Tutorial 11: Carrier frequencies and Bandwidths

* LoRaWAN uses ISM band

* Anything uplink or downlink uses 8 different channels, with different frequency, bandwidth & spreading factor.

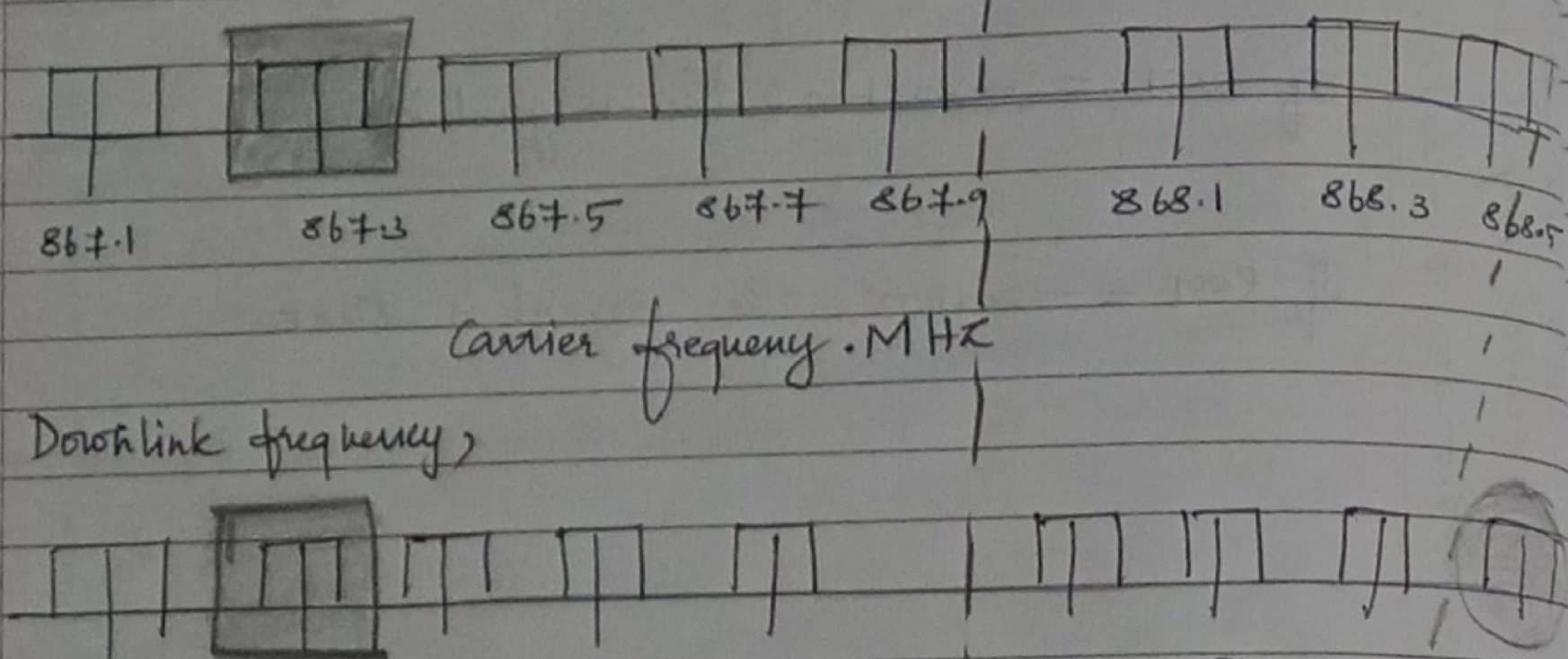
[Regional parameters]

* uplink frequency;

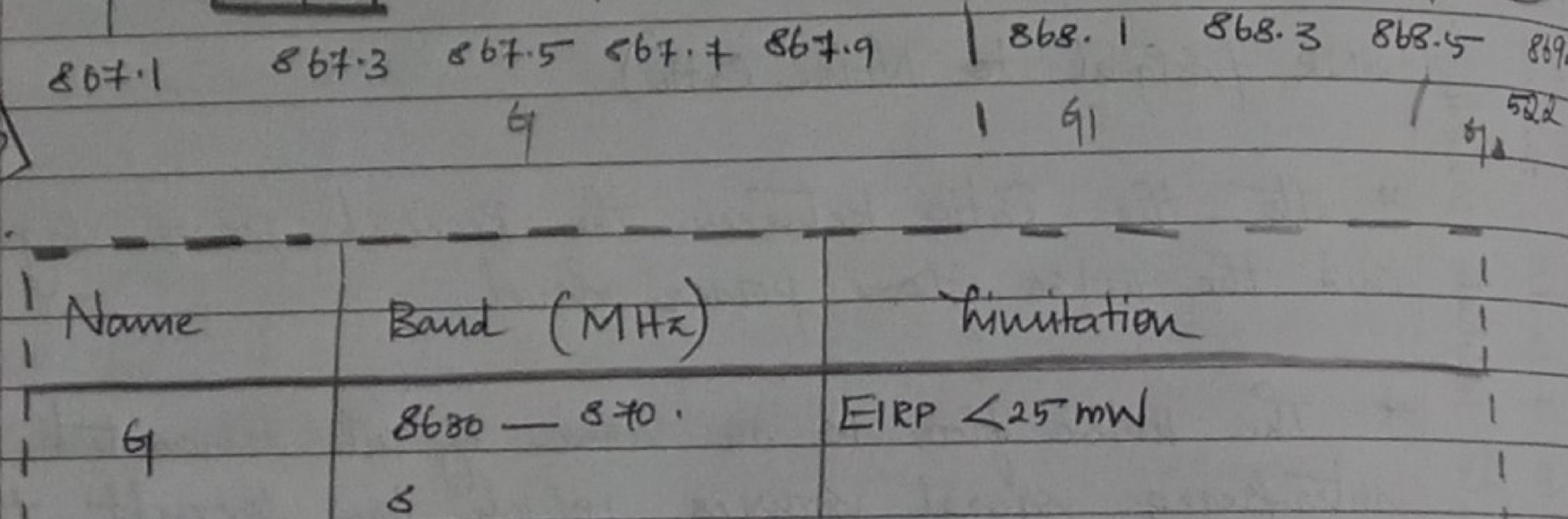
△ - 125 KHz, @ SF7-12, for dl-s-1

▭ - 250 KHz, @ SF7, for dl.s.1

○ - 125 KHz, @ SF9 for dl.s.2



* Downlink frequency;



Name	Band (MHz)	limitation
G	8680 — 870.	EIRP < 25 mW
G1	868 — 868.6	EIRP < 25 mW
G2	868.7 — 869.2	EIRP < 25mW
G3	869.4 — 869.65	EIRP < 500 mW
G4	869.7 — 870	EIRP < 25mW.

* LoRaWAN on
  - → 125
  - → 25
  - → 50

* Europ only

→ 125

→ 250

flow

B

K

L

−½B

Carrie

flow =

fhigh =

flow =

fHigh =

* Dwell Ti

* Dwell ti
to trans

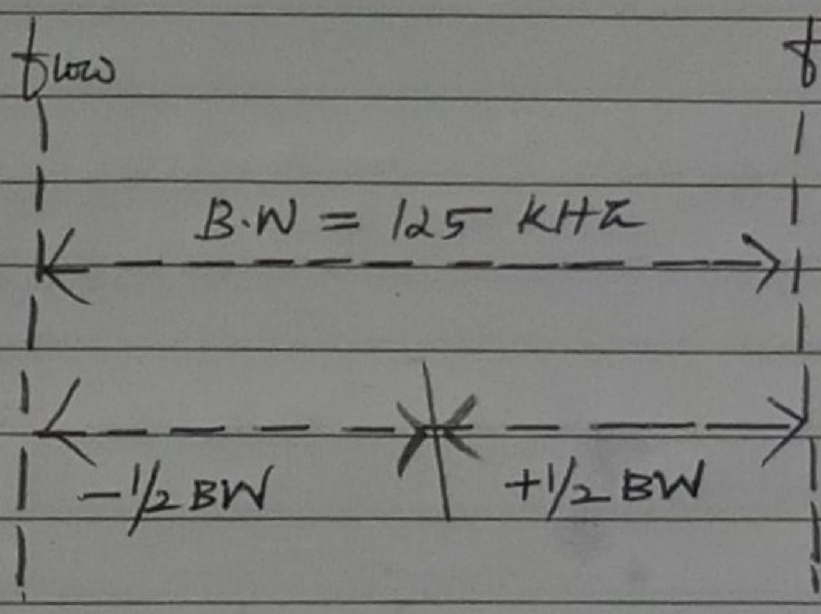
* Hop
from one
not trans

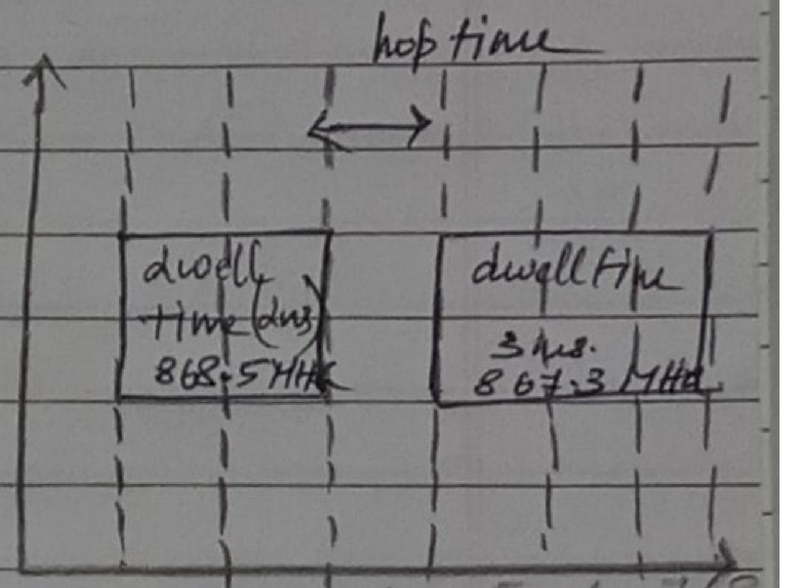
* LoRaWAN only uses bandwidth Range

→ 125 KHz
→ 250 KHz
→ 500 kHz

* Ensofx only uses two freq. bandwidth

→ 125 KHz.
→ 250 KHz.





Carrier frequency = 867.1 MHz

f_{low} = Carrier frequency − Bandwidth / 2.
f_{high} = " " " "

$f_{low} = 867.1 - 0.125/2 = 867.0375$ MHz
$f_{high} = 867.1 + 0.125/2 = 867.1625$ MHz

* Dwell Time & Hop time

* Dwell time (transmit time): is the amount of time needed to transmit on a frequency

* Hop time is the amount of time needed to change from one frequency to other, in which radio is not transitting