHF region have not been greatly successful.

One of the factors here has always been the comparative lack of quality VHF equipment at a competitive cost with HF equipment available. After WW II some pretty fair VHF equipment fell into the hands of amateurs but at the present state of the art, none of this type gear is even worth using. It is a sad thing to note that the MARS programs are still plagued with too much of this archaic equipment. After all, the SCR-522, the BC-6 et al were designed over 25 years ago. The moral of this is: don't waste time and money on WW II surplus. You're far better off by learning how to build your own

equipment, although I must warn that building isn't always easy or painless.

Several manufacturers came out with transmitters, VHF receiving converters and some pretty good antennas during the 50's, but generally the transmitter designs left something to be desired. For example, one popular make of 6 and 2 meter AM-CW transmitter seemed to be capable of working either on 6 or 2, but seldom on both bands. The users always appeared to be having problems making the thing fly on both bands. A lot of these were built in kit form and I think most of these problems could have been traced to poor VHF lead dress, improper by-passing, etc. These points are of the utmost importance when you're dealing with VHF. Some other typical VHF transmitters on the market used rather cheap and dirty ways of RF power generation, such as using a doubler for a final amplifier. Poor modulation systems were also the rule.

At the present time the economic problems of producing a good SSB 2 meter transmitter or receiver are not easily solved. Several manufacturers have tried to overcome this, but the costs of producing such a unit are generally prohibitive. The recent Swan 6 meter SSB transmitter may very well be the exception here. I believe that probably one of the most practical ways of generating SSB for 2 meters is by the component system i.e. by using an existing HF SSB transmitter, such as a Galaxie, General Electronics 20A, etc. and then using a

mixing or heterodyning converter to move the SSB signal into the VHF range. Of course in order to increase our overall xmtr. power, then a linear power amplifier would be needed with SSB.

Cont'd next month.

John D. Snyder, WØWRT  
\*\*\*\*\*

Helping the other guy up the hill gets you there, too.

WØVLI

\*\*\*\*\*

#### ADDITIONS TO ROSTER

James C. Anderson, KØDNE  
4828 Charles Street  
Omaha, Nebraska 68132  
Phone: 551-0630

Walter Bowman, WAØHKV  
2301 Douglas Street  
Omaha, Nebraska 68102  
Phone: 345-2908

Henry J. Dworak, WAØQLE  
1409 Martha Street  
Omaha, Nebraska 68108  
Phone: 341-4823

William G. Oswald, WAØDVK  
417 Williams Street  
Omaha, Nebraska 68108  
Phone: 346-8329

Frank E. Velasquez, WNØQHV  
3262 Harrison Street  
Omaha, Nebraska 68147  
Phone: 733-0542

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## FOR SALE

Rt-18/ARC-1

2 meter Xceiver less p.s.

\$50.00 or best offer

Works as far as I know

\* \* \* \* \*

Heath 6'er

Perfect Condition

Mike, AC & DC cords

\$30.00 or best offer

\* \* \* \* \*

Approx. 20 ft. aluminum tubing  
for antennas - FREE - was

3 el HyGain copy

Call Jim Knudsen, WAØMHF

329 N. 2nd Street

Council Bluffs, Iowa

Phone: 328-0284

\* \* \* \* \*

## OFFICIAL BULLETIN NR 151 FROM ARRL HEADQUARTERS NEWINGTON CONN JANUARY 18 1968 TO ALL RADIO AMATEURS BT

The American National Red Cross announces that in the simulated Emergency Test on January 27 and 28 it will have four stations guarding various frequencies for Red Cross traffic as follows: W4PAY for Eastern Area and National Headquarters, and W4DOC for Southeastern Area, 3550 and 3875 kc., 0000 to 0500 GMT January 28 and 29; KØAEM for Midwestern Area, 3550 and 3875 kc., 0000 to 0500 GMT January 28 and 2300 January 28 to 0300 January 29; W6CXO for Western Area, 3875 and 7250 kc, 1900 January 27

to 0300 January 28 and 1900 January 28 to 0300 January 29. W6CXO hopes also to be active with RTTY on 80, 40 and 2 meters. Amateurs receiving traffic for Red Cross during the SET weekend may refer them to these amateur Red Cross stations or via the ARRL National Traffic System AR

(Editor's Note: For your information even though dates have passed.)

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## OFFICIAL BULLETIN NR 152 FROM ARRL HEADQUARTERS NEWINGTON CONN JANUARY 25 1968 TO ALL RADIO AMATEURS BT

Provided their correct club mailing address is on file, during the next few weeks about 1300 active ARRL affiliated radio clubs should receive the January issue of the new ARRL Affiliated Club Bulletin, containing the annual club questionnaire. In cases where recent officer elections have been held, our information may reach a former officer. If your club is affiliated but has not received a bulletin by mid-February, it is suggested that the club president's address be sent to ARRL with a request for a duplicate bulletin. All clubs receiving these forms are urged to return the information on the annual survey to ARRL Headquarters, 225 Main Street, Newington, Connecticut 06111 as quickly as possible AR

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Formulas gathered by Lenkurt Electric, subsidiary of General Telephone & Electronics. Thanks to Dave Moses, WA0GED, for sending this in.

#### 1. CONVERSION FACTORS AND CONSTANTS

$x = 3.14$	$2x = 6.28$
$\pi^2 = 9.87$	$(2\pi)^2 = 39.5$
$e = 2.718$	$\sqrt{2} = 1.414$
$\sqrt{3} = 1.732$	$\log x = 0.497$
1 meter = 39.37 inches = 3.28 feet	
1 kilometer = 0.621 mile (about 3/5 mile)	
1 inch = 2.54 centimeters	
1 kilogram = 2.2 pounds	
1 liter = 1.06 quarts	
1 ounce = 28.35 grams	
1 horsepower = 746 watts	

#### 2. OHM'S LAW FORMULAS FOR DC CIRCUITS

$$I = \frac{E}{R} = \sqrt{\frac{P}{R}} = \frac{P}{E} \quad R = \frac{E}{I} = \frac{P}{I^2} = \frac{E^2}{P}$$

$$E = IR = \frac{P}{I} = \sqrt{PR} \quad P = I^2R = EI = \frac{E^2}{R}$$

#### 3. OHM'S LAW FORMULAS FOR AC CIRCUITS

In these formulas  $\theta$  is the angle of lead or lag between current and voltage and  $\cos \theta = P/EI =$  power factor.

$$I = \frac{E}{Z} = \sqrt{\frac{P}{Z \cos \theta}} = \frac{P}{E \cos \theta}$$

$$E = IZ = \frac{P}{I \cos \theta} = \sqrt{\frac{PZ}{\cos \theta}}$$

$$Z = \frac{E}{I} = \frac{P}{I^2 \cos \theta} = \frac{E^2 \cos \theta}{P}$$

$$P = I^2 Z \cos \theta = IE \cos \theta = \frac{E^2 \cos \theta}{Z}$$

#### 4. RESISTORS IN SERIES

$$R_{total} = R_1 + R_2 + R_3 + \dots$$

#### 5. TWO RESISTORS IN PARALLEL

$$R_1 = \frac{R_1 R_2}{R_1 + R_2} \quad R_2 = \frac{R_1 R_2}{R_2 - R_1}$$

#### 6. EQUAL RESISTORS IN PARALLEL

$$R_{total} = \frac{R}{n} \text{ where } n \text{ is the number of resistors}$$

#### RESISTORS IN PARALLEL GENERAL FORMULA

$$R_{total} = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \dots}$$

#### 8. SINUSOIDAL VOLTAGES AND CURRENTS

Effective value = 0.707 $\times$ peak value
Average value = 0.637 $\times$ peak value
Peak value = 1.414 $\times$ effective value
Effective value = 1.11 $\times$ average value
Peak value = 1.57 $\times$ average value
Average value = 0.9 $\times$ effective value

#### 9. ZERO dBm IS

.001 watt
.775 volts RMS across 600 ohms
.274 volts RMS across 75 ohms
.361 volts RMS across 130 ohms

Most "flat meters" are calibrated in dBm based on an impedance of 600 ohms. When the circuit impedance is not 600 ohms a conversion factor is needed:

$$NdB = 10 \log \frac{P_2}{P_1} = 20 \log \frac{E_2}{0.775} + 10 \log \frac{600}{R_1}$$

Circuit impedance	Add to dB reading
600	0
75	9
130	6.5
900	-1.8

#### 10. PEAK TO PEAK VOLTS

A calibrated oscilloscope will read peak to peak voltage. Most "flat meters" (dB meters) read RMS voltage. Multiply by 2.82 to get peak to peak volts.

#### 11. REACTANCE FORMULAS

$$X_C = \frac{1}{2\pi fC} \quad C = \frac{1}{2\pi fX_C}$$

$$X_L = 2\pi fL \quad L = \frac{X_L}{2\pi f}$$

#### 12. RESONANT FREQUENCY FORMULAS

$$f = \frac{1}{2\pi \sqrt{LC}} \text{ or } f = \frac{159.2}{\sqrt{LC}}$$

$$L = \frac{1}{4\pi^2 f^2 C} \text{ or } L = \frac{25,330}{f^2 C}$$

$$C = \frac{1}{4\pi^2 f^2 L} \text{ or } C = \frac{25,330}{f^2 L}$$

\*where in the second formula  $f$  is in kc and  $L$  and  $C$  are in microinths.

#### 13. IMPEDANCE FORMULAS

$$Z = \sqrt{R^2 + (X_L - X_C)^2} \text{ (for series circuit)}$$

$$Z = \frac{RX}{\sqrt{R^2 + X^2}} \text{ (for } R \text{ and } X \text{ in Parallel)}$$

(Continued on next page)

#### 14 DECIBEL FORMULAS

When impedances are equal

$$db = 10 \log \frac{P_1}{P_2} = 20 \log \frac{E_1}{E_2} = 20 \log \frac{I_1}{I_2}$$

When impedances are unequal

$$db = 10 \log \frac{P_1}{P_2} = 20 \log \frac{E_1 \sqrt{Z_2}}{E_2 \sqrt{Z_1}} = 20 \log \frac{I_1 \sqrt{Z_2}}{I_2 \sqrt{Z_1}}$$

DECIBEL TABLE

DB	Power Ratio	Voltage or Current Ratio	DB	Power Ratio	Voltage or Current Ratio
0	1.00	1.00	10	10.0	3.2
0.5	1.12	1.06	15	31.6	5.6
1.0	1.26	1.12	20	100	10
1.5	1.41	1.19	25	316	18
2.0	1.58	1.26	30	1,000	32
3.0	2.00	1.41	40	10,000	100
4.0	2.51	1.58	50	31,600	178
5.0	3.16	1.78	60	100,000	316
6.0	3.98	2.00	70	1,000,000	1,000
7.0	5.01	2.24	80	10,000,000	3,162
8.0	6.31	2.51	90	100,000,000	10,000
9.0	7.94	2.82	100	1,000,000,000	31,620

#### 15 TO ADD TWO NUMBERS EXPRESSED IN DB

Subtract the smaller signal from the larger to get the difference. Find this number in the difference column, move across to the add column. Add the number in the add column to the larger of the two signals being added. For example, to add -14 dBm and -20 dBm. The difference between them is 6. Across from 6 in the difference column is 1 in the add column. Add 1 to -14 dBm to get -13 dBm. -14 dBm + -20 dBm = -13 dBm. 4 dBdO + 5 dBdO = 7.6 dBdO.

Difference	Add	Difference	Add
0	3.0	10	0.4
1	2.6	11	0.3
2	2.2	12	0.25
3	1.8	13	0.22
4	1.5	14	0.2
5	1.2	15	0.12
6	1.0	16	0.10
7	0.8	17	0.08
8	0.65	18	0.00
9	0.5		

#### 18. NOISE MEASUREMENT CONVERSION

dBdO	dBmc	NPR	pwp	S/N
0	6	64	3.98	82
1	7	63	5.0	81
2	8	62	6.3	80
3	9	61	7.95	79
4	10	60	10.01	78
5	11	59	12.6	77
6	12	58	15.9	76
7	13	57	20.0	75
8	14	56	25.1	74
9	15	55	31.6	73
10	16	54	39.8	72
11	17	53	50.0	71
12	18	52	63.0	70
13	19	51	79.5	69
14	20	50	100.0	68
15	21	49	126	67
16	22	48	159	66
17	23	47	200	65
18	24	46	251	64
19	25	45	316	63
20	26	44	398	62
21	27	43	500	61
22	28	42	630	60
23	29	41	795	59
24	30	40	1000	58
25	31	39	1260	57

All units with reference to 1st tone level of ZERO dBm.  
dBdO—FIA weighted.  
dBmc—C-message weighted.  
pwp—Prolarix phonometrically weighted.

#### 17 DC RESISTANCE OF WIRE

Gauge	Resistance (Ohms) at 55°F	
	Per Mile	Per Kilofoot
16	20.5	3.9
19	41.5	7.9
22	84.5	16.0
24	125	25.2
26	115	40.0

Resistance increases approximately 0.2% per degree above 55°F.

#### 18. FREQUENCY AND WAVELENGTH

$$f_w = 3 \times 10^8 \lambda_w$$

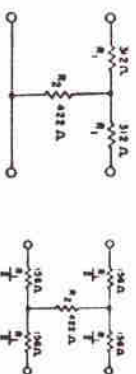
$$f_w = 3 \times 10^6 \lambda_w$$

$$f_w = \frac{3 \times 10^4}{\lambda_w}$$

$$f_w = \frac{984}{\lambda_w}$$

#### 19. RESISTANCE VALUES FOR S<sup>2</sup> TRICAL T AND H PADS

To find the value for R<sub>1</sub> and R<sub>2</sub> for a T pad multiply the values from the table by the impedance that the pad should have. For an H pad half the value of R<sub>1</sub> should be used in each side of the line.



dB	R1	R2	dB	R1	R2
0.5	0.0287	1.73775	8	0.4304	0.9466
1.0	0.0575	8.6680	9	0.4764	0.8112
1.5	0.0861	5.7630	10	0.5193	0.7031
2.0	0.1147	4.3037	11	0.5604	0.6119
2.5	0.1429	3.4270	12	0.5984	0.5364
3.0	0.1712	2.8357	13	0.6344	0.4710
3.5	0.1987	2.4168	14	0.6672	0.4158
4.0	0.2263	2.0963	15	0.6983	0.3668
4.5	0.2532	1.8483	16	0.7284	0.3231
5.0	0.2801	1.6453	20	0.8182	0.2020
6.0	0.3322	1.3389	23	0.8678	0.1423
7.0	0.3825	1.1158	25	0.8935	0.1128

#### 20. LENGTH OF ANTENNAS

Formulas assume velocity of propagation equal to 95% of the velocity of light.

$$L_{wv} = \frac{234}{F_{mc}}$$

$$L_{wv} = \frac{468}{F_{mc}}$$

(for quarter-wave antenna)

(for half-wave antenna)

#### 21. RESISTOR COLOR CODE

0 Black	4 Yellow	8 Gray
1 Brown	5 Green	9 White
2 Red	6 Blue	5% Gold
3 Orange	7 Violet	10% Silver
	20% No color	

Third color band indicates number of zeros to be added after figures given by first two color bands. But if third color band is gold, multiply by 0.1 and if silver multiply by 0.01. Do not confuse with fourth color band that indicates tolerance. Thus a resistor marked blue-red-gold-gold has a resistance of 6.2 ohms and a 5% tolerance.

## ARE YOU ONE?

In general there are two great classes of amateurs: those who are married (both male and female) and those who are single (same categories). This epistle is directed to those who are single, in an endeavor to increase the understanding between the two groups.

Let us consider the Club member who is a busy Club organizer, worker or executive, married, with children and spouse. The home telephone rings and an obviously adult voice (sometimes a member of the opposite sex) says "Hello?"

Do you then say to the ham's spouse, "Is...there?" No, you do NOT. You say, "Good evening, Mrs. (or Mr.) Spitz. This is C.Q. Smith, could I have a word with Tom (Dick, Harry or Sue, as the case may be)? The Hamming spouse is then called to the landline.

What particularly annoys the wives in the attitude a number of hams have in assuming SHE knows from the voice who YOU are. In any event, she probably feels her OM should be painting the kitchen instead of teaching code classes or explaining how to make a beam. A word to the wise--telephone manners are important, particularly if you want Tom to stay active in the Club. Also, no spouse likes to listen to one side of a protracted telephone conversation, so be brief on the landline and save general rag chews for 75 meters or Club meetings.

Another case (not strictly limited to amateurs) is the habit of just driving over to see Tom

at any time of the day or evening. This may be OK if you are a close personal friend; but it is only considerate to phone first and see if a visit is convenient. Otherwise, you may find him knee-deep in guests, booze or secretaries!

Finally, if you do go over to visit Tom, remember to leave your much loved (and worn) T-shirt at home, and turn up looking like a respectable member of the community and not a beatnik. Tom has to live there and if his neighbors see a scarecrow with six days growth and six months worth of uncut hair, and the world's oldest car (perhaps painted yellow), they could be excused for wondering how come a pillar of society like Tom has a friend like that. And when Tom explains (or his XYL) as eventually he must, the image of Amateur Radio is dealt another blow.

de DARÀ Bulletin

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## OFFICIAL BULLETIN NR 150 FROM ARRL HEADQUARTERS NEWINGTON CONN JANUARY 11 1968 TO ALL RADIO AMATEURS BT

February presents an excellent opportunity for every amateur to test his frequency measuring skills by participating in an ARRL Frequency Measuring Test. W1AW will transmit signals for measurement at 0230 GMT February 10 on approximately 3506, 7027 and 14,067 kc. A second series of test signals will be transmitted at 0530 GMT February 10 on about 3551, 7100 and 14,171 kc. Note that this is the evening of February 9, local time, for most U.S. and Canadian amateurs. Each participant will receive an individual report comparing the accuracy of his measurements with those of a professional frequency measuring laboratory. Further FMT details appear on page 97 of January QST AR

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