Key comparison CCEM.RF-K9

MEASURAND : Excess noise ratio
NOISE SOURCE : TSA1
REFERENCE PLANE : R140

x_i : averaged Excess noise ratio measured by laboratory *i*
u_i : averaged standard uncertainty of x_i

Lab *i*	x_i / dB	u_i / dB	x_i / dB	u_i / dB	x_i / dB	u_i / dB	x_i / dB	u_i / dB	x_i / dB	u_i / dB	Date of measurement
	Frequency 12.4 GHz		Frequency 13.5 GHz		Frequency 15 GHz		Frequency 17.5 GHz		Frequency 18 GHz		
LNE	15.700	0.038	15.718	0.038	15.681	0.039	15.683	0.039	15.666	0.039	Sep 97, Jan 99, Dec 00
NPL	15.687	0.021	15.682	0.024	15.689	0.020	15.659	0.031	15.658	0.021	May 98
PTB	15.709	0.013	15.719	0.015	15.700	0.016	15.683	0.018	15.645	0.021	Jun 97, Apr 99
NIST	15.689	0.018	15.683	0.018	15.676	0.019	15.666	0.020	15.655	0.020	Apr 00
VNIIFTRI	15.817	0.031	15.747	0.027	15.717	0.028	15.775	0.026	-	-	Sep - Oct 00

Key comparison CCEM.RF-K9

MEASURAND : Excess noise ratio
NOISE SOURCE : TSA1
REFERENCE PLANE : R140

At each frequency, the key comparison reference value, x_R, is calculated as the unweighted mean of the participants results with exclusion of outliers. Its standard uncertainty u_R is computed as given in page 112 of the Final Report.

Frequency 12.4 GHz		Frequency 13.5 GHz		Frequency 15 GHz		Frequency 17.5 GHz		Frequency 18 GHz	
x_R / dB	u_R / dB	x_R / dB	u_R / dB	x_R / dB	u_R / dB	x_R / dB	u_R / dB	x_R / dB	u_R / dB
15.696	0.005	15.710	0.012	15.693	0.007	15.673	0.006	15.656	0.004

The degree of equivalence of laboratory i with respect to the key comparison reference value is given by a pair of terms terms, both expressed in dB: $D_i = (x_i - x_R)$ and its expanded uncertainty U_i ($k = 2$). The equations for the computation of U_i are given in page 112 of the Final Report.

The degree of equivalence between two laboratories i and j is given by a pair of terms, both expressed in dB : $D_{ij} = (D_i - D_j)$ and its expanded uncertainty U_{ij} ($k = 2$) with $U_{ij} = 2(u_i^2 + u_j^2)^{1/2}$.

Note that the terms D_i and D_{ij} are computed with the opposite sign in the Final Report.

Key comparison CCEM.RF-K9

MEASURAND : Excess noise ratio **NOISE SOURCE : TSA1** **REFERENCE PLANE : R140**

FREQUENCY : 12.4 GHz **Lab *j*** ⇨

Lab *i* ⇩

	D_i / dB	U_i / dB	LNE		NPL		PTB		NIST		VNIIFTRI	
			D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB
LNE	**0.004**	0.054			**0.013**	0.086	**-0.009**	0.079	**0.011**	0.083	**-0.117**	0.098
NPL	**-0.009**	0.031	**-0.013**	0.086			**-0.022**	0.049	**-0.002**	0.055	**-0.130**	0.075
PTB	**0.012**	0.020	**0.009**	0.079	**0.022**	0.049			**0.020**	0.044	**-0.108**	0.067
NIST	**-0.007**	0.027	**-0.011**	0.083	**0.002**	0.055	**-0.020**	0.044			**-0.128**	0.072
VNIIFTRI	**0.121**	0.063	**0.117**	0.098	**0.130**	0.075	**0.108**	0.067	**0.128**	0.072		

FREQUENCY : 13.5 GHz **Lab *j*** ⇨

Lab *i* ⇩

	D_i / dB	U_i / dB	LNE		NPL		PTB		NIST		VNIIFTRI	
			D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB
LNE	**0.008**	0.063			**0.036**	0.089	**-0.001**	0.081	**0.035**	0.083	**-0.029**	0.093
NPL	**-0.028**	0.045	**-0.036**	0.089			**-0.037**	0.056	**-0.001**	0.060	**-0.065**	0.072
PTB	**0.009**	0.033	**0.001**	0.081	**0.037**	0.056			**0.036**	0.046	**-0.028**	0.061
NIST	**-0.027**	0.037	**-0.035**	0.083	**0.001**	0.060	**-0.036**	0.046			**-0.064**	0.065
VNIIFTRI	**0.037**	0.049	**0.029**	0.093	**0.065**	0.072	**0.028**	0.061	**0.064**	0.065		

FREQUENCY : 15 GHz **Lab *j*** ⇨

Lab *i* ⇩

	D_i / dB	U_i / dB	LNE		NPL		PTB		NIST		VNIIFTRI	
			D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB
LNE	**-0.012**	0.063			**-0.008**	0.088	**-0.019**	0.085	**0.005**	0.087	**-0.036**	0.097
NPL	**-0.004**	0.034	**0.008**	0.088			**-0.011**	0.051	**0.013**	0.055	**-0.028**	0.069
PTB	**0.007**	0.029	**0.019**	0.085	**0.011**	0.051			**0.024**	0.050	**-0.018**	0.064
NIST	**-0.017**	0.033	**-0.005**	0.087	**-0.013**	0.055	**-0.024**	0.050			**-0.041**	0.068
VNIIFTRI	**0.024**	0.046	**0.036**	0.097	**0.028**	0.069	**0.018**	0.064	**0.041**	0.068		

Key comparison CCEM.RF-K9

MEASURAND : Excess noise ratio **NOISE SOURCE : TSA1** **REFERENCE PLANE : R140**

FREQUENCY : 17.5 GHz **Lab *j*** ⇨

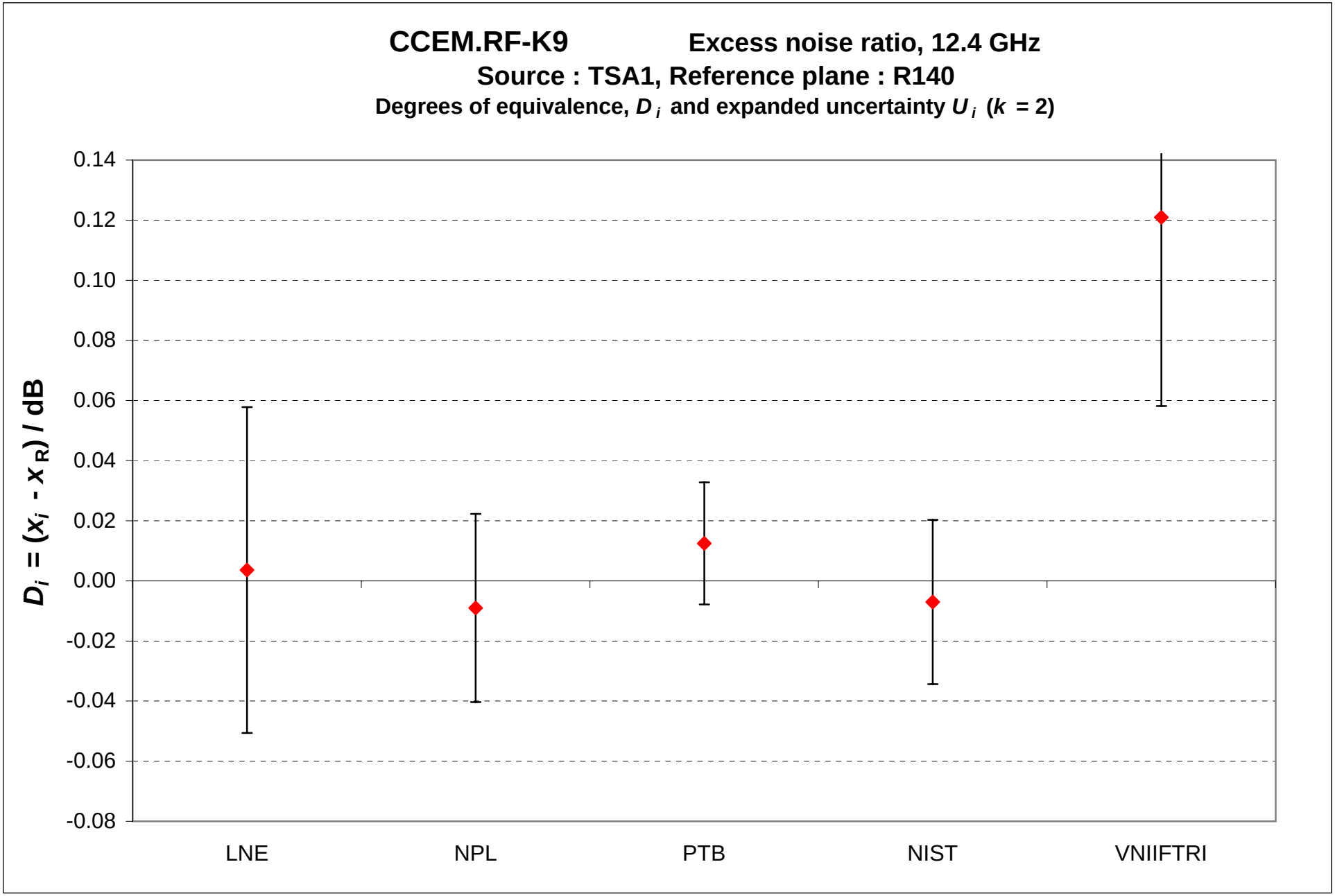
Lab *i* ⇩

	D_i / dB	U_i / dB	LNE		NPL		PTB		NIST		VNIIFTRI	
			D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB
LNE	**0.010**	0.056			**0.024**	0.100	**0.000**	0.086	**0.017**	0.088	**-0.092**	0.094
NPL	**-0.014**	0.045	**-0.024**	0.100			**-0.024**	0.072	**-0.007**	0.074	**-0.116**	0.081
PTB	**0.010**	0.028	**0.000**	0.086	**0.024**	0.072			**0.017**	0.054	**-0.092**	0.063
NIST	**-0.007**	0.031	**-0.017**	0.088	**0.007**	0.074	**-0.017**	0.054			**-0.109**	0.066
VNIIFTRI	**0.102**	0.053	**0.092**	0.094	**0.116**	0.081	**0.092**	0.063	**0.109**	0.066		

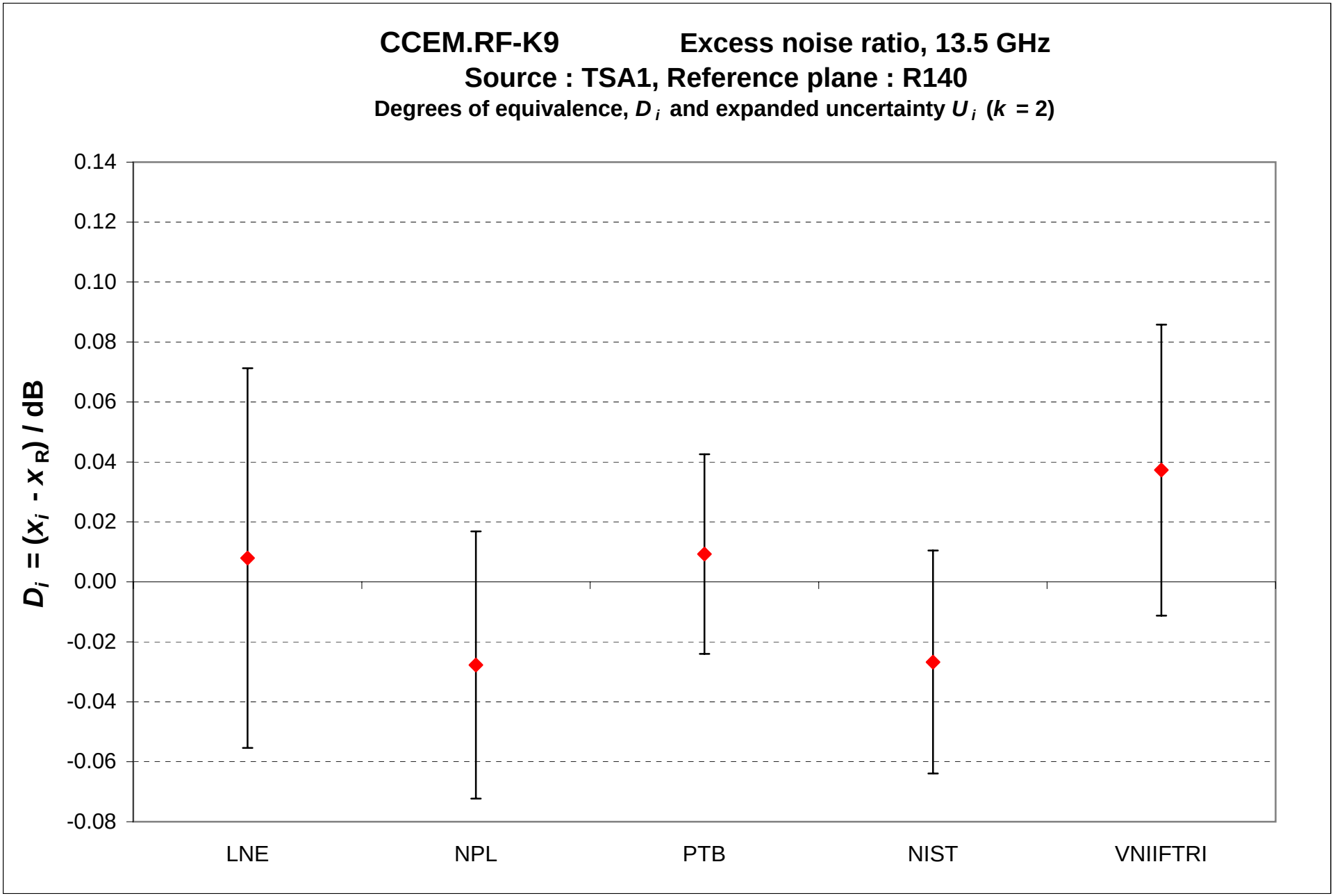
FREQUENCY : 18 GHz **Lab *j*** ⇨

Lab *i* ⇩

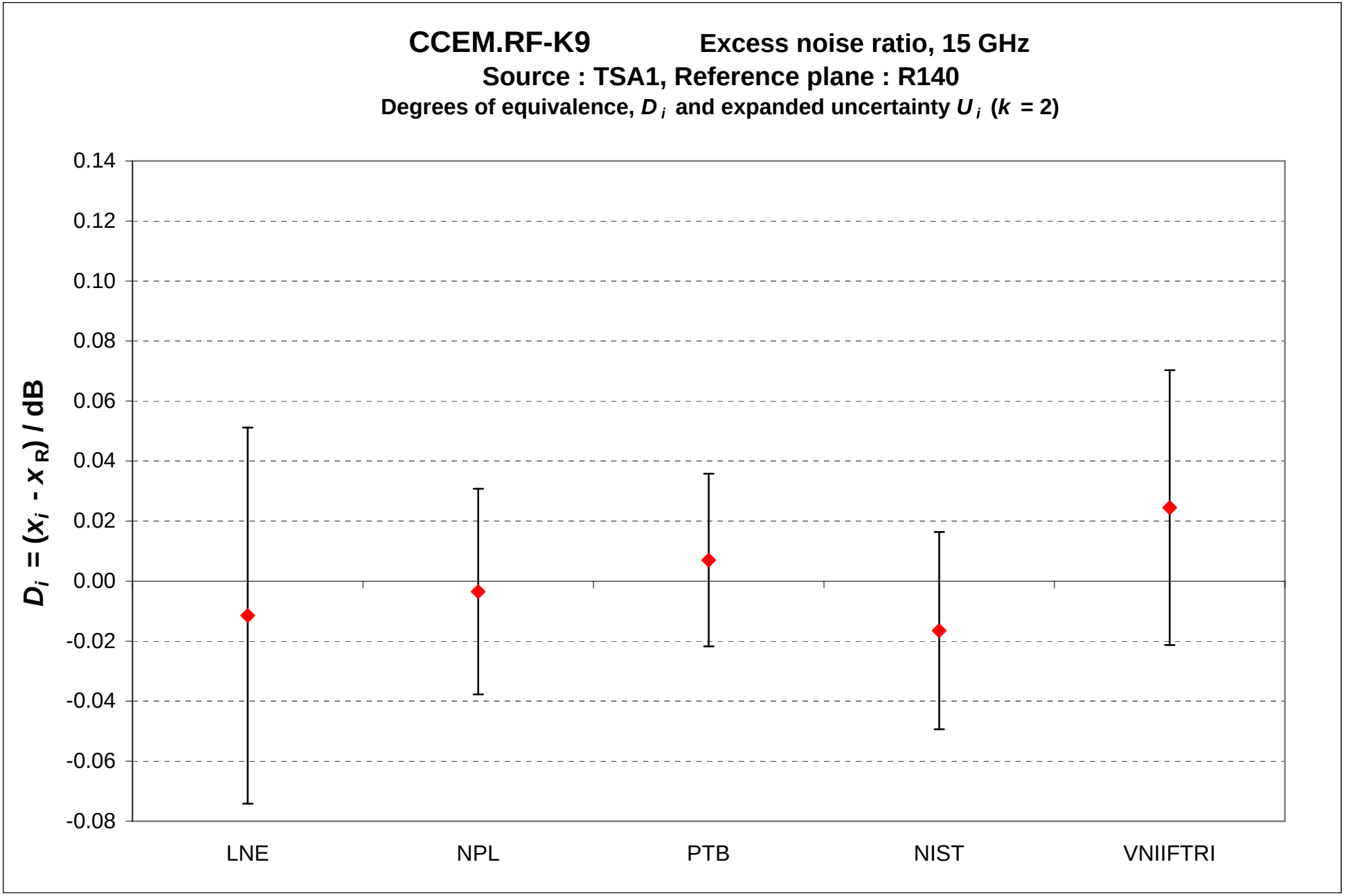
	D_i / dB	U_i / dB	LNE		NPL		PTB		NIST	
			D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB
LNE	**0.010**	0.056			**0.008**	0.089	**0.021**	0.089	**0.011**	0.088
NPL	**0.002**	0.031	**-0.008**	0.089			**0.013**	0.059	**0.003**	0.058
PTB	**-0.011**	0.030	**-0.021**	0.089	**-0.013**	0.059			**-0.010**	0.057
NIST	**-0.001**	0.030	**-0.011**	0.088	**-0.003**	0.058	**0.010**	0.057		



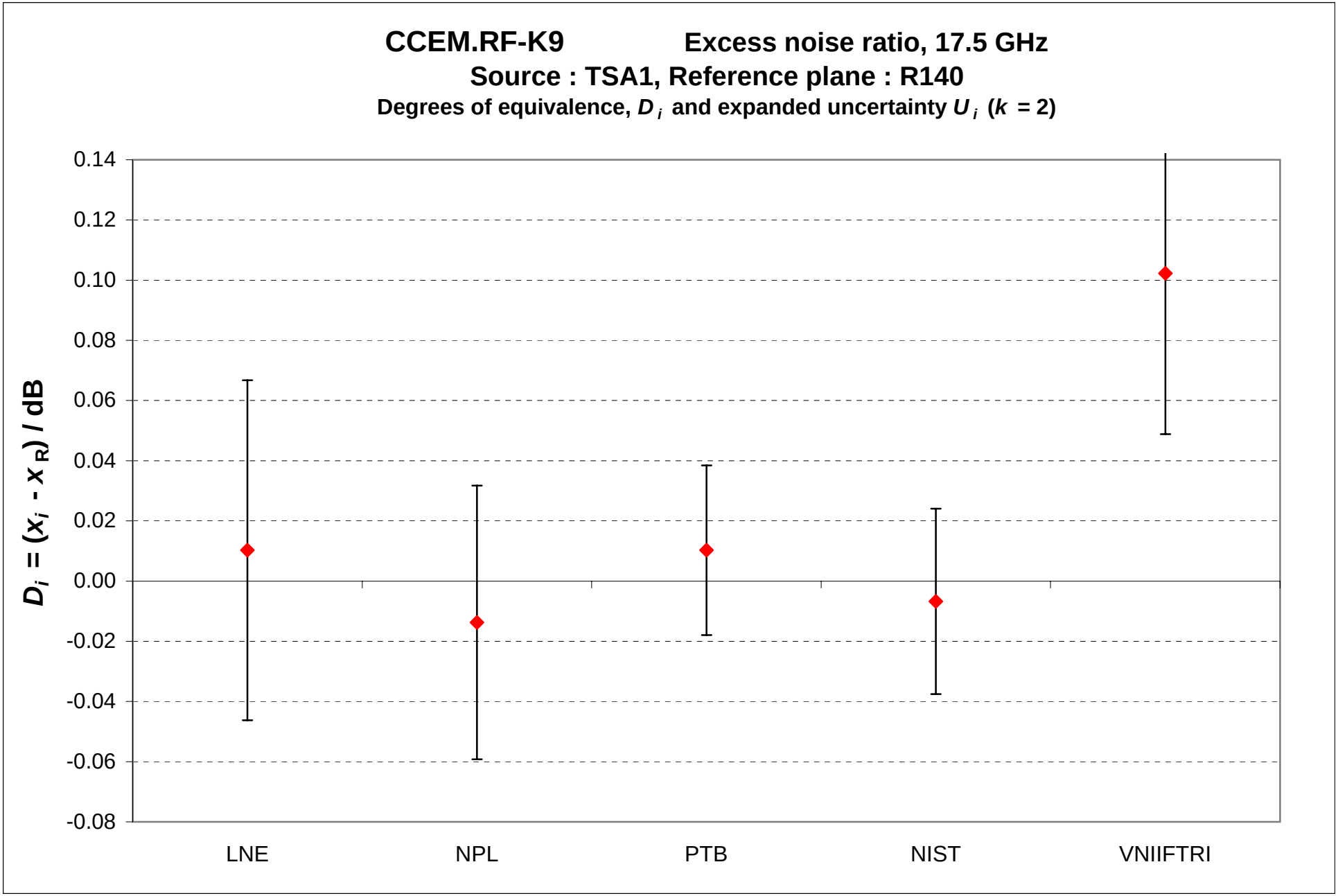
Note that the terms D_i are computed with the opposite sign in the Final Report.



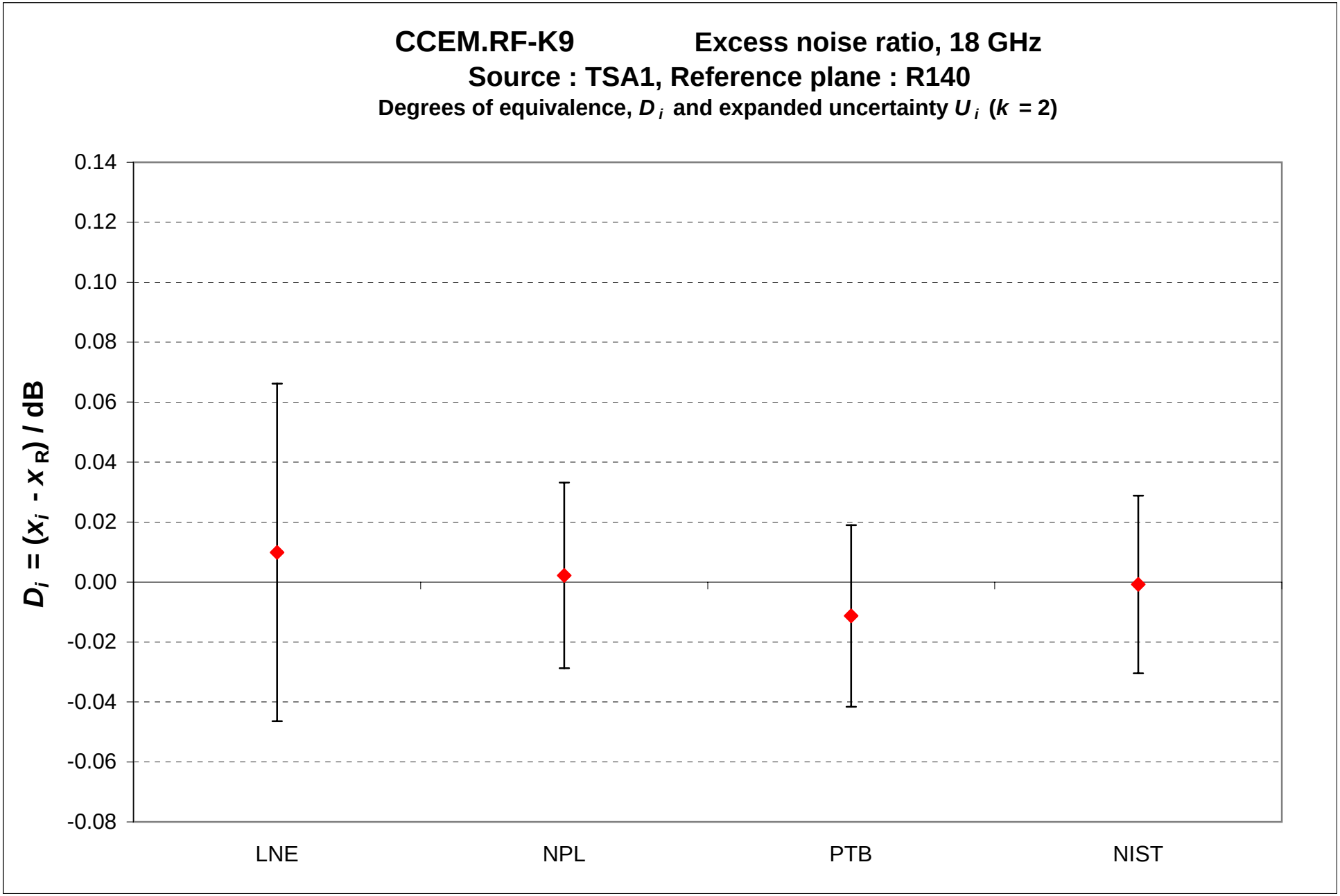
Note that the terms D_i are computed with the opposite sign in the Final Report.



Note that the terms D_i are computed with the opposite sign in the Final Report.



Note that the terms D_i are computed with the opposite sign in the Final Report.



Note that the terms D_i are computed with the opposite sign in the Final Report.

Key comparison CCEM.RF-K9

MEASURAND : Excess noise ratio
NOISE SOURCE : TSB1
REFERENCE PLANE : PC-7 / R140

x_i : averaged Excess noise ratio measured by laboratory *i*
u_i : averaged standard uncertainty of x_i

Lab *i*	x_i / dB	u_i / dB	x_i / dB	u_i / dB	x_i / dB	u_i / dB	x_i / dB	u_i / dB	x_i / dB	u_i / dB	Date of measurement
	Frequency 12.4 GHz		Frequency 13.5 GHz		Frequency 15 GHz		Frequency 17.5 GHz		Frequency 18 GHz		
LNE	15.785	0.039	15.835	0.039	15.836	0.040	15.692	0.040	15.582	0.039	Sep 97, Jan 99, Dec 00
NPL	15.787	0.021	15.822	0.024	15.857	0.020	15.667	0.031	15.608	0.021	May 98
PTB	15.792	0.014	15.838	0.015	15.835	0.018	15.696	0.019	15.546	0.021	Jun 97, Apr 99
NIST	15.773	0.018	15.801	0.018	15.826	0.018	15.697	0.019	15.575	0.020	Apr 00
VNIIFTRI	15.870	0.036	15.874	0.028	15.848	0.033	15.899	0.026	-	-	Sep - Oct 00

Key comparison CCEM.RF-K9

MEASURAND : Excess noise ratio
NOISE SOURCE : TSB1
REFERENCE PLANE : PC-7 / R140

At each frequency, the key comparison reference value, x_R, is calculated as the unweighted mean of the participants results with exclusion of outliers. Its standard uncertainty u_R is computed as given in page 112 of the Final Report.

Frequency 12.4 GHz		Frequency 13.5 GHz		Frequency 15 GHz		Frequency 17.5 GHz		Frequency 18 GHz	
x_R / dB	u_R / dB	x_R / dB	u_R / dB	x_R / dB	u_R / dB	x_R / dB	u_R / dB	x_R / dB	u_R / dB
15.784	0.004	15.834	0.012	15.840	0.005	15.695	0.001	15.578	0.013

The degree of equivalence of laboratory i with respect to the key comparison reference value is given by a pair of terms terms, both expressed in dB: $D_i = (x_i - x_R)$ and its expanded uncertainty U_i ($k = 2$). The equations for the computation of U_i are given in page 112 of the Final Report.

The degree of equivalence between two laboratories i and j is given by a pair of terms, both expressed in dB : $D_{ij} = (D_i - D_j)$ and its expanded uncertainty U_{ij} ($k = 2$) with $U_{ij} = 2(u_i^2 + u_j^2)^{1/2}$.

Note that the terms D_i and D_{ij} are computed with the opposite sign in the Final Report.

Key comparison CCEM.RF-K9

MEASURAND : Excess noise ratio **NOISE SOURCE : TSB1** **REFERENCE PLANE : PC-7 / R140**

FREQUENCY : 12.4 GHz Lab *j* ⇨

Lab *i* ⇩

	D_i / dB	U_i / dB	LNE		NPL		PTB		NIST		VNIIFTRI	
			D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB
LNE	**0.001**	0.055			**-0.002**	0.088	**-0.007**	0.082	**0.012**	0.085	**-0.085**	0.106
NPL	**0.003**	0.031	**0.002**	0.088			**-0.004**	0.050	**0.014**	0.055	**-0.083**	0.083
PTB	**0.007**	0.021	**0.007**	0.082	**0.004**	0.050			**0.018**	0.045	**-0.079**	0.077
NIST	**-0.011**	0.027	**-0.012**	0.085	**-0.014**	0.055	**-0.018**	0.045			**-0.097**	0.080
VNIIFTRI	**0.086**	0.072	**0.085**	0.106	**0.083**	0.083	**0.079**	0.077	**0.097**	0.080		

FREQUENCY : 13.5 GHz Lab *j* ⇨

Lab *i* ⇩

	D_i / dB	U_i / dB	LNE		NPL		PTB		NIST		VNIIFTRI	
			D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB
LNE	**0.001**	0.065			**0.013**	0.092	**-0.002**	0.084	**0.034**	0.086	**-0.039**	0.096
NPL	**-0.012**	0.044	**-0.013**	0.092			**-0.016**	0.057	**0.021**	0.060	**-0.052**	0.074
PTB	**0.004**	0.033	**0.002**	0.084	**0.016**	0.057			**0.037**	0.047	**-0.037**	0.064
NIST	**-0.033**	0.037	**-0.034**	0.086	**-0.021**	0.060	**-0.037**	0.047			**-0.073**	0.067
VNIIFTRI	**0.040**	0.050	**0.039**	0.096	**0.052**	0.074	**0.037**	0.064	**0.073**	0.067		

FREQUENCY : 15 GHz Lab *j* ⇨

Lab *i* ⇩

	D_i / dB	U_i / dB	LNE		NPL		PTB		NIST		VNIIFTRI	
			D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB
LNE	**-0.004**	0.063			**-0.021**	0.090	**0.001**	0.088	**0.010**	0.088	**-0.012**	0.104
NPL	**0.017**	0.033	**0.021**	0.090			**0.022**	0.053	**0.031**	0.054	**0.009**	0.077
PTB	**-0.005**	0.029	**-0.001**	0.088	**-0.022**	0.053			**0.009**	0.050	**-0.013**	0.075
NIST	**-0.014**	0.030	**-0.010**	0.088	**-0.031**	0.054	**-0.009**	0.050			**-0.022**	0.075
VNIIFTRI	**0.008**	0.052	**0.012**	0.104	**-0.009**	0.077	**0.013**	0.075	**0.022**	0.075		

Key comparison CCEM.RF-K9

MEASURAND : Excess noise ratio **NOISE SOURCE : TSB1** **REFERENCE PLANE : PC-7 / R140**

FREQUENCY : 17.5 GHz **Lab *j*** ⇨

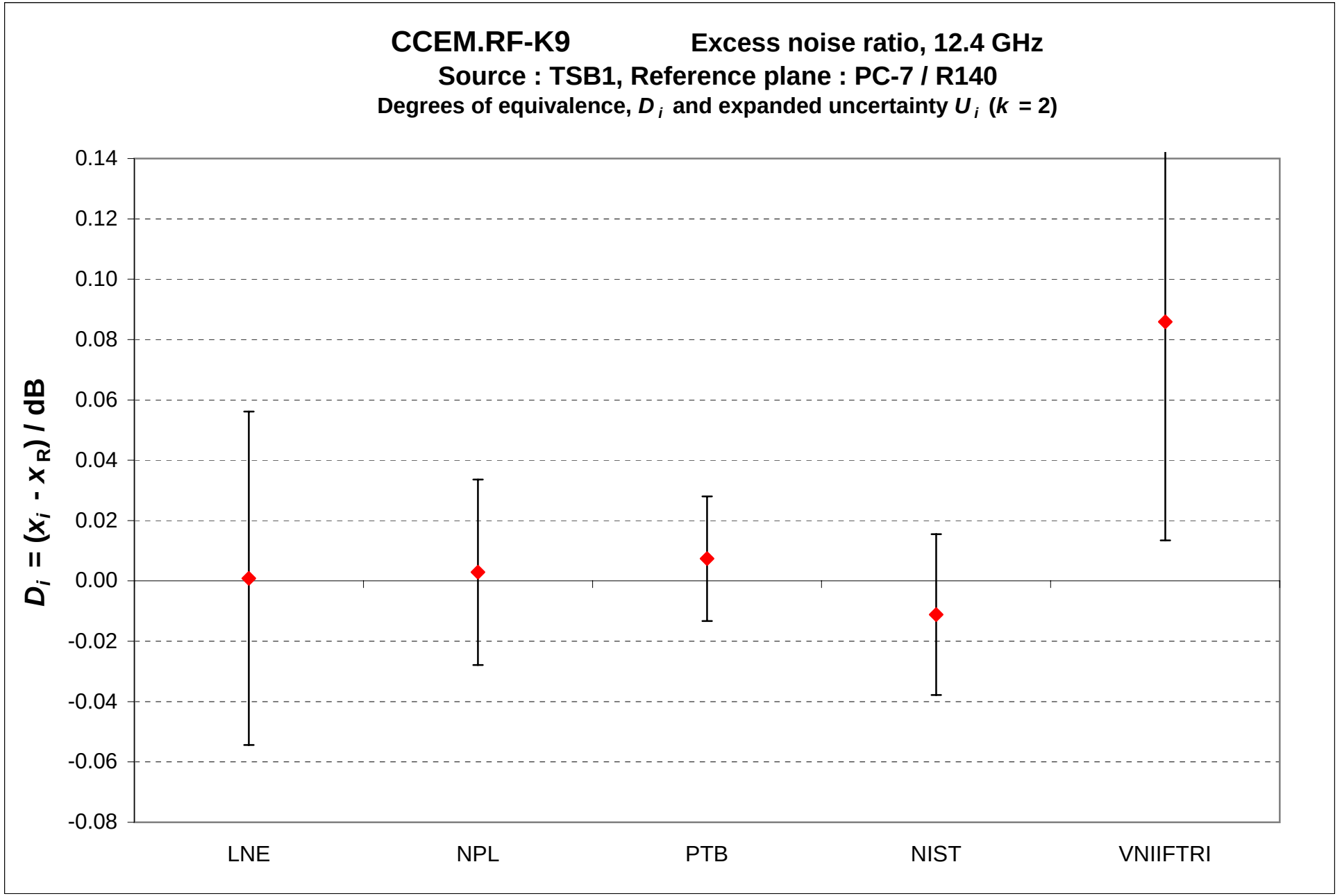
Lab *i* ⇩

	D_i / dB	U_i / dB	LNE		NPL		PTB		NIST		VNIIFTRI	
			D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB
LNE	**-0.003**	0.046			**0.025**	0.101	**-0.003**	0.088	**-0.005**	0.088	**-0.207**	0.095
NPL	**-0.028**	0.062	**-0.025**	0.101			**-0.028**	0.072	**-0.030**	0.073	**-0.232**	0.081
PTB	**0.001**	0.022	**0.003**	0.088	**0.028**	0.072			**-0.002**	0.053	**-0.204**	0.064
NIST	**0.002**	0.022	**0.005**	0.088	**0.030**	0.073	**0.002**	0.053			**-0.202**	0.064
VNIIFTRI	**0.204**	0.052	**0.207**	0.095	**0.232**	0.081	**0.204**	0.064	**0.202**	0.064		

FREQUENCY : 18 GHz **Lab *j*** ⇨

Lab *i* ⇩

	D_i / dB	U_i / dB	LNE		NPL		PTB		NIST	
			D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB
LNE	**0.004**	0.061			**-0.026**	0.089	**0.036**	0.089	**0.007**	0.088
NPL	**0.030**	0.039	**0.026**	0.089			**0.062**	0.059	**0.033**	0.058
PTB	**-0.032**	0.039	**-0.036**	0.089	**-0.062**	0.059			**-0.029**	0.058
NIST	**-0.003**	0.038	**-0.007**	0.088	**-0.033**	0.058	**0.029**	0.058		

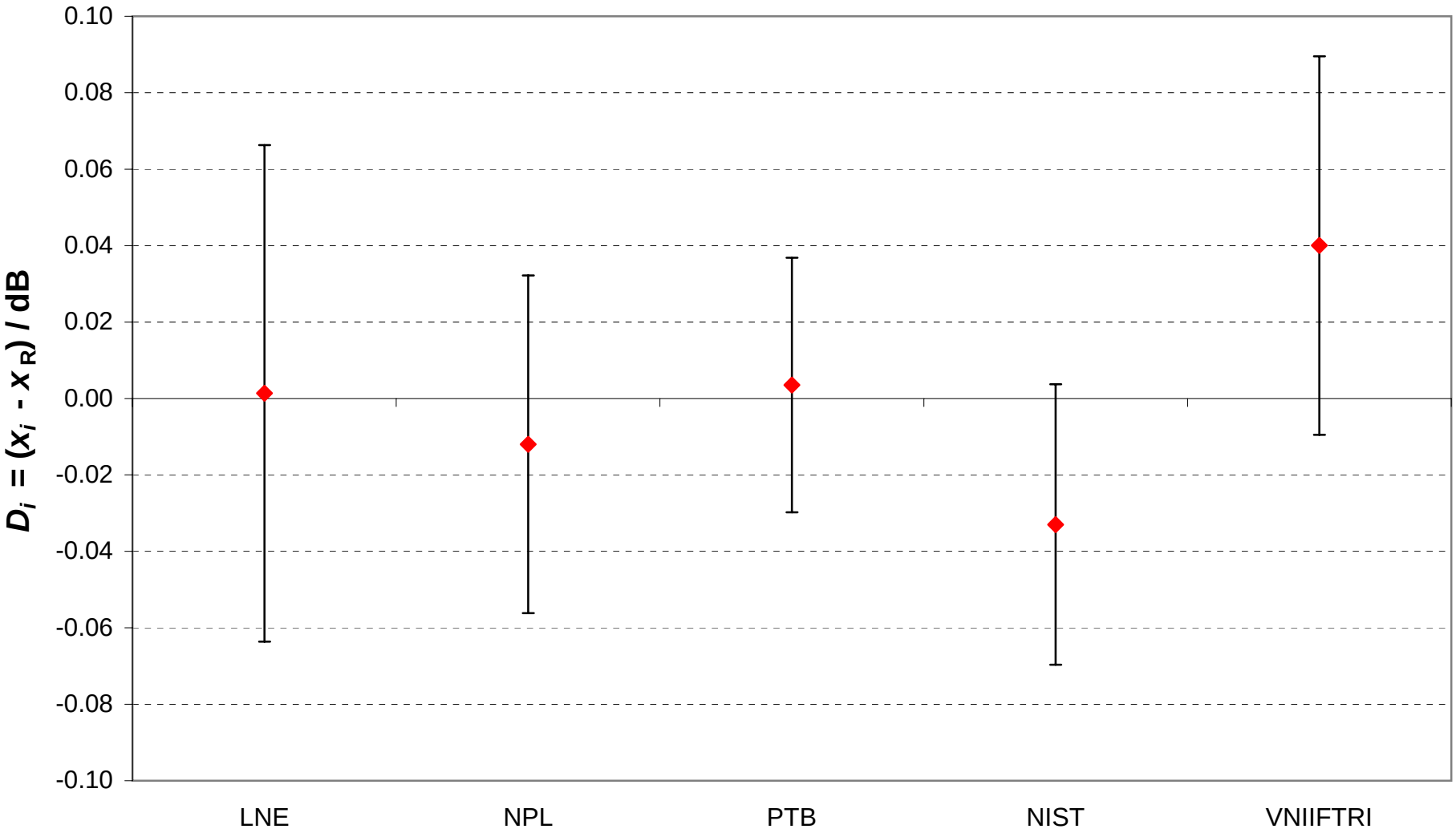


Note that the terms D_i are computed with the opposite sign in the Final Report.

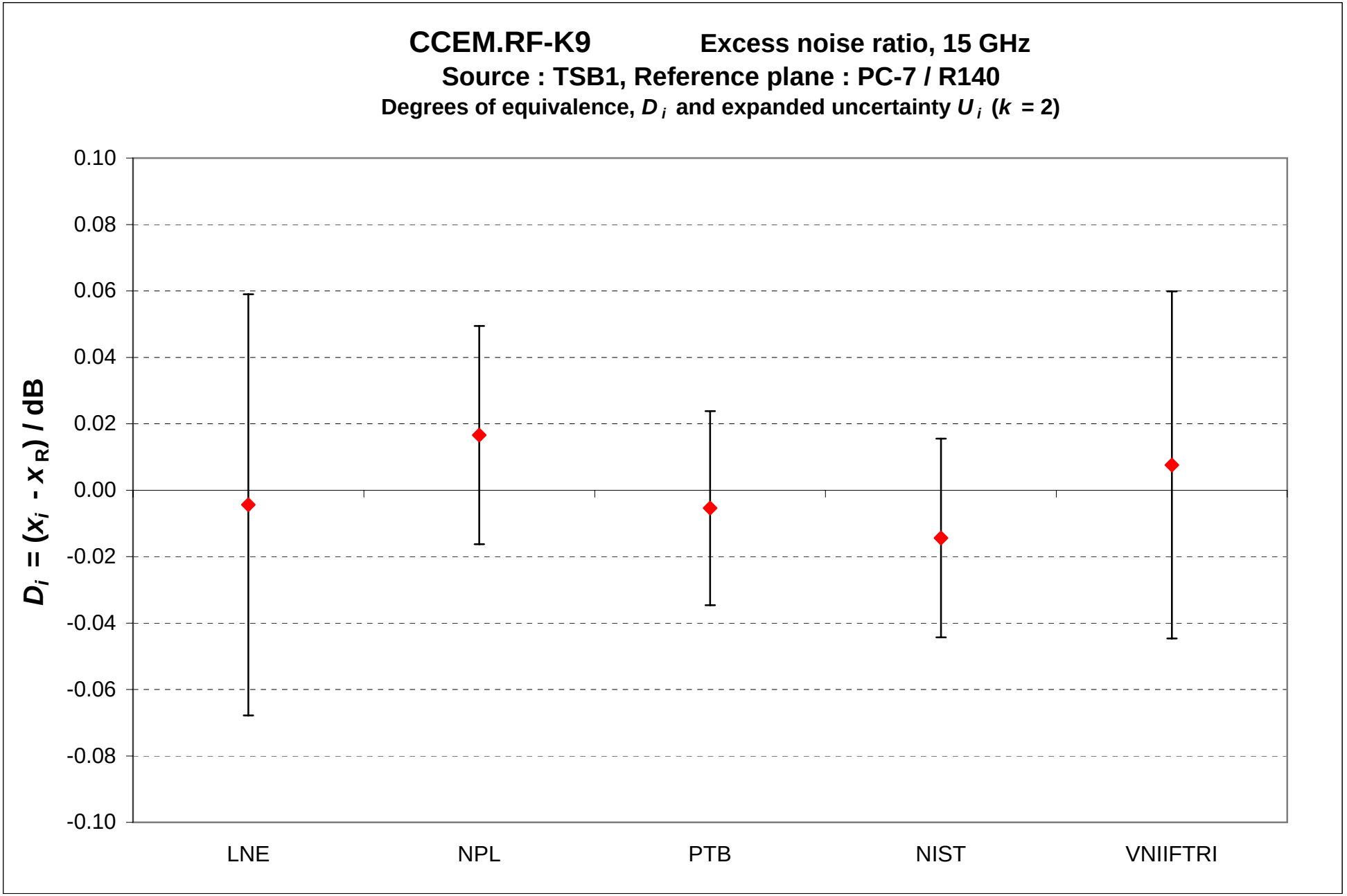
CCEM.RF-K9 Excess noise ratio, 13.5 GHz

Source : TSB1, Reference plane : PC-7 / R140

Degrees of equivalence, D_i and expanded uncertainty U_i (k = 2)



Note that the terms D_i are computed with the opposite sign in the Final Report.

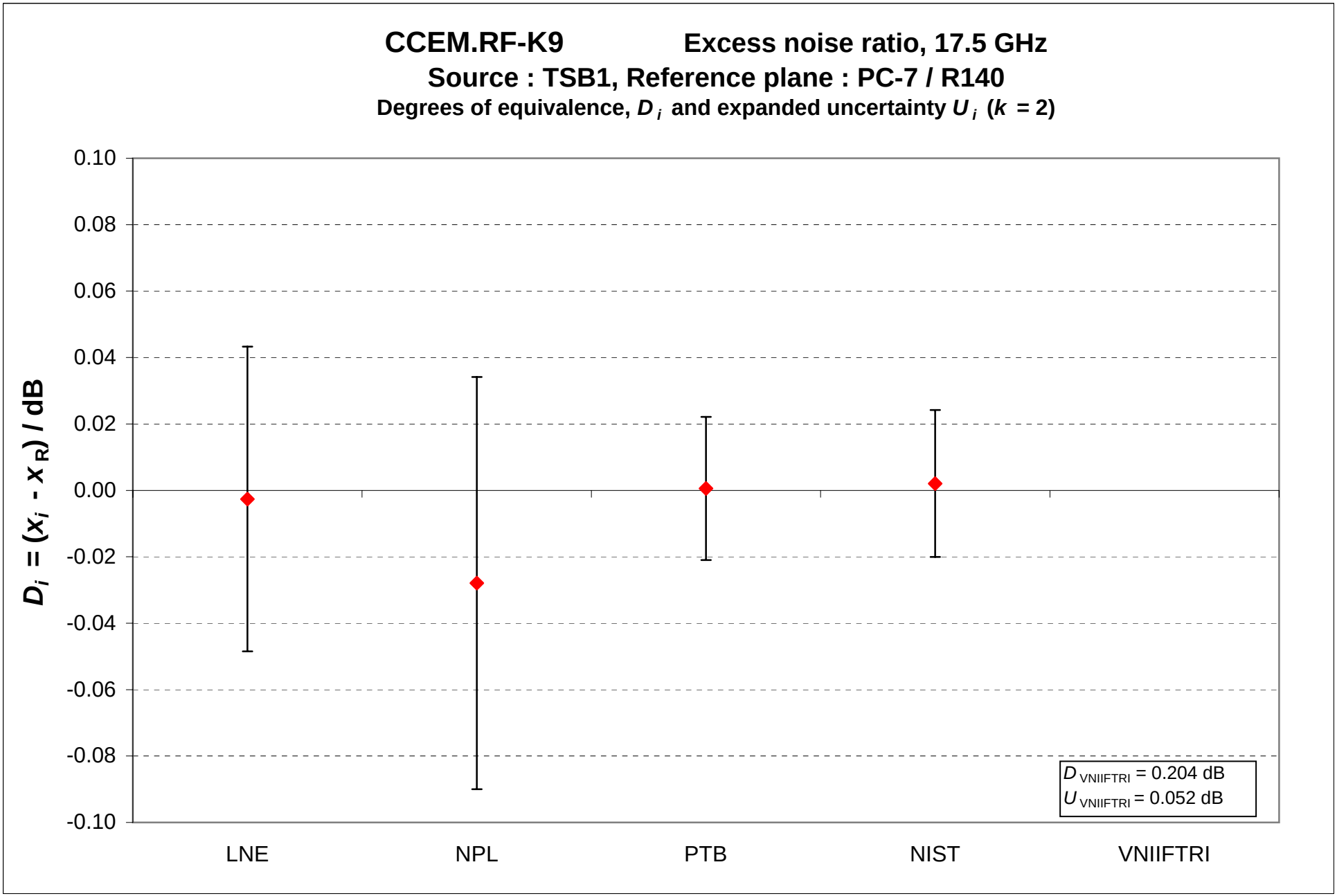


Note that the terms D_i are computed with the opposite sign in the Final Report.

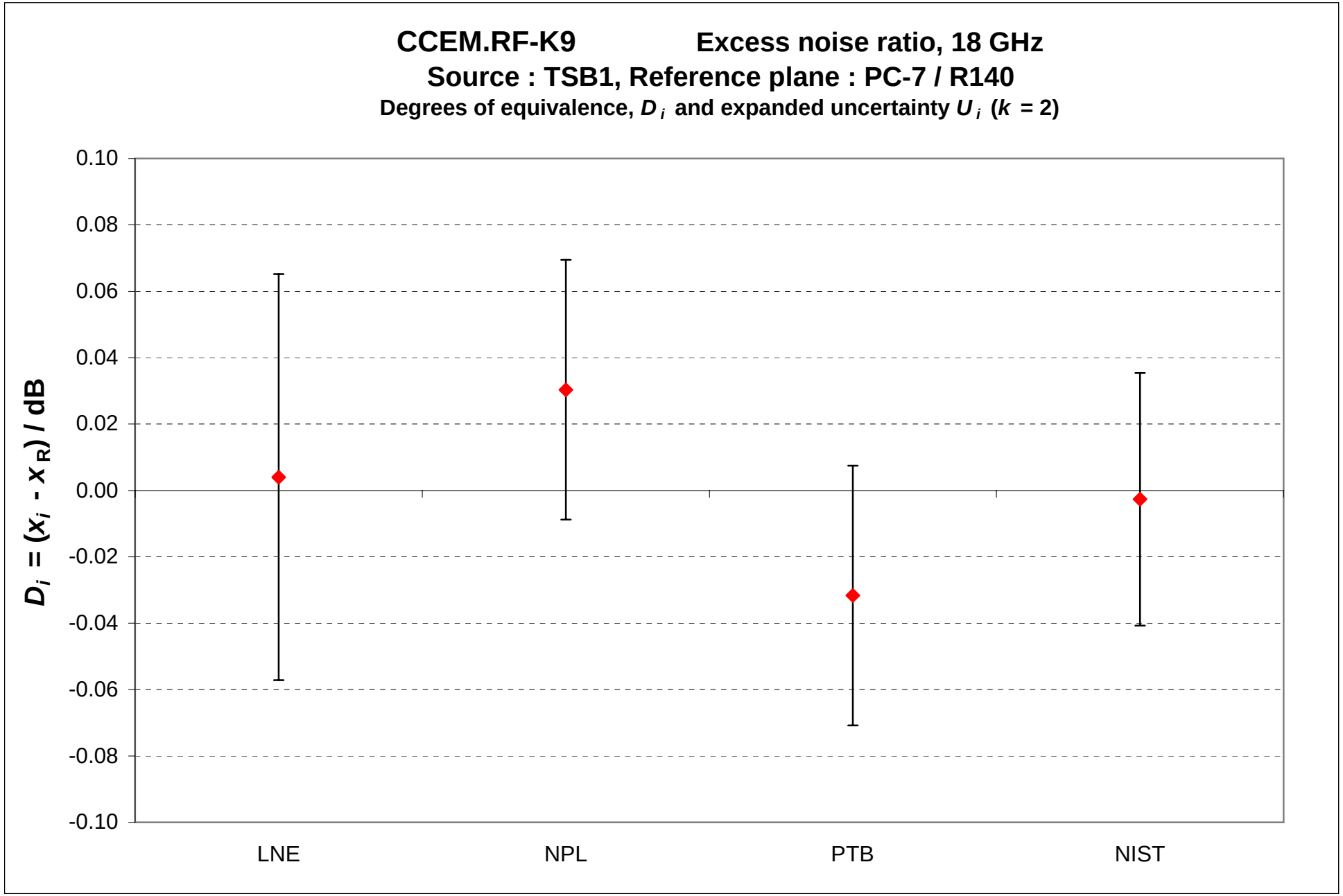
CCEM.RF-K9 Excess noise ratio, 17.5 GHz

Source : TSB1, Reference plane : PC-7 / R140

Degrees of equivalence, D_i and expanded uncertainty U_i (k = 2)



Note that the terms D_i are computed with the opposite sign in the Final Report.



Note that the terms D_i are computed with the opposite sign in the Final Report.

Key comparison CCEM.RF-K9

MEASURAND : Excess noise ratio
NOISE SOURCE : TSB1
REFERENCE PLANE : PC-7

x_i : averaged Excess noise ratio measured by laboratory *i*
u_i : averaged standard uncertainty of x_i

Lab *i*	x_i / dB	u_i / dB	x_i / dB	u_i / dB	x_i / dB	u_i / dB	x_i / dB	u_i / dB	x_i / dB	u_i / dB	Date of measurement
	Frequency 12.4 GHz		Frequency 13.5 GHz		Frequency 15 GHz		Frequency 17.5 GHz		Frequency 18 GHz		
LNE	15.877	0.044	15.929	0.043	15.956	0.045	15.836	0.045	15.741	0.045	Sep 97, Jan 99, Dec 00
NPL	15.856	0.049	15.896	0.037	15.957	0.034	15.809	0.045	15.766	0.040	May 98
PTB	15.871	0.014	15.928	0.016	15.961	0.018	15.847	0.019	15.689	0.021	Jun 97, Apr 99
NIST	15.842	0.023	15.881	0.024	15.950	0.024	15.833	0.025	15.717	0.025	Apr 00
VNIIFTRI	15.954	0.035	15.970	0.028	15.982	0.033	16.055	0.027	-	-	Sep - Oct 00

Key comparison CCEM.RF-K9

MEASURAND : Excess noise ratio
NOISE SOURCE : TSB1
REFERENCE PLANE : PC-7

At each frequency, the key comparison reference value, x_R, is calculated as the unweighted mean of the participants results with exclusion of outliers. Its standard uncertainty u_R is computed as given in page 112 of the Final Report.

Frequency 12.4 GHz		Frequency 13.5 GHz		Frequency 15 GHz		Frequency 17.5 GHz		Frequency 18 GHz	
x_R / dB	u_R / dB	x_R / dB	u_R / dB	x_R / dB	u_R / dB	x_R / dB	u_R / dB	x_R / dB	u_R / dB
15.862	0.008	15.921	0.015	15.956	0.002	15.831	0.008	15.728	0.016

The degree of equivalence of laboratory i with respect to the key comparison reference value is given by a pair of terms terms, both expressed in dB: $D_i = (x_i - x_R)$ and its expanded uncertainty U_i ($k = 2$). The equations for the computation of U_i are given in page 112 of the Final Report.

The degree of equivalence between two laboratories i and j is given by a pair of terms, both expressed in dB : $D_{ij} = (D_i - D_j)$ and its expanded uncertainty U_{ij} ($k = 2$) with $U_{ij} = 2(u_i^2 + u_j^2)^{1/2}$.

Note that the terms D_i and D_{ij} are computed with the opposite sign in the Final Report.

Key comparison CCEM.RF-K9

MEASURAND : Excess noise ratio **NOISE SOURCE : TSB1** **REFERENCE PLANE : PC-7**

FREQUENCY : 12.4 GHz **Lab *j*** ⇨

Lab *i* ⇩

	D_i / dB	U_i / dB	LNE		NPL		PTB		NIST		VNIIFTRI	
			D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB
LNE	**0.016**	0.064			**0.021**	0.131	**0.006**	0.092	**0.035**	0.099	**-0.077**	0.112
NPL	**-0.005**	0.071	**-0.021**	0.131			**-0.015**	0.102	**0.014**	0.108	**-0.098**	0.120
PTB	**0.010**	0.025	**-0.006**	0.092	**0.015**	0.102			**0.029**	0.054	**-0.083**	0.075
NIST	**-0.019**	0.036	**-0.035**	0.099	**-0.014**	0.108	**-0.029**	0.054			**-0.112**	0.084
VNIIFTRI	**0.093**	0.072	**0.077**	0.112	**0.098**	0.120	**0.083**	0.075	**0.112**	0.084		

FREQUENCY : 13.5 GHz **Lab *j*** ⇨

Lab *i* ⇩

	D_i / dB	U_i / dB	LNE		NPL		PTB		NIST		VNIIFTRI	
			D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB
LNE	**0.008**	0.073			**0.033**	0.113	**0.001**	0.091	**0.048**	0.098	**-0.041**	0.103
NPL	**-0.025**	0.065	**-0.033**	0.113			**-0.032**	0.080	**0.015**	0.088	**-0.074**	0.093
PTB	**0.007**	0.039	**-0.001**	0.091	**0.032**	0.080			**0.047**	0.057	**-0.042**	0.064
NIST	**-0.040**	0.048	**-0.048**	0.098	**-0.015**	0.088	**-0.047**	0.057			**-0.089**	0.074
VNIIFTRI	**0.049**	0.053	**0.041**	0.103	**0.074**	0.093	**0.042**	0.064	**0.089**	0.074		

FREQUENCY : 15 GHz **Lab *j*** ⇨

Lab *i* ⇩

	D_i / dB	U_i / dB	LNE		NPL		PTB		NIST		VNIIFTRI	
			D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB
LNE	**0.000**	0.063			**-0.001**	0.112	**-0.004**	0.096	**0.006**	0.101	**-0.026**	0.111
NPL	**0.001**	0.048	**0.001**	0.112			**-0.003**	0.076	**0.007**	0.083	**-0.025**	0.095
PTB	**0.005**	0.025	**0.004**	0.096	**0.003**	0.076			**0.011**	0.059	**-0.021**	0.075
NIST	**-0.006**	0.034	**-0.006**	0.101	**-0.007**	0.083	**-0.011**	0.059			**-0.032**	0.082
VNIIFTRI	**0.026**	0.066	**0.026**	0.111	**0.025**	0.095	**0.021**	0.075	**0.032**	0.082		

Key comparison CCEM.RF-K9

MEASURAND : Excess noise ratio **NOISE SOURCE : TSB1** **REFERENCE PLANE : PC-7**

FREQUENCY : 17.5 GHz **Lab *j*** ⇨

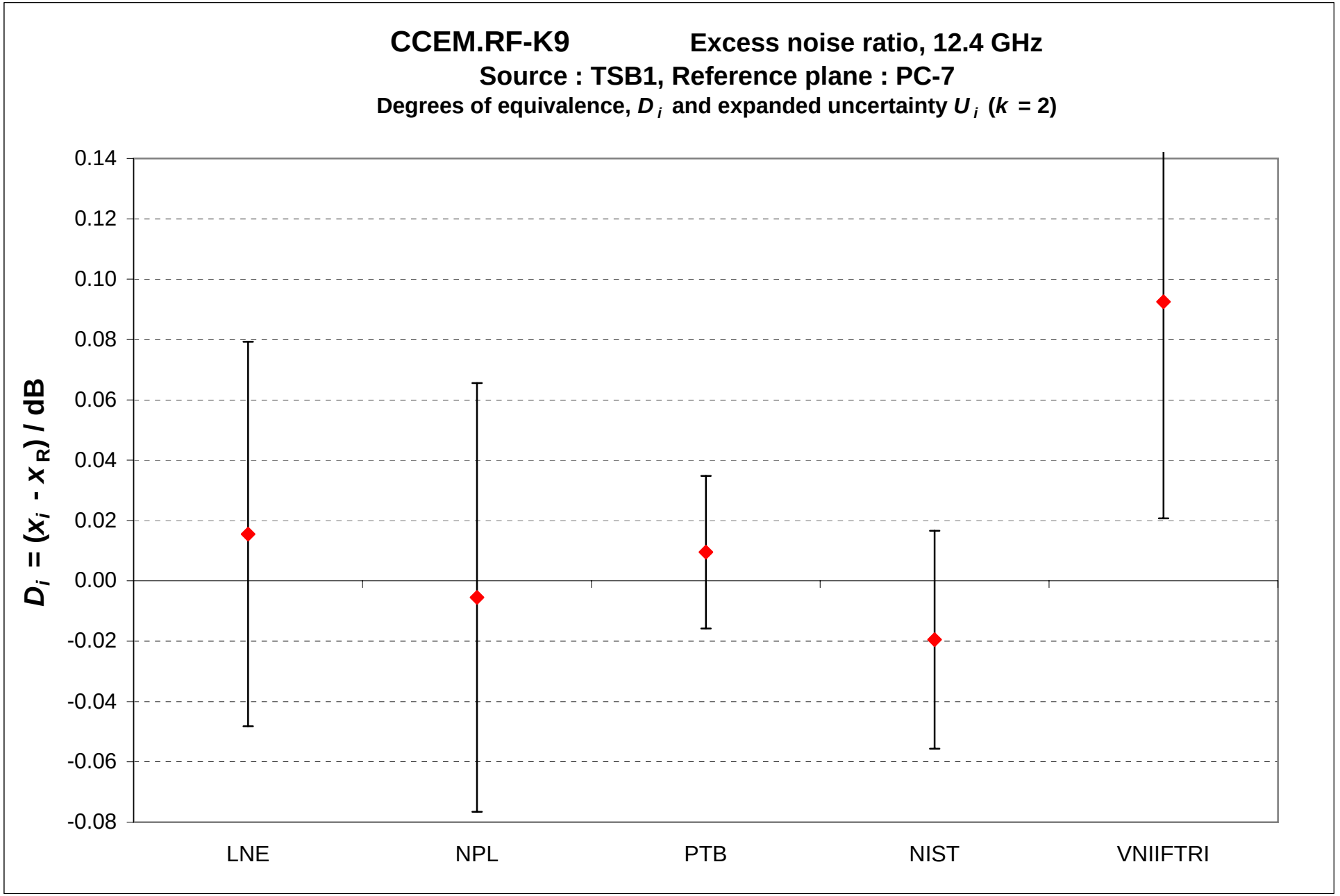
Lab *i* ⇩

	D_i / dB	U_i / dB	LNE		NPL		PTB		NIST		VNIIFTRI	
			D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB
LNE	**0.005**	0.066			**0.027**	0.127	**-0.011**	0.097	**0.003**	0.103	**-0.219**	0.105
NPL	**-0.022**	0.066	**-0.027**	0.127			**-0.037**	0.097	**-0.024**	0.103	**-0.246**	0.105
PTB	**0.015**	0.031	**0.011**	0.097	**0.037**	0.097			**0.013**	0.062	**-0.209**	0.065
NIST	**0.002**	0.039	**-0.003**	0.103	**0.024**	0.103	**-0.013**	0.062			**-0.222**	0.074
VNIIFTRI	**0.224**	0.056	**0.219**	0.105	**0.246**	0.105	**0.209**	0.065	**0.222**	0.074		

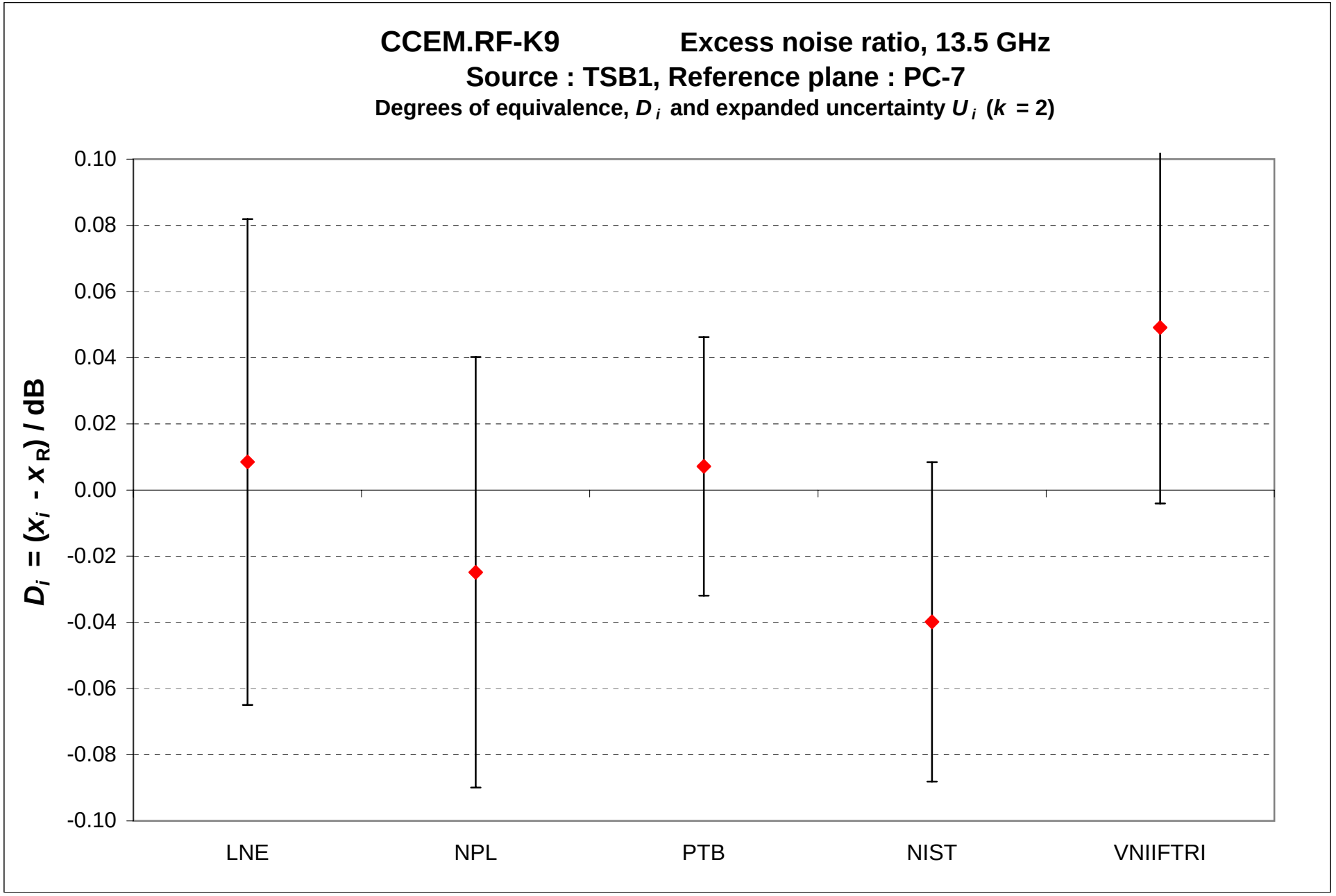
FREQUENCY : 18 GHz **Lab *j*** ⇨

Lab *i* ⇩

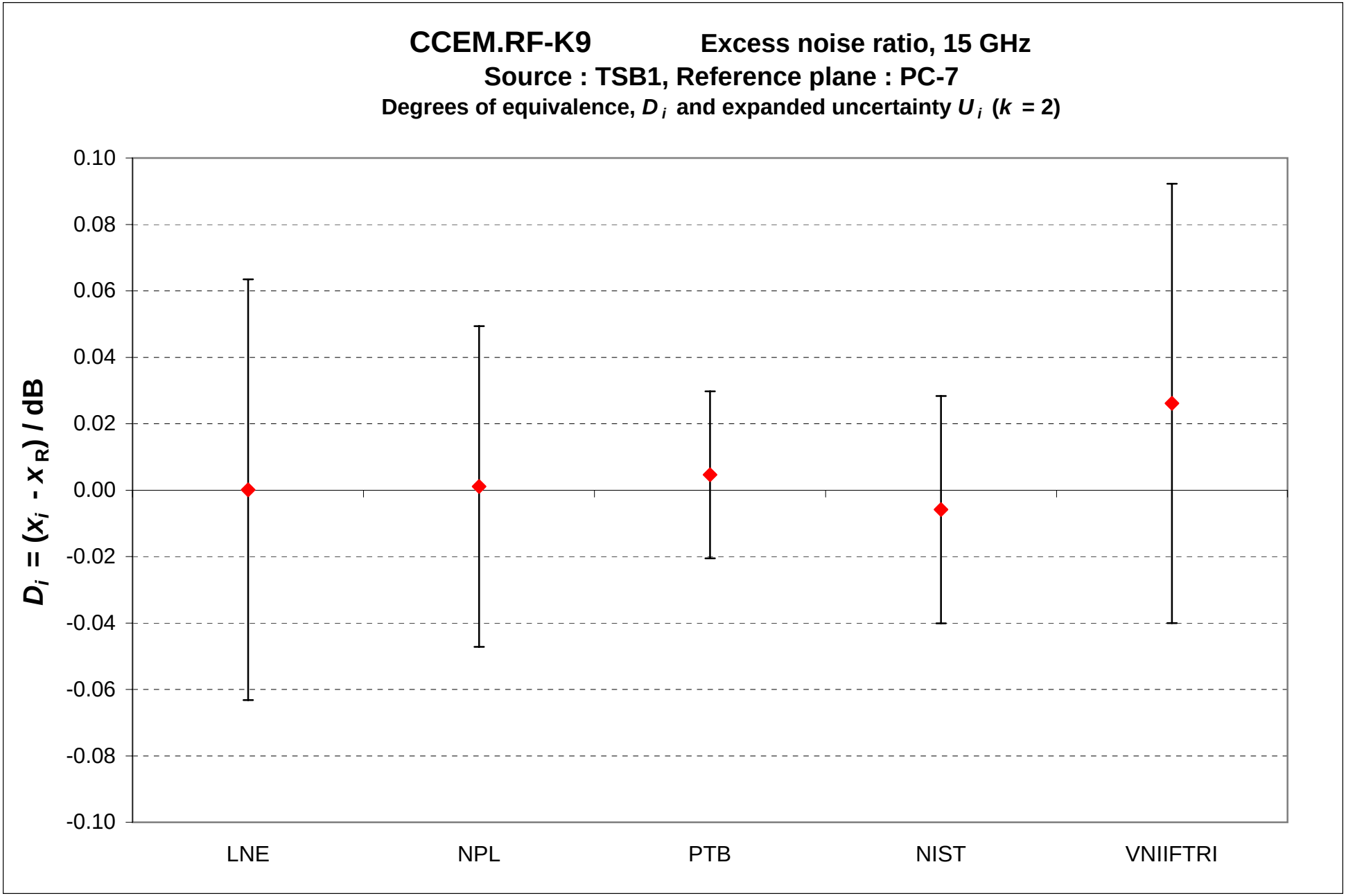
	D_i / dB	U_i / dB	LNE		NPL		PTB		NIST	
			D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB
LNE	**0.013**	0.071			**-0.025**	0.120	**0.052**	0.099	**0.024**	0.102
NPL	**0.038**	0.065	**0.025**	0.120			**0.077**	0.090	**0.049**	0.094
PTB	**-0.039**	0.044	**-0.052**	0.099	**-0.077**	0.090			**-0.028**	0.065
NIST	**-0.011**	0.048	**-0.024**	0.102	**-0.049**	0.094	**0.028**	0.065		



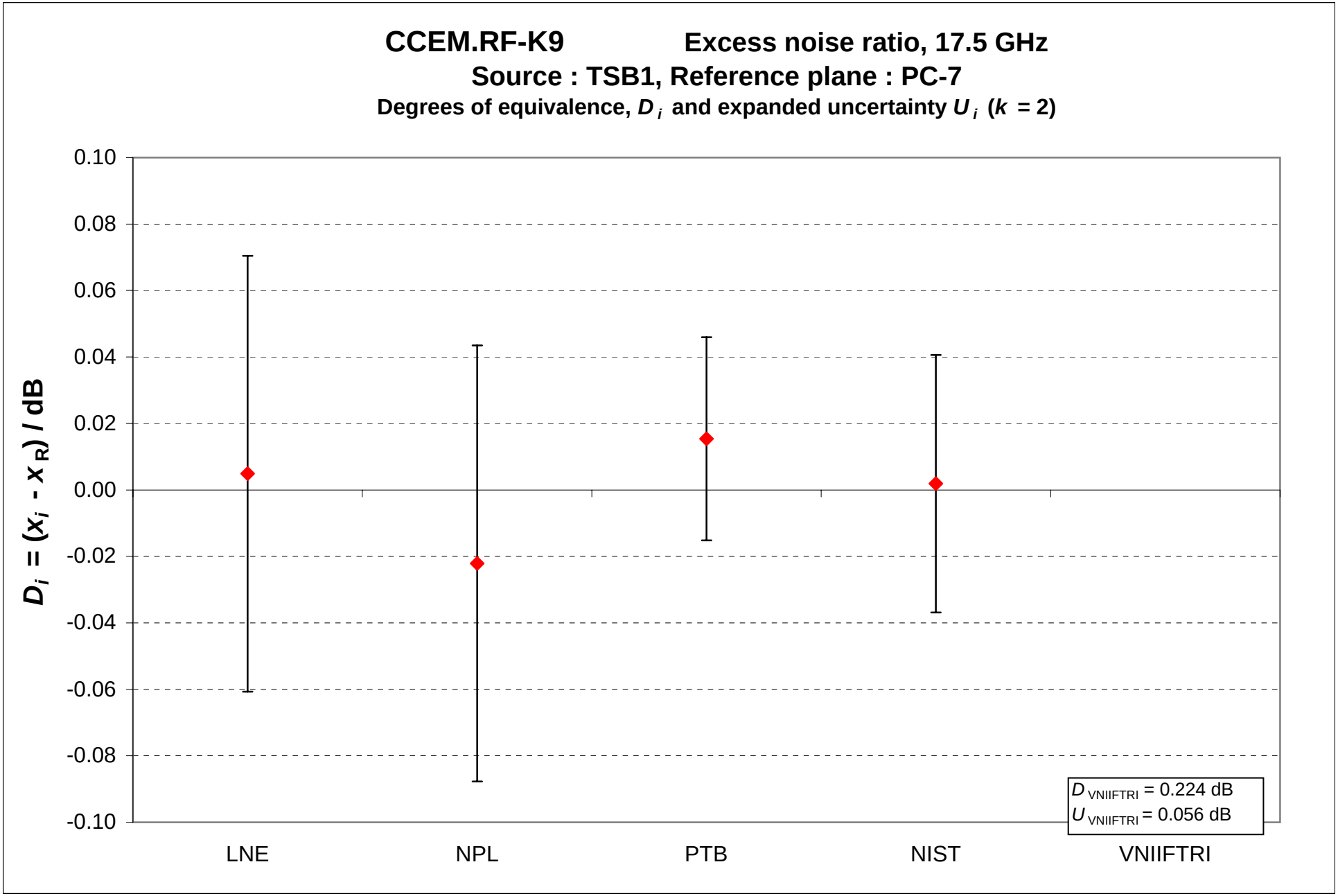
Note that the terms D_i are computed with the opposite sign in the Final Report.



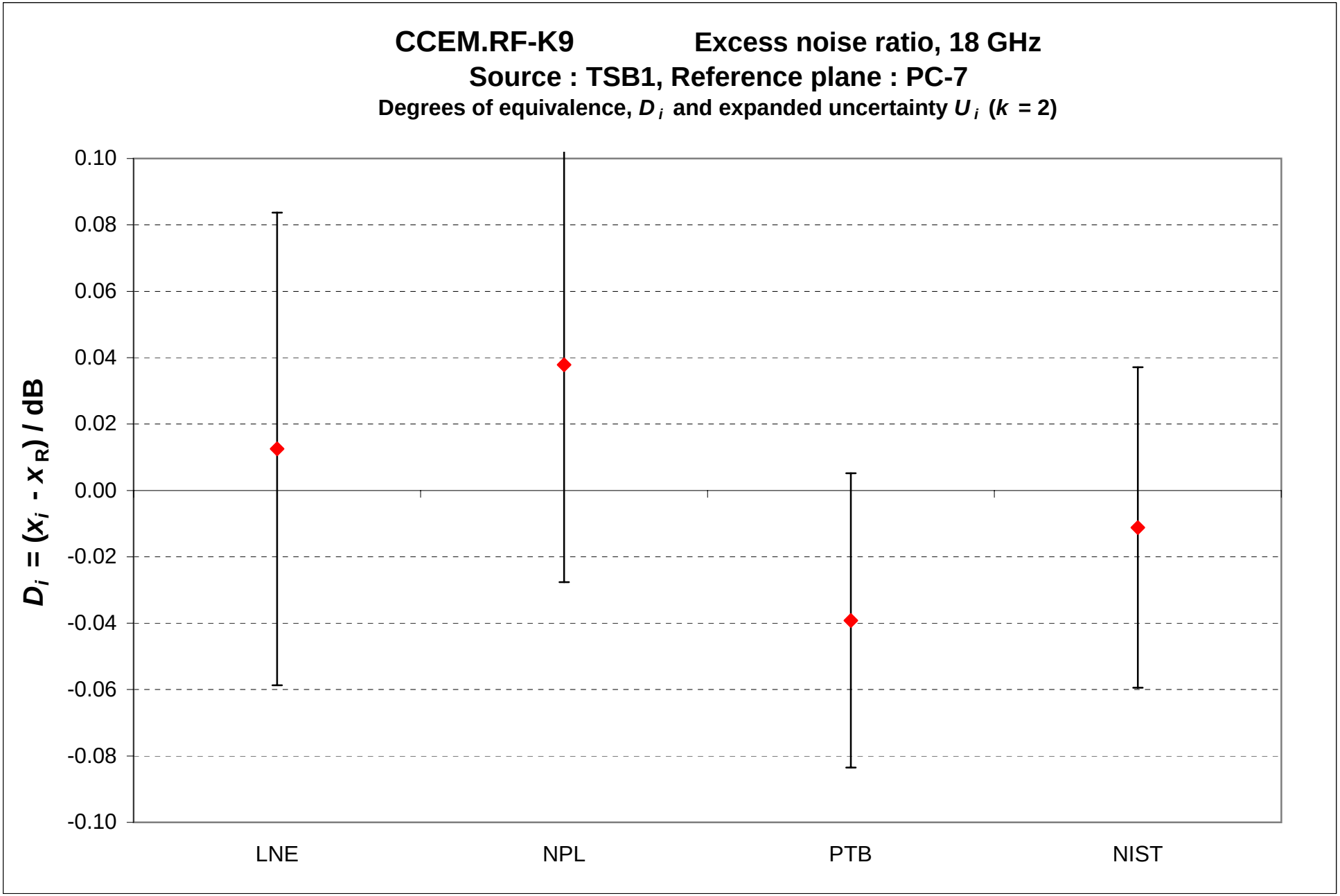
Note that the terms D_i are computed with the opposite sign in the Final Report.



Note that the terms D_i are computed with the opposite sign in the Final Report.



Note that the terms D_i are computed with the opposite sign in the Final Report.



Note that the terms D_i are computed with the opposite sign in the Final Report.

Key comparison CCEM.RF-K9

MEASURAND : Excess noise ratio
NOISE SOURCE : TSA2
REFERENCE PLANE : R140

x_i : averaged Excess noise ratio measured by laboratory *i*
u_i : averaged standard uncertainty of x_i

Lab *i*	x_i / dB	u_i / dB	x_i / dB	u_i / dB	x_i / dB	u_i / dB	x_i / dB	u_i / dB	x_i / dB	u_i / dB	Date of measurement
	Frequency 12.4 GHz		Frequency 13.5 GHz		Frequency 15 GHz		Frequency 17.5 GHz		Frequency 18 GHz		
LNE	15.761	0.038	15.803	0.038	15.761	0.040	15.770	0.039	15.761	0.039	Sep 97, Jan 99, Dec 00
NPL	15.758	0.022	15.755	0.024	15.766	0.022	15.766	0.031	15.770	0.031	Apr 97, Mar - Apr 99
PTB	15.780	0.012	15.793	0.015	15.776	0.016	15.761	0.017	15.730	0.020	Feb 98
NIST	15.758	0.018	15.756	0.018	15.751	0.018	15.753	0.020	15.749	0.020	Apr 00
VNIIFTRI	15.888	0.030	15.816	0.026	15.795	0.028	15.922	0.024	-	-	Sep - Oct 00

Key comparison CCEM.RF-K9

MEASURAND : Excess noise ratio
NOISE SOURCE : TSA2
REFERENCE PLANE : R140

At each frequency, the key comparison reference value, x_R, is calculated as the unweighted mean of the participants results with exclusion of outliers. Its standard uncertainty u_R is computed as given in page 112 of the Final Report.

Frequency 12.4 GHz		Frequency 13.5 GHz		Frequency 15 GHz		Frequency 17.5 GHz		Frequency 18 GHz	
x_R / dB	u_R / dB	x_R / dB	u_R / dB	x_R / dB	u_R / dB	x_R / dB	u_R / dB	x_R / dB	u_R / dB
15.759	0.001	15.785	0.012	15.770	0.007	15.762	0.004	15.753	0.009

The degree of equivalence of laboratory i with respect to the key comparison reference value is given by a pair of terms terms, both expressed in dB: $D_i = (x_i - x_R)$ and its expanded uncertainty U_i ($k = 2$). The equations for the computation of U_i are given in page 112 of the Final Report.

The degree of equivalence between two laboratories i and j is given by a pair of terms, both expressed in dB : $D_{ij} = (D_i - D_j)$ and its expanded uncertainty U_{ij} ($k = 2$) with $U_{ij} = 2(u_i^2 + u_j^2)^{1/2}$.

Note that the terms D_i and D_{ij} are computed with the opposite sign in the Final Report.

Key comparison CCEM.RF-K9

MEASURAND : Excess noise ratio **NOISE SOURCE : TSA2** **REFERENCE PLANE : R140**

FREQUENCY : 12.4 GHz **Lab *j* ⇨**

Lab *i* ⇩	D_i / dB	U_i / dB	LNE		NPL		PTB		NIST		VNIIFTRI	
			D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB
LNE	**0.002**	0.044			**0.003**	0.088	**-0.019**	0.080	**0.003**	0.084	**-0.127**	0.097
NPL	**-0.001**	0.025	**-0.003**	0.088			**-0.022**	0.050	**0.000**	0.057	**-0.131**	0.074
PTB	**0.021**	0.024	**0.019**	0.080	**0.022**	0.050			**0.022**	0.043	**-0.108**	0.065
NIST	**-0.001**	0.021	**-0.003**	0.084	**0.000**	0.057	**-0.022**	0.043			**-0.130**	0.070
VNIIFTRI	**0.129**	0.060	**0.127**	0.097	**0.131**	0.074	**0.108**	0.065	**0.130**	0.070		

FREQUENCY : 13.5 GHz **Lab *j* ⇨**

Lab *i* ⇩	D_i / dB	U_i / dB	LNE		NPL		PTB		NIST		VNIIFTRI	
			D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB
LNE	**0.018**	0.063			**0.048**	0.089	**0.010**	0.081	**0.047**	0.083	**-0.013**	0.092
NPL	**-0.030**	0.044	**-0.048**	0.089			**-0.038**	0.056	**-0.001**	0.059	**-0.061**	0.070
PTB	**0.008**	0.034	**-0.010**	0.081	**0.038**	0.056			**0.037**	0.047	**-0.023**	0.060
NIST	**-0.029**	0.037	**-0.047**	0.083	**0.001**	0.059	**-0.037**	0.047			**-0.060**	0.063
VNIIFTRI	**0.031**	0.047	**0.013**	0.092	**0.061**	0.070	**0.023**	0.060	**0.060**	0.063		

FREQUENCY : 15 GHz **Lab *j* ⇨**

Lab *i* ⇩	D_i / dB	U_i / dB	LNE		NPL		PTB		NIST		VNIIFTRI	
			D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB
LNE	**-0.009**	0.063			**-0.004**	0.090	**-0.015**	0.086	**0.010**	0.087	**-0.034**	0.097
NPL	**-0.004**	0.037	**0.004**	0.090			**-0.011**	0.054	**0.015**	0.056	**-0.030**	0.071
PTB	**0.006**	0.029	**0.015**	0.086	**0.011**	0.054			**0.025**	0.048	**-0.019**	0.064
NIST	**-0.019**	0.032	**-0.010**	0.087	**-0.015**	0.056	**-0.025**	0.048			**-0.044**	0.067
VNIIFTRI	**0.025**	0.046	**0.034**	0.097	**0.030**	0.071	**0.019**	0.064	**0.044**	0.067		

Key comparison CCEM.RF-K9

MEASURAND : Excess noise ratio **NOISE SOURCE : TSA2** **REFERENCE PLANE : R140**

FREQUENCY : 17.5 GHz **Lab *j*** ⇨

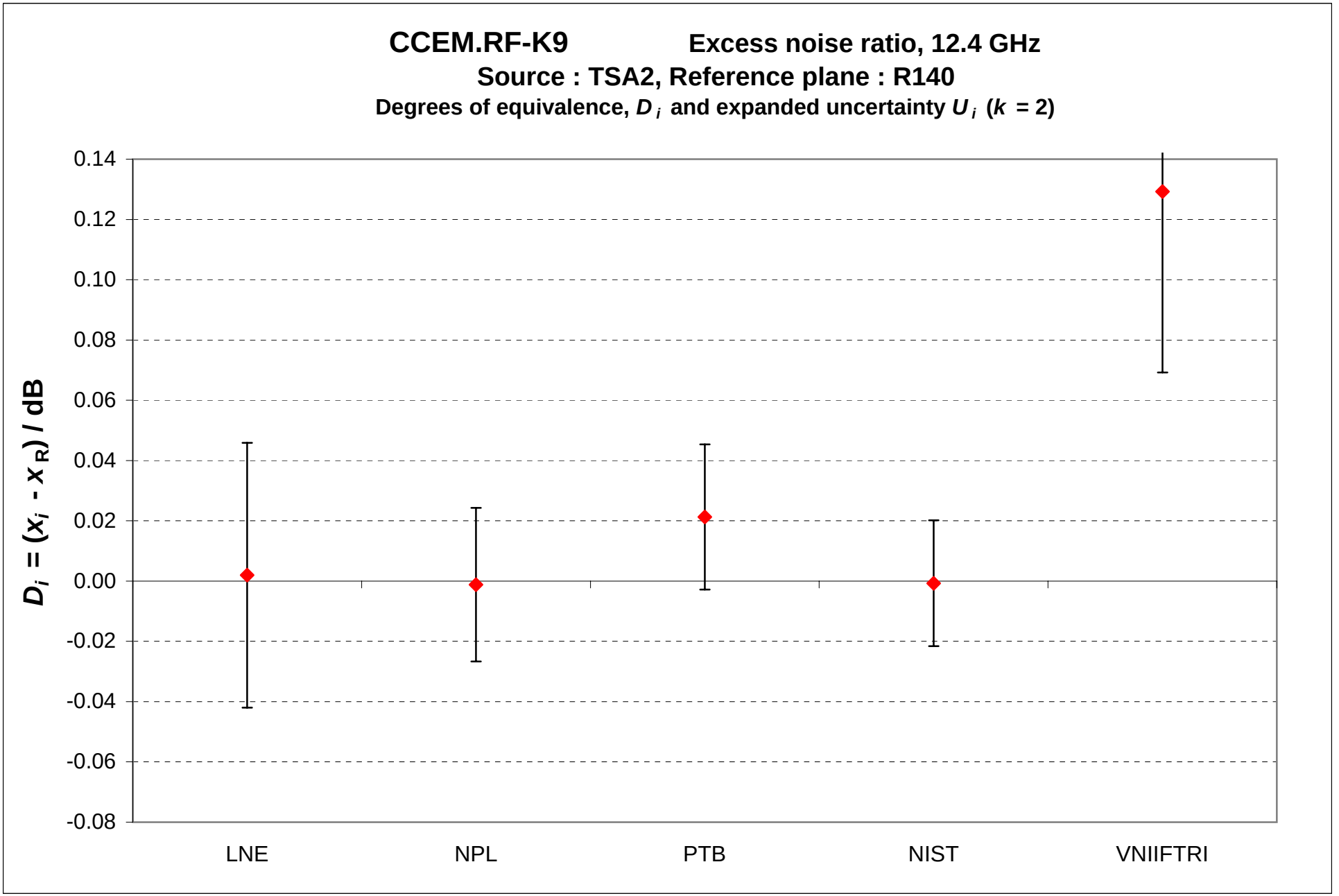
Lab *i* ⇩

	D_i / dB	U_i / dB	LNE		NPL		PTB		NIST		VNIIFTRI	
			D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB
LNE	**0.007**	0.056			**0.004**	0.100	**0.009**	0.085	**0.017**	0.088	**-0.152**	0.092
NPL	**0.004**	0.044	**-0.004**	0.100			**0.005**	0.071	**0.013**	0.074	**-0.156**	0.078
PTB	**-0.001**	0.025	**-0.009**	0.085	**-0.005**	0.071			**0.008**	0.052	**-0.161**	0.059
NIST	**-0.009**	0.029	**-0.017**	0.088	**-0.013**	0.074	**-0.008**	0.052			**-0.169**	0.062
VNIIFTRI	**0.160**	0.049	**0.152**	0.092	**0.156**	0.078	**0.161**	0.059	**0.169**	0.062		

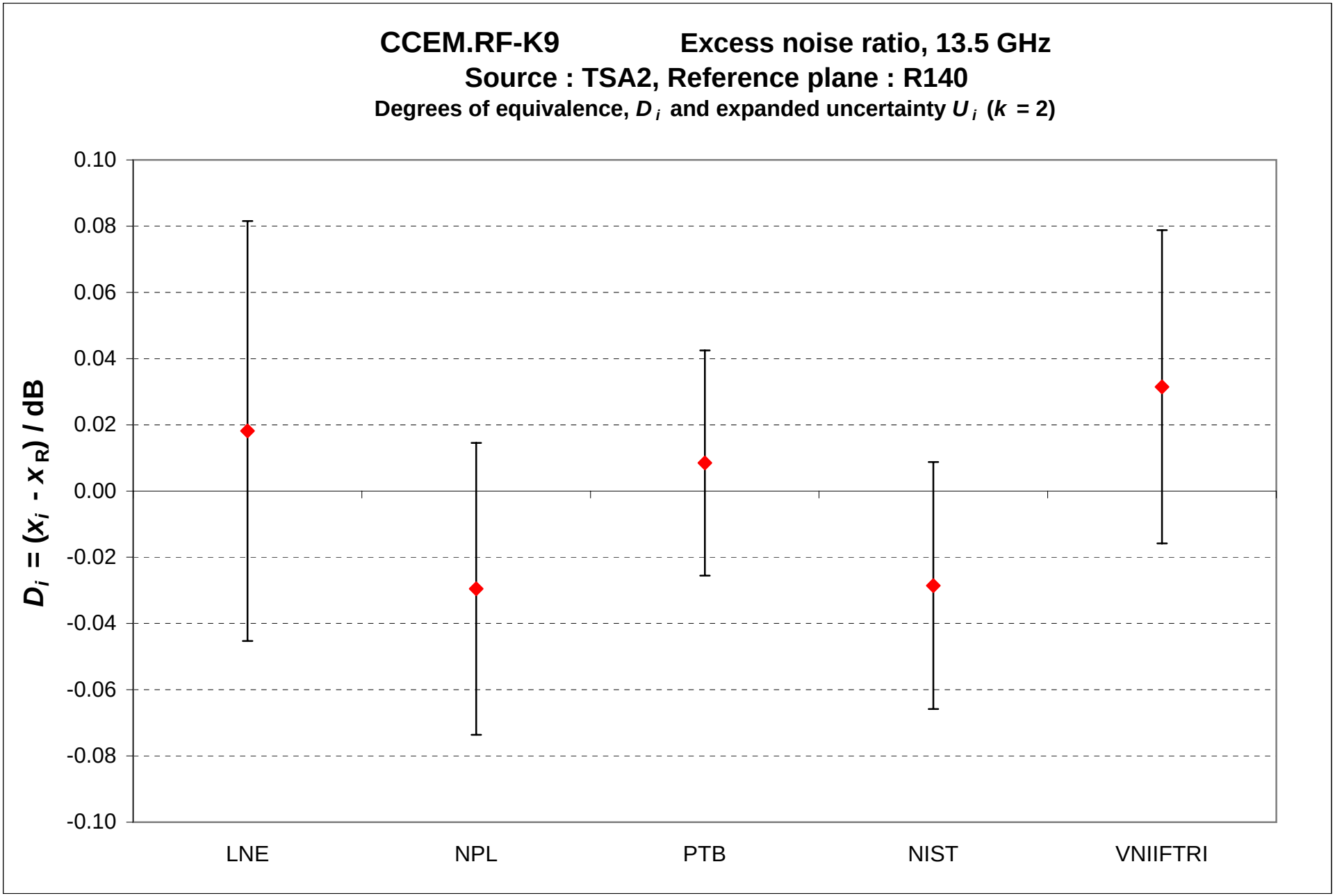
FREQUENCY : 18 GHz **Lab *j*** ⇨

Lab *i* ⇩

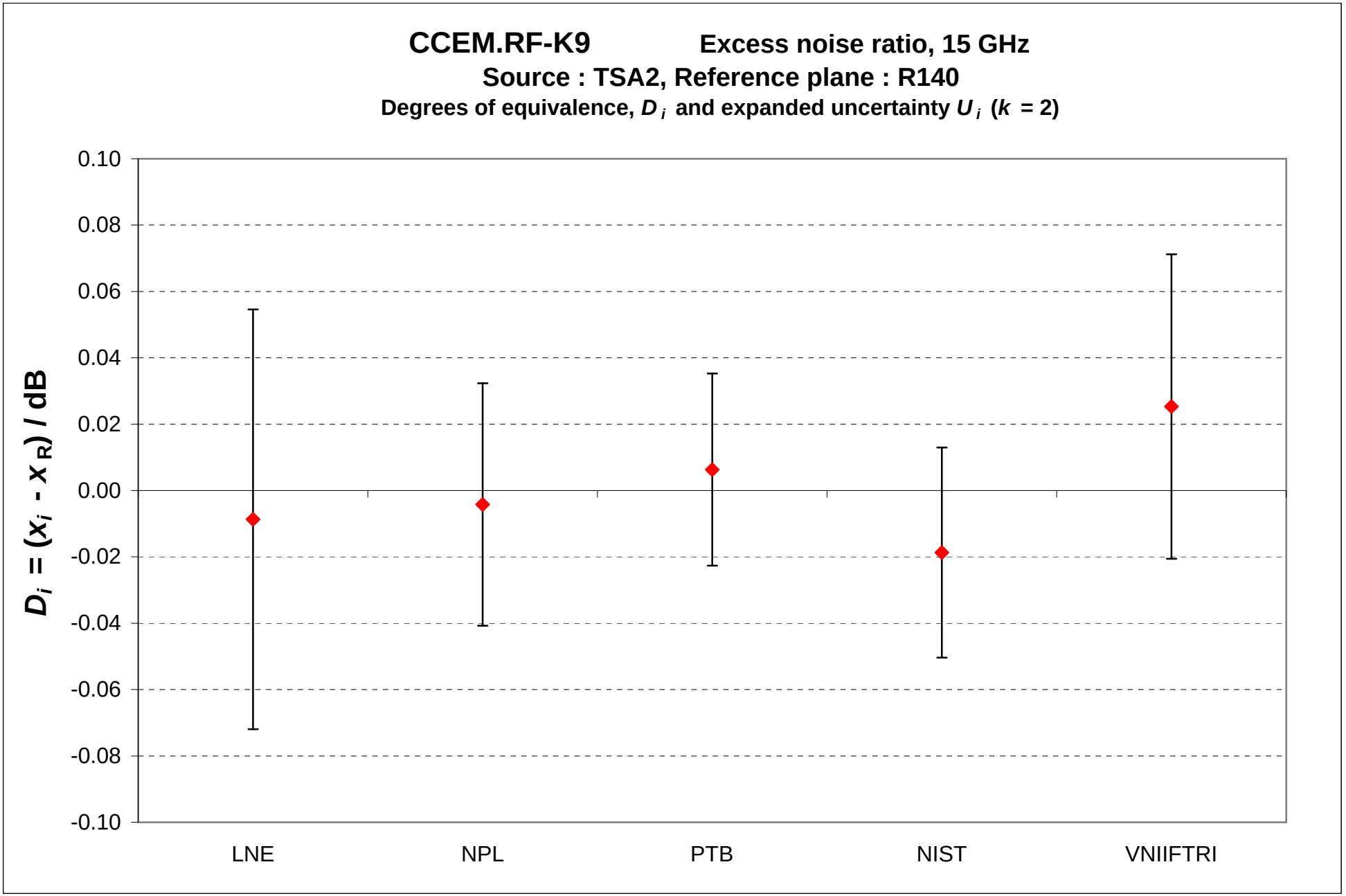
	D_i / dB	U_i / dB	LNE		NPL		PTB		NIST	
			D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB
LNE	**0.009**	0.058			**-0.009**	0.100	**0.031**	0.088	**0.012**	0.088
NPL	**0.018**	0.047	**0.009**	0.100			**0.040**	0.074	**0.021**	0.074
PTB	**-0.022**	0.033	**-0.031**	0.088	**-0.040**	0.074			**-0.019**	0.057
NIST	**-0.003**	0.033	**-0.012**	0.088	**-0.021**	0.074	**0.019**	0.057		



Note that the terms D_i are computed with the opposite sign in the Final Report.



Note that the terms D_i are computed with the opposite sign in the Final Report.

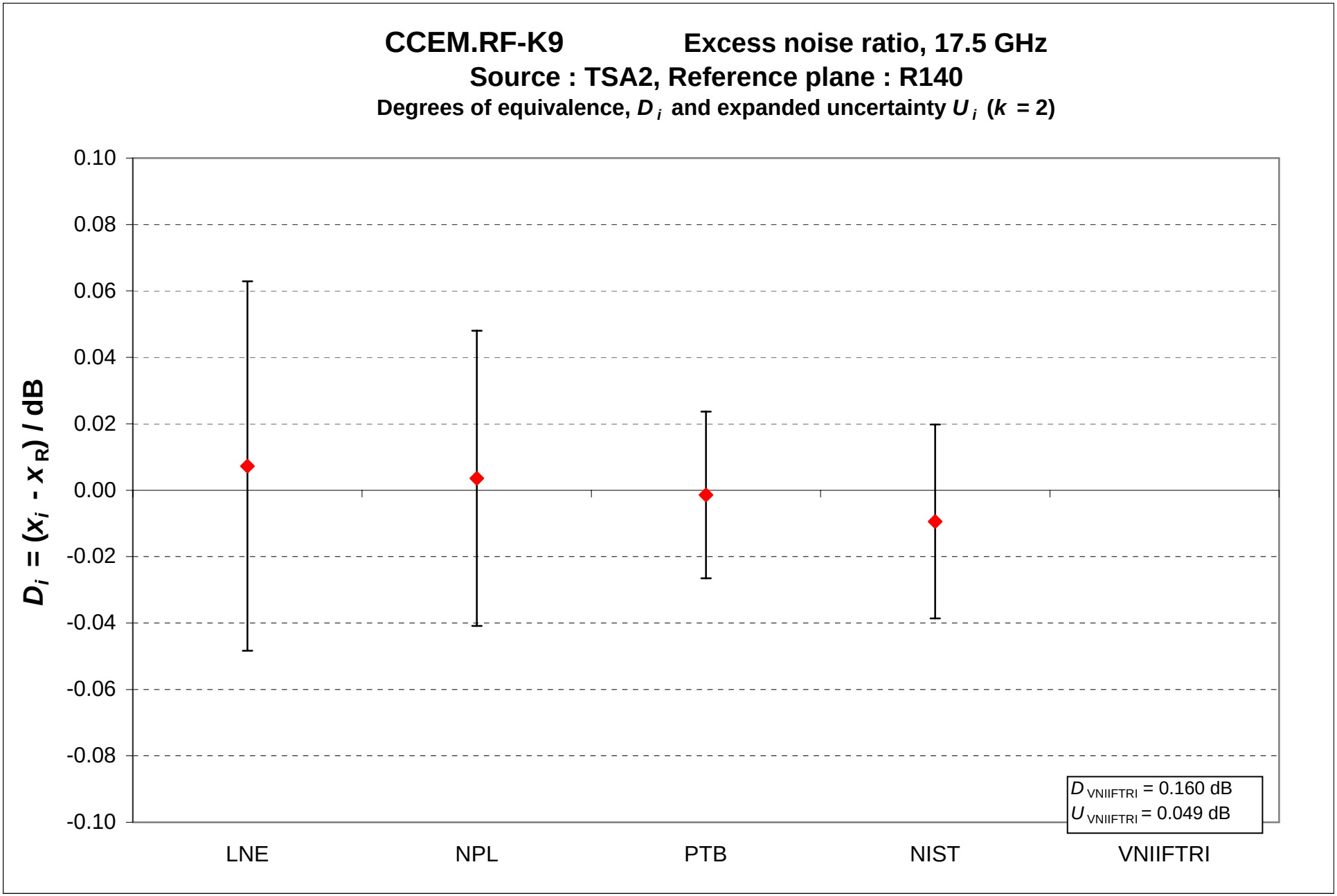


Note that the terms D_i are computed with the opposite sign in the Final Report.

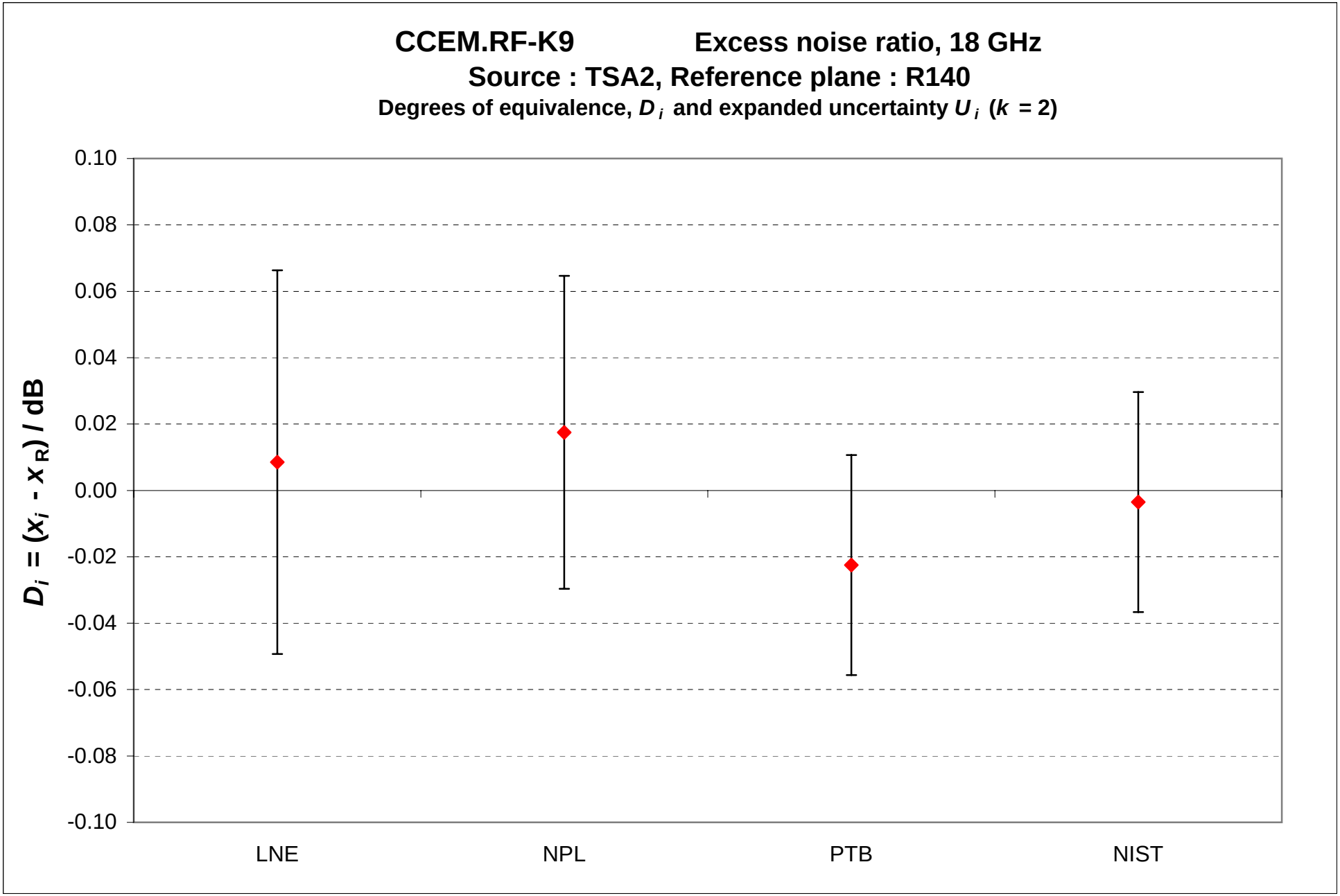
CCEM.RF-K9 Excess noise ratio, 17.5 GHz

Source : TSA2, Reference plane : R140

Degrees of equivalence, D_i and expanded uncertainty U_i (k = 2)



Note that the terms D_i are computed with the opposite sign in the Final Report.



Note that the terms D_i are computed with the opposite sign in the Final Report.

Key comparison CCEM.RF-K9

MEASURAND : Excess noise ratio
NOISE SOURCE : TSB2
REFERENCE PLANE : PC-7 / R140

x_i : averaged Excess noise ratio measured by laboratory *i*
u_i : averaged standard uncertainty of x_i

Lab *i*	x_i / dB	u_i / dB	x_i / dB	u_i / dB	x_i / dB	u_i / dB	x_i / dB	u_i / dB	x_i / dB	u_i / dB	Date of measurement
	Frequency 12.4 GHz		Frequency 13.5 GHz		Frequency 15 GHz		Frequency 17.5 GHz		Frequency 18 GHz		
LNE	4.843	0.043	4.779	0.042	4.717	0.044	4.876	0.043	4.873	0.043	Sep 97, Jan 99, Dec 00
NPL	4.852	0.023	4.751	0.024	4.710	0.023	4.880	0.032	4.877	0.033	Apr 97, Mar - Apr 99
PTB	4.844	0.020	4.768	0.015	4.720	0.018	4.883	0.020	4.751	0.040	Feb 98
NIST	4.841	0.018	4.731	0.018	4.665	0.018	4.836	0.019	4.831	0.021	Apr 00
VNIIFTRI	4.885	0.032	4.754	0.027	4.681	0.027	4.845	0.031	-	-	Sep - Oct 00

Key comparison CCEM.RF-K9

MEASURAND : Excess noise ratio
NOISE SOURCE : TSB2
REFERENCE PLANE : PC-7 / R140

At each frequency, the key comparison reference value, x_R, is calculated as the unweighted mean of the participants results with exclusion of outliers. Its standard uncertainty u_R is computed as given in page 112 of the Final Report.

Frequency 12.4 GHz		Frequency 13.5 GHz		Frequency 15 GHz		Frequency 17.5 GHz		Frequency 18 GHz	
x_R / dB	u_R / dB	x_R / dB	u_R / dB	x_R / dB	u_R / dB	x_R / dB	u_R / dB	x_R / dB	u_R / dB
4.845	0.002	4.757	0.008	4.707	0.009	4.880	0.002	4.860	0.015

The degree of equivalence of laboratory i with respect to the key comparison reference value is given by a pair of terms terms, both expressed in dB: $D_i = (x_i - x_R)$ and its expanded uncertainty U_i ($k = 2$). The equations for the computation of U_i are given in page 112 of the Final Report.

The degree of equivalence between two laboratories i and j is given by a pair of terms, both expressed in dB : $D_{ij} = (D_i - D_j)$ and its expanded uncertainty U_{ij} ($k = 2$) with $U_{ij} = 2(u_i^2 + u_j^2)^{1/2}$.

Note that the terms D_i and D_{ij} are computed with the opposite sign in the Final Report.

Key comparison CCEM.RF-K9

MEASURAND : Excess noise ratio **NOISE SOURCE : TSB2** **REFERENCE PLANE : PC-7 / R140**

FREQUENCY : 12.4 GHz Lab *j* ⇨

Lab *i* ⇩

	D_i / dB	U_i / dB	LNE		NPL		PTB		NIST		VNIIFTRI	
			D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB
LNE	-0.002	0.061			-0.008	0.096	-0.001	0.094	0.002	0.093	-0.042	0.107
NPL	0.007	0.032	0.008	0.096			0.007	0.060	0.010	0.058	-0.034	0.078
PTB	-0.001	0.029	0.001	0.094	-0.007	0.060			0.003	0.054	-0.041	0.075
NIST	-0.004	0.026	-0.002	0.093	-0.010	0.058	-0.003	0.054			-0.044	0.073
VNIIFTRI	0.040	0.064	0.042	0.107	0.034	0.078	0.041	0.075	0.044	0.073		

FREQUENCY : 13.5 GHz Lab *j* ⇨

Lab *i* ⇩

	D_i / dB	U_i / dB	LNE		NPL		PTB		NIST		VNIIFTRI	
			D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB
LNE	0.023	0.068			0.029	0.097	0.011	0.090	0.048	0.092	0.025	0.100
NPL	-0.006	0.041	-0.029	0.097			-0.018	0.057	0.019	0.060	-0.003	0.072
PTB	0.011	0.028	-0.011	0.090	0.018	0.057			0.037	0.047	0.014	0.062
NIST	-0.026	0.032	-0.048	0.092	-0.019	0.060	-0.037	0.047			-0.023	0.065
VNIIFTRI	-0.003	0.045	-0.025	0.100	0.003	0.072	-0.014	0.062	0.023	0.065		

FREQUENCY : 15 GHz Lab *j* ⇨

Lab *i* ⇩

	D_i / dB	U_i / dB	LNE		NPL		PTB		NIST		VNIIFTRI	
			D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB
LNE	0.010	0.064			0.007	0.098	-0.003	0.094	0.052	0.094	0.036	0.103
NPL	0.003	0.036	-0.007	0.098			-0.010	0.058	0.045	0.058	0.029	0.070
PTB	0.013	0.031	0.003	0.094	0.010	0.058			0.055	0.051	0.039	0.065
NIST	-0.042	0.040	-0.052	0.094	-0.045	0.058	-0.055	0.051			-0.016	0.065
VNIIFTRI	-0.026	0.042	-0.036	0.103	-0.029	0.070	-0.039	0.065	0.016	0.065		

Key comparison CCEM.RF-K9

MEASURAND : Excess noise ratio **NOISE SOURCE : TSB2** **REFERENCE PLANE : PC-7 / R140**

FREQUENCY : 17.5 GHz **Lab *j*** ⇨

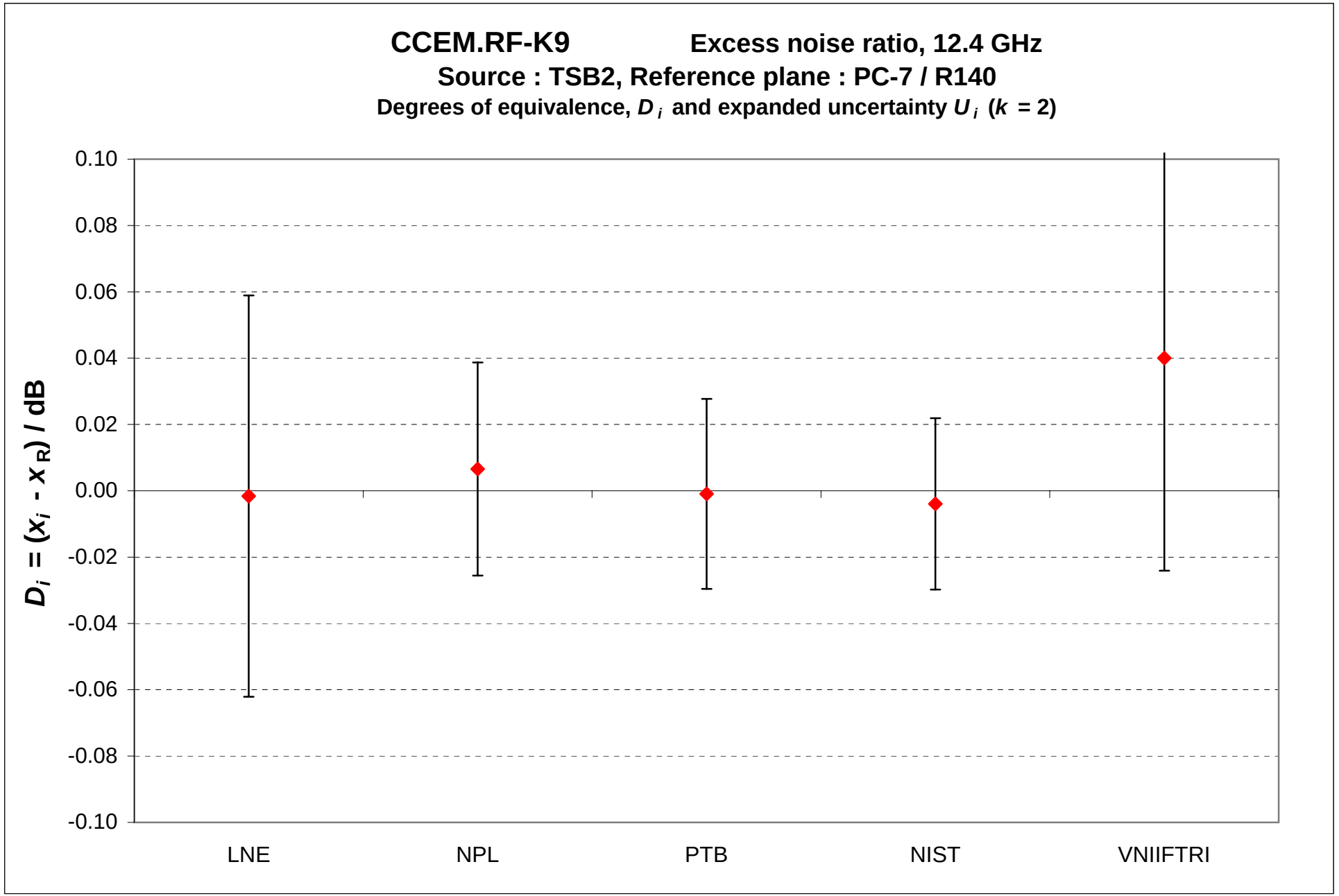
Lab *i* ⇩

	D_i / dB	U_i / dB	LNE		NPL		PTB		NIST		VNIIFTRI	
			D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB
LNE	**-0.003**	0.050			**-0.003**	0.107	**-0.007**	0.095	**0.040**	0.094	**0.031**	0.106
NPL	**0.000**	0.037	**0.003**	0.107			**-0.003**	0.075	**0.043**	0.074	**0.035**	0.089
PTB	**0.003**	0.023	**0.007**	0.095	**0.003**	0.075			**0.047**	0.055	**0.038**	0.074
NIST	**-0.043**	0.038	**-0.040**	0.094	**-0.043**	0.074	**-0.047**	0.055			**-0.009**	0.073
VNIIFTRI	**-0.035**	0.062	**-0.031**	0.106	**-0.035**	0.089	**-0.038**	0.074	**0.009**	0.073		

FREQUENCY : 18 GHz **Lab *j*** ⇨

Lab *i* ⇩

	D_i / dB	U_i / dB	LNE		NPL		PTB		NIST	
			D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB
LNE	**0.013**	0.058			**-0.003**	0.108	**0.122**	0.117	**0.042**	0.096
NPL	**0.016**	0.048	**0.003**	0.108			**0.126**	0.103	**0.045**	0.077
PTB	**-0.109**	0.085	**-0.122**	0.117	**-0.126**	0.103			**-0.080**	0.090
NIST	**-0.029**	0.038	**-0.042**	0.096	**-0.045**	0.077	**0.080**	0.090		

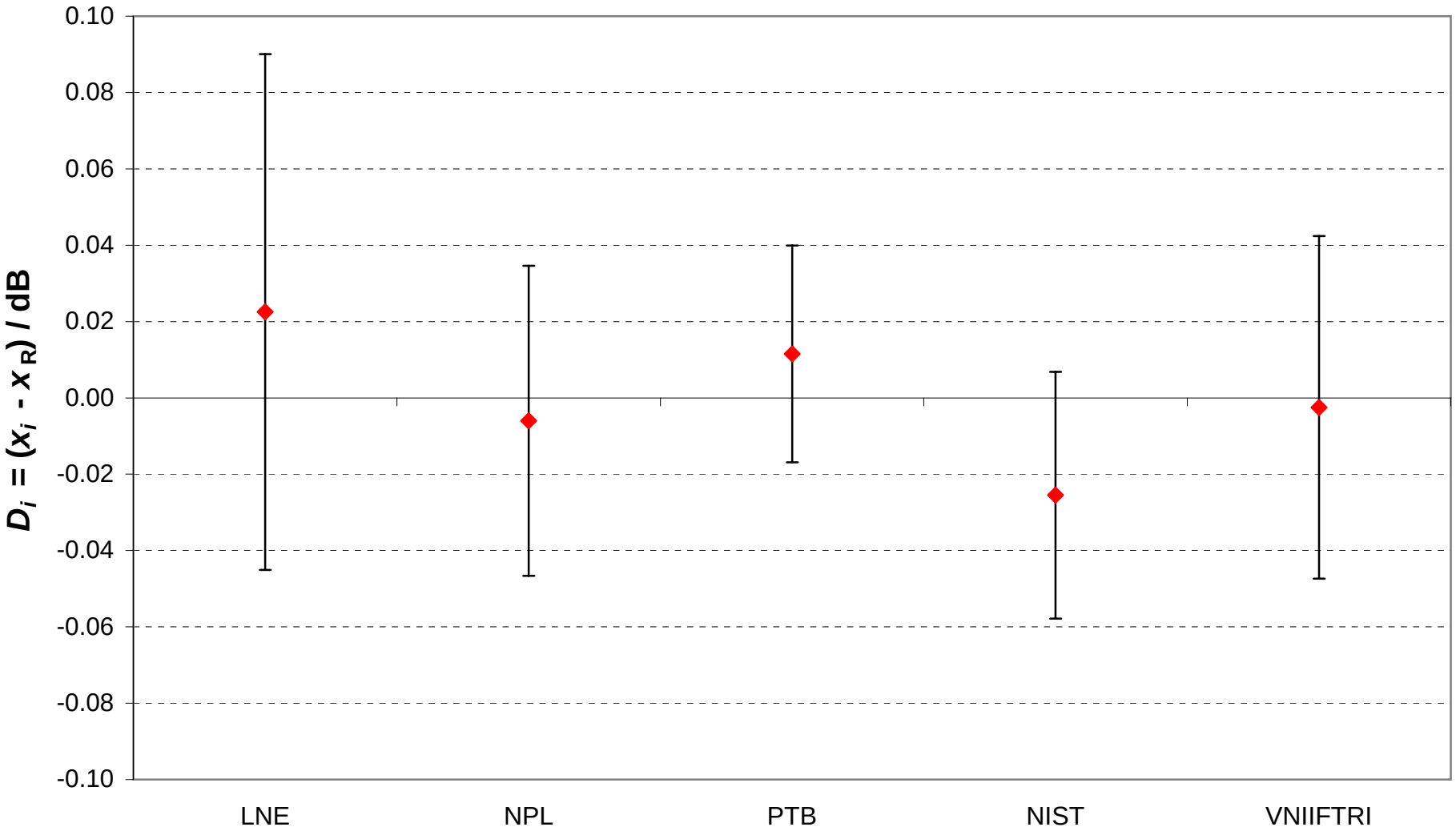


Note that the terms D_i are computed with the opposite sign in the Final Report.

CCEM.RF-K9 Excess noise ratio, 13.5 GHz

Source : TSB2, Reference plane : PC-7 / R140

Degrees of equivalence, D_i and expanded uncertainty U_i (k = 2)

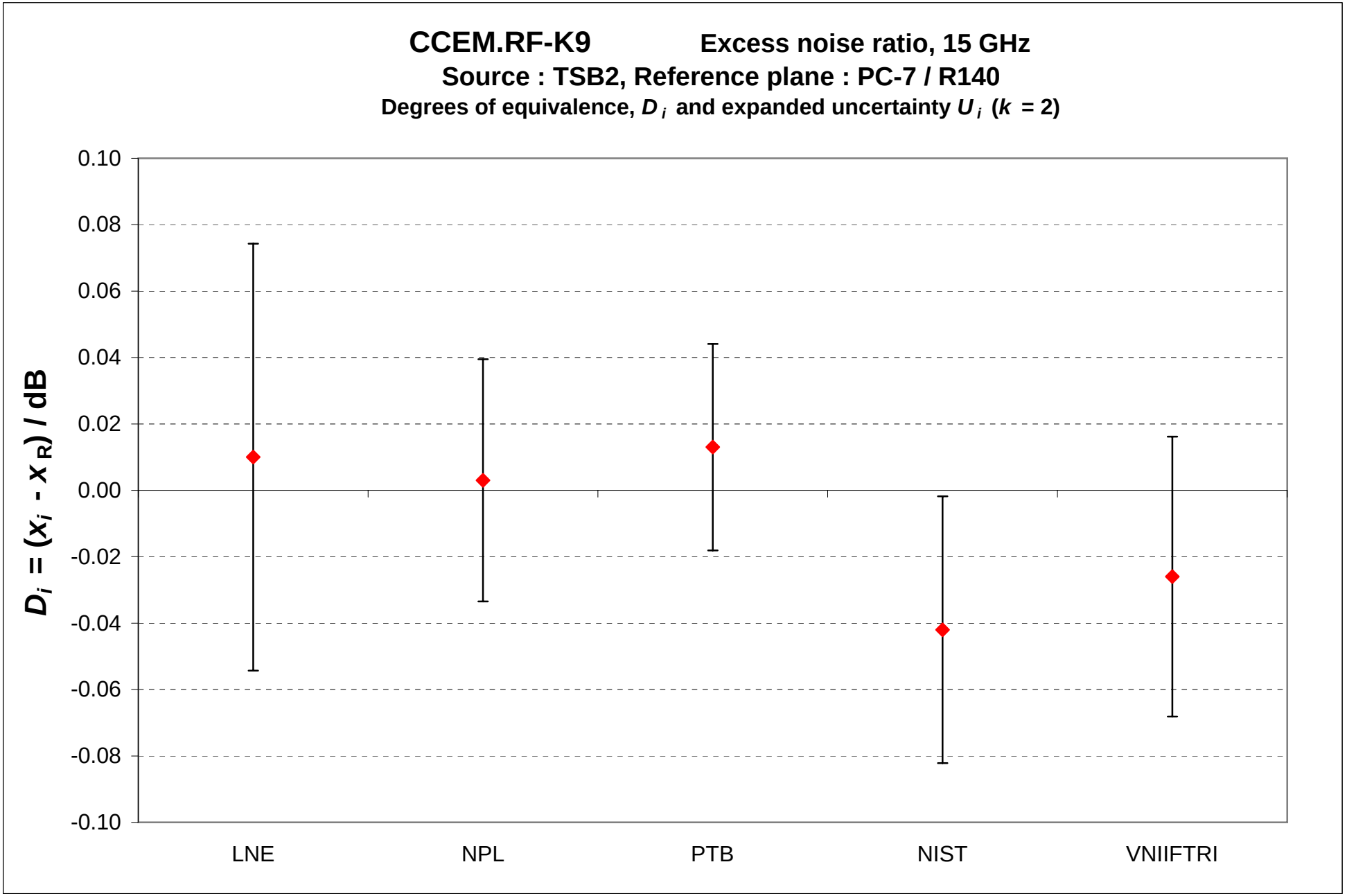


Note that the terms D_i are computed with the opposite sign in the Final Report.

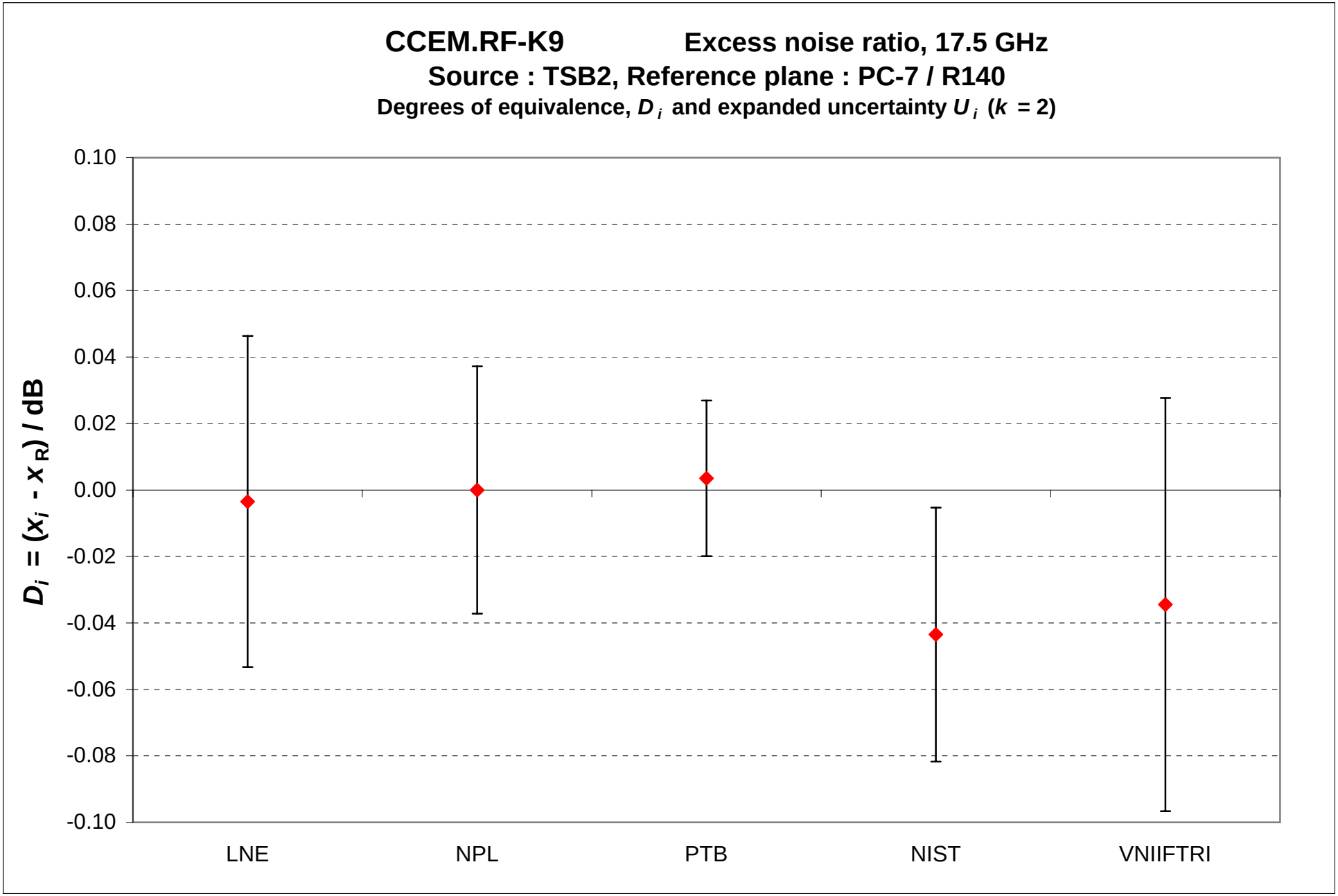
CCEM.RF-K9 Excess noise ratio, 15 GHz

Source : TSB2, Reference plane : PC-7 / R140

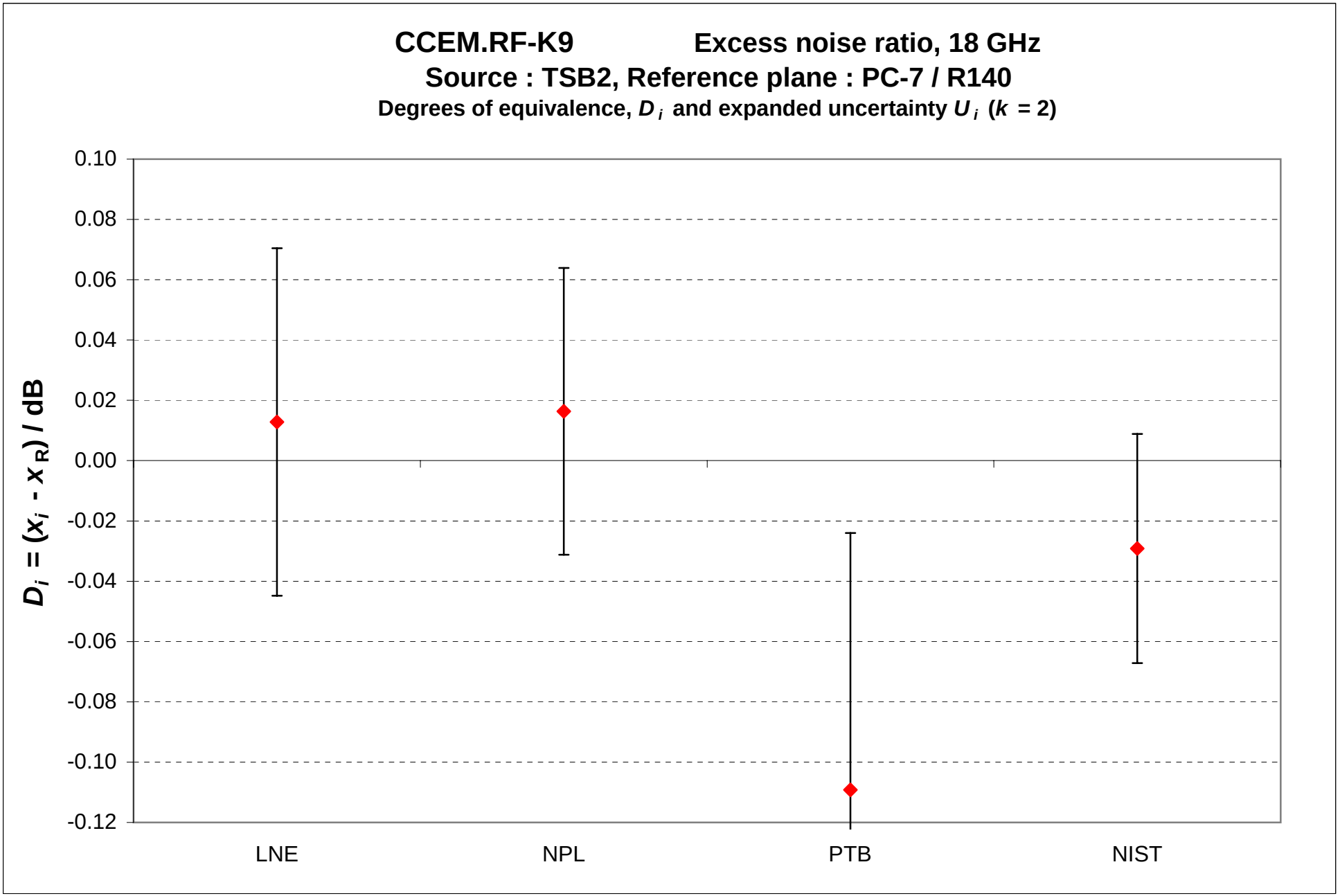
Degrees of equivalence, D_i and expanded uncertainty U_i (k = 2)



Note that the terms D_i are computed with the opposite sign in the Final Report.



Note that the terms D_i are computed with the opposite sign in the Final Report.



Note that the terms D_i are computed with the opposite sign in the Final Report.

Key comparison CCEM.RF-K9

MEASURAND : Excess noise ratio
NOISE SOURCE : TSB2
REFERENCE PLANE : PC-7

x_i : averaged Excess noise ratio measured by laboratory *i*
u_i : averaged standard uncertainty of x_i

Lab *i*	x_i / dB	u_i / dB	x_i / dB	u_i / dB	x_i / dB	u_i / dB	x_i / dB	u_i / dB	x_i / dB	u_i / dB	Date of measurement
	Frequency 12.4 GHz		Frequency 13.5 GHz		Frequency 15 GHz		Frequency 17.5 GHz		Frequency 18 GHz		
LNE	4.949	0.046	4.893	0.046	4.849	0.048	5.040	0.047	5.044	0.047	Sep 97, Jan 99, Dec 00
NPL	4.956	0.052	4.858	0.039	4.831	0.035	5.005	0.045	5.006	0.047	Apr 97, Mar - Apr 99
PTB	4.952	0.021	4.870	0.017	4.839	0.019	5.031	0.021	4.923	0.041	Feb 98
NIST	4.943	0.023	4.836	0.023	4.791	0.029	5.000	0.029	4.995	0.030	Apr 00
VNIIFTRI	4.996	0.032	4.883	0.027	4.866	0.028	5.056	0.041	-	-	Sep - Oct 00

Key comparison CCEM.RF-K9

MEASURAND : Excess noise ratio
NOISE SOURCE : TSB2
REFERENCE PLANE : PC-7

At each frequency, the key comparison reference value, x_R, is calculated as the unweighted mean of the participants results with exclusion of outliers. Its standard uncertainty u_R is computed as given in page 112 of the Final Report.

Frequency 12.4 GHz		Frequency 13.5 GHz		Frequency 15 GHz		Frequency 17.5 GHz		Frequency 18 GHz	
x_R / dB	u_R / dB	x_R / dB	u_R / dB	x_R / dB	u_R / dB	x_R / dB	u_R / dB	x_R / dB	u_R / dB
4.950	0.003	4.868	0.010	4.846	0.008	5.026	0.011	4.992	0.025

The degree of equivalence of laboratory i with respect to the key comparison reference value is given by a pair of terms terms, both expressed in dB: $D_i = (x_i - x_R)$ and its expanded uncertainty U_i ($k = 2$). The equations for the computation of U_i are given in page 112 of the Final Report.

The degree of equivalence between two laboratories i and j is given by a pair of terms, both expressed in dB : $D_{ij} = (D_i - D_j)$ and its expanded uncertainty U_{ij} ($k = 2$) with $U_{ij} = 2(u_i^2 + u_j^2)^{1/2}$.

Note that the terms D_i and D_{ij} are computed with the opposite sign in the Final Report.

Key comparison CCEM.RF-K9

MEASURAND : Excess noise ratio **NOISE SOURCE : TSB2** **REFERENCE PLANE : PC-7**

FREQUENCY : 12.4 GHz **Lab *j*** ⇨

Lab *i* ⇩	D_i / dB	U_i / dB	LNE		NPL		PTB		NIST		VNIIFTRI	
			D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB
LNE	**-0.001**	0.065			**-0.007**	0.138	**-0.003**	0.101	**0.006**	0.102	**-0.047**	0.112
NPL	**0.006**	0.073	**0.007**	0.138			**0.004**	0.111	**0.013**	0.113	**-0.040**	0.121
PTB	**0.002**	0.030	**0.003**	0.101	**-0.004**	0.111			**0.009**	0.062	**-0.044**	0.077
NIST	**-0.007**	0.033	**-0.006**	0.102	**-0.013**	0.113	**-0.009**	0.062			**-0.053**	0.079
VNIIFTRI	**0.046**	0.064	**0.047**	0.112	**0.040**	0.121	**0.044**	0.077	**0.053**	0.079		

FREQUENCY : 13.5 GHz **Lab *j*** ⇨

Lab *i* ⇩	D_i / dB	U_i / dB	LNE		NPL		PTB		NIST		VNIIFTRI	
			D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB
LNE	**0.025**	0.073			**0.035**	0.120	**0.023**	0.097	**0.057**	0.102	**0.010**	0.106
NPL	**-0.010**	0.064	**-0.035**	0.120			**-0.012**	0.085	**0.022**	0.091	**-0.025**	0.095
PTB	**0.002**	0.033	**-0.023**	0.097	**0.012**	0.085			**0.034**	0.057	**-0.013**	0.064
NIST	**-0.032**	0.041	**-0.057**	0.102	**-0.022**	0.091	**-0.034**	0.057			**-0.047**	0.071
VNIIFTRI	**0.015**	0.046	**-0.010**	0.106	**0.025**	0.095	**0.013**	0.064	**0.047**	0.071		

FREQUENCY : 15 GHz **Lab *j*** ⇨

Lab *i* ⇩	D_i / dB	U_i / dB	LNE		NPL		PTB		NIST		VNIIFTRI	
			D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB
LNE	**0.003**	0.070			**0.018**	0.119	**0.010**	0.103	**0.058**	0.112	**-0.017**	0.111
NPL	**-0.016**	0.052	**-0.018**	0.119			**-0.009**	0.080	**0.039**	0.091	**-0.035**	0.090
PTB	**-0.007**	0.031	**-0.010**	0.103	**0.009**	0.080			**0.048**	0.069	**-0.027**	0.068
NIST	**-0.055**	0.060	**-0.058**	0.112	**-0.039**	0.091	**-0.048**	0.069			**-0.075**	0.081
VNIIFTRI	**0.020**	0.042	**0.017**	0.111	**0.035**	0.090	**0.027**	0.068	**0.075**	0.081		

Key comparison CCEM.RF-K9

MEASURAND : Excess noise ratio **NOISE SOURCE : TSB2** **REFERENCE PLANE : PC-7**

FREQUENCY : 17.5 GHz **Lab *j*** ⇨

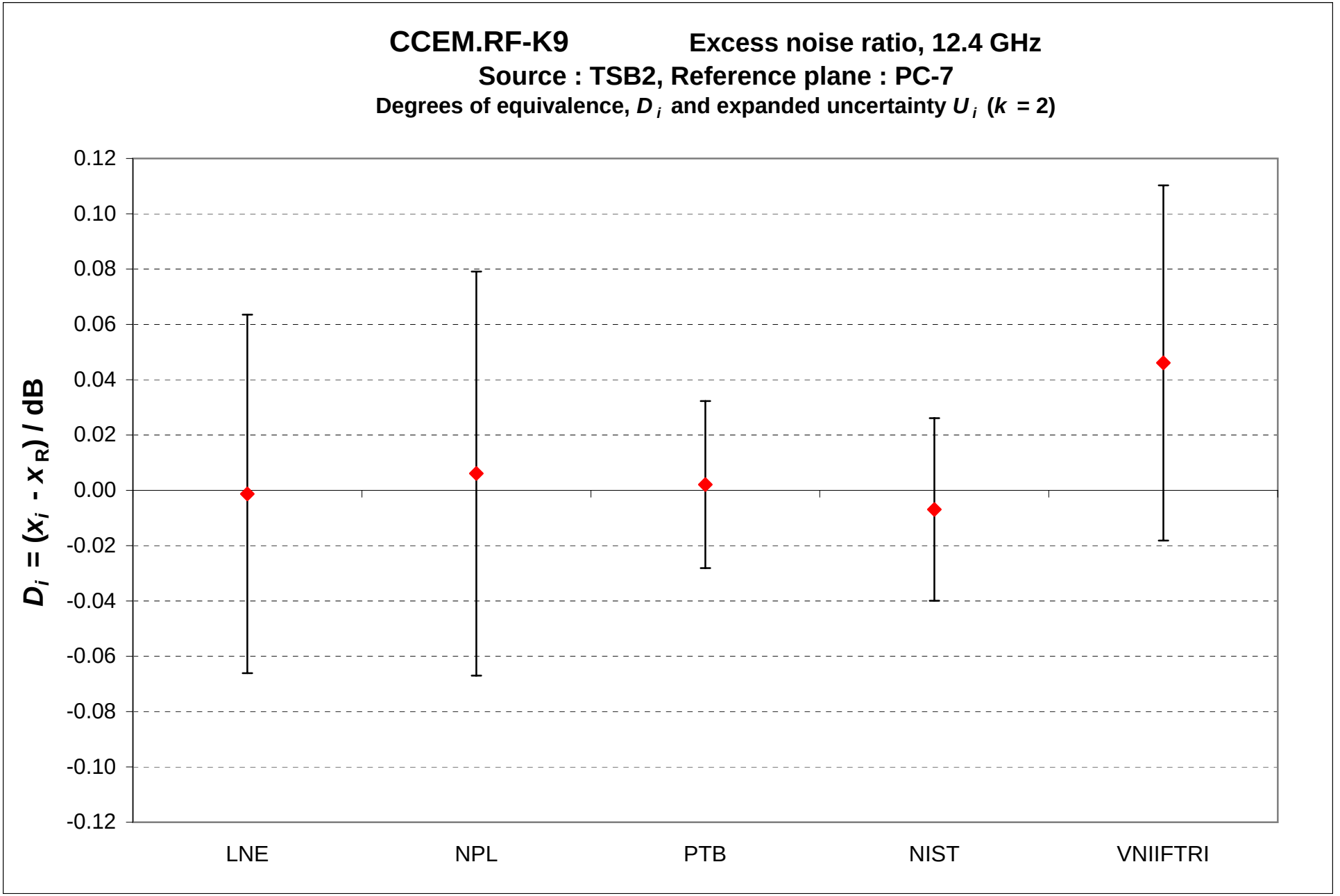
Lab *i* ⇩

	D_i / dB	U_i / dB	LNE		NPL		PTB		NIST		VNIIFTRI	
			D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB
LNE	**0.014**	0.076			**0.036**	0.131	**0.009**	0.104	**0.040**	0.111	**-0.016**	0.125
NPL	**-0.022**	0.073	**-0.036**	0.131			**-0.026**	0.099	**0.005**	0.107	**-0.051**	0.122
PTB	**0.005**	0.039	**-0.009**	0.104	**0.026**	0.099			**0.031**	0.072	**-0.025**	0.092
NIST	**-0.026**	0.050	**-0.040**	0.111	**-0.005**	0.107	**-0.031**	0.072			**-0.056**	0.100
VNIIFTRI	**0.030**	0.067	**0.016**	0.125	**0.051**	0.122	**0.025**	0.092	**0.056**	0.100		

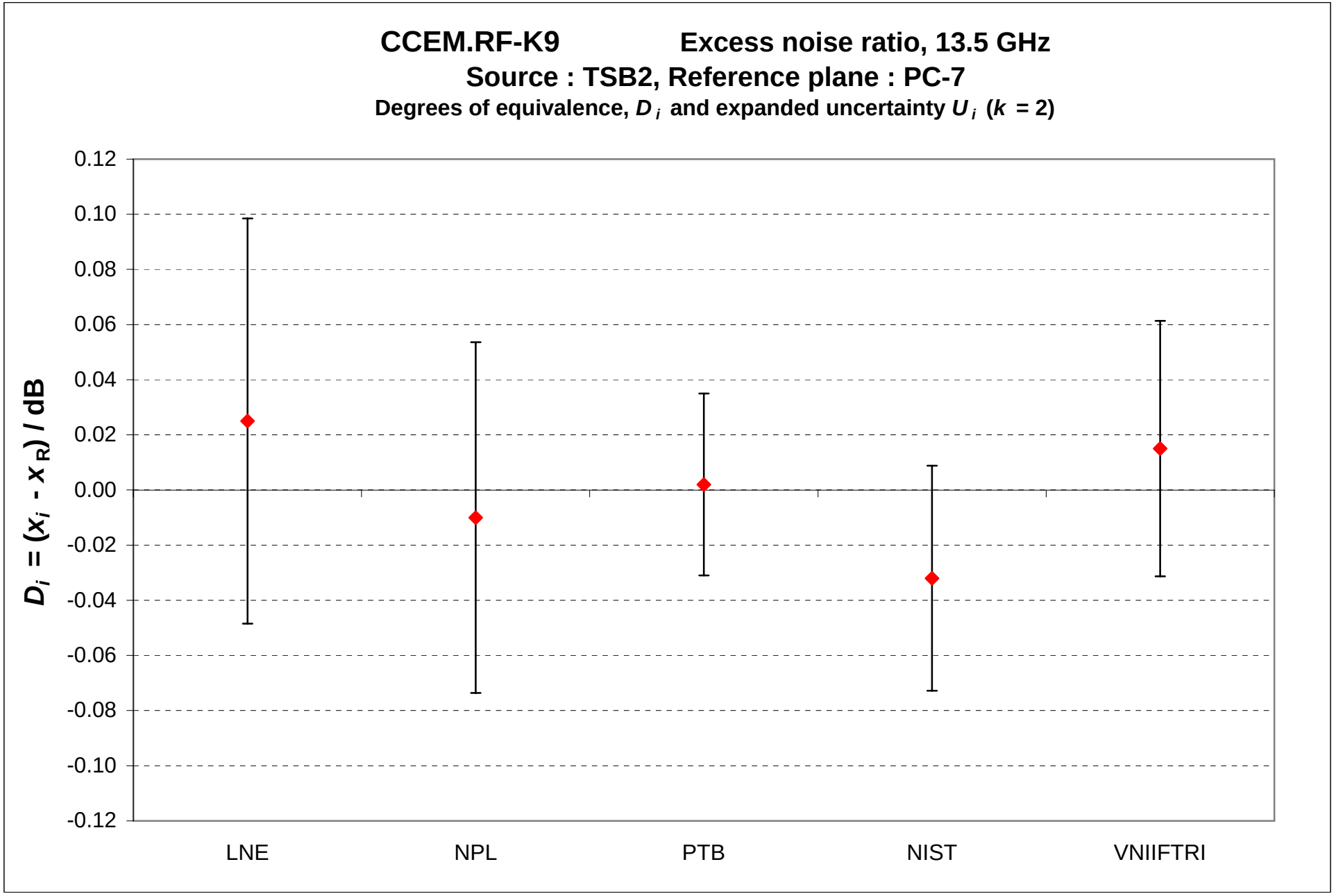
FREQUENCY : 18 GHz **Lab *j*** ⇨

Lab *i* ⇩

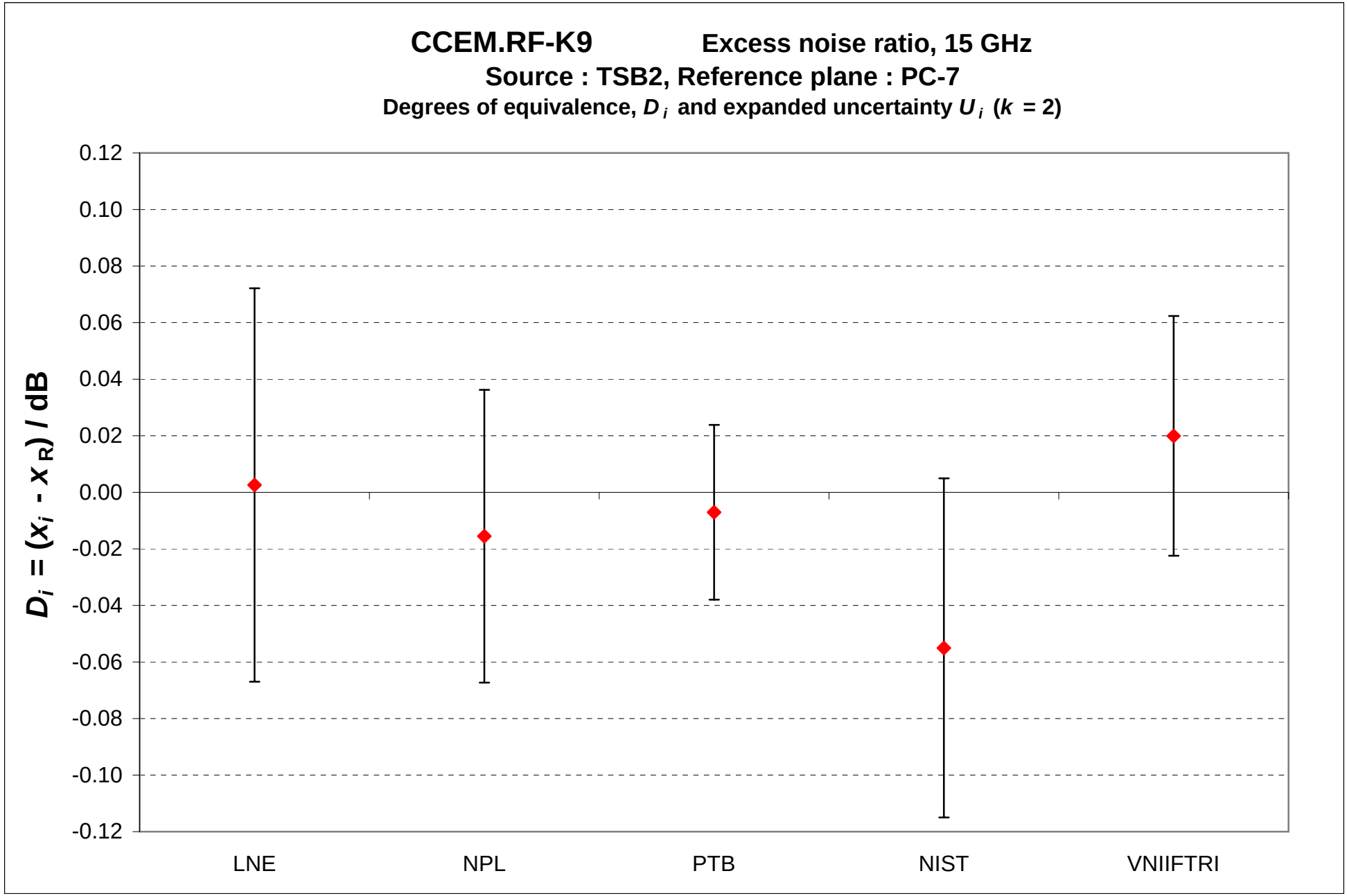
	D_i / dB	U_i / dB	LNE		NPL		PTB		NIST	
			D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB	D_{ij} / dB	U_{ij} / dB
LNE	**0.052**	0.084			**0.038**	0.133	**0.121**	0.125	**0.049**	0.112
NPL	**0.014**	0.084	**-0.038**	0.133			**0.083**	0.125	**0.011**	0.112
PTB	**-0.069**	0.077	**-0.121**	0.125	**-0.083**	0.125			**-0.072**	0.102
NIST	**0.003**	0.066	**-0.049**	0.112	**-0.011**	0.112	**0.072**	0.102		



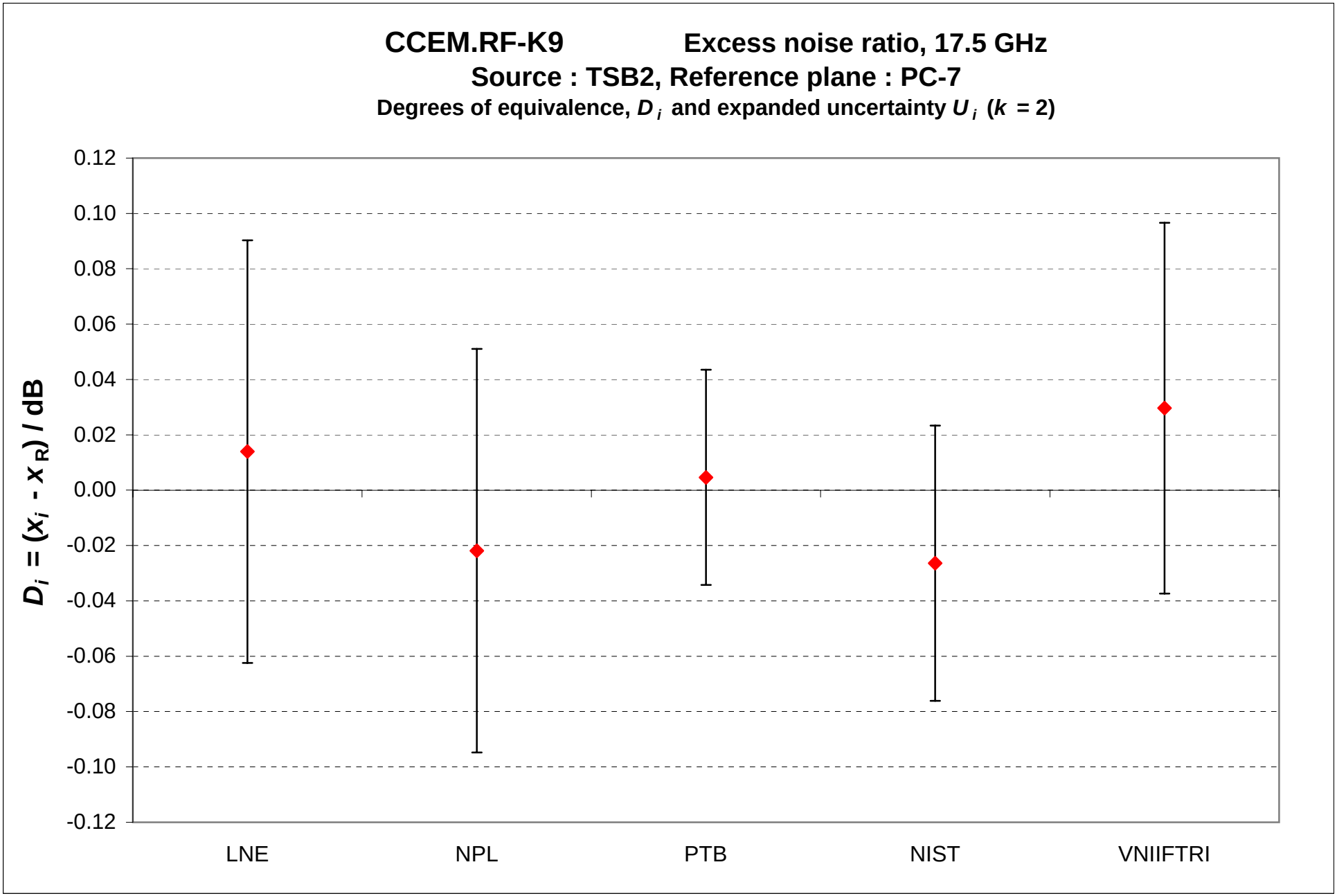
Note that the terms D_i are computed with the opposite sign in the Final Report.



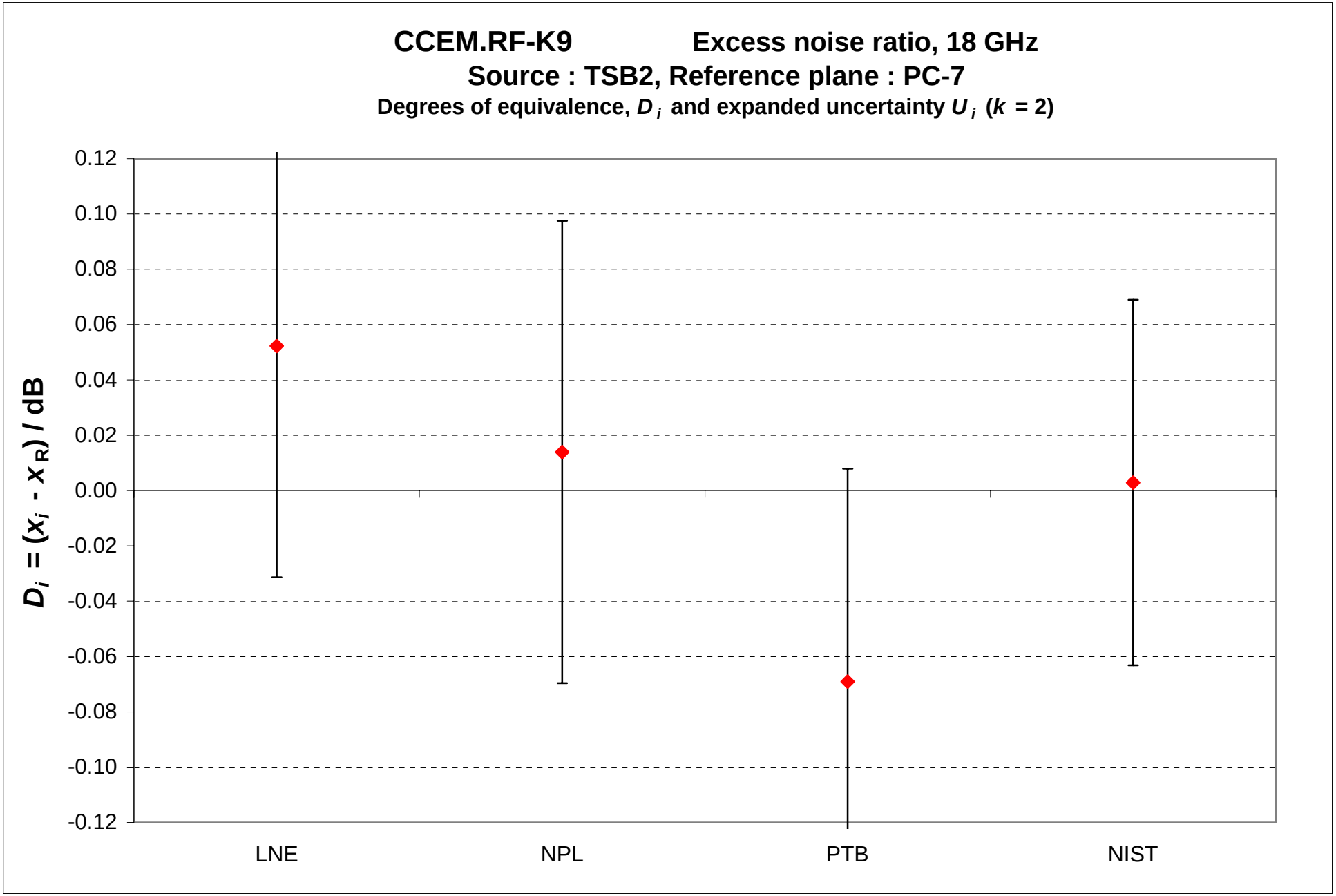
Note that the terms D_i are computed with the opposite sign in the Final Report.



Note that the terms D_i are computed with the opposite sign in the Final Report.



Note that the terms D_i are computed with the opposite sign in the Final Report.



Note that the terms D_i are computed with the opposite sign in the Final Report.