At what time will Panopto videos become available each week? I think they should be opened before Thursday's session so that we could familiarize ourselves with the content of the inclass3 session.

The Panopto videos are mainly related to the Monday sessions when we look at "new" weekly topic. This week was special since Monday session focused on introduction to the course.

We talked a bit about the unideal features of resistors, conductors and inductors. Are there any basic models for example for capacitors to model the unideal resistances and inductances of the component so that the model would apply to all different kinds of conductors, or are those unideal features so component specific that general models do not apply?

For example, for inductors the "basic" models include R, L, and C in various series and parallel connections.
We look at this next week, we first measure impedance of a real inductor and then consider few different equivalent circuits to model the component.

The Inclass2 -bit was apparently the work we did in the classroom earlier today, but did this also involve Preps2 for this week? There were not really any pretasks to be done before Wednesday.
Will there be separate Preps2-tasks in the following weeks that will be done indepentently, or will they be joined with the tasks that are meant to be done at the Inclass2-session?

This week the online task "Introduction to myDAQ and Multisim" acted as Preps2. Deadline for this task was extended because students may still join the course.
In coming weeks you receive information/guidelines on Monday.
For example, next week you build and test a "Phase shifter 10 kHz" -network.

The question in my mind that is it possible to get online class on the same session with in campus session like on Wednesday?

Unfortunately that is not possible as teachers are working with inclass students to build and test the circuits.

Please separate those submit icons and materials specified for remote students from the ones that are for others. It is a little confusing.

We follow the same weekly schedule each week such that the Moodle-area should also become clearer.

As some students are working remotely we have added the additional icons etc. that unfortunately may appear as confusing.

2. What is the issue that mostly needs clarification? Make a clear question!

I wasn't able to attend this week lessons, so it would be nice to know if there was something extra that I'm not able to get from the lumped passive component models video or the material from Moodle.

Also, I would like to know what are the deadlines for inclass2 and inclass3 solutions assignment.

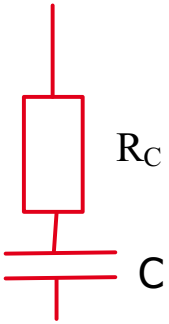
All materials used inclass are made available on Moodle, either as documents or a videos. Inclass may include discussions that are initiated/ motivated by students' questions/discussions and they are not recorded on Moodle.
However, if there is something important to add to the existing materials, then these discussions will be summarized/examplified in the Thursday sessions.

If a student is present inclass2, then the tasks should be completed in the Wednesday session. If not, then the solutions should be submitted by Wed evening. For inclass3, the solutions should be submitted preferably during the session, but latest by Friday at 12.

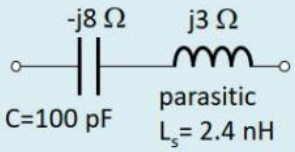
2. On the Wednesday class there was a question related to RLC resonance circuit and how the frequency can be calculated in both series and parallel RLC circuits. On the internet the resonant frequency for parallel RLC circuit was $\omega_0 = \frac{1}{\sqrt{LC}}\left[\frac{R_L^2 C - L}{R_C^2 C - L}\right]^{\frac{1}{2}}$, but honestly on every course ever has just been used $\omega_0 = \frac{1}{\sqrt{LC}}$ on both RLC resonance circuits. So, the question is, what could be actual applications where the approximation would not be accurate enough?

When do we need to use the models?

- The answer is: When the impedance of the parasitic element is comparable to the main circuit element.

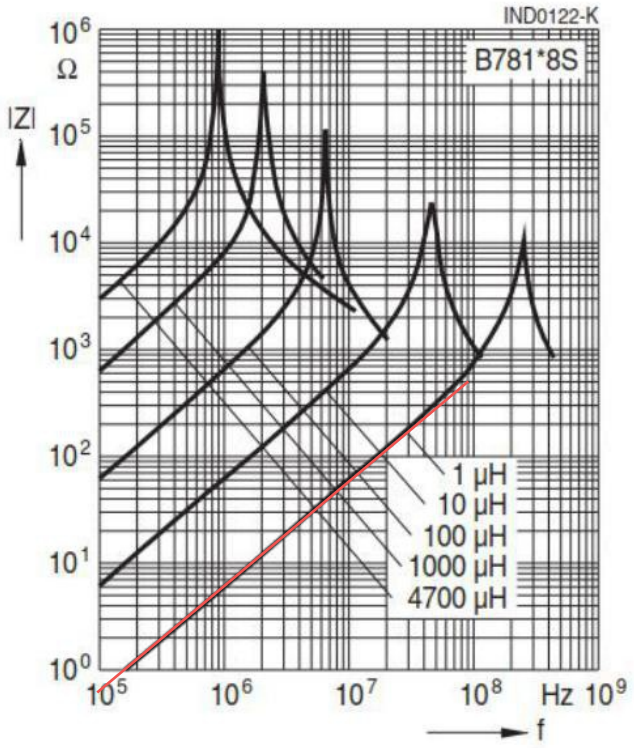


Example: 100-pF capacitor operated at 200 MHz. Assume parasitic inductance 2.4 nH. Impedances are: $1/j\omega C = -j8\ \Omega$ and $j\omega L_s = j3\ \Omega$.



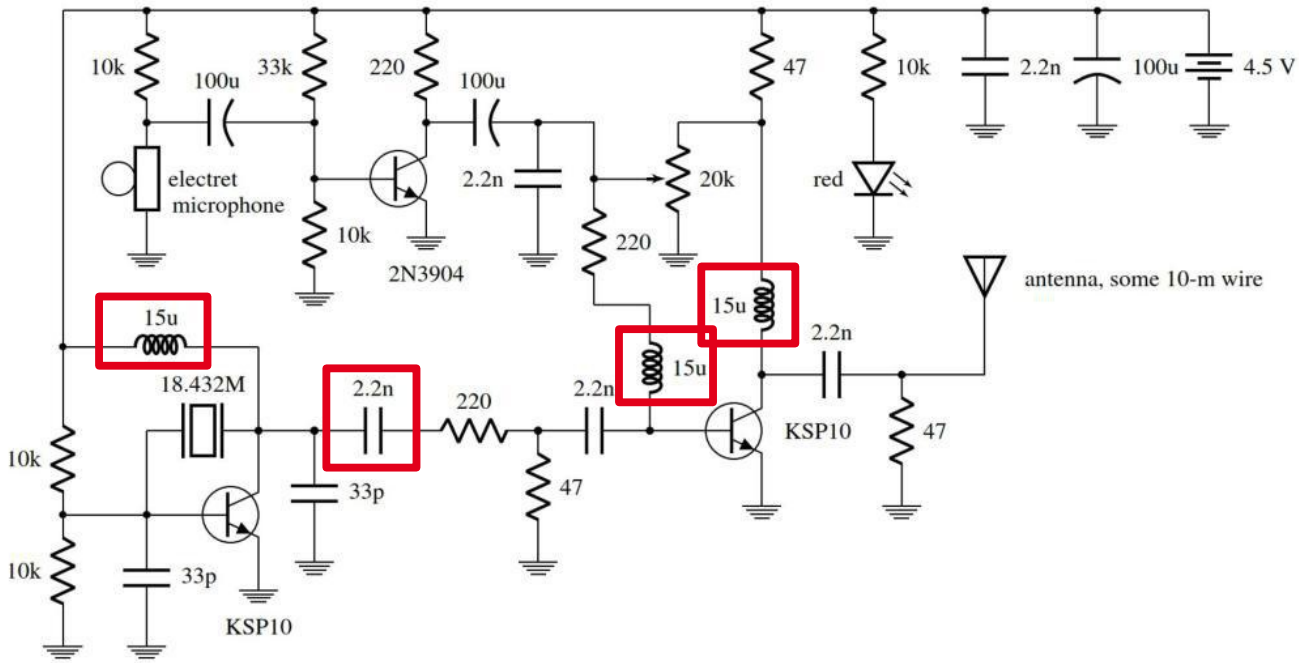
- Is j3Ω comparable to –j8Ω?
- Yes it is!

Impedance |Z| versus frequency f
measured with impedance analyzer Agilent 4294A or S-parameter network analyzer Agilent 8753ES, typical values at +20 °C



The maxima occurs at so called "self-resonance frequency" at which the impedance magnitude is highest.

The 15 uH inductors in the transmitter are chosen because they have highest impedance magnitude near 18 MHz.



SMT inductors, SIMID series **B82422A*100**

SIMID 1210-100

SMD

Technical data and measuring conditions

Rated inductance L_R	Measured with impedance analyzer Agilent 4294A or equivalent at frequency f_L, 0.1 V, +20 °C
Q factor Q_{min}	Measured with impedance analyzer Agilent 4294A or equivalent at frequency f_Q, +20 °C
Self-resonance frequency $f_{res,min}$	Measured with impedance analyzer Agilent E4991A / network analyzer Agilent E8362B or equivalent at +20 °C

Characteristics and ordering codes

L_R µH	Tolerance	f_L MHz	Q_{min}	f_Q MHz	I_R mA	R_{max} Ω	$f_{res, min}$ MHz
Core material: ceramic							
0.0082	±5% ≙ J	10	20	100	800	0.08	4000
0.010	±10% ≙ K	10	20	100	750	0.09	4000
0.012		10	25	100	700	0.10	3500

Datasheet parameters are often given only at certain frequences and component properties may be different at high frequences.
For example: the components shown could be used at 1 GHz, but L_R and f_Q are measured at considerably lower frequences.