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Title:Tolerance analysis of ALMA band 10 corrugated horns and optics

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Abstract:Atacama Large Millimeter/sub-millimeter Array (ALMA) band 10 corrugated horns and optics (787-950 GHz) have been analyzed considering manufacturing and assembly tolerances. The results of thousands of Method-of-Moments and Physical-Optics simulations have been used to determine the impact of these tolerances on final electrical performances. Results on cross-polarization level and focus position, among others, are of special interest. This analysis has been compared with real measurements of ALMA band 10 production components. Results of measurements performed with a high number of corrugated horns match the statistical results fairly well. This study is important to assess the repeatability of results for different fabrications of the same component at THz frequencies. © 1963-2012 IEEE.

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Controlled terms:Antennas - Gaussian beams - Submillimeter waves

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