The Four Proposed ♪ AM Stereo ♪ System Equations

Magnavox (AM/PM)

$$s(t) = Ac \times \underbrace{[\ 1 + m(L(t) + R(t))\ ]}_{\text{Linear Amplitude Modulation}} \times \cos\{\ \omega c\tau + \underbrace{B \times [L(t) - R(t)]}_{\text{Linear Phase Modulation}} + \underbrace{4\cos 10\pi t}_{\substack{\text{5 Hz Pilot Tone} \\ \text{(Fixed Amplitude)}}}\ \}$$

Motorola (AM/PM)

$$s(t) = Ac \times \underbrace{[\ 1 + m(L(t) + R(t))\ ]}_{\text{Linear Amplitude Modulation}} \times \cos\{\ \omega ct + \underbrace{\text{Tan}^{-1}\left[\frac{m[L(t) - R(t) + \overbrace{(.04 \pm .01)\sin 50\pi t}^{\text{25Hz Pilot Tone}}]}{1 + m[L(t) + R(t)]}\right]}_{\text{Non-Linear Phase Modulation}}\ \}$$

Harris (AM/AM with Variable Quadrature Angle)

$$s(t) = Ac \times \underbrace{[\ 1 + m(L(t) + R(t) + \overbrace{\int_{-\infty}^{t} h(\tau) \times (L(\tau) - R(\tau))d\tau}^{\text{Low Frequency L—R Channel}}\ ]}_{\text{Linear Amplitude Modulation}} \times \underbrace{\cos(\ \phi \times \{\overbrace{D(t)}^{\text{RMS Distortion}}\}\ )}_{\text{Variable Quadrature Angle}} \times \cos(\ \omega ct\ )$$

$$+ Ac \times \underbrace{[\ \overbrace{\int_{-\infty} hz(\tau) \times (\ L(\tau) - R(\tau)\ )d\tau}^{\substack{\text{High-Pass-Filtered} \\ \text{L—R Channel}}} + \overbrace{.75 \times \cos(\ 110\pi t + \Delta\omega\{\phi\}t\ )}^{\substack{\text{Pilot Tone w/Variable} \\ \text{Phase FM'd Onto It}}}\ ]}_{\text{Linear Amplitude Modulation}} \times \underbrace{\sin(\ \phi\{D(t)\}\ )}_{\text{Variable Quadrature Angle}} \times \sin(\ \omega ct\ )$$

Where: $15° < \{D(t)\} \leq 45°$
$\phi\{D(t)\}$ increases as D(t) decreases and vice-versa (closed loop)
$\Delta\omega\{\phi\}$ varise between 0 and 82π radians/sec.

Kahn (Modified ISB)

$$s(t) = \underbrace{[\ 1 + m(\ L_1(t) + R_1(t)\ )\ ]}_{\text{Linear Amplitude Modulation}} \times \underbrace{\cos\{\ \omega ct + B((L_2(t) - R_2(t)) + \overbrace{Cd(t)}^{\text{Distortion Correction Term}} + \overbrace{D\cos 30\pi t}^{\text{Pilot Tone(Fixed Amplitude)}}\ \}}_{\text{Linear Phase Modulation}}$$

Where: $L_1(t)$ & $R_1(t)$ are phase shifted —45° from L(t) & R(t)
$L_2(t)$ & $R_2(t)$ are phase shifted +45° from L(t) & R(t)