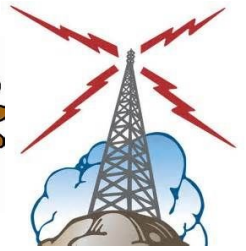




# SLATS



**St. Louis Amateur Television Society**

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**THE PARKS ON THE AIR BOOK**

ISBN: 978-1-62595-174-8

*The Parks on the Air® Book* explores the process of activating a park unit and hunting those activations. Through the experiences of 14 operators, it offers advice and motivation for taking your radio out to the park and becoming active in the growing POTA community.

**Full-color format brimming with photos!**





**CONFIRMED next PACIFICON<sup>SM</sup> 2024 October 18-20**

San Ramon Marriott  
2600 Bishop Drive  
San Ramon, CA 94583

### Pacificon 2023

Since it had been several years since I attended Pacificon ([www.pacificon.org](http://www.pacificon.org)), I decided to go this year to help man a both for FreeDV. I met Mooneer, K6AQ in San Jose airport and we motored up north to San Ramon on Thursday in a new Chevrolet “Bolt” EV from Hertz. The Bolt is a second generation of GM’s answer to a small electric SUV and provided a good ride and plenty of battery for our trip. It may be one to look at if your considering an EV for your next vehicle. EVs are popular in California especially Tesla’s models and with gasoline prices nearly double (yes, saw some pump prices nearly \$6/gal!) the incentive is there to buy electric.

Mooneer is one of the software developers of FreeDV and has added many features over the past couple years. If you have not tried this digital mode for HF recently, check it out at [www.freedv.org](http://www.freedv.org) where you will find a link to download the free software. In addition to helping out Mooneer at the booth answering questions about FreeDV, I took the opportunity to display a HiDes transmitter and information about digital ATV using DVB-T. I also gave a presentation on ATV Saturday. Members of Mt Diablo ATV club also had a table and demonstration ATV with a live transmission from their repeater. Here I met Mike, WA6SVT and others from the club. A previous PowerPoint presentation shown at the last SLATS Wednesday night described other activities. If you wish to see it, drop me an email and I will send you a DropBox link. Additional info on Mooneer and my trip to Pacificon may be found at this link <https://freedv.org/2023/10/29/freedv-at-pacificon-2023/>.



(From left to right: DVB-T transceiver, Mel Whitten K0PFX, the latest SM1000, two separate ezDV setups with the Icom IC-705 and Elecraft KX3, and a display showing the latest FreeDV activity on FreeDV Reporter.)



## MEMBER'S HAM SHACK

MEL— KØPFX



### KØPFX Operating Position #2 - (2023)

For DATV, the main transmitter/receiver uses a home brew DVB-T Interface/amplifier. It is on the desk top and identified with it's Volt and Amp meters. It is used with the HV-120 Receiver and HV-320 Transmitter just above it. This same interface includes a UT-100B dongle inside plus control of a second HV-120 receiver and a HV-200E transmitter used for simplex 70cm horizontal contacts with KDØPXF located just behind the laptop PC. To the left of the DVBB-T interface is a 16 port HDMI switch and the above it is a BlackMagic Design ATEM Mini Pro HDMI switch, camera control and recorder. The DVR and the Gefen Tool Box (HDMI/video test pattern generator) is on the top shelf. To the left of M2 rotor controller is a dedicated spectrum analyzer for monitoring my DVB-T signal.



We have all experienced the video lagging the audio and find it can be quite frustrating when a speaker's lips are not in sync with their voice. What causes this? Can it be avoided in DATV transmissions? Let's take a look at this problem.

First of all, we are not alone with this "sync" problem. As you may have noticed while watching commercial broadcasting TV. It happens often. Poor synchronization is experienced by just about everyone in the industry. In the recording industry a sync difference of more than 20ms is a problem for them. Very poor "lip sync" can be really annoying. It doesn't take much delay to notice it. A couple hundred ms (milliseconds) lag in the video is noticeable. Longer delays may make you want to look the other way while someone is talking. Broadcasters have software and hardware tools that delay the audio in an effort to keep the audio in sync with the video. In hardware you will find what are called "Audio Delay" boxes and "Lip Sync correctors." Any delay must avoid affecting the pitch of the audio too.

So, what does this all mean for us as ATV amateurs? Is there something we can do to improve the A/V sync in our ATV signal? Maybe. Hides has "Low Latency" firmware for some of their receiver/ transmitters. This *might* help with the lip sync but it is really for reducing overall A/V latency. To use this firmware everyone must have the same model of transmitter and receiver. Currently, we all don't. I have not tried the firmware with the repeater's HV-110 receiver. The repeater transmitter is a HV-200 which does not have any receiver low latency compatibility. Changing to a HV-320 would be possible but the repeater really needs the HV-200's loop through HDMI port. I don't believe it would be worth the effort and cost to consider this right now.

What else could be explored?

The video requires a lot of processing for MPEG/h.264 compression and FEC. This causes overall latency and video delay longer than the audio. First, at your transmitter the video must be processed, then sent out OTA to the repeater's receiver where it is processed and on to the repeater's transmitter where it must be processed again. Finally, at your receiver the video must be processed yet again! And wow, what happens when we convert the transmitter's HDMI output to IP (internet protocol) streaming? Oh, now we can have at best 6-7 seconds of delay and up to 10 seconds or more depending on the network not to even mention the lip sync problem. The internet delay is not as bad as it may appear unless you are on 2 meters Talk-Back with zero delay audio talking about a video that is being transmitted over the repeater. However, there is a way to get around some of this problem. You could watch the IP streaming with VLC and then you'll see when to sync your 2m audio with the video.



The delay will seem long but it helps to avoid frustrating the viewer! Your internet latency may be different than others, but anything to minimize the viewer's frustration is worth the effort. This really isn't a fix for the A/V sync problem but rather something you should be aware anytime you are running a video and talking about it on 2 meters. I failed to do this recently with a PowerPoint presentation and was kindly reminded by a viewer of the latency!

Some TV sets (LG, SONY, Samsung) have a lip sync delay setting. It may be configured as Auto or have a manual adjustment. If you are using a TV (vs a PC monitor), check to see if it has lip sync delay correction. Maybe it could make a difference for DATV. Is there PC software that works with a sound card to delay the audio for our application? Probably. This might be worth a few Google searches to find out. Let me know if you find this as a possible solution. There is a lot of info about lip sync and latency on the internet.

From our friends at B&H Photo and Video in NYC you will find an "A/V Lip-Sync Corrector" made by SESCOM that adjusts the delay of the audio up to 300ms. Adding a delay in-line with the repeater's HDMI audio *might* help the lip sync problem. Would this be enough delay? I don't know. The SESCOM lip sync corrector is not an HDMI device. Rather, it is an analog one with RCA I/O jacks. A quick Google search did not find a lip sync corrector for embedded HDMI audio. There probably is one, but the cost could be prohibitive. What could be tried is a HDMI audio "Extractor" and pass the output of it's audio into the SESCOM and then into HDMI "Inserter." Any audio passing from the receiver (your input into the repeater) to the repeater transmitter would then be delayed. Caution must be given here too. An HDMI signal can be degraded causing loss of sync due to the overall cable length, cable bandwidth /adapters and any device added in-line. Keep this in mind too when adding HDMI cables/switches/a DVR in your ATV station. General rule-of-the-thumb for HDMI cables is "the larger the diameter the less loss."

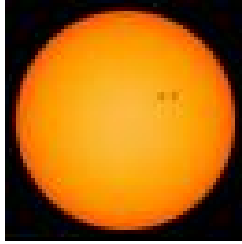
If you would like to do some experimenting with audio delay and lip-sync correction, then take a look at the SESCOM Lip-Sync Corrector at B&H. I think it could be put in line with your microphone and delay your audio which might reduce the lip sync problem coming out of the repeater's A/V.

As you can see, I am looking for some way to add a delay into the audio line in an effort to reduce the lip sync problem. Maybe there is an easy fix for this that I have missed. Perhaps, you may have an idea I can try. If so, please let me know.

Mel, KOPFX

**LINKS:**

**SOLAR UPDATE**



[The K7RA Solar Update \(arrl.org\)](http://arrl.org)

**SLATS**

**ITEMS FOR SALE OR GIVE AWAY**

YAESU FT 847 ~ HF/50/144/430 Mhz
Sell an item
Name
Earle Young
Call Sign
WDØFCH
+13143066646
Email
<a href="mailto:wd0fch@outlook.com">wd0fch@outlook.com</a>
Brief Description of item
Yaesu FT 847 with mic, CW filter and external International Radio VOX Box.
Details, price, condition, etc.
Includes original manual and shipping box. Price is \$800.00 plus shipping.
Very good condition



**Ham Radio Quick Links:**

**Amateur Television Network**  
<https://www.atn-tv.com/>

**ATN Repeater video streaming**  
<https://www.atn-tv.com/events/streaming>

**ATN on YouTube**  
<https://www.youtube.com/AmateurTelevisionNetwork>

**ATN on Whereby.com**  
<https://whereby.com/atn1>

**TAPR - Tomorrow's Ham Radio**  
<https://tapr.org>

**DIGITAL ATV**  
**Digital Amateur Television D-ATV**  
[https://www.dxzone.com/catalog/Operating Modes/Digital ATV/](https://www.dxzone.com/catalog/Operating%20Modes/Digital%20ATV/)

**YouTube Videos**  
**Dave Casler KEØOG - YouTube**  
**Videos** <https://www.youtube.com/channel/UCaBtYooQdmNzq63eID8RaLQ>

**Solar Index & Propagation Made Easy**  
**The SmokinApe**  
<https://www.youtube.com/user/TheSmokinApe>