

# FLEXIBLE NFC ANTENNA WITH FERRITE



ANFCA-101-2515-A02



25 x 15 mm  
RoHS/RoHS II Compliant  
MSL = MSL-1

## FEATURES

- Ultra thin flexible antenna structure (220+/-46µm)
- Peel and Stick antenna designs
- Ferrite sheet backing optimizes magnetic fields
- Wide operating temperature range -40°C to +85°C
- Matched to leading NFC controller IC's
- Customized solutions available

## APPLICATIONS

- IoT devices
- NFC payment readers
- Healthcare ID scanners
- NFC data loggers transport
- Ticketing systems
- Electronic parking payments
- Industrial data collection

## ELECTRICAL CHARACTERISTICS

| Item                        | Spec            |
|-----------------------------|-----------------|
| Operating Frequency (MHz)   | 13.56           |
| Inductance (µH)             | 1.8±10%         |
| RAC (Ω)                     | 4.75±20%        |
| Test Condition              | 1 MHz/500mV     |
| Operating Temperature Range | -40°C to + 85°C |

Test equipment: TH2828S.



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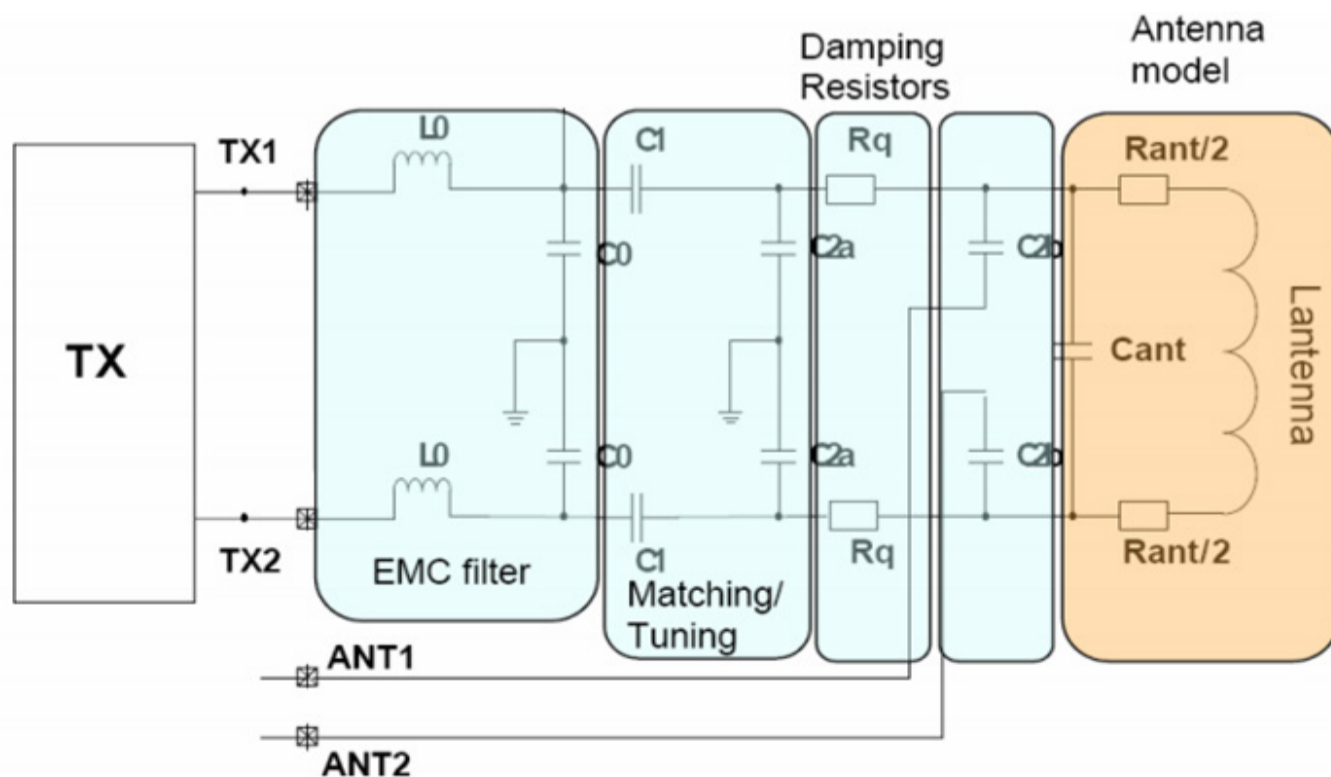
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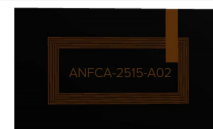
## MATCHING CIRCUIT AND REFERENCE VALUES

| Component                        | Value for reference only (1)   | Notes  |
|----------------------------------|--------------------------------|--|
| L0                               | 560 / 330nH<br>NXP / Broadcom) | EMC filter resonance at 15.4MHz (NXP) and 20.6MHz (Broadcom).  |
| C0                               | 180pF                          | EMC filter resonance at 15.4MHz (NXP) and 20.6MHz (Broadcom).  |
| C1                               | 33pF                           | Antenna matching component, to achieve series resonance at 13.56MHz. (Note: Antenna matching component value may need optimization depending upon antenna environment) |
| C2 (Includes C2a and C2b values) | 82pF                           | Antenna matching component, to achieve parallel resonance at 15MHz. (Note: Antenna matching component value may need optimization depending upon antenna environment). |
| Rq                               | 0 Ohm                          | Damping resistor, the Rq resistor used to lower Q-value if above 35 Ohm, if needed.  |

Note (1) Values can change depending upon drive circuits, design of the antenna and environment.

Matching Circuit





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## MATCHING NETWORKS

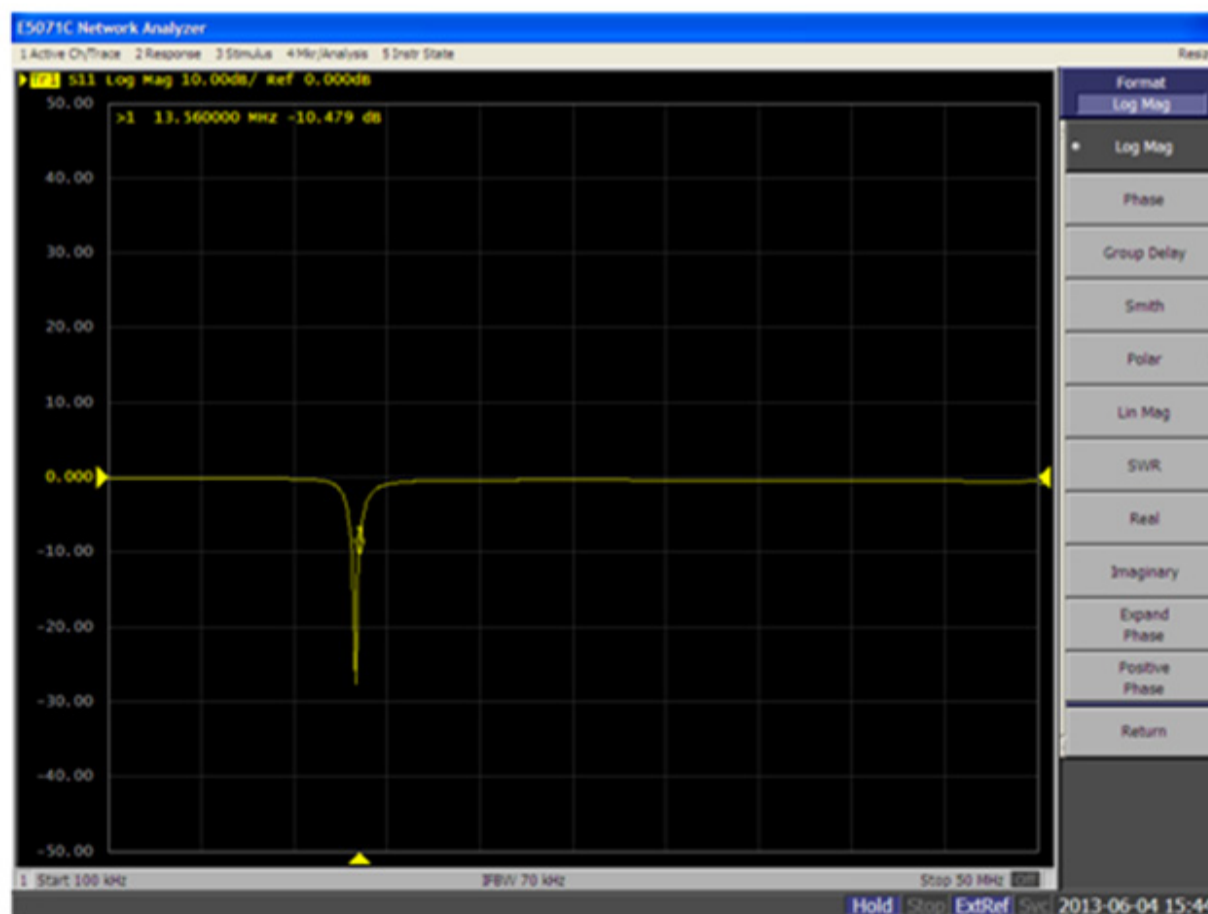
Several conditions apply when matching:

- Environment of the design.
- Placement of Antenna
  - The antenna should be placed as close to the matching network as possible
  - How close the NFC antenna is placed to other metalwork and other coils within the design.
- Antenna design
  - Optimization of the matching network is likely to be needed and this should be done with the antenna in the desired position.
- NFC normally operates from 1 to 4cm between devices. Final optimization of the matching circuit should be completed to ensure compliance.
- Designers need to consider interoperability with other devices. The antenna and matching network contribute to best interoperability.

## CONNECTION TO THE PCB

While soldering thin wires to the pads on the antenna is possible, great care must be taken, (see manual soldering Section 10.1). However it is recommended to make contact to the antenna pads via Pogo Pins. These are soldered onto the product PCB, and interface mechanically via a pressure contact to the pads on the NFC antenna. Volume applications using the NFC antenna should always use Pogo Pins to make the connections.

## ANTENNA RESPONSE – RETURN LOSS



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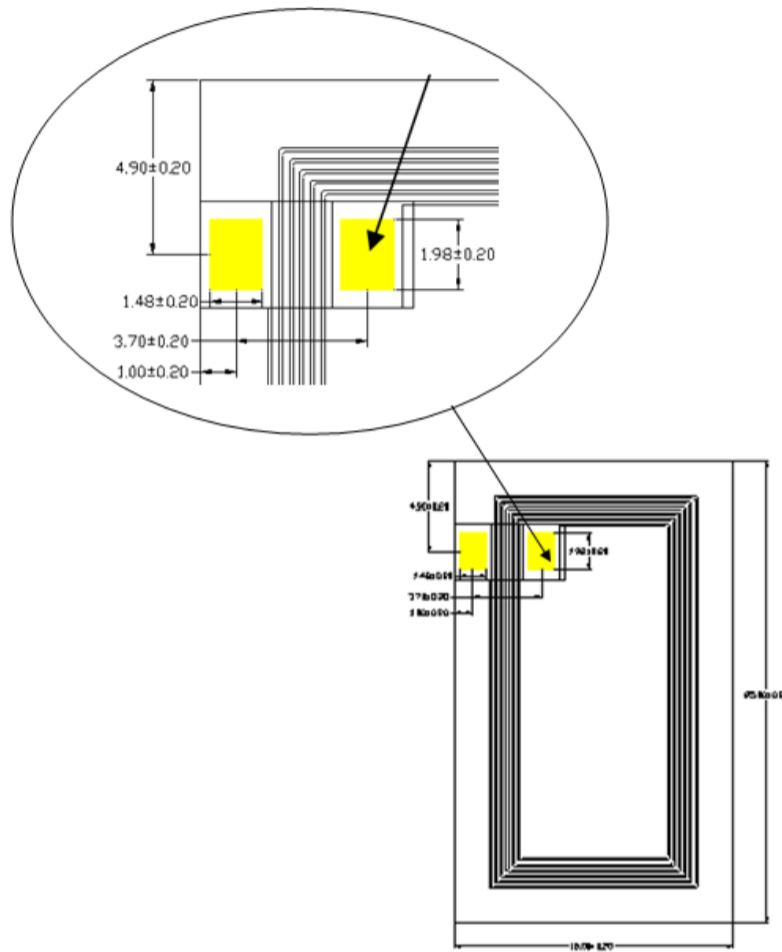


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## OUTSIDE DIMENSIONS



(Dimensions in mm)

## CONSTRUCTION

Construction materials and thickness

| No              | Material Name | Thickness ( $\mu\text{m}$ ) | Thickness (in)    |
|-----------------|---------------|-----------------------------|-------------------|
| 1               | PET Tape      | 10+/-3                      | 0.000393±0.000118 |
| 2               | Ferrite Sheet | 100+/-5                     | 0.00393±0.000196  |
| 3               | Adhesive Tape | 10+/-3                      | 0.000393±0.000118 |
| 4               | FCP           | 70+/-30                     | 0.00275±0.000118  |
| 5               | Adhesive Tape | 30+/-5                      | 0.00118±0.000196  |
| 6               | Release Paper | /                           | /                 |
| Total Thickness |               | 220+/-46                    | 0.00866±0.00181   |

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## REFLOW PROFILE:

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Not recommended for reflow soldering.

## MANUAL SOLDERING

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Recommended Soldering iron temperature setting: 330°C, 3 seconds max, 3 times max.

## PACKAGING:

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100pcs per polyphene bag / box