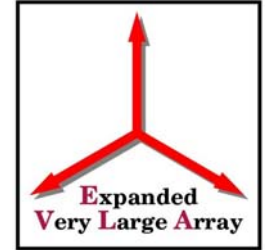


Feed & Front End PDR

Solar Observing



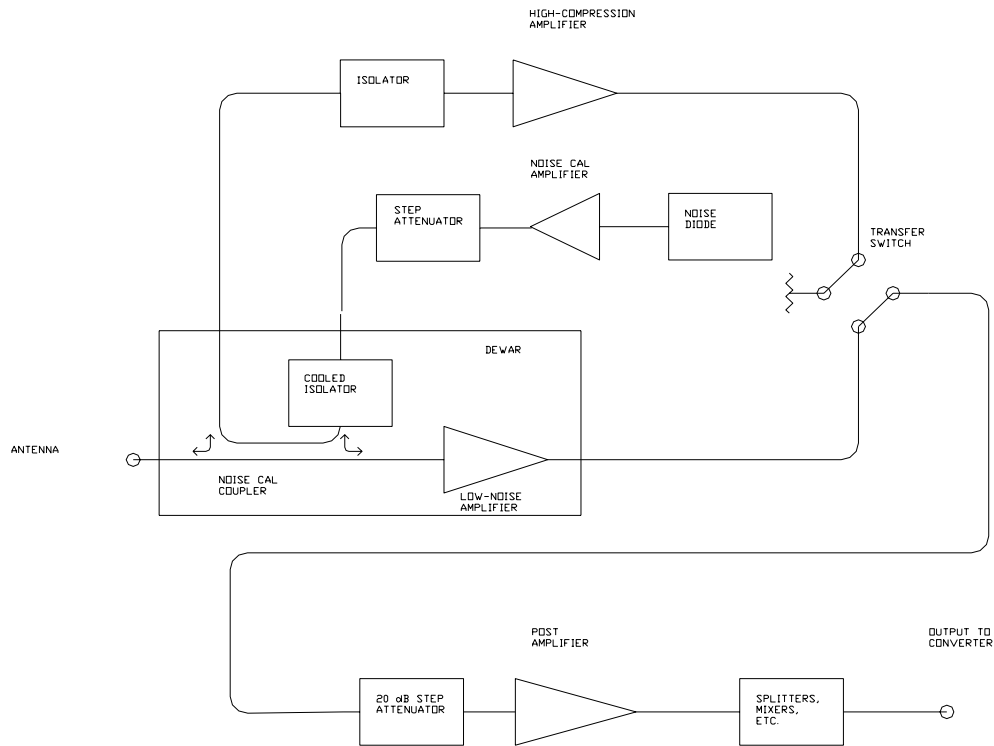
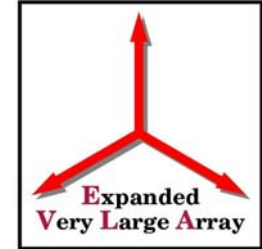
Solar Power Levels



- 1 SFU = 10^4 Jy = 1250 Kelvins at VLA
- Max. flare = 100,000 SFU
- “Normal” $T_{\text{sys}} \sim 25$ K = 0.02 SFU
- Max/Normal = 67 dB range.
- Receivers & Tcal must accept 67 dB range.

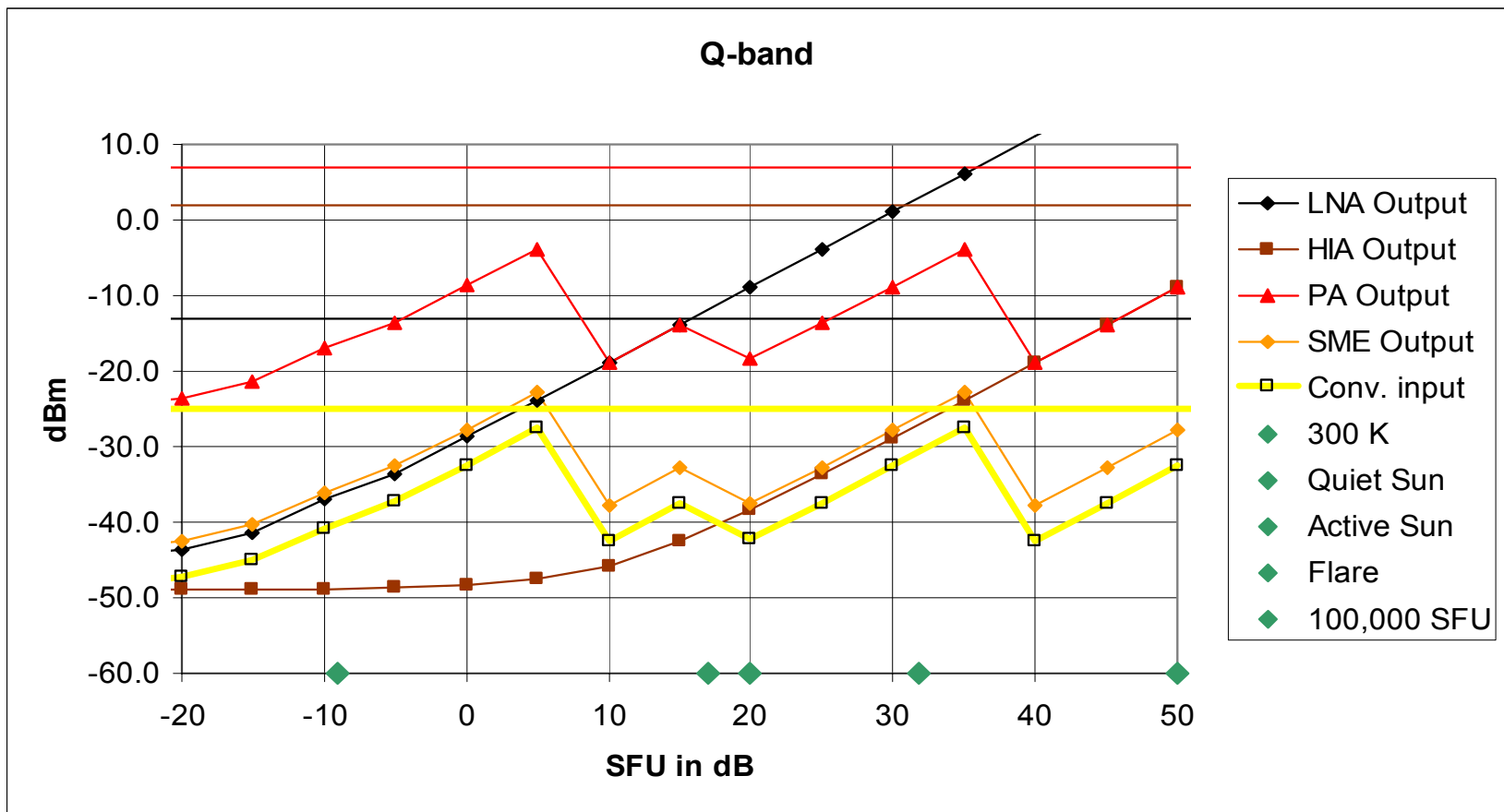
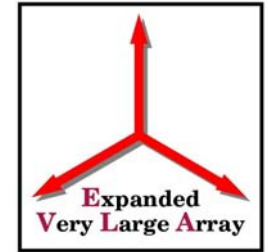


Solar Block Diagram



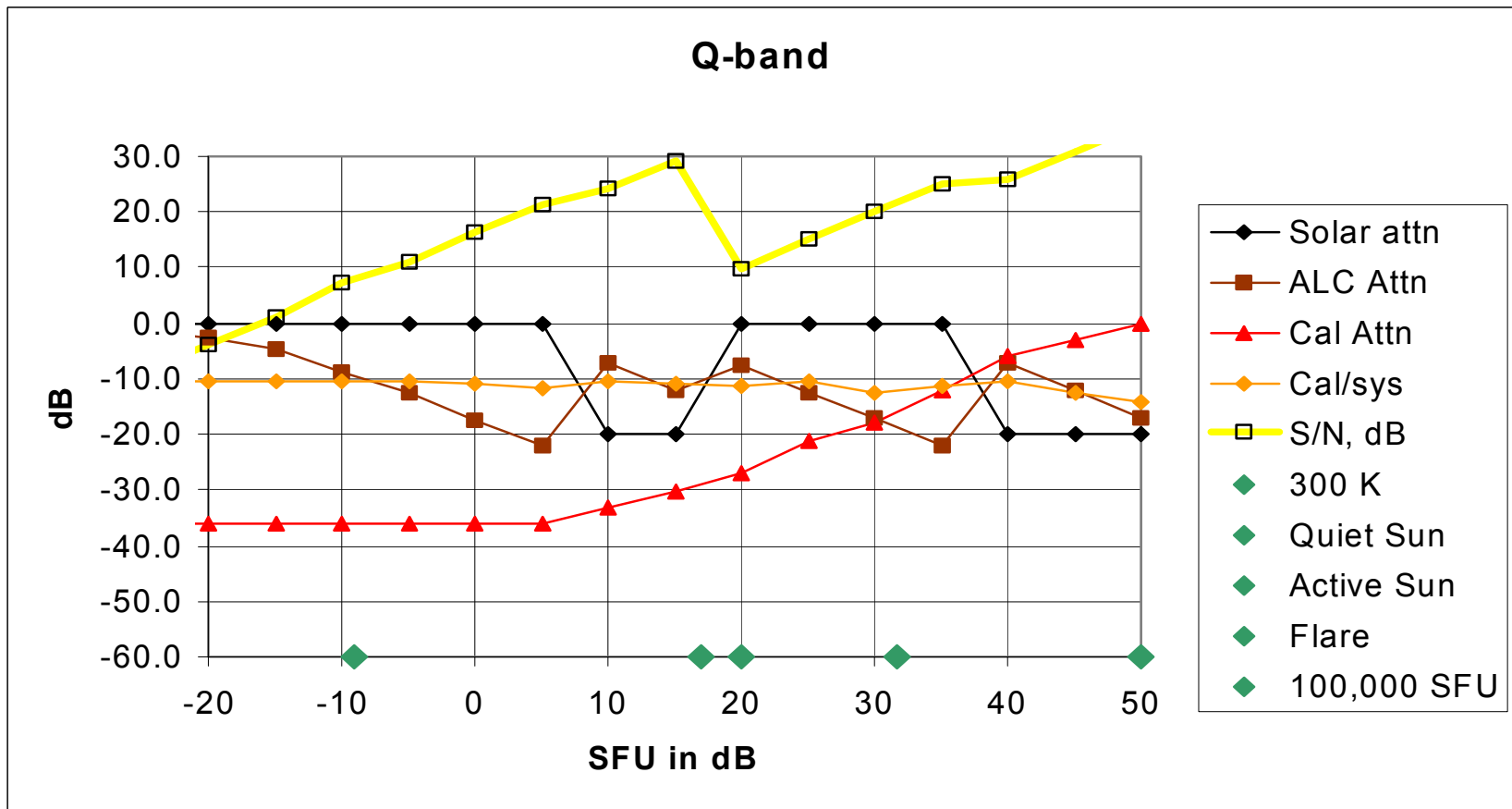
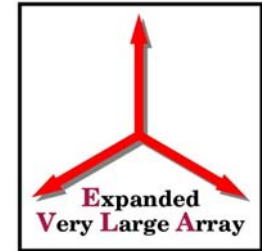


Power Levels in Solar Receiver



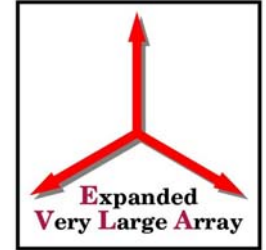


Signal-to-Noise Ratio, etc.





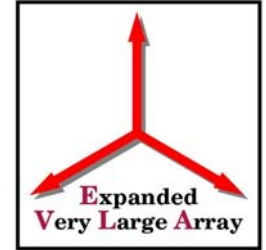
New Components Required



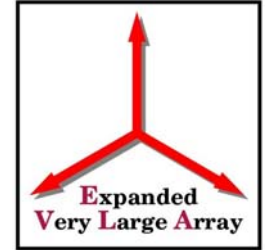
- “High Compression” amplifier (2)
- Isolators (3)
- Transfer switch (2)
- Noise amplifier (1)
- Cal step attenuator (1)
- 20 dB “solar” attenuator (2)



New Components Required—Cost



- Note: very rough guess!
- L-band (1-2 GHz) \$3k/antenna
- X-band (8-12 GHz) \$5k/antenna
- Q-band (40-50 GHz) \$20k/antenna
- Cost not included in plan



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- May require solar cal on all antennas.
 - Need accurate cal values at all levels.
 - Need phase-invariant switching.
 - Converter ALC range > 20 dB.
 - ALC attenuators move to front of converters.