

TRANSATLANTIC F₂ TV DX TIPS

by Jerry Pulice, WB2CPA

After two seasons of F2 layer TV-DX here at WB2CPA, I feel sort of qualified to pass on my experiences and to comment on what might be expected this fall. A lot of things took me by surprise, and if I'd known them sooner, some more IDs would have been possible.

Propagation

I started my experiments late in the fall of 1978 and didn't get to observe a whole season. As a result I was not prepared for 1979-80's surprises.

Seasonal Influence

The best months for F2 TV DX are late October, November, and early December with a secondary peak late in January & February. I'm not sure why, but a possible explanation is as follows: First, the day should be as short as possible to minimize ionospheric heating and expansion (dilatation). Second, the mornings should be as long as possible to maximize the UV exposure (Incidentally stronger during our winter--we are closer to the sun). This would skew peak MUFs towards the fall, where the afternoons shorten first, in the Northern Hemisphere anyway.

Solar Flux

Has to be up there. Learn to check the WWV reports at 18 minutes after the hour. If a Magnetic Storm is not under way (A & K indices less than 3 & 15, roughly), in my experience, I found the approximate flux numbers following to be necessary during the 7 or 8 week peak period:

41.25/41.50 MHz audio channels	flux >	150
45 MHz BBC video	" >	180
48.25 MHz W. European video	" >	210
49.75 Russian & 53.75 Irish video	" >	235

Add at least 20 to these for the January-February period and during less-than-quiet geomagnetic activity. Even then this doesn't explain the mysterious fall-off last winter (78-79 was better than 79-80, after December 18th) but it's a start. The time to look is when the sun is at high noon at the midpoint of the path + 1 hour, eg: 9-11 a.m. EST for the N.Y.C. - London path. In practice, I've seen 405 line BBC pictures as early as 0730 EST and as late as 1345+ EST. The 27 day solar rotation cycle is strongly evident--the solar flux has been swinging between approximately 150 to 250 units monthly for over a year. Expect any period of exceptional reception this November to have a repeat performance in December.

11 Year Sunspot Cycle

The cycle in all probability is now declining--is it worth it for you to equip yourself at this late date? Yes it is. Check out the curves of a "typical" cycle from any ham radio handbook and see that the descent from a peak is much slower than the rise. The peak was in the 160 area, the year before about 115, and the projected smoother sunspot count for December 1980 is in the 130+ range. Therefore the upcoming season will be better than 78-79, when 48.25 MHz video (from Europe) was in daily for a week during February. Fair enough?

Equipment

The best approach for 405 lines probably is the TRF technique detailed by Morrie Goldman in these pages before (VUD, January 1980). The switching of circuits back and forth to make one TV work on both 405 and 625 is too great (I did it but I used a 4PDT relay to switch the various horizontal tuned circuits in my Conrac 17" monitor), so I'd dedicate one TV to 405 lines, converting its horizontal system and going right into its video IF at 45 MHz, etc. See Morrie's article for details. As far as 625 line reception goes, you have no problems as far as scanning is concerned. The horizontal rate is within range of any U.S. TV and the vertical should be, too (you may have to add resistance in series with your vertical hold control--not likely). However, at 50 Hz vertical scan your picture will be stretched, clipping the top and bottom. Be ready to re-set your vertical hold, linearity, and size controls once 625 line video makes it into your shack. Tuning range will be a problem unless you buy a foreign TV (easy to do in the U.S.--previous VUID issues listed export dealers here) or are ready to do some building. A converter like I published last fall (VUD, September 1979) is one way. Another would be to realize that is what you are trying to do is extend your lowest channel 7 MHz (1 1/6 U.S. channels). Your fine tuning won't go that low, but you can modify the tuner, however--it involves padding one channel down so you can get to 48.25 MHz. I'd keep ch 2 operational however--Irish ch "B" from Gort is within range of ch A2 and may well show up this year. If you don't feel like doing the conversion, approach your friendly local TV repairman and patiently explain what you're trying to do. Take along a copy of the VUD so he doesn't think you're crazy! You should be able to find a guy willing to take the job. Narrowing up the IF bandwidth by re-alignment (say to less than 2.5 MHz) will pay off with increased gain, better sync, lower noise, and importantly, better selectivity. I've seen 60 db + S9 signals on 45, 48.25, 49.75, 51.75, 53.75, & 55.25 MHz (my local WCBS) at once and gotten pictures on each. You will find tuned preselectors valuable in reducing bandwidth for this purpose. I quickly learned to narrow my preamps by synchronous tuning during poor reception, and sharpen it by re-tuning when conditions allow.

Un-ID Stations

In general, all your reception will be un-ID. They don't use call letters over there As I write this I still haven't figured out all the reception on the 8+ hours of videotape I shot last fall. I have, however (with some reasonable lack of uncertainty) IDed Ireland, Austria, Czechoslovakia, the U.S.S.R., Poland, West Germany, the British Isles, and France. On what do I base these claims? For one, frequency and scanning standard. Secondly, most of the stations seem to be on TP during their afternoon, when they are most likely to be seen here. Study a European test "card" guide. The EZU electronic grid on 49.75 is the U.S.S.R., also a smaller grid pattern. Austria uses the Telefunken TP on 49.75. West Germany (among others), the FUBK TP on 48.25, and so on. So don't expect to break it down to the actual transmitter received. As a matter of fact, network feeds may make some of the above claims a little shaky. Bill Grant and I both received a German network SWF that has no transmitters on ch E2--The World Radio-TV Handbook (highly recommended) however mentioned that SWF is parallel to another net at the time we saw it, one that transmits on E2 near the French border. Actually, nit-picking on claims is not in the true spirit of DX. I found the satisfaction of setting a goal and pursuing it to its completion (that is seeing what was on that 48 MHz buzz I heard in February '79!) enough. I'd be happy to help with any questions anyone has on F2 TV reception or technique

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