The HIARC Bulletin

May 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: The club station is K4HRS in Building 15, Room 321. E-mail fparsche@harris.com to sign up.

Nets: The South Brevard Emergency Net meets every Thursday at 7:00 PM local on the 146.85 Mc repeater.

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.

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 September 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:

Saturday 6-9-18, Orlando, University Of Central Florida tailgate http://newton.i2lab.ucf.edu/wiki/Tailgate

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

HIARC Field Day is will be June 23 and 24. Bill WA4EMU is coordinating. Site is TBD this month's meeting. The Grant Seafood Festival Grounds and Grant Park are in consideration. If you know of a site with air conditioning please let me know. All will be welcome.

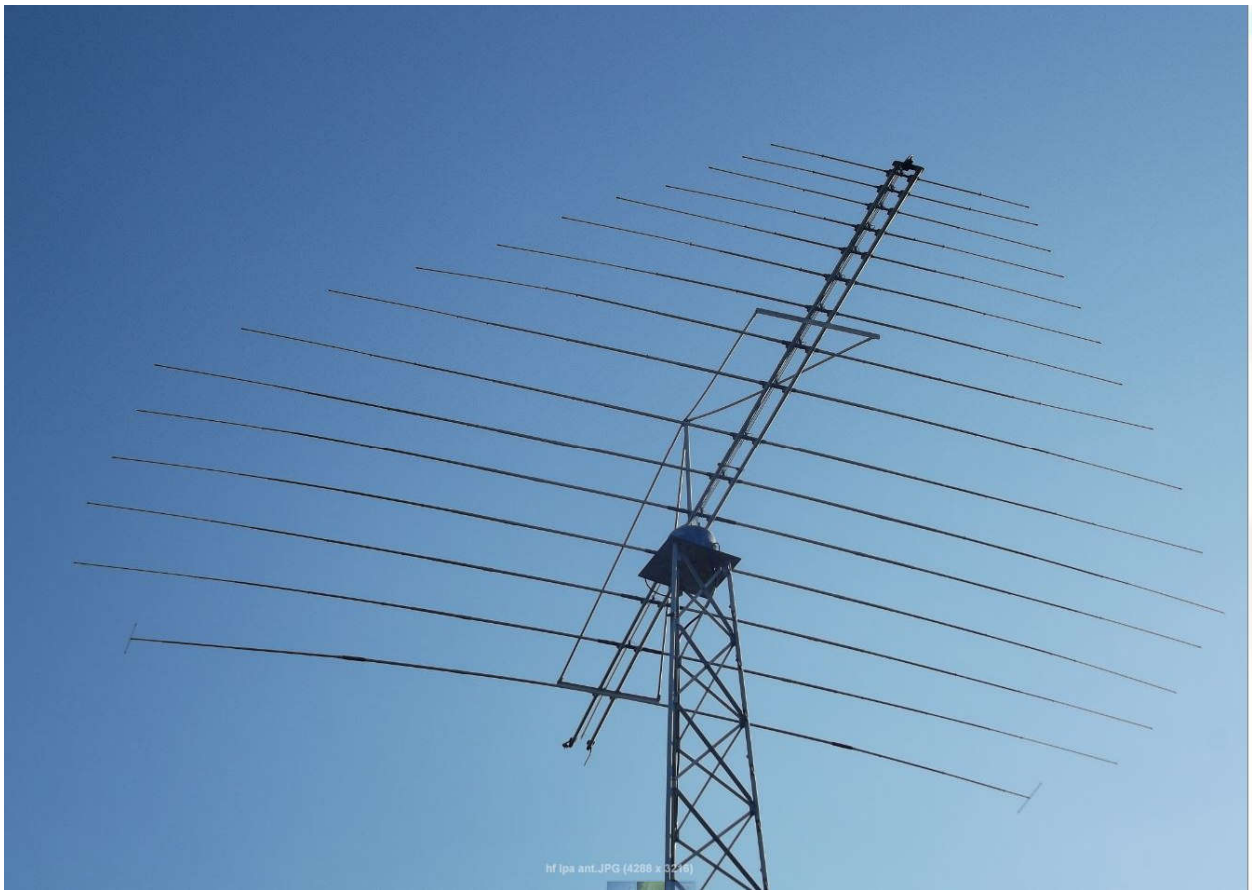
Our May meeting is on Thursday May 10 at Meemaws Barbecue. 6 PM for dinner. 7 PM for business. The program will be on Yagi Antennas with analysis of the dual band KG0BZZ yagi for 2 meters and 70 centimeters: http://www.amateurradio.bz/4_dollar_satellite_antenna.html. Tim KI4TG brought one of these in for show and tell last month and we will learn more.

73's

Butch WA4AQV

Building 25 HF Log Periodic Repaired

The Hurricane Matthew damage to the building 25 HF log periodic antenna (LPA) has been repaired. It had lost some of the longer loaded elements picture attached, to the perhaps 70 – 85 MPH wind gusts. The little Palm Bay - Turkey Creek tornado passed close but seems to have missed. (Circular polarization would have resulted?)



This is a cool antenna as it has 8 to 12 dB forward gain *continuously* over 6.2 to 30 MHz. Data sheet attached. The manufacturers quote for this gain *includes soil reflection enhancement at the peak take off angle* and this angle does vary with frequency and mounting height. Unlike a yagi this LPA uses two insulated booms as open wire transmission line to directly feed the elements. It is a dense, full dipole type LPA as well with adjacent dipoles fed 180 degrees out of phase using base insulators and wire jumpers. So quite a bit goes on in this design. The result is more elements in a smaller boom length and a reduced antenna size for frequency .http://www.usantennaproducts.com/antenna-category/log-periodic/

HIARC used LPA to successfully relay disaster messages out of Puerto Rico after Hurricane Maria. Many disaster stations had improvised antennas and we were close with this nice antenna. The LPA has an estimated takeoff angle near 20 degrees on 20 meters and near 40 degrees on 40

meters. The range to Puerto Rico was 1100 miles and the optimum takeoff angle needed was 20 to 35 degrees depending on the ionosphere height. It worked well.

With 8 to 12 dB gain with respect to isotropic it is natural to be interested in such an antenna. The club station has an Icom 706 HF rig to connect after hours. Let me know if you want to try it.

Butch WA4AQV

Bouvet Island DX'pedition Status

A most rare island indeed: http://www.arrl.org/news/second-3y0z-bouvet-dxpedition-attempt-unlikely-for-2018-2019-austral-season

Brass Tubing Impedance

Charles K6PIP made a handy chart of impedances obtained when using K&S brass tubing to make coax. (You might want to do this, for example, to make an impedance transformer to get to or from 50 or 75 ohms.)

http://www.Ham-Radio.com/sbms/techpapers/k6pip/air_coax_tubing_calc.pdf

73,

Ken N8KH

Surface Charger EMI

RFI from MS SURFACE CHARGER while CHARGING

WØLEV24 April 2018

RADIATED EMISSIONS

Antenna: 300-foot long doublet

Feedline: 2X Window Line (two lengths in parallel – phase matched)

Into Receiver: 5 kW Quadfilar Common Mode choke (homebrew and swept on HP 8753 Vector Network Analyzer) wired as bifilar

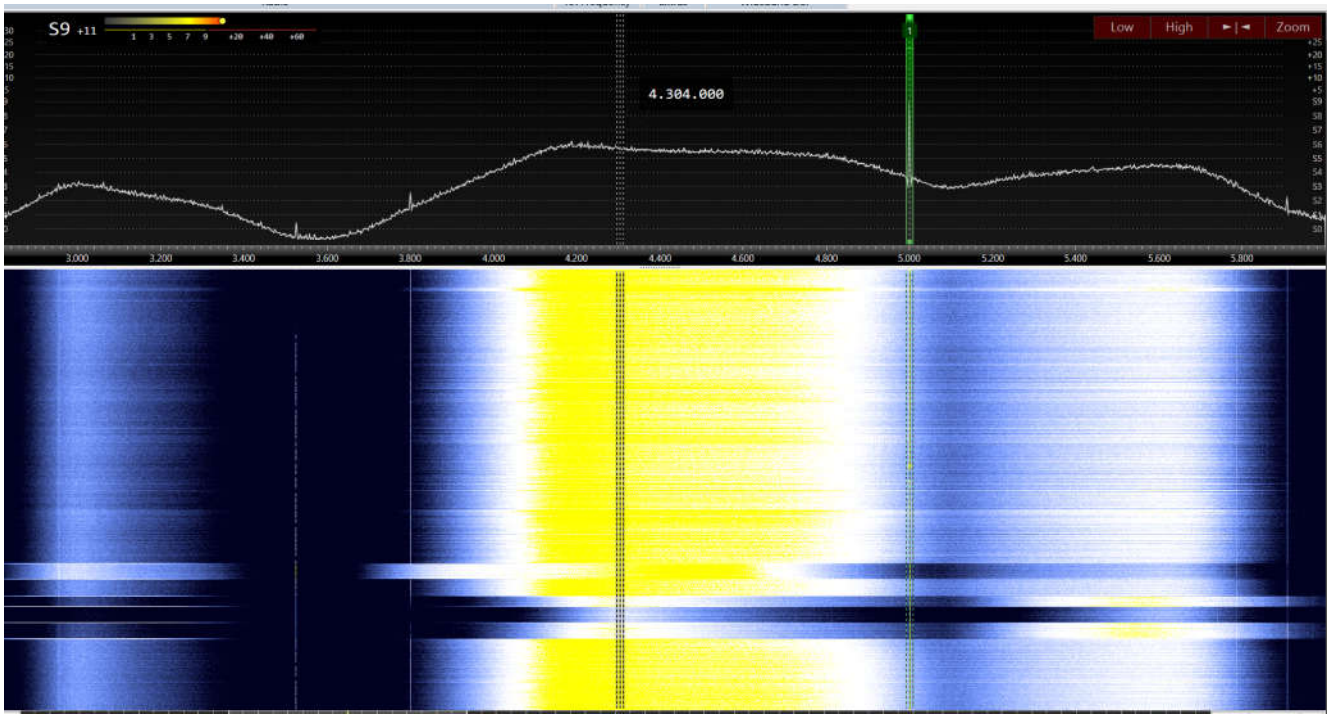
Receiver: RSP1

Tuned to: WWV 5 MHz

Measured Levels: No Antenna (input terminated with 20 dB attenuator): -131 dBm (S-0)
With Antenna (attenuator removed): WWV: -62 dBm (11 dB over S-9)
Peak of Strongest interference 'hump': -88 dBm (S-6)

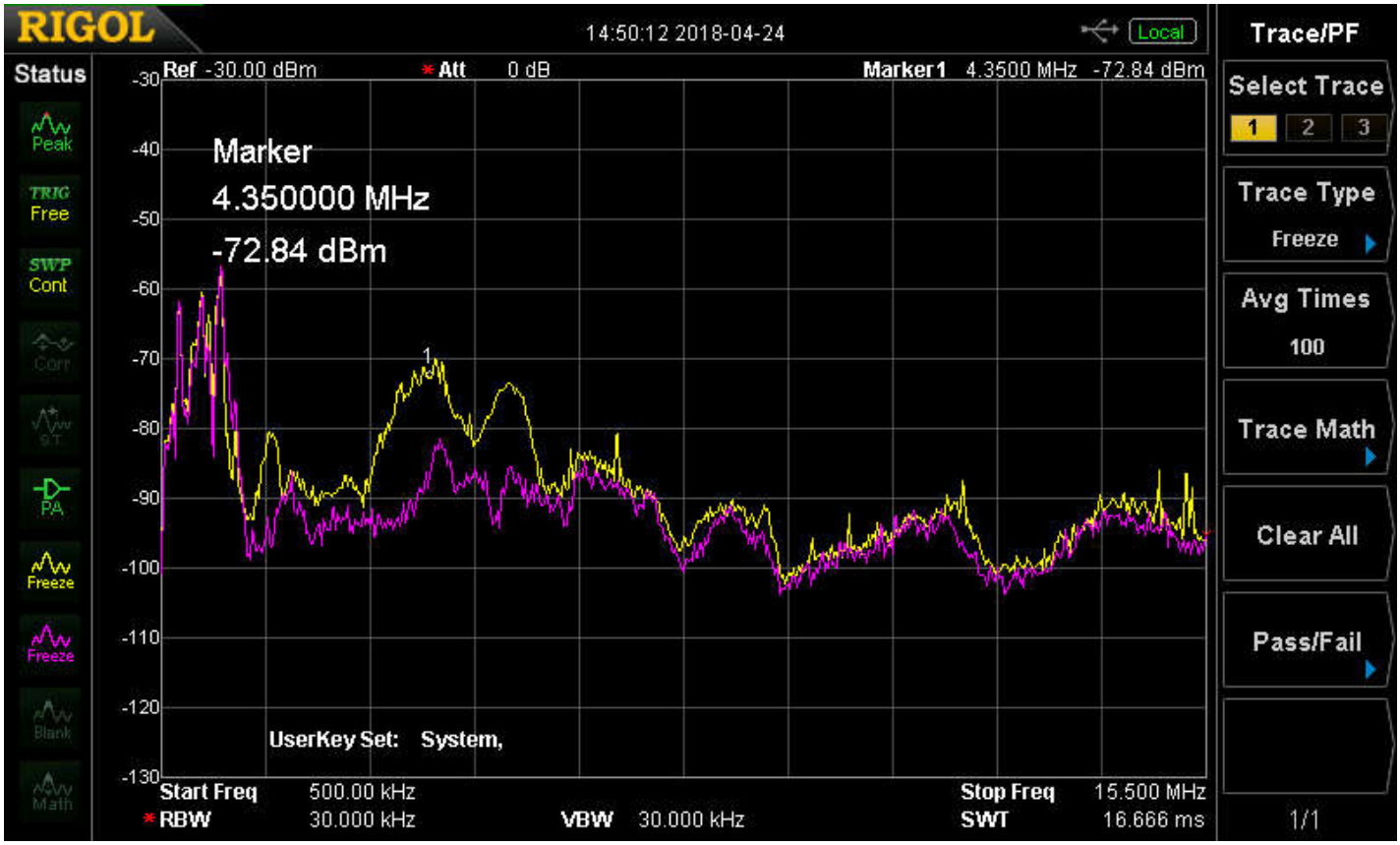
My Location: 11.5 miles WSW of Berthoud, Colorado (about 30 miles from WWV with mountains in the way). 40:16:37N 105:13:00 W

The pattern below pretty much replicates with decreasing amplitude to at least 10 MHz and downward through the BC band. Pretty bad. Too bad radiated emissions are not required by the FCC and the EU to be measured below 30 MHz!!



Antenna: 2/70 cm mag. mount about 2-feet from the MS Surface
Receiver: Rigol Spectrum Analyzer
Frequency Sweep: 0.500 to 15.5 MHz
Yellow: Charging
Magenta: Not Charging

T



The spikes on the left are AM BC signals.

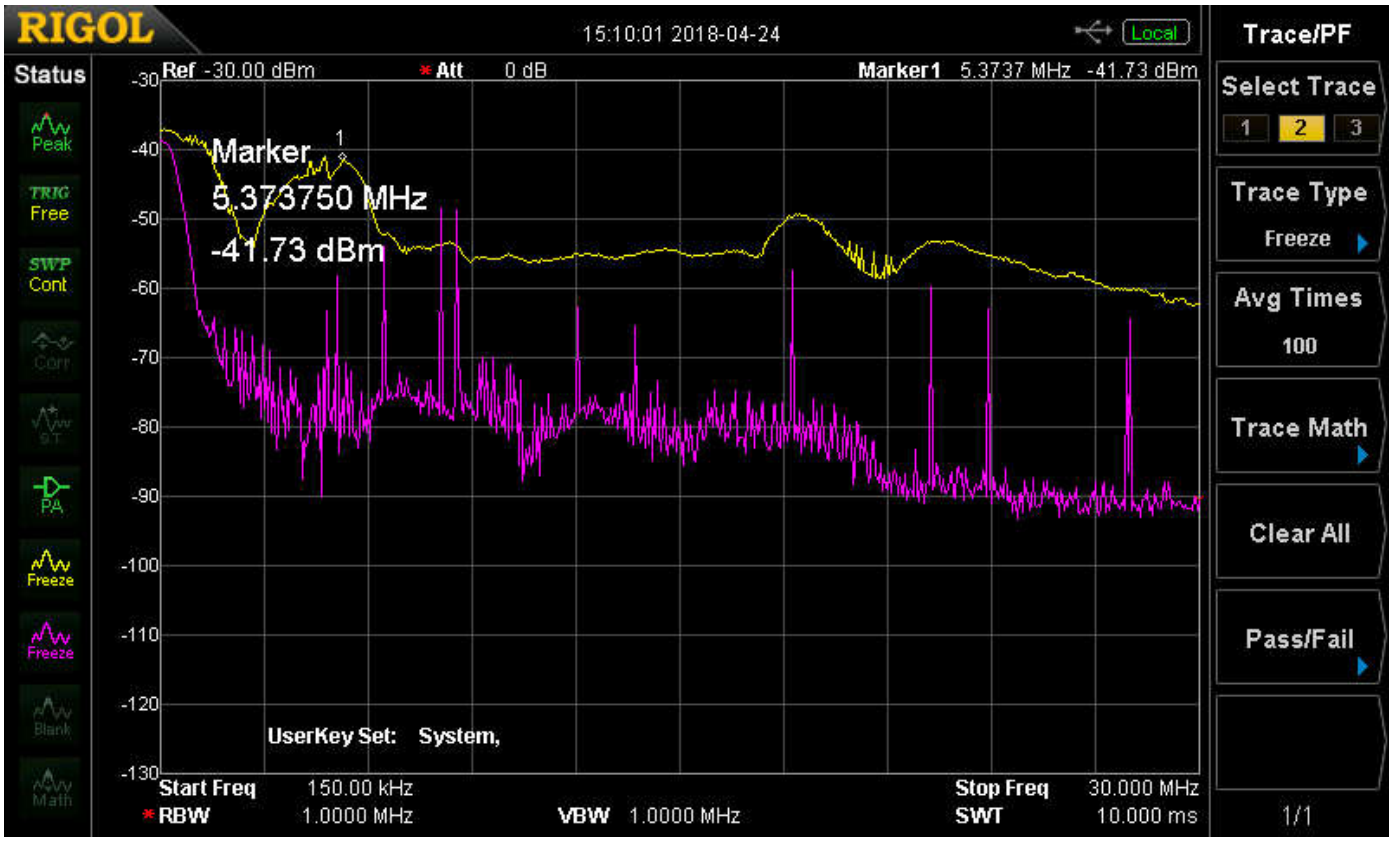
COMMON MODE CONDUCTED EMISSIONS

"Antenna": Clamp-on current around the line cord

Transfer Function: -10 dB from 100 kHz through 100 MHz. The power measured with the spectrum analyzer will be 10 dB GREATER than is reported on the screen grab. This applies to both the yellow and magenta traces. The marker indicates -41.7 dBm on the yellow trace. Taking into account the transfer function, this is -31.7 dBm.

Yellow: Charging

Magenta: Not Charging



This energy lights up the house wiring. That's how it gets out to my 300-foot doublet even though I have steel siding on the house and roof.

Note the spikes on the magenta trace. These are low duty cycle pulses to keep the voltage at the set point of the charger with no load. When the charger is charging the MS Surface, they become very dense due to the high load and fill almost immediately! This energy is coupled to the house wiring from which it is radiated in all directions. The measurement of conducted emissions is pretty much an FCC prescribed measurement from 150 kHz through 30 MHz. I should point out that this charger would NOT PASS FCC or EU specification limits for conducted emissions.

Note the energy is 'still going' above 30 MHz. This charger would likely not even pass radiated emissions when measured in an approved lab setup. Personally, I'm surprised at MS. The Surface, itself, is pretty clean. I suspect the charger is "With Love from China". Let me unwrap the aluminum foil I have placed around the unit.

The charger has all the proper regulatory markings for pretty much world-wide distribution. BUT:…….it does read "Made in China".

MS Surface itself: Clean and FCC/EU compliant
Charger: RFI and dirty and , well, you fill in the blank_____!!!!

QED

Quartz Crystal Alternative

With the closing of Internal Crystal Manufacturing Company in Oklahoma made to order quartz crystals have become difficult to impossible to obtain in small quantity. Yet we amateurs need crystals for our vintage equipment to change bands, replace failed units, or set channel frequency.

A modern alternative is the programmable oscillator integrated circuit. They are sufficiently stable for most needs and 2 to 3 dollars preprogrammed at Digikey:
https://www.digikey.com/products/en/crystals-oscillators-resonators/programmable-oscillators/169?FV=258001b%2Cffe000a9&quantity=&ColumnSort=0&page=1&pageSize=25

These programmable oscillators required DC power and a bit of interfacing. Fortunately an adapter board for us amateurs is available at Hayseed hamfest
https://hayseedhamfest.com/products/ran-technology-four-channel-oscillator-board

Happy oscillating.

Butch WA4AQV

For sale:

1. Harris/RF Comm RF-355 500 watt power amp

I advertised this to the club back in February, with no responses received. 80 pounds is more than I want to be wrestling with, so I'm trying again....**make me an offer**.

- Complete, except that it is missing the top cover. Though high voltage isn't exposed, **this cover should be fabricated for safety reasons**.
- Uses a single 3CX800 tube.
- Includes the Instruction Manual, which contains Parts lists, Schematics, and alignment instructions.
- I am attaching scans of the specification and general information pages of the manual. If they don't make it through our e-mail systems, contact me and I will send them directly to you.
- This amplifier has a built-in power supply that produces 2000 volts! **If you are not experienced in working with high voltages of at least 2000 volts, please do not purchase this amplifier.**
- You may need to build a simple interface for your transceiver
- If you know of someone using a Harris RF-350 Transceiver in MARS service, this would be ideal for them.

2. I am still looking for a quality HF/VHF signal generator.

John W2TX