

ISO 11819-2:2017-03 (E)

Acoustics - Measurement of the influence of road surfaces on traffic noise - Part 2: The close-proximity method

Contents		Page
Foreword		v
Introduction		vi
1	Scope	1
2	Normative references	2
3	Terms and definitions	2
3.1	Road and pavement related definitions	2
3.2	Measurement methods and equipment	2
3.3	Acoustic quantities and symbols	3
3.4	Symbols used for correction terms	4
4	Symbols and abbreviated terms	4
5	Measurement principle	6
6	Measuring instruments	6
6.1	Sound level instrumentation	6
6.2	Frequency analysis instrumentation	7
6.3	Sound calibration instrumentation	7
6.4	Vehicle speed measuring instrumentation	7
6.5	Position monitoring instrumentation	7
6.6	Temperature measuring instrumentation	7
6.7	Tyre load measuring equipment	7
6.8	Inflation pressure measuring equipment	7
6.9	Verification of measuring system and measuring instrumentation	7
7	Test sites	8
8	Meteorological conditions	8
8.1	Wind	8
8.2	Temperature and other weather-related issues	8
9	Test vehicle	9
9.1	General design	9
9.2	Microphone positions and mounting	9
9.3	Performance requirements and conformity of the test vehicle	11
9.4	Reference tyres	11
9.5	Tyre rubber hardness	11
9.6	Tyre mounting	11
9.7	Tyre run-in	12
10	Measurement procedure	12
10.1	Preparations for measurements	12
10.2	Measurement of sound	12
10.3	Procedure for study of typical road section	12
10.4	Minimum number of runs for very short road sections	13
10.5	Lateral position on the road	13
10.6	Longitudinal position on the road	13

10.7	Consideration of disturbing noise	13
10.8	Test vehicle speed	13
10.8.1	Reference speeds	13
10.8.2	Test speed and acceptable deviations	13
10.9	Tyre loads	14
10.10	Tyre inflation	14
10.11	Temperature measurement	14
10.11.1	General	14
10.11.2	Air temperature	15
10.11.3	Road surface temperature (optional)	15
10.12	Overview and summary	15
11	Analysis procedure	15
11.1	Definition of steps in the calculation process	15
11.2	Results expressed as overall levels	16
11.2.1	General	16
11.2.2	Case A	17
11.2.3	Case B	17
11.2.4	Expression of CPX levels	17
11.3	Results expressed as one-third-octave-band levels	18
11.3.1	General	18
11.3.2	Case A	18
11.3.3	Case B	18
11.4	Correction for analysis of spectral levels	18
11.5	Acoustic variability	18
12	Measurement uncertainty assessment according to ISO/IEC Guide 98-3	19
13	Repeatability and reproducibility: System comparison according to ISO 5725-2	21
14	Test report	21
Annex A (normative)	Certification of the test vehicle	24
Annex B (normative)	Averaging within each road segment	30
Annex C (informative)	Detailed explanation of the calculation procedure	32
Annex E (informative)	Guidelines for design and use of the test vehicle	39
Annex F (informative)	Guidelines for measurements	43
Annex G (informative)	Application of the CPX method for surveying large road networks	45
Annex H (informative)	Application of the CPX method for other objectives	48
Annex I (informative)	Summary of measurement parameters	49
Annex J (informative)	Validity and stability of the method	50
Annex K (informative)	Measurement uncertainty	53
Annex L (informative)	Reference road surface	56
Annex M (informative)	Calculation of close-proximity sound indices	58
Annex N (informative)	Summary of measuring and data-processing procedures	59
Annex O (informative)	Example of test report	61
Bibliography	64