

## Table of Contents

<b>1</b>	<b>Scope</b> .....	<b>1</b>
<b>2</b>	<b>Normative References</b> .....	<b>1</b>
<b>3</b>	<b>Index Of Conformance Testing Terms</b> .....	<b>2</b>
<b>4</b>	<b>Symbols and Abbreviations</b> .....	<b>2</b>
<b>5</b>	<b>Framework and Methodology</b> .....	<b>2</b>
5.1	Terminology and standards.....	2
5.2	Abstract test method .....	4
5.3	Alternative realizations of means of testing.....	4
5.4	Equipment specifications .....	6
5.4.1	Waveform generation .....	6
5.4.2	Waveform capture .....	6
5.4.3	1 kHz to 100 kHz band pass filter.....	8
5.4.4	Variable power supply .....	8
5.4.5	Power supply ripple .....	8
5.4.6	Common mode interference (low voltage) .....	8
5.4.7	Common mode interference (high voltage) .....	8
5.4.8	True r.m.s. measurement .....	8
5.4.9	Sweep frequency generation.....	8
<b>6</b>	<b>Abstract Test Suite</b> .....	<b>8</b>
	<b>Test group 1 Static conformance review</b> .....	<b>11</b>
	Test case 1.1 Valid identification of DUT, supplier & profile .....	11
	Test case 1.2 Valid conformance statements .....	12
	Test case 1.3 ICS self-consistency .....	13
	Test case 1.4 Consistency between DUT visual inspection & ICS .....	14
	<b>Test group 2 Basic interconnection tests</b> .....	<b>15</b>
	Test case 2.1 Signal and power connections.....	18
	Test case 2.2 Received signal polarity.....	19
	Test case 2.3 Transmitted signal polarity.....	20
	<b>Test group 3 Transmit levels</b> .....	<b>21</b>
	Test case 3.1 Output amplitude .....	22
	Test case 3.2 Output amplitude with one trunk terminator removed.....	24
	Test case 3.3 Signal bias .....	25
	Test case 3.4 Output signal distortion .....	27
	<b>Test group 4 Transmit timing &amp; quiescent output</b> .....	<b>29</b>
	Test case 4.1 Bit rate .....	30
	Test case 4.2 Bit time.....	32
	Test case 4.3 Rise and fall times .....	33
	Test case 4.4 Slew rate .....	35
	Test case 4.5 Jitter .....	36
	Test case 4.6 Transmit enable time .....	38
	Test case 4.7 Transmit Disable time .....	40
	Test case 4.8 Quiescent transmitter output .....	42
	<b>Test group 5 Special tests for bus-powered devices</b> .....	<b>43</b>
	Test case 5.1 Maximum rate of change of quiescent current .....	44
	Test case 5.2 Maximum current.....	45
	<b>Test group 6 Receive characteristics plus transmit disable time</b> .....	<b>46</b>
	Test case 6.1 Receiver sensitivity .....	47
	Test case 6.2 Receiver noise rejection .....	49
	<b>Test case 6.3 Receive jitter tolerance</b> .....	<b>51</b>
	<b>Test group 7 Network power distribution</b> .....	<b>53</b>
	Test case 7.1 Operating voltage .....	54
	Test case 7.2 Withstand voltage .....	55
	Test case 7.3 Ripple sensitivity .....	56
	<b>Test group 8 Interference susceptibility</b> .....	<b>57</b>
	Test case 8.1 Common mode broadband interference susceptibility .....	58

Test case 8.2 Common mode power frequency susceptibility .....	60
<b>Test group 9 Input circuit parameter measurement .....</b>	<b>61</b>
Test case 9.1 Input impedance .....	62
Test case 9.2 Unbalanced capacitance .....	64
<b>Test group 10 Device interoperability test for use with Isolated Device Couplers .....</b>	<b>65</b>
Test case 10.1 Device Coupler compatibility .....	66
<b>Annex A Unbalanced Capacitance Calculation.....</b>	<b>67</b>
<b>Annex B Measurements with Bus-powered Devices.....</b>	<b>68</b>
<b>Annex C Timing Deviation for Receive Jitter Tolerance .....</b>	<b>69</b>
<b>Annex D Device coupler resistor calculations .....</b>	<b>71</b>
<b>Annex E Cross Reference Between Clause 12 and Test Cases .....</b>	<b>72</b>
<b>Annex F Bibliography and References .....</b>	<b>73</b>
<b>Annex G ICS Proforma Specification .....</b>	<b>74</b>

## Figures

Fig. 1 : Basic conformance testing methodology .....	3
Fig. 2 : Remote test method.....	4
Fig. 3 : Physical layout schematic of realization (A).....	5
Fig. 4 : Physical layout schematic of realization (B).....	5
Fig. 5 : Facility to interpolate between samples .....	7
Fig. 6 : Summary of test operations .....	9
Fig. 7 : Transmit circuit test configuration .....	15
Fig. 8 : PN PhPDU .....	15
Fig. 9 : PR PhPDU .....	17
Fig. 10 : Signal & power connections.....	18
Fig. 11 : Manchester encoding & signal polarity .....	19
Fig. 12 : Transmit level test configuration .....	21
Fig. 13 : Output voltage amplitude .....	23
Fig. 14 : Positive and negative voltage amplitudes .....	26
Fig. 15 : Monotonicity .....	28
Fig. 16 : Overshoot, ringing and droop .....	28
Fig. 17 : Transmit timing test configuration .....	29
Fig. 18 : Bit rate test .....	31
Fig. 19 : Instantaneous bit time .....	32
Fig. 20 : Fall time.....	34
Fig. 21 : Slew rate .....	36
Fig. 22 : Transmitted bit cell jitter .....	37
Fig. 23 : Start of transmission preamble .....	39
Fig. 24 : End Delimiter.....	41
Fig. 25 : Quiescent transmitter noise .....	42
Fig. 26 : Bus powered test configuration.....	43
Fig. 27 : Receive characteristics test configuration.....	46
Fig. 28 : Receiver sensitivity .....	48
Fig. 29 : Receiver noise rejection.....	50
Fig. 30 : Waveform for Receiver jitter tolerance test.....	52
Fig. 31 : Network power test configuration.....	53
Fig. 32 : Common mode test configuration .....	57
Fig. 33 : Input circuit parameter measurement .....	61
Fig. 34 : Device Coupler test setup.....	65