M10 Antenna Detection Application Circuit

With a few external components M10 can detect whether the antenna is fixed or not. The antenna should be carefully chosen when this application is needed. Here we consider two types antenna.

Type 1: we consider an antenna whose DC impedance between the ANT_IN and ANT_GND is infinite is adopted.

In this situation a 10KΩ resistance should be embed into the antenna between ANT_IN and ANT_GND. The reference circuit is shown as Figure 1.

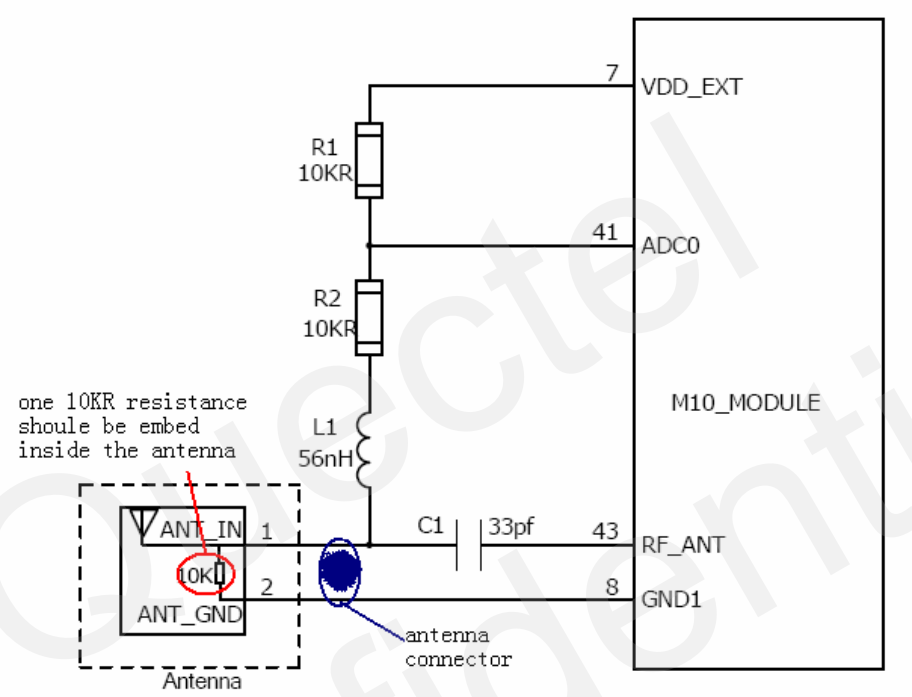

Figure 1: Antenna detection circuit for DC open antenna

L1 is used for RF signal blocking and C1 is used for DC blocking. The output of M10's VDD_EXT (M10 pin7) is 2.8V. Customer can use AT command (AT+QADC？) to check the antenna status. The response of this command is:

+QADC: < status>, <value>

OK

The parameter <*status*>=0 means ADC read is fail and <*status*>=1 means ADC read is successful. The <*value*> indicate the voltage with the unit of mV.

When the antenna is ok, the voltage at ADC0 will be equal to VDD_EXT. The response will be as following:

+QACD:1,1823

OK

Note: Its ok if the value is 1800±100.

When the antenna is removed, the response will be as following:

+QADC:1,2768

OK

Note: Its ok if the value is 2800±100.

Type 2: we consider an antenna whose DC impedance between the ANT_IN and ANT_GND is zero is adopted.

In this situation it's no need to embedded a 10KΩ resistance inside the antenna. The reference circuit is shown as Figure 2

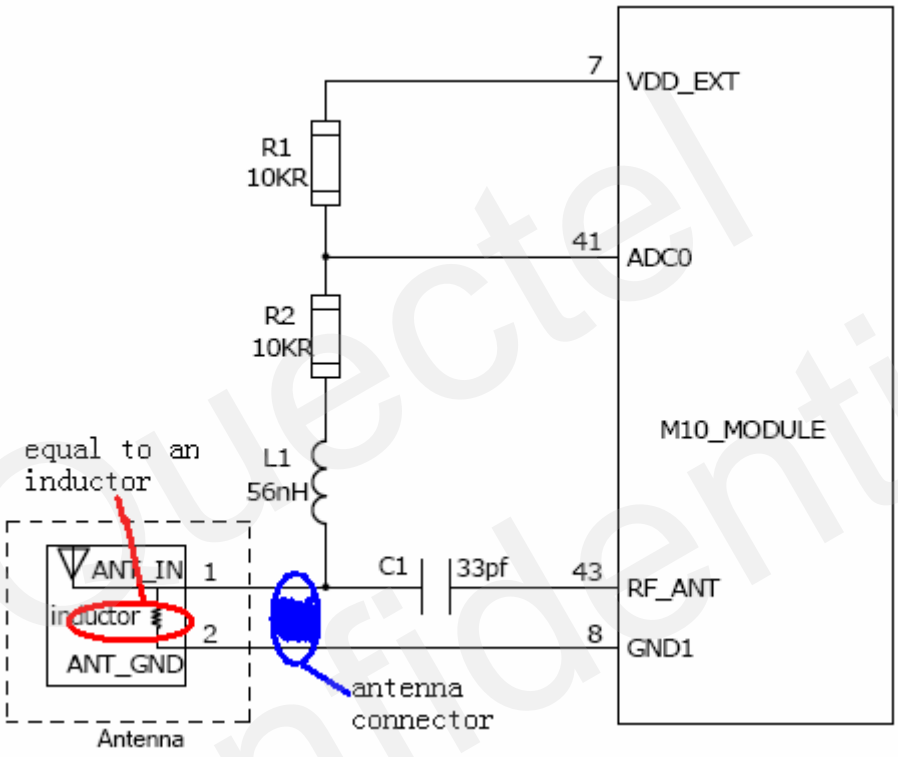

Figure 2: Antenna detection circuit for DC short antenna

When the antenna is ok, the voltage at ADC0 will be around half VDD_EXT, about 1.4V. The response will be as following:

+QACD:1,1423

OK

Note: Its ok if the value is 1400±100.

When the antenna is removed, the voltage at ADC0 will be equal to VDD_EXT. The response will be as following:

+QADC:1,2768

OK

Note: Its ok if the value is 2800±100.