Excerpted from "The Designer's Guide to High-Purity Oscillators" by Hegazi, Rael, and Abidi. For more information, go to www.designers-guide.org/Books.

Index

Ą

absolute jitter 14 amplitude modulation 17 AM-to-FM noise conversion 186

В

Barkhausen criterion 5

С

Colpitts oscillator 67, 89 current source noise 78 differential 91 noise sources 72 resistor noise 74 transistor noise 78 complementary differential oscillator 94 current source noise in Colpitts oscillator 78 current-biased differential oscillator 85, 96 cycle-to-cycle jitter 16

D

Demir's model 28 design example oscillator for GSM receiver 99, 129 device stress, effect on amplitude 122 differential oscillator 35, 94 current biased 85, 96 differential pair noise 50 resonator noise 44 tail current noise 57 voltage biased 88 diffusivity 15

Е

example oscillator for GSM receiver 99, 129

F

figure of merit 83, 132

FLEX oscillator 168 flicker noise 96, 110, 166 jitter 15 Leeson's model 8 nulling 168, 172 top-biased oscillator 113 FM noise AM-to-FM conversion 186 current source 155 due to switch 151 Groszkowski 142

G

Groszkowski 142 GSM phase noise requirements 99

Н

Hajimiri's model 25 harmonic balance 84

I

impulse sensitivity function (ISF) 25

J jitter 12

flicker noise 15

K

Kartner 29

L

 \mathcal{L} (noise-to-carrier ratio) 8, 19 Leeson's formula ix, 8, 38, 62, 97 linear oscillator 3 linewidth 15, 21 Lorentzian spectrum 23

М

modulation 17

Ν

noise factor Colpitts oscillator 78 differential oscillator 104 FET (γ) 61 Leeson 38, 62, 97 noise filtering 112 earlier work 125 wideband 172 noise sensitivity curve 184

0

oscillator Colpitts 67, 89 complementary differential 94 current-biased differential 85, 96 design example GSM receiver 99, 129 differential 35 figure of merit 83, 132 ideal model 1 linear 3 noise filtering 112 van der Pol 142 voltage-biased differential 88

Ρ

period jitter 16 phase jitter 15 phase modulation 17 phase noise 19, 104 Colpitts 72 flicker noise 139, 166 FM due to current source 155 FM due to Groszkowski 142 FM due to switch 151 thermal 39 power supply rejection 119

R

resistor noise 6 in Colpitts oscillator 74 resonator noise in differential oscillator 44

S

single sideband 19 stress, effect on amplitude 122 supply rejection 119 supply sensitivity 187

т

tail current noise in differential oscillator 57 transconductor noise 6 transistor noise in Colpitts oscillator 78 tuning range 123 tuning sensitivity 187

۷

van der Pol oscillator 142 varactor 175 noise sensitivity 181 voltage-biased differential oscillator 88

Excerpted from "The Designer's Guide to High-Purity Oscillators" by Hegazi, Rael, and Abidi. For more information, go to www.designers-guide.com/Books.