This article provides a generalization of the result obtained in the previous article by the same authors [1] (MR2580186). In [1], an elaborated technique for the computation of *planar* one-loop amplitudes in $\mathcal{N} = 4$ super Yang-Mills theory is developed, and it is shown that the dual conformal anomaly of the amplitudes can be expressed exactly as proposed in [2] for one-loop MHV and next-to-MHV amplitudes. In this article, two proofs of the dual conformal one-loop anomaly (as proposed in [2]) are presented for amplitudes of arbitrary helicity configurations. The first proof uses the same analysis in [1] and the second one uses a computational technique developed in [3]. As in the previous article, the former proof is based on a dual relation between the Wilson loops and the MHV amplitudes in the planar $\mathcal{N} = 4$ super Yang-Mills theory. On the other hand, the latter proof has an advantage of making more manifest the connection between the dual conformal anomaly of a generic amplitude and its infrared divergences.

References

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