The HIARC Bulletin

December 2018 Edition

The Official Bulletin of the Harris-Intersil Amateur Radio Club

Club Meetings: Second Thursday of Every Month at Meemaw's Barbecue on Babcock Street between Palm Bay Road and Port Malabar Road. Supper is at 6:00 PM and a short business meeting is at 7:00 PM. Our programs start 7:30 to 8:00 PM.

Club Station: Building 15, Room 321. E-mail Butch access.

HIARC Website: http://qsl.net/hiarc

Repeaters: 145.47 Mc, tone 107.2 cycles, elevation 170 feet, Melbourne

HIARC Web Site: www.qsl.net/hiarc. Website administrator; Jim, KC7SSW

Officers: President: Francis ("Butch"), WA4AQV

Treasurer: Bill WA4EMU

Secretary: Jim, KC7SSW

Repeater Chairmen: Bud W4HXP

Program Chairman: Eric N4SCS

Field Day Chairman: TBD

Sunshine Officer: Open

Club Jester: Ken N8KH

Membership:

Dues are $12.00 per year to:

Bill WA4EMU

Annual Events: Annual swap-fest at the October meeting. Field Day (always the fourth full weekend in June) at Grant Community Center Fairgrounds, Field Day web site link https://sites.google.com/site/hiarcfieldday2013/

Selected Hamfests:

University Of Central Florida, January 12, 2019, http://newton.i2lab.ucf.edu/wiki/Tailgate

- Orlando Hamcation, February 8 through 10, 2019, https://www.hamcation.com/

Ham Radio Lunches:

- Every Friday, 10:30 AM till 12:30 PM or so, Golden Corral on Palm Bay Road in Palm Bay
- Every Friday, 9:00 AM till 11:00AM or so, Umpa's Diner,1115 N Courtenay Pkwy, Merritt Island, FL 3295, (321) 454-3422

President's Message

The December HIARC meeting and the HIARC Christmas Dinner are one in the same and will be held this Thursday December 13 at 6:00 PM at Meemaws Barbecue on Babcock. We will have the traditional most worthless gift exchange. Just put it in a paper bag or unwrapped box. Years past we have had: bag of unlabeled keys, hopeless snarled Christmas lights, chocolate covered electronics, mouse trap telegraph key, and other memorables.

Spouses and significant others are especially invited.

73's

Butch WA4AQV

Here's how we did in FD 2018

Class 2A

#1 in SFL section out of 4 (were #1!)

#2 in SE Division out of 20

#46 in nation out of 328 (top 14 % finish)

All classes

#7 in SFL section out of 31

#31 in SE Division out of 232

#317 in nation out of 2902 (top 11% finish)

Bill

WA4EMU

Repeaters Back On Air

Now both the K4HRS 145.47 and W4MLB 444.425 repeaters are back on the air. Power had been switched off to outlet we were using. Simple fix to plug into new outlet.

Thanks to Don AF4Z and Bill WA4EMU getting this resolved.

A New 440 MHz Repeater Site Is Available

Someone came by my cube one day and was looking for a site for a 440 MHz repeater. I have since found a site. I don't remember who came by. Please come back by my office cube to discuss the opportunity.

Thanks, Butch WA4AQV

HTC 3-3223

Reverse Polarity Sunspot

Yippee, a reverse polarity sunspot was identified on November 17, 2018. This is big news as it shows the solar cycle is progressing https://spaceweatherarchive.com/2018/11/20/a-sunspot-from-the-next-solar-cycle/ . There had been some speculation that we were headed for a Grand Minimum of long term no sunspots but the new reverse polarity sunspot suggests otherwise.

With the quiet sun the earth's magnetic field has been quite steady with a K index of 0 on some days. If you have been on HF you will have noticed surprisingly steady signals as well. The upper HF bands have been nearly dead as solar flux has been about as low as it can go in the mid 60's. But the low HF bands are doing well with our low to no sunspot sun, as there still is a baseline solar output even without sunspots. These are among the best of times to be on the low HF bands and into VLF.

N8KH

Old Program Needed: DSP Noise Filter

We are looking for a copy of the personal computer digital signal processing (DSP) interference filter that Dick KD4JP presented at HIARC at one point. Seems we have all misplaced this good talk. If you have a copy please let us know thanks at Butch

November HIARC Program

The November HIARC meeting program was "Solar Energy To Power Amateur Radio Equipment" by Bruce Hesher KM4OFP. It was really good as Bruce is a Professor at Eastern Florida State College teaching electrical engineering and solar power. Looking forward to Bruce speaking to us more on this soon.

Measuring Unknown Capacitors with an Antenna Analyzer

If you have an antenna analyzer, you can use it to measure unknown capacitor values. First, get a 33Ω resistor. Put the 33Ω resistor in series with your unknown capacitor. Attach this circuit to your antenna analyzer. Then adjust the frequency on your antenna analyzer until the VSWR is either 2.0:1 or 3.0:1. Read the capacitance value from one of the following charts:

VSWR == 2.0	VSWR == 3.0

C (pF)	f (Mhz)	C (pF)	f (Mhz)
10	707	10	368
12.5	566	12.5	294
16	442	16	230
20	354	20	184
25	283	25	147
32	221	32	115
40	177	40	91.9
50	141	50	73.5
63	112	63	58.3
80	88.4	80	45.9
100	70.7	100	36.8
125	56.6	125	29.4
160	44.2	160	23.0
200	35.4	200	18.4
250	28.3	250	14.7
320	22.1	320	11.5
400	17.7	400	9.19
500	14.1	500	7.35
630	11.2	630	5.83
800	8.84	800	4.59
1000	7.07	1000	3.68
1250	5.66	1250	2.94
1600	4.42	1600	2.30
2000	3.54	2000	1.84
2500	2.83	2500	1.47
3200	2.21	3200	1.15

Theory (How/Why it Works)

First, we have picked two points on the Smith chart which are on the VWSR=2.0 and VWSR=3.0 circles: 33-j22.5Ω and 33-43.3Ω respectively. When the frequency is changed, the capacitive reactance changes, according to $X_c=1/(2\pi fC)$. When the VSWR is 2.0, then X_c must be 22.5Ω. When the VSWR is 3.0, then X_c must be 43.3Ω. Knowing the value of Xc, we can re-arrange the capacitive reactance formula by simple algebra, and calculate the value of C. $C=1/(2\pi f X_c)$.

Calibrate your Antenna Analyzer

To get even more accurate results, you can calibrate your antenna analyzer. It is easy. If you are operating into a load of either 100Ω or 25Ω, the VSWR must be 2.0. (100Ω/50Ω=2). (50Ω/25Ω=2). So get a 100Ω or 25Ω resistor, and use the calibration procedure for your antenna analyzer to adjust the VSWR meter to read 2.0 with that load. Alternatively, you could use a resistor of 150Ω or 16.7Ω for a VSWR of 3.0.

The manual for calibrating the MFJ-259 analyzer is available online, and can be easily found with an Internet search.

73,
Ken N8KH