

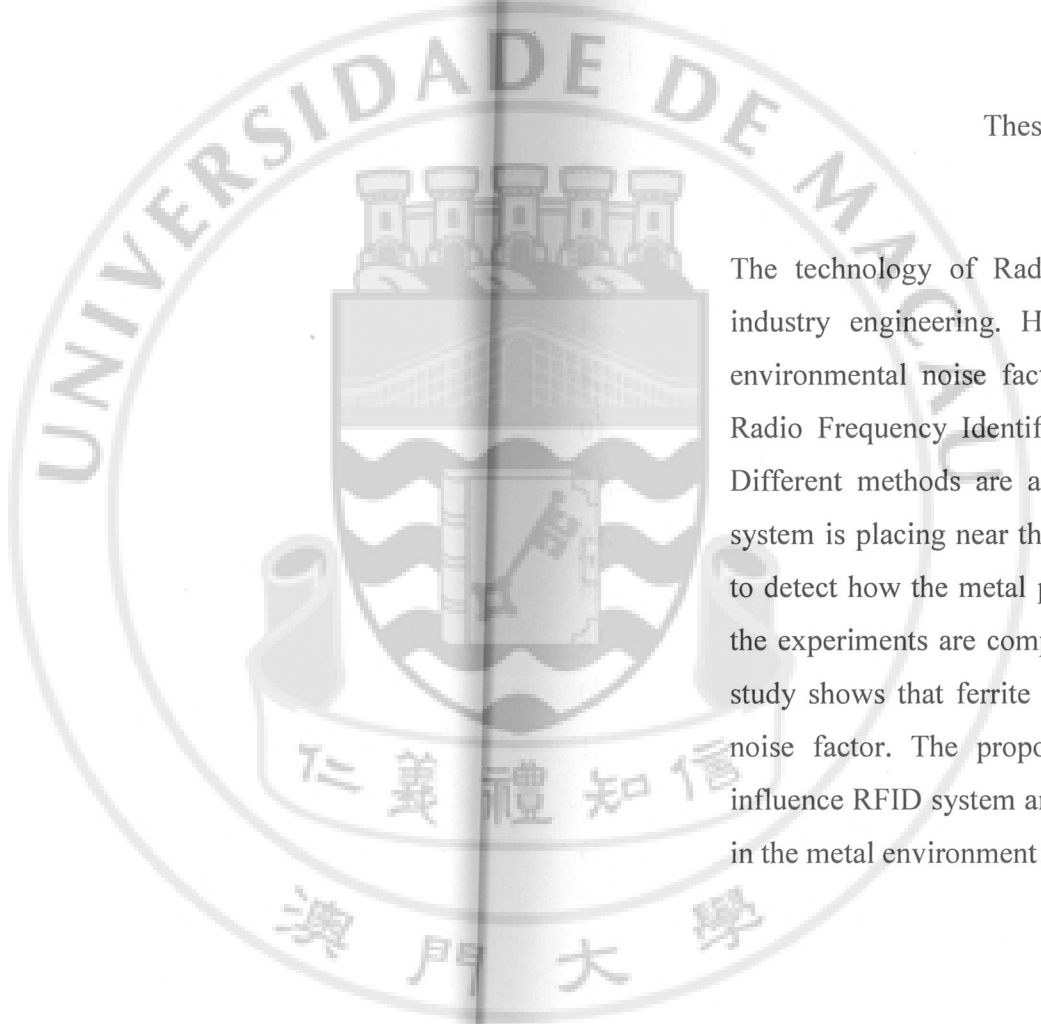
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Abstract

NOISE FACTOR ANALYSIS OF METALLIC OBJECTS IN
POSITIONING PERFORMANCE TO RFID SYSTEM

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The logo of the University of Macau is a circular emblem. It features a central shield with a crown on top, a bridge in the middle, and wavy lines below. A banner at the bottom contains the Chinese characters '仁義禮知信' (Benevolence, Righteousness, Propriety, Knowledge, Faith). The outer ring of the emblem contains the text 'UNIVERSIDADE DE MACAU' at the top and '澳門大學' (University of Macau) at the bottom.

The technology of Radio Frequency Identification is becoming widely used in industry engineering. However, the UHF RFID tag can be easily affected by environmental noise factors, especially on the metal surface. The metal effect to Radio Frequency Identification (RFID) location system is described in the thesis. Different methods are adopted to analyze the circumstances when RFID location system is placing near the metal objects. Simulation for tag antenna is accomplished to detect how the metal plate affecting the magnetic field around the tag. Moreover, the experiments are completed by using RF Code M250 reader and R150 tags. This study shows that ferrite is one of the materials that can reduce the effect of metal noise factor. The proposed results illustrate the noise factor of metal material influence RFID system and provide the useful alert when RFID technology is applied in the metal environment of industry engineering.

KEYWORDS – antenna, electromagnetic simulation, ferrite, metal effect, RFID

TABLE OF CONTENTS

LIST OF FIGURES	vii
LIST OF TABLES	ix
LIST OF ABBREVIATIONS	x
Chapter 1: Introduction	1
1.1 Research background	1
1.2 Objective	2
1.3 RFID System	3
1.3.1 Classification	3
1.3.2 Experiment equipments	4
1.3.3 Advantages of RFID system	8
1.4 RFID application fields	10
1.5 Application of RFID system in indoor localization	15
1.6 The problems existing in RFID technology	16
1.6.1 Factors affecting the development of RFID	16
1.6.2 Main noise factors of rfid system	18
1.6.3 Improve the rate of identification	20
1.7 Effects of metallic surfaces on RFID tag antennas	21
Chapter 2: Literature review	23
2.1 Localization system	23
2.1.1 General techniques in indoor positioning systems	23
2.1.2 RFID technology in indoor positioning systems	25
2.2 RFID localization in harsh environment	28
2.3 Metal noise factor to rfid localization system	29
Chapter 3: Methodology	30
3.1 Experiment facilities	31
3.1.1 Hardware	34
3.1.2 RF Code middleware	36
3.1.3 RFID working sysyem	38
3.2 The influence of different metal material to a single tag	39
3.3 The influence of different metal material to mutiple tags	42
3.3.1 Experiment measured for nine RFID tags matrix	42
3.3.2 Experiment measured for sixteen RFID tags matrix	44
3.3.3 Experiment data measured for twenty five RFID tags matrix	46
3.4 Simulation	48
Chapter 4: Results ang discussion	52
4.1 Analysis of metal noise factor for single RFID tag	52
4.2 Analysis of metal noise factor for multiple RFID tags	58
4.3 Simulation results	70
4.4 Method to solve metal noise factor	73
Chapter 5: Conclusion	82
5.1 Influence of metallic objects to rfid system	82
5.2 Tag interference and anti-collision algorithm	84
5.3 Effect of wave absorbing material for metal noise factor	85
5.4 Contribution	86
5.5 Further work	87
BIBLIOGRAPHY	89
APPENDIX A: SSI data of single tag in different environments	94
APPENDIX B: SSI data of multiple tags matrix in different environments	99
APPENDIX C: SSI data of multiple tags matrix with ferrites and metal plates	105