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Spread Spectrum with Notch Frequency Using Pulse Coding Method for Switching Converter of Communication Equipment

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Abstract : This paper proposes an EMI spread spectrum technique to enable to set notch frequencies using pulse coding method for DC-DC switching converters of communication equipment. The notches in the spectrum of the switching pulses appear at the frequencies obtained from empirically derived equations with the proposed spread spectrum technique using the pulse coding methods, the PWM (Pulse Width Modulation) coding or the PCM (Pulse Cycle Modulation) coding. This technique would be useful for the switching converters in the communication equipment which receives standard radio waves, without being affected by noise from the switching converters. In our proposed technique, the notch frequencies in the spectrum depend on the pulse coding method. We have investigated this technique to apply to the switching converters and found that there is good relationship agreement between the notch frequencies and the empirical equations. The notch frequencies with the PWM coding is equal to the equation F=k/(WL-WS). With the PCM coding, that is equal to the equation F=k/(TL-TS).

Keywords : notch frequency, pulse coding, spread spectrum, switching converter
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