

**From:** Brian Greenway [Brian.Greenway@dft.gsi.gov.uk]  
**Sent:** 15 January 2009 11:35  
**To:** Philip Hanson-Abbott  
**Subject:** RE: Regulation 46 - Camera-Monitor Systems

**Importance:** High

**Attachments:** Extract from UNECE Regulation 46.doc  
Hi Philip

Sorry this took so long.

I would assume the situation in Spain is a National Regulation, which isn't extended to visiting vehicles, although it appears to be based around the amendment to the EU legislation, which only came into force from August 2008. However, in answer to your questions, attached is an extract from UNECE Regulation 46.02 and Amendment 2. This indicates that the split screen can be used for the class IV and class V mirrors simultaneously up to 30kph. Above that speed the screen can show any other information **provided** that the view of the class IV (close proximity) camera view is permanently displayed.

Therefore, although I assume we are talking about the same view, I need to answer the questions by substituting near side view with Close Proximity View.

1. Split screen **Close Proximity View** / rear view when reversing; **Close Proximity View** only at all other times – **Yes** - the Regulation allows this.
2. Split screen **Close Proximity View** / rear view when reversing; **Close Proximity View** only up to 30Kph; split screen **Close Proximity View** / any other view or data display above 30Kph – **Yes** - the Regulation allows this.
3. Split screen **Close Proximity View** / rear view when reversing; split screen **Close Proximity View** / front view at all other times – **No** - the Regulation does not allow this. The front mirror view can only be shown up to 30kph – Item 4 is the only option in this case.
4. Split screen **Close Proximity View** / rear view when reversing; split screen **Close Proximity View** / front view up to 30Kph; **Close Proximity View** only above 30Kph – **Yes** - the Regulation allows this.
5. Split screen **Close Proximity View** / rear view when reversing; split screen **Close Proximity View** / front view up to 30Kph; split screen **Close Proximity View** / any other view or data display above 30Kph – **Yes** - the Regulation allows this.

We are also interpreting “information” to mean either “view” or “data”, but I would advise that you note the disclaimer below.

I understand from our conversations that the close proximity camera may cover a much larger view and, dependent on where it is sited, it could cover the main or wide angle mirror view in addition to the close proximity view. I expect you are already aware that the camera must not project more than 50mm beyond the overall width of the vehicle if it is mounted low down (if it projects more, it must be above 2m from the ground).

NOTE: The information provided is a summary of the Departments understanding of what the law requires. However, ultimately the interpretation of the law is a matter for the courts based on individual facts of any particular case. You are therefore advised to consult the relevant legislation and, if necessary, seek independent advice.

Happy to discuss

Kind Regards

Brian

Brian Greenway  
Department for Transport

Tel: 020 7944 2115

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**From:** Philip Hanson-Abbott [mailto:philip@brigade-electronics.com]

**Sent:** 23 December 2008 10:58

**To:** Brian Greenway

**Cc:** Robert.Taylor@vosa.gov.uk; Chris Baker

**Subject:** RE: Regulation 46 - Camera-Monitor Systems

**Importance:** High

Hi Brian

Interestingly, in Spain there are many different interpretations of the Real Decreto governing visibility around buses carrying school children and, therefore, different implementations of systems to comply. These include, for example:

- split image (reverse and near side) when reversing; then nearside only when moving forwards
- split image (reverse and near side) when reversing; no image when moving forwards
- split screen (reverse and near side) all the time
- split screen (reverse and near side) when reversing and all the time the vehicle is travelling less than 25Kph; near side only above 25Kph
- split screen (reverse and near side) when reversing and all the time the vehicle is travelling less than 25Kph; no image above 25Kph

The common factor is split screen (reverse and near side) in all cases when reversing. In all but one of the above cases the near side camera is visible when moving forward (sometimes split screen, and sometimes whole screen)

According to the Real Decreto, the main purpose of the near side camera is to give the driver visibility of people (children) in the area outside the side access door(s). Therefore, they tend mainly to use high-mounted cameras, looking down.

I am not sure why some of the bodybuilders have no image from the side when moving forwards or when moving forwards above 25Kph. I assume this is because the danger for children is when the vehicle first moves off from a stationary position. However, it ignores the potential to reduce side-swipe accidents by giving the driver visibility of vehicles, cyclists and motorcyclists that may otherwise be hidden in the blind spot.

Regarding the UK position, and your email this morning, my understanding is that the following split screen options are currently allowable – which please confirm:

6. Split screen near side view / rear view when reversing; near side view only at all other times
7. Split screen near side view / rear view when reversing; near side view only up to 30Kph; split screen near side view / any other view or data display above 30Kph
8. Split screen near side view / rear view when reversing; split screen near side view / front view at all other times
9. Split screen near side view / rear view when reversing; split screen near side view / front view up to 30Kph; near side view only above 30Kph
10. Split screen near side view / rear view when reversing; split screen near side view / front view up to 30Kph; split screen near side view / any other view or data display above 30Kph

Note also that we fit more side view cameras low(ish) and looking backwards, than high up looking down. Because of the wide viewing angle, this means that it is possible to see 85%+ of the Class V area and all of the Class IV area in a single image (a point that you made during our conversation yesterday). This means that adding a side view camera to an existing rear view system provides a simple and low cost way for operators to comply with 2007/38/EC (ie fit one camera to view both areas, rather than changing two mirrors) – providing that split screen near side view / rear view is allowable when reversing.

Please confirm.

Many thanks – and best wishes for a MERRY CHRISTMAS and a HAPPY NEW YEAR!  
Philip

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**From:** Brian Greenway [mailto:Brian.Greenway@dft.gsi.gov.uk]  
**Sent:** 23 December 2008 09:11  
**To:** Philip Hanson-Abbott

**Cc:** Robert.Taylor@vosa.gov.uk

**Subject:** RE: Regulation 46 - Camera-Monitor Systems

Hi Philip

We agree with all of this. Our interpretation of the legislation is that a split screen can be used for the front mirror (or another mirror – reversing or as in the Spanish example) that switches off above 30kph. Above that speed the monitor must show an exclusive image from 1 camera.

If this is the conversation we started out with, I apologise for any confusion.

Happy to discuss further. I will be back on 5 January.

Have a very good Christmas.

Kind Regards

Brian

Brian Greenway  
Department for Transport

Tel: 020 7944 2115

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**From:** Philip Hanson-Abbott [mailto:philip@brigade-electronics.com]

**Sent:** 22 December 2008 17:47

**To:** Brian Greenway

**Subject:** Regulation 46 - Camera-Monitor Systems

**Importance:** High

Hi Brian

Further to my earlier email:

I have now read the updated version of 15.2.1.1.2 in Regulation 46. The point that immediately strikes me is that sub-clause (c) is impossible without the use of a split-screen monitor....!

Please confirm.

Thanks and best wishes  
Philip

Hi Brian

Many thanks for this.

As requested, I will prepare and send to you (after the New Year):

1. Photo of monitor with split screen images
2. Details of typical monitor sizes

Incidentally, I should have mentioned that the Spanish introduced earlier this year a regulation for buses that carry school children which requires extended visibility to the near side when driving forwards less than 30Kph, and both the nearside and the rear whilst reversing. Most minibus manufacturers in Spain are now meeting this requirement by fitting camera-monitor systems (many of them ours) with a split screen control box and a speed switch. The driver sees the side view camera (only) when driving forward less than 30Kph – and this automatically switches off above 30Kph. When reversing, the driver sees a split screen view of the side camera and the rear camera on the same monitor.

Note that the split is 50:50 left side:right side of the monitor. The image is slightly 'squeezed' left:right, but no part of the image is lost.

The 'squeezing' effect is not in itself a problem, but can be reduced by using a wide screen monitor. The 'squeezing' effect a similar (but opposite) effect as the 'stretching' left:right of the image that one gets when displaying a standard format picture on a wide screen format monitor. We are all used to this effect because of the prevalence of wide screen TVs, although most old films were made in standard narrower format...which is why people appear short and fat....! We have many satisfied customers that use split screen on standard 4:3 format monitors, as well as some others that use split screen on the newer wide screen format monitors.

Best wishes  
Philip

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**From:** Brian Greenway [mailto:Brian.Greenway@dft.gsi.gov.uk]  
**Sent:** 22 December 2008 16:13  
**To:** Philip Hanson-Abbott  
**Subject:** Regulation

Brian Greenway  
Transport Technology and Standards Division  
Department for Transport  
Zone 2/07  
Great Minster House  
76 Marsham street  
London  
SW1P 4DR

Tel: 020 7944 2115  
Fax: 020 7944 2196  
[brian.greenway@dft.gsi.gov.uk](mailto:brian.greenway@dft.gsi.gov.uk)

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