The unit encapsulated by Misty West was modifed to extend the length of the resonator into the potting material. A representative sample of the extension is shown below. The resonators on future units should be replaced and trimmed to duplicate the length.

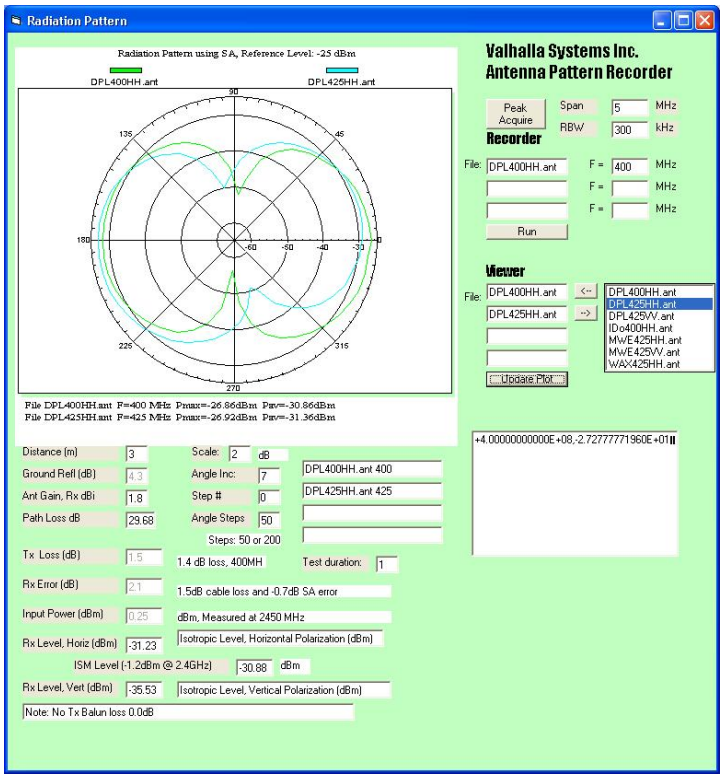

The extension is in the shape of an L, the outside dimensions are 5mm on the short side and 15mm on the long side. This shifts the resonant frequency to ~425 MHz once encapsulated with a tuning range of about 10 MHz. The tuning inductor, L9, is installed as 6.8nH and the fixed series capacitor, C51, is changed to 10pF.

FYI, in air the resonant frequency was measured at 531MHz.

The radiated performance of the prototype was compared against the original IDEO unit (Jan_20 and tuned to 400 MHz) and the parrafin Wax prototype (Jan_21 and tuned to 425 MHz).

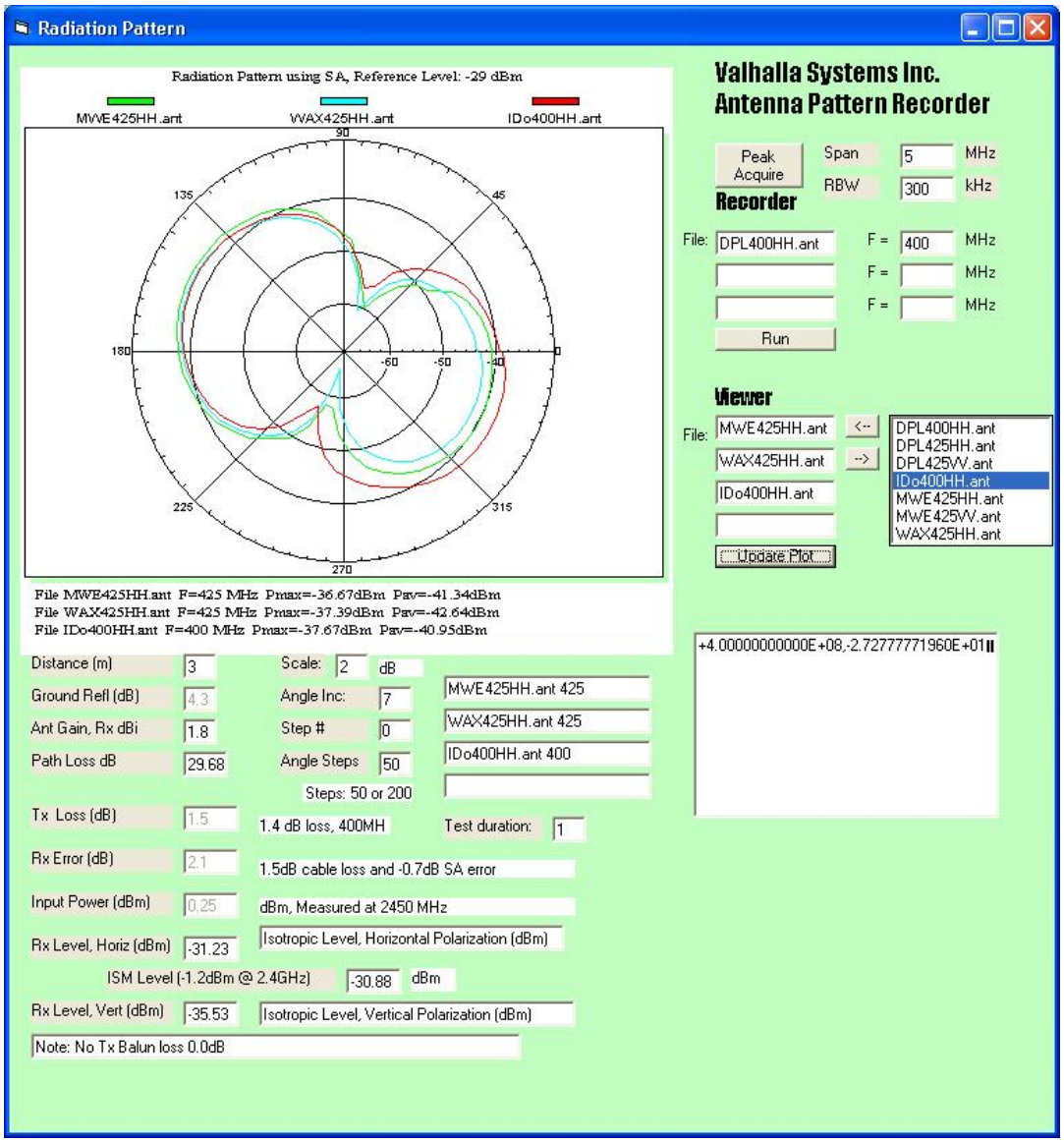
This unit is shown on the PVC test stand.

The same orientation was used for all modules.




This is a plot of the reference dipole antenna measured at 400 and 425 MHz. The received levels are used to estimate gain assuming a dipole of 2dBi.

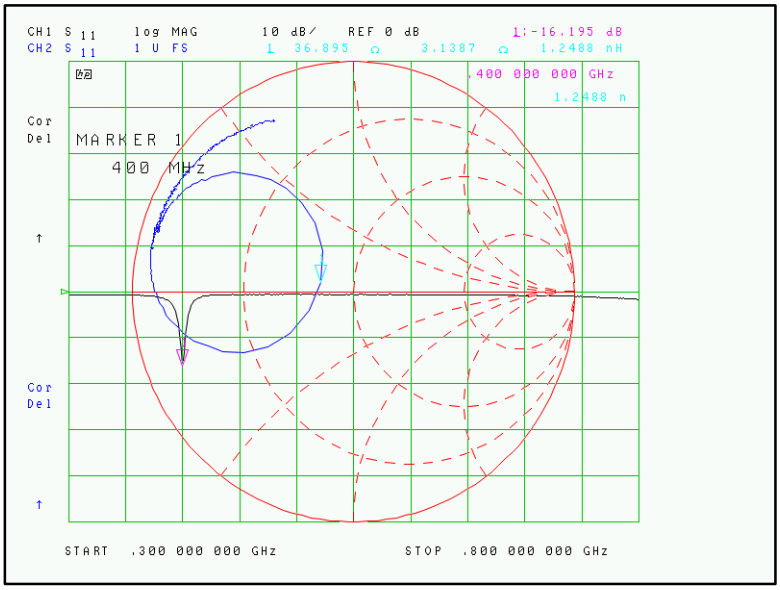
This is a comparison plot of the three prototypes, IDEO_Jan_20, Wax_Jan_21, and the Misty_West_Apr_21.

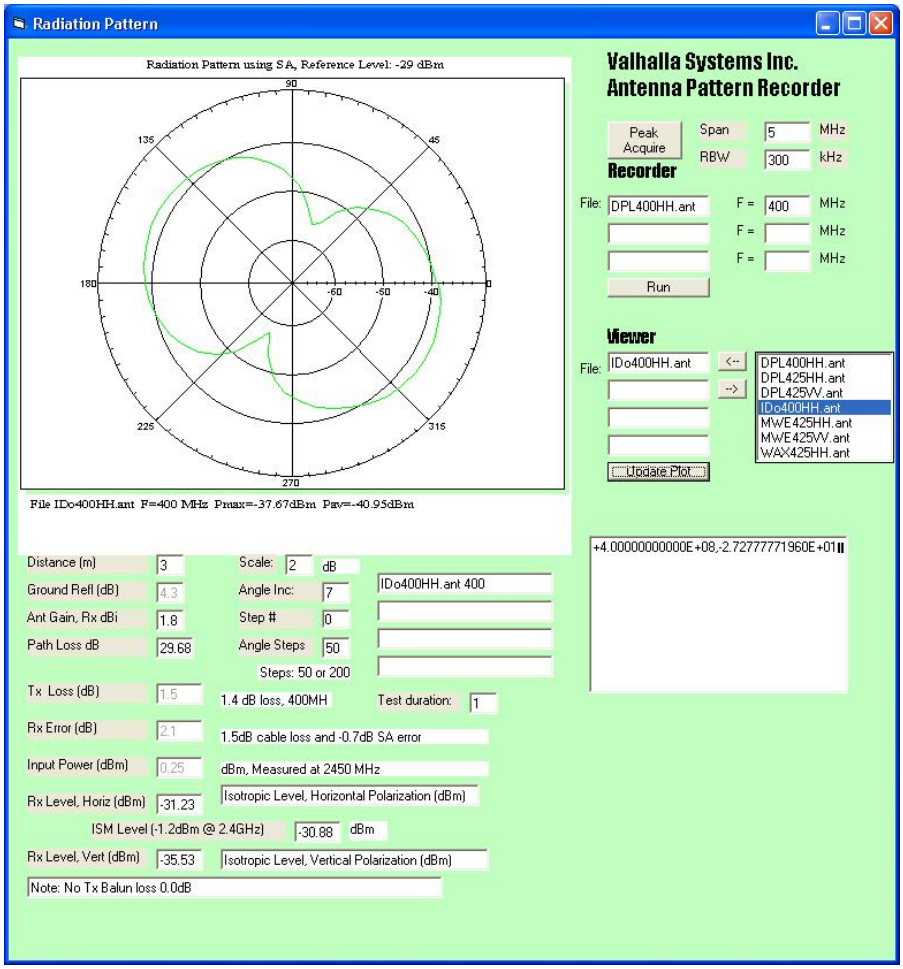



Comments:

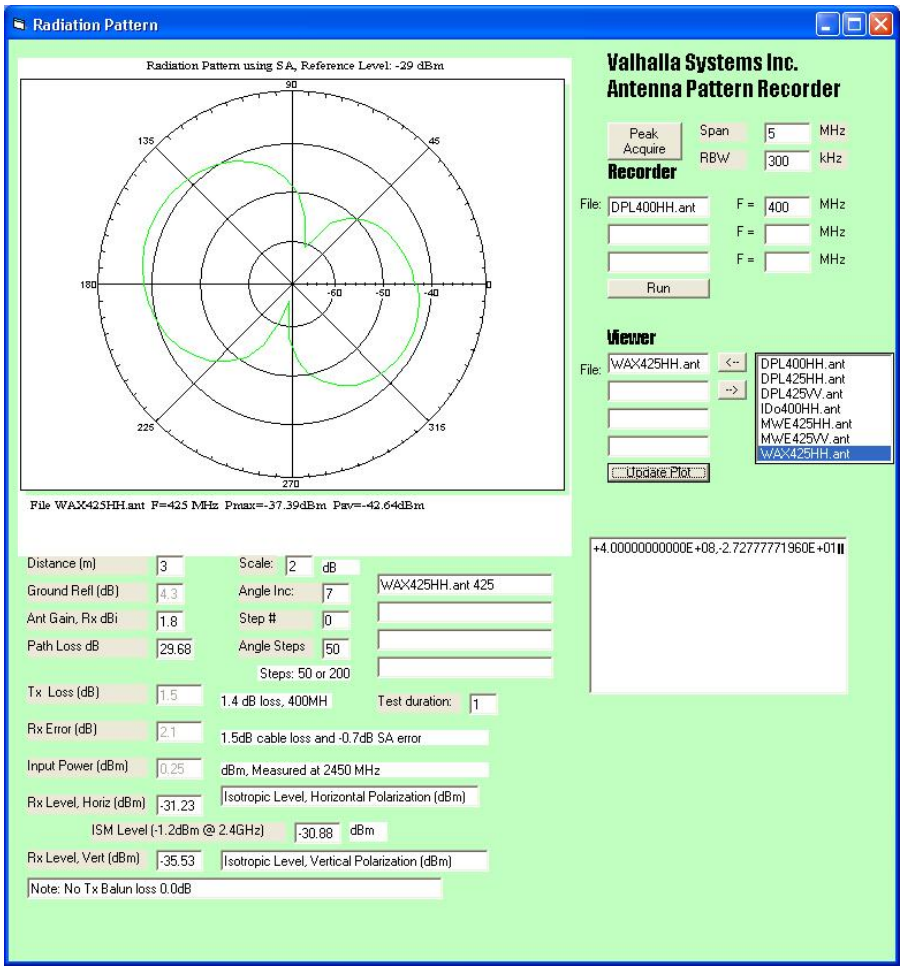
- All three prototypes show very similar gain characteristics.
- There is some assymetry attributed to difference in construction.
- The peak gain of all three antennas is approximately -8dBi.

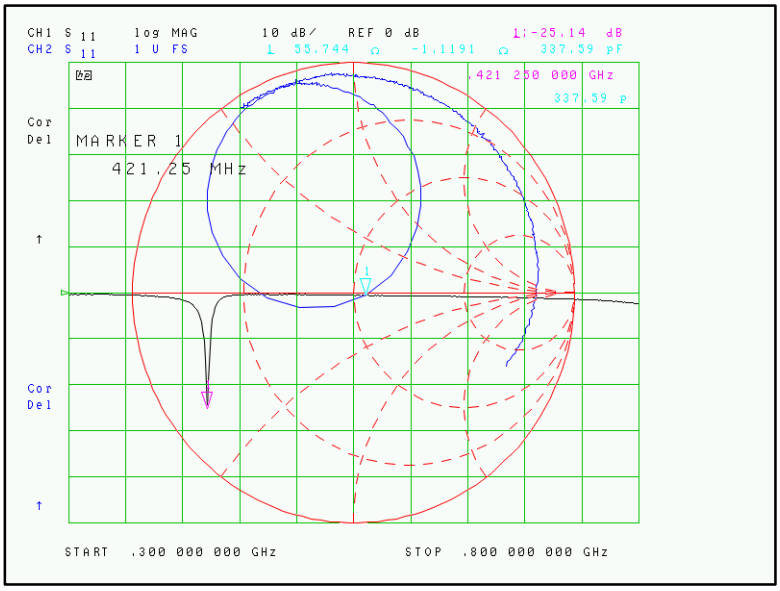
These are radiation and return loss plots of the IDEO prototype, tested at 400 MHz.



These are radiation and return loss plots of the Wax prototype, tested at 425 MHz. The wax prototype did not contain a battery.



These are radiation and return loss plots of the Misty West prototype, tested at 425 MHz. Previously tuned on Phantom for 401.65 MHz