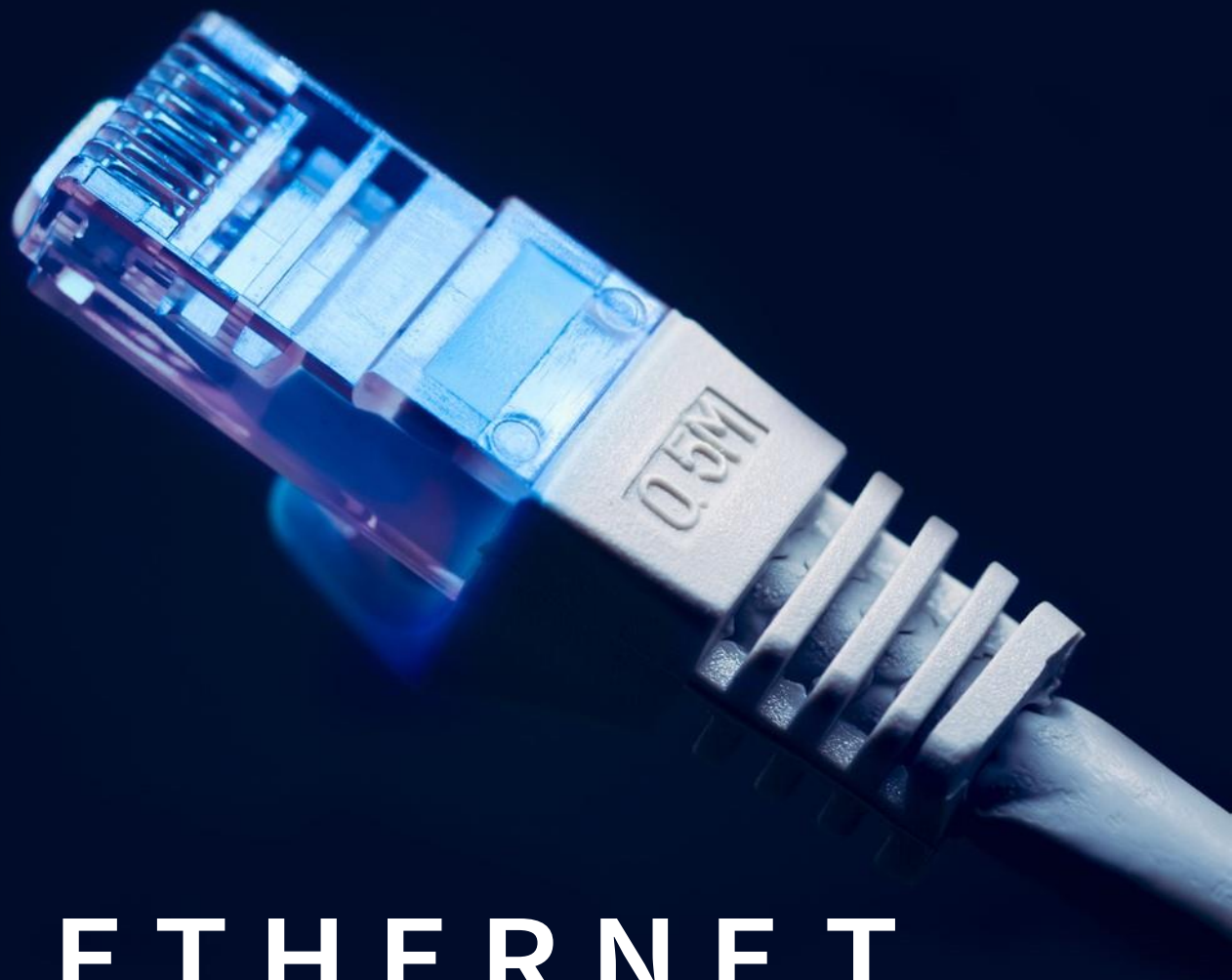
NICOMATIC

CREATIVE
INTERCONNECT
SOLUTIONS



ETHERNET
1000 BASE-T

PHY LAYER QUALIFICATION

IEEE 802.3ab

NICOMATIC

Protocol Signal tested: Ethernet 1000BASE-T
Connector tested: see description
Calibration Method: De-embbed

Operator Adnane JAGHMIM
According to standard IEEE 802.3ab

ROHDE&SCHWARZ

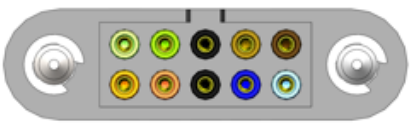


Instrument used :	VNA N°00651 R&S Model ZNB20
Last calibration date :	16/08/19
Next calibration date :	16/08/20
Calibration Method : SOLT and Deembbeding	

Ethernet 1000BASE-T Phy Layer NICOMATIC Compatibility Matrix

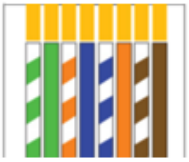
		LF Female Contact				
		Straight True hole	**90° True hole**	**Straight SMT**	**90° SMT**	**Cable**
LF Male Contact	**Straight True hole**	EMM	EMM			CMM/DMM
	90° True hole	EMM	CMM/DMM EMM	CMM/DMM	CMM/DMM	CMM/DMM EMM
	Straight SMT		CMM/DMM	CMM/DMM	CMM/DMM	CMM/DMM
	90° SMT		CMM/DMM	CMM/DMM	CMM/DMM	CMM/DMM
	Cable	EMM	CMM/DMM EMM	CMM/DMM	CMM/DMM	CMM/DMM

CMM / DMM Pin out recommanded



EMM Pin out recommanded





Pin nbr	Signal	AWG
1	BI_DA+	24
2	BI_DA-	24
3	Ground	24
4	BI_DB+	24
5	BI_DB-	24
6	BI_DC-	24
7	BI_DC+	24
8	Ground	24
9	BI_DD+	24
10	BI_DD-	24

Compliant Network Standards: 10BASE-T 1000BASE-TX 100BASE-T4 1000BASE-T ATM-25 ATM-51 ATM-155 100VG-AnyLan TR-4 TR-16 Active TR-16 Passive

NICOMATIC

EMM SERIES

Straight True Hole

vs

Straight True Hole

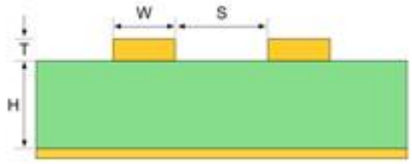
Operator: Adnane JAGHMIM
According to standard: IEEE 802.3ab



PCB recommandation

Total Thickness :	1600 µ
PCB Class :	4
Plating :	ENIG

W =	690 µ
S =	580 µ
H =	380 µ
T =	17 µ



Impedance (Ohm):



Limit (Ohm):
Min = 85
Max = 115

Measured (Ohm):
Min = 90.42
Max = 10.66

Insertion Loss (dB):



Limit (dB):
> -2.1 f ^0.529 - 0.4/f

Measured (dB):
Min = -0.012 (@ 500 MHz)

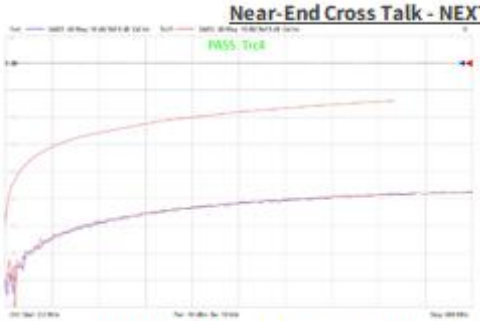
Return Loss (dB):



Limit (dB):
-15 dB (1-20 MHz)
-15+10log10(f/20) (20-100 MHz)

Measured (dB):
Max = -15.8

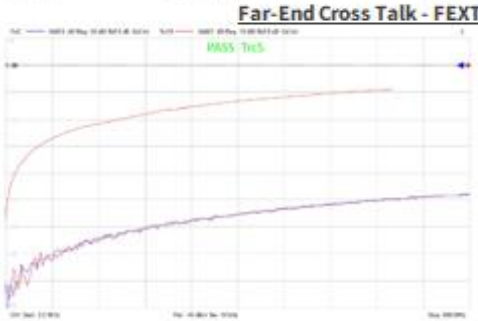
Near-End Cross Talk - NEXT (dB):



Limit (dB):
< -27.1+16.8log10(f/100) dB

Measured (dB):
Max = -47.3 (@ 600 MHz)

Far-End Cross Talk - FEXT (dB):



Limit (dB):
< -23 - 20log10(f/100) dB

Measured (dB):
Max = -48.31 (@ 600 MHz)

Power Sum Equal Level Far End Cross Talk - PSELFEXT (dB):



Limit (dB):
< -14.4 - 20log10(f/100) dB

Measured (dB):
Max = -49.12 (@ 600 MHz)

Compliant Network Standards: 10BASE-T 1000BASE-TX 100BASE-T4 1000BASE-T ATM-25 ATM-51 ATM-155 100VG-AnvLan TR-4 TR-16 Active TR-16 Passive

NICOMATIC

Operator Adnane JAGHMIM
According to standard IEEE 802.3ab

EMM SERIES

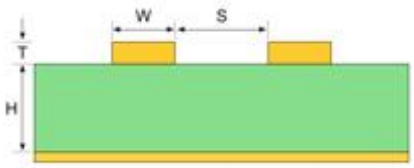
90° True Hole
vs
90° True Hole



PCB recommandation

Total Thickness :	1600 µ
PCB Class :	4
Plating :	ENIG

W =	690 µ
S =	580 µ
H =	380 µ
T =	17 µ



Impedance (Ohm):



Limit (Ohm):
Min = 85
Max = 115

Measured (Ohm):
Min = 91.506
Max = 103.77

Insertion Loss (dB):



Limit (dB):
> -2.1 f ^0.529 - 0.4/f

Measured (dB):
Min = -0.0133 (@ 500 MHz)

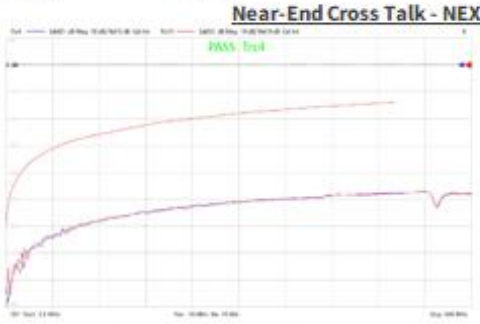
Return Loss (dB):



Limit (dB):
-15 dB (1-20 MHz)
-15+10log10(f/20) (20-100 MHz)

Measured (dB):
Max =

Near-End Cross Talk - NEXT (dB):



Limit (dB):
< -27.1+16.8log10(f/100) dB

Measured (dB):
Max = -50.98 (@ 492.51 MHz)

Far-End Cross Talk - FEXT (dB):



Limit (dB):
< -23 - 20log10(f/100) dB

Measured (dB):
Max = -54.27 (@ 497.51 MHz)

Power Sum Equal Level Far End Cross Talk - PSELFEXT (dB):



Limit (dB):
< -14.4 - 20log10(f/100) dB

Measured (dB):
Max = -49.12 (@ 600 MHz)

Compliant Network Standards: 10BASE-T 1000BASE-TX 100BASE-T4 1000BASE-T ATM-25 ATM-51 ATM-155 100VG-AnvLan TR-4 TR-16 Active TR-16 Passive

NICOMATIC

Operator
According to standard

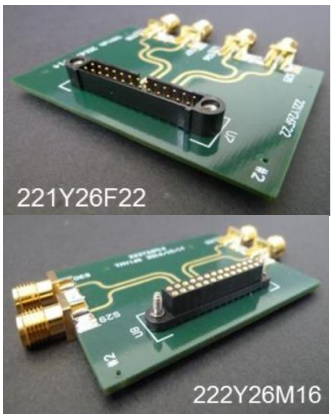
Adnane JAGHMIM
IEEE 802.3ab

SERIES

Straight True Hole

vs

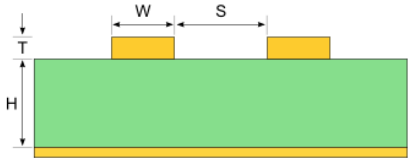
Straight True Hole



PCB recommandation

Total Thickness :	1600 µ
PCB Class :	4
Plating :	ENIG

W =	800 µ
S =	1200 µ
H =	380 µ
T =	17 µ



Impedance (Ohm):



Limit (Ohm):
Min = 85
Max = 115

Measured (Ohm):
Min = 97.09
Max = 129.94

Statut: **Failed**

Insertion Loss (dB):

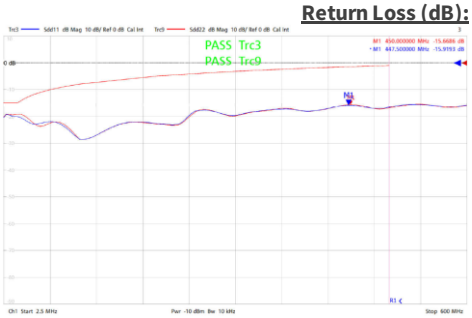


Limit (dB):
> -2.1 f ^0.529 - 0.4/f

Measured (dB):
Min = -0.417 (@ 500 MHz)

Statut: **Passed**

Return Loss (dB):

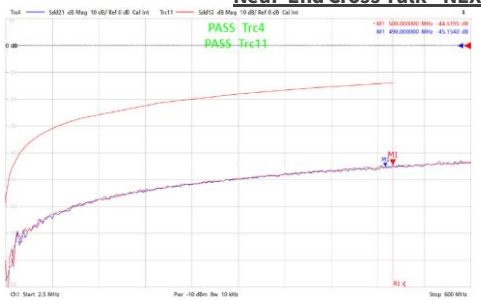


Limit (dB):
-15 dB (1-20 MHz)
-15+10log10(f/20) (20-100 MHz)

Measured (dB):
Max = -15.67

Statut: **Passed**

Near-End Cross Talk - NEXT (dB):

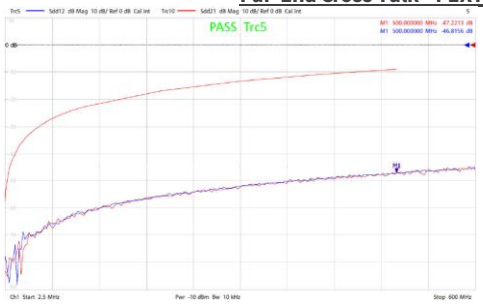


Limit (dB):
< -27.1+16.8log10(f/100) dB

Measured (dB):
Max = -44.52 (@ 600 MHz)

Statut: **Passed**

Far-End Cross Talk - FEXT (dB):

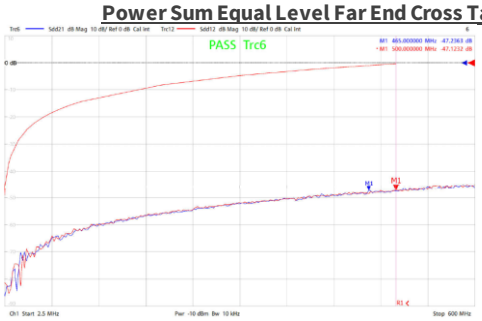


Limit (dB):
< -23 - 20log10(f/100) dB

Measured (dB):
Max = -46.82 (@ 600 MHz)

Statut: **Passed**

Power Sum Equal Level Far End Cross Talk - PSELFEXT (dB):



Limit (dB):
< -14.4 - 20log10(f/100) dB

Measured (dB):
Max = -47.12 (@ 600 MHz)

Statut: **Passed**

Compliant Network Standards: 10BASE-T 1000BASE-TX 100BASE-T4 1000BASE-T ATM-25 ATM-51 ATM-155 100VG-AnvLan TR-4 TR-16 Active TR-16 Passive

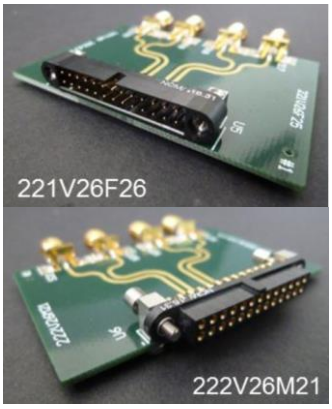
NICOMATIC

Operator
According to standard

Adnane JAGHMIM
IEEE 802.3ab

DMM SERIES
CMM SERIES

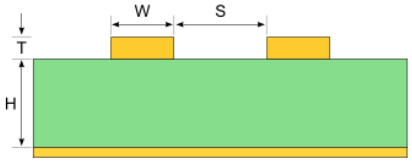
90° True Hole
vs
90° True Hole



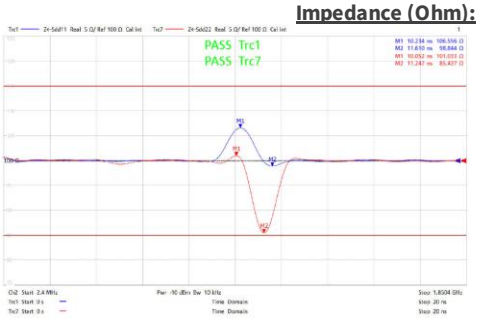
PCB recommandation

Total Thickness :	1600 µ
PCB Class :	4
Plating :	ENIG

W =	800 µ
S =	1200 µ
H =	380 µ
T =	17 µ



Impedance (Ohm):



Limit (Ohm):
Min = 85
Max = 115

Measured (Ohm):
Min = 85.44
Max = 97.09

Statut: **Passed**

Insertion Loss (dB):



Limit (dB):
> -2.1 f ^0.529 - 0.4/f

Measured (dB):
Min = -0.366 (@ 500 MHz)

Statut: **Passed**

Return Loss (dB):

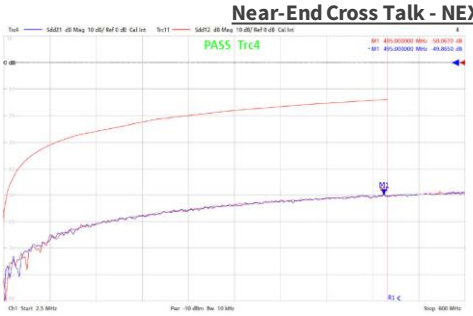


Limit (dB):
-15 dB (1-20 MHz)
-15+10log10(f/20) (20-100 MHz)

Measured (dB):
Max = -19.05

Statut: **Passed**

Near-End Cross Talk - NEXT (dB):

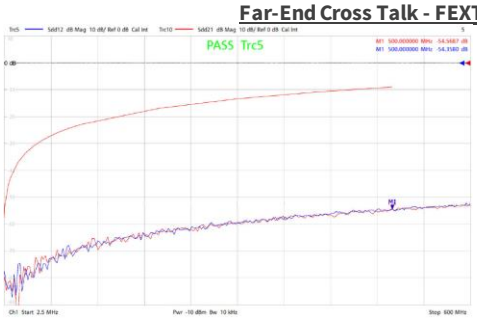


Limit (dB):
< -27.1+16.8log10(f/100) dB

Measured (dB):
Max = -49.87 (@ 600 MHz)

Statut: **Passed**

Far-End Cross Talk - FEXT (dB):

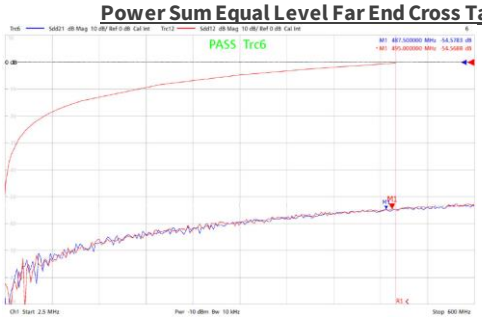


Limit (dB):
< -23 - 20log10(f/100) dB

Measured (dB):
Max = -54.36 (@ 600 MHz)

Statut: **Passed**

Power Sum Equal Level Far End Cross Talk - PSELFEXT (dB):



Limit (dB):
< -14.4 - 20log10(f/100) dB

Measured (dB):
Max = -54.57 (@ 600 MHz)

Statut: **Passed**

Compliant Network Standards: 10BASE-T 1000BASE-TX 100BASE-T4 1000BASE-T ATM-25 ATM-51 ATM-155 100VG-AnvLan TR-4 TR-16 Active TR-16 Passive

NICOMATIC

Operator
According to standard

Adnane JAGHMIM
IEEE 802.3ab

DMM SERIES
CMM SERIES

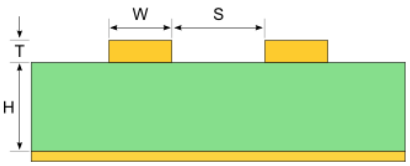
Straight SMT
vs
Straight SMT



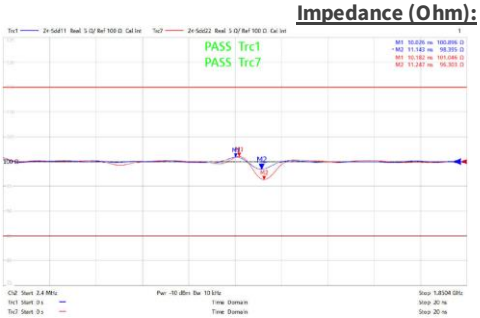
PCB recommandation

Total Thickness :	1600 µ
PCB Class :	4
Plating :	ENIG

W =	800 µ
S =	1200 µ
H =	380 µ
T =	17 µ



Impedance (Ohm):



Limit (Ohm):
Min = 85
Max = 115

Measured (Ohm):
Min = 96.303
Max = 101.05

Statut: **Passed**

Insertion Loss (dB):

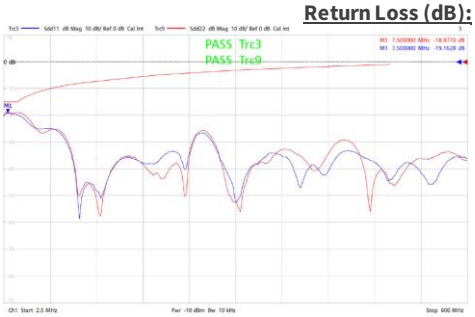


Limit (dB):
> -2.1 f ^0.529 - 0.4/f

Measured (dB):
Min = -0.317 (@ 500 MHz)

Statut: **Passed**

Return Loss (dB):

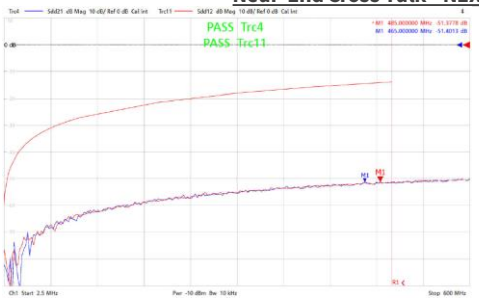


Limit (dB):
-15 dB (1-20 MHz)
-15+10log10(f/20) (20-100 MHz)

Measured (dB):
Max = -15.67

Statut: **Passed**

Near-End Cross Talk - NEXT (dB):

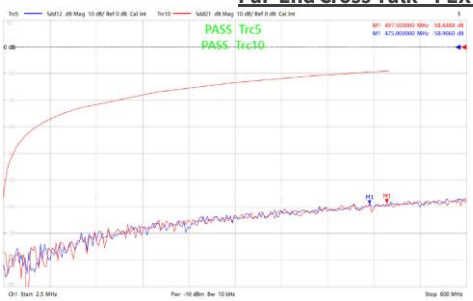


Limit (dB):
< -27.1+16.8log10(f/100) dB

Measured (dB):
Max = -51.38 (@ 600 MHz)

Statut: **Passed**

Far-End Cross Talk - FEXT (dB):

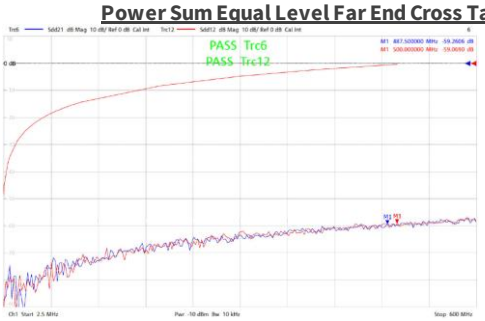


Limit (dB):
< -23 - 20log10(f/100) dB

Measured (dB):
Max = -58.68 (@ 600 MHz)

Statut: **Passed**

Power Sum Equal Level Far End Cross Talk - PSELFEXT (dB):



Limit (dB):
< -14.4 - 20log10(f/100) dB

Measured (dB):
Max = -59.07 (@ 600 MHz)

Statut: **Passed**

Compliant Network Standards: 10BASE-T 1000BASE-TX 100BASE-T4 1000BASE-T ATM-25 ATM-51 ATM-155 100VG-AnvLan TR-4 TR-16 Active TR-16 Passive

NICOMATIC

Operator
According to standard

Adnane JAGHMIM
IEEE 802.3ab

DMM SERIES
CMM SERIES

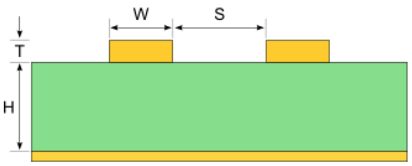
90° SMT
vs
90° SMT



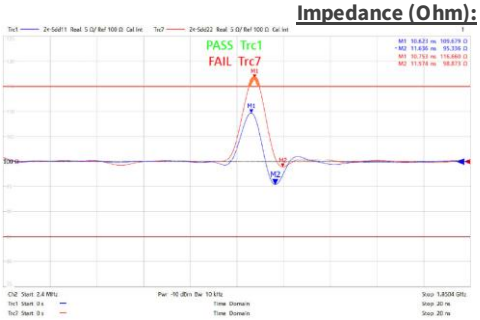
PCB recommandation

Total Thickness :	1600 µ
PCB Class :	4
Plating :	ENIG

W =	800 µ
S =	1200 µ
H =	380 µ
T =	17 µ



Impedance (Ohm):



Limit (Ohm):
Min = 85
Max = 115

Measured (Ohm):
Min = 95.34
Max = 116.66
Statut (F to M): **Failed**
Statut (M to F): **Passed**

Insertion Loss (dB):

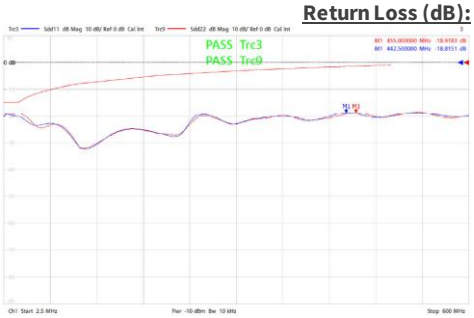


Limit (dB):
> -2.1 f ^0.529 - 0.4/f

Measured (dB):
Min = -0.366 (@ 500 MHz)

Statut: **Passed**

Return Loss (dB):

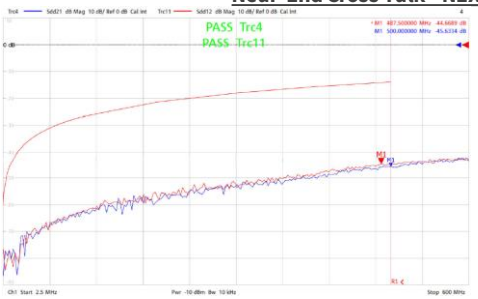


Limit (dB):
-15 dB (1-20 MHz)
-15+10log10(f/20) (20-100 MHz)

Measured (dB):
Max = -18.82

Statut: **Passed**

Near-End Cross Talk - NEXT (dB):

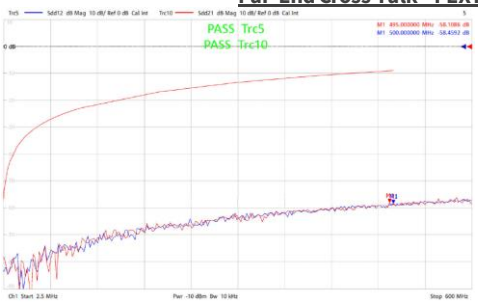


Limit (dB):
< -27.1+16.8log10(f/100) dB

Measured (dB):
Max = -44.67 (@ 600 MHz)

Statut: **Passed**

Far-End Cross Talk - FEXT (dB):

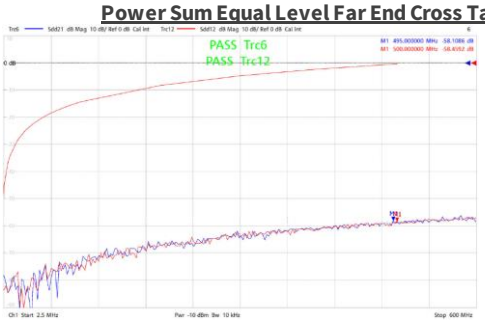


Limit (dB):
< -23 - 20log10(f/100) dB

Measured (dB):
Max = -58.11 (@ 600 MHz)

Statut: **Passed**

Power Sum Equal Level Far End Cross Talk - PSELFEXT (dB):



Limit (dB):
< -14.4 - 20log10(f/100) dB

Measured (dB):
Max = -58.42 (@ 600 MHz)

Statut: **Passed**

Compliant Network Standards: 10BASE-T 1000BASE-TX 100BASE-T4 1000BASE-T ATM-25 ATM-51 ATM-155 100VG-AnvLan TR-4 TR-16 Active TR-16 Passive