

TPCT's TERNA ENGINEERING COLLEGE

Plot No. 12, Sector-22, Opp. Nerul Railway Station
Phase-II, Nerul (W), Navi Mumbai 400 706
Ph. +91 22 61115444 (30 Lines) Fax No.91 22 61115400
Web : www.terna.org. e- mail : principal@terna.org

Project-A (B) Report Format (GENERAL GUIDELINES)

1. Presentation

- 1.1 Mandatory: Abstract, Literature, Review and Scope of the project, Methodology, Results and Discussion, Summary and Conclusions, References and Bibliography, Appendices (if required), Acknowledgements.
- 1.2 Errors in spelling and grammatical errors should be eliminated. Spelling should be conform to Oxford Dictionary (for uniformity).
- 1.3 Precision and Consistency: Ever effort must be made to avoid over-writing, unwanted repetition, padding with irrelevant materials and use of unwieldy and clumsy constructions. The report must be self-consistent in the use of symbols, abbreviations, spelling and punctuation. Once chosen, the same must be used throughout. *It is recommended* that must be as concise as possible and it *should not exceed 40 pages (Project-A) or 100 pages (Project-B)*.
- 1.4 A list of symbols (if used in the report) must appear in the beginning of the report.
- 1.5 Chapters: The basic material of the report shall be presented in the form of chapters, each carrying an appropriate and title which must convey the scope of its content.
- 1.6 Parts: If work comprises two or more mutually independent, the report may be divided into two or more parts, each with an appropriate title. However, the numbering of chapters will be continuous right through.

- 1.7 Introduction: The first chapter shall be titled 'Introduction'. The introduction shall be common to all of you and it will (a) Introduce the project stating the present state, (b) Define the scope of investigations, (c) explain the methodology used, and describe the contents of the project chapter wise.
- 1.8 Last chapter: It is strongly recommended that the last chapter of the report be devoted to a critical evaluation of the results highlighting the specific contribution made.
- 1.9 Appendices: It is important that the presentation must ensure utmost continuity in the theoretical discussion, in the description of experimental results, and their interpretation. Hence, lengthy derivations, voluminous tables, chart and figures, which are likely to disturb the smooth flow for the reader, must be presented in the appendices.

2. Sequence

- 2.1 Title Sheet: The title sheet shall be first typed page and it will conform to '**Specimen 1**'.
- 2.2 Approval Sheet: The approval sheet shall follow the title sheet and it shall conform to '**Specimen 2**'.
- 2.3 Contents: The contents shall follow the approval sheet and it indicates in the usual manner the page numbers, sections, sub-sections of the chapters, appendices, and references. The numbers and titles of all the items must be clearly entered with the page numbers against each. It shall conform to '**Specimen 3**'.
- 2.4 List of Figures, Charts, and Tables: It is necessary to give separate lists of these items. This may be placed immediately after contents. It shall conform to '**Specimen 3A and 3B**'.

- 2.5 Fractographs and those metallographs/photographs in which colors that do not contribute to scientific/technological interferences must be black and white only. For photographs of equipment /test specimens/set ups, a scale must be a part of the photographs to give an idea regarding the size of the elements shown in the photographs.
- 2.6 Nomenclature: Nomenclature will follow the contents. Its purpose will be to arrange all the symbols, abbreviations, Greek/Latin letters, sub – and superscripts etc. and indicate precise meaning and usage.
- 2.7 The Chapters: Chapter 1 shall follow the previous item. Chapter 2 and the subsequent chapters will follow in the usual sequence. It shall conform to '**Specimen 4**'.
- 2.8 Appendices: The appendices shall follow the last chapter of the Report.
- 2.9 References: References shall follow the last chapter or the appendices. Research papers, reviews, treatises and books shall be listed therein as far as possible in the order in which they are first cited in the text. They will be indicated by superscripts or placed with in square brackets approximately placed in the text. *A reference to a paper shall include the names of authors, title of the paper, name of the journal, volume number, page number and the year in parenthesis. A reference to a book shall include the names of the authors, the title, volume number (bold), publisher's name and the place, the edition, and the year of publication in parenthesis.* If only certain pages of a book are referred to, the page numbers must be given as shown...pp.347-378. The title of the journal and book should be in Italics. It shall conform to '**Specimen 5**'.
- 2.10 Abstract: It is the condensed version of the report. It should contain aim of the work, methods used in the work and important results obtained. The abstract should occupy maximum of one page, typed in one and half space.

3. Technical

- 3.1 Paper: The original typescript must be typed on white A4 size bond paper. The remaining copies may be on any other bond paper.
- 3.2 Word processing: (All the text should be in Times New Roman only)
- (i) Size: Standard A4 Size.
 - (ii) Paper: 70GSM Executive Bond paper.
 - (iii.a) Fonts: Times New Roman 12-point font.
 - (iii.b) Chapter headings: Bold, 14-point font
 - (iii.c) Section heading: Bold 12 point.
 - (iii.d) Subsection headings: Italics, 12point.
 - (iii.e) Paragraph to start on the new in each of these cases;
 - (iii.f) Sub- section headings: underlined, with paragraph to start on the same line.
 - (iii.g) Font size for text in graphs and tables: minimum size of 9 points, maximum of 12 points. The letter size should be at least 3mm.
 - (iii.h) Headers and footnotes: Font size of 9 points.
 - (iv) Margins: 25mm left, bottom and top; 15mm right margin.
 - (v) Line spacing: 1.5 lines.
 - (vi) Paragraph spacing: If indented: 1.5 lines spacing, if unindented, 2 lines spacing.
 - (vii) Justification of the text: Left side justified for body of the text, right side justified for headers, central justification for chapter headings only.
 - (viii) A new section/ subsection that begins towards the bottom half of the page must have at least 6-7 lines of text or at least a figure on the same page. Beginning a new section at the bottom of the page is other wise not acceptable. Similarly, a chapter that ends on a new page must have at least 6-7 of text/ a figure on that page.

3.2.1 Use of color: Allowed photographs or cell structures. Colors are **NOT PERMITTED** in the text.

3.2.2 Equations: Should be numbered sequentially and indented with respect to the body of the text. No colors are permitted. One line should be left blank on either side of the equation. Successive equations without a body of text in between must have double spacing.

SPECIMEN 1
(Title sheet)

Multi Port Network Model Analysis of
Gap-Coupled Microstrip Antennas (24pt)

Project – A (B) (18 pt)

Submitted in partial fulfillment of the requirements for the degree of

Bachelor of Engineering (14pt) by:

(Exam no)

Jain Amit Sudhir Kumar	xxxx0
Pange Guruprasad Prabhakar	yyyy1
Nimkar Bhakti Suresh	yyyy3
Redkar Anagha Subhash	yyyy4

Under the guidance of

XXXXXXXXXX (Internal) and

YYYYYYYYYYYY (External)



Department of ----- (14 pt)

UNIVERSITY OF MUMBAI
2011

SPECIMEN 2

CERTIFICATE OF APPROVAL (18 pt)

Project Entitled: Multi Port Network Model Analysis of Gap-Coupled Microstrip Antennas

Submitted by:

Jain Amit Sudhir Kumar	xxxx0
Pange Guruprasad Prabhakar	yyyy1
Nimkar Bhakti Suresh	yyyy3
Redkar Anagha Subhash	Yyyy4

In partial fulfillment of the degree of **B.E.** in "**Electronics and Telecommunication Engineering**" is approved.

Guide(s):

Examiner (s):

1. Internal _____

2. External _____

Project Convener

HOD

Principal

SPECIMEN 3

TABLE OF CONTENTS (16 pt)

Caption	Page No.
List of Figures	iii
List of Tables	iv
Chapter 1 (14 pt)	
Introduction (16 pt)	
1.1 Aim of the project	1
1.2 Organization of report	1
Chapter 2	
Literature Survey	
2.1 Basics of radio frequency identification	3
2.2 Operating principles of radio frequency identification system	10
2.3 The 13.56 MHz radio frequency identification antenna	14
2.4 Antenna operating distances	19
2.5 Frequency ranges of tags	22
2.6 Applications of radio frequency identification system	24
2.7 Conclusion	26
Chapter 3	
Implementation of radio frequency identification	
3.1 Circuit diagram and description	28
3.2 Reader communication procedure.	29
3.3 HyperTerminal for read / write to the tag (MF1 S50-1k)	32
3.4 Database details and software for attendance record	34
3.5 Conclusion	

Chapter 4

Result and Discussion

4.1	Software results	39
4.2	Summary on the results obtained	41

Chapter 5

Conclusion

5.1	Summary.	43
5.2	Future scope of the project.	43

Appendix A	45
-------------------	-----------

References	51
-------------------	-----------

SPECIMEN 3A

LIST OF FIGURES

Figure No.	Caption	Page No.
2.1	Block Diagram of radio frequency identification system	3
2.2	MF1 S50 IC Tag block diagram	4
2.3	Transaction sequence of the tag	6
2.4	Memory organizations of tag	8
2.5	Manufacturer block of tag	8
2.6	Basic interface diagram with host terminal	9
2.7	Operating principle of an inductive coupling	11
2.8	Sample circuit of the power supply and load modulator in a transponder.	12
2.9	Operating principle of a backscatter coupling	13
2.10	Mifare interface principle	15
2.11	Transformer Model for energy transmission	16
2.12	Data transmission from reader to tag, signal shape	17
2.13	Miller coding	17
2.14	Sub carrier load modulation principle	18
2.15	Time and Frequency domain representation of modulated wave	19
2.16	Coupling factor k v/s antenna diameter	20
2.17	Frequency v/s range performance of radio frequency devices	23
3.1	Circuit diagram of reader with antenna	28
3.2	Communication flow graph of reader	31
3.3	Tag read/write on hyper terminal	32
3.4	Photograph of system hardware	33
3.5	Antenna circuitry	34
3.6	Visual basic view of username and password dialog box	35
3.7	Configuration window	35
3.8	User window of application	36
3.9	Time window of application	37
3.10	System user window of application	37
3.11	Attendance database window in access	38
4.1	Login and password dialog box	39
4.2:	Final configuration window of application	39
4.3	Time and attendance record	40
4.4	Monthly attendance record	41

SPECIMEN 3B

LIST OF TABLE

Table No.	Caption	Page No.
2.1	Classification of smart card.	2
2.2	Overview of MIFARE interface.	15
2.3	Frequency classification of tags	23
3.1	Modem state assignment	32

SPECIMEN 4

Chapter 1 (14 pt)

Introduction (16 pt)

Radio frequency identification is a carrier technology that fits under the umbrella of automatic identification. It does not require line of sight to operate, can function under variety of environment conditions and provide high level of data integrity and security. The existing procedure in maintenance of attendance records is very tedious and it consumes lot of manual power [1]. Hence there lies a motivation to create a project for efficient management of records. Also, as telecommunication engineer, it is an opportunity for us to learn application of radio frequency identification in the fields of telecommunication [2 -3].

1.1 Aim of the project

Our project aims to achieve the usefulness of radio frequency identification in time and attendance management. This project, if implemented on large scale in colleges, offices and various areas where access points are required will help in faster and smoother handling of access techniques. Our project automatically records a person attendance without the need for signature sheet, which reduces the filing of various attendance sheets thus providing efficient management of records.

1.2 Organization of Report

In chapter 2 we discuss the concepts involved in radio frequency identification. We have also introduced the basics components used in radio frequency identification. The chapter 3 deals with the implementation of time and attendance managements using radio frequency identification. In chapter 4 we have discussed about software results obtained. In chapter 5 we have given conclusion and future scope of project.

Chapter 2

Literature Review

In the previous chapter we have given the aim of project of automatically identifying a person by means of radio frequency identification and in this chapter we will be discussing about the concepts involved in radio frequency identification.

2.1 Introduction

Radio frequency identification is similar to bar coding. Bar coding system use a reader and coded label that are attached to an item, whereas radio frequency identification uses a reader and special tags that are attached to an item. Bar code uses optical signal to transfer information from the label to the reader whereas radio frequency identification uses RF signal to transfer information from reader to tag.

The Table 2.1 gives classification of various smart cards and tags, which are currently in use, their typical capacity and the type of interface.

Table 2.1 Classification of smart card

Type	Typical Capacity (Bits)	System Interface
Radio Tag	64	RF Coupling
Memory Only Card	16k-1M	6-8 Electrical Contacts
Wired Logic Smart Card	>256	6-8 Electrical Contacts
Programmable Logic Smart Card	>8k	6-8 Electrical Contacts
RF Programmable Logic Smart Card	>8k	RF Coupling

From Table 2.1 we conclude that the various smart cards have higher capacity than the radio tags, however for automatic identification of individual the radio tags are sufficient Contact less cards include capacitive plate or a coil for coupling with reader and a microcontroller with analog circuitry to condition the data transmitted over the interfaces. Currently, most contact

less card solution involved two silicon devices: one similar to those used in count cards, operator is microcontroller or memory device, as well as another device to provide radio frequency interface.

2.1 Basics of radio frequency identification

Figure 2.1 gives the general view of radio frequency identification system and the blocks involved in it.

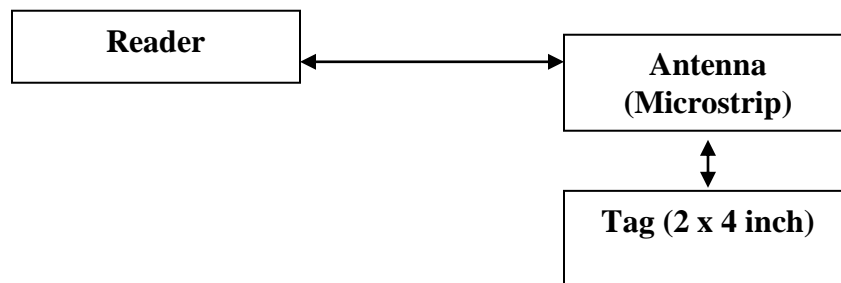


Figure 2.1 Block Diagram of radio frequency identification system.

The radio frequency identification basically consists of three components: -

1. Reader
2. Antenna
3. Radio frequency tag:

2.1.1 Radio frequency identification tags

The MIFARE MF1 S50 used as a smart card is developed according to the ISO/IEC 14443A.(refer appendix) The communication layer complies with part 2 and 3 of the ISO/IEC 14443A standard. The security layer sports CRYPTO1 stream cipher for secure data exchange.

Reader Antenna
(Microstrip)
Tag (2 X 4 inch)

2.6 Conclusion

This chapter has given detailed explanation regarding existing technology. It has also described the basic concept of radio frequency identification systems, which have been used in this project. It has also dealt with the component such as radio frequency identification tags and readers. Other characteristic properties such as frequency range, data transfer rate and power level of different type of tags and reader have also been mentioned. The next chapter deals with the actual implementation of the ideas as per our requirements.

Chapter 5

Conclusion

In this previous chapter we had highlighted the observations and results obtained upon implementing our project. In this chapter we will be explaining about the conclusions drawn and the future prospects for our project

5.1 Summary

Radio Frequency Identification technology, its application and innovation are constantly changing. Its adoption is still relatively new and there are many features of the technology that are not well-understood. We have implemented radio frequency identification for attendance management in the college. This considerably reduces the manual overhead required for record maintenance. The system shown in our project has revealed one of the applications of Radio Frequency Identification system that will continue to grow in areas where bar code technologies aren't effective management prospect in our respective area of interest. It is there by helps in reducing manual work and allows good time management. Also it helps to reduce brainwork. It is also a flexible and reliable system, which covers a minute detail of the students. The planning and processing is done in an efficient manner, thereby helping smooth management of attendance purpose. Our project is user-friendly system as it is easily perceivable to enter the data as well as modified it.

5.2 Future scope

We have used passive tag for attendance management because small distance in a range of 5-10 cm is involved. For a greater range implementation, high frequency tags with frequency equal of 2.45 GHz would be required. We can implement this module for other college requirement such as

SPECIMEN 5

References

- [1] Klaus Zellenger, "*Fundamentals and Applications in Contactless Smart Cards and Identification*", Wiley & Sons LTD, 2nd Edition, pp.243 – 276, 2003
- [2] R. Hookes et al., Technology News, *Microwave Journal*, Vol 37, pp.21 -27, 1994
- [3] P L Hawkes, D W Davies and W L Price, "*Integrated circuit cards tags and tokens: New technology and applications*", www.agnelcrit.org/~plh/ic.pdf, 2005