National Physical Laboratory

NPL EXAMPLE CERTIFICATE

Sullivan IVD Type F9200

Statement of Uncertainties.

The reported expanded uncertainties are based on standard uncertainties multiplied by a coverage factor, *k*, providing a coverage probability of approximately 95%. These uncertainties apply only to the measured values and do not carry any implication regarding the long-term stability of the instrument.

The uncertainty evaluation has been carried out in accordance with UKAS requirements.

The reported uncertainties in the values given are: -

Tables	Frequency	In-Phase Voltage Ratio Uncertainty	*k*-factor	Quadrature Error Uncertainty	*k*-factor
I & II	1 kHz	± 0·000 000 06	2·0	± 7 x 10^{-8} of input	2·0

Method

The instrument was calibrated with a sinusoidal voltage applied between the ratio winding terminals marked ‘H’ and ‘L’ on the left hand side of the instrument. The terminals marked ‘MAGNETISING INPUT H and L’ were energised via a separate cable from the source to ensure that no magnetising currents flow in the measurement circuit.

The ratio winding terminal marked ‘L’ was connected to the case terminal marked ⏚ and to mains earth throughout the tests.

The values of In-Phase Voltage Ratio and Quadrature Error given refer to the operation of the divider as a three - terminal device. The output was measured between the terminal marked ‘O’ and the ratio winding terminal marked ‘L’ on the left hand side of the instrument.

The sign of the Quadrature Error is given as positive when the output voltage was found to be in advance of the input voltage.

Example Results –for the first 3 Decades

Table I

Input voltage 25 V (RMS) at 1 kHz

Dial Setting	In-Phase Voltage Ratio	Quadrature Error ($\times 10^{-8}$ of Input)
9999999(10)	1.000 000 02	-7
90000000	0.900 000 00	12
80000000	0.799 999 96	30
70000000	0.699 999 96	30
60000000	0.599 999 97	17
50000000	0.499 999 97	1
40000000	0.399 999 98	-11
30000000	0.300 000 01	-29
20000000	0.200 000 01	-30
10000000	0.100 000 02	-10
0999999(10)	0.100 000 02	-31
09000000	0.090 000 01	-34
08000000	0.080 000 01	-32
07000000	0.070 000 01	-27
06000000	0.060 000 01	-20
05000000	0.050 000 01	-13
04000000	0.040 000 00	-5
03000000	0.030 000 00	1
02000000	0.020 000 00	5
01000000	0.010 000 00	6
0099999(10)	0.010 000 00	5
00900000	0.009 000 01	4
00800000	0.008 000 01	4
00700000	0.007 000 01	4
00600000	0.006 000 00	4
00500000	0.005 000 00	4
00400000	0.004 000 00	4
00300000	0.003 000 00	4
00200000	0.002 000 00	4
00100000	0.001 000 00	3
0009999(10)	0.000 999 98	2
00000000	0.000 000 00	1

Example Results for 11 section

Table II

Input voltage 25 V (RMS) at 1 kHz

Dial Setting	In-Phase Voltage Ratio	Quadrature Error (x 10^{-8} of Input)
90909090	0.909 090 93	-4
81818181	0.818 181 81	-8
72727272	0.727 272 70	-17
63636363	0.636 363 61	-31
54545454	0.545 454 52	-43
45454545	0.454 545 43	-52
36363636	0.363 636 35	-60
27272727	0.272 727 28	-63
18181818	0.181 818 19	-53
09090909	0.090 909 10	-29