A HOMEBREW ANTENNA FOR VIDEO SIGNALS BELOW 54 MHZ

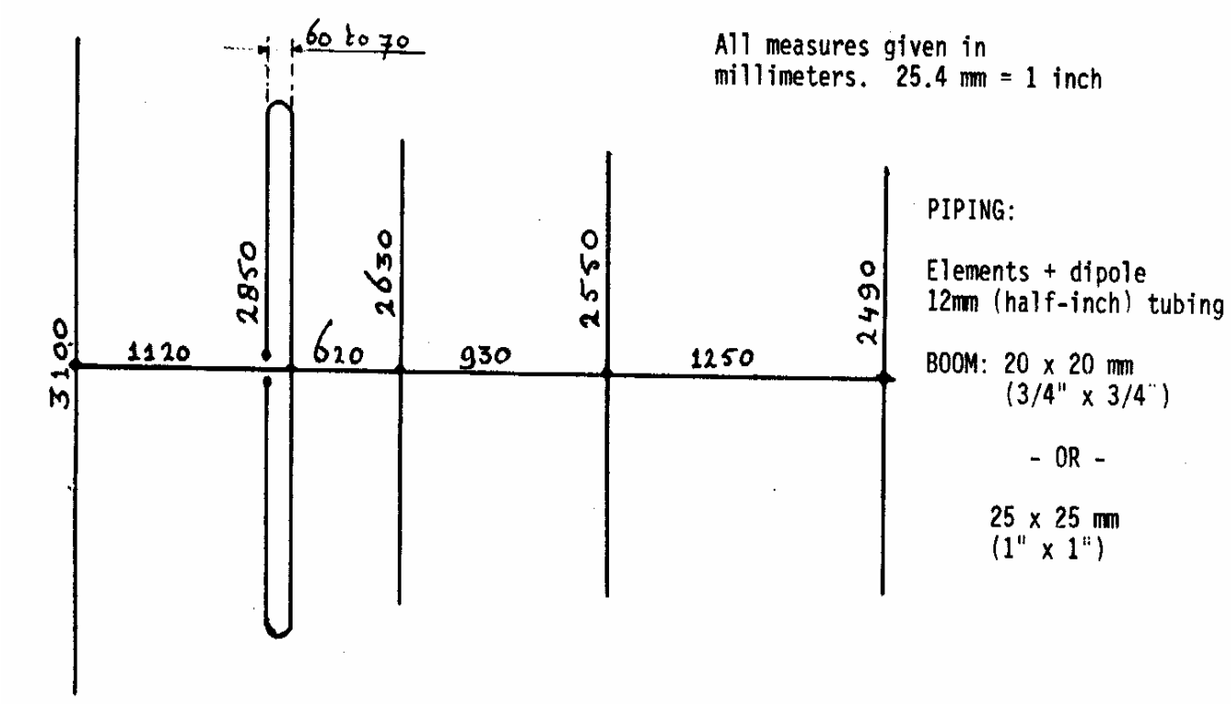
BY JOOP J. PROSEE

In “International—Notes” Ron Stock asks for powerful antenna designs for F2 reception of E2/R1 channels (48.25/49.75 MHz) and I presume also for the New Zealand channel 1 and Australian channel 0. Well I think that I can offer such a special design for the North American TVDXers.

The antenna I want to introduce to you directly originated from the F2 conditions of the last 14 months. In spite of very high solar activity, the MUF is only very very seldom higher than ch E2/R1. Channel E3/A2 reception has been up to now extremely rare. Considering this fact, I decided in early 1989 to mount a big ch E2 antenna In one of my masts. The mounted antenna was a rather big commercial E2 design (Yagi) with three reflectors, a folded 300-ohm dipole, and three directors.

Unfortunately, this antenna performed not as could be expected from such a design. The results on ch E2 were not better than the results with my normal 4 element home built, wideband antenna for 47—68 MHz Ich E2—E4). That’s why I restyled this E2 antenna last October into a design that Is now the fulfillment of my wishes.

Another fact that appeared with these solar—cycle conditions is: only reception of vision (video) frequencies. Of all the many F2 TV signals that I received the last 14 months, I had only twice reception of traces of sound. So I made up my mind and decided to design the antenna only for the vision part of ch E2/R1. The design spectrum lies between 47 & 52 MHz. This choice also takes care of very good reception of the 50 MHz HAM-band that’s much smaller here than In the USA, only 50-50.4 MHz! As stated before this design gives bad reception of the E2/R1 soundchannels (53.75 & 56.25 MHz), on the other hand qood reception of the soundchannels of New Zealand ch 1 and Australia ch 0 (50.75 & 51.75 MHz) must be possible!



I have used this restyled ch E2 antenna since early November and the reception of E2/R1 visionsignals has become absolutely noticeably better. More gain, less disturbances giving a cleaner picture and a better directivity compared with the 4-element wideband B-i antenna that I normally use for 47—68 MHz Horizontal signals. At this moment a copy of this restyled ch E2 antenna has been built by me and is in use with another Dutch wellknown TVDXer since 15th of November 89. He wanted such an antenna after he saw the results of it in my 0TH. He has already made marvellous F2—catches with It, for instance China ch 1 (= ch Ri) and very distant USSR transmitters on Ri.

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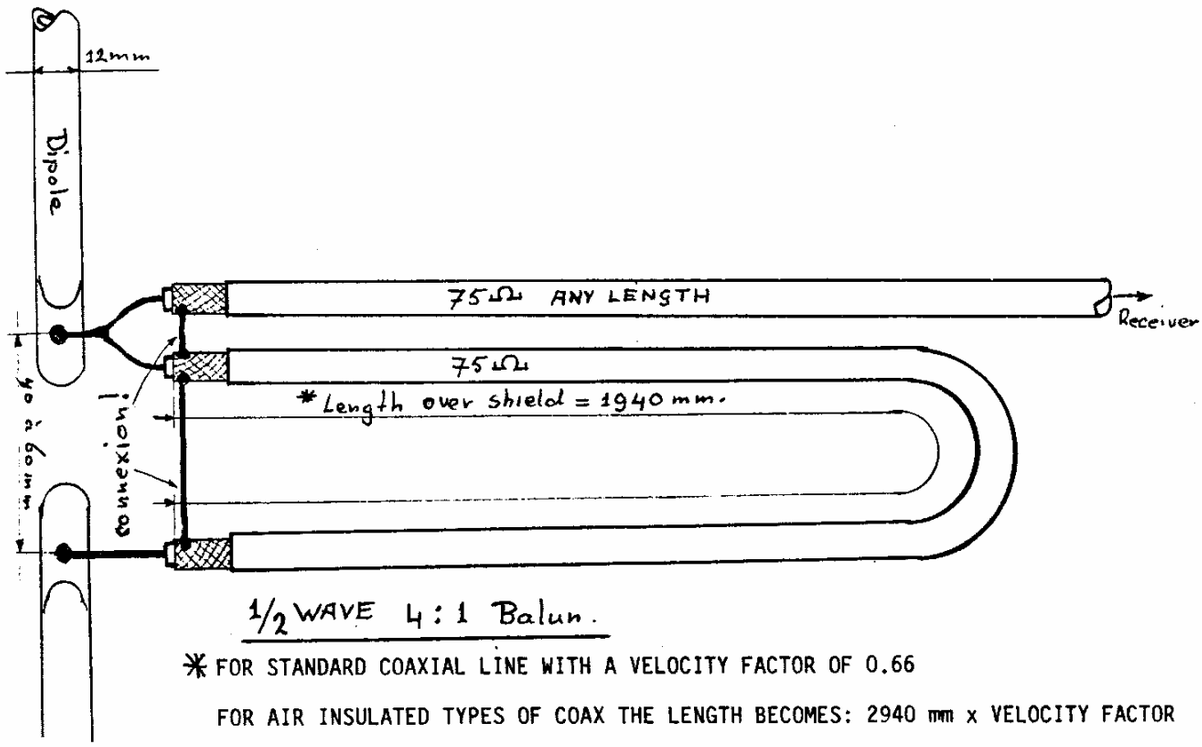
On the previous page is a sketch of the E2—design; please mind that if 75/50 ohm coaxial line is used, a 4:1 balun is necessary. I don't know if such trafos (baluns) are normally obtainable in the USA. If not, such a balun can easily be made out of a piece of any normal kind of coax! (see sketch below) Please mind that the length of the balun is measured over the shield of the coax, the total length is somewhat bigger. Of course 300 ohm twinlead can be attached directly to the folded dipole, in Europe this sort of line is not used anymore, has not been used for many years!



I hope that you find this design interesting...compared with a vertical polarised groundplane as used among US/Canadian DXers. Especially the directivity of the design and the F/B ratio of 17 dB is superior to a ground plane with no directivity or F/B ratio at all! Our experiences with F2—propagation show, that horizontally polarized antennae give the best results with F2! The forward gain of this E2-design lies around 8.5 dBd. It is recommendable to mount the E2—antenna with a support to strengthen the boom of this rather big beam.

Im an engineer on a big powerplant here in the province which is delivering electricity for +3.5 million people and all the industries. My QTH lies 40 km (25 miles) north of our capital Amsterdam. The Log Periodic-antenna principle is my favorite and I use these types of antennae for BAND 1—2, BAND 3 & UHF. Antennae for BAND 1-2 & BAND 3 are my own designs and home made. My BAND 1-2 Log Periodic is designed for the 45-108 MHz frequencyspectrum with 10 log-per dipoles and has a boomlength of 4.145 metres (137). My BAND 3 (174—230 MHz) antenna consists of 8 log—per dipoles, 1 Yagi reflector and 9 Yagi directors with a boomlength of 3.705 metres (12'2") For UHF, I use 4 stacked commercial TeWeA (Philips) log-periodic—yagis with 15 log—per dipoles and 24 1 Yagi directors in 2 rows of 12 and a boom length of 2.100 metres (7).

Another DX—interest is the study of ionospheric propagation. This is because I was unpleasantly surprised when I discovered that the knowledge of Ionospheric propagation among (TV) OXers is unbelievably low. Since last year when studying this matter I discovered that many opinions about this subject have to be considered again. In an upcoming article the newest opinions about ionospheric ways of propagation will be ventilated.

73's de: Joop

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