

# UNITED STATES FREQUENCY ALLOCATIONS

## THE RADIO SPECTRUM

**RADIO SERVICES COLOR LEGEND**

AERONAUTICAL MOBILE	INTER-SATELLITE	RADIO ASTRONOMY
AERONAUTICAL MOBILE-SATELLITE	LAND MOBILE	RADIO TERRESTRIAL SATELLITE
AERONAUTICAL RADIONAVIGATION	LAND MOBILE-SATELLITE	RADIOLOCATION
AMATEUR	MARITIME MOBILE	RADIOLOCATION SATELLITE
AMATEUR SATELLITE	MARITIME MOBILE-SATELLITE	RADIONAVIGATION
BROADCASTING	MARITIME RADIONAVIGATION	RADIONAVIGATION SATELLITE
BROADCASTING SATELLITE	METEOROLOGICAL	SPACE OPERATION
EARTH EXPLORATION SATELLITE	METEOROLOGICAL SATELLITE	SPACE RESEARCH
FIXED	MOBILE	STANDARD FREQUENCY AND TIME SIGNAL
FIXED-SATELLITE	MOBILE-SATELLITE	STANDARD FREQUENCY AND TIME SIGNAL SATELLITE

**ACTIVITY CODE**

FEDERAL EXCLUSIVE	FEDERAL/NON-FEDERAL SHARED
NON-FEDERAL EXCLUSIVE	

**ALLOCATION USAGE DESIGNATION**

SERVICE	EXAMPLE	DESCRIPTION
Primary	FIXED	Capital Letters
Secondary	MOBILE	1st Capital with lower case letters

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U.S. DEPARTMENT OF COMMERCE  
National Telecommunications and Information Administration  
Office of Spectrum Management  
JANUARY 2016



\* EXCEPT AERONAUTICAL MOBILE (M)  
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PLEASE NOTE: THE OPENING-ALLOTTED BANDS IN THIS SPECTRUM CHART ARE SUBJECT TO CHANGE WITHOUT NOTICE. THE ACTUAL BANDS OF USE WILL BE DETERMINED BY THE FCC.



# Filtro Passa-Baixa

- Um sistema de comunicação wireless opera na banda ISM de 2.4 GHz. No entanto, este sistema sofre uma interferência muito grande de transmissores marítimos que operam entre 2.9 e 3 GHz.
  - Projete um filtro passa baixa do tipo step-impedance ( $\mu$ Strip) para uma “resposta maximamente plana” (*maximally flat response*). Utilize a figura 8.26 para determinar a ordem do filtro e a tabela 8.3 para determinar o valor dos elementos reativos. Garanta uma atenuação de pelo menos 10 dB em 2.9 GHz. Considere uma tecnologia onde a menor dimensão fabricável é de 300  $\mu\text{m}$ .
    - Implemente o filtro utilizando componentes ideais (L e C).
    - Implemente o filtro utilizando linhas de transmissão (MLIN).
- Simule o filtro no Momentum (Layout – Generate Layout, adicione portas e substrato)
- Comente os resultados