*BPF, IF = 9MHz*

*Design goals:*

* Chebyshev, 0.1dB ripple
* loaded Q < 10
* IL < -2dB
* IF rejection > -54dB (requires -50dB DBM)
* image rejection > -104dB
* IMDR > 100dB

| Band | BW, MHz | Δf, MHz | IF, dB | Image, dB | L | IL, dB | Order |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 40m | 1.5 | 6.5 - 8 | -28 | -130 | 30t 0.35mm2 on T80-6, 4.64uH | -0.9 | 4 |
| 20m | 2 | 13.5 – 15.5 | -54 | -110 | 25t 0.35mm2 on T80-6, 3.24uH | -1.1 | 4 |
| 15m | 3 | 20.5 – 23.5 | -66 | -92 | 2 uH, 23t 0.35mm2 on T80-10 | -1.5 | 4 |
| 10m | 5 | 28 - 33 | -65 | -67 | 1.27 uH, 18t 0.35mm2 on T80-10 | -1.9 | 4 |

| Filter | 9MHz | 39 MHz | 46 MHz |
| --- | --- | --- | --- |
| 9MHz IF notch | -40 dB | - | - |
| 30 MHz LPF | - | -26 dB | -40 dB |

| Band | C, pF | C1, pF | C2, pF | C3, pF | Vil | Vih | Vol | Voh | IL, dB | BW, MHz | Notes |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 40m | 130/150 | 100 | 680 | 750 | 5.2 | 4.4 | 4.5 | 4.4 | -0.9 | 1.5 | 30t 0.25mm2 on T80-6, 4.64uH |
| 40m | 130/150 | 100 | 680 | 750 | 5 | 5.2 | 4.6 | 4.5 | -0.9 | 1.4 | 30t 0.34mm2 on T80-6, 4.64uH |
| 40m | 120/135\* | 160 | 620 | N/A | 5 | 5 | 4.6 | 4.6 | -0.7 | 1.5 | 34t 0.25mm2 on T50-6, 5.23uH |
| 40m | 120/130 | 240 | 680 | N/A | 5 | 5 | 4.6 | 4.6 | -0.7 | 1.6 | 32t 0.25mm2 on T80-6, 5.23uH |
| 40m | 120/130 | 180 | 680 | N/A | 5 | 5 | 4.4 | 4.4 | -1.1 | 1.7 | 32t 0.34mm2 on T80-6, 5.23uH |
| 40m | 160 | 270 | 820 | N/A | 5 | 5 | 4.7 | 4.7 | -0.5 | 1.4 | 29t 0.34mm2 on T80-6, 4.32uH |
| 20m | 43/47 | 75 | 270 | 360 | 5 | 5 | 4.4 | 4.4 | -1.1 | 1.9 | 25t 0.34mm2 on T80-6, 3.24uH |
| 20m | 36/39 | 91 | 270 | N/A | 5 | 5 | 4.2 | 4.2 | -1.5 | 2 | 29t 0.25mm2 on T50-6, 3.83uH |
| 15m | 36 | 82 | 215\* | 270 | 5 | 5 | 4.2 | 4.2 | -1.5 | 3 | 22t 0.34mm2 on T80-10, 1.82uH |
| 15m | 30/33 | 68 | 160 | N/A | 5 | 5 | 4.2 | 4.2 | -1.5 | 4.3 | 25t 0.25mm2 on T50-10, 2.26uH |
| 15m | 36 | 120 | 270 | N/A | 5 | 5 | 4.2 | 4.2 | -1.5 | 2.7 | 22t 0.34mm2 on T80-10, 1.82uH |
| 15m | 39/41\* | 110 | 240 | N/A | 5 | 5 | 4.2 | 4.2 | -1.5 | 3 | 22t 0.25mm2 on T50-10, 1.78uH |
| 15m | 56 | 120 | 270 | N/A | 5 | 5 | 4.4 | 4.4 | -1.1 | 4 | 18t 0.34mm2 on T80-10, 1.27uH |
| 15m | 58/59 | 150 | 330 | N/A | 5 | 5 | 4 | 4 | -1.9 | 3.4 | 18t 0.34mm2 on T50-10, 1.24uH |
| 10m | 27 | 33 | 118\* | 160 | 5 | 5 | 4 | 4 | -1.9 | 5.4 | 18t 0.25mm2 on T80-10, 1.27uH |
| 10m | 27 | 47 | 120 | 160 | 5 | 5 | 4 | 4 | -1.9 | 5.3 | 18t 0.34mm2 on T80-10, 1.27uH |
| 10m | 36 | 100 | 120 | 180 | 5 | 5 | 4 | 4 | -1.9 | 6.2 | 16t 0.34mm2 on T80-10 1.05uH |
| 10m | 27/24 | 56 | 100 | 160 | 5 | 5 | 3.8 | 3.8 | -2.4 | 6 | 18t 0.34mm2 on T80-10, 1.27uH  5th order, 27/27/24 |
| 10m | 27 | 68 | 160 | N/A | 5 | 5 | 4.2 | 4.2 | -1.5 | 4.3 | 18t 0.34mm2 on T80-10, 1.27uH |
| 10m | 27 | 91 | 100 | N/A | 5 | 5 | 4.2 | 4.2 | -1.5 | 7.6 | 18t 0.5mm2 on T80-10, 1.27uH |
| 10m | 30/33 | 82 | 180 | N/A | 5 | 5 | 4 | 4 | -1.9 | 4.9 | 18t 0.34mm2 on T50-10, 1.24uH |
| 10m | 68/56 | 160 | 390 | N/A | 5.2 | 5.2 | 3.6 | 3.6 | -3.2 | 3.4 | 13t 0.34mm2 on T50-10 0.697uH |

| 9MHz IF Notch Filter | | | |
| --- | --- | --- | --- |
| L1 | L2 | C1 | C2 |
| 27t 0.34mm2 on T80-6, 3.83uH | 5t 0.5mm2 d=10mm l=6mm, 0.226uH | 82 | 1n3 |

| 30MHz LPF | | | |
| --- | --- | --- | --- |
| L1 | L2 | C1 | C2 |
| 9t 0.34mm2 on T80-10, 0.387uH | 10t 0.34mm2 on T80-10, 0.461uH | 130 | 220 |

1. It might be possible to build the 40m and 20m filters on T50-6 and still be under -2dB IL.
2. The 30MHz LPF starts attenuating at 26MHz, at 29MHz it is -3dB.
3. Build the 10m BPF on T94-10 to achieve insertion loss well under -2dB.
4. This will allow to switch it to 5th order, which will increase insertion loss, and avoid the LPF.