

Abstract Details

Title: Margins Roll in Determination of HPA Sizing for Different Types of Carriers

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Abstract: A satellite transponder having finite resources in terms of bandwidth and power, leasing costs are determined by bandwidth and power used. For optimal utilization, a satellite circuit should be designed to use similar share of transponder bandwidth and transponder power. The main objectives are summarized in determining the significant differ when single and multicarriers, in the regardless of the number of carrier are used. This paper ensuring why the transmission budget take this single in consideration and don't care with the specific carrier number in the multicarrier. This was achieved by studies the effect of margins (up and down) in the HPA sizing and EIRPs. This paper detected that, the precise value of HPA size that required to upgrade the link capacity represent in increasing the carrier number, in order to upgrade the link from single carrier to 7 carriers, this required to increasing 47.943 dBW of HPA sizing and just 0.326 dBW required to upgrade the link from 2 to 7 carriers. When margin increased to 18 dB the required 46.95 dBW and 0.331dB respectively, also the precise value for requiring EIRP, the study reveal that, the Margin has significant effect in the EIRP that radiated from the E/S and not effected In that radiated from a satellite, on the other hand This EIRP has not any effect in the carrier numbering. Finally, mathematical equations and plotting a nearest curve are revealed, explaining the Relation between carriers and required HPA sizing at different margin.

Keywords: HPA, Antenna, Carrier and Power Density.