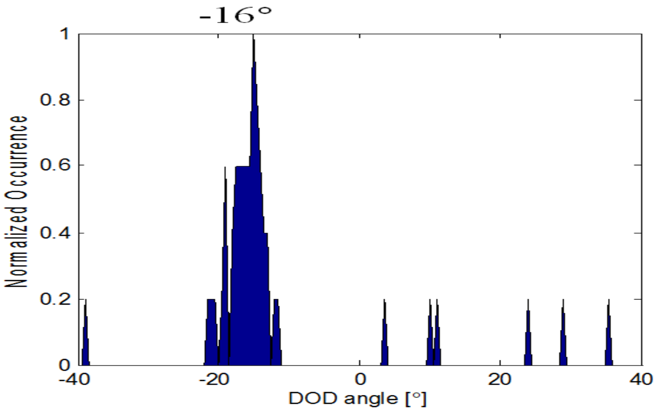
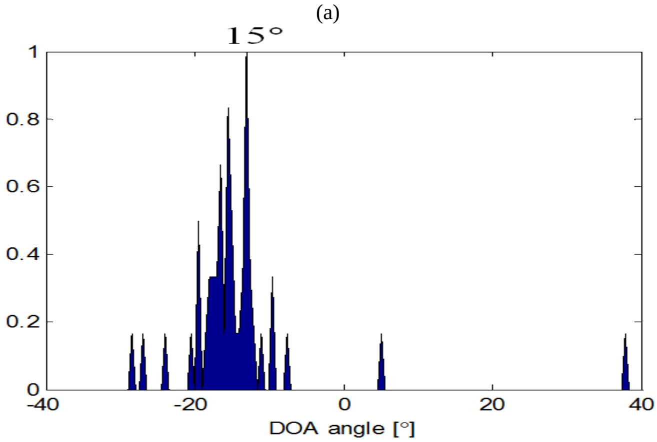


(a)



(b)

Fig. 13 Angle histograms obtained with implementation of power allocation scheme (H = 78): (a) DOD, and (b) DOA

IV. Conclusion

This paper proposed a target localization scheme in MIMO OFDM radars employing an adaptive power allocation scheme among the sub-carriers. The sub-carrier selection [18] was made by evaluating the singular values (obtained from singular value decomposition) at each of the sub-carrier based on thresholding technique, and the result is fed to the MIMO radar transmitting side. The radar will allocate the transmitting power among the selected sub-carriers from the next scan and onwards. It was shown by numerical simulations and experimental measurements that the proposed scheme was effective in estimating the angles of a target with fluctuating RCS against frequency, ascribed to the utilization frequency diversity obtain from selected sub-carriers of the OFDM signal. Experimental evaluation in a radio anechoic chamber was also done to validate the proposed scheme. The result in this paper was presented in the case of one target, but in principle, it can be applied to multi-targets as well due to the capability of the MUSIC algorithm. The proposed algorithm was considered to be a good candidate to be applied in future MIMO radar systems designed to detect targets with fluctuating radar cross sections.

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