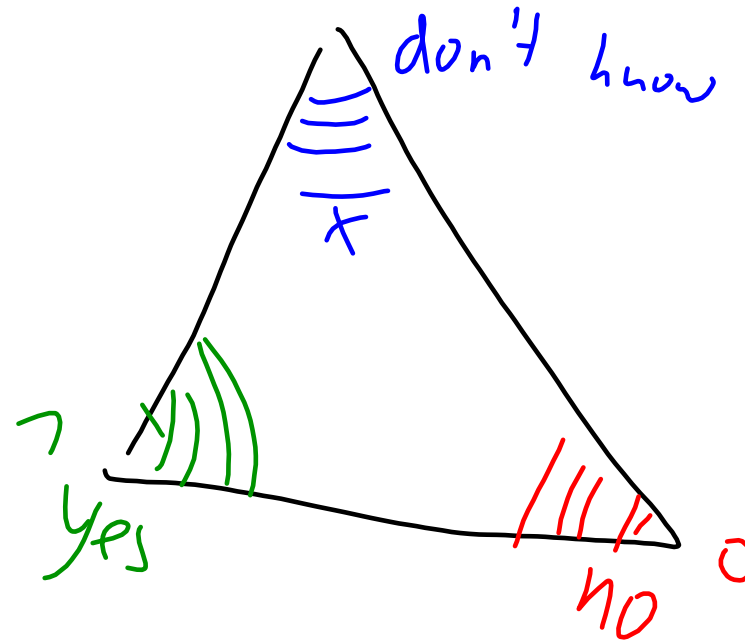


how to assess
sec & priv



previously

Range:

2G 800/900 MHz
~15km 8-9km

3G 7900-2700 MHz
~3km (7-9km)

4G 2600 MHz
~1km

5G 20 GHz (30, 60 GHz)
~200-600m

BV

200kHz

3.8 MHz

7, 2.5, 70, 20 MHz

4G+ 40 MHz

1 GHz

2017++
Refarming

12G 5G IoT 500MHz 4G (5MHz)

~~3G~~ 4G

4G

5G

Collector

868 MHz

433 MHz
BW: 7.74

$$dB_m = 10 \log \frac{P}{[mW]}$$

$$100mW = 20dB_m$$

Smart Grid

bandwidth

(5 MHz) 3 MHz, 0.6 MHz, 0.25 MHz

433.050 MHz

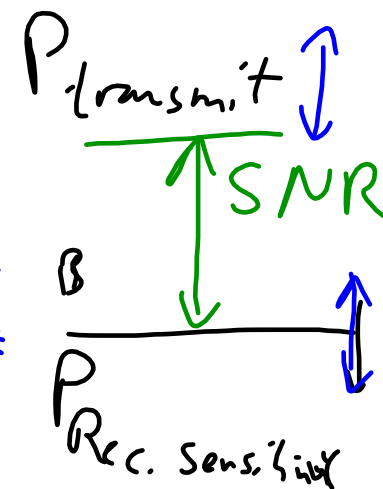
434.790 MHz BT

Wifi

3G

LTE

100 mW = 7.52 mW

 P_{sens}

-85 dBm

-80...-95 dBm

-106 dBm

-114 dBm

Sensitivity

Législation Française (et Européenne) sur la bande dite des 868MHz

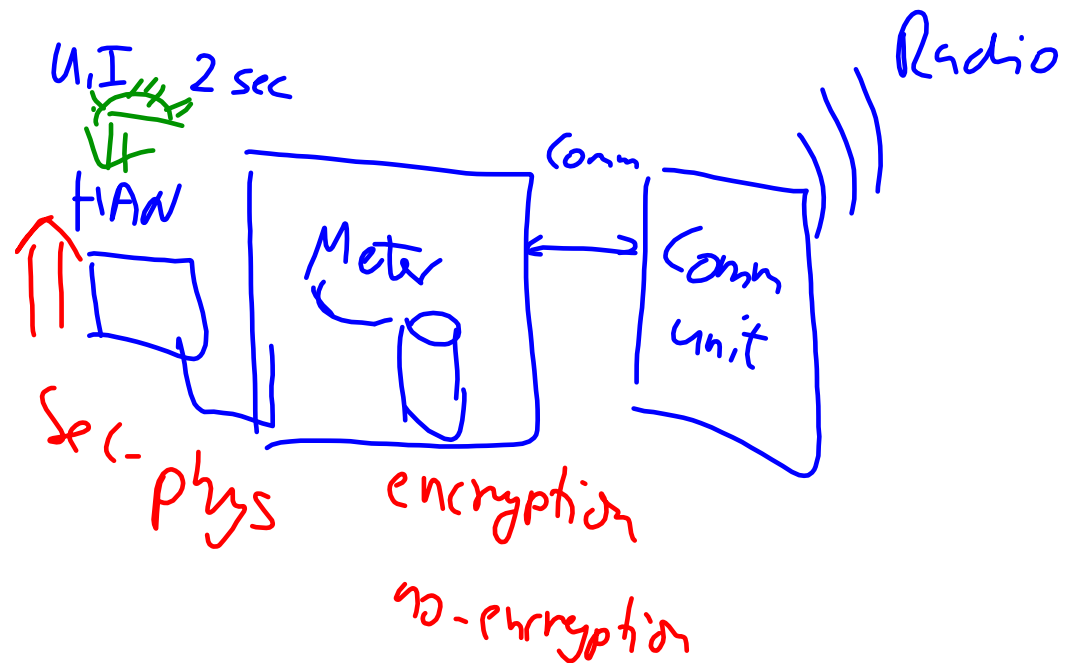
865Mhz-870 Hz



La réglementation est régie par différents textes, au niveau Européen l'ERC-REC-70-03E et en France par la décision de l'ARCEP 2012-0612 et 2014-1263 publiée au JORF le 30/01/2015.

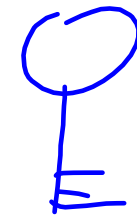
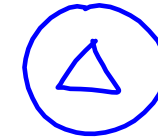
Le coefficient d'utilisation limite est défini comme étant le rapport de temps, sur 1 heure, durant lequel un dispositif émet effectivement dans la bande de fréquence concernée.

Smart Meter



phys.

lock



Operator enabled

- email

- phone

Log: When / if

Group work

- HAN Port

- remote control

vs autonomous control

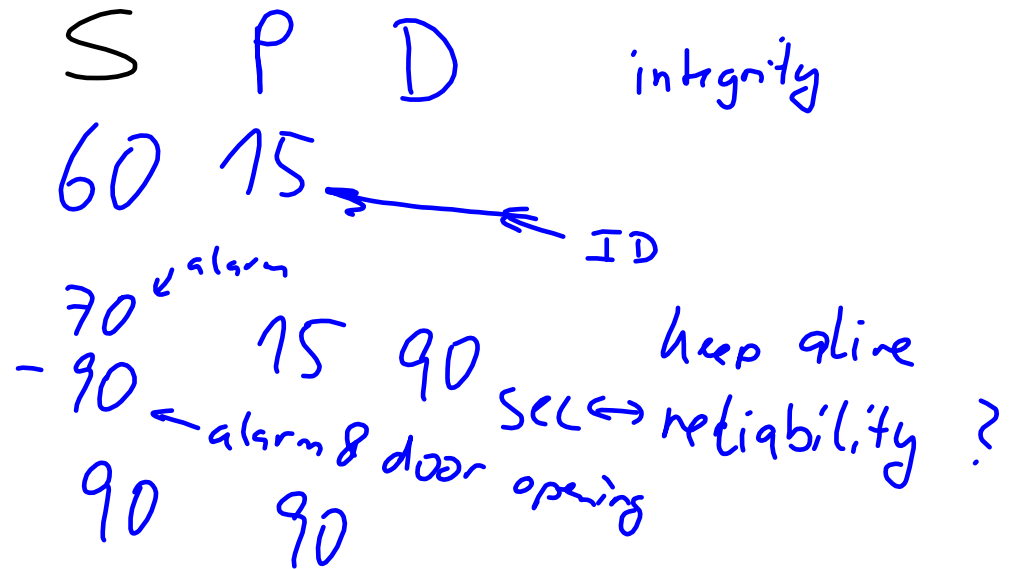


Billing

Fire alarm

Home control

- L Read
- L Switch
- L configure



$$Sec = 100 - (integrity)$$

high weighting:

- remote access
- authentication
- encryption

$$C = \sqrt{\sum \frac{x_i^2 \cdot w_i}{\sum w_i}} \quad w_i = \left(\frac{w_i}{100}\right)^2$$

weights: 10, 20, 30
: 80, 85, 90

$$w_i = 10 \\ 0.01$$

$$w_i = 90 \\ 0.81$$

high sec

$S1 = 90$

1 R	2	3	4	5	3	6	3
Rem	Ant	enc	nrsh	rate	enc	mob	enc
off	n.a.	on	off	low	on	shs	on
10	~~10~~	10	30	20	10	40	10
70	80	80	60	80	40	70	40
0.49	0.64	0.64	0.36	0.64	0.16	0.49	0.16

weight:
 w_i

$$0.7 = \sqrt{0.01}$$

$$S1 = 0.9$$

$$S2 = 0.77$$

$$S3 = 0.65$$

$$\Sigma \frac{0.01(0.49 + 0.01 \cdot 0.64 + 0.01 \cdot 0.64)}{7.77}$$

$$S3: \frac{0.16 \cdot 0.49 + 0.01 \cdot 0.16}{0.35}$$

$C_{S3} = 40$

$$\frac{0.09 \cdot 0.36 + 0.04 \cdot 0.64}{7.16} + 0.01 \cdot 0.16$$

$$\frac{0.0324 + 0.0256}{0.0016} + 1.6E-3$$

$$\leftarrow 0.23$$

$$\sqrt{\frac{0.06}{7.16}}$$

	S1	S2	S3		best $\Rightarrow$	System
C_s	0.1^2	0.23	0.35		Sec	90
W_i	80	50	20		AMR	77
	0.64	0.25	0.04	$= \sum$		65
						Radio
						Mob

$$0.01 \cdot 0.64 + 0.23^2 \cdot 0.25 + 0.35^2 \cdot 0.04$$

$$= 0.0064 + 0.013225 + 0.0049$$

$$= 0.024525$$

$$= \sqrt{0.024525} \approx 0.16$$

