GTB
Working Group Light Sources

Replacement Light Sources
and
Compliance

WP.29 March 2012
item 4.2.4. “Request for guidance regarding non-conforming aftermarket light sources”
Background

Regular reports

Light source work items in the pipeline

- GTB TF LED light sources
- **GTB WG Light Sources**
- GTB Committee of Experts
- GRE
- WP.29
- Awaiting enforcement

Request for guidance

- Replacement Light Sources and Compliance

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WP.29
Request for guidance

Much effort is spent to

- accurate specification of light source characteristics in UN Regulations
  - replacement aspects in view of safety
- additional/ reference specifications in IEC standards
  - obligatory: cap/holder, colour endurance
  - voluntary: e.g. shock and vibration
- conformity of production

⇒ OEM ✓
⇒ Aftermarket ✗

NEEDS IMPROVEMENT
Seek advise from WP.29
Content

1. Summary of applicable law
2. Safety aspects of replacement characteristics
3. Snapshot of aftermarket products and their quality
4. Consequences and ideas
5. Request for guidance
Summary of applicable law
Type approval <-> In use requirements
Lighting (components)

Bringing (mass production) vehicles on the road
• Well defined
• More and more globally harmonized
  • UN Regulations for contracting parties (58 Agreement)
  • More and more countries following the UN Regulations
  • Harmonisation SAE

Once on the road
• National law
• Very divers
  • Some countries refer to UN Regulations or implement into national law
  • Some countries do forbid application of non-approved components on the road, but do not forbid sales
  • Some countries do not forbid sales nor application of non-approved components
Safety aspects of replacement characteristics

example: filament position
“Good” bulbs
Illumination – Position of Filament

von Justieren: 0

"Good"

*yellow box right top is for automatic camera operation
Principle of beam formation
“Ideal” beam pattern

Low glare level

High beam range
“Bad” bulbs
Illumination – Position of Filament

"Bad"

*yellow box right top is for automatic camera operation
Reminder
One effect of displacement of the filament:

\[ \Delta \text{ visibility range} \]

Not to scale
Another effect of displacement of the filament:

$\Delta$ glare
“Bad” beam pattern
Snapshot of aftermarket products

example: Bulb Test in country X*

* EU Contracting party to 58 Agreement
**H7 Bulb Test**

<table>
<thead>
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<th>Production location</th>
<th>Import to EU</th>
<th>EU</th>
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<tr>
<td></td>
<td>#1</td>
<td>#2</td>
</tr>
<tr>
<td>E-Mark</td>
<td>Yes**</td>
<td>Yes**</td>
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<tr>
<td>Sample size</td>
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<td>29</td>
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<tr>
<td>Visual check</td>
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<tr>
<td>Geometry</td>
<td>27 out of 30 FAI LED</td>
<td>28 out of 29 FAI LED</td>
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<tr>
<td>Photometry</td>
<td>9 out of 30 FAI LED</td>
<td>15 out of 29 FAI LED</td>
</tr>
<tr>
<td>UN compliance</td>
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</tbody>
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** Real or fake?

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Consequences
Daily consequences

Safety
- front lighting
  - not enough illumination of the road
  - increased glare
- signalling
  - insufficient visibility
- melting of plastic
- risk of explosion of the light source

Current Practice
- “bad bulbs”
  - lacking necessary clarity to know quality
  - normally cheaper
- “good bulbs”
  - less readily available
  - therefore less used
Why is aftermarket “bad” bulb cheaper?

Factors influencing quality
• materials
• supplier quality-philosophy
• production machine
  • selection
  • precision
  • maintenance
• quality checks
  • online
  • offline quality checks
• non-compliant bulbs
  • not thrown away
  • sold (yet E-marked)

Approval testing and certification
Profit margin structure

may be up to 50% of the total cost

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Possible ultimate consequence

compliant replacement products
are
no longer available

traffic safety
is
compromised
And how about these?

LED retrofit

all equipped with a cap in use by approved R37 light sources
LED retrofit in front lighting

example

approved halogen light source vs. non-approved LED retrofit

- Luminous output: 1100lm vs. 67lm
- Color of light: 3200K vs. 9300K (outside boundaries for white)
- Emitter size: 4mm vs. 20mm
- Intensity distribution: circular vs. non-symmetrical

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LED retrofit in signal lighting

example

approved filament lamp vs. non-approved LED retrofit

- Luminous output: ok vs. not sufficient
- Red color: ok vs. ok
- Emitter size: 4mm vs. 12mm (too large)
- Intensity distribution: ok vs. does not fit to optical system
Summary of issues

1. Requirements to replacement parts are not harmonised
2. Enforcement and surveillance is sometimes missing
3. Non-compliant products are not identifiable (consumer)
4. Compliant products may disappear from the market
5. Traffic safety may be compromised

how can this be avoided?
Ideas
EU framework directive 2007/46/EC

“Article 28

1. Member States shall permit the sale or entry into service of components or separate technical units if and only if they comply with the requirements of the relevant regulatory acts and are properly marked in accordance with Article 19.

Work programme on automotive legislation 2012 - 2013
Proposals under the responsibility of DG Enterprise & Industry

“....there is a need to strengthen the provisions permitting a better enforcement and surveillance of the market...”

Could this serve as a model for other regions/ countries?

(Only those, not or little time and effort spending to enforcement and surveillance)
Referencing to UN Regulations

The 58 Agreement is about mutual recognition of type approval,

but it looks like

some countries refer to the UN Regulations for in-use compliance.

If this is a good method,

would it be possible/allowed/helpful to amend

UN Lighting Regulations,

so as to serve this purpose?
Agenda items that might give a clue for a start of resolving this issue

- **4.3.** Development of an International Whole Vehicle Type Approval (IWVTA) system and involvement of the Working Parties (GRs) on it

- **4.5.** Feasibility of establishing an electronic database for the exchange of type approval documentation (DETA)
  - Access for manufacturers (organizations) could be helpful

- **6.** Exchange of views on national/regional rulemaking procedures and implementation of established regulations/gtrs into national/regional law

- **8.9.** Exchange of information on enforcement of issues regarding defects and not compliance
Request for guidance
Request

1. Would WP.29 be prepared/able to insert these issues in their agenda?

   a. Would insertion of a requirement in UN regulations be allowed/helpful for reference from national law and so promote harmonisation?

   b. Could the EU framework art. 28 serve as a model for harmonisation?

   c. Access for manufacturers (organisations) to DETA?

2. Or does WP.29 have another suggestion?

THANK YOU