

Technical Description for MINIMAX:

Transmitter Chain:

The transmitted RF pulse is generated by a 60MHz Coherent Oscillator (COHO) operating in a CW mode and pulsed via a high isolation switch which is then up-converted to the operating RF frequency. The up-convert mixer is of the triple balanced topology providing generally 25dB of suppression. This RF pulsed signal is filtered via a 6-cavity tunable filter to ensure that no mixer images or spurious emissions are generated. A signal preamplifier is then used to amplify this signal to the level necessary for the high power amplifier. A solid state amplifier utilizing "Gallium Arsenide Field Effect Transistors" (GaAsFET). The GaAsFET's comprise individual power modules which are then combined with phase matched power combiners to achieve the required power output. Finally, a harmonic filter is used to eliminate any spurious and harmonic emissions.

Receiver Chain:

The receiver is comprised of a Low Noise Amplifier setting a front end noise figure of 2.5dB. A 6-pole cavity tunable filter is used as a pre-selector then to eliminate out of band interferers and to limit spectral content available for processing. A double balanced mixer is used as a single stage down-converter with an Intermediate Frequency (IF) of 60MHz. This IF is further processed with an amplifier, Linear and Logarithmic amplifiers, and a quad phase detector to form the Intensity and Quadrature (IQ) signals necessary for digitization and weather moment processing