

Vinayak Laxman Patil

Chronological Developments of Wireless Radio Systems before World War II

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To my wife, Vidya

Preface

From the ages, human race has strived hard for better and better communication with their fellow colleagues by adopting various novel ways leading to the current state of wireless radio communication systems. It is remarkable to present the motivating, exciting consolidated account of chronologies of discoveries, inventions and developments put forth by various stakeholders in the area of wireless radio communication systems. It was the curiosity of inventors that made it happen, which can be judged from the following quotes:

If you want to find the secrets of universe, think in terms of energy, frequency and vibrations.....—Nicola tesla

And this is what exactly happened while investigating the phenomenon called “lightning and thunder” that amounts to the investigation of energy, frequency and vibration. A spark was responsible for making inventors investigate the type of energy released from it, called electromagnetic waves and became the natural choice for inventors like Maxwell and Hertz. James Clerk Maxwell speculated the existence of electromagnetic waves and how power transfer through free space occurs and put forward a theory called “Electromagnetic Field Theory”. The quotation of James Clerk Maxwell has something to tell about the fascination of discoveries of science, and focuses on the chronological tracing of the wireless radio systems to make them fascinating.

In Science, it is when we take some interest in the great discoverers and their lives that it becomes endurable, and only when we begin to trace the development of ideas that it becomes fascinating.—James Clerk Maxwell

Now it was the turn of Heinrich Rudolf Hertz to practically prove the existence of Electromagnetic Waves: he connected a large area plate to spark gap to increase charge holding capacity so that spark can be produced across the spark gap by adjusting the gap, and the radiation emitted was sensed using loop antenna and was no sure about its use in future.

I do not think that radio waves I have discovered will have any practical application...
—Heinrich Hertz

This quote indicates that Heinrich Rudolf Hertz was unaware of the implications of his discovery and could not even foresee the importance and impact of his discovery as seen today. It now very well proved that wireless systems are extensively using electromagnetic waves.

When wireless is perfectly applied, whole earth can be converted into a huge brain and we shall be able to communicate with each other instantly irrespective of distance.—Nicola Tesla

Guglielmo Marconi worked tirelessly for large scale public spread of wireless radio communication systems and commented on his involvement in the wireless radio communication systems and fuelled never-ending quest or race in the wireless radio communication system developments.

Have I done the world good, or have I added a menace?—Guglielmo Marconi

Reginald Aubrey Fessenden introduced brilliant ideas for sound transmission and entirely focused on telephony and kept the ball rolling further. Many others then jumped into the fray for developing radio transmitter, receivers and required components.

... in going over the history of all the inventions for which history could be obtained it became more and more clear that in addition to training and in addition to extensive knowledge, a natural quality of mind was also necessary.—Reginald Fessenden

This book not only gives running commentary of historical happenings in the area of wireless radio communications, but also gives the detailed understandable technical account of the systems in great detail, not only for students, but also for the readers of all segments. Efforts are taken so that the information provided in the book is from original resources of inventors, and in case of absence of authenticated information from original inventors, the information provided is verified using multiple references. And on the lighter side, finally, I will end up this preface with my own signature quote,

Quotes of only celebrities are admired and referred to for value addition, while even best quotes of common man go unnoticed...—by Author

The Author

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I sincerely thank my critical son Dr. Nilesh Patil for providing me a series of required humiliating triggers for my slow but iterating perfectionist approach: he provided the required acceleration and speed for manuscript completion. I greatly oweto his valuable contribution into the preparation of this book.

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I also thank Dr. Santosh Bhosale, Principal, and Dr. Arun Sabale, Head Research Centre, Maharashtra Institute of Technology, an affiliate of Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (India), for encouraging me to write such a book for the benefit of the readers of all segments.

Thanks are also due to Dr. Madhukar Deshmukh, Dr. Arun Sabale and Dr. Vaibhav Hendre for critically going through the manuscript of this book.

My parents, Late Shri Laxman Patil and Mrs. Manakarnika Patil, besides their poor financial farming background, kept my temperament all time high during my whole education and job carrier, helped me to a maximum extent and did all those things that they can do for me.

Last but not least, I also thank my wife Vidya for her patience and tolerating me for my non contribution to home and family affairs during the course of preparation of this manuscript and I dedicate this book to her.

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