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Introduction; 2.2 The Perfect Image; 2.3 The JND Map and Metric; 2.4 Image Bandwidth or Considering a Display or the Eye as an Information Channel; 2.5 The Control Signal and Scaling for Rendering; 2.6 Jaggies; 2.7 Hyperacuity; 2.8 Bar Gratings and Spatial Frequency; 2.9 Three Measures of Contrast and Webers Law; 2.10 Contrast Sensitivity Function (csf); 2.11 Veiling Ambient Light: Contrast Reduction from Glare; 2.12 Dither: Trade Offs between Spatial Scale and Intensity; 2.13 Three Display Screens with Text Imagery; 2.14 Color; 2.15 Making Color on Displays; 2.16 Luminance and Tone Scale; 2.17 Concluding Remarks; References; 3 Advanced Mobile Display Technology; 3.1 Introduction; 3.2 Advanced Mobile Display Technology; 3.2.1 Liquid Crystal Display Mode; 3.2.2 Operating Principle of VA Mode; 3.2.3 Super PVA (S-PVA) Technology; 3.2.4 Mobile PVA (mPVA) Technology; 3.2.5 Transflective VA LCD for Mobile Application; 3.2.6 Backlight; 3.2.7 Substrates; 3.2.8 Drive Electronics; 3.2.9 Triple-Gate; 3.2.10 ALS (Active Level Shifting); 3.2.11 hTSP (Hybrid Touch Screen Panel); 3.2.12 ABC (Adaptive Brightness Control); 3.3 Summary; References; 4 In-Plane Switching (IPS) LCD Technology for Mobile Applications; 4.1 Introduction; 4.2 LCD Modes; 4.3 Operational Principle of IPS Mode; 4.3.1 Voltage Transmittance Relation; 4.4 LC Equation of Motion under an Electric Field; 4.5 Schematic Diagram of IPS Pixel Structures; 4.6 Characteristics of IPS Mode; 4.6.1 Response Time Characteristics; 4.7 Light Efficiency; 4.8 Viewing Angle Characteristics; 4.9 Color and Gray Level; 4.10 IPS Mode for Outdoor Applications; 4.11 Summary; References; 5 Transflective Liquid Crystal Display Technologies; 5.1 Introduction; 5.2 Classification of Transflectors; 5.2.1 Openings-on-Metal Transflector; 5.2.2 Half-Mirror Metal Transflector; 5.2.3 Multilayer Dielectric Film Transflector; 5.2.4 Orthogonal Polarization Transflector; 5.3 Classification of Transflective LCDs; 5.3.1 Absorption Type Transflective LCDs; 5.3.2 Scattering Type Transflective LCDs

## Sommario/riassunto

The mobile display industry has witnessed rapid growth, in both volume and diversification, in recent years. This trend is expected to persist with continued consumer demand for mobile communications and computing applications. Mobile displays are now integral to a wide range of devices such as MP3 players, digital cameras, PDAs, GPS map readers, portable DVD players, and electronic books, as well as the ubiquitous mobile phone and laptop computers. This proliferation of products has fuelled a significant investment into the research and development of the mobile display, with key research la