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Autore	Tsui James <1935->
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Receiver with Multiple Signal Capability; 3.5.1 Single-Signal Dynamic Range; 3.5.2 Two-Signal Third-Order Intermodulation Spur Free Dynamic Range; 3.5.3 The Two-Signal Instantaneous Dynamic Range (IDR); 3.6 A Brief Discussion on the Eigenvalue Decomposition and MUSIC Methods; 3.7 Define the Processing Procedure; 3.8 Eigenvalues Generated with Noise and Noise Plus Signals; 3.9 IDR Determination Through Eigenvalues; 3.10 MUSIC Method; 3.11 IDR Determined by Frequency Identification
3.12 Amplification Required in Front of the ADC3.13 Digitization Effect on Sensitivity as a Function of a Number of Bits; 3.14 Digitization Effect in the Instantaneous Dynamic Range Calculation; 3.15 Curve Fitting for the Instantaneous Dynamic Range; 3.16 IDR Calculated with 128 Data Points and Digitization; 3.17 Generating Very High IDR Using Long Data Length; 3.18 Conclusion; References; Chapter 4 Dynamic Range Study Through Fast Fourier Transform (FFT); 4.1 Introduction; 4.2 Using Simulation Approach to Find the IDR; 4.3 Local Peaks; 4.4 Simulation Procedure; 4.5 Threshold Determination
4.6 Windows and Input Frequencies4.7 IDR Results; 4.8 IDR with a Rectangular Window; 4.9 IDR with a Rectangular Window and Close Spaced Frequencies; 4.10 IDR with Hamming Window; 4.11 IDR with Blackman Window; 4.12 IDR with a Chebyshev Window; 4.13 IDR with a Park-McClellan Window; 4.14 Data Length and IDR; 4.15 Receiver Design Considerations; 4.16 Conclusion; 4.17 Remarks; References; Chapter 5 In-Phase and Quadrature Phase (IQ) Study; 5.1 Introduction; 5.2 Approach to Find the IQ Imbalance; 5.3 FFT Output Imbalance Measurement Procedure; 5.4 Results from Measuring FFT

Sommario/riassunto

Offering engineers a thorough examination of special, more advanced aspects of digital wideband receiver design, this practical book builds on fundamental resources on the topic, helping professionals gain a more comprehensive understanding of the subject. This in-depth volume presents a detailed look at a complete receiver design, including the encoder. Moreover, it discusses the detection of exotic signals and provides authoritative guidance on designing receivers used in electronic warfare. From frequency modulation and biphase shifting keys, to parameter encoders in electronic warfare receivers and the use of the simulation and probability density function to predict the false alarm parameter, this book focuses on critical topics and techniques that help engineers design digital wideband receivers for top performance. The authoritative reference is supported with over 310 illustrations and more than 180 equations.