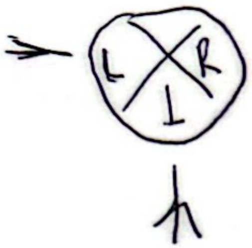
(11)

STALO
- 9,2 GHz
- 2 ppm



COHO
- 300 MHz
- 20 ppm

∴ STALO - Contributes the most f drift

(STALO)

940 KHz >> 306 KHz (COHO)

STALO

$\Delta(°C) = \cancel{\quad}$

$= -28{,}89°C - (22{,}22)$

$= -51{,}11°C$

$°F \rightarrow °C = \frac{5}{9} \times (T°F - 32)$

∴ $75°F = 22{,}22°C$

$-20°F = -28{,}89°C$

STALO total drift $= \pm 2 \times -51{,}11° = \pm 102{,}22$ ppm

$\Delta f = \frac{FD \times f_0}{1\times10^6} = \frac{102{,}22 \times 9{,}2\times10^9}{1\times10^6} = 940{,}424$ Hz

COHO drift $= -51{,}11°C \times 20$ ppm $= 1022{,}2$ ppm

$\Delta f = \frac{FD \times f_0}{1\times10^6} = \frac{1022{,}2 \times 300\times10^6}{1\times10^6} = 306\,660$ Hz

(12) (a) $f_1 = 7{,}8$ GHz

$f_2 = 1{,}8$ GHz

$f_1 + f_2 = 9{,}3$ GHz

$f_1 - f_2 = 6.3$ GHz

$2f_1 = 15{,}6$ GHz

$2f_2 = 3{,}0$ GHz

$f_1 - 2f_2 = 4{,}8$ GHz

$f_1 + 2f_2 = 10{,}8$ GHz

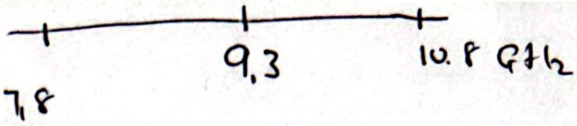
$2f_1 + 2f_2 = 18.6$ GHz

$2f_1 + f_2 = 17{,}1$ GHz

$2f_1 - f_2 = 14{,}1$ GHz

$2f_1 - 2f_2 = 12{,}6$ GHz

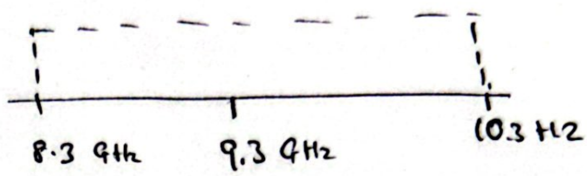
(b)



Min = 9,3 − 7,8 = 1,5 GHz ⟺ Max = 10.8 − 9.3 = 1,5 GHz

∴ difference = $1{,}5 \times 10^3$ MHz
= 15000 MHz

(c)



• No − only 10.8 GHz which is at the edge of the filter.

d) 2 · Sections

(14) Total loss = 0,7 dB + 6 dB + 1,5 dB = 8,2 dB

output power = Input Power − Total loss

= 7 dBm − 8,2 dB

= −1.2 dBm

(15) Output Power from filter = −1,2 dB

Desired Power = +10 dBm

Δ Power needed = 10 dBm − (−1,2 dBm) = 11,2 dB

(13) 8 − Sections

6 − Sections