



# The Blurb



Newsletter of The Phil-Mont Mobile Radio Club  
Public Service Since 1949

Volume 73 Number 11

[www.phil-mont.org](http://www.phil-mont.org)

# OCT-POTA

**Phil-Mont Felt the Thrill of HF in the Great Outdoors at our First Annual OKTPOTAFEST! Check out our Groups.io for the whole story and more pictures.**



# RISING!

# Get the Net!

There's no ham radio without YOU!

Get on the air and share! Operate, cooperate, & celebrate ham radio!

## Phil-Mont's Drive Time Net

*Join us on the air every  
Monday to Friday 1700  
to 1800 EDT on:*

- 147.030 MHz (+offset 91.5 PL)
- Bucks County and North PL 88.5 (147.030)
- [Echolink W3QV-R](#)
- [ALLSTAR 47970](#)

**VHF:** 147.030 MHz (+offset 91.5 PL)

Bucks County and North PL 88.5  
(147.030)

**UHF:** 444.80 MHz Yaesu System  
Fusion WiresX

[ECHOLINK W3QV-R](#) &

[ALLSTAR 47970](#)

[EMAIL REPEATER COMMITTEE](#)

## Sunday Morning Nets

*Three Nets on three  
bands, all in a Row! Tune  
in on any or all for a  
Sunday morning 'Hello!'*

**0930 EDT:**

- 147.030 MHz (+offset 91.5 PL)
- Bucks County and North PL 88.5 (147.030)
- 2m, [Echolink W3QV-R](#)
- [ALLSTAR 47970](#)

**1000 EDT:**

75 meter Net (3.993  
MHz LSB +/-QRM)

**1030 EDT:**

10 meter Net (28.393  
MHz USB +/-QRM)

## November Net Control Schedule

11/6 - WA3GM

11/13 - KB3SJS

11/20 - K3XS

11/27 - W3AFV

**CQ! CQ! CQ!**

**Calling CQ for New  
Net Control  
Operators !**

[Click Here and Sign Up To-  
day! It's a Fun Way to Meet  
Our Members!](#)



# Club Business

**NEXT GENERAL CLUB MEETING:**

**Wednesday**

**Nov 9th**

**IN PERSON \*ONLY\***

At [Giant Supermarket 315 York Rd.](#)

[Willow Grove, PA 19090](#)

**7PM Start**

**(6PM Yack & Snack)**

**Nominations CLOSE**

**&**

**Old-Timers Night!**

**This Month's Talk:**

**Test Equipment by  
Bob WA2POW**



B-DAY	HAM	SPOUSE
11/02	N3FSC	
11/07	Denise	NS9G
11/12	KB3VLA	
11/14	N3PEG	
11/15	Edythe	WA2DTW
11/19	N3GLH	
11/22	W3AOK	
11/24	KC6OEI	
11/24	Dolores	N3PP
11/26	KC3ORH	
11/27	NY3J	
11/27	AJ3DI	
11/30	KE3YW	

## New Members

John "Muggs" Ferguson -  
KC3UDZ - Technician

Brian J Therien  
KC3KAY - General

Jeffrey M Rodgers  
KC3UTO - Technician

David F Levy  
K3DFL - General

# PMRC LABS

OPEN TO ALL!

December 10th - 10am to 2pm

10am Social/Setup

11am LAB START

Contest LOGGING WORKSHOP

LoTW setup - File Conversion

Any and all things LOGGING.

Giant Willow Grove  
315 Old York Rd  
Willow Grove, PA 19090

[Map and directions from Google Maps](#)

Beverage Service (Coffee, Tea, and soft drinks) and light snacks  
will be provided

*In exchange for FREE use of the Community Center GIANT requires*

**NO OUTSIDE FOOD or BEVERAGES**

ALL refreshments may be purchased in the store.

THIS IS FOR ALL CLUB EVENTS HELD AT THE COMMUNITY CENTER

**Community Room Rules**

Won't You Join Us...  
in ***The DENn!***

Phil-Mont's *Digital Education Net for newbies!*

**Tuesday Evenings @8:00pm**

W3QV Repeater: 147.030 MHz + 91.5  
Allstar Node: 47970

*Don't let the name fool you!*

All are welcomed to join us and play. It doesn't matter if you are new to Ham Radio, new to digital modes, or are an already experienced ham and digital operator.

**We are here to play, learn, and test our equipment.**

With the digital modes if you can do it on the repeater you can do it pretty much everywhere, *including HF.*

*So come on out, test your setup, and **HAVE SOME FUN!***

**NET CONTROLS** KC3SMW Greg NY3J Ron

Philadelphia



ARES

The Amateur Radio Emergency Service are trained licensed amateur radio operators providing radio communications as a public service in disaster situations. All licensed operators are welcome to join. To get started fill out this [ARES Registration form](#) and [submit it to Cliff Hotchkiss](#) (KC3PGT), the Philadelphia Emergency Coordinator.

**Join the  
A.R.E.S.  
Training Net**

**Every Sunday  
evening at 2100 (9:00  
PM)  
147.030 MHz**

# PHIL-MONT MOBILE RADIO CLUB, INC. 26th ANNUAL HAM RADIO "AUCTION-FEST"

Wednesday, JANUARY 11, 2023  
7PM Start  
(6PM Setup)

Ben Wilson Senior Activity Center  
580 Delmont Avenue  
Warminster, PA 18974

DIRECTIONS  
FLYER  
Item Sale Sheet

*What is AUCTION-FEST?!?!?!?*

AN AUCTION!

Bring items that you wish to sell at auction. Fill out an Item Sale Sheet for each item.  
We will auction it off!

A DONATION CENTER!

What? Bring items you no longer want or need. There will be a donation area setup in the room. Other folks will be able to take anything they want from the donation area. There will be a donation box in that area. Feel free to donate whatever you can for the item(s) you choose.

A SOCIAL EVENT OPEN TO THE PUBLIC!

Let folks know. Hams and future hams!

We have found that between the AUCTION and the DONATION area,  
(you never know what will be in either)  
there is a \*great\* opportunity for ELMERING!

Both long time and new hams will find things  
THAT THEY NEVER KNEW THEY NEEDED!!

**COME OUT AND HAVE SOME FUN**

# Membership Stats

Rank	Active Count
Board Member	7
Honorary Member	2
Member	139
Officer	4
Non-Member Affiliates	1
<b>Total:</b>	<b>153</b>

## License Class Distribution (PMRC)

License Class	Active Count	Percent
E	75	49%
G	40	36%
T	24	16%
A	11	7%
HON	3	2%
<b>Total:</b>	<b>153</b>	

## ARRL VE List (PMRC)

#	Callsign	Name
1	KE9TT	<a href="#">Walt Beattie</a>
2	WA3ADI	<a href="#">Vince Buono Jr</a>
3	K3DTC	<a href="#">Domenic T Cantarella</a>
4	KC3SMW	<a href="#">Gregory P Cheng</a>
5	N8BLK	<a href="#">Arthur F Clemons</a>
6	N1LC	<a href="#">Lamonte D Cuff</a>
7	N3PEG	<a href="#">Peg Daly</a>
8	KC3PTC	<a href="#">Timothy Dati</a>
9	K3FZT	<a href="#">Steve Davidson</a>
10	KB1JEY	<a href="#">Michael L Davis</a>
11	K3HIJ	<a href="#">E Michael Elmaleh</a>
12	W3AFV	<a href="#">Chuck Farrell</a>
13	AJ3DI	<a href="#">James G Fisher</a>
14	KC2PMW	<a href="#">Andrew J Furlong</a>
15	NS9G	<a href="#">Stephen P Getson</a>
16	W3FRB	<a href="#">William Hewitt</a>
17	K3JCP	<a href="#">Adam M Huffnagle</a>
18	K3JQH	<a href="#">Benjamin S Johns</a>
19	K3KC	<a href="#">William R Kennedy</a>
20	W3UP	<a href="#">Richard M Klein</a>
21	WA3ERQ	<a href="#">Jim Lanigan</a>
22	KA2FFP	<a href="#">James A Larkin</a>
23	WA3GM	<a href="#">Gregory J Malone</a>
24	NC3U	<a href="#">Salvatore Marandola</a>
25	KB3IV	<a href="#">Edward C Masarsky</a>
26	NS3K	<a href="#">James J Mc Closkey</a>
27	WB3IDW	<a href="#">Vincent L Pisacane</a>
28	W3AOK	<a href="#">William H Popovic</a>
29	AA3RC	<a href="#">Rich Roth Jr</a>
30	N3BKR	<a href="#">Kent D Simmons</a>
31	KZ3A	<a href="#">James P Smith</a>
32	W4GMN	<a href="#">Daniel T Wagaman</a>
33	NY3J	<a href="#">Ronald H Wenig Sr</a>
34	NW3T	<a href="#">Jerome Winbush</a>
35	KC3QFB	<a href="#">Laura A Wohlford</a>
36	N3ZP	<a href="#">Phillip J Zminda</a>

## We have moved the Club's Membership & Administration to \* HamClubOnline \*

You may access the private club roster, calendar and other member only information by visiting [www.hamclubonline.com](http://www.hamclubonline.com). *USE THE EMAIL ADDRESS* that received this email/is registered with the club.

**If it is your first time using HamClubOnline, click on the forgot password link to receive a password.**

You can update and add your membership info directly. Add your birthday for announcement on the Nets. Add ARRL skill if you are a member. Don't hesitate to ask on repeater or email the groups.io if you have any issues.

# Nominations for 2023 Now OPEN

Nomination Committee Chair: WA3GM Greg

## NOMINATE HERE

### Officer Positions:

President: AJ3DI Jim

Vice President: AA3RC Rich

Treasurer: NS3K Jim

Secretary: K3DFG Dave

### 3 Board Positions

Expiring are: N1LC-NC3U-W3UP

### Nominations:

N3PEG Peg

N3ZP Phil

KC3SMW Greg

Thank you all. ALL others throw your hats into the ring! The MORE the MERRIER.  
We will find a ROLE for you to assist with.  
RADIO, NOT PERSONALITIES!

[Rules of Election](#)

**Nominations will close at November General Meeting**

**Election will be at December General Meeting**

[Description of Duties](#) are in [Bylaws](#)



# The Prez Sez...

## Hello Phil-Mont,

Fall. Leaves dropping. Undone things dropping as we DO more things. Like the leaves, we become more colorful as we DO more things.

PMRC Radio Labs - PACKET edition.

APRS - Packet - interfaces - Winlink - VARA

Great job Greg KC3SMW (as always)

Preso planted the seeds and followed with reaping what you sow!

Feel free to keep playing/asking questions, and talking about this on the repeater and groups.io. Many more assets are becoming available throughout the area.

How about the October SET. All the local ARES groups preparing to assist with communications in the event of an emergency.

**Philadelphia:** <http://phlares.org/>

**Chester County ARES/RACES:** [CCAR](#)

**Montgomery County ARES:** [MCAR](#)

**Bucks County ARES:** [BCARES](#)

**Delaware County ARES:** [DelCo ARES](#)

**Southern New Jersey** [SNJ ARES](#)

**Eastern PA Section:** [EPA ARES](#)

Look into getting involved in your area.

Amazon Smile: \$22.69 donation from the AmazonSmile Foundation as a result of AmazonSmile program activity between April 1 and November 30, 2022.

See the website for how to add Phil-Mont as your Amazon Smile recipient.

[AMAZON SMILE LINK](#)

Another GREAT test session by our VE Team and our 7 candidates.

Our Contest Chair, Phil, N3ZP with a presentation on contesting. Perfect timing as we are now in CONTEST SEASON.

Phil's presentation as well as many of our presentations and events ARE ALWAYS available at: [PAST Presentations/EVENTS](#) on our website UNDER the current meeting information.

The [DENn](#) every Tuesday night 8pm. What an amazing asset.

[DENn past and current info.](#)

# The Prez Sez...

In case you missed it, our member Drew, KC3UKF, is looking for some Amateur Radio items for his workplace. Phila. Public Library.










More info here: <https://philmontmobileradioclub.groups.io/g/main/message/3364>

OKT POTA FEST weekend at Fort Washington State Park.  
Whenever we get together in real life (IRL) the magic happens.

Read about it here: <https://philmontmobileradioclub.groups.io/g/main/topic/94523605#3386>

And here: <https://philmontmobileradioclub.groups.io/g/main/topic/94421158#3352>

POTA numbers as of October 25th (more to come)

Date	Callsign	CW	Data	Phone	Total QSOs
2022-10-23	 N3ZP	0	2	0	2
2022-10-23	 WB3JAC	0	0	13	13
2022-10-22	 AA3RC	0	0	13	13
2022-10-22	 N3ZP	0	23	0	23
2022-10-22	 KC3UFO	0	11	0	11
2022-10-22	 WB3JAC	0	0	5	5
2022-10-22	 KC3TUY	0	0	20	20
2022-10-22	 WA3GM	29	0	0	29
2022-10-22	 KC3SMW	0	0	31	31

# The Prez Sez...

We've had a Pony and Sunshine October!



ALMOST perfect.....ALMOST.

A big part of OUR drive over the past 2 years has been Amateur empowerment.

We have opened \*all\* things up in the Club for everyone to utilize and enjoy. The hope was, and still is, for folks to take ownership and give back, whenever and wherever needed, when possible.

I know this is unusual. Some think it's chaotic. It's not. It's community. We are all Amateur Radio operators. That's the community. There are NO preferred members or class of Amateur (outside of license class). WE ARE ALL PEERS.

We have dedicated teams and folks that do our Net Control duties for all of our nets. Sometimes LIFE gets in the way. Most of the time, these issues are covered. There are a few times that they may slip through the cracks.

I WANT YOU ALL TO KNOW, everyone who participates in any of our NETS, if you are staring at a silent radio when a net should be on

# The Prez Sez...

YOUR THOUGHT process should NOT be “I guess there is NO NET”.

## IT SHOULD BE

### ***“THIS IS MY OPPORTUNITY”***

EVERYONE get on one knee and bow your head. If you can't get on one knee, or if you could and couldn't get back up; just bow your head.

I am placing my light saber on your right shoulder.

BY THE POWER VESTED IN ME by the Phil-Mont BOARD of DIRECTORS,

I make YOU ALL EMERGENCY NET CONTROL OPERATORS.

Congratulations. If you ever wondered if it would be appropriate for you to JUMP IN and take a vacant net. NOW YOU KNOW IT IS.

This Club is a DO-OCRACY. NO ONE will ever get in trouble/scolded for DOING.  
The only asshats that would have anything to say DON'T DO A DAMN thing so THEY DON'T mean a damn thing to me.

You don't have to be perfect. NONE OF US ARE. Do the best you can; it's infinitely better than those doing nothing. AMATEUR radio...not professional.

Dick, W3UP, jumped in and filled a vacant net. THANK YOU DICK.

What would have been an affirmation of what we have been trying to do would have been someone outside of the Net Control Teams jumping in.

You may not have known that was an option. IF YOU ARE READING THIS, now you know it is.

If you are nervous about the scripts....don't be. Do the best YOU can. The scripts are available on the website, under the Net Schedule Chart if you really want them. WE ALL WOULD APPRECIATE whatever you did in the absence of a net.

# The Prez Sez...

We are in Election/Nomination season with ALL nominations closing at the November General Meeting.

I have personally been getting compliments from many folks about the direction of the club. I don't do well with that. I appreciate them, but words DON'T MEAN much to me. OUT or IN. My mouth has gotten me in a lot of trouble. I don't get offended by words, and I *may* offend. Sorry if I offend you; it is not my intention.

**I am NOT PART 97 FRIENDLY IRL.**

The BEST way to compliment me and this club's direction IS BY DOING. Nothing else matters to me. It really is that simple. PLAY RADIO. WE ARE A RADIO CLUB. I don't need or want deep thinkers. I want DOERS.

What I said previously about the NET, goes for everything. IF YOU WANT to DO A THING, let us know HOW WE CAN ASSIST you.

There is MORE WORK to do to make all of this really work.

HELP US make it work. Get involved. Please.

NOVEMBER is OLD-TIMERS month. They are not old; they ARE LONG TIME HAMS. We will be celebrating Amateurs that have been licensed for 50 plus years. We are fortunate to have them guiding us!

We will also be having a presentation on TEST EQUIPMENT for YOUR SHACK by Bob WA2POW. You may hear all of us asking Bob to look over equipment when we have problems. Bob is a great equipment tech (and engineer) and will begin sharing some of his knowledge with US!

EVERY SINGLE MINUTE remember, this is YOUR HOBBY, YOUR Club, YOUR repeaters. USE them. MONITOR them. BE A REPEATER GREETER. Answer calls when you can. Let's try to leave...

**NO CALL UNANSWERED.**

PLAY\*BREAK\*LEARN

jim fisher

AJ3DI

[www.aj3di.com](http://www.aj3di.com)

HamshackHotline ext: 14423

"Do, or do not. There is no 'try.'"

-- Jedi Master Yoda



# GENERAL AMATEUR OPERATIONAL DATA

Copyright Virgil Sipes  
W7YEN  
w7yen@aol.com

### PHONETIC USER LIST

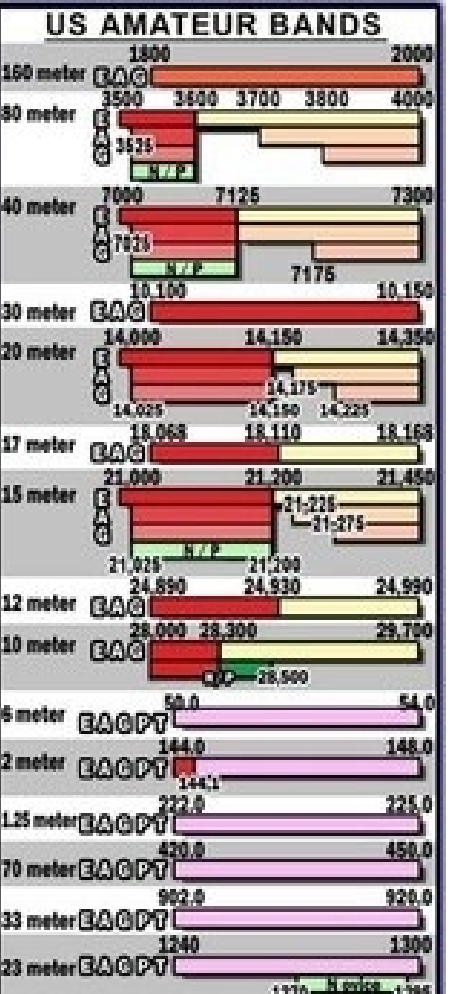
Current List	Optional List	WWII List
ALFA	AMERICA	ABLE
BRAVO	BOSTON	BAKER
CHARLIE	CANADA	CHARLIE
DELTA	DENMARK	DOG
ECHO	ENGLAND	EASY
FOXTROT	FRANCE	FOX
GOLF	GERMANY	GEORGE
HOTEL	HONOLULU	HOW
INDIA	ITALY	ITEM
JULIETT	JAPAN	JIG
KILO	KILOWATT	KING
LIMA	LONDON	LOVE
MIKE	MEXICO	MIKE
NOVEMBER	NORWAY	NANCY
OSCAR	ONTARIO	OBOE
PAPA	PORTUGAL	PETER
QUEBEC	QUEBEC	QUEEN
ROMEO	RADIO	ROGER
SIERRA	SANTIAGO	SUGAR
TANGO	TOKYO	TARE
UNIFORM	URUGUAY	UNCLE
VICTOR	VICTORIA	VICTOR
WHISKEY	WASHINGTON	WILLIAM
XRAY	WASHTON	XRAY
YANKEE	YOKOHAMA	YOKE
ZULU	ZANAIBAR	ZEBRA

### Frequently Used Q Signals

QRL - Are you / I am - BUSY  
 QRN - Other Station Interference (1 TO 5)  
 QRN - Static Interference (1 TO 5)  
 QRO - Shall I / Will you - INCREASE POWER  
 QRP - Shall I / Will you - DECREASE POWER  
 QRT - Shall I / Will you - STOP SENDING  
 QRU - I / You - HAVE NOTHING for Me / You  
 QRX - I shall / Will you - CALL AGAIN AT (time & freq.)  
 QRZ - Who is - CALLING, You are BEING CALLED - (freq.)  
 QSA - What is my / Your - SIGNAL STRENGTH - in (1 to 5)  
 QSB - Are my / Your - SIGNALS FADING  
 QSK - I can / Can you - BREAK-IN  
 QSL - I can / Can you - ACKNOWLEDGE RECEIPT  
 QSO - I can / Can you - COMMUNICATE (direct or relay) WITH (station & freq.) -  
 QSP - I can / Will you - RELAY  
 QST - General Call to all Amateurs preceding a MESSAGE  
 QSY - Shall I / Will you - CHANGE FREQUENCY  
 QTH - My / What is your - LOCATION

### The RST System

R (Readability)	S (Signal Strength)	T (Tone)
1 - UNREADABLE	1 - VERY FAINT	1 - VERY BAD
2 - POOR	2 - QUITE WEAK	2 - VERY HARSH
3 - DIFFICULT	3 - WEAK	3 - RAW-BROAD
4 - GOOD	4 - FAIR	4 - ROUGH
5 - PERFECT	5 - FAIRLY GOOD	5 - FAIR
	6 - GOOD	6 - MEDIOCRE
	7 - FAIRLY STRONG	7 - GOOD
	8 - STRONG	8 - VERY GOOD
	9 - VERY STRONG	9 - PURE TONE



### VOLUNTARY HF BAND PLANS

Band	Frequency Range	Mode / Notes
160M	1.800-1.830	CW, DATA, other narrowband
160M	1.810	QRP CW Calling
160M	1.830-1.840	CW, DATA, etc.
160M	1.840-1.850	CW, SSB, etc.
160M	1.850-2.000	CW, SSB, PHONE, etc.
80M	3.500-3.510	CW DX
80M	3.590	RTTY DX
80M	3.580-3.620	DATA
80M	3.620-3.635	Auto controlled DATA stations
80M	3.710	QRP Novice/ Tech CW Calling
80M	3.790-3.850	DX
80M	3.845	SSB
80M	3.885	AM calling
80M	3.985	QRP SSB
40M	7.040	RTTY DX QRP CW Calling
40M	7.075-7.100	EXULIF (Phone only)
40M	7.080-7.100	DATA
40M	7.100-7.105	Auto Controlled DATA stations
40M	7.110	QRP Novice/ Tech CW calling
40M	7.171	SSB
40M	7.285	QRP SSB calling
40M	7.290	AM calling
30M	50.100-50.140	QRP CW calling
30M	50.200	SSB DX calling
30M	50.125	SSB Local calling
30M	50.600-51.000	Experimental RTTY calling
30M	50.700	DX Pacific
30M	50.800-51.100	FM Repeater
30M	51.100-52.000	FM simplex
30M	52.000-52.050	DX Pacific
30M	52.000-53.000	FM repeater and simplex
30M	53.000-54.000	Radio Control 50 channels spaced 100 kHz
20M	14.060	QRP CW calling
20M	14.070-14.095	DATA
20M	14.095-14.0995	Auto controlled DATA stations
20M	14.100	SP/NOCT beacon
20M	14.100-14.112	Auto controlled DATA stations
20M	14.230	SSB
20M	14.285	QRP SSB calling
20M	14.290	AM calling

### SHORTWAVE LISTENING BANDS

Band	Frequency	Band	Frequency
120	2.300-2.495	25	11.650-12.050
90	3.200-3.400	22	13.600-13.800
75	3.900-4.000	19	15.100-15.600
60	4.750-5.060	16	17.500-17.900
49	5.950-6.200	13	21.450-21.850
41	7.100-7.300	11	25.800-26.100
100	9.500-9.900		

### FREQUENCY STANDARD STATIONS

Call Sign	Location	Frequency (MHz)
WWV/WWVB	USA	2.5, 5, 10, 15, 20
BSF	TAIWAN	5, 15
CHU	CANADA	3.330, 7.335, 14.670
FFH	FRANCE	2.500
IAM/IBF	ITALY	5.000
JJY	JAPAN	2.5, 5, 8, 10, 15
LOL	ARGENTINA	5, 10
RID	IRKUTSK	5.004, 10.004, 15.004
RWM	MOSCOW	5, 4.995, 9.995, 14.990
VNO	AUSTRALIA	2.5, 5
ZSC	SOUTH AFRICA	4.291, 8.481, 12.724

### RF SPECTRUM CLASSIFICATION

Band	Frequency Range	Unit
VLF	Very Low Frequencies	3 - 30 KHz
LF	Low Frequencies	30 - 300 KHz
MF	Medium Frequencies	300 - 3000 KHz
HF	High Frequencies	3 - 30 MHz
VHF	Very High Frequencies	30 - 300 MHz
UHF	Ultra High Frequencies	300 - 3000 MHz
SHF	Super High Frequencies	3 - 30 GHz
EHF	Extremely High Frequencies	30 - 300 GHz

### COMMUNICATION MODES

MODE	USAGE	BANDWIDTH
CW	Morse code communication	<300 Hz
SSB Voice	(Single Side-Band, no carrier)	~3 kHz
AM modes	(Double Side-Band, full carrier)	~6 kHz
FM	(Narrow-Band FM available for HF use)	Variable (wide)
PM	(Phase modulation, similar to FM)	~3 kHz
DIGITAL	RTTY, Packet, AMTOR, APRS, Computer, FACTOR, G-TOR, CLOVER, PSK31, etc.	Variable (Many with low bandwidths. May be used in CW band.)
IMAGE	SSB, (Slow-Scan TeleVision)	~3 kHz (HF, VHF)
	FSTV, (Fast-Scan TeleVision), Facsimile (print)	~6 MHz (HF & above) ~300 Hz

### Other Bands

2300 - 2310 MHz	2390 - 2450 MHz
All	3300 - 3500 MHz
Licensees	5550 - 5925 MHz
except	10.0 - 10.5 GHz
Novice	24.0 - 24.25 GHz
allowed	47.0 - 47.2 GHz
	75.5 - 81.0 GHz
	119.98 - 120.02 GHz
	142 - 149 GHz
	241 - 250 GHz
	All above 300 GHz

CW, PHONE, RTTY, DATA, IMAGE  
 CW, RTTY, DATA  
 CW, PHONE, IMAGE  
 CW, PHONE, RTTY, DATA, MCW, TEST, IMAGE  
 CW  
 CW, SSB PHONE  
 Extra  Advanced  General  
 Technician Plus  Technician  Novice

Name	Common Notation	Math Notation	Exponent	Prefix
Quadrillion	1,000,000,000,000,000,000	10 <sup>15</sup>	15	Qua (Q)
Trillion	1,000,000,000,000,000	10 <sup>12</sup>	12	Tri (T)
Billion	1,000,000,000,000	10 <sup>9</sup>	9	Bil (B)
Million	1,000,000	10 <sup>6</sup>	6	Mega (M)
Thousand	1,000	10 <sup>3</sup>	3	Kilo (K)
Hundred	100	10 <sup>2</sup>	2	Hecto (H)
Ten	10	10 <sup>1</sup>	1	Deca (D)
One	1	10 <sup>0</sup>	0	
One Tenth	0.1	10 <sup>-1</sup>	-1	Deci (D)
One Hundredth	0.01	10 <sup>-2</sup>	-2	Centi (C)
One Thousandth	0.001	10 <sup>-3</sup>	-3	Milli (m)
One Millionth	0.000001	10 <sup>-6</sup>	-6	Micro (μ)
One Billionth	0.000000001	10 <sup>-9</sup>	-9	Nano (n)
One Trillionth	0.000000000001	10 <sup>-12</sup>	-12	Pico (p)
One Quadrillionth	0.00000000000001	10 <sup>-15</sup>	-15	Femto (f)
One Quintillionth	0.0000000000000001	10 <sup>-18</sup>	-18	Atto (a)

### Ohm's Law

$E = \text{Voltage}$   $I = \text{Current}$   
 $R = \text{Resistance}$   $P = \text{Power}$

Resistors (In Parallel) or Capacitors (In Series)  
 Substitute "C" for "R"

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

$\text{dB Power}$   
 $N_{dB} = 10 \log_{10} \left( \frac{P_2}{P_1} \right)$

$\text{dB Voltage}$   
 $N_{dB} = 20 \log_{10} \left( \frac{V_2}{V_1} \right)$

Resonant Frequency  $f_r = \frac{1}{2\pi \sqrt{LC}}$

### CENTIGRADE - FAHRENHEIT CONVERSION

Cent. F	Cent. F	Cent. F	Cent. F	Cent. F	Cent. F
-40.0	-40	-17.8	0	+7	+32
-37.3	-38	-15.0	+5	+16.3	+61
-34.7	-35	-12.2	+10	+31.4	+79
-32.0	-33	-9.4	+15	+36.8	+95
-29.4	-30	-6.7	+20	+42.2	+108
-26.7	-28	-3.9	+25	+47.7	+118
-24.0	-25	-1.1	+30	+53.2	+128
-21.3	-22	1.7	+35	+58.7	+138
-18.7	-19	4.5	+40	+64.2	+148
-16.0	-17	7.3	+45	+69.7	+158
-13.3	-14	10.1	+50	+75.2	+168
-10.7	-11	12.9	+55	+80.7	+178
-8.0	-9	15.6	+60	+86.2	+188
-5.3	-6	18.4	+65	+91.7	+198
-2.7	-3	21.1	+70	+97.2	+208
0.0	0	23.9	+75	+102.7	+218
2.7	3	26.7	+80	+108.2	+228
5.3	6	29.4	+85	+113.7	+238
8.0	9	32.2	+90	+119.2	+248
10.7	11	35.0	+95	+124.7	+258
13.3	12	37.8	+100	+130.2	+268
16.0	13	40.6	+105	+135.7	+278
18.7	14	43.5	+110	+141.2	+288
21.3	15	46.3	+115	+146.7	+298
24.0	16	49.1	+120	+152.2	+308
26.7	17	52.0	+125	+157.7	+318
29.4	18	54.9	+130	+163.2	+328
32.0	19	57.8	+135	+168.7	+338
34.7	20	60.7	+140	+174.2	+348
37.3	21	63.6	+145	+179.7	+358
40.0	22	66.5	+150	+185.2	+368

### ELECTROMAGNETIC SPECTRUM

Radiation	Frequency	Wavelength
X-ray	3 x 10 <sup>16</sup> THz & higher	10 Å & shorter
Ultraviolet	800 THz - 3 x 10 <sup>16</sup> THz	4000 - 10 Å
Visible light	400 THz - 800 THz	8000 - 4000 Å
Infrared	300 GHz - 400 THz	1mm - .0008 mm
Radio (RF)	10 kHz - 300 GHz	30,000 km - 1 mm

THz = Terahertz = 10<sup>12</sup> Hertz  
 GHz = Gigahertz = 10<sup>9</sup> Hertz  
 Å = Angstrom = 1 x 10<sup>-10</sup> meter

# The Last Page



## *The Blurb* wants to hear from YOU!

Got a hot lead on antenna design? Soldering up a special circuit? Digging some new DSP? Reminiscing about some retro receivers? Maybe you have some goodies for sale.

Click the big blue envelope and [tell us your tale!](#)

## Put a Smile on Everyone's Face!

It's easy: Every purchase you make through our club's Amazon Smile page donates part of that purchase to the club and helps us fund our scholarship, activities, and more. [Click the Amazon smile link and help us help each other!](#)



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