

1000Base-T template

Test items: **Template/Peak Volt/Droop**

(1) Set PHY MDI or MDIX mode

=> Step1: PHY register setting offset 0x10=0x7800 (MDI mode)/0x7820(MDIX mode)

=> Step2: PHY register setting offset 0x0=0x9000

(2) Disable hibernation

=> Step3: PHY register setting offset 0x1d=0x000b

Step4: PHY register setting offset 0x1e=0x3c80

(3) Set PHY 1000Base-T:

=> Step5: PHY register setting offset 0x00=0x140

(4) Set test mode 1:

=> Step6: PHY register setting offset 0x09=0x2200

Use Tektronix TDESET3 Ethernet Compliance Test Software as an example

Template	Configuration	Comments
Template/Peak Volt	<ol style="list-style-type: none">1) connect DUT to J490;2) connect the differential probe to: A P9; B P10; C P11; D P12.3) Tektronix: Select→1000-T→Template/Volt→Select All(or test them one by one)→Configure→Disturbing signal:NO;Filter:Int→connect→View wfm→Run Test。	<p>Test A/B/C/D separately</p> <p>Use TC2 of the basic test fixture(TF-GBE)</p>
Droop	<ol style="list-style-type: none">1) connect DUT to J490;2) connect the differential probe to: A P9; B P10; C P11; D P12.3) Tektronix: Select→1000-T→Droop→Select All→Configure→Disturbing signal:NO→connect→View wfm→Run Test。	<p>Test A/B/C/D separately</p> <p>Use TC2 of the basic test fixture(TF-GBE)</p>

Test items: **Jitter-Master mode**

(1) Set PHY MDI or MDIX mode

=> Step1: PHY register setting offset 0x10=0x7800 (MDI mode)/0x7820(MDIX mode)

=> Step2: PHY register setting offset 0x0=0x9000

(2) Disable hibernation

=> Step3: PHY register setting offset 0x1d=0x000b

Step4: PHY register setting offset 0x1e=0x3c80

(3) Set PHY 1000Base-T:

=> Step5: PHY register setting offset 0x00=0x140

(4) Set test mode 2:

=> Step6: PHY register setting offset 0x09=0x4200

Use Tektronix TDSET3 Ethernet Compliance Test Software as an example

Jitter Master Filtered	1) connect DUT to J490; 2) connect the differential probe to: A P9; B P10; C P11; D P12. 3) Tektronix: Select→1000-T→Jit/Distortion→Jitter-Master:Filtered→Configure→TX_TCLK:NO→connect→View wfm→Run Test.	Test A/B/C/D separately Use TC2 of the basic test fixture(TF-GBE)
Jitter Master Unfiltered(TIE Method)	1) connect DUT to J490; 2) connect the differential probe to: A P9; B P10; C P11; D P12. 3) Tektronix: Select→1000-T→Jit/Distortion→Jitter-Master:Unfiltered→Configure→TX_TCLK:NO; Meas Type:TIE→connect→ View wfm→Run Test.	Test A/B/C/D separately Use TC2 of the basic test fixture(TF-GBE)
Jitter Master Unfiltered(Histogram Method)	1) connect DUT to J490; 2) connect the differential probe to: A P9; B P10; C P11; D P12. 3) Tektronix: Select→1000-T→	Test A/B/C/D separately Use TC2 of the basic

	Jit/Distortion→Jitter-Master:Unfiltered →Configure→ TX_TCLK:NO; Meas Type:Histogram→connect→View wfm→Run Test。	test fixture(TF- GBE)
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Test items: **Distortion/CM Voltage/Return loss**

(1) Set PHY MDI or MDIX mode

=> Step1: PHY register setting offset 0x10=0x7800 (MDI mode)/0x7820(MDIX mode)

=> Step2: PHY register setting offset 0x0=0x9000

(2) Disable hibernation

=> Step3: PHY register setting offset 0x1d=0x000b

Step4: PHY register setting offset 0x1e=0x3c80

(3) Set PHY 1000Base-T:

=> Step5: PHY register setting offset 0x00=0x140

(4) Set test mode 4:

=> Step5: PHY register setting offset 0x09=0x8200

Use Tektronix TDSET3 Ethernet Compliance Test Software as an example

Distortion	1) connect DUT to J490; 2) connect the differential probe to: A P9; B P10; C P11; D P12. 3) Tektronix: Select→1000-T→Jit/Distortion→Distortion→Configure→ Disturbing signal:NO; TX_TCLK:NO→connect→View wfm→Run Test。	Test A/B/C/D separately Use TC2 of the basic test fixture(TF- GBE)
CM Voltage	1) connect DUT to J500; 2) connect a BNC cable between J400 and the configured channel of the oscilloscope; 3) Short A J420; B J430; C J431; D J440; 4) Tektronix: Select→1000-T→ CM	Test A/B/C/D separately Use TC4 of the basic test

	Voltage→Configure→connect→View wfm→Run Test。	fixture(TF- GBE)
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100Base-TX template test

Test items: **all tests**

(1) Set PHY MDI or MDIX mode

=> Step1: PHY register setting offset 0x10=0x7800 (MDI mode)/0x7820(MDIX mode)

=> Step2: PHY register setting offset 0x0=0x9000

(2) Disable hibernation

=> Step3: PHY register setting offset 0x1d=0x000b

Step4: PHY register setting offset 0x1e=0x3c80

(3) Set PHY 100Base-TX:

=> Step4: PHY register setting offset 0x00=0x2000

Use Tektronix TDSET3 Ethernet Compliance Test Software as an example

All tests except return loss which uses different test fixture	1) DUT RJ45 connect to J490; Probe in P9; 2) Tektronix: Select->100-TX->Parametric- >Select All(or test them one by one)- >Configure->Average->connect->View wfm- >Run Test.	Use TC2 of the basic test fixture(TF-GBE)
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10Base-Te template test

Test items: **Link Pulse without Twisted-pair model, Link Pulse with Twisted-pair model**

(1) Set PHY MDI or MDIX mode

=> Step1: PHY register setting offset 0x10=0x7800 (MDI mode)/0x7820(MDIX mode)

=> Step2: PHY register setting offset 0x0=0x9000

(2) Disable hibernation

=> Step3: PHY register setting offset 0x1d=0x000b

Step4: PHY register setting offset 0x1e=0x3c80

(3) Set PHY 10Base-Te:

=> Step4: PHY register setting offset 0x00=0x100

(4) Send link pulse out:

=>Step5: PHY register setting offset 0x1d=0x0012

=>Step6: PHY register setting offset 0x1e=0x4C07

Use Tektronix TDSET3 Ethernet Compliance Test Software as an example

Link Pulse without Twisted-pair model	1) DUT RJ45 connect to TC6(J800);Probe in P20 2) Tektronix: Select→10-T→Template→Link Pulse→ A 100ohm W/O TPM (Short Load 3) B Load 1 W/O TPM (Short Load 1) C Load 2 W/O TPM (Short Load 2) →configure→Average→connect→View wfm →Run Test.	Test A/B/C separately. Use TC6 of the basic test fixture(TF-GBE)
Link Pulse with Twisted-pair model	1) DUT RJ45 connect to TC7(J990); Probe in P22; P21 NC. 2) Tektronix: Select→10-T→Template→Link Pulse→ A 100ohm W/ TPM (Short Load 3) B Load 1 W/ TPM (Short Load 1) C Load 2 W/ TPM (Short Load 2) →configure→Average→connect→View wfm→Run Test.	Test A/B/C separately Use 10Base-Te test fixture(TF-GBE-EE)

Test items: **MAU/MAU Inverted/TP_IDL/Differential Voltage/jitter/Common-mode output voltage/Return loss**

(1) Set PHY MDI or MDIX mode

=> Step1: PHY register setting offset 0x10=0x7800 (MDI mode)/0x7820(MDIX mode)

=> Step2: PHY register setting offset 0x0=0x9000

(2) Disable hibernation

=> Step3: PHY register setting offset 0x1d=0x000b

Step4: PHY register setting offset 0x1e=0x3c80

(3) Set PHY 10Base-Te:

=> Step4: PHY register setting offset 0x00=0x100

(4) Send pseudo-random sequence signal out:

=>Step5: PHY register setting offset 0x1d=0x0012

=>Step6: PHY register setting offset 0x1e=0x4C06

Use Tektronix TDSET3 Ethernet Compliance Test Software as an example

MAU	1) DUT connect to (J6); Probe in P2; Short load3 (100 ohm). 2) Tektronix: Select→10-T→MAU(Normal) →configure →MAU Type:	Test A/B separately Use 10Base-Te test fixture(TF-
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	A Internal; B External; MAC Scale: 0.9; Energy Efficient :Yes Connect →View Wfm →Run Test。	GBE-EE)
MAU Inverted	1) DUT connect to (J6); Probe in P2; Short load3 (100 ohm). 2) Tektronix: Select→10-T→MAU (Inverted) →configure →MAU Type: MAC Scale: 0.9; Energy Efficient :Yes A Internal; B External; Connect →View Wfm →Run Test。	Test A/B separately Use 10Base-Te test fixture(TF-GBE-EE)
TP_IDL Without Twisted-pair model	1) DUT connect to TC6 (J800), Probe in P20. 2) Tektronix: Select→10-T→TP_IDL→ A 100ohm W/O TPM (Short Load 3); B Load 1 W/O TPM (Short Load 1); C Load 2 W/O TPM (Short Load 2). →configure→Average→connect→View wfm→Run Test。	Test A/B/C separately Use TC6 of the basic test fixture(TF-GBE)
TP_IDL With Twisted-pair model	1) DUT connect to (J6); Probe in P2; Short load3 (100 ohm). 2)Tektronix: Select→10-T→TP_IDL→ A 100ohm W/ TPM (Short Load 3); B Load 1 W/ TPM (Short Load 1); C Load 2 W/ TPM (Short Load 2). →configure →Average →connect →View Wfm→Run Test。	Test A/B/C separately Use 10Base-Te test fixture(TF-GBE-EE)
Differential Voltage	1) DUT connect to TC6 (J800), Probe in P20 Short Load 3。	Template Voltage may be scaled by a factor of 1.1

	2) Tektronix: Select→10-T→Parametric→Diff Volt→ Min Max→ Configure →Sample; Energy Efficient: Yes →connect →View Wfm →Run Test。	defined in 802.3az. Use TC6 of the basic test fixture(TF-GBE)
Jitter with cable	1) DUT connect to J6; Probe in P2; short Load 3. 2) Tektronix: Select→10-T→With Cable(TPM) →All→Configure→Sample→connect→View wfm→Run Test。	Use 10Base-Te test fixture(TF-GBE-EE)
Jitter without cable	1) DUT connect to TC6 (J800); Probe in P20; short Load 3. 2) Tektronix: Select→10-T→W/O Cable(TPM) →All→Configure→Sample→connect→View wfm→Run Test。	Use TC6 of the basic test fixture(TF-GBE)
Common-mode output voltage	1) DUT connect to TC4 (J500), SMA cable in J400 connect to oscilloscope; Short J420. 2) Tektronix: Select→10-T→CM Voltage→Configure→connect→View wfm→Run Test。	Use TC4 of the basic test fixture(TF-GBE)

Test items: **Harmonic**

(1) Set PHY MDI or MDIX mode

=> Step1: PHY register setting offset 0x10=0x7800 (MDI mode)/0x7820(MDIX mode)

=> Step2: PHY register setting offset 0x0=0x9000

(2) Disable hibernation

=> Step3: PHY register setting offset 0x1d=0x000b

Step4: PHY register setting offset 0x1e=0x3c80

(3) Set PHY 10Base-Te:

=> Step4: PHY register setting offset 0x00=0x100

(4) Send pseudo-random sequence signal out:

=>Step7: PHY register setting offset 0x1d=0x0012

=>Step8: PHY register setting offset 0x1e=0x4C05

Use Tektronix TDSET3 Ethernet Compliance Test Software as an example

Harmonic	1) DUT connect to TC6 (J800), Probe in P20; short Load 3(100ohm). 2) Tektronix: Select→10-	Use TC6 of the basic test fixture(TF-GBE)
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	T→Harmonic→Configure→connect→View wfm→Run Test。	
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