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# 802.3dj - Comments D1.1

## Annex 179A - TBDs

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# Purpose

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- Comments D1.1 - D1.1- 179A - TBDs
  - 518,566: Assumed connector IL - 179A.4 - (slide 4-5)
  - 519: max TP0d-TP2 or TP3-TP5d - 179A.5 - (slide 6)
  - 520,126: Mated Test Fixture - 179A.5 - (slide 6)
  - 521,461: Iddch,min-(slide 8), Iddca,min - (slide 7)
  - 522,194,195: min TP0d-TP2 or TP3-TP5d - (slide 8-9)

# Supporters

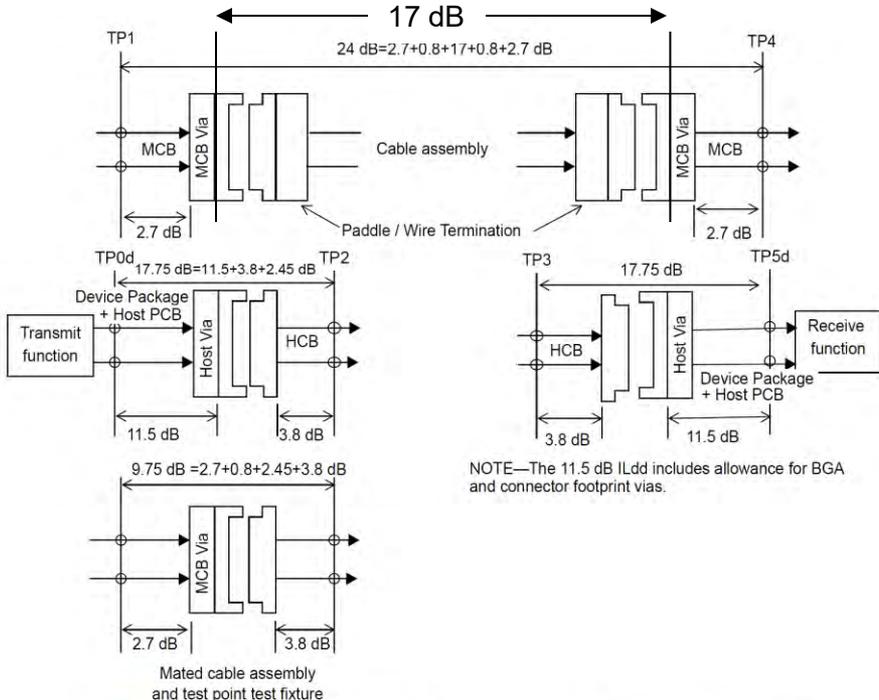
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# Comment# 518,566; 179A.4 - TBDs - assumed connector

## 179A.4 Host channel insertion loss

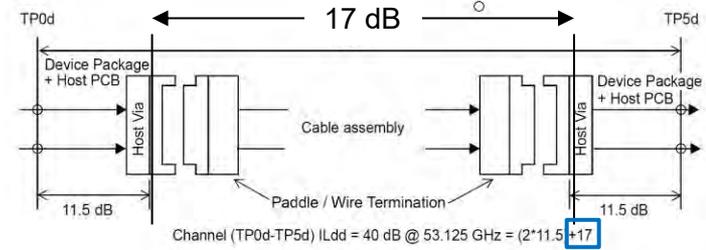
The recommended maximum differential insertion loss from TP0d to TP2 or from TP3 to TP5d is determined using Equation (179A-3) and illustrated in Figure 179A-2. The recommended differential insertion loss from TP0d to TP2 or from TP3 to TP5d are consistent with the host channel and an assumed mated connector insertion loss of 2.45 dB. The recommended maximum insertion losses from TP0d to TP2 or from TP3 to TP5d are given in Figure 179A-2.

179A.4 - Adopt assumed mated connector IL of 2.45 dB



NOTE (TBD)—2.7 dB MCB PCB ILdd includes the RF connector (up to the RF connector reference plane). The MCB via allowance is 0.8 dB.

Figure 179A-3—Host-Nominal to Host-Nominal, Cable assembly, and test fixture



NOTE—Channel (TP0d-TP5d) ILdd derived from cable assembly host, and mated test fixture

Figure 179A-4—Host-Nominal to Host-Nominal Channel (TP0d-TP5d) at 53.125 GHz

# Comments#566 - host channel IL

CI 179A SC 179A.4 P 739 L 2 # 566

Dawe, Piers Nvidia  
 Comment Type T Comment Status X

Defining a "host channel" as "controlled impedance PCB, device package, and host connector footprints" is not realistic. There may be cables in the host, and the connector loss is significant and will not be the same for all connectors, cabled and not, on either side of the board... The connector is part of the host and its loss should be included. This will simplify things: there will be only two parts making up the TP0d to TP2 channel: the host and the HCB traces.

**Suggested Remedy**

Define the host channel from TP0d to the outside of the connector, adding the nominal connector loss (2.9 dB because hundredths of a dB are to be avoided) to the values in Table 179A-1.

**Current D1p1 >> Figure 179A-3—Host-Nominal to Host-Nominal, Cable assembly, and test fixture insertion loss at 53.125 GHz**

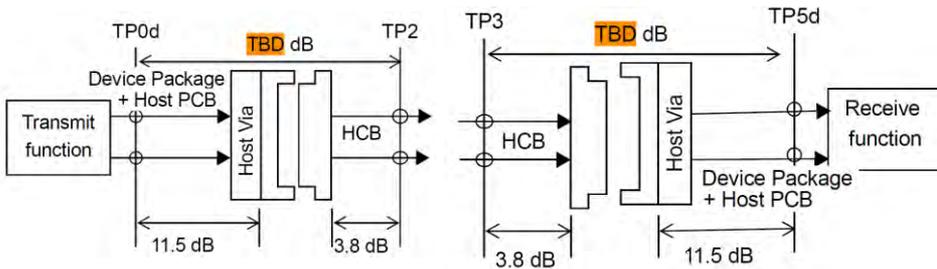


Table 179A-1—Recommended differential insertion loss limits at 53.125 GHz

Host designation	Host channel		TP0d to TP2 or TP3 to TP5
	Max (dB)	Min (dB)	Max (dB)
Host-Low (HL)	6.5	TBD	TBD
Host-Nominal (HN)	11.5	TBD	TBD
Host-High (HH)	16.5	TBD	TBD

Proposal to change host channel definition - Figure 179A-3 figure revised to move arrows to outside of plug. Values with 2.45 dB assumed connector included in figure.

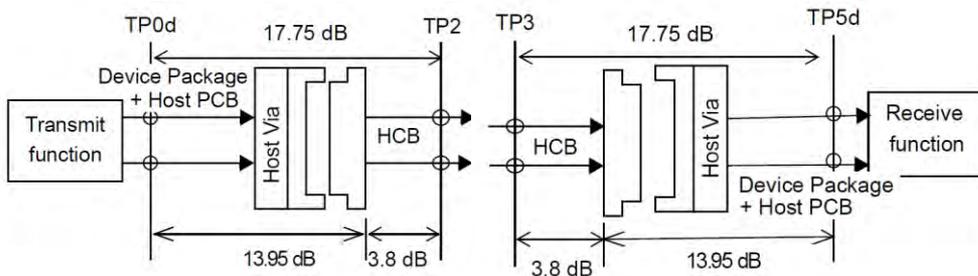
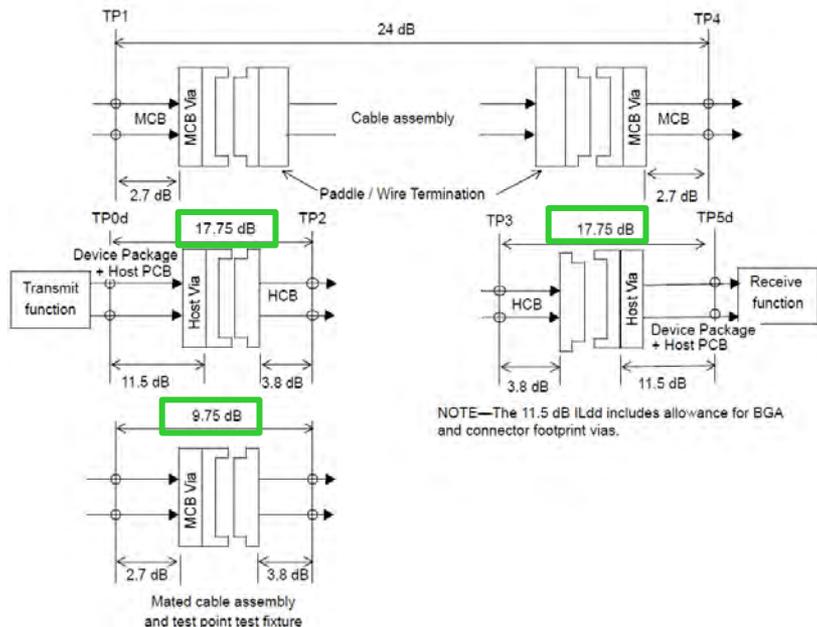


Table 179A-1—Recommended differential insertion loss limits at 53.125 GHz

Host designation	Host channel		TP0d to TP2 or TP3 to TP5
	Max (dB)	Min (dB)	Max (dB)
Host-Low (HL)	8.95	TBD	TBD
Host-Nominal (HN)	13.95	TBD	TBD
Host-High (HH)	18.95	TBD	TBD

# Comment#519: max TP0d-TP2 or TP3-TP5d and Comment#520, 126 MTF IL- 179A.5

- 179A.5 - TBDs; Mated Test Fixture 9.75 dB @53.125 GHz, TP0d-TP2, TP3-TP5d (Table 179A-1)



NOTE—The 11.5 dB ILdd includes allowance for BGA and connector footprint vias.

NOTE (TBD)—2.7 dB MCB PCB ILdd includes the RF connector (up to the RF connector reference plane). The MCB via allowance is 0.8 dB.

Figure 179A-3—Host-Nominal to Host-Nominal, Cable assembly, and test fixture insertion loss at 53.125 GHz

Table 179A-1—Recommended differential insertion loss limits at 53.125 GHz

Host designation	Host channel		TP0d to TP2 or TP3 to TP5d
	Max (dB)	Min (dB)	Max (dB)
Host-Low	6.5	TBD	12.75
Host-Nominal	11.5	TBD	17.75
Host-High	16.5	TBD	22.75

$$IL_{Ch,Max}(f) = IL_{CA,Max}(f) + IL_{Host1,Max+TF}(f) + IL_{Host2,Max+TF}(f) - 2IL_{MTFref}(f) \quad (179A-10)$$

$$IL_{Ch,Min}(f) = IL_{CA,Min}(f) + IL_{Host1,Min}(f) + IL_{Host2,Min}(f) - 2IL_{MTFref}(f) \quad (179A-11)$$

for  $0.05 \leq f \leq$  (TBD)

where

$IL_{Ch,Max}(f)$

is the maximum channel insertion loss between TP0d and TP5d in dB

$IL_{Ch,Min}(f)$

is the minimum channel insertion loss between TP0d and TP5d in dB

$IL_{CA,Max}(f)$

is the maximum cable assembly insertion loss (TP1 to TP4) in dB, Table 179A-3

$IL_{CA,Min}(f)$

is the minimum cable assembly insertion loss (TP1 to TP4) in dB, Table 179A-4

$IL_{Host1}(f)$

is the maximum insertion loss from TP0d to TP2d in dB (Table 179A-2) for link configurations Table 179A-3

$IL_{Host2}(f)$

is the maximum insertion loss from TP3d to TP5d in dB (Table 179A-2) for link configurations Table 179A-3

$IL_{MTFref}(f)$

is the reference insertion loss of the mated test fixture in dB, using Equation (179B-5)

$f$

is the frequency in GHz

Cable Assembly	Link Configurations IL	TP0d-TP2 IL	TP3-TP5d IL	Cable 2*connectors IL	TP1-TP4 IL	MTF IL	$IL_{Ch,Max}$
CA-A	HH-HN	22.75	17.75	12	19	9.75	40
CA-B	HH-HL	22.75	12.75	17	24	9.75	40
CA-B	HN-HN	17.75	17.75	17	24	9.75	40
CA-C	HN-HL	17.75	12.75	22	29	9.75	40
CA-D	HL-HL	12.75	12.75	27	34	9.75	40

# Comment#521,461 179A.5 - TBDs; Min Channel TP0d-TP5d and Min CA ILdd

Table 179A-4—Minimum Insertion loss budget values at 53.125 GHz

Link Configuration	$ILdd_{Ca,min}$	$ILdd_{Ch,min}$
Host-High to Host-Nominal	TBD	TBD
Host-High to Host-Low	TBD	TBD
Host-Nominal to Host-Nominal	TBD	TBD
Host-Nominal to Host-Low	TBD	TBD
Host-Low to Host-Low	TBD	TBD

Min channel TP0d - TP5d with max cable IL  
(consistent with 802.3ck method)

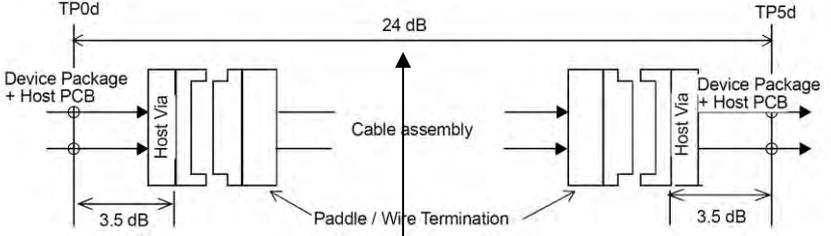
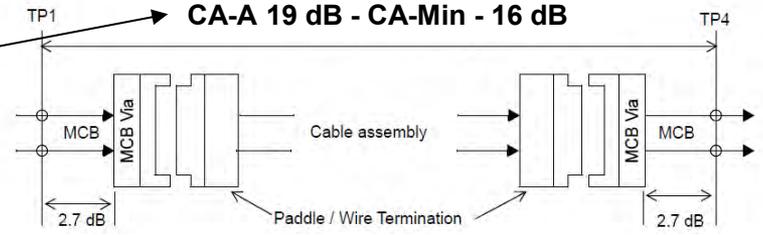
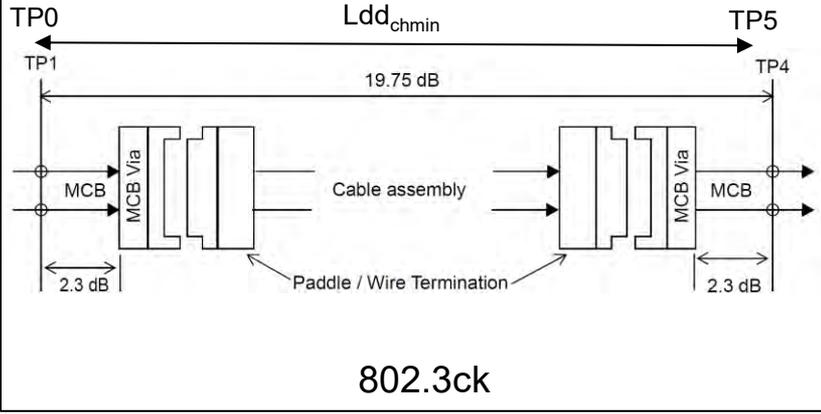


Table 179A-x— Insertion loss budget values at 53.125 GHz

Parameter	Value	Units
$ILdd_{Ch,max}$	40	dB
$ILdd_{Ca,max}$	24	dB
$ILdd_{Ch,min}$	24	dB
$ILdd_{Ca,min}$	16	dB
$ILdd_{MTFref}$	9.75	dB

Table 162A-1—Insertion loss budget values at 26.56 GHz

Parameter	Value	Units
$ILdd_{Ch,max}$	28.5	dB
$ILdd_{Ca,max}$	19.75	dB
$ILdd_{Ch,min}$	19.75	dB
$ILdd_{Ca,min}$	11.0	dB
$ILdd_{MaxHost}$	10.975	dB
$ILdd_{MTFref}$	6.6	dB



# Comment# 522,194,195 - 179A.4 - Table 179A - Min host channel

CI 179A SC 179A.4 P739 L1 # 194  
 Mellitz, Richard Samtec  
 Comment Type TR Comment Status D Host channel IL

Insertion loss plots are not indicative of COM or performance because of cable vs PCB choices, electromagnetically compensated connectors, top-package connections, or other design choices. In addition, the host MDI connector may not have a connector footprint. Insertion loss limit mask plots are not easily determined because of the variety of design choices. In addition, the use of the words "maximum" and "minimum" are imperative words that are often circumvent the informative nature of the specification. A suggested range is more appropriate for an informative specification.

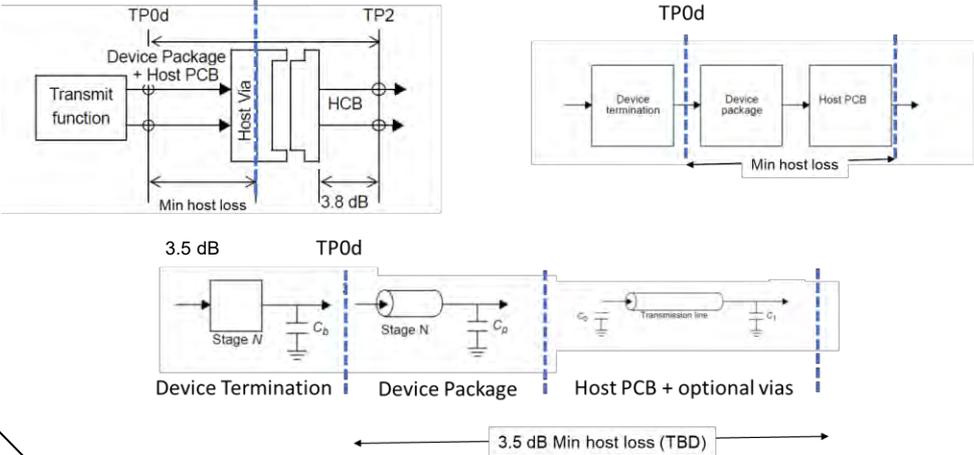


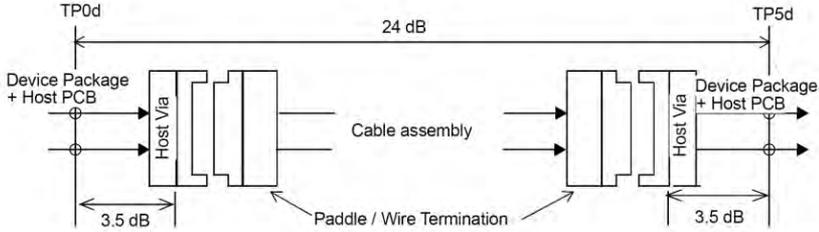
Table 179A-1—Recommended differential insertion loss limits at 53.125 GHz

Host designation	Host channel		TP0d to TP2 or TP3 to TP5
	Max (dB)	Min (dB)	Max (dB)
Host-Low (HL)	6.5	TBD	12.75
Host-Nominal (HN)	11.5	TBD	17.75
Host-High (HH)	16.5	TBD	22.75

Table 179A-1—Recommended differential insertion loss limits at 53.125 GHz

Host designation	Host channel		TP0d to TP2 or TP3 to TP5
	Max (dB)	Min (dB)	Max (dB)
Host-Low	6.5	3.5	12.75
Host-Nominal	11.5	3.5	17.75
Host-High	16.5	3.5	22.75

Host designation	Host Channel	TP0d to TP2 or TP3 to TP5d
	Range (dB)	Max (dB)
Host-Low	3.5-6.5	12.75
Host-Nominal	3.5-11.5	17.75
Host-High	3.5-16.5	22.75



Min Channel TP0d - TP5d with max cable IL (consistent with 802.3ck method)

# Comment# 522,194,195 - 179A.4 - Table 179A - Min host channel

CI 179A SC 179A.5 P741 L 27 # 195

Mellitz, Richard Samtec  
 Comment Type TR Comment Status D Host channel IL

Insertion loss plots are not indicative of COM or performance because of cable vs PCB choices, electromagnetically compensated connectors, top-package connections, or other design choices. In addition, the host MDI connector may not have a connector footprint. Insertion loss limit mask plots are not easily determined because of the variety of design choices. In addition, the use of the words "maximum" and "minimum" are imperative words that are often circumvent the informative nature of the specification. A suggested range is more appropriate for an informative specification.

**Suggested Remedy**

Replace line 27 and 28 with  
 This subclause provides information on the channel (TP0d-TP5d) insertion losses for the suggested loss ranges for cabling topologies.

Remove from line 45 page 741 to line 20 on page 742

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.  
 [Editor's note: TBD, P740 L10-14]  
 The suggested remedy includes removal of the equations for ILddCh,Max(f) and ILddCh,Min(f). This would remove the need for all the frequency-mask equations 179A-1 through 179A-9.  
 Note that comment #522 suggests minimum ILdd values at Nyquist.

Implement the suggested remedy with editorial license.

Host designation	Host Channel	TP0d to TP2 or TP3 to TP5d
	Range (dB)	Max (dB)
Host-Low	3.5-6.5	12.75
Host-Nominal	3.5-11.5	17.75
Host-High	3.5-16.5	22.75

~~$$ILdd_{Ch,Max}(f) = ILdd_{CA,Min}(f) + ILdd_{Host1,Max+TF}(f) + ILdd_{Host2,Max+TF}(f) - 2ILdd_{MTFref}(f) \quad (179A-10)$$~~

~~$$ILdd_{Ch,Min}(f) = ILdd_{CA,Min}(f) + ILdd_{Host1,Min}(f) + ILdd_{Host2,Min}(f) - 2ILdd_{MTFref}(f) \quad (179A-11)$$~~

for  $0.05 \leq f \leq \text{TBD}$

where

- $ILdd_{Ch,Max}(f)$  is the maximum channel insertion loss between TP0d and TP5d in dB
- $ILdd_{Ch,Min}(f)$  is the minimum channel insertion loss between TP0d and TP5d in dB
- $ILdd_{CA,Max}(f)$  is the maximum cable assembly insertion loss (TP1 to TP4) in dB, Table 179A-3
- $ILdd_{CA,Min}(f)$  is the minimum cable assembly insertion loss (TP1 to TP4) in dB, Table 179A-4
- $ILdd_{Host1}(f)$  is the maximum insertion loss from TP0d to TP2d in dB (Table 179A-2) for link configurations Table 179A-3
- $ILdd_{Host2}(f)$  is the maximum insertion loss from TP3d to TP5d in dB (Table 179A-2) for link configurations Table 179A-3
- $ILdd_{MTFref}(f)$  is the reference insertion loss of the mated test fixture in dB, using Equation (179B-5)
- $f$  is the frequency in GHz

~~$$ILdd_{Host\_Low}(f) \leq ILdd_{Host\_Low,max}(f) = TBD \quad (179A-1)$$~~

~~$$ILdd_{Host\_Low}(f) \geq ILdd_{Host\_Low,min}(f) = TBD \quad (179A-2)$$~~

~~$$ILdd_{Host\_Nom}(f) \leq ILdd_{Host\_Nom,max}(f) = TBD \quad (179A-3)$$~~

~~$$ILdd_{Host\_Nom}(f) \geq ILdd_{Host\_Nom,min}(f) = TBD \quad (179A-4)$$~~

~~$$ILdd_{Host\_High}(f) \leq ILdd_{Host\_High,max}(f) = TBD \quad (179A-5)$$~~

~~$$ILdd_{Host\_High}(f) \geq ILdd_{Host\_High,min}(f) = TBD \quad (179A-6)$$~~

~~$$ILdd_{Low+TF}(f) \leq ILdd_{Host\_Low,max+TF}(f) = TBD \quad (179A-7)$$~~

~~$$ILdd_{Nom+TF}(f) \leq ILdd_{Host\_Nom,max+TF}(f) = TBD \quad (179A-8)$$~~

~~$$ILdd_{High+TF}(f) \leq ILdd_{Host\_High,max+TF}(f) = TBD \quad (179A-9)$$~~