

Use other sets of Wi-Fi channels, as long as they are 5 channels apart - for instance 3, 8 and 13. This may

802.11n vs 802.11ac

$$C = M \cdot B \cdot \log_2(1 + SNR)$$

M: MIMO

	IEEE 802.11n	IEEE 802.11ac
Frequency Band	2.4 GHz and 5 GHz	5 GHz Only
Channel Widths	20, 40 MHz	20, 40, 80, (160 optional) MHz
Spatial Streams	1 to 4	1 to 8 total Up to 4 per client
Multi-user MIMO	No	Yes
Single Stream (1x1) Maximum Client Data Rate	150 Mbps	450 Mbps
Three Stream (3x3) Maximum Client Data Rate	450 Mbps	1.3 Gbps

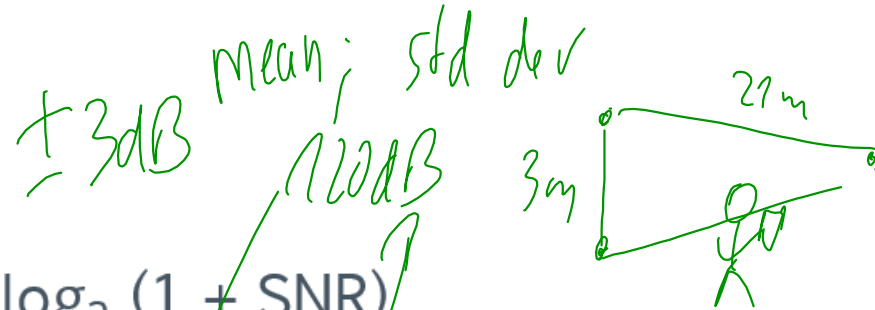
MIMO

? Why

?

Shanon Capacity

› Shannon formula: $C = B \cdot \log_2 (1 + \text{SNR})$



SNR (dB)			Channel Capacity (Mbps)			Bandwidth (MHz)
Myroom	Usman-room	Student-room	Myroom	Usman-room	Student-room	
65.5	25.5	40.5	121.11	94.56	107.50	20
63.5	42.5	46.5	120.22	108.86	111.40	20
64.5	15.5	25.5	120.67	80.89	94.56	20
65.5	19.5	31.5	121.11	87.15	100.45	20
55.5	26.5	40.5	116.40	95.63	107.50	20
60.5	12.5	22.5	118.85	75.10	91.09	20
56.5	22.5	33.5	116.91	91.09	102.17	20
55.5	35.5	40.5	116.40	103.80	107.50	20
42.5	10.5	25.5	108.86	70.47	94.56	20
48.5	15.5	20.5	112.59	80.89	88.53	20
52.5	32.5	38.5	114.83	101.32	106.08	20
57.5	12.5	16.5	117.41	75.10	82.59	20
57.33	22.58	31.83				
37.25			105.15			

5 dB

30 Mbps

112 Mbps



Acrylic testing Speed MCS index

SNR

55 - 115 Mbps

35 - 104

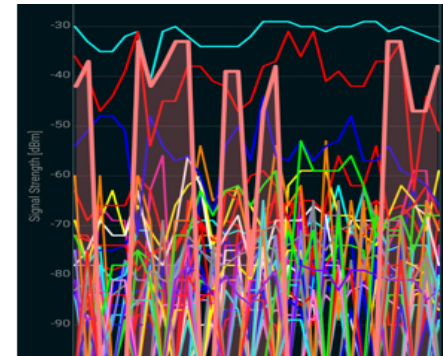
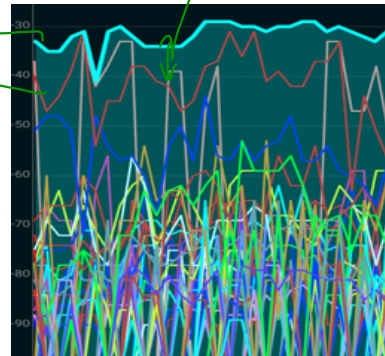
40 - 108

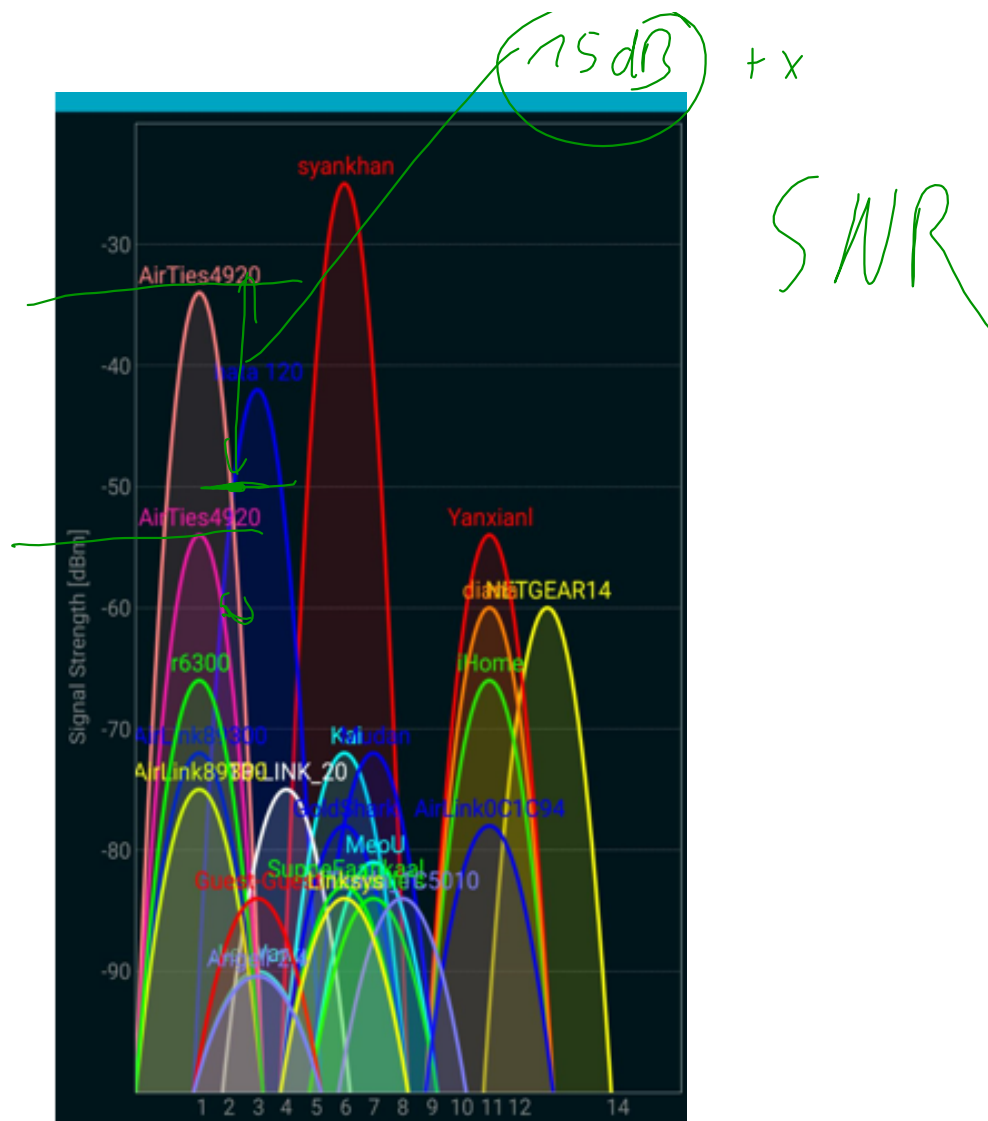
5 dB ↑ 4 Mbps
 15 dB 7 Mbps
 20 dB 11 Mbps

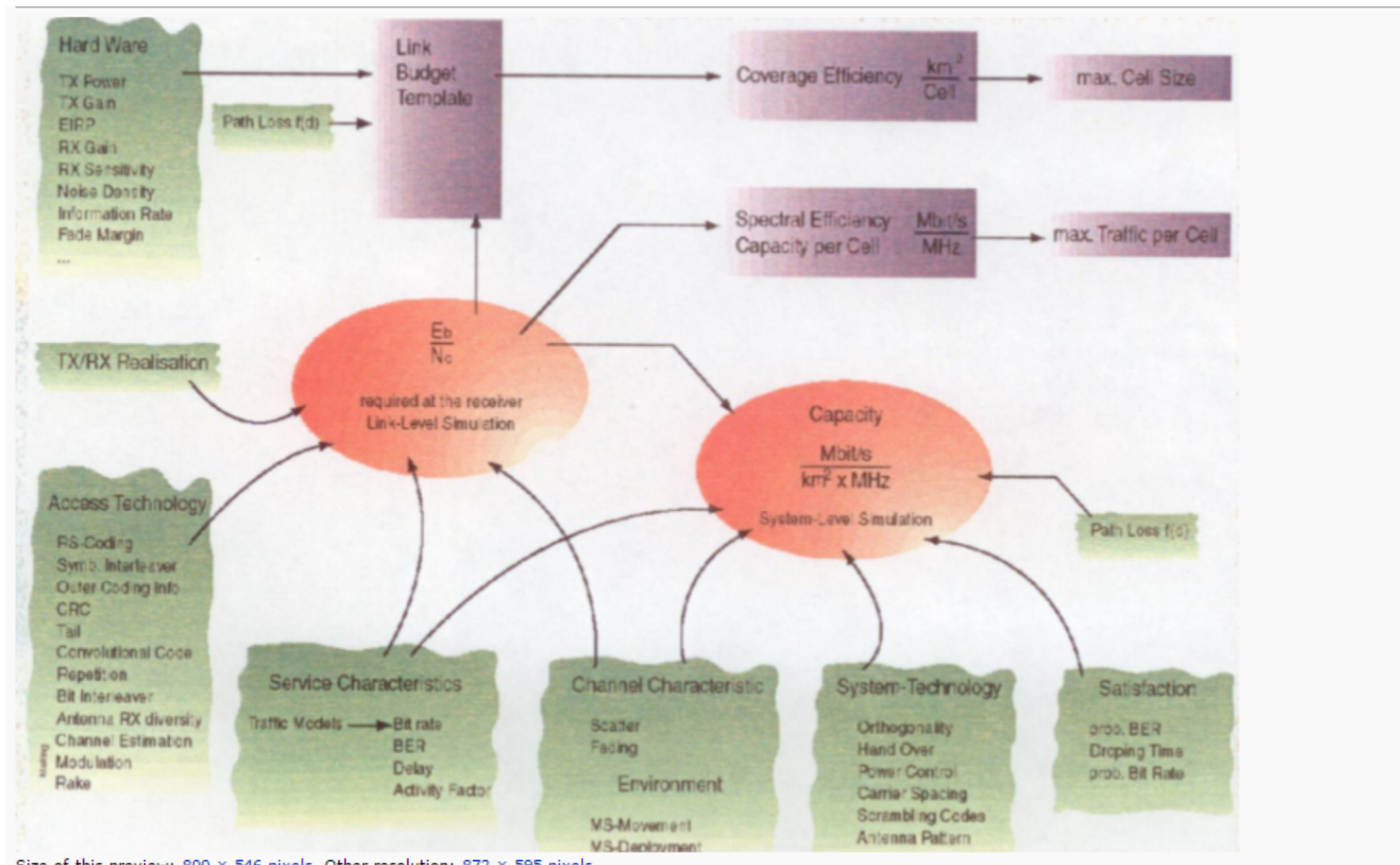
Noise = noise floor = -90 dBm

Wifi: interference = noise

SNR = 10 dB







Size of this preview: 800 × 546 pixels. Other resolution: 872 × 595 pixels.