CFAR Detection

CFAR Detection

- For CFAR input, currently only support non-coherent combining for integration. Output of integration is total power from all antennas in SP floating-point only!
- CFAR cell averaging (CFAR-CA) and CFAR ordered statistics (CFAR-OS) are supported.
- Relative detection threshold is determined from input probability of false detection (Pf). Table is from Alek's detection documents.
- Memory used
  - Scratch pad size of: fft1DSize*(sizeof(float) +sizeof(int16_t)) + 100*sizeof(float)
  - Relative threshold table sizes vary from canfiguration.

CFAR Detection Benchmarks

C66x Benchmarks

1D FFTsize	2D FFTsize	nDetObj	CFAR-CA?	CFAR-OS?	Cycles
2048	32	34	Yes	No	887925
2048	32	13	No	Yes	6999377
1024	32	20	Yes	No	455540
1024	32	8	No	Yes	3514375
512	64	19	Yes	No	472102
512	64	8	No	Yes	3547029
256	128	19	Yes	No	500387
256	128	8	No	Yes	3612285

C674x Benchmarks

1D FFTsize	2D FFTsize	nDetObj	CFAR-CA?	CFAR-OS?	Cycles
2048	32	34	Yes	No	2203709
2048	32	13	No	Yes	9220029
1024	32	20	Yes	No	1107895
1024	32	8	No	Yes	4613817
512	64	19	Yes	No	1112807
512	64	8	No	Yes	4633854
256	128	19	Yes	No	1124594
256	128	8	No	Yes	4675126