Difference EMC Behaviour LM63615 & LM63625

During our production, the colleagues from purchase had ordered instead of LM63625 the similar LM63615. The circuitry is the same. The different coils are cause, why we found the two different IC because we try to optimize the EMC behaviour.

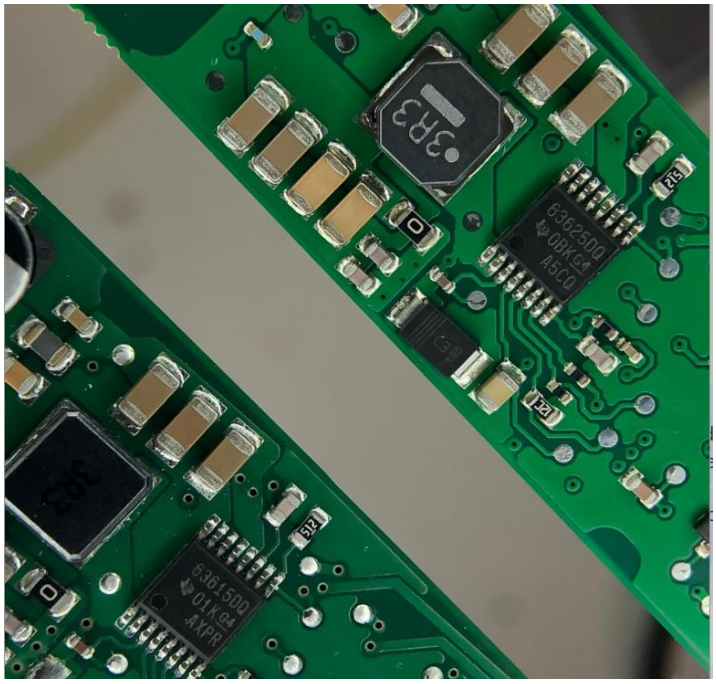

Figure 1 Assembled LM63625 and LM63615

In parallel, we are now in der design verification phase in the EMC lab. We have problems with our DCDC Converter at the switching frequency (AN-Test) and also with the harmonics at higher frequencies.

According the datasheet for LM636x5, the behaviour for both is the same, with the difference of in the maximum current.

Circuit description

We use the DCDC converter to supply our LED-String.

Supply: 9V < Uin < 16V

Current 100mA < I < 350mA

Uout = 8V

Frequency in current application: f= 1,2MHz

During the initial setup we saw, the inductance is a little bit to less. With 4.7uH, we have a much better switching behaviour because now, we are partially in the non conductive mode. A little bit ringing is visible on the switching node. But this is independent from the assembled IC because both are affected.

But in the spectrum for booth, I see big deviations in the shape. I can't explain that with my current tests. The PCB is 100% the same, the coils on my modules are really the same, just the LM636x5 is different.

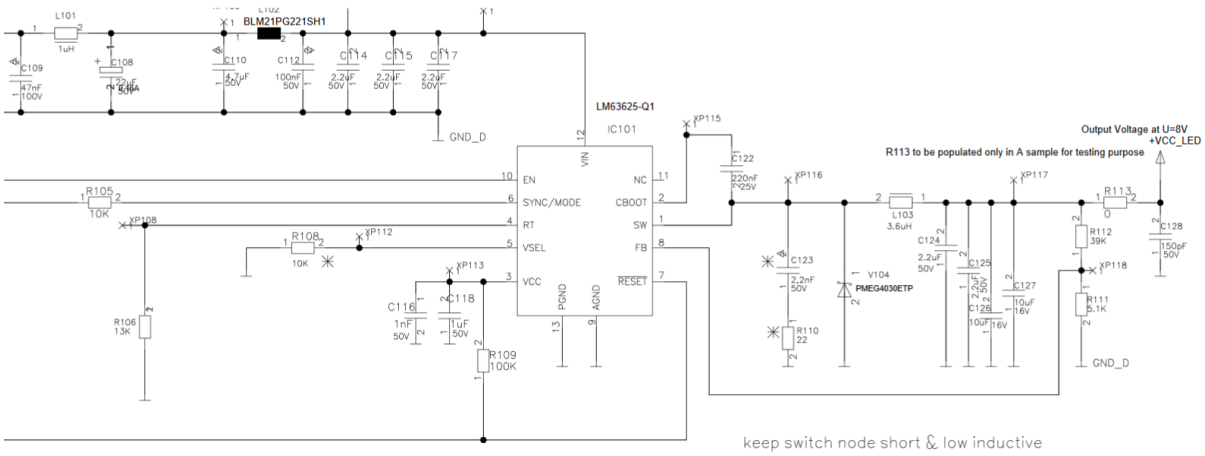

Figure 2 Circuitry DCDC Converter

63625DQ

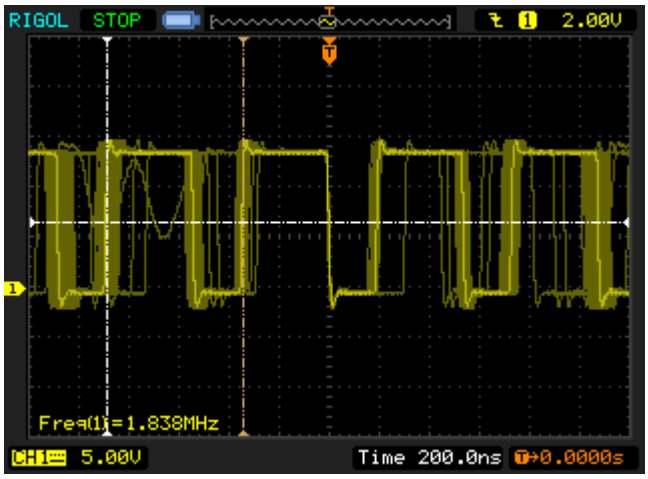

Figure 3 Signal switching Node at 1,8MHz

f=1,8MHz

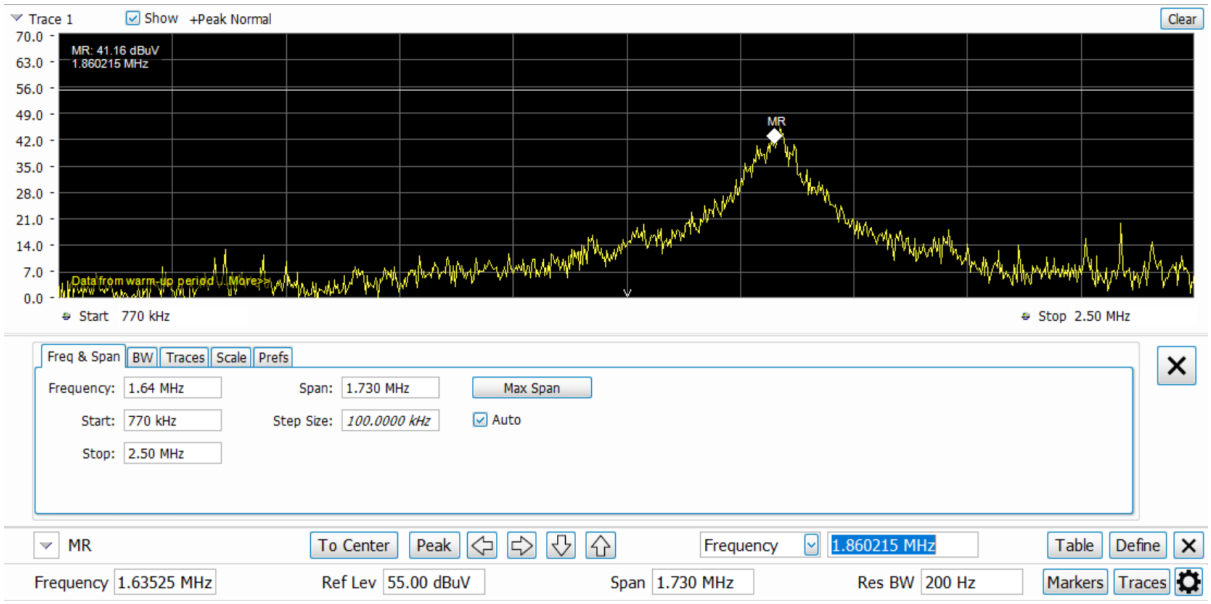

Figure 4 DCDC-Clock Frequency f=1,8MHz

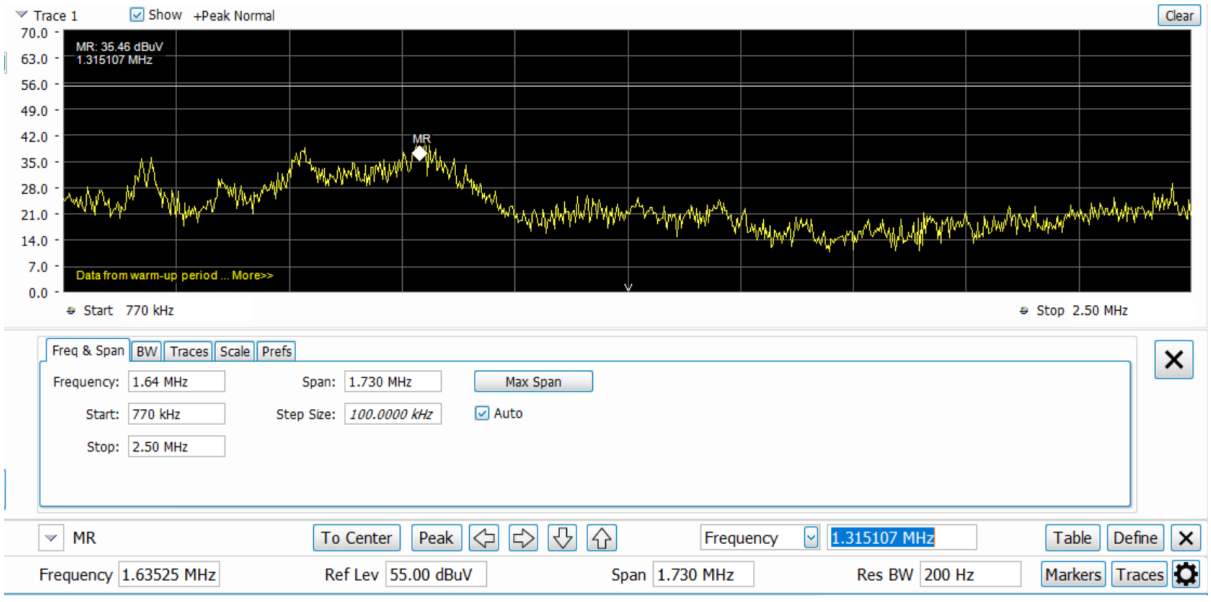

Figure 5 DCDC-Clock Frequency f=1,2MHz

63615DQ

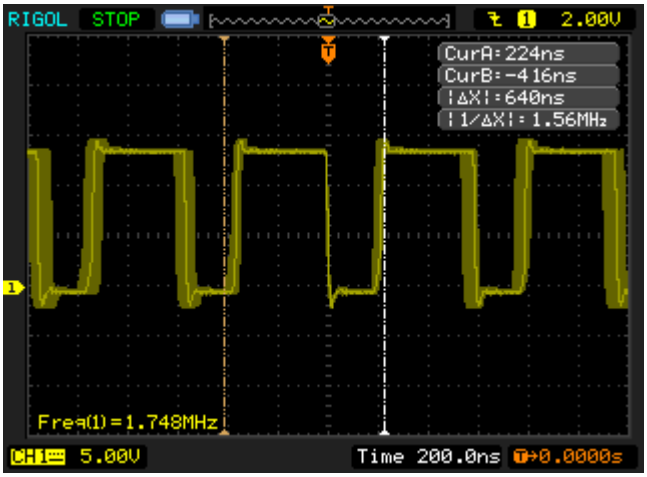

Figure 6 Signal switching Node at 1,8MHz

f=1,8MHz

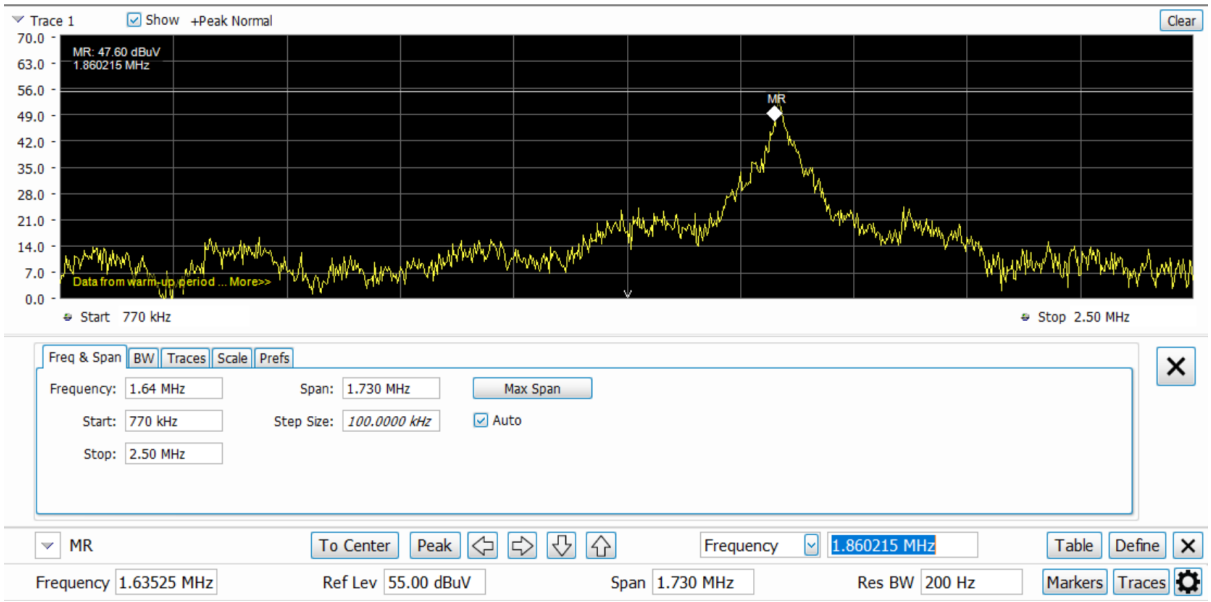

Figure 7 DCDC-Clock Frequency f=1,8MHz

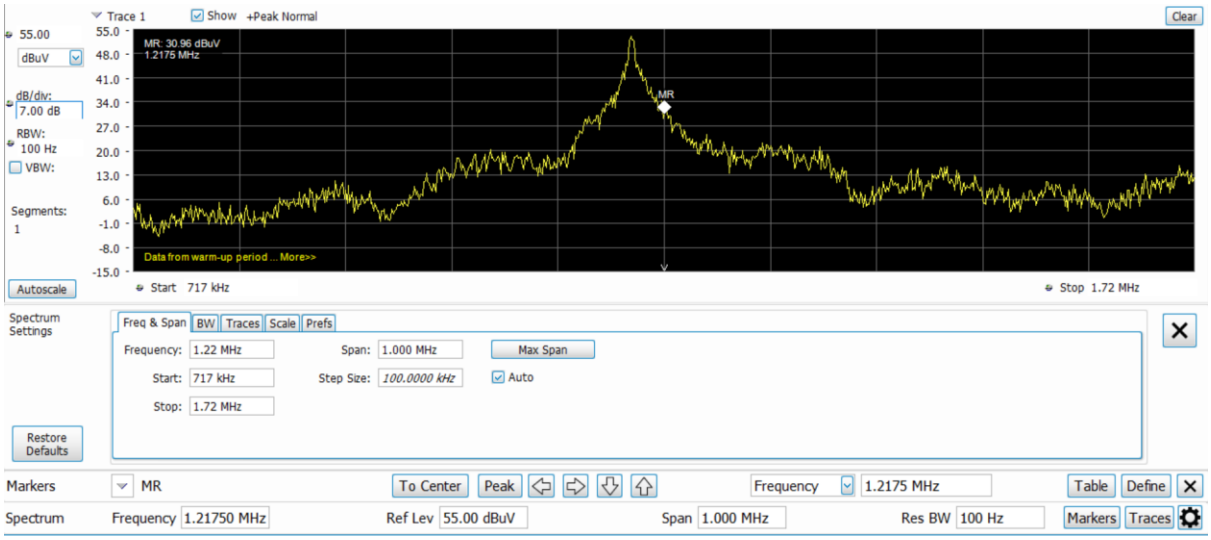

Figure 8 DCDC-Clock Frequency f=1,2MHz