

Display Control Unit (DCU) - human exposure analysis according to FCC regulation



Boundary conditions

The investigation was carried out with two different armrest types that are currently installed in Fendt tractors. For example, the small armrest is used on the Fendt 200 series, while the large armrest is used on large tractors such as the Fendt 700 series.

It is important to note that only seat center positions are used in the analysis. The same applies to the armrest. Extreme positions of the seat or armrest do have an influence on the result.

As a dummy, a 50-percentile man is used (corresponds to the average European man). Other body sizes and confections can also massively influence the result.

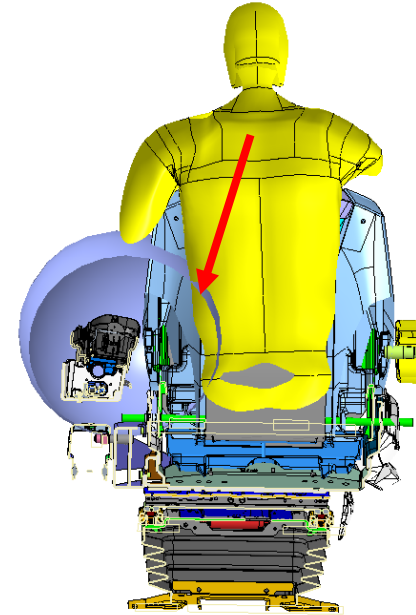
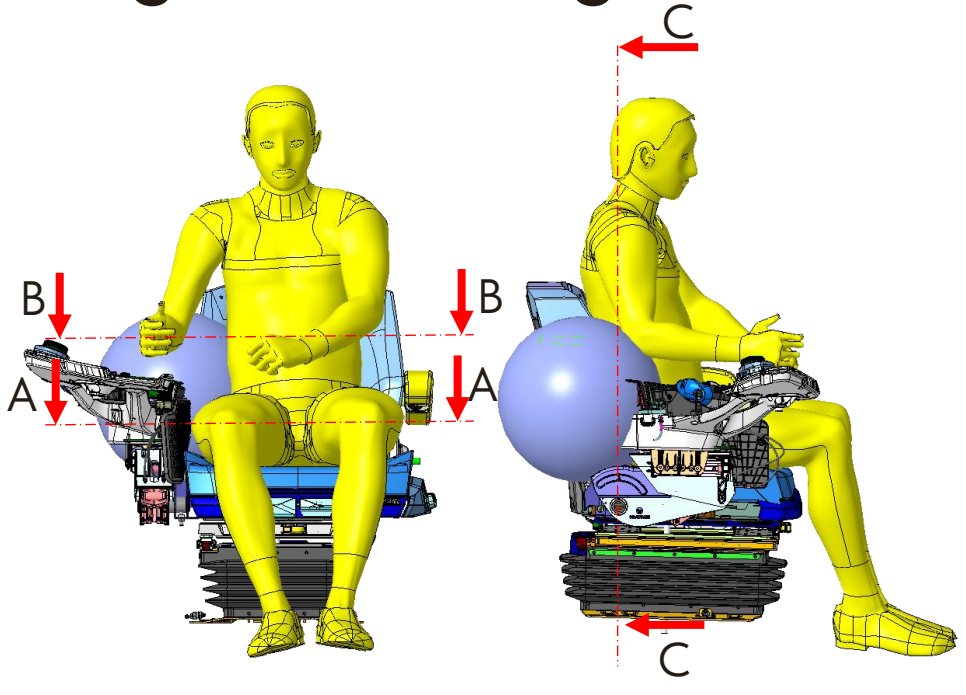
Different driving maneuvers influence the body postures.

Further details:

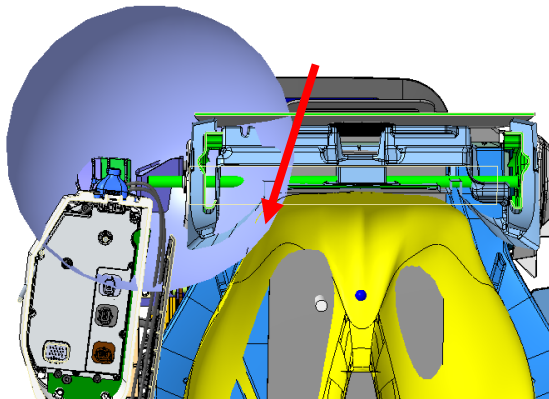
- DCU REV1 with SPB209A WiFi/BT module and PC14 antenna
- ISRI M222PB252010E driver seat and large armrest of Fendt 700
- Grammer S120PB2519140 driver seat and small armrest of Fendt 200
- Manikin 50p man installed on seat index point and pushed onto the backrest (C:\Users\hilderic\OneDrive - AGCO Corp\Shared Documents - Sharepoint_EFK_ALLE\08_CAD_NEXUS_SAP\01_RAMSES\04_RAMSES-REPORT\Untersuchungen\MRC-Funksignal-Untersuchung) Use of Test_Manikin4
- Sphere with diameter Ø400mm installed at the center of the antenna



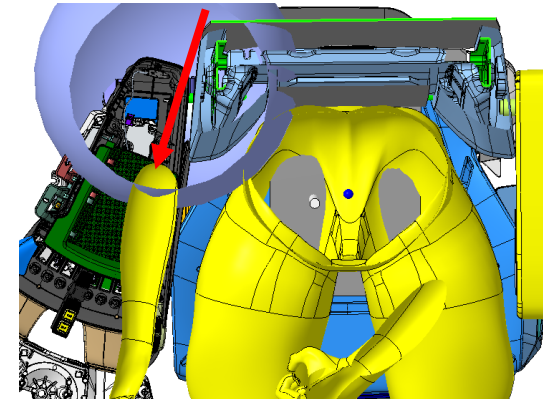
Integration in large armrest (e.g. Fendt 700) – investigation results



C-C:
Penetration of up to 38mm.

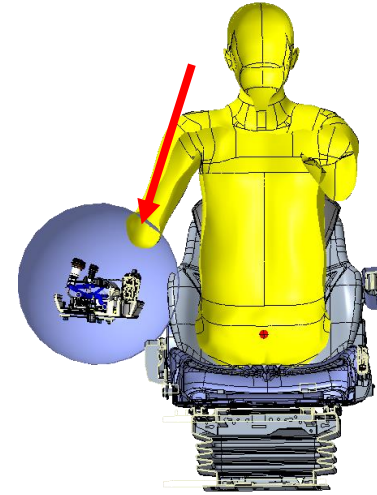
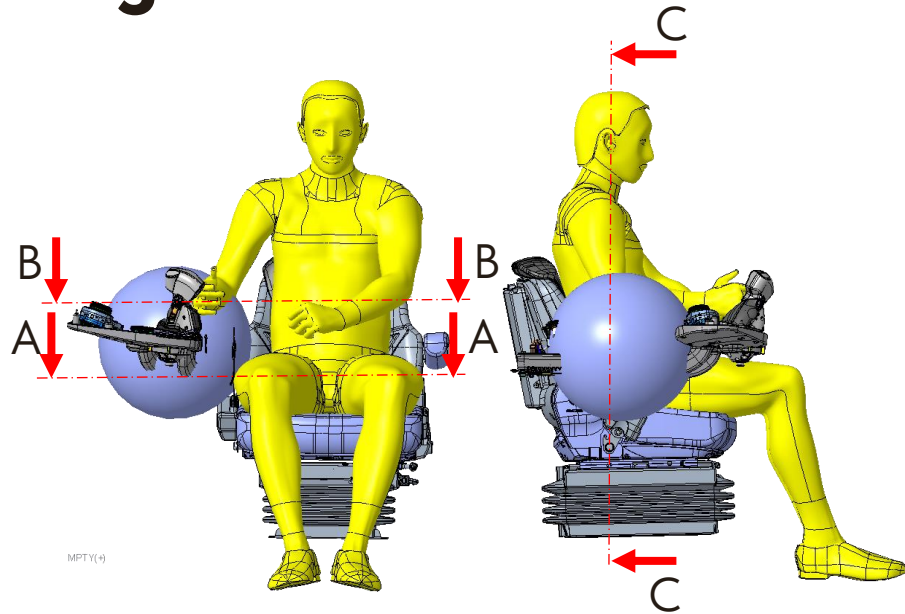


A-A:
Penetration at 458mm above
seat base approx. 20mm

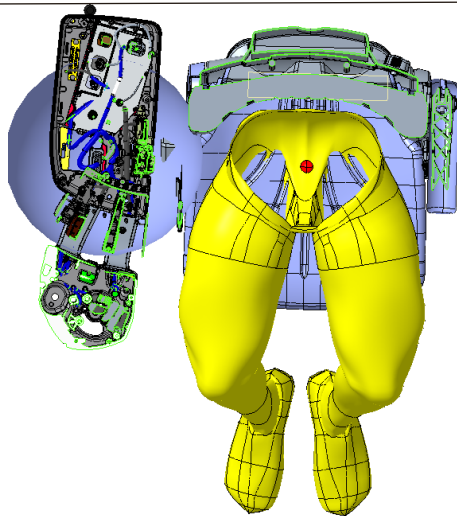


B-B:
Penetration of the elbow at 653
mm above seat base.

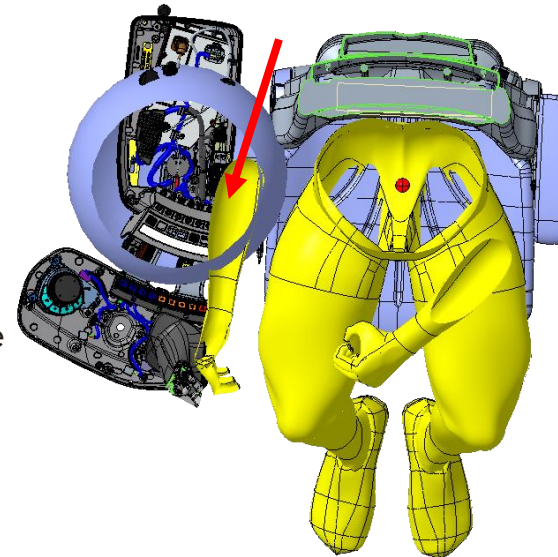
Integration in small armrest (e.g. Fendt 200) – investigation results



C-:C
The torso is not penetrated. The elbow and forearm are completely penetrated.



A-A:
No penetration in the hip area
(height approx. at 500 mm above
seat base)



B-B:
Complete penetration of the
forearm and elbow at 630 mm
above the seat base.

Summary and interpretation

Context of the investigation is the human exposure requirements according to FCC regulations of the integrated SPB209A WiFi/BT module (see, excerpt from data sheet):

„The internal / external antenna(s) used for this mobile transmitter must provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter “

Interpretation of the investigation results for small, mid-range and large cabins: Minimal collisions of the 20cm radius sphere with hip and elbow of the dummy are detected.

AGCO assumes to be compliant under consideration of:

- a certain inaccuracy of the driver position
- a certain movement of the driver over the course of the day
- the duty cycle of the Wifi / BT usage (only during certain operations e.g. field data exchange, SSI)
- the material that encloses the DCU attenuates the signal sufficiently