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Sent: Tuesday, May 18, 1999 5:56
To: Hellschreiber@onelist.com
Subject: Hellschreiber in Space KD7MW Seattle
Attachments: ao10s.jpg; ao10slos.jpg; ao10qsbs.jpg; ATT39753.txt

Hello, everyone. I'd to introduce myself to the list. I'm Peter, KD7MW, and I live in Seattle, Washington, USA. I'm active on digital modes, and just got the IZ8BLY Hellschreiber software a few days ago. I'm also an enthusiastic fan of PSK31. But due to my location, a lot of DX is on high-latitude paths prone to flutter, and flutter is one thing PSK31 can't handle well. I'm hoping that Hellschreiber will be a good alternative.

I've also taken Hellschreiber into space, on the OSCAR 10 satellite! The three little JPEGs included in this mail show some of the results. I used JPEG because every time I tried to convert to GIF I lost resolution and the image turned partially blue in MS-Paint. So I reduced the size of my images by half and kept them as JPEGs.

A0-10 has a rather daunting combination of very weak signals, cyclical deep QSB, and cyclical transponder frequency changes of +/- 30 Hz. Results on PSK31 were good, except that a lot of manual "frequency riding" was needed to keep the signal within PSK's tuning requirements.

Results with Hellschreiber are encouraging. Feld-Hell is not as sensitive as PSK, and so doesn't work as far out in the orbit nor as deep into the worst QSB. But it also isn't as frequency sensitive, so can be run on A0-10 with occasional, rather than constant tuning touch-up. And as a non-constant carrier mode, Feld-Hell isn't a power hog and should be OK to use on satellite. It really shows visually what is going on with the signal.

The first image was received by tape recording a message off the sound card and transmitting it to the satellite while copying with the IZ8BLY software on the downlink. The other two images were done with full duplex.

A010S.JPG: 14 May 1999, 2037 UTC. Satellite range ~27,100 km. Power 90w.
IZ8 software bandwidth 200 Hz. Some QSB, but not severe, and copy still quite usable.
Earlier in the orbit, signals were very good.

A010SLOS.JPG: 14 May 1999, 2145 UTC. Satellite range ~33,500 km. Power 90w, IZ8 software bandwidth 125 Hz. The satellite is now quite far from earth, signals are very weak. Cyclical QSB is terrible, with the signal disappearing from audibility for several seconds at a time. I fooled around with various slow speeds and filtering, and the best results are captured here: 1/4 speed and 1/8 speed. 1/8 speed is excruciatingly slow, but it works nicely through the fades--it's sort of like using very slow CW and ~100 Hz bandwidth.

A010QSBS.JPG was made at 2312 UTC, under similar conditions as A010SLOS, with the satellite at 37700 km out. Signal conditions don't get much worse than this, and you can really see the QSB.

Hope this is of interest!
73 from KD7MW,

AO10S.JPG

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THE QUICK BROWN FOX JUMPS OVER THE LAZY
THE QUICK BROWN FOX JUMPS OVER THE LAZY
DOG @ 1/4 SPEED
DOG @ 1/4 SPEED

DE KD7MW THE QUICK BROWN FOX JUMPS OVER THE
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LAZY DOG @ 1/8 SPEED.

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1W AR>>
1W AR>>

AO10QSBS.JPG