



Cairo University

DESIGN, FABRICATION, AND MEASUREMENT OF TAG AND READER ANTENNAS FOR RFID APPLICATIONS

By
Dina Ali Abd EL-Aziz Mohamed

A Thesis Submitted to the
Faculty of Engineering at Cairo University
in Partial Fulfillment of the
Requirements for the Degree of
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in
Electronics and Communications Engineering

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Title of Thesis:
Design, Fabrication, and Measurement of Tag and Reader Antennas for RFID Applications.

Key Words:
Bandwidth; Bow-tie antenna; Radio frequency identification (RFID); Ultra high frequency (UHF).

Summary:

The Thesis is concerned with:

- Overview on Radio Frequency Identification and its requirements.
- New proposed methods to design and calculate the complex input impedance of RFID tag bow-tie antenna.
- Design, modeling and fabrication of conventional and modified Bow-Tie RFID tag antennas matched to Monza 5 chip impedance.
- Design, and modeling of a UHF RFID patch tag antenna. This antenna can be used for metallic objects as it achieves high performance when it is mounted on metallic plate.
- Design, modeling and fabricating different shapes of circularly polarized RFID reader antennas so as to monitor RFID tag from any side.
- Measurements and calculation of uncertainty of antennas designed for radio frequency identification system operating at resonance frequency 900MHz.

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DEDICATION

To my husband Ahmed, my mother, my father, my sister Sara , my brother Hany and his son Hamza, my grandmother, my aunt Rania, my friends.

TABLE OF CONTENTS

ACKNOWLEDGMENT.....	i
DEDICATION.....	ii
TABLE OF CONTENTS.....	iii
LIST OF TABLES.....	vi
LIST OF FIGURES.....	vii
NOMENCLATURE.....	xiii
SYMBOLS.....	xiii
ABBREVIATIONS.....	xv
ABSTRACT.....	xvi
CHAPTER 1: INTRODUCTION.....	1
1.1. MOTIVATION.....	1
1.2. CONTRIBUTION.....	1
1.3. SOFTWARE USED.....	2
1.3.1. MATLAB Program.....	2
1.3.2. Zeland IE3D Software Package	2
1.3.3. CST MWS Simulation Tool.....	2
1.4. THESIS ORGANIZATION.....	3
CHAPTER 2: RADIO FREQUENCY IDENTIFICATION (RFID).....	4
2.1. INTRODUCTION.....	4
2.2. HISTORIC DEVELOPMENT OF RFID.....	5
2.3. RFID SYSTEM.....	5
2.3.1. RFID Reader.....	6
2.3.2. RFID Tag.....	6
2.3.2.1. Types of RFID tag.....	7
2.3.2.2. RFID tag chip.....	10
2.3.2.3. RFID tags operation theory	10
2.4. RFID TAG AND READER ANTENNAS.....	12
2.4.1. Reader Antenna Types	13
2.4.1.1. Ultra high frequency band reader antennas.....	13
2.4.1.2. Microwave reader antennas.....	15

2.4.2. Tag Antennas Types.....	17
2.5. ADVANTAGES AND DISADVANTAGES OF RFID.....	19
2.5.1. Advantages.....	19
2.5.2. Disadvantages.....	19
2.6. RFID STANDARDS.....	19
2.7. RFID APPLICATIONS.....	21
CHAPTER 3: ULTRA HIGH FREQUENCY RFID TAG ANTENNAS.....	23
3.1. INTRODUCTION.....	23
3.2. BOW-TIE ANTENNA INPUT IMPEDANCE CALCULATION.....	24
3.2.1. Quasi-static Method.....	24
3.2.2. Tapered Transmission Line Method.....	25
3.2.3. Biconical Approximation Method.....	30
3.2.4. Proposed Methods For Bow-tie Antenna Input Impedance Calculation.....	35
3.2.4.1. Analytical method.....	35
3.2.4.2. Graphical method.....	41
3.2.4.3. Comparison between input impedance calculated by different methods.....	43
3.3. CONVENTIONAL BOW-TIE TAG ANTENNA DESIGN AND RESULTS.....	45
3.4. MODIFIED BOW-TIE TAG ANTENNA DESIGN AND RESULTS.....	50
3.4a . T- matched circuit parameters effect on antenna bandwidth and matching...51	
3.4b . Slot dimensions effect on antenna bandwidth and matching.....	51
3.5. FABRICATION AND MEASUREMENTS	62
3.6. BOW-TIE TAG ANTENNA MEASUREMENT UNCERTAINTY.....	65
3.6.1. Uncertainty Evaluation For One-port Measurements.....	66
3.6.1.1. Effective directivity measurement	66
3.6.1.2. Effective test port match measurement.....	66
3.6.1.3. Tracking.....	66
3.6.1.4. System repeatability.....	66
3.6.2. Uncertainty Evaluation For Conventional Bow-tie Antenna.....	67
3.6.3. Uncertainty Evaluation For Modified Bow-tie Antenna.....	67
3.7. CONCLUSION.....	68
CHAPTER 4: UHF RFID TAG ANTENNA MOUNTABLE ON METALLIC OBJECTS.....	69
4.1. INTRODUCTION.....	69
4.2. GENERAL EFFECTS ON RFID APPLICATIONS.....	69
4.2.1. Absorption.....	69
4.2.2. Reflection.....	70
4.2.3. Refraction.....	70
4.2.4. Diffraction.....	70

4.3. THE BEHAVIOUR OF ELECTROMAGNETIC WAVES NEAR METALLIC SURFACE.....	71
4.3.1. Boundary Conditions For A General Case.....	71
4.3.2. Boundary Conditions At The PEC Interface.....	72
4.4. RFID TAG ANTENNA PERFORMANCE EFFECT ON METALLIC PLATFORMS.....	72
4.4.1. Inverted-F Antenna (IFA).....	73
4.4.2. Planar Inverted-F Antenna(PIFA).....	73
4.4.3. Microstrip Antenna With EBG Ground Plane.....	74
4.5. REVIEW OF LITERATURE	74
4.5.1. A printed Rectangular Antenna with A Microstrip Feed Line.....	74
4.5.2. Multi-band Dipole Antennas With AMC Ground Planes.....	75
4.5.2.1. Meandered dipole antenna structure.....	76
4.5.2.2. Meandered dipole antenna with 0.92GHz zigzag dipole AMC- HIS ground plane.....	76
4.5.2.3. Meandered dipole antenna with I-shaped slot AMC-HIS ground plane.....	77
4.6. A UHF RFID U-SHAPED SLOTS TAG ANTENNA DESIGN.....	78
4.7. CONCLUSION.....	85
CHAPTER 5: CIRCULARLY POLARIZED UHF RFID READER ANTENNA...86	
5.1. INTRODUCTION.....	86
5.2. REVIEW OF LITERATURES.....	86
5.2.1.CP Handheld RFID Reader Antenna.....	86
5.2.2.CP UHF RFID Sequentially Fed Stacked Patch Reader Antenna.....	87
5.2.3.CP UHF RFID Monopole Slot Reader Antenna	88
5.2.4.CP RFID Microstrip Patch Reader Antenna.....	88
5.3. RFID READER COMPONENTS	89
5.3.1.RF Interface.....	90
5.3.2.Control unit.....	90
5.3.3.Reader antenna.....	90
5.4. RFID READER SINGLE-LAYER CIRCULARLY POLARIZED SLOT ANTENNA	91
5.5. CIRCULARLY POLARIZED (CP) PATCH ANTENNA WITH THREE STACKED SLOT-RINGS.....	98
5.6. CONCLUSION.....	104
CHAPTER 6: CONCLUSIONS AND SUGGESTIONS FOR FUTURE WORK...105	
6.1.CONCLUSIONS.....	105
6.2.SUGGESTIONS FOR FUTURE WORK.....	105
PUBLICATION.....106	
REFERENCES.....107	

LIST OF TABLES

Table 2.1: RFID tag types according to frequency band[4,12,13,14].....	9
Table 2.2: Features of new UHF IC's types.....	10
Table 2.3: Specification of Tag and Reader Antennas[22].....	13
Table 2.4: CP compact antenna dimensions (unit: mm).....	13
Table 2.5: Helical antenna parameters[24].....	15
Table 2.6: Dielectric resonator antenna dimensions.....	17
Table 2.7: EPC Tag classes[8].....	20
Table 3.1: Traditional Bow-Tie antenna parameters at 900MHz.....	33
Table 3.2: Comparison of input impedance calculation within different methods at resonance frequency 900MHz.....	35
Table 3.3: The value of coefficients $(x_0, x_1, X_1, \dots, x_8, X_8, m_{aL}, m_{aW})$ for $a_i(L)$ and $a_i(W)$	38
Table 3.4: The value of coefficients $(y_0, y_1, Y_1, \dots, y_8, Y_8, m_L, m_W)$ for $b_i(L)$ and $b_i(W)$	39
Table 3.5: The value of coefficients $(z_0, z_1, Z_1, \dots, z_8, Z_8, m_{cL}, m_{cW})$ for $c_i(L)$ and $c_i(W)$	40
Table 3.6: Input impedance calculation at resonance frequency 900MHz using Zeland IE3D,CST, Analytical and Graphical proposed methods.....	45
Table 3.7: Modified Bow-Tie antenna with T-matched and slots dimensions in(mm)...	52
Table 3.8: RFID Tag conventional and modified Bow-Tie antenna results.....	61
Table 3.9: RFID tag conventional bow-tie antenna measurement expanded uncertainty	67
Table 3.10:RFID tag modified bow-tie antenna measurement expanded uncertainty..	67
Table 4.1: The effect of some absorbents material on RFID applications[60]	70
Table 4.2: The comparison between meandered dipole antenna, with and without the zigzag dipole AMC shapes at 0.92GHz[73].....	77
Table 4.3: The comparison between meandered dipole antenna, with and without the slotted rectangular I-shaped slot AMC shapes at 0.92 GHz[73].....	77
Table 4.4: The comparison between meandered dipole antenna, with and without the slotted rectangular I-shaped slot AMC shapes at 2.45 GHz[73].....	78
Table 4.5: Antenna parameters and dimensions.....	79
Table 4.6: Results of antenna mounted on free space, metal plate and metallic cylinder	85
Table 5.1: Geometry of circular polarized slot antenna.....	92
Table 5.2: Results of circular polarized slot antenna.....	98
Table 5.3: CP patch antenna[79],and two modification technique shapes, dimensions in(mm).....	101
Table 5.4: Results of circular polarized patch antenna with three stacked slot-rings...	104

LIST OF FIGURES

Figure 2.1: RFID system[2].....	4
Figure 2.2: RFID historic development diagram.....	5
Figure 2.3: Inductive Coupling[8].....	6
Figure 2.4: Radiative Coupling[8].....	6
Figure 2.5: RFID Tag types according to power source[11].....	7
Figure 2.6: Active and passive tags[11].....	8
Figure 2.7: RFID frequency bands[4].....	8
Figure 2.8: Link Budget calculation[18].....	11
Figure 2.9: CP compact antenna geometry [23] (a) Director.(b) Driven element. (c) Reflector.(d) Configuration of coupler.(e)Cross view.(f)photo of fabricated design.....	14
Figure 2.10: Helical antenna structure[24].....	15
Figure 2.11: Initial antenna geometry: (a) top face, (b) bottom face, miniaturized antenna geometry :(c) top face, (d) bottom face[25].....	16
Figure 2.12: The CP DRA antenna geometry [26].....	17
Figure 2.13: The 2×2 CP DRA array antenna geometry[26].....	17
Figure 2.14: Dual band RFID Tag antenna[28].....	18
Figure 2.15: RFID metal Tag antenna structure[29].....	18
Figure 2.16: Examples of RFID application areas[1].....	22
Figure 3.1: Conventional Bow-Tie antenna geometry.....	24
Figure 3.2: Quasi-static characteristic impedance Z_{qs} versus bow-tie angle θ at different values of ϵ_r	25
Figure 3.3: Tapered transmission line matching section[45].....	26
Figure 3.4: Impedance profile of different types of a tapered Transmission Line assuming $Z_o = 50\Omega$, $Z_L = 100\Omega$	27
Figure 3.5: Geometric width of different types of tapered T.L assuming $Z_o = 50\Omega$, $Z_L = 100\Omega$ $\epsilon_r = 4.3$ and $h = 1.6mm$	28
Figure 3.6: Reflection coefficient of exponential and triangular tapered T.L.....	28
Figure 3.7: Tapered transmission line method.....	29
Figure 3.8a: Schelkunoff's finite Biconical antenna and boundary sphere[35].....	31
Figure 3.8b: Equivalent transmission line.....	31
Figure 3.9: Characteristic impedance of biconical antenna.....	31
Figure 3.10: Thin finite biconical antenna and transmission line equivalent for finding Z_L	32
Figure 3.11: Traditional Bow-Tie antenna.....	33
Figure 3.12: Bow-Tie antenna input impedance, real part.....	34
Figure 3.13: Bow-Tie antenna input impedance, imaginary part.....	35

Figure 3.14a: Bow-Tie antenna input impedance at different values of Length L at 900MHz.....	41
Figure 3.14b: Bow-Tie antenna input impedance at different values of width W_1 at 900MHz.....	42
Figure 3.14c: Bow-Tie antenna input impedance at 900MHz.....	42
Figure 3.15a: Bow-Tie antenna input impedance at different values of Length L at 2.45GHz.....	42
Figure 3.15b: Bow-Tie antenna input impedance at different values of width W_1 at 2.45GHz.....	43
Figure 3.15c: Bow-Tie antenna input impedance at 2.45GHz.....	43
Figure 3.16: Bow-Tie antenna real part input impedance versus frequency using analytical, graphical, IE3D and CST methods.....	44
Figure 3.17: Bow-Tie antenna imaginary part input impedance versus frequency using analytical, graphical, IE3D and CST methods.....	44
Figure 3.18: Bow-Tie Tag antenna geometry using Zeland IE3D.....	46
Figure 3.19: Bow-Tie Tag antenna input impedance, real part at 900MHz.....	46
Figure 3.20: Chip input impedance versus frequency.....	46
Figure 3.21a: Bow-Tie antenna simulated reflection coefficient $ S_{11} $ versus frequency at different values of L_1	47
Figure 3.21b: Bow-Tie antenna simulated reflection coefficient $ S_{11} $ versus frequency...48	48
Figure 3.22: Tag input impedance using IE3D ,and analytical method.....	49
Figure 3.23: Planar bow-tie antenna with T-matched principle and the equivalent circuit [27].....	49
Figure 3.24: Modified shape Bow-Tie antenna with T-matched and slots.....	51
Figure 3.25: T-matched circuit chart for conventional bow-tie antenna with $17.31 + j163.62\Omega$ input impedance, $u = \frac{w}{w'} = 2$ at $f=900\text{MHz}$	52
Figure 3.26: Modified Bow-Tie antenna reflection coefficient versus frequency at different values for both T-matched circuit and slot dimensions.....	54
Figure 3.27: Reflection coefficient versus frequency for both conventional and modified Bow-Tie antenna.....	54
Figure 3.28: Real part of input impedance versus frequency for both conventional and modified Bow-Tie antenna.....	55
Figure 3.29: Imaginary part of input impedance versus frequency for both conventional and modified Bow-Tie antenna.....	55

Figure 3.30: Reading range versus frequency for both conventional and modified Bow-Tie antenna.....	56
Figure 3.31: Directivity versus frequency for both conventional and modified Bow-Tie antenna.....	56
Figure 3.32: Gain versus frequency for both conventional and modified Bow-Tie antenna.....	57
Figure 3.33: Radiation efficiency versus frequency for both conventional and modified Bow-Tie antenna.....	57
Figure 3.34: Current distribution for both conventional and modified Bow-Tie antenna.....	58
Figure 3.35: Co-planar and cross polarization for both conventional and modified Bow-Tie antenna.....	59
Figure 3.36: Radiation pattern of Conventional and modified Bow-Tie antenna at 900MHz.....	60
Figure 3.37: Flow chart of the design procedure of Bow-Tie antenna.....	61
Figure 3.38: Fabricated conventional bow-tie antenna on FR4 substrate.....	62
Figure 3.39: Fabricated modified bow-tie antenna on FR4 substrate.....	62
Figure 3.40: Conventional bow-tie antenna reflection coefficient versus frequency (simulated, measured , simulated with ir gap).....	63
Figure 3.41: Conventional bow-tie antenna input impedance(real and imaginary parts) versus frequency (simulated, measured, simulated with air gap).....	64
Figure 3.42: Modified bow-tie antenna reflection coefficient versus frequency (simulated, measured, simulated with air gap).....	64
Figure 3.43: Modified bow-tie antenna input impedance(real and imaginary parts) versus frequency (simulated, measured, simulated with air gap).....	65
Figure 4.1: The refraction behavior of UHF and SHF EM waves[60].....	70
Figure 4.2: Electromagnetic boundary between two media[57].....	71
Figure 4.3: Boundary conditions at the interface of PEC[57].....	72
Figure 4.4: Folded antennas: Inverted-F Antenna (IFA), Planar Inverted-F Antenna (PIFA)[69].....	73
Figure 4.5: Microstrip patch antenna with EBG ground plane [19,70].....	74
Figure 4.6: UHF RFID printed rectangular antenna[72].....	75
Figure 4.7: A straight dipole AMC-HIS design at 0.92 GHz[73].....	75
Figure 4.8: Zigzag dipole AMC-HIS design at 0.92 GHz[73].....	75
Figure 4.9: Slotted rectangular with I-shaped slot AMC-HIS design at 0.92 GHz and 2.45 GHz[73].....	76

Figure 4.10: Multi-band meandered dipole antenna[73].....	76
Figure 4.11: The meandered dipole antenna with: (a) 2x2 zigzag dipole AMC and (b) 4x2 zigzag dipole at 0.92GHz[73].....	76
Figure 4.12: The meandered dipole antenna with 2x2 slotted rectangular I-shaped slot AMC GP[73].....	77
Figure 4.13: Geometry of UHF RFID tag antenna with symmetrical U-shaped slots[58]78	
Figure 4.14: UHF RFID tag antenna with symmetrical U-shaped slots using CST tool..80	
Figure 4.15: Curved tag antenna reflection coefficient versus frequency at different metallic cylinder diameter values.....	80
Figure 4.16: Tag antenna with symmetrical U-shaped slots reflection coefficient versus frequency mounted on free space , metal plate and metallic cylinder.....	81
Figure 4.17: Tag antenna with symmetrical U-shaped slots real part of input impedance versus frequency mounted on free space , metal plate and metallic cylinder.....	81
Figure 4.18: Tag antenna with symmetrical U-shaped slots imaginary part of input impedance versus frequency mounted on free space, metallic plate and metallic cylinder.....	82
Figure 4.19: Tag antenna with symmetrical U-shaped directivity versus frequency mounted on free space , on metal plate and on metallic cylinder.....	82
Figure 4.20: Tag antenna with symmetrical U-shaped gain versus frequency mounted on free space , on metal plate and on metallic cylinder.....	83
Figure 4.21: Tag antenna with symmetrical U-shaped reading range versus frequency mounted on free space, on metallic plate and on metallic cylinder.....	84
Figure 4.22a: Two-dimensional radiation pattern at 896MHz of antenna on free space.....	84
Figure 4.22b: Three -dimensional radiation pattern at 896MHz of antenna on free space.....	84
Figure 4.23a: Two-dimensional radiation pattern at 919MHz of antenna on metallic plate.....	84
Figure 4.23b: Three -dimensional radiation pattern at 919MHz of antenna on metallic plate.....	84
Figure 4.24a: Two-dimensional radiation pattern at 895MHz of antenna on metallic cylinder.....	85
Figure 4.24b: Three -dimensional radiation pattern at 895MHz of antenna on metallic cylinder.....	85
Figure 5.1: Handheld RFID reader antenna geometry :(a) Top view, (b) Back view. (c) Side view[80].....	87
Figure 5.2: CP sequentially fed stacked patch reader antenna. (a) geometry, (b) Side view ($h_1 = 5$ mm, $h_2 = 20$ mm, $h_3 = 10$ mm, and $L_g = 250$ mm)[76].....	87
Figure 5.3: CP monopole slot reader antenna geometry[82].....	88
Figure 5.4: CP RFID microstrip patch reader antenna geometry along with feed network on the backside of the ground plane[83].....	89