



## Cathay December 2017

[www.cathayradio.org](http://www.cathayradio.org)

revised 12/12/2017

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**Mission:** The Cathay Amateur Radio Club is basically an active social club of Ham Radio Operators and their spouses. We support local community requests for HAM emergency communications. Several of us are trained in CPR/ First Aid and are involved with community disaster preparedness.

**Monday Night Net Time:** 9 PM Local Time/PST,

~~Frequencies: 146.67MHz - 600KHz PL85.4 and 442.70 +5MHz PL 173.8. The repeaters are linked only during the CARC Monday night net.~~

### **QSY Change to transmission on another frequency / Repeater:**

Repeater: WB6TCS - RX 147.210, TX 147.810, Offset +0.6 MHz, CTCSS/Tone PL100 Hz

Repeater: N6MNV UHF 442.700 Mhz, Offset +5MHz, CTCSS/Tone PL 173.8 Hz in South San Francisco is cross linked every Monday Night Net at 9 p.m. to WB6TCS 2 meter repeater.

The CARC Monday night net is the best way to find out the latest club news. All check-ins are welcome.

## **Message from the President: George Chong, W6BUR**

Hello CARC Members and Friends;

As many of you are well aware that our normal Monday Night Nets using W6BUR Repeater has been running into heavy radio interference. Denis L. Moore – WB6TCS has come to our rescue and has generously allowed the CARC club to use his repeater: WB6TCS for our Monday night nets.

Until further notice, our Monday night nets will use Denis L. Moore's 2 meter repeater and Howard Louie's UHF cross Linked repeater.

Repeater: WB6TCS – Denis L. Moore  
Location: Oakland, Oakland Hills County: Alameda State: California  
RX 147.210 TX 147.810 Offset +0.6 MHz CTCSS/Tone PL 100 Hz

Repeater: N6MNV - Howard Louie  
Location: South San Francisco County: San Mateo State: California  
RX 442.700 TX 447.700 Offset +5 MHz CTCSS/Tone PL 173.8 Hz

I want to wish all our CARC members and friends a very Happy Holidays.

I hope you all had a good Thanksgiving dinner.

Several CARC members have requested that we change the CARC Monday Night Net time to an earlier time. They like an early time like 2030 Hrs. That would be a half hour sooner than the present time of 2100 Hrs.

Please email me [W6BUR@comcast.net](mailto:W6BUR@comcast.net) or when you are on the Monday night net express your thoughts as to your choice of having the CARC Monday Night Nets on either at 8:30 pm or 9:00 pm.

### **CARC Christmas Party Announcement**

Yes, the Christmas holidays is already upon us! On Saturday December 16, 2017 Ed Fong - WB6IQN will be hosting the CARC Annual Christmas Party at his home, further detail are in this newsletter.

### **Veteran Day Luncheon Recap Intro**

We had a great turn out for our Nov 11, 2017 luncheon at the Buffet Fortuna in Oakland.

We had 12 very hungry folks show up for the delicious Asian Style Buffet food. We ate well past our time limit of 2 hours and were there close to 3pm and by that time we could not eat any more food.

## Silent Key



Long time CARC Member, Joe Lee – W6DOB age 90 passed away in his sleep in the early morning hours of Monday November 20, 2017. Joe was born in San Francisco on September 18, 1927. He spent his early childhood years in San Francisco and later grew up in Oakland.

During WWII Joe Lee served in the US Army as a Tank commander in Alaska and was in the Army Airborne European Theatre of Operations (ETO).

Later in life Joe taught auto mechanics classes at the College of Alameda. I took his automotive class and I purposely flunked the class so I could retake his class because I enjoyed it so much. I shall miss Joe

Among the HAM community, Joe Lee was well known as a top notch CW radio communicator and message handler. He is one guy that did all his talking via "the fist". Yes he was the ultimate CW operator with a very distinct style that was his signature on the net.

Joe would CW his call sign W6DOB first, then followed by a multi digit number which indicated how many messages he handled for that month in the QST Public Service column. I believed he logged well over 60 contacts/messages each month using CW and telephone. This all occurred before cell phone technology ever existed.

As a Cathay Radio member Joe Lee was invaluable with helping out with the many club activities that included organizing the many memorable Chinese style banquets we had at the Silver Dragon restaurant in Oakland. Joe even recruited into the club your CARC editor – Rodney Yee – KJ6DZI. I shall miss Joe Lee as he was a friend and taught me volumes of knowledge in automotive technology.

The enclosed picture of Joe Lee – W6DOB was taken during the CARC Veteran's Day luncheon held at the Buffet Fortuna Restaurant on Sunday November 11, 2012. Joe had selected the Buffet Fortuna Restaurant for our annual Veteran's day luncheons that we still continue to visit up to this very day.

Joe's wife Stella is being comforted by their son Guy and daughter Joanne.

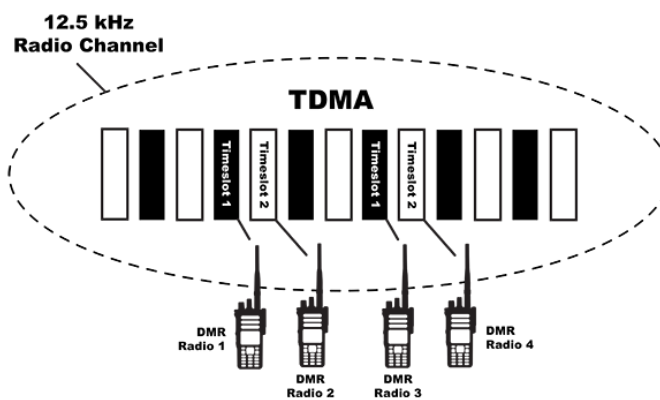
## **Tech Article Introduction**

CARC member Ed Fong – WB6IQN has written up an introductory article about Digital Mobile Radio, the newest digital radio protocol. DMR uses a 2-slot (channel) Time Division Multiple Access (TDMA) Communications.

The following is an excerpt from: <http://dmrassociation.org/dmr-key-benefits.html>

DMR enables a single 12.5 kHz channel to support two simultaneous and independent calls. This is achieved using TDMA, Time Division Multiple Access.

Under TDMA DMR retains the 12.5 kHz channel width and divides it into two alternating timeslots A and B (illustrated in figure 1 below) where each timeslot acts as a separate communication path. In figure 1 Radios 1 and 3 are talking on time slot 1 and Radios 2 and 4 are talking on timeslot 2.

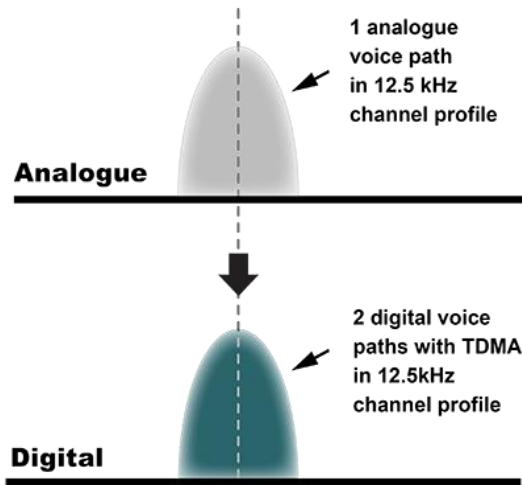


**Figure 1: 2 timeslot TDMA structure of DMR**

Each communication path is active for half of the time in 12.5 kHz of bandwidth, each uses an equivalent bandwidth of half x 12.5 kHz or 6.25 kHz. This is known as having an efficiency of one talk path per 6.25kHz of spectrum.

However with DMR the channel as a whole maintains the same profile as an analogue 12.5kHz signal. This means that DMR radios operate in the licence holders existing 12.5 kHz or 25 kHz channels; there is therefore no need for re-banding or re-licensing but at the channel capacity is doubled. This is illustrated in diagram 2 below.

This TDMA approach to increasing call capacity in a given bandwidth is very well tried and tested. TETRA and GSM cellular mobile – two of the world's most widely adopted two-way radio communication technologies – are TDMA systems. The US public safety radio standard, P25, is also currently evolving its Phase II specifications to two-time slot TDMA.



**Figure 2: Analogue to digital migration with DMR systems**

FDMA, Frequency Division Multiple Access, an alternative approach to increasing capacity splits 12.5 kHz or 25 kHz channels into two or more discrete 6.25 kHz channels. Theoretically radios working in 6.25 kHz FDMA are able to squeeze two new channels side by side in an old 12.5 kHz channel.

### **CARC Final Wrap-up News**

The irony of Joe Lee's picture from the 2012 CARC Veteran Day's Luncheon and this newsletter coverage of the 2017 CARC Veteran's Day's Luncheon is not lost upon me nor our CARC membership.

I wish to thank our CARC members that set aside their valuable time to participate in our Monday night's nets.

Chat sub s'em to all you CARC members! - George W6BUR.

### **Public Service Announcements**

#### **HAM CRAM / HAM Licensing**

For upcoming HAM Licensing locations please refer to:  
<http://www.arrl.org/find-an-amateur-radio-license-exam-session>

#### **Auxiliary Communications Service (ACS)**

The Auxiliary Communications Service (ACS) was organized by the San Francisco Office of Emergency Services (OES) following the 1989 Loma Prieta Earthquake to

support the communications needs of the City and County of San Francisco when responding to emergencies and special events.

The Auxiliary Communications Service holds General Meetings on the third Tuesday of each month at the San Francisco Emergency Operations Center, 1011 Turk Street (between Gough Street and Laguna Street), from 1900 hours to 2100 hours local time. All interested persons are welcome to attend.

The ACS Net begins at 1930 hours (7:30 p.m.) local time each Thursday evening, on the WA6GG repeater at 442.050 MHz, positive offset, tone 127.3 Hz. The purpose of this net is to practice Net Control skills, practice checking in with deployment status in a formal net, and to share information regarding upcoming ACS events. Guests are welcome to check in. ACS Members should perform Net Control duty on a regular basis. On the second Thursday of each month, the net will be conducted on the output frequency of the WA6GG repeater, 442.050 MHz no offset, tone 127.3 Hz, simplex.

For more information, please attend an ACS meeting or check in on a net, or call 415-558-2717.

Upcoming meetings: Tuesday 7pm, January 16, 2018  
Tuesday 7pm, February 20, 2018

### **Gilbert Gin (KJ6HKD)**

Free Disaster Preparedness Classes In Oakland:  
<http://www.oaklandnet.com/fire/core/index2.html>

CORE is a free training program for individuals, neighborhood groups and community-based organizations in Oakland. The underlying premise is that a major disaster will overwhelm first responders, leaving many citizens on their own for the first 72 hours or longer after the emergency.

If you have questions about the recertification process, you may contact the CORE Coordinator at 510-238-6351 or [core@oaklandnet.com](mailto:core@oaklandnet.com).

### **Free Disaster Preparedness Classes In San Francisco – NERT Taught by San Francisco Fire Department (SFFD).**

<http://sf-fire.org/calendar-special-events>

#### **Upcoming events**

#### **December 2017**

16 NERT training Day & Holiday Party  
registration open soon

SVP to [sffdnert@sfgov.org](mailto:sffdnert@sfgov.org) or call 415-970-2024 to register.

Visit [www.sfgov.org/sffdnerf](http://www.sfgov.org/sffdnerf) to learn more about the training, other locations, and register on line. Upcoming Special NERT Events.

### **San Francisco Police Department: Auxiliary Law Enforcement Response Team (ALERT)**

The Auxiliary Law Enforcement Response Team (ALERT) is a citizen disaster preparedness program designed. The ALERT program is for volunteers 16 years of age or older, who live, work, or attend high school in San Francisco.

Graduates of the San Francisco Police Activities League (P.A.L) Law Enforcement Cadet Academy are also eligible to join.

ALERT volunteers will first complete the Fire Department's Neighborhood Emergency Response Team (NERT) ([www.sfgov.org/sfnert](http://www.sfgov.org/sfnert)) training and then graduate into an 8 hour Police Department course specifically designed for ALERT team members.

ALERT members will work closely with full-time and/or Reserve Police Officers in the event they are deployed after a disaster. The Basic ALERT volunteer will have no law enforcement powers other than those available to all citizens.

#### **SFPD ALERT Training**

The next SFPD ALERT training class has been scheduled for Sat January 27, 2018. The class will be held at the San Francisco Police Academy, in the parking lot bungalow, from 8am-5pm (one hour lunch break) on Saturday.

IMPORTANT- All participants must complete the background interview process in order to be eligible to attend the ALERT training class.

Eligible ALERT participants may register for a training class by contacting the ALERT Program Coordinator, Mark Hernandez, at [sfpdalert@sfgov.org](mailto:sfpdalert@sfgov.org), or by telephone at 415-401-4615.

#### **SFPD ALERT Practice/Training Drill**

All active/trained ALERT members are asked to join us for our next training drill, scheduled for an evening on 7:00pm – 10:30pm Saturday February 3, 2018. Details will be emailed to active ALERT members, prior to the date of the exercise. Participation is not required, but strongly encouraged.



For more information on the San Francisco Police Department ALERT Program, email us at [sfpdalert@sfgov.org](mailto:sfpdalert@sfgov.org), or call Sergeant Mark Hernandez (SFPD, Ret.), SFPD ALERT Program Coordinator, at (415) 401-4615.

For additional information on the web please refer to:

<http://sf-police.org/index.aspx?page=4019>

## **CARC 2017 Veteran's Day Luncheon Recap**

By Rodney Yee – KJ6DZI

The CARC had one of our best turnouts – 12 folks attended the CARC Veteran's Day Luncheon – Saturday Nov 11, 2017 that was held at the Buffet Fortuna in Oakland.



Our CARC group at the 2017 Veteran's day luncheon

The food was very good and no doubt enhanced by the good conversation. Some of us stayed at the restaurant until 3:00 pm, well past the normal time limit set by the restaurant.

Of course we had the "Mayor of Oakland Chinatown" in our little group and therefore we received a very special dispensation on the posted time limit from the restaurant. That special person in our group wishes to remain anonymous so I am not at liberty to review his/her identity at this time! LOL!





Left to right: Avery Mew -K6MEW, John Tim – TW6QNT, and Dave Chan – WZ6X



Left to right: Gary Gin – KN6LV and Avery Mew – K6MEW



Left to right: CY Moy – WB6TCF and Gilbert Gin - KJ6HKD



Left to Right: Chris Gin – KE6FOX, George Chong – W6BUR, and Dennis Lee – AH6KD



Left to right: Hetty Chong – WB6SHU, Alicia – Grand daughter of John Tim

- Rodney Yee



## 2017 CARC Christmas Party Announcement

by Ed Fong

**Christmas Party** – Saturday December 16, 2017 from 6-10 PM

**Format:** Potluck – bring your favorite dish.

**Door Prize** - Btech UV24x4 Quand band 25 watt transceiver

**Host:** Ed Fong

**Where:** 1163 Quince Ave. Sunnyvale, CA

Best directions given on [www.googlemaps.com](http://www.googlemaps.com) Call if you get lost: 408-245-8210

Have you ever heard of California Foodie Events? Never been to one? Here is your chance. Not only that, it is FREE to all attendees. Just bring a dish to share.

If you have ever been to our Cathay Radio Christmas Party, you know this is the event to taste foods from all over the world.

Does not matter whether you like – barbecue ribs, salads, seafood, Chinese, Mexican, Italian, Korean, it will be there. All kinds of desserts served at the dessert table. Get ready to eat your heart out and meet new friends as well.



Above is a picture of some of the food at last year's blowout Christmas Party.

Get a chance to meet some really cool folks that are movers and shakers in the Silicon Valley. Dr. Steven Stearns, Keith Synder, Ron Quan, Nick Cassarino, Jim Walker, Austin Lu, Brenna Fong, to name a few.

Folks that have participated through the year at our various events will receive one raffle ticket - no charge at the door. This will make you eligible for the grand prize.

This is our way of saying thank you for your support during the year at the events we have held. If you already have one of these radios, you can swap it for cash.

This year we have outdone ourselves once again. The door prize will be the new BTECH UV25 x4 a 25 watt Quad band mobile by Baofeng. It covers 2 meters, 220 MHz, and 70cm. Also covers 350-400 MHz which is not a ham band in the US.

This is a great example of great things come in small packages. It has full color display that is fully programmable where every line can be a different color. You have got to see this radio to believe it. Is it the only radio I know that has 4 VFO's.



**1<sup>st</sup> Prize: Baofeng's UV25 x4** new Triband Mobile 25 watt transceiver.

This radio boast 200 memories, full software programmability, great bullet proof front end with 0.25 uV sensitivity, full FM broadcast radio, direct microphone key pad entry, absolutely the best color display out there and more.

If you have been looking to get on 220 MHz, this is the latest and

greatest. You will be a proud owner of one of these radios.

The Frequency coverage:

- 65-108 MHz – FM broadcast – receive only
- 136-174 MHz – VHF – TX/RX
- 210-230 MHz - TX/RX
- 350-400 MHz TX/RX (not an amateur band in the US)
- 400- 520 - MHz - TX/RX

Full CTSS and DCS coding, Power – 10/25 watt (user programmable)

I will have this radio preprogrammed to most of the Bay Area VHF 2 meter, 220 MHz and 70cm repeaters. I will gladly add any free of charge to the winner. Of course we will have many other prizes such as state of the art cool items: LED 3 watt flashlight, digital multi-meter, tools, etc.

So mark your calendars. You must be present to win.

- Ed Fong

## Tech Article

### Digital Mobile Radio (DMR)

By Edison Fong *WB6/QN*

November 12, 2017

Why DMR? There are basically three competing systems for VHF/UHF digital voice for amateur radio. D-STAR by Icom, Yaesu System Fusion (C4FM) and then there is DMR by Motorola (Mototrbo).

The primary reason I looked into a digital format was to communicate with my daughter Tessa (KJ6QXM) who is a 3<sup>rd</sup> year engineering student at Boise State University. HF radio communications was not practical and probably not even very reliable with the band conditions so poor.

The Icom D-Star is WAY too expensive at about \$400 a radio. I would need two so that will put me slightly under \$1k. The Yaesu System Fusion (C4FM) radio is about the same price as the Icom D-Star radio. Both digital radio systems are WAY too expensive for my budget!

But then there is a 3<sup>rd</sup> option known as DMR which is an open digital mobile radio system standard that Motorola has been working for now over 15 years. It is commonly known as Mototrbo and is the standard way most commercial folks communicate with. It is very robust with FEC (forward error correction). I have found it has superior coverage over conventional FM for the same conditions. FEC is the reason why digital modes on HF such as JT65 and FT8 work so well under weak signal conditions.

Cost for DMR hand held radios are in the \$100 range. Motorola has been very kind to “share” their technology with the amateur community. They do this through the MARC - Motorola Amateur Radio Club. Motorola spent well over \$100 million perfecting the DMR standard and for this reason it is the most robust among the digital radio formats. Both Icom and Yaesu spent a fraction of this amount in developing their own proprietary digital radio systems (ie: D-STAR and C4FM).

#### This is how DMR basically works – commercial description in a nutshell

For commercial folks “Mototrbo” allows many users on a single channel. A user (such as a taxi service) will purchase a “zone” or “zones” from a DMR dealer. The more zones you have the more the cost. The more users you have, the more the cost. Each DMR radio has DMR ID. Similar to cell phones, one is not recognized by a “frequency channel” but is recognized by a unique radio ID.

For example, my DMR radio has the ID: 1107008. Once you hit transmit, this ID is sent to the DMR node and logged into a server. You can check all DMR radio traffic by going to <https://hose.brandmeister.net>

In the commercial world, the radio will dynamically switch channels depending on the closest available DMR node. By the DMR ID, the system will know who you are and who you are allowed to talk to. A computer server keeps track of everyone and their location. For

example, if someone on the system is looking for me (by my DMR ID), the server will find me and then wake up my radio.

Even if I am in New York (assuming I have purchased DMR zone coverage in NY) my colleague can contact me from his/her DMR radio in Sunnyvale just by pressing the mike on their radio.

### How is DMR different for HAMS?

With the Mototrbo software, the MARC group has configured DMR to be more for HAM friendly.

Here is how it is different from the commercial DMR and how it basically works.

Obviously there is not charge for the use of DMR for hams.

What do you get out of DMR? You can talk to anyone in the world with a DMR radio that has access to a DMR repeater or DMR low power "hotspot".

Hotspots can be purchased for about \$250 from companies like "SHARK RF". These are typically less than 100mW radios with a DMR controller. One typically sets up one in the house with internet access. This will give your ham DMR walkie talkie access around your neighborhood.

Like the commercial DMR, amateur DMR is not frequency dependent. Once you enter into the ham DMR network, whether from a DMR repeater or DMR hotspot, you gain access to the DMR network. Next you need to determine what talk group you want to talk to. Talk groups are given interesting names. Here are a few examples.

- NorCal - Northern California
- SA - South America
- NA – North America
- WW - world wide
- SEUSA - South East USA

NEUSA - North East USA

Non-specific channels

- TAC 310
- TAC311
- Parrot - repeater retransmits what you say to test out your radio



As long as the other party you wish to talk to is on the same “talk group” you will make a connection. You can also submit to MARC your own talk group name. Once it is approved they will enter that name into the DMR server.

So that is all you need to do. Find a DMR repeater or hotspot, type in the group you want to talk on and give a call to your party. You will need the detail information of the talk group to enter into your radio. For example -

Name of the group - such “world wide”

Slot number - 1 or 2

CC number - (almost always 1 for hams)

Does this sound pretty exciting? For a little over \$100 you can join this new mode of HAM radio communication.

Just email me for details at [edison\\_fong@hotmail.com](mailto:edison_fong@hotmail.com).

We can put together a group order and order the radios directly from Connect Systems.

**DMR (digital mobile radio)** Ed Fong WB6IQN - [edison\\_fong@hotmail.com](mailto:edison_fong@hotmail.com)



On the left is the DMR radio I purchased from Connect Systems - model number CS-580.

Cost \$130 - This is a commercial radio with both DMR and conventional FM on UHF. With a total of 1064 channels, it meets full Mil Spec 810 for humidity, vibration, shock and waterproof. Comes with a 2100mah battery, smart charger, and antenna. Excellent color screen. Will last 4-5 days on a single charge.

Included with the price comes, it comes already preprogrammed to the Bay Area DMR repeaters and talk groups and also conventional FM Bay Area repeaters. With the programming cable (\$15), one can update for future needs. Contact me if you want to join in on a group order.

I have owned my new DMR radio for about a month (October 2017).

I am certainly not an expert but it has been a great learning experience.

A good article on digital ham radio was published in QST October 2015 and gave a discussion on all three competing digital radio systems.

- Ed Fong