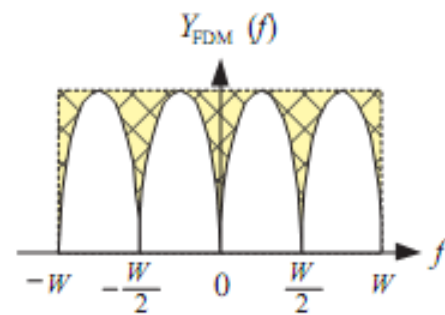


*OFDM

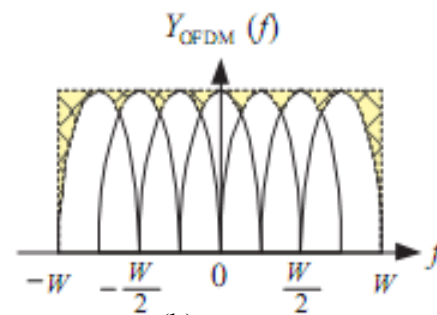
DR. Risanuri Hidayat

- * OFDM (*Orthogonal Frequency Division Multiplexing*) merupakan suatu teknik modulasi dengan banyak pembawa yang mampu menyediakan layanan transmisi paralel dengan pesat bit tinggi
- * Pada sistem OFDM, bidang frekuensi yang digunakan untuk memodulasi sinyal dibagi menjadi N sub pembawa.
- * Aliran data tunggal (serial) dipetakan menjadi simbol-simbol dan ditransmisikan secara paralel melalui N sub pembawa tersebut.
- * Simbol-simbol pada tiap sub pembawa dimodulasi dengan sinyal pembawa secara bersamaan dan kemudian ditransmisikan pada kanal.

* Pendahuluan

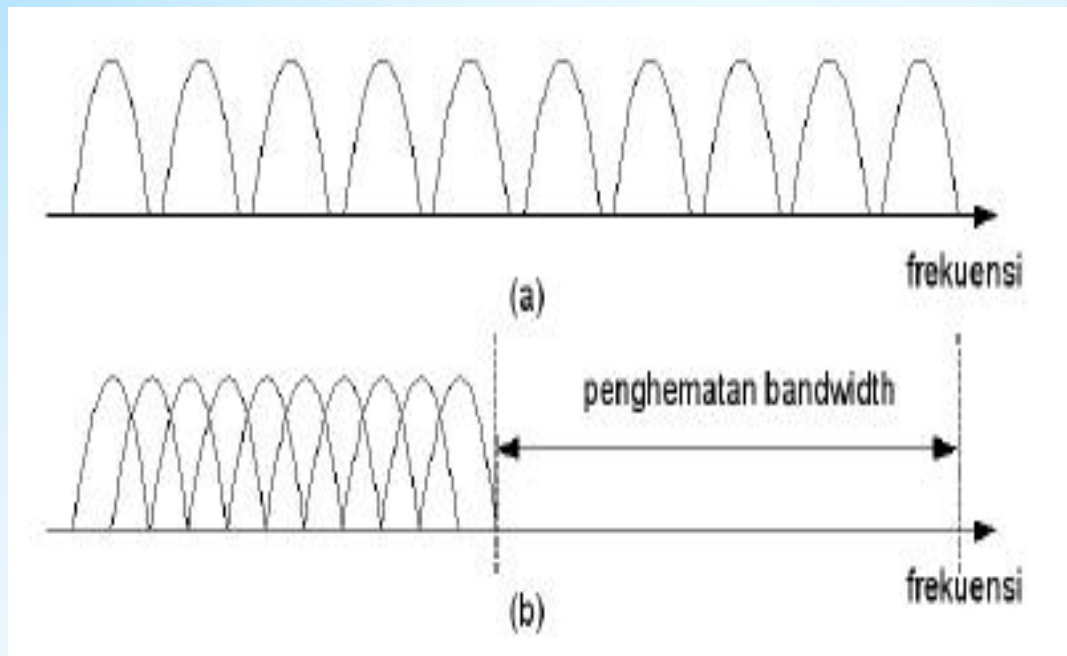


(a)

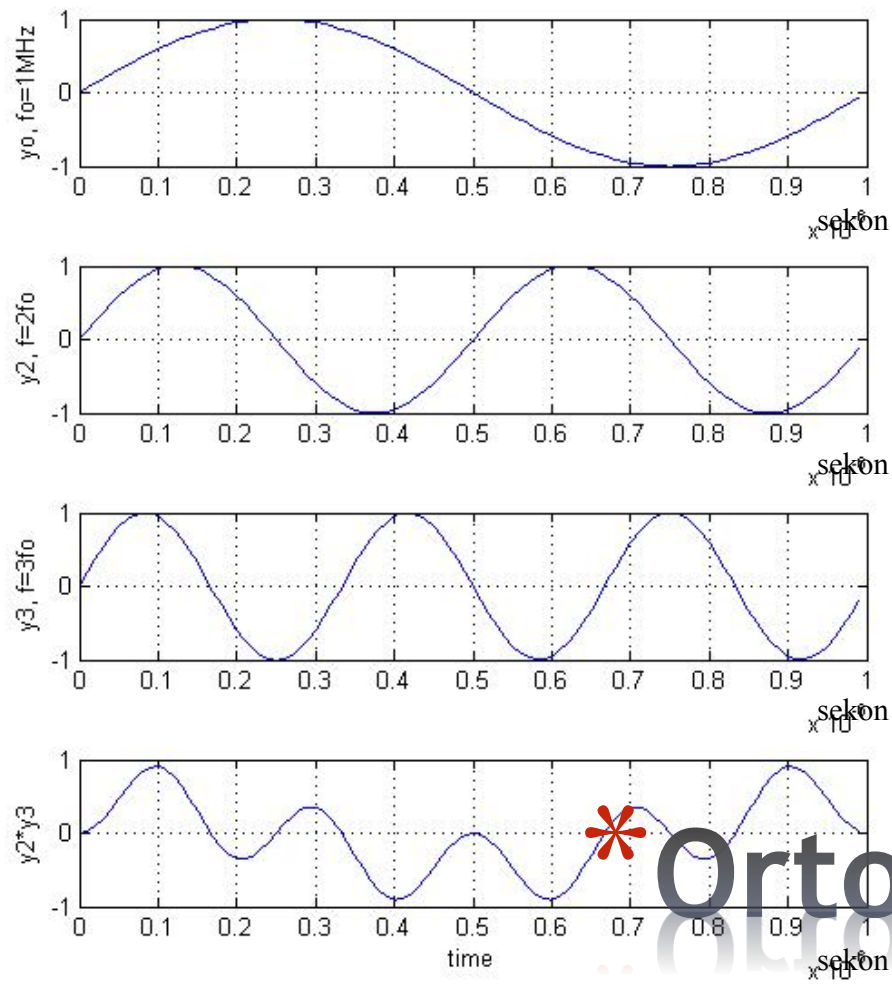


(b)

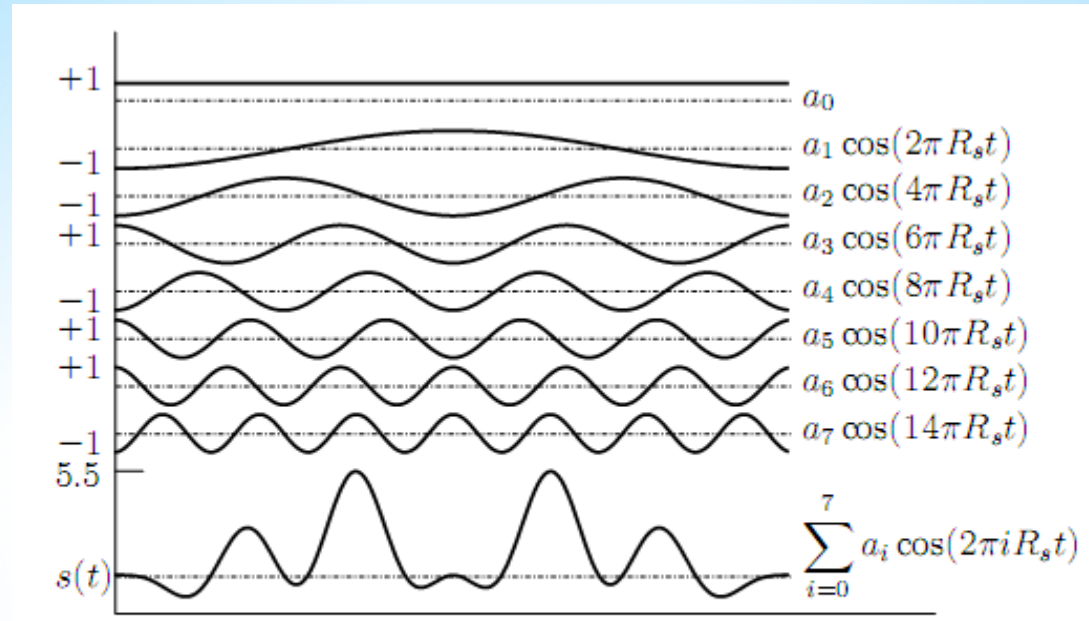
*FDM vs OFDM



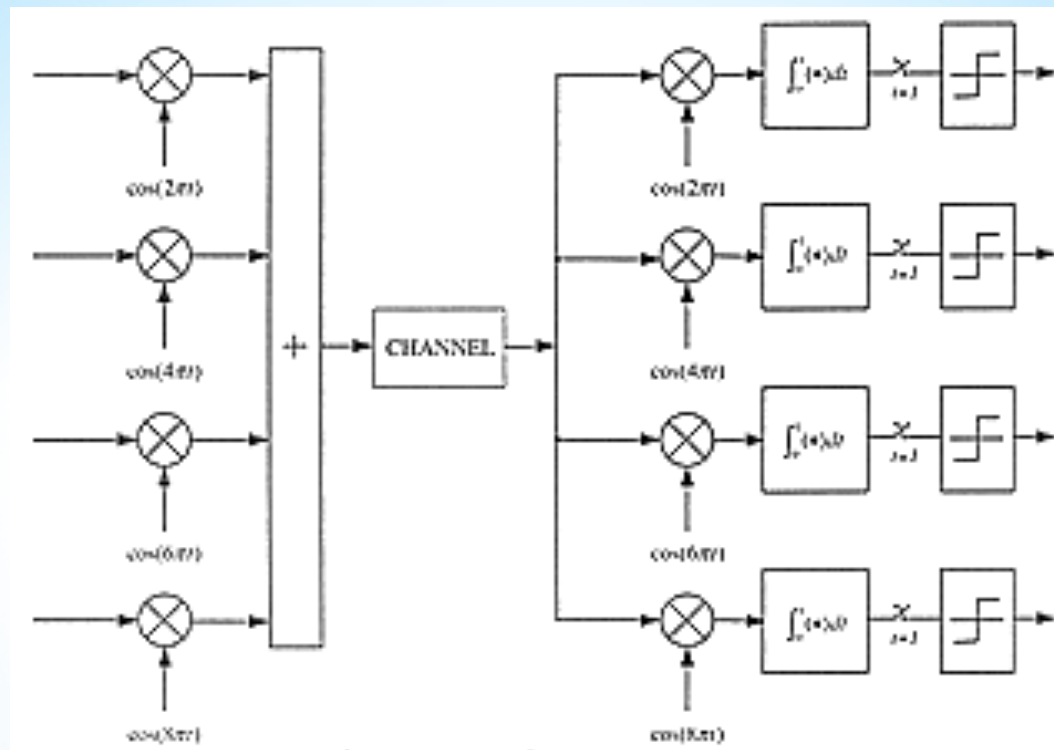
*FDMA vs OFDM



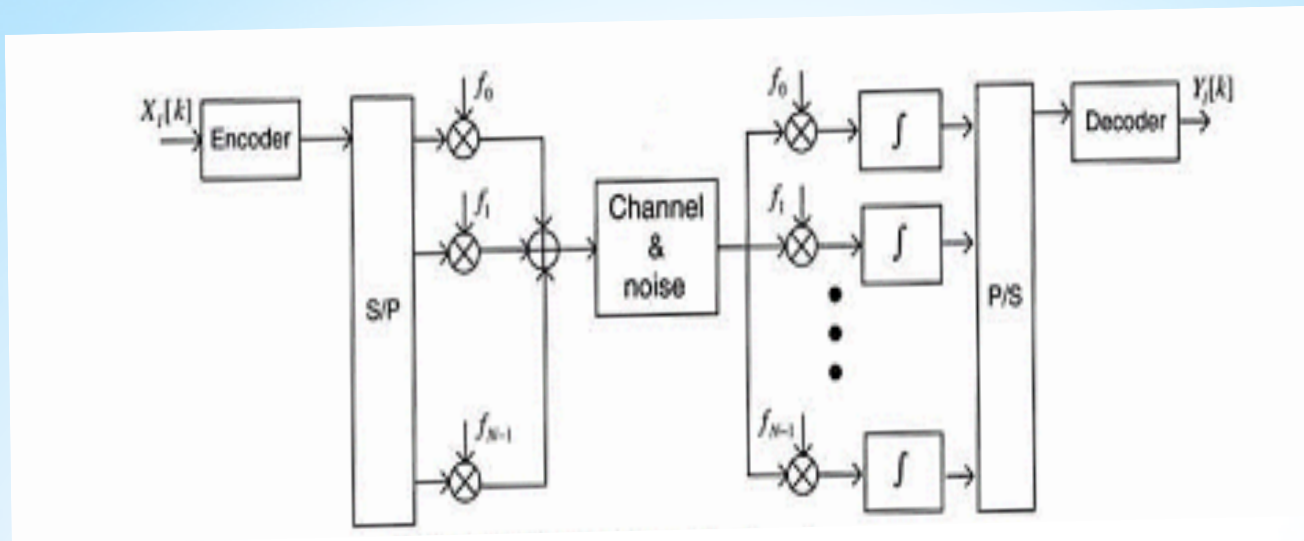
Ortogonalitas



*Sub Pembawa OFDM

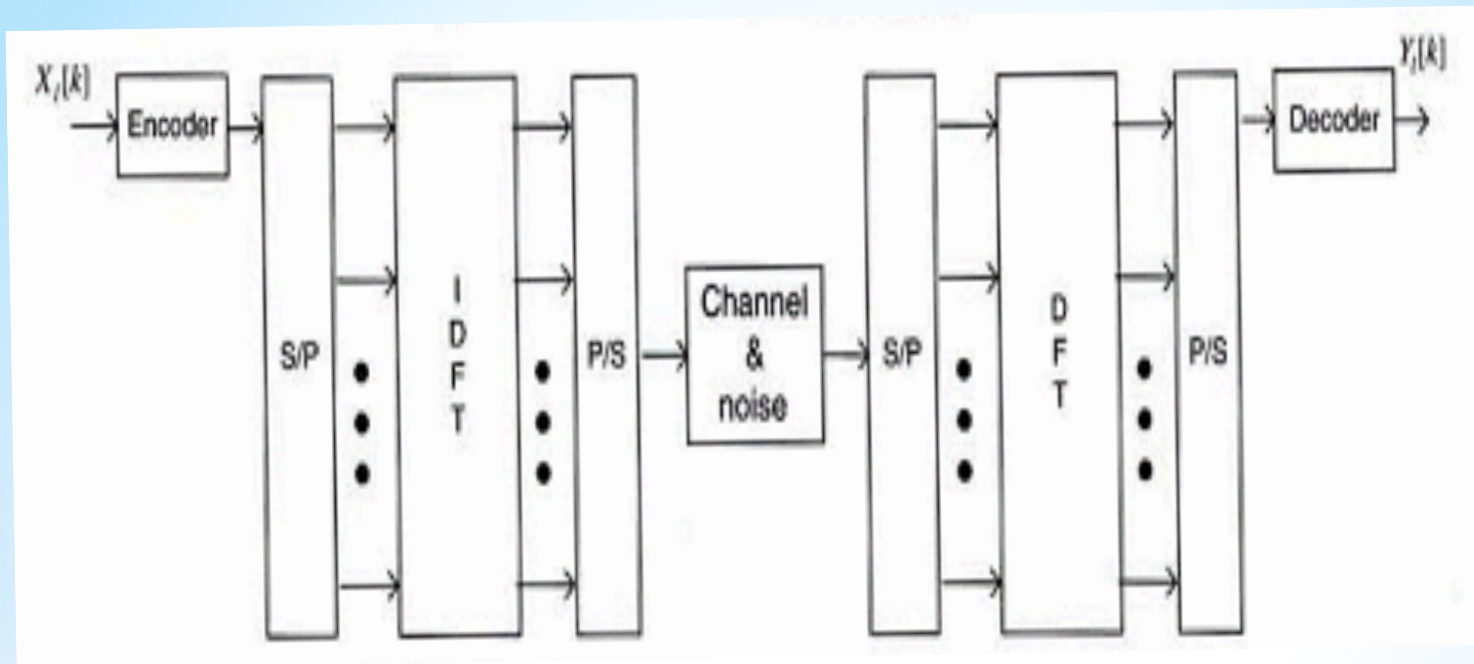


* Cara Kerja Dasar

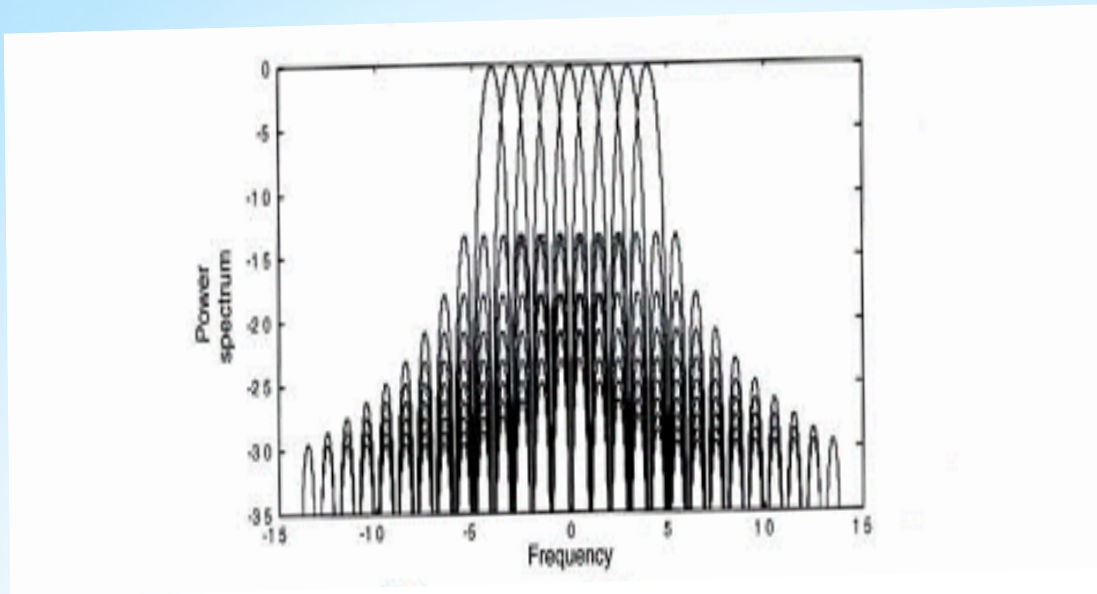


(a) Skema transmisi OFDM [3]

*Cara Kerja 2

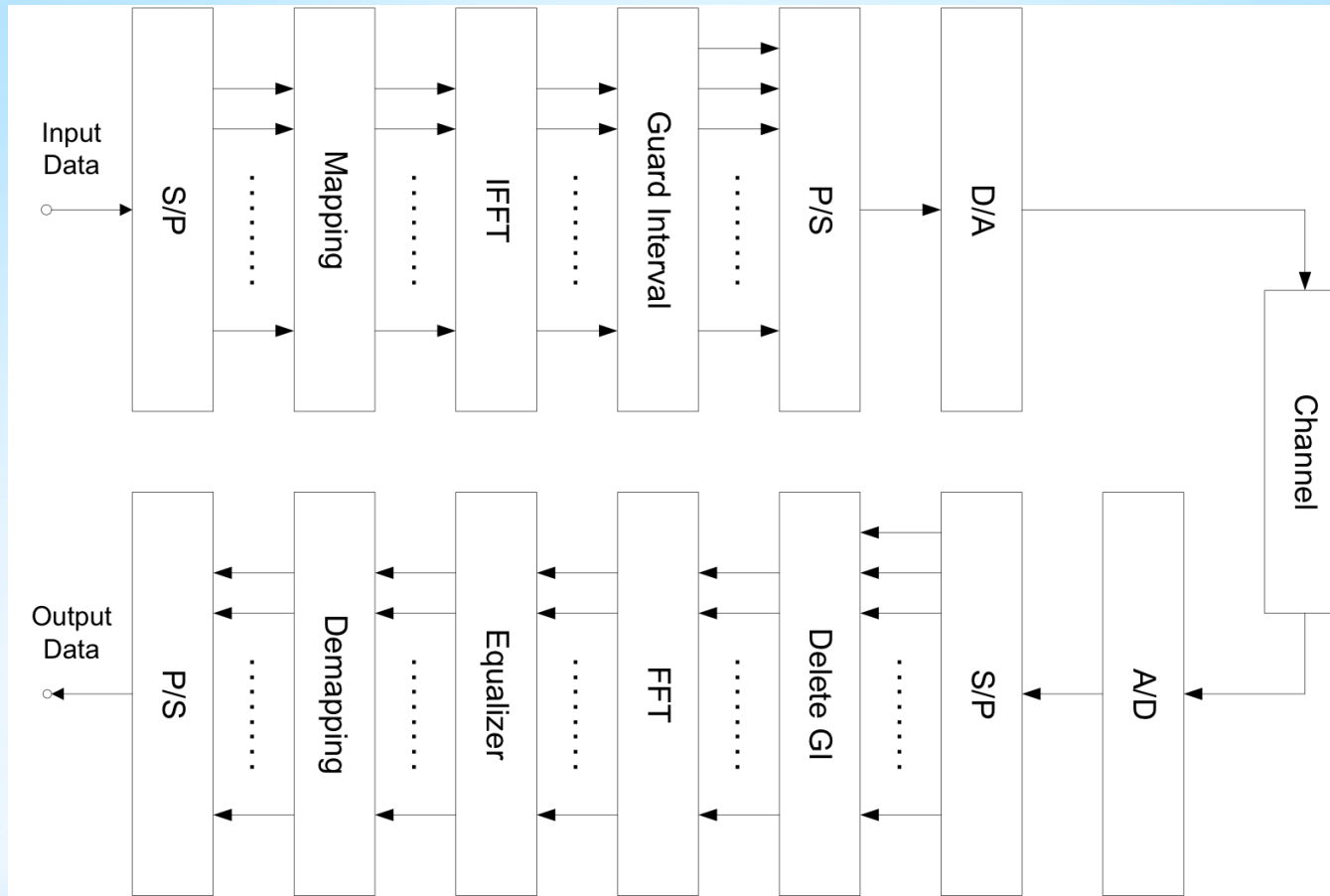


* Menggunakan IFFT/
FFT

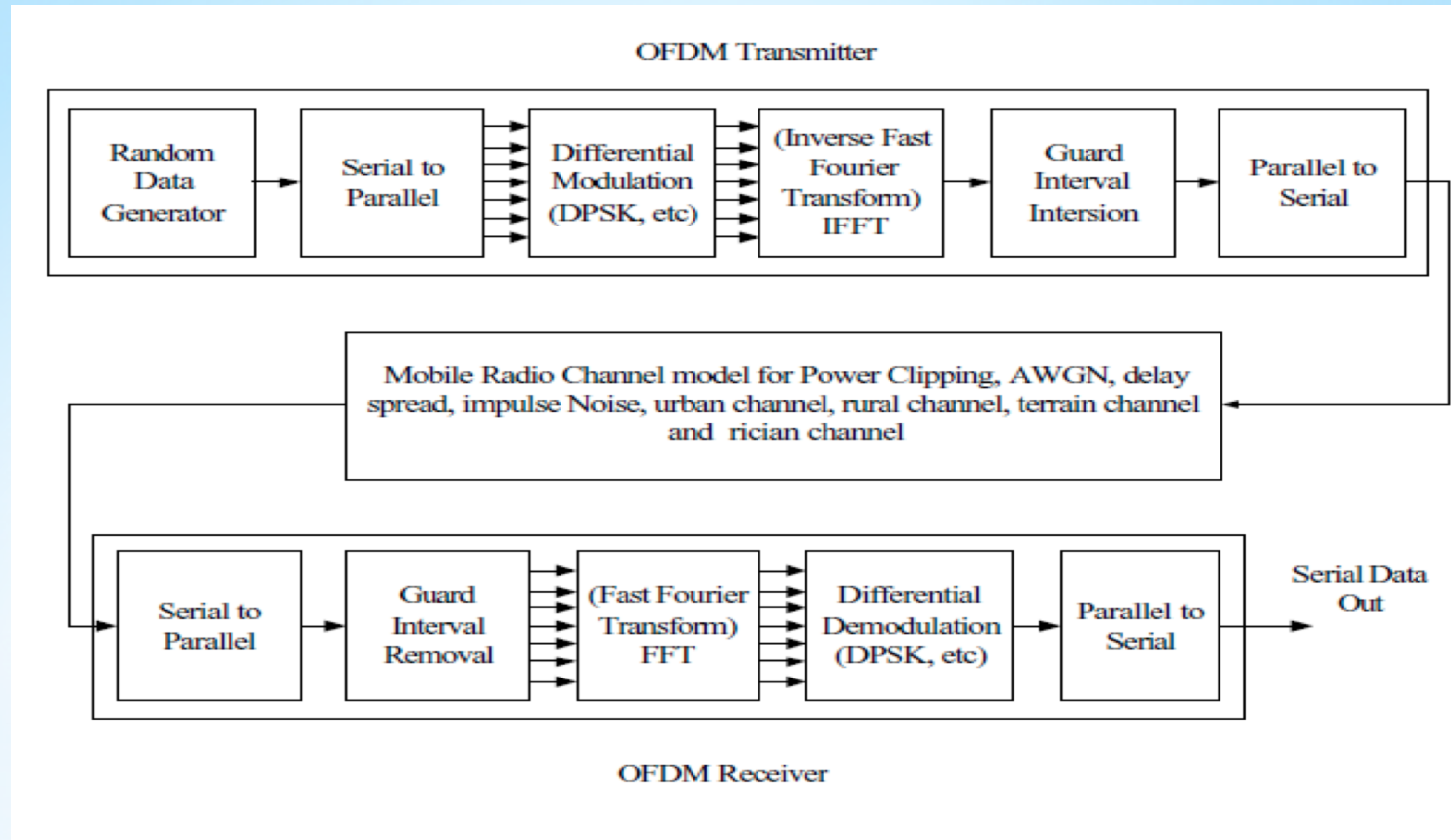


(a) Spektrum daya dari sinyal OFDM (dB) [3]

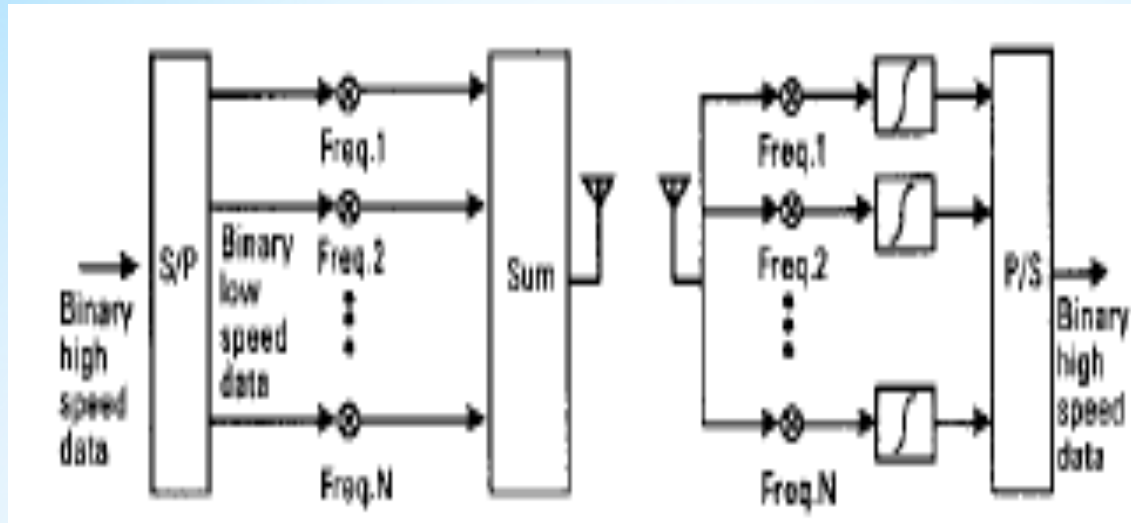
* Spektrum OFDM



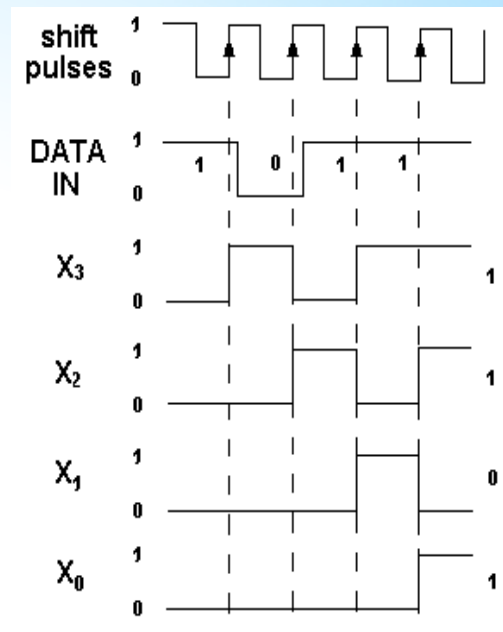
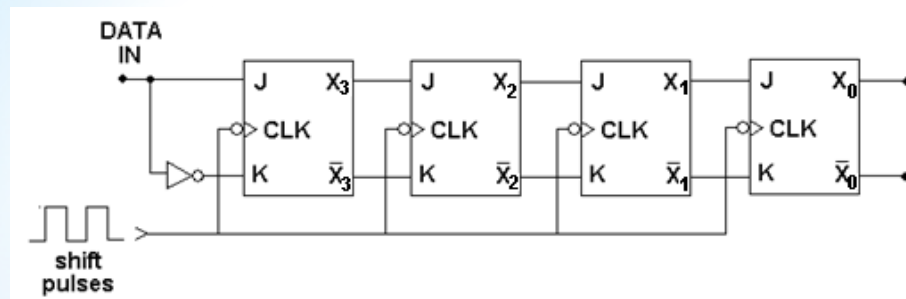
*Konfigurasi Sederhana



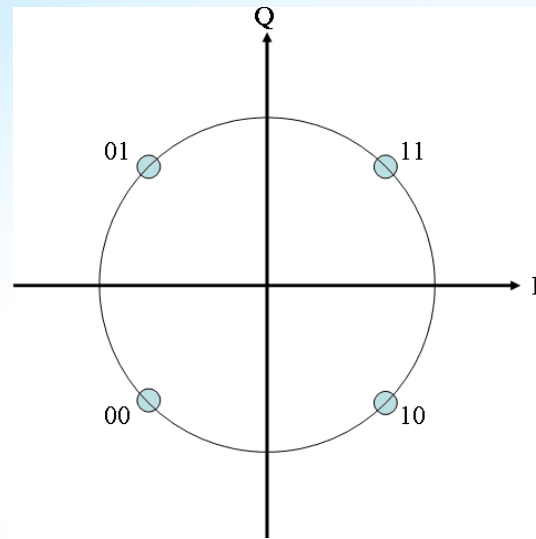
* Bagan dasar OFDM



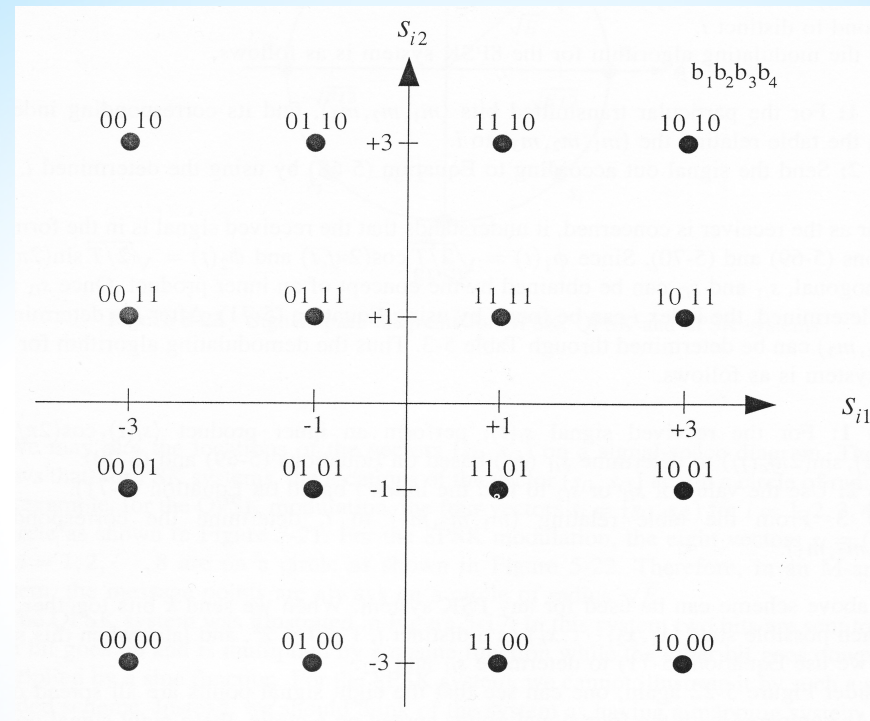
*S/P



*S/P

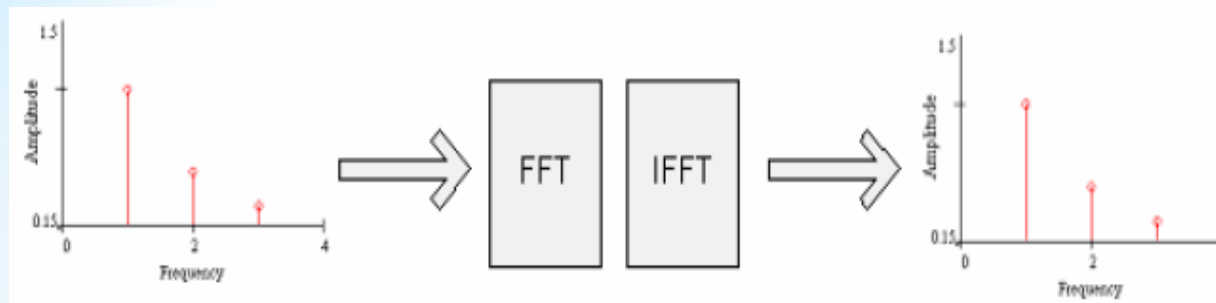
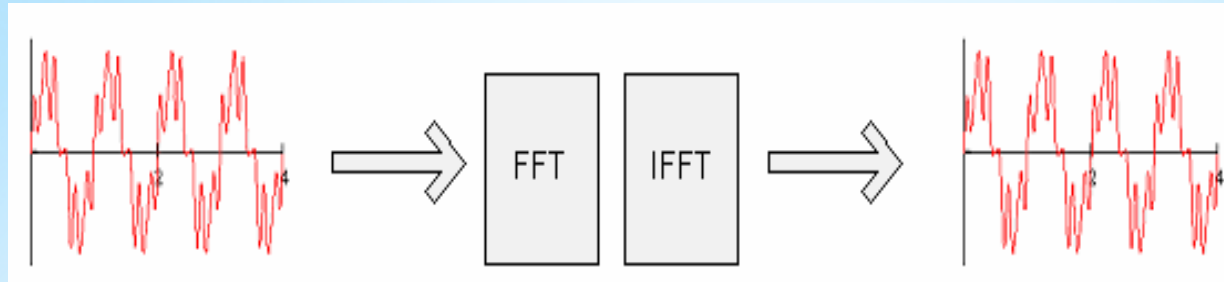


*Map

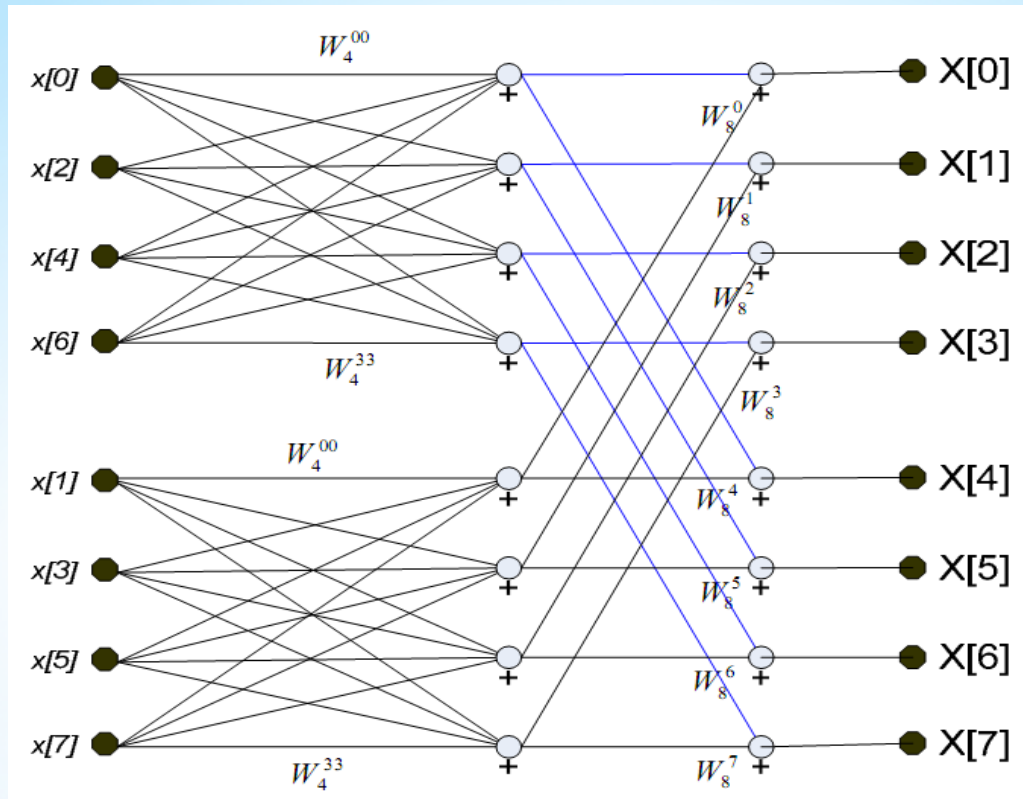


$b_1 b_2$	$b_3 b_4$	s_{i1}	s_{i2}
0 0	0 0	-3	-3
0 1	0 1	-1	-1
1 1	1 1	+1	+1
1 0	1 0	+3	+3

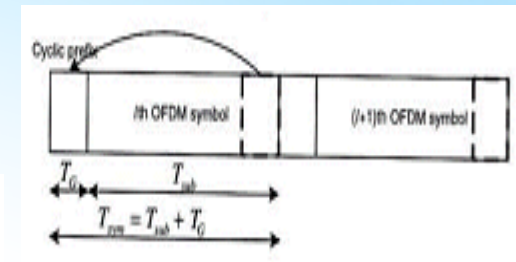
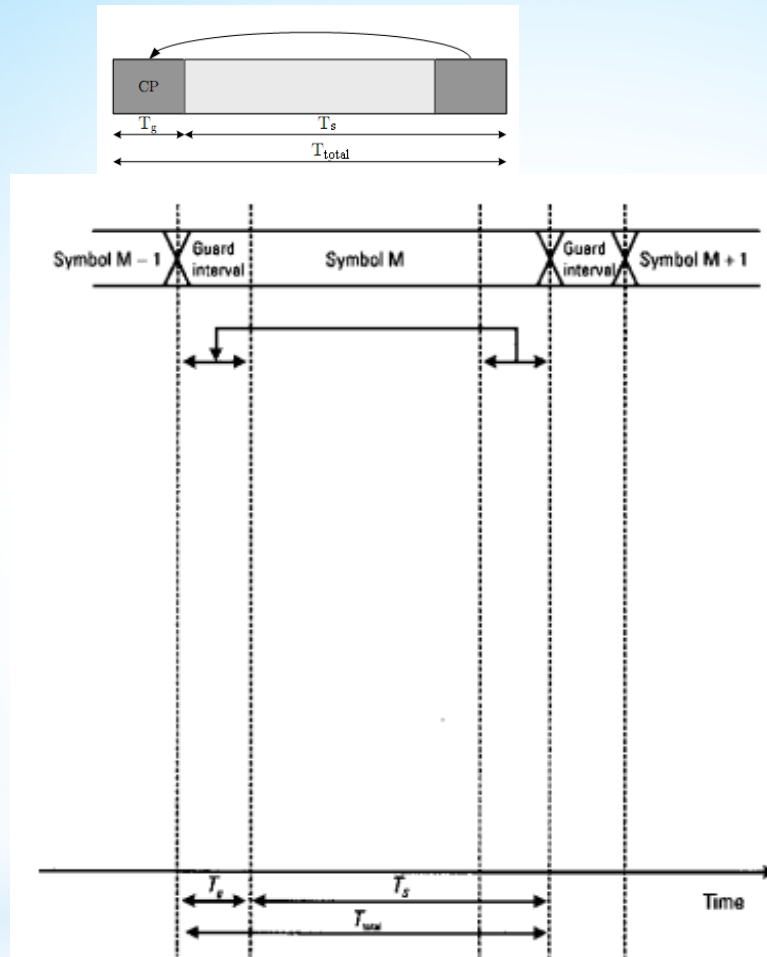
*Pemetaan



* IFFT/FFT

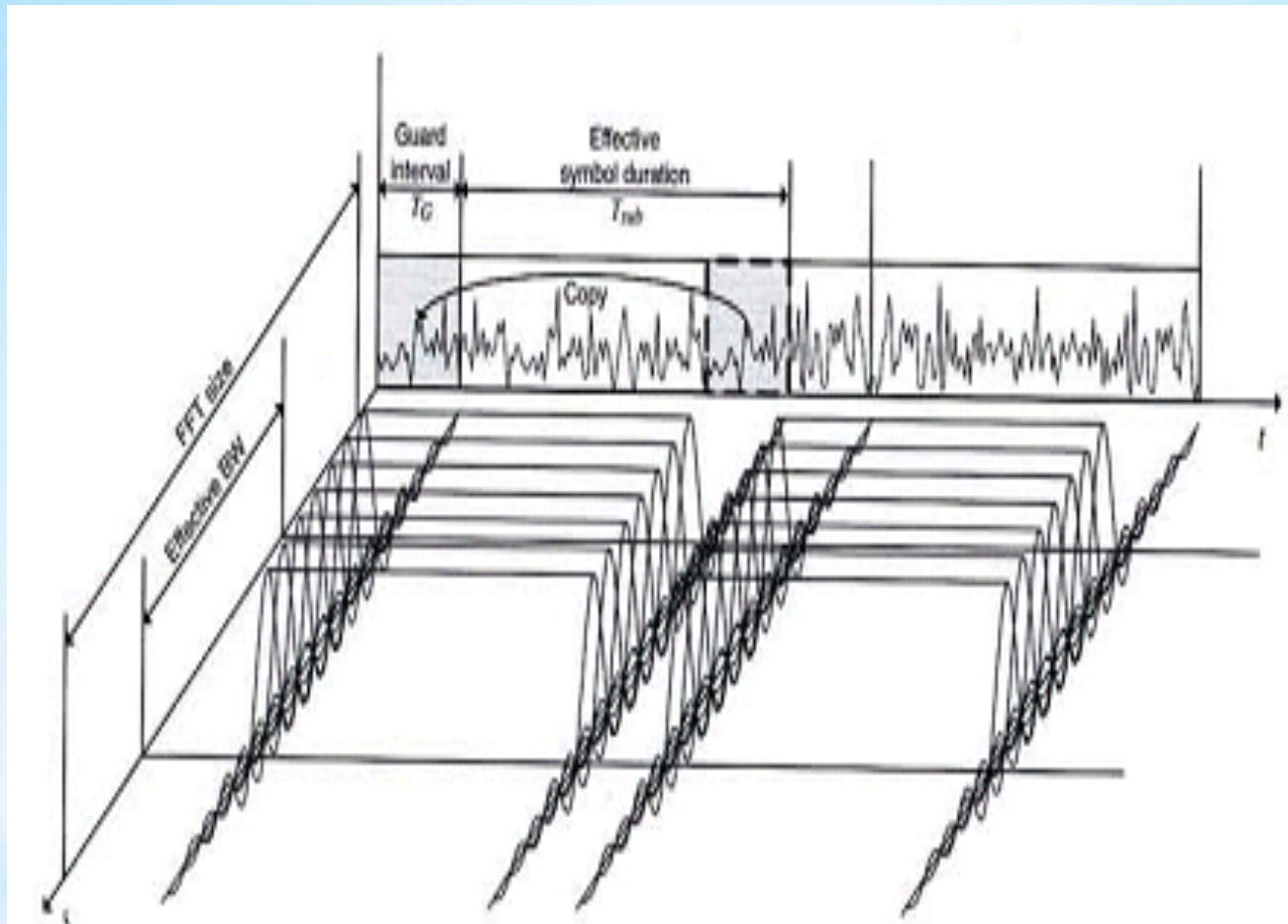


* IFFT/EFT

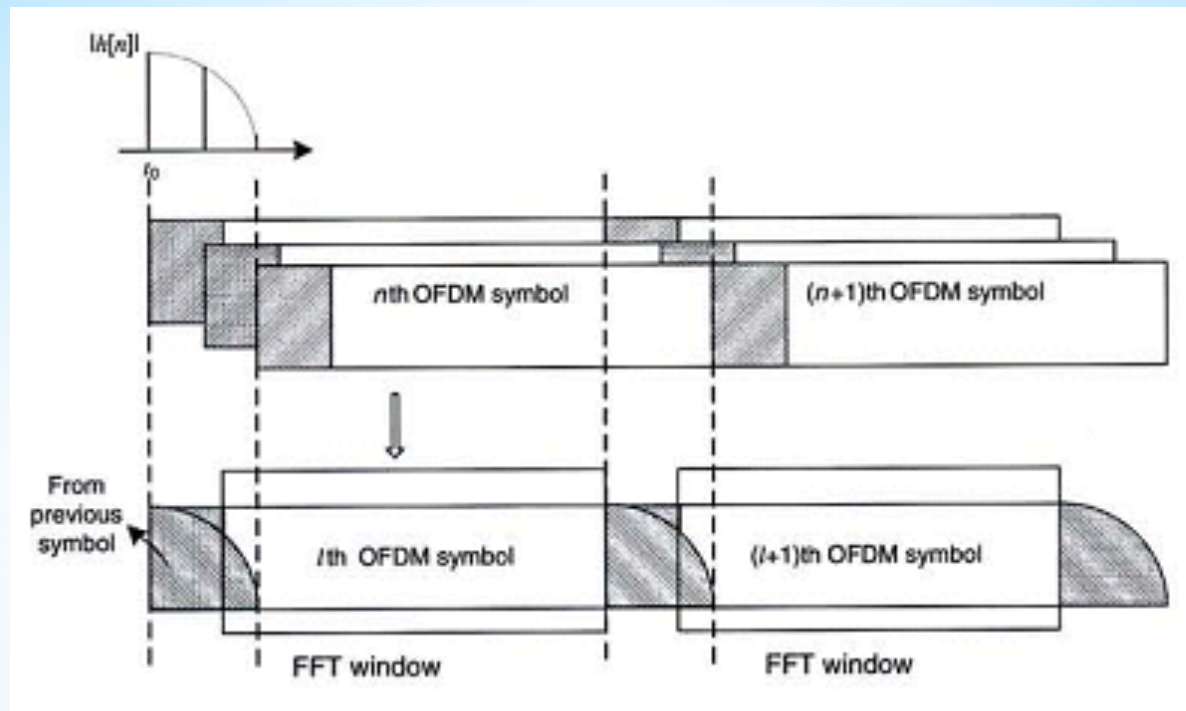


(a) Simbol OFDM dengan CP [3]

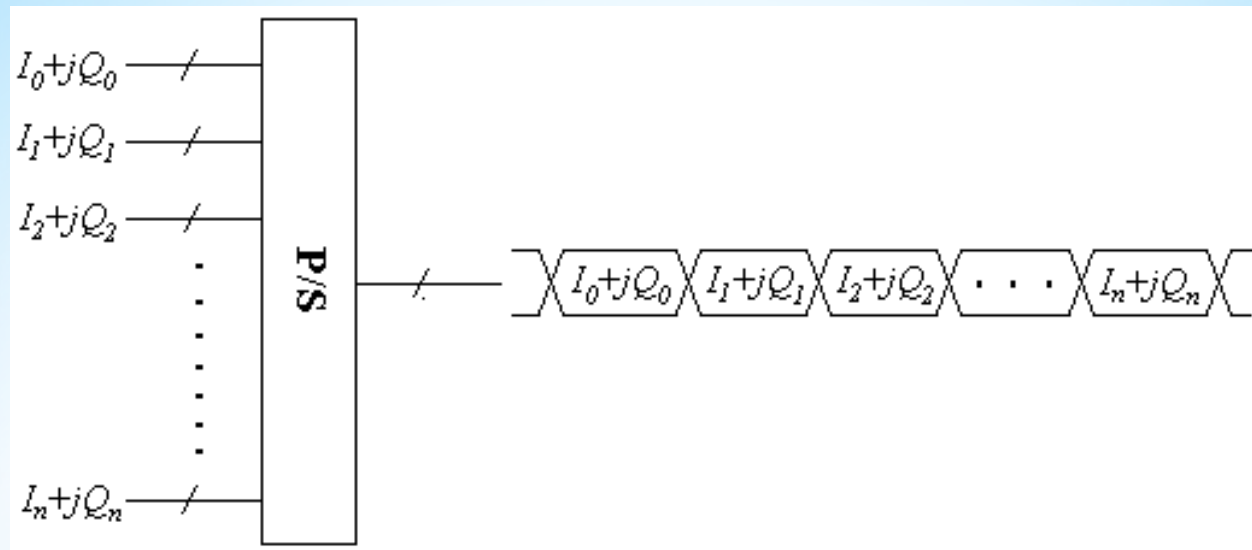




*GI



*GI vs ISI



* P/S

Detil standar 802.11a

Rentang Frekuensi (MHz)	4915-5825
Lebar Kanal (MHz)	20
Jumlah sub pembawa	64 (52 sub pembawa aktif)
Skema modulasi	BPSK, QPSK, 16-QAM, 64-QAM
Durasi simbol (μ s)	3.2
<i>Guard interval</i>	1/4
Jarak antar sub pembawa (kHz)	312.5
<i>Bit rate</i> (Mbps)	6, 9, 12, 18, 24, 36, 48, 54

*802.11a