dB – In Class Problem (Power)
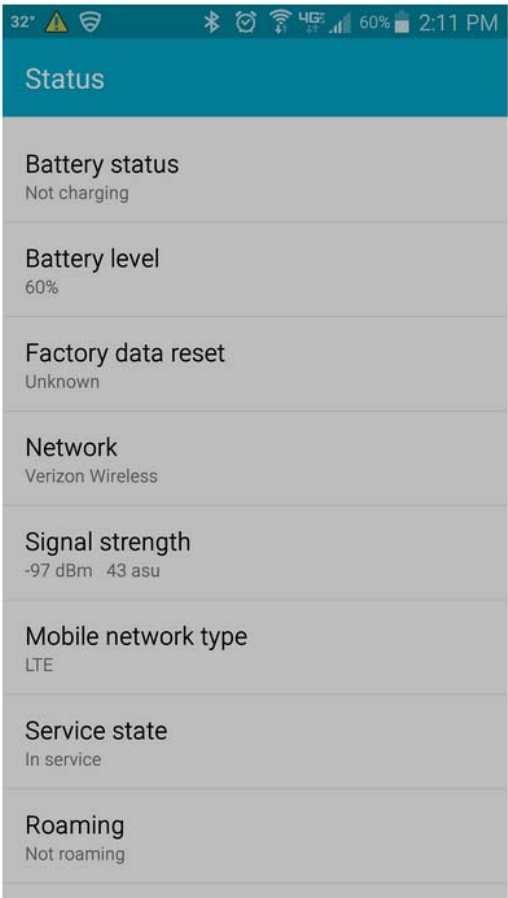
1) Assuming a cellular phone base station transmits at 10W and a smartphone transmits at 100mW, what's the difference in these two power levels in dB?

2) If the received signal is -97dBm (a realistic number), how many watts is this?

3) How many volts is this in a 50 Ohm system?

$$dB_m = 10 \log_{10} \frac{P}{1 \text{ mW}}$$

dB – In Class Problem (Power)

1) Assuming a cellular phone base station transmits at 10W and a smartphone transmits at 100mW, what's the difference in these two power levels in dB?

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10W => 40dBm

100mW => 20dBm

Therefore, there is a difference of 40dBm – 20dBm = **20dB**

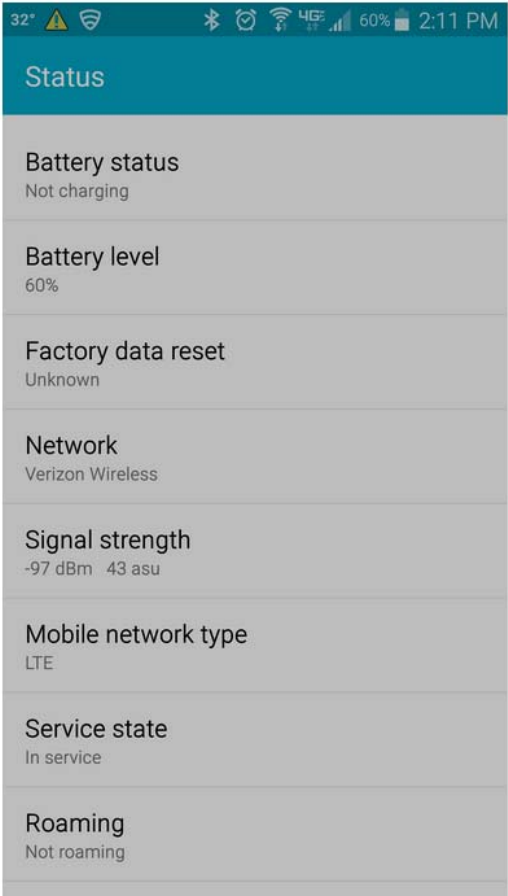2) If the received signal is -97dBm (a realistic number), how many watts is this?

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-97dBm => **199.5fW**

3) How many volts is this in a 50 Ohm system?

$$P = V^2/R$$

V = **3.16uV**RMS

Status

Battery status
Not charging

Battery level
60%

Factory data reset
Unknown

Network
Verizon Wireless

Signal strength
-97 dBm   43 asu

Mobile network type
LTE

Service state
In service

Roaming
Not roaming

NP