|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ANALOG MULTIPLIER- in case of AC INPUT( SINE WAVE )** | | | | | | |
| **Various Detected Faults in Analog Multiplier in the presence of faults with deviations (5% – 15%) & (20%-46%)** | | | | | | |
| **Injected Faults** | **=500, = 0.0098**  **Optimal Order – 18th** | | **=1000, = 0.0097**  **Optimal Order – 18th** | | **=2000, = 0.0097**  **Optimal Order – 22nd** | |
| **No. of Coefficients Out of Bound** | **Fault Detection Status** | **No. of Coefficients Out of Bound** | **Fault Detection Status** | **No. of Coefficients Out of Bound** | **Fault Detection Status** |
| R11 6%**↑** | 19 | **√** | 16 | **√** | 23 | **√** |
| R11 6% **↓** | 12 | **√** | 7 | **√** | 12 | **√** |
| R12 7% **↑** | 10 | **√** | 4 | **√** | 23 | **√** |
| R12 7% **↓** | 27 | **√** | 20 | **√** | 64 | **√** |
| R21 8% **↑** | 25 | **√** | 16 | **√** | 12 | **√** |
| R21 8%**↓** | 15 | **√** | 8 | **√** | 12 | **√** |
| R22 9%**↑** | 20 | **√** | 15 | **√** | 32 | **√** |
| R22 9% **↓** | 21 | **√** | 17 | **√** | 30 | **√** |
| R31 10% **↑** | 15 | **√** | 12 | **√** | 11 | **√** |
| R31 10% **↓** | 30 | **√** | 30 | **√** | 27 | **√** |
| R32 11% **↑** | 22 | **√** | 15 | **√** | 30 | **√** |
| R32 11% **↓** | 36 | **√** | 30 | **√** | 32 | **√** |
| R41 12% **↑** | 38 | **√** | 35 | **√** | 13 | **√** |
| R41 12% **↓** | 17 | **√** | 15 | **√** | 17 | **√** |
| R42 13% ↑ | 29 | **√** | 18 | **√** | 32 | **√** |
| R42 13% **↓** | 21 | **√** | 8 | **√** | 18 | **√** |
| R51 14% **↑** | 3 | **√** | 5 | **√** | 12 | **√** |
| R51 14% **↓** | 16 | **√** | 16 | **√** | 35 | **√** |
| R52 15% **↑** | 41 | **√** | 38 | **√** | 18 | **√** |
| R52 15% **↓** | 26 | **√** | 24 | **√** | 13 | **√** |
| R11 20% **↑** | 17 | **v** | 9 | **√** | 25 | **√** |
| R11 20% **↓** | 58 | **√** | 37 | **√** | 39 | **√** |
| R12 25% **↑** | 17 | **√** | 14 | **√** | 27 | **√** |
| R12 25% **↓** | 40 | **√** | 20 | **√** | 15 | **√** |
| R21 30% **↑** | 33 | **√** | 28 | **√** | 39 | **√** |
| R21 30% **↓** | 4 | **√** | 3 | **√** | 9 | **√** |
| R22 35% **↑** | 40 | **√** | 27 | **√** | 22 | **√** |
| R22 35% **↓** | 20 | **√** | 20 | **√** | 14 | **√** |
| R31 36% **↑** | 28 | **√** | 27 | **√** | 8 | **√** |
| R31 36% **↓** | 38 | **√** | 26 | **√** | 18 | **√** |
| R32 38% **↑** | 7 | **√** | 7 | **√** | 2 | **√** |
| R32 38% **↓** | 75 | **√** | 57 | **√** | 96 | **√** |
| R41 40% **↑** | 32 | **√** | 23 | **√** | 26 | **√** |
| R41 40% **↓** | 18 | **√** | 10 | **√** | 30 | **√** |
| R42 42% **↑** | 46 | **√** | 44 | **√** | 34 | **√** |
| R42 42% **↓** | 3 | **√** | 4 | **√** | 4 | **√** |
| R51 44% **↑** | 30 | **√** | 26 | **√** | 19 | **√** |
| R51 44% **↓** | 68 | **√** | 58 | **√** | 53 | **√** |
| R52 46% **↑** | 66 | **√** | 65 | **√** | 71 | **√** |
| R52 46% **↓** | 28 | **√** | 24 | **√** | 36 | **√** |