Preface

This textbook originated in my lecture notes for the “Communication Electronics I” undergraduate course that I have offered over the last six years to the students at The University of Western Ontario in London Ontario, Canada. The book covers the transitional area between low frequency and high frequency wireless circuits. Specifically, it introduces the fundamental physical principles related to the operation of a typical wireless radio communication system.

By no means have I attempted to touch upon all the possible topics related to wireless transmission systems. Most modern textbooks cover a large number of topics with relatively low level of details, which are usually left as an “exercise to the reader”. In this textbook I have chosen to discuss the subject in more depth, and thus provide detailed mathematical derivations, applied approximations, and analogies. The chosen topics are, in my experience, suitable for a one semester, four hours per week, senior undergraduate engineering course. My intent was to tell a logical story that flows smoothly from one chapter to the next, hoping that the reader will find it easy to follow.

My main inspiration in writing this book came from my students, who at the beginning of the semester would always ask: “What do I need to study for this course?”. Having a choice between writing a textbook that covers many topics at a high level, or the one that covers fewer fundamental principles but in more detail, I choose the latter. All of the material in this book is considered the basic knowledge that is expected to have been acquired by aspiring engineers entering the field of wireless communication electronics.

Therefore, the intended audience for this book are, primarily, senior undergraduate engineering students preparing for their careers in communication electronics. At the same time, my hope is that graduate engineering students will find this book a useful reference for some of the topics that have been only touched upon in the previous stages of their education, or are explained from a different point of view. Finally, the practicing junior RF engineers may find this book a handy source for the quick answers that are routinely omitted from most textbooks.

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