修士論文題目	A Study of Bandwidth Broadening of Shielding Effectiveness
	Measurement
	(電磁波シールド材特性の広帯域測定法に関する研究)
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論文提出日	平成 26 年 3 月 14 日

In recent years, with the development of technology and electronics, a variety of digital and high frequency electronic equipment such as computer, wireless communication equipment become more and more popular. When the voltage of these equipments changes quickly, a lot of electromagnetic waves at different frequencies are radiated to space. These unwanted waves cause EMI (Electro-Magnetic Interference) problem. Following the air pollution and water pollution, electromagnetic radiation has become a serious pollution. Therefore, the accurate measurement on properties of microwave shielding materials becomes very crucial.

Theoretical considerations regarding the electromagnetic shielding effectiveness of metallic materials had been reported by many researchers. However, experimental quantitative data had not been reported so much. The reason is that the electromagnetic shielding effectiveness of metallic materials is very high and is difficult to confirm by measurement. The experiment results of shielding characteristics reported in the past were only in low frequency range from kilohertz to megahertz. In addition, the measurement method concerning the electromagnetic shielding effectiveness of materials is not standardized yet. Further, the use of high frequency (gigahertz) becomes more and more popular in the modern society. Therefore it is necessary to develop one method that can measure shielding effectiveness in gigahertz.

In his paper, we propose a wideband shielding effectiveness measurement. In chapter 1, the background and measurement theory is introduced. In chapter 2, we introduce the design of experiment instrument. Double ridge horn antennas and absorbers are used to get a desired S-parameter performance. In chapter 3, we use the proposed instrument to simulate the shielding effectiveness of conducting materials and punching materials, and compare the simulation results with theoretical ones. To verify the practical performance, in chapter 4, a real experiment instrument is made. FR-4 and three kinds of punching materials are tested. Finally, chapter 5 gives the conclusion of this thesis.