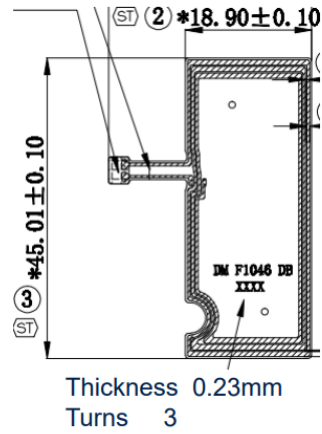
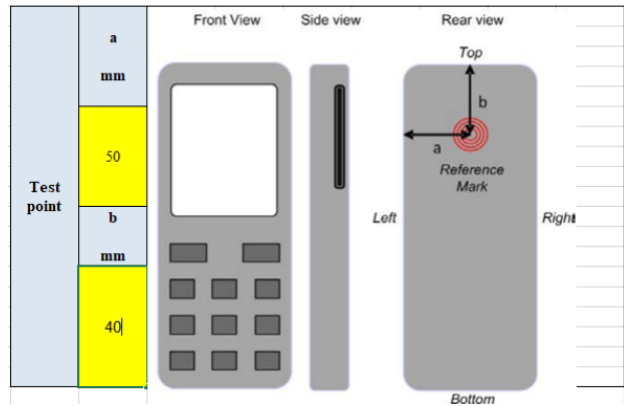


P898A12 NFC Antenna Specification

Tear down should include following information:

1. Picture of mobile phone marked antenna position.
2. Take off back cover to show antenna position.
3. Antenna size and thickness, coil turns.



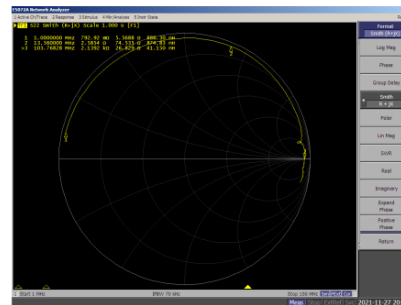
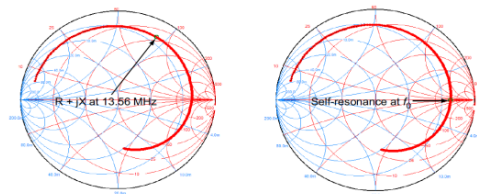
Antenna parameters

The antenna parameters are measured with a network analyzer connected to the antenna.

- ✓ The antenna must be disconnected from the matching circuit
- ✓ The antenna should be placed in its final environment with all the surrounding parts that compose the final device. If the NFC antenna is in close proximity to another antenna or even shared with another radio, then the loading of this other antenna during NFC operations should be taken into account.
- ✓ There are both measurement ways to get antenna parameter values
 - One port S11 measurement
 - Two port Sdd11 measurement

- The recommended electrical characteristics of an antenna are:
- $200 \text{ nH} < L_{p_ant} < 600 \text{ nH}$ when using the differential topology, $100 \text{ nH} < L_{p_ant} < 350 \text{ nH}$ when using the single-ended topology.
 - $Q = 8$ in case of card emulation only, $Q = 15$ for full NFC support (including reader/writer).
 - $\text{SRF} > 30 \text{ MHz}$.

ST recommended antenna parameters



The following measurement must be performed

The following measurement is an example

5

LMA and Gain value when at 000 and APC disabled

m_max_drive values to be used in Card emulation [5]	4.5
Do LMA value at 000 position with APC disabled [APC]	07
desired_gain value [G_14] read during the LMA measurement in Reg_004000000C [G14]	12
set gain at 000 is 12 for an optimum dynamic range of the Card Emulation receiver. This value is exceeded (Gain = 12 or 10). Please decrease the value of the internal divider's resistance does not need to be modified	
internal divider's resistance in CR and RPS [R06 0x4000000C]	7000
open internal divider's resistance in card emulation R06 0x4000000C	0x400010000
total divider's resistance is modified, please go back to the first step to determine APC gain	

Gain	VDD_000_M0							
	RPS_MAIN (A000)		RPS_RPSX (B000 - R000)		RPS_F102		RPS_F424	
	Suggested	Chosen	Suggested	Chosen	Suggested	Chosen	Suggested	Chosen
0	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
1	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
2	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
3	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
4	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
5	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
6	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
7	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
8	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
9	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
10	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
11	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20
12	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
13	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70

Reg. # [Hex]	Description	RPS_MAIN (A000) APC [Hex]		RPS_RPSX (B000 - R000) APC [Hex]		RPS_F102 APC [Hex]		RPS_F424 APC [Hex]	
		Suggested	Chosen	Suggested	Chosen	Suggested	Chosen	Suggested	Chosen
0x40000010	APC_F102_0	0x01000000	0x01000000	0x01000000	0x01000000	0x01000000	0x01000000	0x01000000	0x01000000
0x40000012	APC_F102_1	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000
0x40000014	APC_F102_2	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000

Set phase comp. to midpoint

Gain	RPS_MAIN (A000) phase comp. [1]		RPS_RPSX (B000 - R000) phase comp. [1]		RPS_F102 phase comp. [1]		RPS_F424 phase comp.	
	Currents	Chosen	Currents	Chosen	Currents	Chosen	Currents	Chosen
0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
1	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
2	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
3	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0