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85 kHz

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$$f_{\text{im}} = 600 \times 10^3 + 2(455 \times 10^3) = 1510 \text{ kHz}$$

$$\begin{aligned}\rho &= \frac{1510 \times 10^3}{600 \times 10^3} - \frac{600 \times 10^3}{1510 \times 10^3} \\ &= 2.51 - 0.397 = 2.113\end{aligned}$$

$$\text{IFRR} = \sqrt{1 + (100)^2 (2.113)^2} = 211.3$$

In a broadcast superheterodyne receiver having no RF amplifier, the loaded Q of the antenna coupling circuit is 100. If the IF is 455 KHz, a) calculate the image frequency and its rejection ratio at 1000 kHz. b) calculate the image frequency and its rejection ratio at 25MHz c) What is the rejection ratio in decibels c) is the rejection is adequate?

Image Frequency Rejection Ratio

$$(a) f_{ri} = 1000 + 2 \times 455 = 1910 \text{ kHz}$$

$$\rho = \frac{1910}{1000} - \frac{1000}{1910} = 1.910 - 0.524 = 1.386$$

$$\alpha = \sqrt{1 + 100^2 \times 1.386^2} = \sqrt{1 + 138.6^2} = 138.6$$

$$(b) f_{ri} = 25 + 2 \times 0.455 = 25.91 \text{ MHz}$$

$$\rho = \frac{25.91}{25} - \frac{25}{25.91} = 1.0364 - 0.9649 = 0.0715$$

$$\alpha = \sqrt{1 + 100^2 \times 0.0715^2} = \sqrt{1 + 7.15^2} = 7.22$$

A superheterodyne receiver having an RF amplifier is tuned to 15 MHz. The IF is 455 kHz. The RF amplifier and preselector are equal and are such that the image rejection is 41.58 dB. Calculate Q.

Design a frequency translation circuit to get the Intermediate frequency of AM receiver

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The Amplitude Modulated carrier frequencies are in the frequency range 535-1605 kHz.

Find n_1 , n_2 and F_{Lo}

