10 GHz Microwave notes……

LA3EQ
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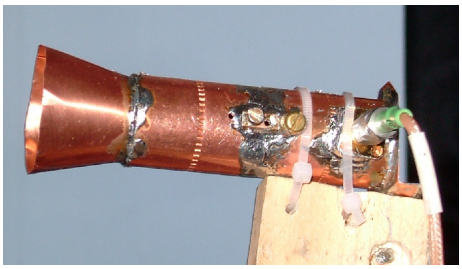
Stavanger 2007

Beware size markings on tube! After using the old feed horn for almost one year, I noticed that it was not 22mm in diameter as I always had thought….It never acquired to me to measure it before, because on the side of the tubing there was a "22x1" engraved on it…to my surprise it was only 18mm when I measured it. Now 18mm is not a good diameter for copper tubing for 10 GHz as it is close to cut-off frequency. Changing from 18 mm to 22 mm tubing in the feed horn gave almost 6 dBi more gain. Some of this gain comes from a little larger flair on the new horn.



New 22mm copper tubing feed horn……..

Fwd = 900mW
Ref = 32mW
Return loss =14,5 dB
Gain= -10dB@20dB ref horn = 10dBi

Old 18mm copper tubing feed horn…….

Fwd=900mW
Ref=28mW
Return loss = 15dB
Gain = -14dB @20dB horn = 4dBi

Test equipment:

Kenwood TS-2000X transceiver
Demi 2watt transverter
HP 8565A Spectrum analyzer 10MHz-40GHz
HP 432A power meter
HP 478A power mount
Narda 4246-10 directional coupler
Narda 20dB attenuator
Ref antenna is a homemade 20dB horn