ICBI 2016-Fall

2016 International Conference on Business and Internet - Fall Session

ICEPL 2016-Fall

2016 International Conference on Education, Psychology, and Learning - Fall Session

ICETA 2016-Fall

2016 International Conference on Engineering, Technology, and Applied Science - Fall Session

CONFERENCE PROGRAM

SEOUL, KOREA
NOVEMBER 7-9

Organized by

International Business Academics Consortium
Hanyang University, Korea




ICEPL 2016-Fall

2016 International Conference on Education, Psychology, and Learning - Fall Session

http://iainst.org/icepl

Conference Program

Seoul Olympic Parktel, Seoul, Korea
November 07-09, 2016

Conference Organizer

International Business Academics Consortium
Hanyang University, Korea

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Conference Schedule

Monday , November 07, 2016 14:30~16:00 Registration	
15:00~16:00	**--- Opening Ceremony ---** **Welcome Remarks** **Keynote Speech** **Professor** Namjae Cho, Hanyang University, Korea *"Business and Technology Education for Intelligent Society"* **Outstanding Paper Awards Ceremony** **Social Networking**

Tuesday, November 08, 2016 09:30-14:15 Registration			
Time	Room A	Room B	Room C
09:30~10:45	ICETA A1 (P.7)	ICEPL B1 (P.16)	ICEPL C1 (P.17)
10:45~11:00	Poster session I (P.31) & Coffee Break		
11:00~12:15	ICETA A2 (P.8)	ICEPL B2 (P.18)	ICBI C2 (P.27)
12:15~13:00	Lunch		
13:00~14:15		ICEPL B3 (P.19)	ICBI C3 (P.28)

Wednesday, November 09, 2016 09:30-12:00 Registration			
Time	Room A	Room B	Room C
09:30~10:45	ICEPL A4 (P.20)	ICEPL B4 (P.21)	ICBI C4 (P.29)
10:45~11:00	Poster Session II (P.32) & Coffee Break		
11:00~12:15	ICETA A5 (P.9)	ICEPL B5 (P.22)	ICBI C5 (P.30)
12:15~13:00	Lunch		

Session: C1 **09:30-10:45** **Tuesday, November 08, 2016**

Room C **Session Chair: Rungaroon Porncharoen**

Using Graphical User Interface of MatLab in Teaching Telecommunication Engineering

Rungaroon Porncharoen, Rajamangala University of Technology Phra Nakhon

Analytical view of Bahrain's government schools performance: Quality perspective

Khaled Albaker, National Authority for Qualification and Quality Assurance of Education and Training

An Investigation of Relationship between Iranian General English Learners' Self-Esteem and Their Grammatical Accuracy and Cohesion in Written Picture Description Task

Pardis Zafarani, Islamic Azad University

Using Graphical User Interface of MatLab in Teaching Telecommunication Engineering

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ABSTRACT

This paper presents the parameters antenna calculator program using fundamental antenna theory. Principle of radiation power density, radiation intensity, directivity, maximum directivity and polarization for telecommunication engineering education. After the surveying by questionnaire about antenna engineering subject, the instructor found that the antenna engineering subject has a difficult to learn because the nature is usually taught informing an abstract concepts and the mathematical model which is hard to understand. Therefore, the simulation program is important to use in teaching of telecommunication engineering. The structure of developed parameters antenna calculator program consists of input, output and radiation patterns of EM polarization by using GUI (Graphic User Interface) of MatLab®. The research results were as follows, the simulated response comparison agrees well with theory and the evaluation of tools by 5 experts was high level. Thus, the Graphical User Interface of MatLab® tools can be applied and developed for teaching telecommunication engineering with efficiency.

Keyword: Graphical User Interface, Parameters Antenna, Telecommunication Engineering.

1. Introduction

Studying telecommunication engineering are important about numerical methods for scientists, engineers and researcher. The development and application are necessary for technical solutions (Pinit and Somsak, 2014). Traditional methods like blackboard plots or slide presentations do not provide a good idea of the radiation patterns and do not offer interactivity needed for a better understanding of the concepts. Currently, antenna engineering subject has a difficult to learn because the nature is usually taught informing an abstract concepts and the mathematical model which is hard to understand. However, most universities have insufficient educational tool, students will cannot to learn in numerical contents to be easy and efficiently within a classroom. Simulator computer tools are used have been developed such as SONNET, IE3D, ADS (Agilent Advance Design System), HFSS (High Frequency

Structure Simulation), MatLab® etc for RF printed circuit, electronics component, antennas design. (Odeyemi, Akande and Oqunti, 2011). MatLab® has become to design graphical user interface that provide a suitable application that calculates the main parameters antenna and also plots the radiation patterns, allowing the students to modify and visualize the whole process. In this paper, the parameters antenna calculator program in the teaching of telecommunication engineering was developed.

2. Background Concept of the Program

The developed software package includes 3 modules. Theoretical background of each module is briefly described below:

2.1 Radiation power density

The power density associated with the electromagnetic fields of antenna in its far-field region is predominately real and will be referred to as radiation density. (Constantine, 2016)

$$P_{rad} = P_{av} \oiint_S W_{rad} \cdot ds = \oiint_S W_{av} \cdot \hat{n} da_r,$$

$$= \frac{1}{2} \oiint_S Re\,[E \times H^*] \cdot ds.$$

2.2 Radiation Intensity

Radiation intensity of antenna is defined as the power radiated from antenna in a given direction per unit solid angle. It is expressed in watts per steradian (W/sr).

$$U = r^2 W_{rad}$$

2.3 Maximum directivity and Directivity

The ratio of the radiation intensity in a given direction from the antenna to the radiation intensity averaged over all directions. Stated more simply, the directivity of a nonisotropic source is equal to the ratio of its radiation intensity in a given direction over that of an isotropic source.

$$D = D(\theta, \emptyset) = \frac{U(\theta, \emptyset)}{U_0} = \frac{4\pi U(\theta, \emptyset)}{P_{rad}}$$

If the direction is not specified, the direction of maximum radiation intensity is implied.

$$D_{max} = D_0 = \frac{U}{U_0} = \frac{(U|max)}{U_0} = \frac{U_{max}}{U_0} = \frac{4\pi U_{max}}{P_{rad}}$$

3. Flowchart and GUI of the Developed Program

The process of designing a calculation program is shown, as show in Figure 1. We can select main menu antenna. Next, the initial calculating values are set up. The program will calculated and processed according to parameters of antenna and will show the output and radiation patterns.

The calculator tool development using the graphical user interface (GUI) function of MatLab® program is illustrated, as show in Figure 2. The developed program can calculate of power density, radiation intensity and maximum directivity.

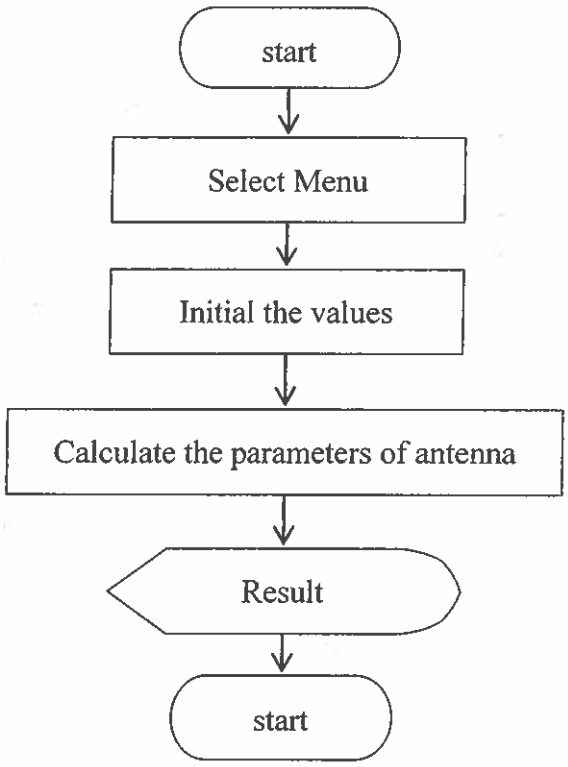

Figure 1. Flowchart of parameters antenna calculator

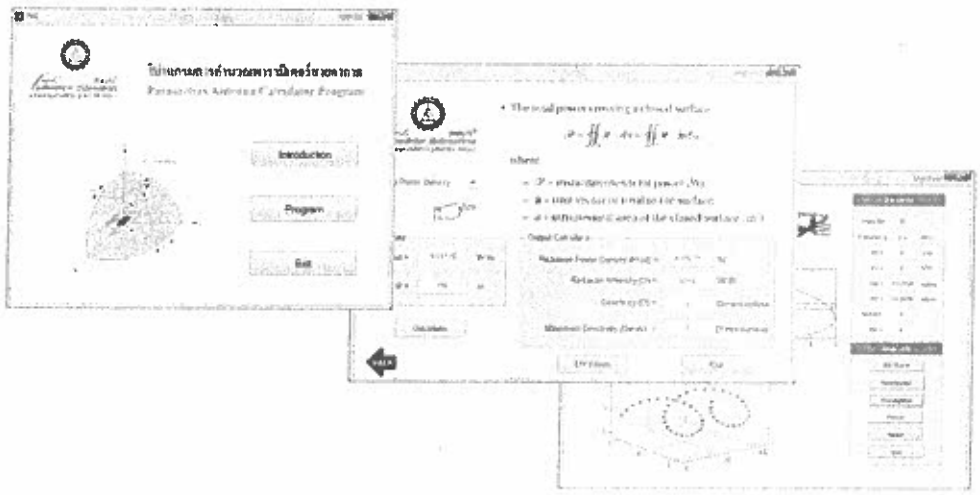

Figure 2. The parameters antenna calculator program

4. Results and Discussion

In this paper, we present GUI for parameters antenna by using parameters antenna calculator program. Finally, the environments of simulation tool are evaluated from educational viewpoint.

4.1 GUI for Parameters Antenna Calculator Program

The parameters antenna by using parameters antenna calculator program can be analyzed including radiation power density, radiation intensity, directivity, maximum directivity and polarization. In this research, we present the example for parameters antenna calculator program, as shown in Figure 3.

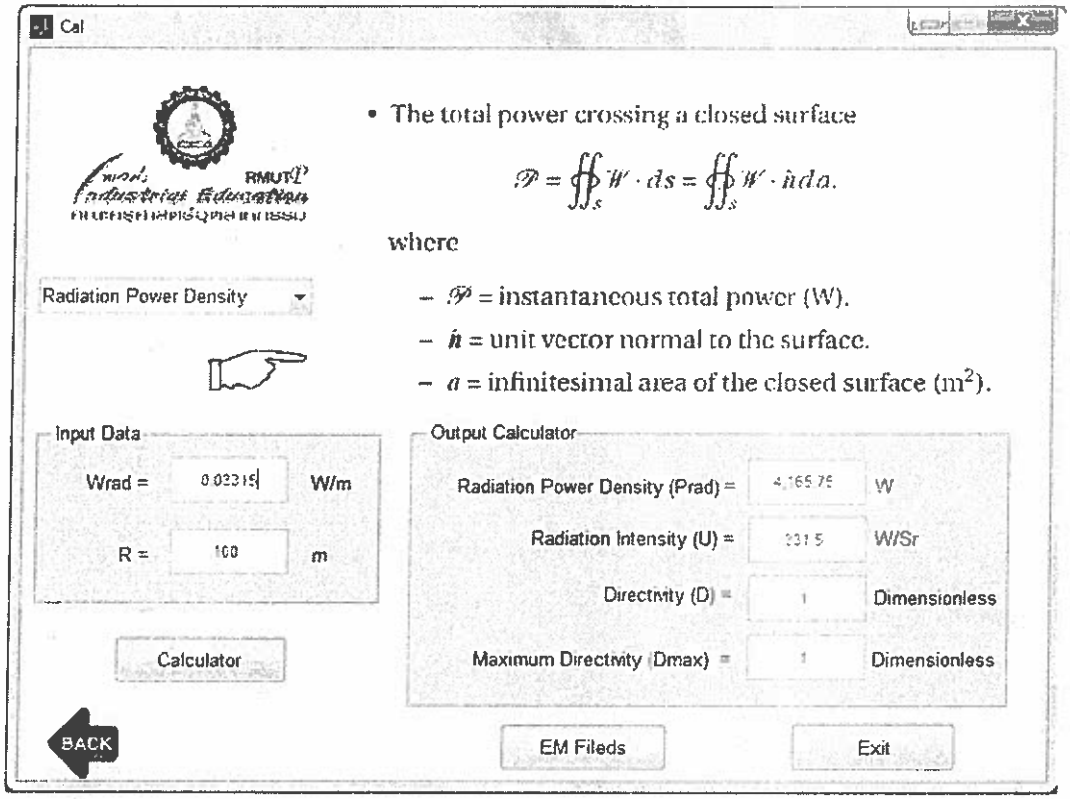

Figure 3. The results of parameters antenna calculation program

Figure 3 presents the GUI enables the user to calculate and plot the radiation patterns of EM polarization. The input parameters are poynting vertor (W_{rad}) (in W/m) and radius (R) (in m). The program uses parameters antenna to calculate the radiation power density, radiation intensity, directivity, maximum directivity and plot the radiation patterns of EM polarization. Upon completion of these, the user can determine the performance of the antenna by click on the EM Fileds which shows interface electromagnetic simulation can be performed on the polarization and return the results back to MatLab for display.

4.2 Evaluation of Program

The evaluated result of usage of parameters antenna calculator program for five experts who are researches and educators. The findings related to the parameters antenna calculator program had mean value of 4.21 and S.D. equal to 0.42, thus the quality of parameters antenna calculator program was more appropriate, as show in table 1.

Table 1. The results of the quality of program by 5 experts

List	mean	S.D.
1. Appropriate for students	4.53	0.38
2. Accurate results	4.26	0.42
3. Easy to use	4.13	0.42
4. Appropriate for content and purpose	3.92	0.35
5. Encourage student to learn	4.19	0.52
Average	**4.21**	**0.42**

The developed tools were experimented by using 20 students who registered in antenna engineering course at Rajamangala University of Technology Phra Nakhon. The sample group was taught by using the parameters antenna calculator program in antenna engineering subject. After learning all lessons, we measured students' satisfaction of usage of parameters antenna calculator program using questionnaire. The finding after learning and teaching using the parameters antenna calculator program are that the students have more knowledge and understanding of the course contents. Also the satisfaction of the students to the parameters antenna calculator program had mean value of 4.24 and S.D. equal to 0.51, as show in table 2. Thus the parameters antenna calculator program has good quality to use in the teaching of telecommunication engineering of bachelor degree.

Table 2. The students' satisfaction of usage of program

List	mean	S.D.
1. Appropriate for students	4.35	0.36
2. Accurate results	4.25	0.48
3. Easy to use	4.32	0.63
4. Appropriate for content and purpose	3.63	0.45
5. Encourage student to learning	4.63	0.64
Average	**4.24**	**0.51**

5. Conclusion

This paper has presented the parameters antenna calculator program in the teaching environment for telecommunication engineering education by using graphical used interface. The proposed approach based on the wave concept can be the calculation and illustration of the parameters of antenna by monitoring the radiation patterns. The benefits of this research can be used in the teaching that the learners can understand the calculating behavior of antenna engineering subject for telecommunication engineering.

ACKNOWLEDGEMENTS

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