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INLAND TRANSPORT COMMITTEE

Working Party on the Construction of Vehicles

Working Party on Lighting and Light-Signalling  
(Forty-third session, 4 - 8 October 1999,  
agenda item 4.)

**PROPOSAL FOR GRE POSITIONS TO ELECTROMAGNETIC COMPATIBILITY (EMC)  
OF VEHICLES OF CATEGORY L**

Revision 1

Transmitted by the Expert from the Czech Republic

Note: The text reproduced below was prepared by the expert from the Czech Republic, with the aim of making a comparison among the prescriptions of Regulation No. 10 and those contained in EC Directives 97/24/EC (Chapter 8), and 95/54/EC. It is a revised proposal incorporating the text of a document by IMMA, distributed without a symbol (informal document No. 13) during the forty-second session (TRANS/WP.29/GRE/42, paras. 67-69).

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Note: This document is distributed to the Experts on Lighting and Light-Signalling only.

97/24/EC, Chapter 8.	95/54/EC	ECE No.10.02	correct wording of 97/24/EC, chapt.8 according to GRE position
<u>Annex I, paragraph 1.6.:</u> "reference antenna" means a balanced half/wave dipole tuned to the measured frequency.	<u>Annex I, paragraph 2.1.6.:</u> "Reference antenna" for the frequency range 20 to 80 MHz: means a shortened balanced dipole being a half wave resonant dipole at 80 MHz, and for the frequency range above 80 MHz: means a balanced half wave resonant dipole tuned to the measurement frequency.	<u>Paragraph 2.6.:</u> "Reference antenna" for the frequency range 20 to 80 MHz: means a balanced half wave resonant dipole at 80 MHz, and for the frequency range above 80 MHz: means a balanced half wave resonant dipole tuned to the measurement frequency	according to 95/54/EC
<u>Annex I, paragraph 1.7.</u> <u>and in the whole document:</u> "wide-band emission" ...	<u>Annex I, paragraph 2.1.7.:</u> "Broadband emission" ...	<u>Paragraph 2.7.:</u> "Broadband electromagnetic disturbances" ..	according to 95/54/EC
<u>Annex I, paragraphs 1.10.-1.13.</u> <u>and other paragraphs:</u> 97/24/EC, Ch.8 uses STU (separate technical unit)	<u>Annex I, paragraphs 2.1.10.-2.1.12.1.</u> <u>and other paragraphs:</u> 95/54/EC uses both STU (separate technical unit) and ESA (electrical/electronic sub-assembly)	<u>Paragraphs 2.10.-2.12.1.</u> <u>and other paragraphs:</u> ECE No 10.02 uses both STU (separate technical unit) and ESA (electrical/electronic sub-assembly)	according to 95/54/EC
<u>Annex I, paragraph 5.2.2.2.:</u> ... of $3.0 \pm 0.5$ m ... ... (546 microvolts/m) twice	<u>Annex I, paragraph 6.2.2.2.:</u> ... of $3.0 \pm 0.05$ m ... ...(562 microvolts/m) twice	<u>Paragraph 6.2.2.2.:</u> ... of $3.0 \pm 0.05$ m ... ...(562 micro-Volts/m) twice	according to 95/54/EC
<u>Annex I, Appendixes 1 - 6:</u> the character on the vertical scale "in microvolts/m" is missing (see the text in paragraphs)	<u>Annex I, Appendixes 1 - 6:</u> the character on the vertical scale "in microvolts/m" is according to the text in paragraphs	<u>Appendixes 1 - 6:</u> the character on the vertical scale "in microvolts/m" is according to the text in paragraphs	according to 95/54/EC

<u>Annex I, Appendixes 3, 4 and 6:</u> measured value “mean”	<u>Annex I, Appendixes 3, 4 and 6:</u> measured value “peak”	<u>Appendixes 3, 4 and 6:</u> measured value “peak”	according to 95/54/EC
<u>Annex I, Appendix 5:</u> in middle column : $L = 64 + 15.13 \log (f/75)$	<u>Annex I, Appendix 5:</u> in middle column : $L = 54 + 15.13 \log (f/75)$	<u>Appendix 5:</u> in middle column : $L = 54 + 15.13 \log (f/75)$	according to 95/54/EC
<u>Annexes II, V, paragraph 1.1.:</u> A quasi-peak detector must be used ...	<u>Annexes IV, VII, paragraph 1.2.:</u> A quasi-peak detector ... or if a peak detector is used ...	<u>Annexes 4, 7, paragraph 1.2.:</u> A quasi-peak detector ... if a peak detector is used ...	according to ECE No. 10.02
<u>Annex II, paragraph 3.3.:</u> ---	<u>Annex IV, paragraph 3.3.:</u> Neither do they need to have ambient emissions checked before or after the test as indicated in paragraph 3.4. of this Annex.	<u>Annex 4, paragraph 3.3.:</u> Neither do ambient emissions need to be checked before or after the test as indicated in paragraph 3.4. of this annex.	according to ECE No. 10.02
<u>Annex II, paragraph 4.4.:</u> The driver must occupy the driving position assigned to him if, in the judgment of the testing body, this represents the worst-case	<u>Annex IV, paragraph 4.2.:</u> --- (No) ---	<u>Annex 4, paragraph 4.2.:</u> --- (No) ---	according to ECE No. 10.02 (For better reproducibility)
<u>Annexes II, III, IV, V, paragraph 6.1. and Annex VII, paragraph 5.2:</u> the single measuring frequencies in range 75 - 400 MHz are: 90, 150, 180, 220 and 300 MHz	<u>Annexes IV, V, VI, VII, paragraph 6.1. and Annex IX, paragraph 5.2:</u> the single measuring frequencies in range 75 - 400 MHz are: 90, 120, 150, 190, 230, 280 and 380 MHz	<u>Annexes 4, 5, 6, 7, paragraph 6.1. and Annex 9, paragraph 5.2:</u> the single measuring frequencies in range 75 - 400 MHz are: 90, 120, 150, 190, 230, 280 and 380 MHz	according to 95/54/EC
<u>Annexes II, III, paragraph 5.2.1.3., Annex IV, paragraph 5.2.1.2.:</u> No part of the antenna receiving components must be less than 0.25 m from the vehicle plane. <u>In the whole document:</u> ... the vehicle plane ...	<u>Annexes IV and V, paragraph 5.2.1.3., Annex VI, paragraph 5.2.1.2.:</u> No part of any antenna's receiving elements shall be closer than 0.25 m to the plane on which the vehicle rests. <u>In the whole document:</u> ... the plane on which vehicle rests ...	<u>Annexes 4 and 5, paragraph 5.2.1.3., Annex 6, paragraph 5.2.1.2.:</u> No part of any antenna's receiving elements shall be closer than 0.25 m to the plane on which the vehicle rests. <u>In the whole document:</u> ... the plane on which vehicle rests ...	according to 95/54/EC
<u>Annexes II and III, paragraph 5.2.2.3.:</u> ... the position of the antenna receiving components must not be less than (0.5)m from any type of ...	<u>Annexes IV and V, paragraph 5.2.2.3.:</u> ... the antenna's receiving elements shall be no closer than 1.0 m to any radio absorbent ...	<u>Annexes 4 and 5, paragraph 5.2.2.3.:</u> ... the antenna's receiving elements shall be no closer than 1.0 m to any radio absorbent ...	according to ECE No. 10.02

<u>Annex II, Appendix 1, Figure 2</u> , replace: "see CISPR 12, Edition 2" by "see CISPR 12, Edition 4 and CISPR 16-1"	does not include it	proposal for amendment: replace: "see CISPR 12, Edition 2" by "see CISPR 12, Edition 4 and CISPR 16-1"	according to ECE No. 10.02
<u>Annexes III and VI, paragraph 1.1.:</u> A mean-value detector is used ...	<u>Annexes V and VIII, paragraph 1.2.:</u> An average detector or a peak detector shall be used .....	<u>Annexes 5 and 8, paragraph 1.2.:</u> An average detector or a peak detector shall be used ...	according to 95/54/EC
<u>Annex IV, paragraph 4.1.1.:</u> The engine must turn the driving wheels at a constant speed predetermined by ...	<u>Annex VI, paragraph 4.1.1.:</u> The engine shall normally turn the driving wheels at a steady speed of 50 km/h if there is no technical reason ...	<u>Annex 6, paragraph 4.1.1.:</u> The engine shall normally turn the driving wheels at a steady speed of 50 km/h if there is no technical reason ...	according to TRANS/WP.29/613  50 km/h or 25 km/h (L1, L2)
<u>Annex IV, paragraph 5.1.3.:</u> ... field is polarized both horizontally and vertically ...	<u>Annex VI, paragraph 5.1.3.:</u> ... the generated field is polarized:  ... horizontally or vertically ...	<u>Annex 6, paragraph 5.1.3.:</u> ... the generated field is polarized:  ... horizontally or vertically ...	according to ECE No. 10.02
<u>Annex IV, paragraph 5.2.1.1.:</u> The phase mid-point of all antennas must not be less than 1.5 m above the vehicle plane.	<u>Annex VI, paragraph 5.2.1.1.:</u> The phase centre of any antenna shall not be less than 1.5 m above the plane on which the vehicle rests ...	<u>Annex 6, paragraph 5.2.1.1.:</u> The phase centre of any antenna shall not be less than 1.5 m above the plane on which the vehicle rests ...	according to 95/54/EC
<u>Annex IV, paragraph 5.2.2.2.:</u> ... radiator elements of the field generator must not be less than 0.5 m ...	<u>Annex VI, paragraph 5.2.2.2.:</u> ... the field generating device's radiating elements shall be no closer than 1.0 m ...	<u>Annex 6, paragraph 5.2.2.2.:</u> ... the field generating device's radiating elements shall be no closer than 1.0 m ...	according to 95/54/EC
<u>Annex IV, paragraph 5.3.2.:</u> No part of the TLS, except the vehicle plane, may be less than 0.5 m from any part of the vehicle.	<u>Annex VI, paragraph 5.3.3.:</u> No part of a TLS, with the exception of the plane on which the vehicle rests, shall be closer than 0.5 m to any part of the vehicle.	<u>Annex 6, paragraph 5.3.3.:</u> No part of a TLS, with the exception of the plane on which the vehicle rests, shall be closer than 0.5 m to any part of the vehicle.	according to 95/54/EC

<p><u>Annex IV, paragraph 7.2.1.:</u> During the calibration phase (before the vehicle is positioned on the test surface) the field strength must not be less than 50% of the nominal field strength at the following locations: (i) for all field-generating devices, 1.0 ± 0.02 m on either side of the reference point on a line passing through this point, and perpendicular to the median longitudinal plane of the vehicle; (ii) in the case of a TLS, 1.5 ± 0.02 m on a line passing through the reference point, and situated in the median longitudinal plane of the vehicle.</p>	<p><u>Annex VI, paragraph 7.2.1.:</u> During the calibration phase of the substitution method (prior to a vehicle being introduced into the test area), the field strength in at least 80% of the calibration steps shall not be less than 50% of the nominal field strength, at the following locations: (i) for all field-generating devices, 0.5 ± 0.05 m either side of the reference point on a line passing through the reference point and at the same height as the reference point, and perpendicular to the vehicle plane of longitudinal symmetry; (ii) in the case of a TGLS, 1.5 ± 0.05 m on a line passing through the reference point at the same height as the reference point and along the line of longitudinal symmetry.</p>	<p><u>Annex 6, paragraph 7.2.1.:</u> During the calibration phase (prior to a vehicle being introduced into the test area), the field strength in at least 80 per cent of the calibration frequencies shall not be less than 50 per cent of the nominal field strength, at the following locations: (i) for all field-generating devices, 0.5 ± 0.05 m either side of the reference point on a line passing through the reference point and at the same height as the reference point, and perpendicular to the vehicle plane of longitudinal symmetry; (ii) in the case of a TLS, 1.5 ± 0.05 m on a line passing through the reference point at the same height as the reference point and along the line of longitudinal symmetry.</p>	<p>according to 95/54/EC (after replacing “TGLS” by “TLS”)</p>
<p><u>Annexes V and VI, paragraph 4.3., Annex VII, paragraph 4.2.:</u> The STU and its cable harness must be placed on insulated supports 50 + 10/-0 mm above the earth plate..... The earth plate must be a metal sheet at least 0.25 mm thick ...</p>	<p><u>Annexes VII and VIII, paragraph 4.3.1., Annex IX, paragraph 8.2.1.1.:</u> ... the ESA under test and its wiring harness shall be supported 50 ± 5 mm above a wooden or equivalent non-conducting table... The ground plane shall be a metallic sheet with a minimum thickness of 0.5 mm.</p>	<p><u>Annexes 7 and 8, paragraph 4.3.1., Annex 9, paragraph 8.2.1.1.:</u> ... the ESA under test and its wiring harness shall be supported 50 ± 5 mm above a wooden or equivalent non-conducting table... The ground plane shall be a metallic sheet with a minimum thickness of 0.5 mm.</p>	<p>according to 95/54/EC</p>
<p><u>Annexes V and VI, paragraph 4.4., Annex VII, paragraph 4.3.:</u> Power for STU is supplied by a 50µH Line Impedance Stabilizing Network (LISN)...</p>	<p><u>Annexes VII and VIII, paragraph 4.4., Annex IX, paragraph 4.2.:</u> Power shall be applied to the ESA under test via a 5 µH/50 Ω artificial network (AN)..</p>	<p><u>Annexes 7 and 8, paragraph 4.4., Annex 9, paragraph 4.2.:</u> Power shall be applied to the ESA under test via a 5 µH/50 Ω artificial network (AN)..</p>	<p>according to 95/54/EC</p>
<p><u>Annexes V and VI, paragraph 5.2.1.:</u> The phase centre of the antenna must be 0.5 ± 0.05 m above the earth plate.</p>	<p><u>Annex VII, paragraph 5.2.1.:</u> The phase centre of the antenna shall be 150 ± 10 mm above ground plane. <u>Annex VIII, paragraph 5.2.1.:</u> The phase centre of the antenna shall be 50 ± 10 mm above ground plane.</p>	<p><u>Annexes 7 and 8, paragraph 5.2.1.:</u> The phase centre of the antenna shall be 50 ± 10 mm above ground plane. <u>Annex 8, paragraph 5.2.1.:</u> The phase centre of the antenna shall be 150 ± 10 mm above ground plane.</p>	<p><u>Annexes VII and VIII, paragraph 5.2.1.:</u> The phase centre of the antenna shall be 150 ± 10 mm above ground plane.</p>

<u>Annex VI, paragraph 6.1.:</u> ... into 11 bands... ... following 11 frequency bands: 30 - 45, 45 - 80, 80 - 130, 130 - 170, 170 - 225, 225 - 300, 300 - 400, 400 - 525, 525 - 700, 700 - 850, 850 - 1000 MHz.	<u>Annex VIII, paragraph 6.1.:</u> ... into 13 bands... ... following 13 frequency bands: 30 to 50, 50 to 75, 75 to 100, 100 to 130, 130 to 165, 165 to 200, 200 to 250, 250 to 320, 320 to 400, 400 to 520, 520 to 660, 660 to 820, 820 to 1000 MHz.	<u>Annex 8, paragraph 6.1.:</u> ... into 13 bands... ... following 13 frequency bands: 30 - 50, 50 - 75, 75 - 100, 100 - 130, 130 - 165, 165 - 200, 200 - 250, 250 - 320, 320 - 400, 400 - 520, 520 - 660, 660 - 820, 820 - 1000 MHz.	according to ECE No. 10.02
<u>Annex VII, paragraph 9.3.:</u> ... in turn around all the wires in the cable harness at $100 \pm 10$ mm from each connector ...	<u>Annex IX, paragraph 10.3.:</u> ... in turn around all the wires in the wiring harness to each connector and $150 \pm 10$ mm from each connector ...	<u>Annex 9, paragraph 10.3.:</u> ... mounted around all the wires in the wiring harness on each connector and $150 \pm 10$ mm from each connector ...	according to 95/54/EC
<u>Annex VII, paragraph 9.4.:</u> ... This harness must run parallel to the edge of the earth plate, $100 \text{ mm} \pm 10 \text{ mm}$ from its edge. The distance from the ECU to the LISN will be $1.5 \pm 0.1$ m or may ...	<u>Annex IX, paragraph 10.4.:</u> ... This harness shall run parallel to the edge of the ground plane and 200 mm minimum from its edge. The distance from the ECU to the AN shall be $1.0 \pm 0.1$ m or ...	<u>Annex 9, paragraph 10.4.:</u> ... This harness shall run parallel to the edge of the ground plane and 200 mm minimum from its edge. The distance from the ECU to the AN shall be $1.0 \pm 0.1$ m or ...	according to 95/54/EC
<u>Annex VII, paragraph 11.2.2.1.1.:</u> The phase centre of the antenna may not be less than 0.5 m above ...	<u>Annex IX, paragraph 8.3.2.1.:</u> The phase centre of any antenna shall be $150 \pm 10$ mm above ...	<u>Annex 9, paragraph 8.3.2.1.:</u> The phase centre of any antenna shall be $150 \pm 10$ mm above ...	according to 95/54/EC
<u>Annex VII, paragraph 11.2.4.1.3.:</u> ... $100 \pm 10$ mm above the earth plate.	<u>Annex IX, paragraph 8.3.4.3.:</u> $150 \pm 10$ mm above the ground plane.	<u>Annex 9, paragraph 8.3.4.3.:</u> $150 \pm 10$ mm above the ground plane.	according to 95/54/EC
<u>Annex VII, paragraph 11.3.2.1.:</u> ... nominal field strength $1.0 \pm 0.05$ m either side ...	<u>Annex IX, paragraph 8.5.1.:</u> ... nominal field strength $0.5 \pm 0.05$ m either side ...	<u>Annex 9, paragraph 8.5.1.:</u> ... nominal field strength $0.5 \pm 0.05$ m either side ...	according to 95/54/EC
<u>Annex VII, Appendix 1, Figure 2 :</u> shortcomings: 4700 2w 13x8200 2w 4700 2w 2x1200 2w 3300 2w 2700 2w	<u>Annex IX, Appendix 1, Figure 3 :</u> shortcomings: 470 $\Omega$ 2w 2x120 $\Omega$ 2w 470 $\Omega$ 2w 2x820 $\Omega$ 2w 330 $\Omega$ 2w 270 $\Omega$ 2w	<u>Annex 9, Appendix 1, Figure 3 :</u> shortcomings: 470 $\Omega$ 2w 2x120 $\Omega$ 2w 470 $\Omega$ 2w 2x820 $\Omega$ 2w 330 $\Omega$ 2w 270 $\Omega$ 2w	<u>Annex VII, Appendix</u> <u>1, Figure 2 :</u> correct wording: 470 $\Omega$ /2W 2x120 $\Omega$ /2W 470 $\Omega$ /2W 2x820 $\Omega$ /2W 330 $\Omega$ /2W 270 $\Omega$ /2W