



Simi Settlers' Amateur Radio Club

Short Circuit

November 2017

November 6, 2017

Static & Sparks

Inside this Issue

Mike Hasenfratz - WA6FXT

- 1 November Program
Static & Sparks
- 2 Nets of Interest
ACS Corner
- 3 Holiday Pot Luck Dinner
- 4 John Kitchen Bio
- 5 Events
Raffle Prize!
- 6 Christmas Party Harbor
Cruise Flyer
- 7 October General Meeting
Minutes
- 8 Rocket Day Special Event
Station
Measuring Antenna Gain,
with a little help from Friis
by Steve J. Noll, WA6EJO
- 9 Simi Settlers' Leadership
- 12 Membership Form

November Program

Thursday, November 9 7:00 PM

John Kitchens, NS6X

John will talk about what has happened in the ARRL this past year or so. John has replaced Jim Fortney as the Santa Barbara Section Manager. We will look at the ARRL.org website. There are several free classes available. We will look at the various ARRL resources available for our free use, including satellite information, DX activity to complete DXCC, political and governmental information, lobbyist dealings and much more. You are not required to be an ARRL member to be an amateur. However, the ARRL is the only current national organization that represents the amateur radio operator at the federal level.

I look forward to the talk, and most importantly look forward to your questions.

Rocket Day Special Event Station Update

Bill Woods - AB6BW

Once you've put your station in order and made provisions for emergencies, you need to test your setup, to see that all of your plans will work. After getting my station back together and ready of any disaster, Mother Nature decided to test my station's readiness for me. On October 9th, wind gusts blew some high voltage power lines together resulting in a transformer exploding and plunging my area into darkness. After several retries, by SCE to reset the power, in our area, power was down for several hours (13 hours). Luckily, my preparations 'almost' worked. My station was fully operational, with the exception of my linear, and I was very happy. During the 13 hours, I did find some issues: stale gasoline, solar panel was not installed and I needed to watch my energy usage on battery.

Don't let Mother Nature force your testing. Find the issues on 'you' time table.

73's Mike - WA6FXT

Welcome our New Members

Donald Reed

Dinner with the Speaker

Where? TGIFriday's
When? **5:30 pm Thursday Nov. 9**
Join your club board members and Lea Veronica for dinner before the club meeting.

General Meeting
Time: 7:00pm
Location: Simi Valley Senior Center
3900 Avenida Simi
Simi Valley, CA 93063

Nets of Interest

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
LSB Net 8pm 3.908 MHz SSARC 2 Meter Net* 8:30 pm SMRA-ERN Repeater 146.805 - 0.6MHz PL100.0 or 445.580 - 5.0MHz PL100.0 Mesh Net 8pm 2.4/5.8 GHz Mesh	Condor Connection 7pm (Plays Newslines) Frazier Mountain 224.720-1.6 MHz PL156.7	LSB Net 8pm 3.908 MHz ACS Area 1 Simi Valley SMRA-ERN 7:05pm Repeater 146.805 -0.6MHz PL100.0 or 445.580 -5.0MHz PL100.0 ATN-CA Net 7:30pm http://atn-tv.org/netnight.htm	Channel Islands chapter 10-10 International 28.34 MHz at 10AM and 6PM	LSB Net 8pm 3.908 MHz		SSARC SSB HF Net 8:30am 7.240 (+ or - QRM/N) 40 meter CW-QRP 9am 7.032 MHz Quad Squad net 1PM on 21.365 MHz's

New NET: 2.4 GHz / 5.8 GHz Mesh On the Teamtalk server at w6bi-vc-mesh-info. Sunday night at 8 p.m. Contact W6BI for an account.

Additional information on local nets can be found on the CVARC web site at: <http://www.cvarc.org>

Thanks to our fine Net Control Operators: Steve, KE6WEZ; Rick, W6DQE; Ray, KI6LKD; Jay, AG6JF and Dante, KK6JCQ.

ACS/ARES Corner

We are always looking for ACS members that would like to become Net Controllers.

You will receive hands on training at the Simi Valley PD (where we normally conduct the Weekly Net). It is both fun and at times challenging. You will gain valuable experience in running a controlled Net as well as becoming more than just familiar with the equipment in the Radio Room at the PD. If you would like to volunteer for this, let me know -

ke6wez@gmail.com

If anyone is interested in how to setup your own packet station, RMS Winlink station, or a Mesh Node, let me know and we can get you started in the proper direction.

NOTE: Please be advised that we hold the Tue. countywide net at 19:30 (7:30PM) on the Sulphur Mountain WD6EBY repeater 145.200, minus 600 KHz offset, CTCSS of 127.3. Until further notice, this will be our standard frequency for countywide communications.



- Steve King KE6WEZ (ke6wez@gmail.com)

Upcoming ACS/ARES Events:

- Monday - 6 November 2017 - District Meeting Camarillo PD
- Saturday - 11 November 2017 - Oxnard Band Competition. Contact Stewart at Stewart.stone@verizon.net to help.
- Saturday - 2 December 2017 - Sky Warn Day, contact Rick Tate for info at kq6no@arrl.net
- Tuesday - 5 December 2017 - ORT - We need volunteers to help man the Simi PD, Hospital, remote site.
- Saturday - 9 December 2017 - Camarillo Christmas Parade - Contact Ted Lansing at w6tel@arrl.net to help.
- Sunday - 10 December 2017 - Santa to the Sea Half Marathon. Contact Stewart Stone at kg6bov@arrl.net to help.
- For all of you (ACS or ARES) that need to complete the required FEMA IS Courses, here is the link: <https://training.fema.gov/is/crslist.aspx> Required Courses are IS-100, IS-200, IS-700, and IS-800. Once you complete them, they will email you a link to to download your completion certificate. Download it and SAVE it, then email a copy to Steve.

The SSARC Holiday Party is Coming!



Hello Settlers,

It is time for our annual Holiday Party! You are invited to join us on Saturday, December 16th at 6pm (0200 Z), at the home of our hosts Jim (WA6NXK) & Lea Veronica. The address is 442 Peter Place, Simi Valley.

For the Pot-Luck dinner, please bring a main course, a side dish or dessert to share. The Club will provide soft drinks.

This year's raffle prizes include a Bench Mount Radio Holder, a Weller Soldering Station, 2 Baofeng Dual Band HTs and two Grand Prizes: a Mesh Node Ubiquity

NanoStation Loco M5 and a BTECH MINI UV-25x4 Dual Band including a magnetic mount antenna. *! And we will be giving away another Baofeng 144/440 HT and other prizes just for attending.

Raffle Tickets Are:

1-4 tickets for a \$2 donation each

6 tickets for a \$10 donation

9 tickets for a \$15 donation

12 tickets for a \$20 donation

You can purchase tickets at the November Pizza Night, the general meeting, the December Pizza Night or at the party.

And remember to make your check out to Simi Settlers Amateur Radio Club (SSARC).

*The raffle is open to all paid club members. You need not be present to win the Grand Prize.



NanoStation Loco M5



John Kitchens, NS6X – a little bit about me

Radio

The reason we are here, I think. I was fortunate enough to grow up when shop classes were mandatory. Maybe for the wrong reason – I should have had home-ec classes, too. We had to spend 10 weeks in electric shop. Don Ulrey, WA6TRX was the teacher. He had a “radio room”, where students could go to learn about ham radio. Getting a license wasn’t required, but it was a goal. And did I mention that if you volunteered for the radio room, it was an automatic A? Well, I took advantage of that, in 1965. We were told to memorize the Morse code, which I did, because that is what a 7th grader did. I was licensed as WN6UYJ, when I had one year as a novice to upgrade or lose my license. My friend, John Radabaugh and I skipped school one day to go to the Federal Building in downtown Los Angeles to take our General test. John passed. I didn’t pass the theory. I studied a bit more, and finally passed it. Was KZ5JS in the Panama Canal Zone, 1975-76, when stationed there with the Air Force, and was the MARS station sponsor. I upgraded to Extra, becoming NS6X, to get the extra KCs (or are they MHz) for contesting. I enjoyed contesting, helping to set many records in the Division and Section, with N6VR. K6MEP, WA6IJZ. WA6DJS, K6VMN, WA6FPX, at the Southern California Contest Club. Contesting taught me about propagation, antennas, and operating skills. When I joined the K6MEP club, I met more contesters, and became a mountaintop VHF contester. I was on one end of several WA6EJO laser records.

Emergency communications is, and will continue to keep amateur radio viable, and provides a reason to keep the radio bandwidth we now enjoy. I was the City of Los Angeles liaison for ARES, and helped create the current ACS program, trying to keep the politics out of it. During the Northridge earthquake, I coordinated the ARES response for the City of Los Angeles. I have been a member of several local clubs, and am a life member of the ARRL. Currently, I enjoy QRP kit building and operating, still go out to a few mountaintops for VHF contests, like to give out rare grid squares for the VHF awards and experimenting with antennas. Computers and radio intrigue me. I want to learn more. Ham radio offers a tremendous variety of interests and activities, as well as a serious learning experience for those of all ages.

Personal

I retired after 37 (and ½) years with the Los Angeles City Fire Department where I was a Fire Captain/Paramedic. Most important, I say tongue in cheek, I have a three year-old granddaughter, Samantha, three adult daughters and a wife, Suzanne, of 44 years. I was born in Hollywood, or more specifically, East Hollywood, near LA City College, and grew up in Gardena, where I met my wife. After my time in the USAF starting at the end of Viet Nam, I joined the LAFD in 1976. Camarillo was a place where we could afford a house, as an upgrade to our Gardena home was not economically possible at the time. We have enjoyed living in Ventura County since 1981. Since collecting a pension from the LAFD, I have continued to work as a fire and life safety consultant, working as an expert witness regarding the origin and cause of fire, fire and building codes, and helping people, and their businesses, comply with life safety requirements.

Other hobbies I enjoy include hiking/camping/backpacking, now with my adult daughter.. She says that I am fat, and need to get back in shape. I used to take her out on 10K runs. Now she is embarrassing me with my lack of physical fitness. I add fishing to my camping activity, as well as reading and writing. I am trying to continue to learn more about electronics, computers and how they are controlling our lives, or prevent them from doing so. I teach a bit, and am trying to get a non-profit radio club going for youth that will help them enter the technical fields. I also try to fly rockets. The National Association of Rocketry sponsors a TARC (Team America Rocketry Challenge) competition for middle and high school students. I am trying to figure out how we can do something similar for amateur radio.

I was asked to talk about what has happened in the ARRL this past year or so. With Jim Fortney moving out of our Section and no one else feeling the need to volunteer to be the Section Manager, I felt that it was okay for me to put my name out there to be the next Santa Barbara Section Manager. We will look at the ARRL.org website. There are several free classes available. We will look at the various ARRL resources available for your free use, including satellite information, DX activity to complete DXCC, political and governmental information, lobbyist

dealings and much more. You are not required to be an ARRL member to be an amateur. However, the ARRL is the only current national organization that represents the amateur radio operator at the federal level.

I look forward to the talk, and most importantly look forward to your questions.

72/73 John Kitchens, NS6X

Events

Thursday, November 2, 2017, 6:00pm SSARC Pizza Night

Round Table Pizza, 2345 Erringer Road, Ste. 100, Simi Valley

Thursday, November 9, 2017, 7:00pm SSARC General Meeting

Simi Valley Senior Center, 3900 Avenida Simi, Simi Valley, CA 93063

Thursday, November 16, 2017, 7:00pm SSARC Board Meeting – Date change due to Thanksgiving

Simi Valley Senior Center, 3900 Avenida Simi, Simi Valley, CA 93063

Saturday, November 18, 2017, Rocket Day & Special Event Station

Strathearn Historical Park, Simi Valley

See the article in this newsletter for details.



Sunday, December 10, 2017, Evening, Cruising Ventura Harbor Christmas Lights - *See the event flyer on page 4.*

Hosted by Jim and Lea Veronica

HOLD THE DATE !!! SUNDAY DECEMBER 10TH FOR THE VENTURA HARBOR BOAT CRUISE TO SEE THE HOLIDAY LIGHTS.

BOAT WILL DEPART THE ISLAND PACKERS DOCK AT 6:00. \$15.00 PER PERSON.

MAKE YOUR RESERVATION NOW !!



Saturday, December 16, 2017, 5:30 PM. Holiday Pot Luck Dinner

Raffle Prizes for the Holiday Pot Luck Dinner:

Door Prize

1 ea. Baofeng 144/440 HT

Drawing

- 1 ea. Mesh Node Ubiquity NanoStation Loco M5
- 1 ea. BTECH MINI UV-25x4 Dual Band to include Magnetic Mount Antenna
- 2 ea. Baofeng Dual Band HT
- 1 ea. Weller Soldering Station
- 2 ea. Earpiece Headset Mic
- 2 ea. HT Case Holder
- 1 ea. Bench Mount Radio Holder

XYL's

- 3 ea. Fruit Baskets
- 2 ea. Dinner Gift Cards

Hosted by Jim and Lea Veronica

442 Peter Pl, Simi Valley

6 PM (0200Z)

For the Pot-Luck dinner, please bring a main course, a side dish or dessert to share. The Club will provide soft drinks.

Raffle Tickets for the Holiday Pot Luck Dinner:

- 1-4 tickets for a \$2 each donation
- 6 tickets for a \$10 donation
- 9 tickets for a \$15 donation
- 12 tickets for a \$20 donation

Raffle Prize!

The grand prize for the raffle will be :**Wireless Bluetooth Speaker, ZOOE S1** Outdoor Portable Stereo Speaker with HD Audio and Enhanced Bass, Built-In Dual Driver Speakerphone, Bluetooth 4.0, Handsfree Calling, FM Radio and TF Card Slot



**HOP ABOARD SANTA'S BOAT
AT ISLAND PACKERS DOCK LOCATED AT
Ventura Harbor- 1691 Spinnaker Drive - Ventura**

To tour the Ventura Harbor and view the "In The Holiday Spirit" decorated boats and the festive waterfront homes of the Ventura Keys.



**"CHRISTMAS PARTY HARBOR CRUISE"
SUNDAY DECEMBER 10, 2017**

Hosted by **THE OPEN SQUARES, Lea & Jim Veronica**
Arrival time to check in and receive boarding pass 5:30 pm.
(Boarding pass is required by Island Packers. You will receive it when you check in)

Cruise Fare - \$15.00 per person.

Space is limited, reserve now. **PRE-SALE ONLY**

Includes deserts, coffee & water.

Tea, soda & hot chocolate are provided by no host bar on board - \$1.00 each.

Beat the holiday "frenzy" by making your reservation now.

For further info call Lea & Jim Veronica, 818-326-0177 or 805-583-8843

BOOK YOUR "HARBOR CRUISE" RESERVATION NOW

Cut here and enclose with check payable to Lea Veronica & mail to: Lea Veronica, 442 Peter Place, Simi Valley, CA 93065

HOLIDAY HARBOR CRUISE _____ Number of persons. Enclosed \$15.00 per person _____

Name(s) _____ Address _____

City _____ Zip _____ Phone Number _____

A NAME AND EMERGENCY PHONE NUMBER FOR EVERY PASSENGER IS REQUIRED BY ISLAND PACKERS AND THE COAST GUARD.

Contact name & number in case of emergency

YOUR RESERVATION TICKET WILL BE
CONFIRMED BY MAIL OR PHONE CALL
IF MAILING TIME IS TOO SHORT FOR
YOU TO RECEIVE TICKETS IN TIME.



Simi Settlers Amateur Radio Club General Membership Meeting, October 12, 2017

Call to Order: President, Mike Hasenfratz, WA6FXT, called the meeting to order at 7:00pm. Mike welcomed everyone to the meeting, held at the Simi Valley Senior Center. There was a recitation of The Pledge of Allegiance. 8 Officers and Board Members/Advisors were present. The total attendance was 36, with 9 visitors. Our guests were: Roger Armstrong, WD6EVT, Tresta Costello, Pam Daly, Sue Valdez, Brian Hernandez, KM6MIN, Don Ree, N6DSR, Kate Sedlmayr, KK6VKX, Kerwyn Schimke, N6YHX and Rebecca Schimke.

Introductions: There was a round of introductions for members and guests.

Announcements: President Mike presented a certificate of appreciation to Steve Noll, WA6EJO, for his presentation to the Club at the September General Meeting. Bill Everett, KI6KSV, reminded members about the Heroes Airshow at Hansen Dam on Saturday, November 4. Frank Valdez, KI6OQ, said the Boy Scouts will have the annual Jamboree on the Air (JOTA) on Saturday October 21, on the grounds of St. Rose of Lima Catholic School on Royal Avenue. SSARC will participate and provide a station operating under the Club's callsign W6SVS. Bill Woods is coordinating SSARC's participation in "Rocket Day" at Strathearn Park on Saturday, November 18th. We are hoping to set up one or two H.F. stations for SSB, CW and a contact with the International Space Station (I.S.S.), if possible.

Program: Mike Hasenfratz introduced our speaker for tonight, Lea Veronica, wife of member Jim Veronica, WA6NXK. Lea spoke about being a Ham's XYL, and her hobby activity Quilting, that she started while she and Jim lived aboard a sailboat. She spoke about different styles of quilts, the different patterns and fabric types used, and tools and sewing machines that are used. For many years hand sewn quilts were judged in Quilting shows. In the 1980s, machine sewn quilts were added as a category for judging in shows. Lea showed examples of quilts she has made with a variety of patterns, and entered in quilting show competitions, including a number for which she won prizes. Lea explained how quilting has a technical side involving math used to make quilts of different sizes and pattern shapes. As a long-time quilter, she has a collection of quilting fabrics and patterns, and special tools used for measuring and cutting the materials. It is somewhat like hams who have collections of radios, accessories and test equipment for their hobby.

At the end of program, Mike thanked Lea for this very interesting look at things that "XYLs" of hams do while their husbands are "Hamming" on the radio.

Break: At 8:35pm, a 15-minute break was taken with refreshments provided by Bill Everett, KI6KSV.

Member Drawing: The winning name in the progressive Membership drawing was Lisa Trent, KK6AKR, who was not present to win the \$20 prize. The prize amount will therefore increase to \$30 for our next regular meeting on Nov 9, 2017. Members must be present to win, and the prize grows by \$10 each month it is unclaimed.

Prize Raffle: After the prize raffle drawing, the Grand Prize winner of a Battery Charger was Roger Armstrong, WD6EVT.

Adjournment: The meeting was adjourned at 8:58pm.

Submitted by: Secretary, John Percival, WI6O

Note: Copies of past meeting minutes are available to members upon request from the Secretary.

SSARC 2017 Picnic



Rocket Day Special Event Station

SSARC has been invited to operate a Special Event Station as part of the Rocket Day celebration Nov. 18 at the Strathearn Historical Park. Special event stations are fairly common on the HF bands. They are usually set up and run by amateur radio clubs in conjunction with larger community or historical society events. The FCC has set aside 1x1 call signs beginning with K, N, or W which can be assigned for short limited times to these special event stations. This is the provision that grants VCARS the call sign N6R for our Field Day operations at the Reagan Library. Special Event Stations are favorite targets for QSL card collectors.

In our club meeting on November 9, Bill Woods will update the plans for SSARC's Special Event Station (SES) at Rocket Day.

- ▶ **The call sign: W6S.** Check us out on QRZ.com.
- ▶ **Stations:** We have commitments for: 20M phone (Rick Slater), 40M phone (Frank Valdez), 40M CW (John Percival), and a freelance HF remote station (Mike's Flex 6700). SSARC members are encouraged to stop in and help operate and log.
- ▶ **Special Event QSL card** Thanks to Kerwyn Schimke, N6YHX for the beautiful double sided QSL card design.
- ▶ We have also been asked to highlight amateur radio interaction with space. I know, it's a vast subject. Demonstrating the reception of beacons from passing satellites or especially the ISS (International Space Station) would be a cool addition to the SES. We are seeking a club member with experience in this area to guide, help, and (oh yeah) volunteer to **do something with ham satellites.**

Special Offer to SSARC Members: Sign up to help no later than **November 11** at the general club meeting or by email to ab6bw1@gmail.com and get in for half price (\$5.00). Wear your SSARC shirt or badge if you have one.



Work us on HF or VHF 145150 simplex to get your own official copy of this smashing QSL card.

A celebration of the local aerospace workers and industry that made the US Space programs possible...

In person NASA astronaut from Johnson Space Flight Center

Aerojet Rocketdyne RS-18 rocket engine on display

Frank Winter from the National Air and Space Museum

Astronaut ice cream and other novelties

Food trucks and vendors

Live feed from the International Space Station

"Mission Control" room launch videos, NASA videos

Dr. E.C. Krupp, Director, Griffith Observatory

Memorabilia and photos from Rocketdyne on display

And much, much more!!

Adults: \$10.00 | Children: \$5.00 | Children 4 & under: FREE
(13+) (5-12)

Saturday, November 18th 2017
 11AM – 5PM

The Simi Valley Historical Society presents

ROCKET DAY

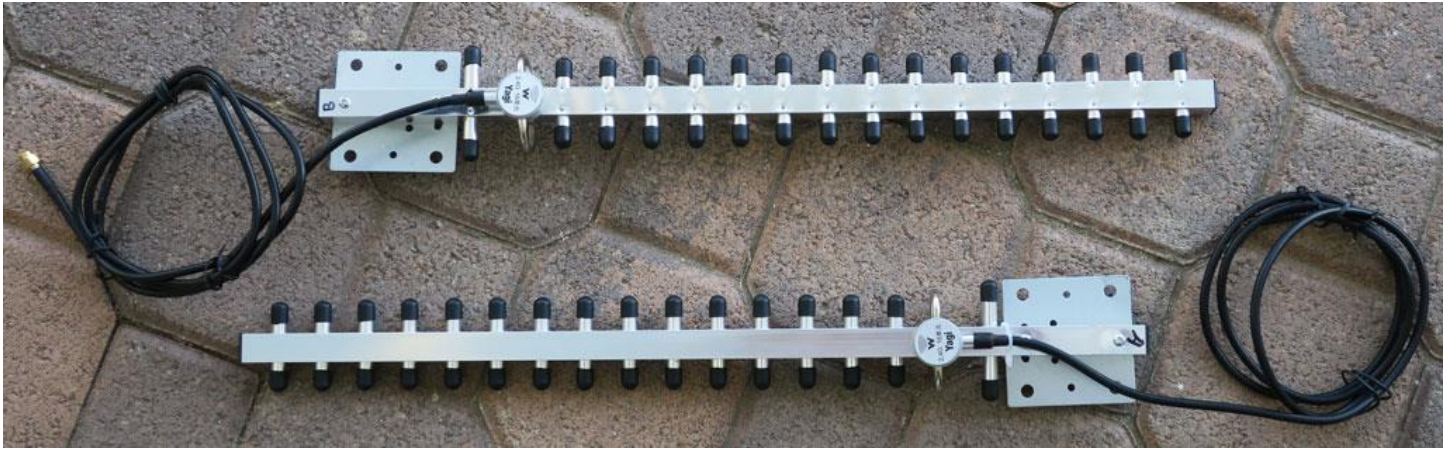
at Strathearn Historical Park and Museum
 137 Strathearn Pl, Simi Valley, CA 93065 (805) 526-6453

Made possible by support from...









Measuring Antenna Gain, with a little help from Friis.

Steve J. Noll, WA6EJO

I saw an outfit on eBay recently selling a pair of 2.4 GHz WiFi Yagi antennas that had what seemed to be an unrealistic claim of 25 dBi gain, and the pair was only \$20.55. I couldn't resist! It made me recall a handy formula, the Friis Equation, that I used years ago for measuring antenna gain. This is a simple equation that allows you to determine antenna gain if you have two identical antennas. In addition, you need a transmitter and a power meter capable of measuring both transmit and receive power. You do not need an antenna of known gain for the measurement, just the two identical antennas. I ran the antenna measurement ranges at the 1991, 1992, and 1993 West Coast VHF/UHF Conferences that were held in Ventura. Using the Friis equation allowed me to come up with the needed source and reference antennas for some of the bands measured there.

Friis Equation: $P_r / P_t = G_t G_r (\lambda / 4\pi D)^2$

$$\frac{P_r}{P_t} = G_t G_r \left| \frac{\lambda}{4\pi D} \right|^2$$

or

$$\frac{\text{Power received}}{\text{Power transmitted}} = (\text{Gain of receive antenna}) \times (\text{Gain of transmitter antenna}) \left| \frac{\text{Wavelength}}{4 \times \text{Pi} \times \text{Distance}} \right|^2$$

Where the antenna gain in dBi is calculated by $10 \log_{10} G$.
 The powers are in Watts or milliwatts, just so they are the same units.
 Wavelength and Distance between the two antennas are in the same units.

By the way, always suspect any antenna gain spec where it isn't given in either dBi or dBd. If it is listed as just dB, someone is trying to fool you. dBi is dB gain over an isotropic radiator, an antenna that radiates equally in all directions like a spherical pattern. Such is actually an imaginary antenna as one that does that can't be physically made. dBd is gain relative to a perfect dipole antenna. A dipole is assumed to have 2.15 dBi of gain. It has more gain than a spherical antenna because it is focusing energy in some directions and rejecting signals from other directions. To convert: $\text{dBi} = \text{dBd} + 2.15$ and $\text{dBd} = \text{dBi} - 2.15$.

I chose these antennas to measure because their construction looks questionable and I doubted their 25 dBi gain claim. They are cheap Chinese imports with 17 elements. Each of the 15 directors are the same length

and spacing which is not how Yagis are designed. Element centering is poor. As they were sold in pairs it was just begging for using the Friis equation for gain measurement.

The SWR Measurements

I started by measuring the SWR of each antenna with a Daiwa CN-801 SWR meter that covers 900 MHz to 2.5 GHz. However, when I went to check out the meter with a dummy load it indicated a 1.2:1 SWR at 2.4 GHz. I tried several high quality microwave-rated loads, Weinschel and Narda, with the same result. Further testing cast doubts on the accuracy of this meter so I changed to testing with a directional coupler, a 2 GHz to 4 GHz Microlab/FXR. A 10 dB Narda Microline attenuator provided isolation for the Agilent E4421B signal generator. A HP 8566B spectrum analyzer was used for the reflected signal detector. Average SWR for antenna A was 7.1:1, 6.3:1 for antenna B. Yikes! In the same setup a 50-ohm load measured 1.08:1 thus validating the measurement method.

Further indication of a serious problem with these antennas was the fact that placing my hand on the driven element resulted in almost no change in the SWR readings, a huge red flag! The supplied coax cable could be the cause? It is 57-inches long and not marked as to the type. If it was RG-58 it should be about 1.5 dB loss at 2.4 GHz, not enough to account for the problem. If it was very high loss it could account for no effect when touching the driven element, but it would also probably result in a better SWR, like a dummy load.

Resistance measurements found continuity between the coax shield and center conductor and the loop driven element and the boom. That in itself is not unusual, a loop yagi driven element can also be at DC ground with its metal boom. Out of curiosity I remove one of the two screws holding the driven element assembly on the boom. This electrically isolated the driven element from the boom as the screw appeared to pierce the coax shield. The result was a dramatic improvement in SWR, although still not great. Antenna A now 3.1:1, antenna B now 2.8:1. Then the second (front) screw was also removed. SWR is now looking usable at 2.4:1 each antenna. The problem may be due to the heads of the screws being quite close to the driven element loop. Next the first (rear) screw is reinstalled grounding the driven element, the second (front) screw removed. Even better at 2:1 for each antenna. I note that with antenna B it mattered how tightly the rear screw was driven in. Perhaps it is shorting more than the shield.

The Gain Measurements

The frequency for these antennas is specified to be 2400 MHz with a 100 MHz bandwidth, so a test frequency of 2400 MHz was used (12.49 cm wavelength.) Transmit power was generated with an Agilent E4421B signal generator and a Mini-Circuits ZQL-2700MLNW+ amplifier, and some measurements were made with a higher power amp. Forward and reflected transmit power were measured using a directional coupler, the difference being what power was actually transmitted. Received power was measured with a HP 432A power meter with a HP 478A thermistor mount which allows sub-milliwatt power readings. The results:

RUN	DISTANCE	POLARIZATION	TX POWER (mW)	RX POWER (mW)	GAIN (dBi)	
1	4m	Hor	135	0.06	9.3	Unmodified antennas
2	4m	Vert	135	0.03	7.8	Unmodified antennas
3	4m	Hor	284	0.03	6.2	Unmodified antennas
4	4m	Vert	284	0.03	6.2	Unmodified antennas
5	4m	Hor	214	.001	-0.6	Antenna B flaky
6	4m	Vert	214	.0015	0.27	Antenna B flaky
7	4m	Vert	214	.002	0.9	Antenna B flaky

RUN	DISTANCE	POLARIZATION	TX POWER (mW)	RX POWER (mW)	GAIN (dBi)	
8	4m	Hor	214	.001	-0.6	Antenna B flaky
9	4m	Hor	327	.001	-1.5	Antenna B flaky
10	4m	Vert	327	.04	6.4	Antenna B modified
11	4m	Hor	327	.05	7.0	Antenna B modified
12	4m	Hor	335	.035	6.1	Antenna B modified
13	4m	Vert	335	.04	6.4	Antenna B modified

When using antenna B as the receive antenna I noticed that its gain became extremely unstable with the slightest movement of its coax cable near the driven element assembly. One side of the round PVC box housing the driven element dipole loop and coax connection is against the boom. Removing this driven element assembly from the boom gained access to the open side of the driven element junction box and the wiring inside which was potted with something like hot glue. I picked most of the glue out and milled open the opposite end of the box to gain better view of what was inside.



The center conductor of the feedline coax goes to one end of the loop element, the shield to the other end. In addition there is a short length of a very small coax with one end unterminated, the other end has its center conductor connecting to the end of the loop that the feedline center conductor connects to, the shield of the tiny coax connects to the other end of the loop element, same as the feedline shield. I assume this small coax serves as a capacitor for matching purposes. I did not see any obvious connection issue although one of the two mounting screws is long enough to pierce the feedline coax shield, and possibly the center conductor. Two such sheet metal screws fasten the driven element assembly to the square aluminum boom. After the potting material was picked out I could see that one of the mounting screws was touching the coax shield, and extremely close to touching the coax center conductor, possibly even touching it. Both sheet metal screws were replaced with nylon screws which fixed the gain stability problem. Both Yagis were then checked with a horn source antenna and found to be reasonably close to each other in gain.

The impedance of these antennas is not specified. The coax connector they use is a reverse polarity SMA which is a 50-ohm connector. However, I measured (mechanically) the coax and it is approximately 75 ohms. The measurement error resulting from using 50-ohm test equipment on a 75-ohm antenna (if it really is a 75-ohm antenna) should be just a few percent.

Conclusions? As delivered, if there is no intermittent as developed in one of the antennas that I received, the gain of these Yagis is about 7 dBi at best, not 25 dBi! Since my purchase in August the seller reduced the gain claim in the eBay listing to 16 dBi. I guess someone called him on it. However, even that lower gain spec is for properly designed well-built antennas, not these. SWR as delivered is in the order of 6:1 to 7:1! The SWR can be improved substantially if one has the needed instrumentation for assistance.

Handy Friis calculator: <https://www.random-science-tools.com/electronics/friis.htm>

Measuring SWR with directional couplers: <https://www.youtube.com/watch?v=iBK9Zlx9YaY>

Calculate coax cable impedance: <https://www.pasternack.com/t-calculator-coax-cutoff.aspx>

Letter From The Editor

Please submit articles, pictures, etc. on things of interest to our SSARC community for publication to me at ab6bw1@gmail.com. Such items may discuss your recent antenna project, shack modifications, new operating modes, anecdotes from portable field operations, and so forth. A picture with a caption works. A few sentences strung together works. A few paragraphs, a few pages with detailed illustrations.... It's all good. I look forward (with a wee bit of trepidation) to your submissions. **Submission Deadline is Sunday night before 1st Thursday!**

73, Bill (AB6BW)

Simi Settlers' Amateur Radio Club Web Page: <http://www.simisetters.org/index.htm>

Simi Settlers' ARC Yahoo Group: <http://groups.yahoo.com/group/SimiSettlersARC>

Mail: P.O. Box 2125 Simi Valley, CA 93062-2125

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Membership Application



Type of Application:

New Member

Renewal

Type of Membership:

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(Omit year)

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