$x(t)i_{TX}(t)i_{RX}(t)y(t)$
$i_{TX}(t)$
$s(t)r(t)i_{RX}(t)$
$y(t)$
$y(t) = x(t)\otimes h_1(t)\otimes h_2(t)\otimes h_3(t)+z(t)$
(1)
$x(t)h_1(t)$
$h_2(t)h_3(t)$
?
$z(t)$
$z(t) \sim$
$N(0, N_0/2)N_0\otimes$
?
$h_1(t)h_2(t)$
$h_3(t)$
$h_1(t)h_3(t)h_1(t)$
$h_3(t)$
??
$h_2(t)$
$h(t) = h_1(t)\otimes h_2(t)\otimes h_3(t)$
(2)

$$h_2(t) = \sum_{n=0}^{N_t-1} \alpha_n \delta(t-\tau_n)$$

(3)
$N_t\alpha_n\tau_n$
??
??
??
??
?

$$\alpha_n \propto \exp\left(-\frac{\tau_n}{\tau_{DS}}\right)$$

(4)
τ_{DS}

$$\alpha_n \propto \frac{6a^6}{(\tau_n + a)^7}$$

(5)
$a =$
$12\tau_{DS}\sqrt{11/13}\alpha_n\tau_n$
$h_2(t)h_2(t)$
$_I mplusResponse.eps[DOW][width = 0.5]figures/chapter - 2/DOW_A mpResponse.epsDOW$
??
?
??
$_L Z4_S putrcalPowerLZC-$
$03MA07LED??LED(Red)(Green)(Blue)(Yellow)(Amber)??[h][LZC-$
$03MA07][width = 0.5]figures/chapter - 2/LED_L Z4_r elativeSputrcalPower.eps[LZC-$
$03MA07][width = 0.5]figures/chapter - 2/LED_L Z4_a bsoluteSputrcalPower.epsLZC - 03MA07$
$_t emprature[?]??LED(Amber)120^\circ$
??
$_T emperature_L ight_O utput.eps[LZC-$
$03MA07][width = 0.5]figures/chapter - 2/LED_T emperature_W avelength_S hift.epsLZC - 03MA07$
??
?
?
?$N/2X(k), k =$
$0, 1, 2, \cdots, N/2-$
1

$$\tilde{X}(k) = \{\Re\{X(0)\}k = 0X(k)k = 1, 2, \cdots, N/2-1\Im\{X(0)\}k = N/2X^*(N-k)k = N/2+1, \cdots, N-1$$

(6)
$N\Re\{\cdot\}\Im\{\cdot\}(\cdot)^*\tilde{X}(k), k =$
$0, 1, ..., N-$
1
N

$$x(n) = \frac{1}{\sqrt{N}} \sum_{k=0}^{N-1} \tilde{X}(k)e^{\frac{j2\pi kn}{N}}$$

(7)
??$kX(k) =$
$a+$
$bjX(N-$
$k) =$
$a-$
bj
$\frac{j2\pi kn}{N}+$
$X(N-$
$\frac{j2\pi(N-k)n}{N}$