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Ham On A Hog II | Ham Radio Rider To Doffo Winery Via 2016 Harley CVO Limited

by Jonathan Handler

Ham on a Hog 2 (For Ham Radio Riders) – via Harley-Davidson CVO Limited 2016 to the Doffo Winery
Besides motorcycles, and a few other things, I really enjoy ham radio. I have since I was about 12 years old, though there was a multi-decade break due to family life and work. Now that I’m back for a few years, I do operate from home but, even more, enjoy battery powered activity in the great outdoors. Whether camping, four-wheeling or motorcycling, I like bringing a radio, or two, sitting back with a cold one and reaching out on the airwaves to chat with interesting people and see how far my signal will take me.

After last year’s successful Moto DX Safari (https://ultimatemotorcycling.com/2015/07/06/moto-dx-safari-ham-radio-camping-via-honda-gold-wing/) in which I went with friends ham radio camping with an Icom IC-7200 on a Honda Gold Wing, I decided to reprise the idea this year. Only this time I rode a 2016 Harley–Davidson CVO Limited (https://ultimatemotorcycling.com/2015/10/15/2016-harley-davidson-cvo-limited/) to Temecula, Calif., to try out Icom America’s brand new IC-7300 rig with all the trimmings. The CVO was a great choice, with its cavernous top case and panniers, to store gear, super-comfortable cockpit and its smooth and powerful ride that simply ate up the 150-mile, mostly freeway, ride to my destination.
The weather was warm and the skies sunny when I cruised into town and found the Doffo Winery, owned and operated by my friends Marcelo Doffo and his son Damian, a true family run winery. The various wines are delicious and, as important, the friendly atmosphere is a pleasure.

When in Southern California I highly recommend a visit. If you’re a motorcycle aficionado, I recommend you come to see the 100, or more, mostly vintage Italian bikes that litter the property with the best of all in the Barrel Room. Impressive is not a strong enough adjective. I will be following up this review with a travel story I’ll probably call “Harley meets Ducati at Doffo” and tell more about the sweet Limited and the amazing Doffo Winery.

Even more importantly, for amateurs, Marcelo was once a ham and is radio friendly. Upon arrival, and after a glass of wine and some conversation, Marcelo pointed to the hill on the south end of the property. On it I found a few stone picnic tables covered by a permanent canvas fly.

The sun was out and a breeze was blowing the warm air through the tent-like structure and the far-off vistas were delightful to behold. This was truly a perfect spot in which to set up, hang out and operate the new equipment I was so excited about. Of course, I had been using the new radio for a couple of weeks before this date in order to acclimate myself to it.

**Icom America IC-7300**

Of great interest was Icom America’s newest radio, the IC-7300, which has taken radio operators by storm in the last two months since its release and is the talk of the airwaves. Icom began sales of this model in April of this year, and it has been a resounding hit, flying off shelves and creating a stir in the amateur radio community and on social media.

The 7300 is a natural progression from its popular IC-7200 but built so differently, and an order of magnitude greater, for not a lot more money. Like the 7200, and many other HF radios, it will tune from 30 KHz to 74.8 MHz and transmit on the ham bands from 160 to 6 meters. Output is 100 watts in most modes which include SSB, CW (full break-in, CW reverse, CW auto tuning, built-in electronic keyer), RTTY, AM and FM.

Unlike most radios you know, Icom built this radio using SDR (software defined radio) technology and it offers more features, functionality and ability than anything anywhere near its price that I have seen, heard of or operated. Say goodbye to super heterodyne and welcome RF direct sampling.
Simply stated, direct sampling causes RF signals to be directly converted to digital data as soon as they enter the receiver and not further down the line as in the architecture of most earlier receivers. This simplifies circuit construction, reduces noise, allows the signal to be processed digitally and costs less to build. The 7300 bears little internal resemblance to your father’s radio but you can bet he’d like one.

Let me set the stage. My perspective on ham equipment is from the bottom looking up. I’ve never owned or operated any of the high-end uber radios that are so feature-rich, capable and costly. My other HF radio is an Icom IC-7200 so this review may be more focused on amateur operators whose budgets are aimed at a so-called “entry level” rig but want big dollar radio features. With this in mind the Icom IC-7300 may be all you will ever need.

It is for me but don’t get me wrong, I would adore a contesting-type rig and all its commensurate goodness but the price tag may not be easy to hide from my wife. Therefore, bang for the buck is my game and the 7300 plays it like a champion. This review will be written, not from the technical standpoint of the wonderful and comprehensive work by the ARRL testers, but from my perspective – that of an enthusiastic ham who wants the ability to dig out weak and distant stations and appreciates hearing “big signal and great audio” reports from DX QSOs, as I have on many occasions.

As for entry level, a somewhat pejorative phrase, the $1,500 street price is certainly above the $600 to $700 starting price for a new, major brand HF transceiver but well below the $3,000 to $12,000 cost of a mega contesting setup. In most cases, one gets what one pays for yet with the 7300 the capabilities, design and ease of operation are not only greater than the sum of the parts but it offers a feature set found in no radio near this price.

I’ve never owned a radio with a real-time spectrum scope until the 7300 and this is a total game-changer. I cannot stress this too strongly. I feel as though I’ve been blind and now can see. No longer do I have to twist the dial hunting around from one end of the band to another. I can take one look at the band on the scope, see all activity and jump right in by touching the signal which pops open a small “magnify” window on the scope that expands that section of the band.

A second touch will put me on the signal. If the band is dead then one glance tells me so and two key presses on the 4.3-inch color, high-resolution TFT display puts me where I want to go. Oh, the color display, set to 100% brightest, did pretty well in direct sunlight and I only needed to shade the screen occasionally.
The scope is quite customizable, allowing adjustments to span (about 2.5 to 500 kHz), edge (range indicated), center or fixed mode (frequency indicator remains in place and the scale moves or scale is stationary and indicator moves – my favorite), speed, marker (show RX and TX frequencies, if different), reference level and much more. There is a mini-scope and an expanded scope displayed by pressing the M.SCOPE button for one second. I like the expanded scope because it shows me a longer (taller) waterfall which is helpful finding weak signals. There is an audio scope with waterfall and oscilloscope and, again, this is highly customizable for time, level, attenuation, waveform and more.

They say, about the spectrum scope – “The IC-7300’s real-time spectrum scope is class-leading in resolution, sweep speed and dynamic range. While listening to received audio, you can check the real-time spectrum scope and quickly move to an intended signal.”

About the waterfall function – “The combination of the waterfall function and the real-time spectrum scope assists in maximum receive performance of the IC-7300 and increases QSO opportunities without missing weak signals.”

About the audio scope – “The audio scope function can be used to observe various AF characteristics such as microphone compressor level, filter width, notch filter width and keying waveform in the CW mode. Either the transmit or receive audio can be displayed on the FFT scope with the waterfall function and the oscilloscope.”

I often turn on my radio and start by selecting 160 meters then 75, 40, 20, etc. Five seconds and one glance at each band display tells me everything I want to know and puts me right in the action. If the band is dead, I see that right away. Additionally, the scope is quite accurate and large enough, with great enough resolution, that I can plainly see great differences in each received signal. A glance shows the strong and the weak, CW and phone, beacons as well as those signals splattering and taking up big slices of bandwidth. It also helps me find a vacant frequency and can simultaneously display the audio in a separate window.

The radio is so easy to operate. In fact, I used it for a few hours before opening the manual. I couldn’t help myself and had to spin dials immediately. Obviously, reading the manual is important but the fact that I could get right into it is a testimony to its ease of use.

I can use the memory mode (99 plus 2 band edges) and scan around or use the MPAD button to tune to up to 10 frequencies and modes that I’ve stored by holding this button down for a second to store them in a rotating memory bank that is separate from the main memories. MPAD will automatically delete the oldest memory to make room for the newest, or I can delete all. I can even bring up a display showing all ten and allowing me to select any one that is saved along with the mode used when saving. I use MPAD all the time when I want to return to a random station after jumping around a bit.

I can move through my main memories from the front panel as well as using the up and down buttons on top of the HM-219 microphone, supplied with the radio. The audio reports I get with this piece have never included a complaint or even a suggestion that I do anything differently. I run the
mic gain and compression box stock at 50%.

The 7300 includes a built-in antenna tuner that will match 16.7-ohm to 150-ohm line with SWRs up to 3:1. It works well and easily tuned the Alpha antenna in all bands as well as my home half-wave multi-band endfed. It’s as fast as any automatic tuner I’ve used and memorizes preset points over a period of time. Icom does not state how many memories are available here but I have found it fast and effective.

The 7300 has 15 discrete band-pass filters in which “the RF signal is only passed through one of the bandpass filters, while any out of range signals are rejected. High Q factor coils are used to minimize the loss in the RF band-pass filters.” This is certainly one of the most important features of the radio and makes me chuckle when I think back on the old days of add-on filters, crystals, one filter, no filters, etc. Adjacent signal rejection is the best I’ve ever experienced.

The 7300 has the ubiquitous, and very effective, twin PBT knobs as well as three IF filter passband widths (FIL1 wide, FIL2 mid and FIL3 narrow) selected by screen press. A one second press of this screen button will allow re-defining the filters as to sharp and soft with a slew of choices that, frankly, I haven’t explored to the limit. A one second press of the PBT knob will reset it. There is just so much available right off the panel and what is not is easy to figure out or get to either by a Menu-Set command.

There is a dedicated button that offers two preamp levels and a one-second hold will engage the attenuator. Three others are for notch, NR and NB. A one-second press on any will bring up controls for level, depth, width and position, depending on which button. There’s an RIT button that shifts RX frequency without changing the TX and a ΔTX button that does the opposite, changing the TX without affecting the RX. An XFC button allows you to monitor the transmit frequency while operating split.

There’s a keyboard lock/speech button which will announce your frequency and mode verbally and an auto-tune button which will automatically put you on the right frequency in CW mode. The split button makes that operation easy with two ways to make a split pair. V/M button is there for VFO/ Memory mode changes as well as a separate A/B button to select from two VFOs. There is so much available right off the panel and what is not is easy to figure out or get to either by a one-second press or within the color screen menu system, which is straightforward and will, more than likely, only contain your set-and-forget items, many of which are easily accessible under the

Overlook with the Alpha antenna on the left.
The multi-function meter has everything you might need – signal strength, power out, SWR, ALC, compression, drain voltage of the final amplifier MOS-FETs, drain current of the final amplifier MOS-FETs and the temperature of the final amplifier MOS-FETs. I can display most, all at once, under the mini-scope or just have one meter peeking out to the left of the frequency display, above the scope, so as not to take up too much room when other items are preferred. In this case, I can tap that single meter repeatedly to choose S/SWR, S/PO, S/ALC, S/COMP and more.

As with the big rigs, there is a full sized SD card slot in the front panel. You may use a 2gb SD card or a 4 to 32gb SDHC version which must be formatted in the radio, even if the card is delivered formatted. With this card you may save settings of the transceiver, memory channel contents, transmitted and received audio (your QShnOs), communication and receive history log, voice audio to use with the Voice TX function, the transmitted or received RTTY decode history log and screenshots.

With the voice recorder you may record up to 8 memories, each up to 90 seconds and easily re-transmit them. Same goes for CW with 8 memories and a lot of features like editable button labels. The SD card is also used to update the system firmware and makes doing so fairly simple.

Another notation, and a sensitive item for many, is that the cooling fan, which switches on during TX has only a mild woosh sound, does not bother me and is quieter than my voice, so I don’t hear it. The main tuning knob has adjustable tension and has a smooth, quality feel. I tightened mine up one click with the adjuster positioned right under the knob.

Around the back of the 7300 are the typical cohort of hook-ups. There is one antenna jack, power, ground, accessory socket, USB port, CI-V remote, external speaker, key jack, ALS, tuner control and fan. You may hook up your computer, linear amplifier, antenna tuner and more. The IC-7300 weighs 9.25 pounds and measures 9.45×3.7×9.37 inches. A mobile bracket is available as you might even consider this for your mobile rig.

There is a lot here and available with this fabulous radio. Even 2,200+ words on this model doesn’t adequately cover it but does give some insights. Don’t panic over the 173-page manual. You will find that about half of the radio functions – those we use constantly – are intuitive and won’t require any manual. The other half – those set-and-forget functions – are easily learned with one read of the manual.

If my buying decision were to be made from the abilities of the scope, this radio would be hard to ignore, but when I factor in all the features, filters, performance in RX and TX and the reports I’m
getting, this radio, at this price, is in a league of its own.

Street price around $1,500

[www.icomamerica.com](http://www.icomamerica.com)

**Bioenno Power BLF-1230W Lithium Iron Phosphate Battery**

I have every kind of battery on a shelf in my garage which is groaning under the weight of a deep-discharge 120 amp lead acid battery, a handful of SLAs, AGM and gel. I’ve used them all and nothing compares to lithium iron phosphate (LiFePO4), the most advanced technology in batteries and not to be confused with lithium polymer or lithium ion.

Not only does LiFePO4 weigh about one third of an equal capacity lead acid battery, they have a relatively flat discharge curve offering hams better and more stable voltage than any other battery chemistry. The Bioenno battery I review here puts out around 13.4 volts for 90-95% of its discharge phase before the voltage begins to dip. It has a protective circuit module (PCM) that will shut off the battery to protect it in cases of over-discharge, over-charge and polarity reversal which could destroy a lead acid type battery. It can be mounted in any position. LiFePO4 will also hold almost a full charge while sitting on the shelf for months at a time and allow thousands of recharges and life expectancy in the 7 to 10 year range. These are, currently, the perfect batteries for portable ham radio applications and are available in many sizes to suit both QRP and QRO operators.

Here I review the Bioenno Power BLF-1230W. It is rated at 30aH and offers a 60-amp constant draw capability and 360 watt hours of energy before requiring a recharge. Preliminary estimates told me that if I operated at an 80/20 duty cycle I should be able to operate at 100 watts (21-amp TX and 0.9-amp RX draw) for 8-12 hours. It weights 9 pounds.

In comparison to an SLA/AGM battery that would weigh 30+ pounds, I can operate QRO all day long on this lightweight LiFePO4 battery battery on one charge. On this day my radio was on for about five hours and I enjoyed QSOs as far away as Michigan and Texas with no diminished power. I could have easily used a 15 or 20-amp battery but got this one because, to me, more is better and I don’t plan on hiking with it. Bioenno has a comprehensive range of these batteries from pocket-sized 3-amp to 100 and 200 amp monsters that will run your RV and ham gear all day.

Since the voltage doesn’t dip when the power is consumed, having a read-out on power used is the
only way to tell when your battery is getting low, aside from it just shutting down when drained. A voltmeter will not help you. Bioenno recommended the Powerwerxs watt meter to track cumulative usage but I saved some money and bought a cheapie online. It works well and shows me present, peak and cumulative watts, amps, volts and more. I wired it between the battery and radio with Anderson Powerpole connectors and, with this battery, I monitor watt hours knowing I’ve got about 360 before shutdown. That’s a lot.

I happen to own a 60-watt solar panel that outputs 15 volts at around 4 amps. Since its voltage is 15 vdc, even in bright sun, I can plug it into the Bioenno battery without a solar controller to limit the voltage, as many panels can generate 20 volts, or more, which would harm the battery. And since my BLF-1230W had two power leads (Powerpole 20 and 50 amp) I am able to run the rig off one while charging into the other without any power splitters or harness.

LiFePO4 batteries are not inexpensive but neither is your ham gear. Prices have been falling as the technology becomes more in demand. Don’t let friends buy lead acid. Lithium iron is worth you hard-earned cash.

High-rate battery warning for hams – On a recent motorcycle ride, two buddies asked me to charge their iPhones. I had a micro jumper battery, like you may have seen around, and I gave them an hour each which bumped them up to 75%. That was good but the battery’s meter had dropped to 2 bars from 5. That’s not much left after two hours of one amp draw.

These types of batteries are called “high-rate” and are designed to put out a lot of current for a very short time and not to deliver the kind of long term power needed to run your radio. Bioenno does manufacture high-rate batteries but they are sold as replacements for starter batteries in cars, trucks, motorcycles and other vehicles.

MSRP $299.99 with 4-amp charger

https://www.bioennopower.com/collections/12v-series-lifepo4-batteries

**Alpha Antenna 6-160 meter Multiband Tactical System**

I was accompanied on the ride by the Alpha Antenna 6-160 meter Multiband tactical System with the 13-inch (13+ feet deployed) MilStick element. This antenna has changed dramatically compared to earlier versions in that a re-design has given it near-zero loss electrical continuity between element segments versus some older models that used capacitive coupling combined with electrical continuity. The new Alpha Match is now fully encased in a brushed 316 stainless steel housing to withstand anything you or the elements can throw at it, including RFI.

I know because it’s been blown over a couple of times already when I was too lazy to guy it or weigh down the tripod. Lesson learned without a scratch or any damage even though it crashed to the ground once and into a tree on another occasion.
The non-magnetic stainless steel housing provides a near perfect housing for RFI rejection to the core components inside the Alpha Match.

I set up this antenna with the counterpoise, turned off the IC-7300s tuner and observed SWR readings as high as 2.7 on 160 meters and as low as 1.1 on 15 meters with 1.5 to 2.1 SWR readings on other bands. This antenna does not require any length or coil adjusting or fiddling to change bands from top to bottom and was easily tuned by the 7300s internal tuner. I like its set-and-forget nature and it's much more appealing to me than larger, bulky, recalcitrant portable antennas that require me to pay too much attention to them. Sure, it's not a full-wave dipole but I consider it a top notch choice for portable work.

This 6-160 meter Alpha Multiband Antenna is the first in a brand new line of systems. The first batch was sold at the Dayton Hamvention earlier this year. Besides the new stainless-steel enclosed Alpha Match, the 13-foot MilStick whip is formed from .433-inch diameter, 13-inch aerospace alloy sections held together with marine grade shock cord. Setup and take down can be done in a minute or less. The wire elements are composed of “up to 400-pound break strength wire that is built for extreme temperature variances. These same wires also have very little memory when stored and deployed.”

The bottom termination utilizes a 316 stainless steel bolt with 3/8-24 threads on the Alpha Match, so you can use their mounts or any others in this standard size. This system is rated from QRP to 500 watts PEP SSB.

On this trip I took the MilStick, Alpha Match, jaw mount and counterpoise (terminated on one end in a connector ring and the other with a ground spike). It all fit in a 16-inch long, 4-inch diameter custom carry case with handles and shoulder strap. The whole deal weighs 4.1 pounds and was a pleasure to pack, setup and use, and, more importantly, was an effective antenna for both RX and TX. To this I added a cheapie lighting tripod because it was the only one I could find that would fit in the Harley’s side pannier and not require me to strap it across the seat. It had a top stud and no threaded part but the Alpha jaw mount fastened on securely and I raised the bottom of the antenna to around 6 feet above the ground.

My final thought is that if I have to take only one antenna with me during portable ops it will be the 6-160 meter Alpha Multiband Antenna. Add 25 feet of RG8X and let the magic happen.

MSRP starting at $250

http://alphaantenna.com/ or http://amateurradiostore.com/
MFJ-939I Automatic Tuner and Random Wire Antenna

For the sake of redundancy on this test I took the MFJ Enterprises MFJ-939I tuner and a random length wire about 50-feet long. I also wanted to compare the performance of the random wire to that of the Alpha unit and knew I'd need an antenna tuner with the ability to tune SWRs over 3:1.

This MFJ unit is relatively light (2.4 pounds), automatic and has a cable to link it to most any modern Icom radio. They also offer cables for other brands or use it without a cable and simply supply 12vdc. With this cable I am able to power the tuner directly from the radio without worrying about a separate power connection and a one-second press of the tuner button on the 7300's front panel will set this unit to work. Tuning times are relatively short and even jumping from 160m to 10m will only have the tuner grinding away for a few seconds.

The unit will operate from 160-10 meters (1.8 to 30 MHz rating) at 2 to 200 watts SSB or CW. It is claimed to match 6-1,600 ohms (32:1 SWR) and has 20,000 memories that it automatically stores to ensure fast future tune-ups on pre-tuned frequencies. It has an audio SWR meter that will beep when SWR is greater than 1.5, 2, 2.5 and 3 and an alarm if it cannot reduce your antenna's SWR to under 3:1.

I was able to plug the banana clip on the random wire directly into the center hole on the SO-239 connector that is standard on this tuner. I used a 2-way antenna switch so that I was able to go back and forth from random to Alpha quickly to compare RX and TX. I spread out the random wire along some four-foot tall bushes in front of where I was operating and routed it right into the tuner.

In the hour, or so, that I worked back-to-back with both antennas I found that reception of nearby signals was about the same to my ear and on the S-meter but in QSOs with DX stations my RX fell off about 1-2 S-units versus the Alpha antenna. I really did not do any kind of quantitative analysis nor did I experiment with positioning the wire or flinging it up in a tree, since none were available to me.

I conclude that the Alpha, under these circumstances, performed better and was way easier to setup. The MFJ tuner did a marvelous job of keeping my SWR under 1.5:1 but spreading out the wire and dealing with that was not any fun. This was only intended as my backup system and I plan to do more investigating, which I will report in another review.

MSRP $159.95
http://www.mfjenterprises.com
This review was a lot of fun to do and I learned a great deal about the IC-7300 and all the other equipment. My sincerest thanks go to Icom America, Bioenno Power, Alpha Antenna and MFJ Enterprises for their help to make this happen and a special thanks to Harley-Davidson for the loan of their 2016 CVO RLimited (MSRP starting at $39,999).

*Photos by Jonathan Handler*

**Ham on a Hog II Photo Gallery**

*IC-7300 at an overlook with the Harley-Davidson 2016 CVO Limited*

*Overlooking the mountains.*

*Look out and reach out.*

*Strapped to a post in the wind.*

*It was so windy this day.*

*Alpha Antenna 6-160 meter Multiband Tactical System*
Welcome to Doffo Winery.

2016 Harley CVO Limited

Doffo Winery Barrel Room

Alpha Antenna 6-160 meter Multiband Tactical System in its carrying case

Alpha Antenna 6-160 meter Multiband Tactical System
IC-7300 in the sun.  Bioenno Power BLF-1230W Lithium Iron Phosphate Battery

IC-7300 front view.

IC-7300 rear view.  IC-7300 menu screen.  IC-7300 showing the various scopes available.