



Smoke Signals

Newsletter of Fullerton Radio Club

April 2015

President's message

Hi all and happy April. How are you all doing on getting the spring cleaning done? Have you found some radio equipment or other things you need to say goodbye to? Well the club would like your help to put on a swap meet or maybe a section in the newsletter to help find it a new home.

Now that I got that out of my system I can tell you about some upcoming events in the club. This month we have the Donate Life 5k run/walk on the 25th. This is a fun event to work and a great event to be a part of. If you have signed up to do communications I look forward to seeing you there. If you haven't, then talk to Gene KB6CMO and there might be a slot or two open. Otherwise come down and support the cause and bring along you HT to get an idea of how we work these events so you can join us next time. We also have ANTS (antennas in the park) coming up on May 16th at a place yet to be determined. Come join us and bring you radios to set up and get on the air. The next couple of meetings for the club are going to be great we have a wonderful speaker coming in named Chris Storey. There is a section in the newsletter that tells about him and what he will be speaking on. I have been to both of the meetings he did for WARA and he was great. I highly encourage you to join us and to bring a friend to these meetings. Anyway I hope you all have a cool rest of the month. Stay on the air and 73s. Albert Solomon AG6OF

April Club Presentation changed

Chris Storey KA6WNK

Chris Storey, KA6WNK, is a nineteen-year veteran Public Response Dispatcher for the Los Angeles County Sheriff's Department. Chris has a wide range of emergency communications experience including Navy-Marine Corps MARS (as a radio operator, Station Augmentation Team member to Marine Corps Air Station El Toro MARS, Assistant Region Five Director for Emergency Communications and the Region Five MARS Teletypewriter System, Assistant Southern California Area Coordinator for Emergency Communications and Net Operations), the federal SHARed RESources High Frequency Radio Program (SHARES), Orange County Radio Amateur Emergency Services (RACES), and has military high frequency communications experience while stationed in Antarctica.

Mr. Storey has been a licensed Amateur Radio operator for over 30 years, with an Extra class Amateur Radio license and Marine Radio Operator's Permit. Since becoming licensed, the majority of Chris's ham radio operations have been focused on public service. Chris is a Major in the U.S. Air

Force Auxiliary Civil Air Patrol, and has degrees in Law Enforcement Occupational Studies, Curriculum Development and Adult Vocational Education for Public Safety, Administration of Emergency Services, and a professional development certificate in Emergency Planning,



Management, and Disaster Response operations.

Mr. Storey has developed and presents training on various aspects of emergency communications, hot weather safety for emergency responders, and emergency incident reporting to various Southern California emergency response organizations, including the Amateur Radio Emergency Service (ARES), Radio Amateur Emergency Services (RACES), CERT teams, LA County Disaster Communications Service, the U.S. Air Force Auxiliary, and various sheriff department Search and Rescue units.

Note: The April meeting presenter had a last minute need to change plans and will not be available to do his scheduled presentation.

The April meeting, therefore, will be a "Show and Tell" event. If any of you have something to share with the club please bring it. This can be anything from new equipment, a special project, test equipment, or anything else that will help fill the meeting time.

Thanks.

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Show –and–Tell

Bring something of interest to the meeting to show and share your story.
Something old, new, or just of interest to hams.

Web site: www.FullertonRadioClub.org

April Board Meeting Minutes

The April 2015 Board meeting was called to order by President Albert Solomon AG6OF at 7:40 PM. Others present included Treasurer Gene Thorpe KB6CMO, Secretary Linda Endsley KJ6IHB, Board members Larry McDavid W6FUB, Richard Belansky KG6UDD, Robert Gimbel KG6WTQ, Paul Broden K6MHD, and member Cheryl Thorpe KE6TZU.

Minutes of the March Board meeting were reviewed and approved.

Treasurer's report: Checking, \$2520.24; Savings, \$3073.59. Two renewals have been received.

Old Business:

Swap meet – May want to include a classified ad section in our newsletter.

DonateLIFE run / walk event – April 25; additional ARO volunteers are needed.

Railroad Days – Will be May 2 and 3

Airport Day – Will be May 9

Antennas in the Park – Will be May 16

Hamcon – Will be in September

Ham Shack – still discussing

April general meeting speaker will be Chris Storey

New Business:

Motioned and recorded to continue Gordon Levine using our club call sign on the 10-10 net

Paul K6MHD will submit the IRS reports, gross income for 2014

The next Board meeting will be Wednesday, May 6

The meeting was closed at 8:15 PM

Submitted by Linda Endsley, KJ6IHB

Is it 3dB or 6 dB?

By Walter Clark

In a previous SBMS Newsletter I showed a trick that makes it look like you think in dBm; instead of the more provincial milliwatts or watts. There are a few numbers you were to have memorized. They are circled in this table.

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You were then shown a trick for milliwatt levels that have twos in the front; as in 20 mW, or 200 mW where you add 3 dB. And fives, like 0.5 mW, or 500 mW where you subtract 3 dB.

dBm to Watt Conversion Table

dBm	Watts	dBm	Watts	dBm	Watts
0	1.0 mW	16	40 mW	32	1.6 W
1	1.3 mW	17	50 mW	33	2.0 W
2	1.6 mW	18	63 mW	34	2.5 W
3	2.0 mW	19	79 mW	35	3.2 W
4	2.5 mW	20	100 mW	36	4.0 W
5	3.2 mW	21	126 mW	37	5.0 W
6	4 mW	22	158 mW	38	6.3 W
7	5 mW	23	200 mW	39	8.0 W
8	6 mW	24	250 mW	40	10 W
9	8 mW	25	316 mW	41	13 W
10	10 mW	26	398 mW	42	16 W
11	13 mW	27	500 mW	43	20 W
12	16 mW	28	630 mW	44	25 W
13	20 mW	29	800 mW	45	32 W
14	25 mW	30	1.0 W	46	40 W
15	32 mW	31	1.3 W	47	50 W

This table has to do with power where 0 dBm is 1 milliwatt. Hence the m in dBm.

The most important point is that dBm is another way of saying milliwatts or watts.

But what about changes in voltage? Same table?

It's similar, except there's no volt values in the table. When you use dB instead of dBm, there are no measurable values tied to dB numbers. You have to provide your own reference; that is, a measured voltage with respect to another measured voltage; a ratio of voltages.

dB	Volts	dB	Volts	dB	Volts
0		16		32	
1		17		33	
2		18		34	
3		19		35	
4		20		36	
5		21		37	
6		22		38	
7		23		39	
8		24		40	
9		25		41	
10		26		42	
11		27		43	
12		28		44	
13		29		45	
14		30		46	
15		31		47	

As everyone knows, dB has to do with logs which means that a difference (one dB value subtracted from another dB value) corresponds to one measured value *divided* by another. Or conversely, when measured values are *multiplied*, their dB values add. That is useful because in electronics, value changes are huge; orders of magnitude is a phrase often used and adding these orders can be easier than multiplying. For example, a horn may “add” 17 dB to what the detector would normally sense. The first preamp may “add” 40 dB more. That’s 17 plus 40. The filter

dB	Ratio	dB	Ratio	dB	Ratio
0	same	16		32	
1		17		33	
2		18		34	
3		19		35	
4		20	hundred times	36	
5		21		37	
6		22		38	
7		23		39	
8		24		40	ten thousand
9		25		41	
10	ten times	26		42	
11		27		43	
12		28		44	
13		29		45	
14		30	thousand times	46	
15		31		47	

that follows subtracts 7 dBm followed by a mixer which subtracts another 3 dB and so on. What is actually going on is, a factor of 50 times 10,000 divided by 5 then finally divided by another factor of 2. Some of us feel that dB is a hangover from the days before calculators. Today it is useless except for its value as a secret handshake. Like the Morse code, it does give the hobby an air of superiority; a priesthood that’s fun to be in.

What follows are some tricks to make it look like you are part of the priesthood of dB. Again, rather than referring to the math, memorize some key places on the table...

Check the table above for an amplifier with a voltage gain of ten thousand. Yes, that’s 40 dB of gain. That’s voltage out divided by voltage in. Notice the similarity to the dBm table. It is the same if you drop the “W” units which means that zero is not 1 mW but just plain 1 or rather “the same”. Let’s now fill out the table with all the easy values we can calculate in our heads.

Notice that the fields with “five” are 3 dB less than the multiple of ten above them. (They are half of the multiple of ten above them). The dB-volts table with the blank column in it, is a graphic way for you to remember that you have to provide your own reference; one measured value as a ratio to another measured value.

dB	Ratio
0	same
1	
2	
3	twice
4	
5	
6	
7	five times
8	
9	
10	ten times
11	

Why is that? Why does power have its dB scale fixed at 1 mW? Whereas for voltage there is no absolute value? Usage. Power is most often used to indicate an actual number of watts where voltage is usually used as a ratio. Mel Swanberg told me that sometimes voltage is referenced; 1 microvolt is used as the reference but then the letters

dB	Ratio	dB	Ratio	dB	Ratio
0	same	16		32	
1		17	fifty times	33	two thousand
2		18		34	
3	twice	19		35	
4		20	hundred times	36	
5		21		37	five thousand
6		22		38	
7	five times	23	two hundred	39	
8		24		40	ten thousand
9		25		41	
10	ten times	26		42	
11		27	five hundred	43	20 thousand
12		28		44	
13	twenty times	29		45	
14		30	thousand times	46	
15		31		47	50 thousand

“dB” are changed to dB μ V. So 30 dB μ V is 1000 microvolts. There is also dB μ V/m for absolute electric field measurements. And several others he blew my mind with. But without the extra letters after dB, it can only be used as a ratio of two numbers where both numbers are in the same units.

6 dB vs. 3dB

But when does 6 dB correspond to a factor of two? The answer is “it shouldn’t”. I don’t think so anyway. But when you do see 6 meaning a doubling, it is seen when voltage and power are used at the same time. It is my suggestion to not do that. If you are doubling in voltage and you want to say what that does in watts, reduce confusion by talking about a ratio of two voltages in dB and then in another sentence what that does to power in dBm if you like. As you will see below a 3dB increase in voltage (a doubling) quadruples power. Use those words. Never use 6dB to mean doubling.

This admonition is because when you double voltage and give the answer in power, the number *two* shows up twice. It is confusing.

Power is voltage times current. If you double the voltage across a load the current doubles as well as the voltage. So power is doubled twice; the two is squared. See the two twos? In dB when you multiply you add, but when you square you multiply. The first two is 3dB the second two is the square which is *two-times*. In this case two times the 3dB. (There’s the 6.)

The power gain is the square of whatever the dB gain is in voltage. If you were to make a dB table of power and voltage (the voltage needed for that power), the power column of dBs is squared at each step. Squaring in dB is times two. So the power column gets larger faster by exactly a factor of two. Imagine a Squaring Table; 1,2,3,4 dB on voltage side, 2,4,6,8, dB on the watts side. An 11 dB gain in voltage is next to a 22 dB gain in power. (Note I said gain, so I don’t say 22 dBm.) The phrase “3 dB” makes us sound smarter than the word double. There is no additional information in the characters; “3dB”. When that’s in reference to a voltage gain that is applied to a power device we use our imaginary squaring table where a 3dB gain in voltage on the left column corresponds to 6dB on the right. It’s too bad doubling is so common. Too many twos.

Correct: “a doubling in voltage is a 6 dB of gain in power.”

Never say “a doubling in voltage is 6 dB of gain.”

Never say “a doubling in power is 6 dB.”

Now you know. Now don’t use it.

Only use dB gain (or loss) when it is about to be added to (multiplied by) another dB gain term.

Only use dBm if you know you can turn that number into a number of watts but don’t want to because you want to sound smart.



13th Annual Donate Life Run/Walk

Hello Past Donate Life Run/Walk Volunteers. Happy Donate Life Month! We would like to invite you to volunteer with us once again at the 13th Annual Donate Life Run/Walk scheduled for Saturday, April 25th at Cal State Fullerton University campus! Your volunteer help in past years has allowed us to provide an incredible Donate Life Run/Walk to more than 12,000 participants consisting of donor families, transplant recipients, transplant candidates as well as hospital and community teams who joined together to run/walk in celebration of life and the power of organ and tissue donation. The Donate Life Run/Walk is the largest run/walk of its cause in the nation. We are expecting more participants than ever which is why **we need your help** because this event is only made possible because of volunteers like yourself. If you haven't already please sign-up to volunteer on Friday, April 24th and/or Saturday, April 25th. You are welcome to sign-up directly online at www.regonline.com/2015DLRW and if you should have any questions please feel free to contact me. I look forward to seeing you in April!

Best, Erika Ospina Awad Chair, Donate Life Run/Walk Volunteer Operations

FRC T-hunt Report

David Whittlesey KK6JDC hid the Fullerton Radio Club mobile transmitter hunt for the first time on March 16. He knew that the hills of Hacienda Heights can cause confusing signals, so he chose a location along Skyline Drive, just west of west of Hacienda Boulevard. Here are the results:

<u>Team Calls</u>	<u>Odo Miles</u>
N6AIN/WA6PYE	11.6
N6MJN	13.9
AB6PA/KG6EEK	14.3
WA6CYY	30.9

Winners with lowest mileage were Deryl N6AIN and Steve WA6PYE. One of them will hide the April hunt, which will start at 8 PM on April 18 from the top of Acacia Avenue in Fullerton. Signal will be continuous on 146.565 MHz.

73,
Joe Moell K0OV

The next T-Hunt will be at Antennas In The Park. Details to follow.

HDSCS News

Not sure if it was March Madness for HDSCS but we did get in some important "educational" opportunities.

On March 7 we held our yearly all day Orientation and Review Workshop. Care Ambulance hosted us for the day which included our traditional "Disaster Potluck". Dr. Sam Stratton, W5AGX, Orange County EMS Medical Director and HDSCS member, taught the group about hospital evacuation issues and also provided "color commentary" throughout the day. Guest speaker for the day was Michael Noone who is the Regional Disaster Medical Health Specialist for OES Region 1. He helped understand what he does when there is a major disaster or medical need that requires assistance from outside of our immediate area.

An overview of HDSCS and how the emergency communications groups function in Orange County was provided to Amateur Radio Operators who are residents at Fullerton's

Morningside complex along with key administration staff. In addition to April and Joe Moell representing HDSCS, Gene Thorpe, KB6CMO was present to represent Fullerton RACES and CERT. This meeting and presentation was done at the request of resident Vi Barrett, W6CBA and Executive Director, Gary Stork, in hopes of developing a disaster communications plan for Morningside.

Recently April, WA6OPS and Paul, K6MHD participated in a tabletop exercise that is in preparation for a major drill that will take place later this spring for Orange County hospitals and healthcare facilities. Representatives from hospitals, clinics, EMS, ambulance companies and county emergency management officials were in attendance and also participated in the various aspects of this exercise.

Come October this will be the 35th year of back-up communications provided by HDSCS.

73
April WA6OPS

Public Service Event

Public Service Event: Donate LIFE 5K Run/ 1K Walk on Saturday April 25, 2015 at CSUF

From 0700 - 1100 hrs. or so. You will Need Your HT with spare charged Battery and earphone/Headset, seat & snack.

Please sign-up on the Donate LIFE R/W website ASAP:

www.regonline.com/2015DLRW

Access Code; ARO

Thank You for Volunteering to help out with this event. See you on the Morning of Saturday April 25, 2015 at 0630 hrs. at CSUF

Gene Thorpe KB6CMO

FRC Regular Club Meeting

Third Wednesday of each month
Chapman Activity Center
2515 San Carlos Dr.
Fullerton, CA

Next Regular Meeting
Wednesday,
April 15, 2015

Dinner before the meeting at 5:00 PM at:
Coco's Restaurant, 1011 N. Harbor Blvd.

Meeting time: 7:00 PM
Visitors are welcome

Next Board Meeting:

FRC Board Meeting

Open to all Club members

Marie Callender's Restaurant
126 Yorba Linda Blvd., Placentia
First Wednesday of each month.

Next Board Meeting
May 6, 2015

QSO and dinner; 7:00 PM

Meeting: 7:30 PM

Something New

In previous issues of Smoke Signals we've discussed the potential of conducting a "swap meet" type meeting as one of our regular monthly Club meetings. Inquiries made during recent Club meetings has not found much enthusiasm for the swap meet, so for now we will put this concept on the back burner. However, because we are aware of members with surplus equipment, and the fact that we still have residual equipment left to the Club by W6ZJE, the Board has Okayed the idea of providing a classified ad section to Smoke Signals. So, beginning with the May edition of Smoke Signals we will offer this service. The rules are (subject to change); The ad placements are for club members only: Ads are for Ham-related equipment only (i.e., no sports stuff): Full descriptions and asking price should be provided: Ad material **must** be provided to the newsletter editor **no later** than the Sunday following the regular monthly Board meeting: Ads are subject to review by the editor, and publication may be limited to space available in the current newsletter edition.

Side Notes

The Board Meeting Minutes noted dates for Railroad Days and Airport Day. At this

time the Club has no plans for direct participation in either event, so you do not have to plan to volunteer for these events.

Antennas In The Park

This is one of our biggest events of the year, but this year we've hit a snag in identification of a place to hold the event. We're scheduled for Saturday, May 16, 2015, and will continue to develop plans, but the announcement as to location will come in a separate communication.

Plans continue to conduct event with the ever-popular T-Hunt conducted by Joe Moell K0OV.

Additional information will be sent as soon as we identify an event location [use of Tri City Park now requires an expense permit]

MEMBERSHIP RENEWAL / APPLICATION

Fullerton Radio Club
PO Box 545, Fullerton, CA 92836

(Please Print)

Name #1 _____ Call: _____ Class: _____

Name #2 _____ Call: _____ Class: _____

Address: _____ City: _____ State/Zip: _____

Phone #1: _____ Email #1: _____

Phone #2: _____ Email #2: _____

ARRL Member Yes No

Special Amateur Radio Interests: _____

Dues are \$20 per member, or \$25 per family. Students (full time) \$10

Bring your application and dues payment to the next meeting or mail to the above address.