Protokoll nr 11, 2019-11-22
sammanträde bolagsstyrelsen
GS Buss AB

Närvarande:

Ordinarie:	Ann-Britt Svensson	Ordförande	
	Olof Lindgärde	Förste vice ordförande	
	Thomas Larsson	Andre vice ordförande	
	Hans Nilsson		
	Stefan Söderman		
Suppleanter:	Fredrik Biörnerud	Tjänstgörande	
	Dan Berggren	Tjänstgörande	
	Björn Bernehed	Tjänstgörande	
	Stina Svensson	Tjänstgörande	
	Jonathan Ahlström		
Personalrepr.	Miroslav Lakobrija	Vision	§§ 129-146
	Reza Bahadori	Kommunal	§§ 129-146
Övriga:	Birgitta Roos	Tf Verkställande direktör (VD)	§§ 129-144, 146
	Dan Paulström	Affärsområdeschef Buss	§§ 129-144, 146
	Malin Andersson	Chef HR (CHR)	§§ 129-144, 146
	Frida Hagenius	Sekreterare (SEK)	§§ 129-144, 146
	Annette Johansson	Chef Kommunikation (CK)	§§ 129-144, 146
	Anne-Beate Silverfjäll	Chef Ekonomi&Admin (CHE)	§§ 129-144, 146
	Roger Lindgren	Projektledare Koncernbildning	§§ 129-144, 146
	Ingela Åslund	Ledningsassistent	§§ 129-144, 146
Frånvarande:	Per Anders Örtendahl	Ordinarie	
	Gertrud Ingelman	Ordinarie	
	Marie Lökkeberg	Ordinarie	
	Ewa Karlholm Janson	Ordinarie	
	Rasmus Loberg	Suppleant	

Tid: kl. 15:30 – 17.15

Justerande: Thomas Larsson

Underskrifter:

Sekreterare Frida Hagenius §§ 129-144, 146

Ordförande §§ 129-146

Justerande §§ 129-146

§ 129 **Sammanträdets öppnande**
Ordförande hälsade styrelsen välkommen och öppnade mötet.

§ 130 **Val av justerare**
Thomas Larsson utsågs att jämte ordföranden justera dagens protokoll.

§ 131 **Godkännande av dagordning**
Utsänd dagordning godkändes.

§ 132 **Ev. anmälan av jäv**
Ordförande frågade om någon styrelseledamot behövde anmäla jäv i dagens beslutsärende, vilket ingen gjorde.

§ 133 **Föregående sammanträdesprotokoll**
Protokoll från möte den 25 oktober 2019 godkändes och antecknades till handlingarna.

§ 134 **VD-info**
Återkoppling på fråga från 25 okt 2019, angående magnetfält i Volvos elbussar
Affärsområdeschef Buss informerade att frågan är ställd till Volvo som återkommit med besked om att mätningar är gjorda på hybridbussarna, och att nya mätningar kommer att genomföras nu på elbussar. Samtliga bussar är EU-godkända och sammanfattningsvis är AO Chef Buss slutsats att magnetfälten är låga under laddning och för föraren under körningen. Ytterligare information finns i rapport "Measurement of magnetic flux density in an electric hybrid bus at Volvo Bus Corporation", vilken bilägges protokollet som Bilaga 1.

Elbussar i trafik
Affärsområdeschef Buss informerade om att åtta elbussar är numera i drift på linje 60 och att samtliga elbussar skall vara i drift innan jul.
Styrelsen beslutade

Budgetprognos, återkoppling från fråga 25 okt 2019
VD besvarade Björn Berneheds fråga om möjlighet att få budgetprognos per månad redovisad, med att detta endast tas fram vid akuta situationer och då särskilda risker föreligger. Budgetprognos redovisas fyra gånger per år enligt beslutad process.

Styrelsen beslutade

att anteckna informationen till protokollet.

§ 135 **Info från Presidiet**
Fråga ställd den 25 okt 2019 från Björn Bernehed om möjlighet med ackumulerad paragrafnumrering inom parantes på dagordningen besvarades, med ett nej.

Styrelsen beslutade

att anteckna informationen till protokollet.

§ 141 **Budget 2020**

Materialet var sedan tidigare utsänt. CEA tillsammans med Affärsområdeschef Buss redogjorde för innehållet i budgeten för 2020.

Styrelsen beslutade, med omedelbar justering

att godkänna budget för 2020.

§ 142 **Intern kontrollplan – statusuppdatering**

Materialet var sedan tidigare utsänt. Styrelsen anser att underlaget är bristfälligt.

Styrelsen beslutade att

att återremittera ärendet till den 7 februari 2020.

§ 143 **Sammanträdesdagar 2020**

Materialet var sedan tidigare utsänt. VD informerade om att vid de tillfällen under året som Uppföljningsrapporten ska lämnas, behöver moderbolaget GSK ha två dagar på sig att sammanställa sin Uppföljningsrapport för koncernen, därav att dagarna för styrelsesammanträdena då ligger på olika dagar (och inte på samma dagar som innevarande år).

Styrelsen beslutade

att godkänna sammanträdesdagar för 2020.

§ 144 **Övriga frågor**

Inga övriga frågor anmäldes.

§ 145 **Utvärdering av styrelsens arbete**

Samtliga tjänsteanställda lämnade möteslokalen, därefter genomförde styrelsen den årliga utvärderingen av sitt eget arbete.

Styrelsen beslutade

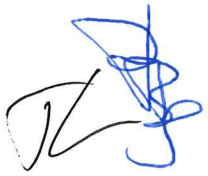
att anteckna informationen och konstaterade att inga brister som behövs åtgärdas har identifierats.

§ 146 **Mötets avslutande**

Ordföranden tackade styrelsen för dagens sammanträde och förklarade därefter sammanträdet avslutat.

Nästkommande ordinarie styrelsemöte är (2020):

7 februari Styrelsemöte
13 mars Styrelsemöte
22 april Styrelsemöte
29 maj Styrelsemöte
28 augusti Styrelsemöte
23 september Styrelsemöte
23 oktober Styrelsemöte
25 november Styrelsemöte



BILAGA 1

Yngve Hamnerius AB

Measurement of magnetic flux density in an electric hybrid bus at Volvo Bus Corporation

May 10, 2015, Rev A

Content

1 Introduction

On a request from Volvo Bus Corporation, Sam Letafat, the magnetic flux density in an electric hybrid bus at Volvo Bus Corporation was measured 2015-04-24.

The background to the measurements was demands from authorities:

- The European Council Recommendation of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz) (1999/519/EC).
- Directive 2013/35/EU - electromagnetic fields of 26 June 2013 on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (electromagnetic fields) (20th individual Directive within the meaning of Article 16(1) of Directive 89/391/EEC)

The European Council Recommendation builds on ICNIRP ”Guidelines on limits of exposure to time-varying electric, magnetic, and electromagnetic fields (up to 300 GHz)”, International Commission on Non-Ionizing Radiation Protection, Health Physics, April 1998, Volume 74, Number 4.

The recommendation is non binding for the member states, but it is used in many of the member countries. In Sweden the recommendation is implemented by the Radiation Protection Agency (Strålsäkerhetsmyndighetens allmänna råd om begränsning av allmänhetens exponering för elektromagnetiska fält; **SSMFS 2008:18)**.

The Directive is compulsory from July 1st 2016 in all member states. The directive is based on ICNIRP Guidelines for Limiting Exposure to Time-Varying Electric and Magnetic Fields for low frequencies (1 Hz - 100 kHz), Health Physics, June 2010, Volume 99, Number 6 and on the above mentioned ICNIRP 1998 for higher frequencies.

The limits in the Recommendation and in the Directive differ, not only in levels, but also in frequency dependence. However the limits in the Recommendations are always stricter than in the Directive.

In article 4, section 6 of the Directive it is stated “In workplaces open to the public it is not necessary for the exposure assessment to be carried out if an evaluation has already been undertaken in accordance with the provisions on the limitation of exposure of the general public to electromagnetic fields, if the restrictions specified in those provisions are respected.”

This means that if the demands for the general public (=the Council Recommendation) are fulfilled then it has been satisfactory shown that also the EU Directive is fulfilled and there is no demand to do a separate assessment against the Directive.

We have therefore made the assessment of the bus against the Counsil Recommendation.

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2 Measurements

The measurements were performed on an electric hybrid bus with ID YV3T1U225F1171329, see figure 2.1.

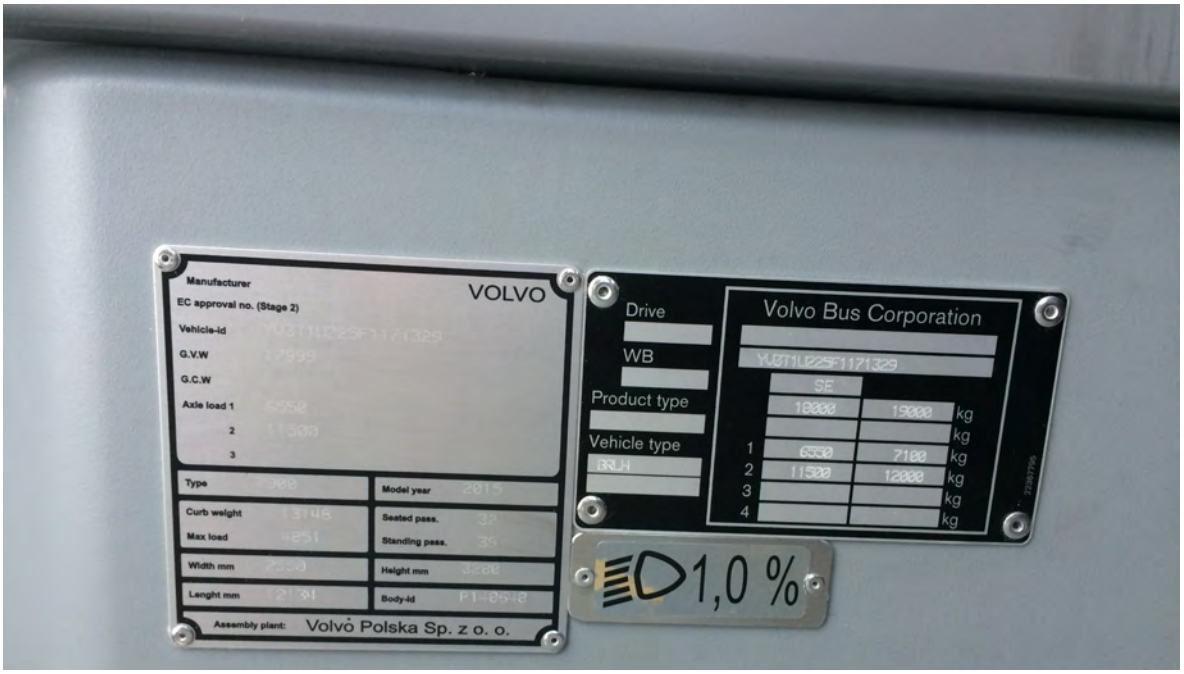

Figure 2.1. Identification plate of the bus.

Four modes were examined, low power charging, high power charging, pure electric drive and hybrid drive.

Place: Volvo bus garage at Arendalsvägen Gothenburg and driving in the Arendal area on flat ground 5-50 km/h including acceleration, gear shift and braking.

The measurements were performed by Tomas Nilsson and Yngve Hamnerius of Yngve Hamnerius AB assisted by Sam Letafat and 3 colleagues from Volvo Bus Corporation for driving the bus and performing charging.

Measuring equipment:

Magnetic field meter Narda ELT-400 serial number M0021.

Oscilloscope Picoscope 3424 serial number IJY57/041.

The magnetic fields were measured in “standard” mode showing the exposure as a percentage of the ICNIRP 1998 limits for occupational exposure. The frequency range was set to10 Hz-400 kHz while charging and 30 Hz-400 kHz while driving. A higher start frequency was chosen during driving in order to avoid false signals due to movements of the measuring probe in the earth magnetic field.

The limit for general public is 20% of the occupational limit, meaning that measurement values < 20 % fullfils the EU Council Recommendation. The internal noise level of the measurement instrument is 0.3 %, meaning that measurement values of 0.3 % is noted

when the field level is 0 – 0.3 %. If the instrument is switched to RMS amplitude mode the noise level is 0.03 μT.

During a test-drive the passenger positions which had the highest exposures were identified. They were the last seat on the left side and the middle seat of the back, at the floor, see figure 2.2.

Figure 2.2. Measurement point: the middle seat of the back, at the floor.

3 Measurement results

High power charging

The magnetic fields were measured during high power charging, se figure 3.1.

Figure 3.1 Top of the bus, the rails that the pantograph connects to during high power charging are shown.

The measured magnetic flux density expressed as a percentage of ICNIRP 1998 occupational limit is shown in table 3.1 for high power charging. In order to fullfil the EU Council Recommendation the measured values should be below 20 %.

Table 3.1 Measured levels of magnetic fields during high power charging.

High power charging	% of ICNIRP 1998 occupational limit			
	All electrical equipment off and batteries disconnected	Battery connected, ignition off	Ignition on, not charging	Ignition on, charging
Driver position				
Head	0.3%	0.4%	0.5%	0.5%
Torso	0.3%	0.5%	0.3%	0.4%
Feet	0.3%	1%	0.4%	0.4%
Hands	0.3%	0.3%		0.3%
Cable duct close to roof	0.3%	0.4%	2.5%	
Passenger position				
Seat last, left side	0.3%			0.5%
Floor, last left side	0.3%			0.6%
Head, last left side	0.3%			0.3%
Seat last middle at floor	0.3%			1.6%

The highest level was measured behind the driver compartment, at the cable duct, close to roof, see figure 3.2. This is a position where no person normally is positioned.

Figure 3.2. Measurement point at the cable duct, close to roof.

Low power charging

The magnetic field were measured dururing low power charging. The measured magnetic flux density expressed as a percentage of ICNIRP 1998 occupational limit is shown in table 3.2 for low power charging.

A measurement was also made at the charge box, where the highest level was found below the box, see figure 3.3.

Table 3.2. Measured levels of magnetic fields during low power charging.

Low power charging	% of ICNIRP 1998 occupational limit			
	All electrical equipment off and batteries disconnected	Battery connected, ignition off	Ignition on, not charging	Ignition on, charg-ing
Driver position				
Head	0.3%		0.5%	0.6%
Torso	0.3%		0.3%	0.3%
Feet	0.3%		0.3%	0.4%
Hands	0.3%		0.3%	0.4%
At cable duct close to roof	0.3%			
Below cover of charger box	0.3%			0.7%

Figure 3.3. Charge box used for low power charging.

Driving

The magnetic levels measured during driving, expressed as a percentage of ICNIRP 1998 occupational limit is shown in table 3.3. As the levels varied a bit during driving depending on speed etc, some measurement at the driver position were done in the max hold mode. These measurements were done during a whole cycle of acceleration, driving at speed approximately 50 km/h and breaking, the maximum reading is registered.

Table 3.3. Measured levels of magnetic fields during driving.

Driving	% of ICNIRP 1998 occupational limit		
	Hybrid drive	Electric drive	Electric drive, max hold
Driver position			
Head	0.6%	0.4%	0.7%
Torso	0.6%	0.4%	0.7%
Feet	0.9%	0.4%	
Hands		0.4%	
Passenger position			
Seat last, left side	0.4%	0.5% *1	
Floor, last left side	1.5%	2%	
Head, last left side	0.4%	0.4%	
Seat, last middle		0.6%	
Head, last middle		0.4%	
Seat, last middle at floor	2.3% *2 *3	1.9%	

*Note: *1 recording 20140424-0002*
*Note: *2 recording 20140424-0003*
*Note: *3 Occasionally 3%, associated with buzzing noise.*

The time variations of the magnetic field where registered on a digital oscilloscope for positions close to the motor. A registration during electric drive measured in the last passenger seat on the left side is shown in figure 3.4. In order to assess the frequency content of the magnetic field a FFT analysis of the signal is shown in figure 3.5.

As read from figure 3.5 there are higher amplitudes registered at frequencies around 1, 3, 9 and 27 kHz.

A registration during hybrid drive, measured in the measurement point shown in figure 2.2, is shown in figure 3.6. In order to assess the frequency content of the magnetic field a FFT analysis of the signal is shown in figure 3.7.

As read from figure 3.7 there are higher amplitudes registered at frequencies around 1, 3, 8, 24 and 36 kHz.

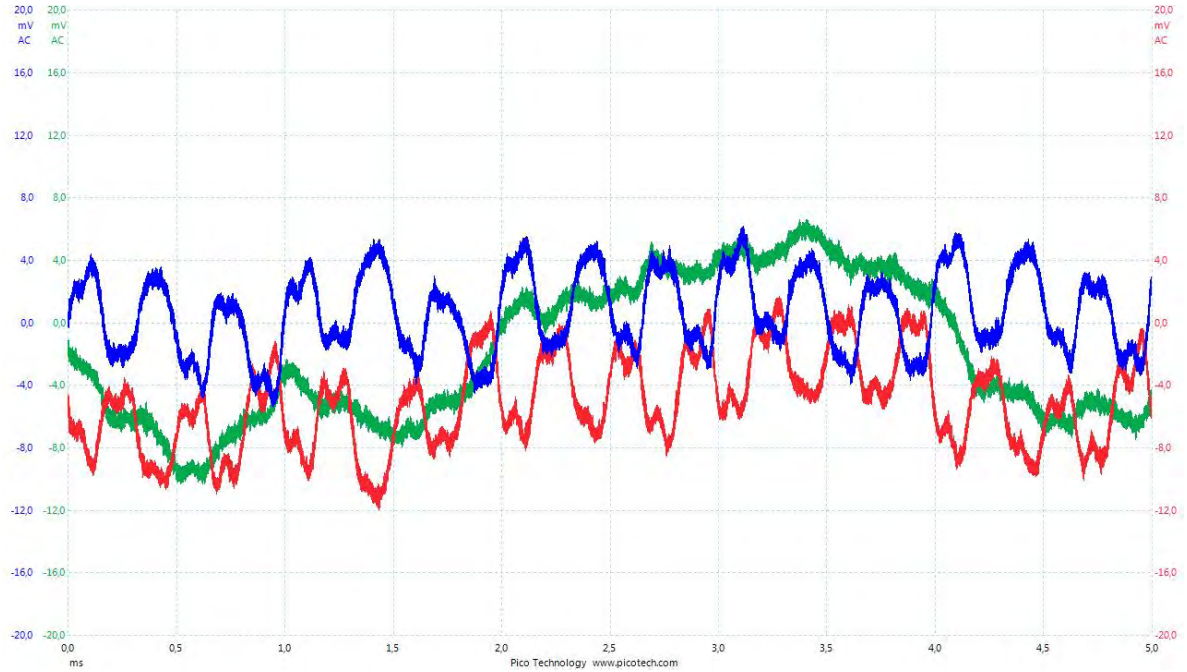

Figure 3.4. Output voltage from instruments 3 orthogonal magnetic field coils versus time in ms, during electric drive (recording 20140424-0002).

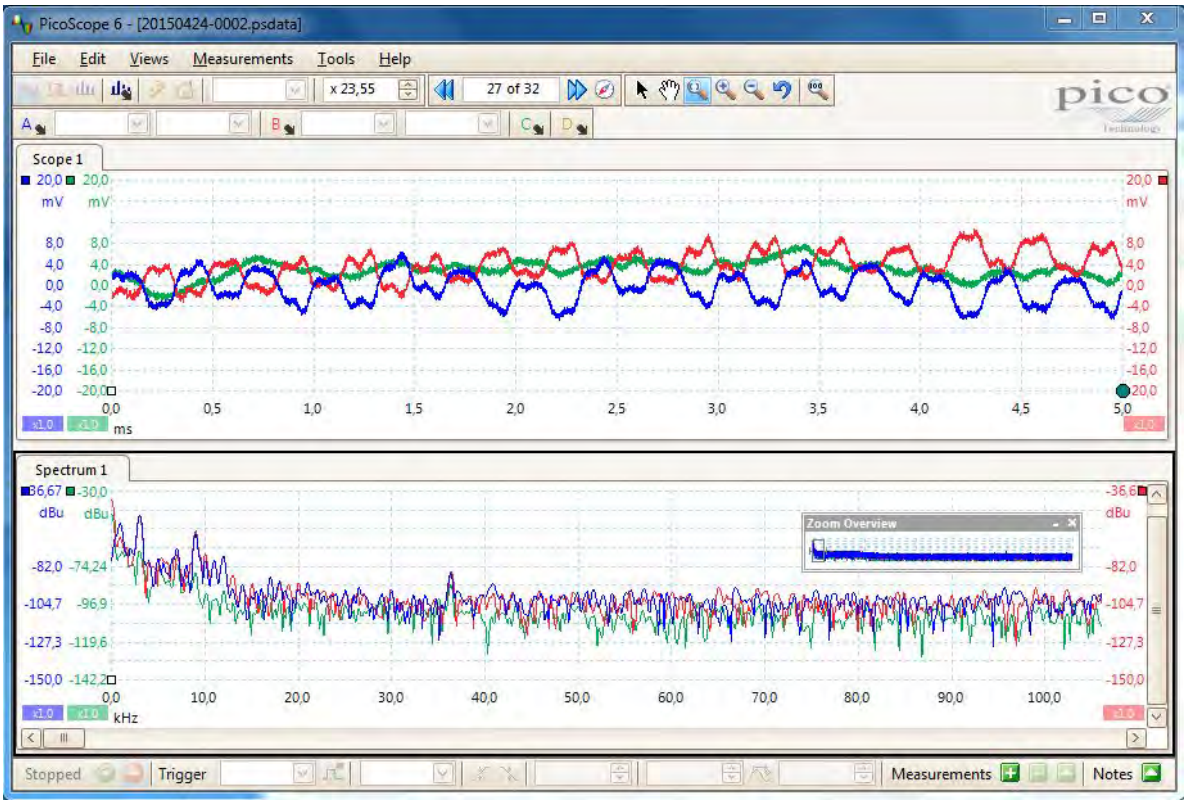

Figure 3.5. Top: Output voltage from instruments 3 orthogonal magnetic field coils versus time in ms, during electric drive. Below: FFT spectra of the signals, X-axis in kHz.

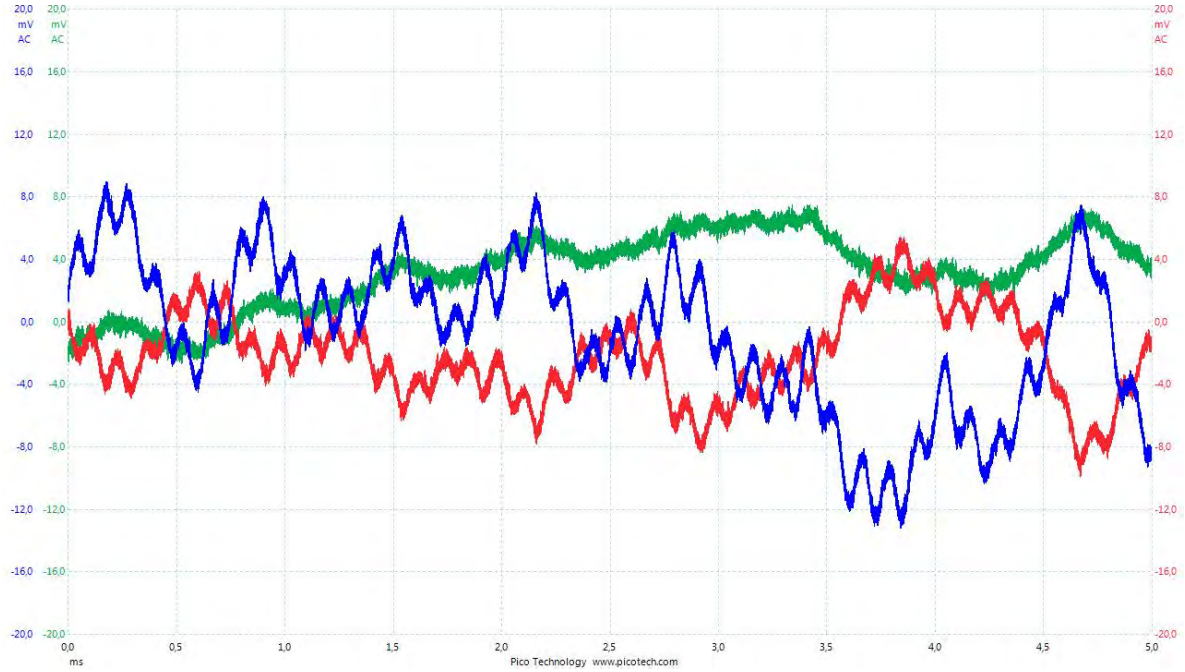

Figure 3.6. Output voltage from instruments 3 orthogonal magnetic field coils versus time in ms, during hybrid drive (recording 20140424-0003).

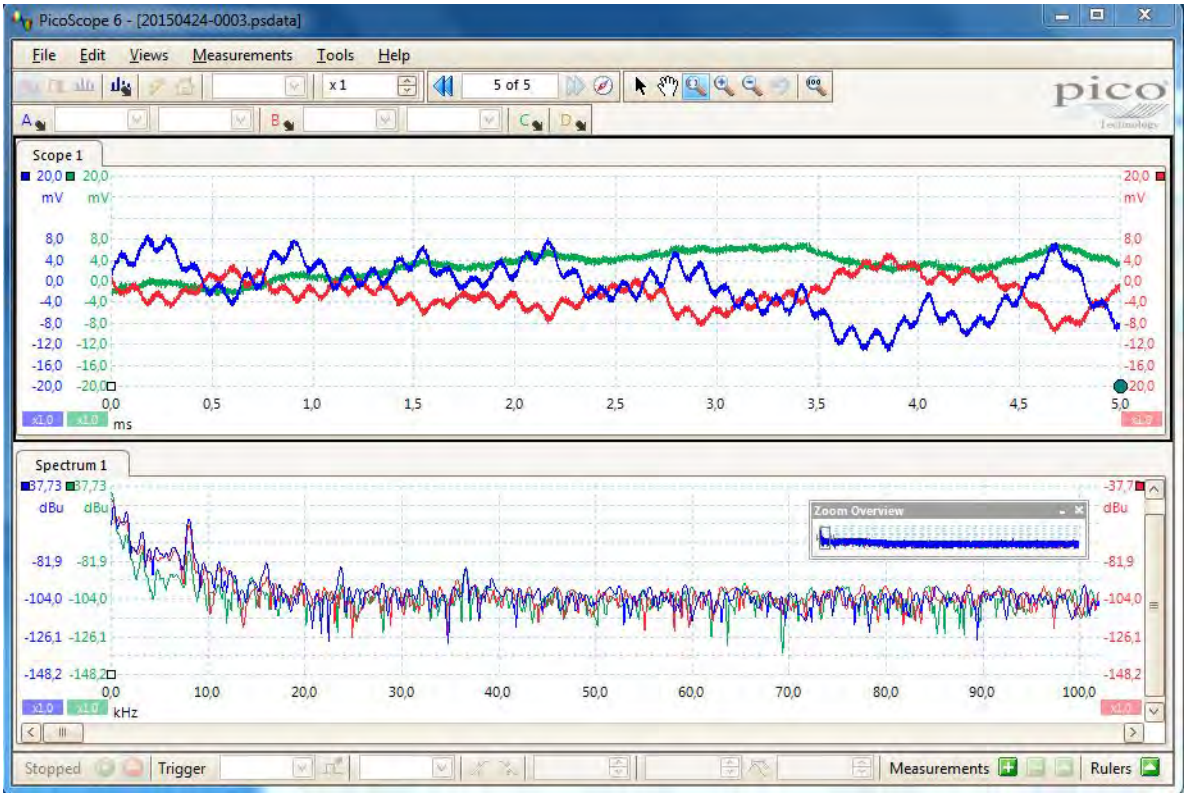

Figure 3.7. Top: Output voltage from instruments 3 orthogonal magnetic field coils versus time in ms, during hybrid drive. Below: FFT spectra of the signals, X-axis in kHz.

4 Discussion

The measurements in all measured positions in the bus and during all modes (charging, electric drive, hybrid drive) showed low levels, much lower than the EU Counsil Recommendation.

This means that the bus fullfils the EU Counsil Recommendation for the general public. Work places that fullfils the demands for general public also fullfils the the EU Directive 2013/35/EU for workers.

The excellent result is due to a carefull design, where forward and return AC currents are short and kept together. The most critical components, electric motor and alternator, are kept close together, meaning short AC current paths, see figure 4.1.

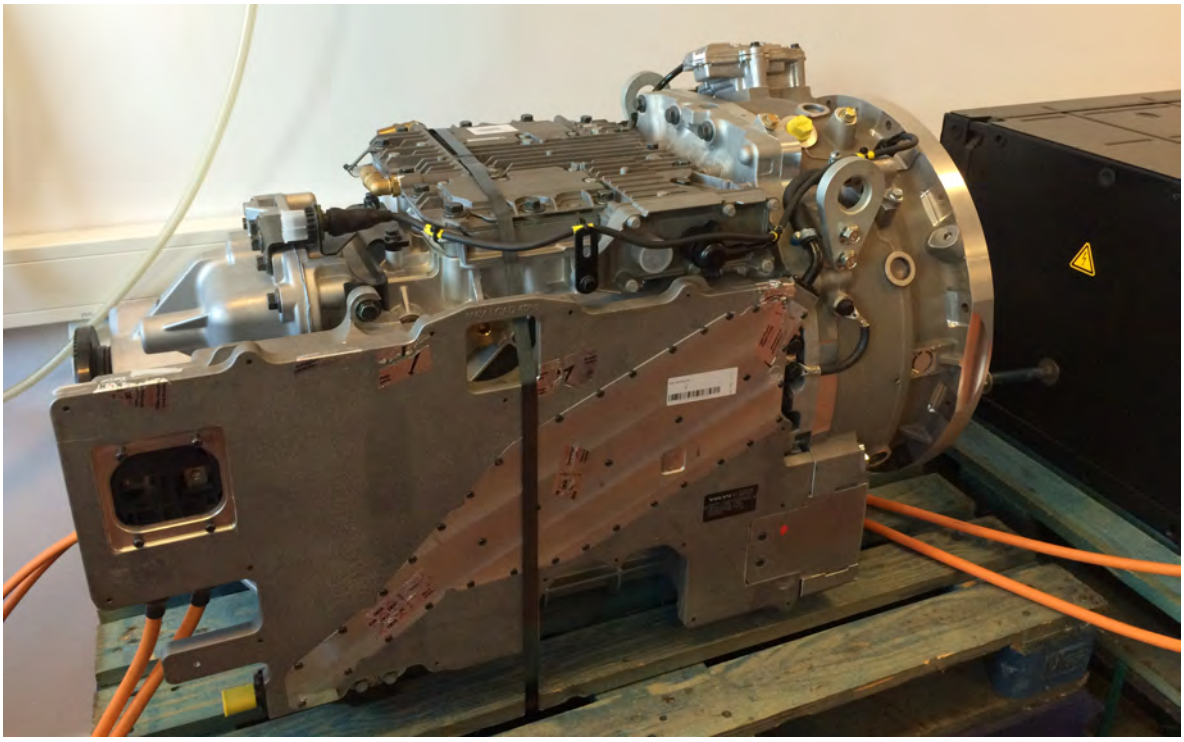

Figure 4.1. Electric motor and alternator are kept in a compact packing, resulting in low magnetic fields.

Measurement at the seats in the back closest to the motor showed very low levels. The fields at the driver position is also very low, both during drive and charging.

Yngve Hamnerius, Professor