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| INTERNATIONAL TELECOMMUNICATION UNION | | **Focus Group On Car Communication** |
| **TELECOMMUNICATION STANDARDIZATION SECTOR**  STUDY PERIOD 2009-2012 | | **FG CarCOM-R-8** |
| **English only**  **Original: English** |
|  |  | Braunschweig, 8-9 December 2011 |
| **REPORT** | | |
| **Source:** | Chairman FG CarCOM | |
| **Title:** | Report of FG CarCOM meeting held in Braunschweig, Germany, 8‑9 December 2011 | |

***Abstract***

*ITU-T FG CarCOM held its 8th meeting in Braunschweig, Germany on 08-09 Dec. 2011. Incoming liaisons from ITU-T and FG Distraction were reviewed. No output liaison was needed. New contributions were received on the latest draft of FG.VSSR (Subsystem requirements for automotive speech services), a new noise distortion metric and a new SNR metric were agreed to be integrated in FG.VSSR. Furthermore a new annex on delay and buffer alignment considerations was agreed. In addition time was spent on discussing and progressing, the microphone subsystem requirements and the audio subsystem requirements of FG.VSSR. New figures were discussed and agreed on. The next FG Distraction meeting will be held in Kyoto, Japan on 12-13April 2012. The final dates and location are to be confirmed.*

**1.0 Introduction**

This document is a meeting report from the 8th meeting of ITU-T FG CarCOM which was hosted by University Braunschweig in Germany on 08-09 Dec. 2011.

The meeting documents are available on the ITU-T website and may be downloaded for free at: <http://www.itu.int/md/T09-FG.CARCOM2-110829/sum/en>

In this report, the participants are identified by their initials (see the table in Annex 1). Annex 2 provides the list of documents.

**2.0 Review of Liaison Statements (LS)**

**2.1 LS “New Focus Group on driver distraction (Response to COM 2 LS 107)” from FG Distraction (IL-18)**

This LS, from FG Distraction to SG 2, JCA-AHF, was copied to FG CarCOM for information only.

The group felt that no response was needed since this liaison was sent to FG CarCOM for information only.

**2.2 LS “Liaison on revision of Recommendation ITU-T P.501 including fullband speech signals” from ITU-T Q4/12 (IL-19)**

This liaison statement gives information about the finalization of the new ITU-T Rec. P.501 where speech test signals are included. Since the new test signals are very relevant for all tests dealt with in FG.VSSR as well as for P.1100 and P.1110 some time was spent on a short introduction of the new P.501draft. The chairman who is also rapporteur’ of Q.6/12 introduced P.501.

The group felt that no response was needed since this liaison was sent to FG CarCOM for information only.

**2.3 LS “Liaison on Appendix III to P.863 - Prediction of acoustically recorded narrowband speech” from ITU-T Q9/12 (IL-20)**

This liaison statement gives information about the new Appendix III to P.863 – “Prediction of acoustically recorded narrowband speech” which was approved at the ITU-T SG12 meeting on 9 November 2011 about the new Appendix III to P.863 – “Prediction of acoustically recorded narrowband speech” which was approved at the ITU-T SG12 meeting on 9 November 2011. Its potential application for car-hands free was discussed. Clearly, more experience is needed before integrating the method and defining limits for car hands-free.

The group felt that no response was needed since this liaison was sent to FG CarCOM for information only.

**2.4 LS “Reply to LS from FG CarCOM , Q18/16 and Q16/16 on "Tandeming of voice quality enhancement devices in end to end connections and signalling of signal processing capabilities between terminals" from ITU-T Q11/12 (IL-21)**

This liaison statement gives information about the new work item G.Tandem-QoE. The planned Recommendation should identify methods for assessing end-to-end voice quality for connections involving multiple VEDs, and will propose methods for managing individual VEDs so as to provide satisfactory end-to-end voice quality.

The group felt that no response was needed since this liaison was sent to FG CarCOM for information only. FG CarCom will be pleased to receive further input if the work is progressing.

**3.0 New Contributions**

**3.1 “Adding viewpoint of frame process and delay, etc.” from Asahi Kasei Corporation (C-23)**

This contribution proposes some modifications and additions to FG.VSSR. It was already received for the last meeting but too late to be considered at that meeting.

The document was introduced the second day and the input on delay and buffering was felt very valuable. It was decided to provide the information contained in chapter 2 as an annex to FG VSSR. In the main body of FG VSSR a note shall be added to all sections where delay is measured to give information by the manufacturer about the size of a delay buffer if present. The delay considered in the individual sections of the document should be the processing delay. Considerations about the impact of potential buffers and their impact on the overall delay should be made in the annex.

**3.2 “Proposal of a Noise Distortion Measure” from Volkswagen AG, Technische Universität Braunschweig (C-25)**

This contribution proposes an objective measure of noise distortion that is intended to be used to optimize performance of a noise reduction system based on noise level fluctuations. The method used is the curtosis. The measurement should be complimentary to the determination of S-, N- and G-MOS based on ETSI EG 202 396-3.

The document and the related material included were discussed. During the discussions it got clear that the measured curtosis also would depend on any level fluctuation of the (input) background noise signals. It was decided

* To integrate the method in an annex.
* That further material should be made available to give a mapping function for the method also for narrowband. University Braunschweig agreed to provide these data for the next CarCom meeting.
* Besides the use with the actual car noise a set of background noise signals from the ETSI database EG 202 396-1 should be defined clearly for use of the method and give comparable results with different noise cancellation algorithms.

The group thought the proposed approach could be a useful tool for tuning noise reduction systems. Therefore, it was agreed that **TF** would provide proposed text for an annex or appendix of FG.VSSR for the next meeting.

**3.3 “Proposal of a Reference-free SNR Measurement” from Volkswagen AG, Technische Universität Braunschweig (C-25)**

This contribution proposes an objective SNR measure without using a reference channel. The method is intended calculate SNR where no reference channel is available. The paper showed a good correlation of the proposed method for mostly stationary noises to the actual SNR. Depending on signal length the SNR estimation error can be less than 1 dB. It was decided

* To integrate the method in the microphone section.
* To reference the method using a publication to be made by University Braunschweig.
* To use P.501 speech samples.
* To limit the measurement duration to about 30 s - this is given by the concatenation of the speech samples.
* To refer the SNR achieved by the hands-free microphone to the SNR achieved by an omidirectional microphone positioned 20 cm in front of the HATS in the car.

The text of FG.VSSR was updated accordingly. Whether the SNR should be A-weighted or not could not be decided during the meeting. Further input on the application of the method is expected.

**3.4 “Draft 12 of FG.VSSR” from FG CarCOM Chairman (C-27)**

This contribution contains the 12th draft of a new ITU-T recommendation on subsystem requirements for automotive speakerphones. It reflects discussions so far, the microphone section was updated for discussion during the meeting. A further draft 13 was provided in advance to the meeting which included additions to the section on audio subsystems and additional SNR tests for the unidirectional and bidirectional transport.

**4.0 Meeting discussions**

**4.1 Day 1 discussions**

Prof. Fingscheidt and the Chairmanwelcomed participants. The chairman thanked University Braunschweig for hosting the meeting. The agenda was reviewed and approved.

Delegates were asked if there were any IPR declarations; and there were none.

Liaison statements were then reviewed. Please see Section 3 for the discussions and decisions related to these liaisons.

Then the contributions from University Braunschweig were introduced and discussed. See section 3 for the results and decisions.

Further discussions took place on the measurement parameters for the microphone subsystem. The outputs of the discussions were captured in the revised FG.VSSR (**C-28**) in the form of modifications to the text or comments.

It got clear during the discussions that a lot of measurements need to be provided in order to form a solid basis for the QoS class requirements.

**4.2 Conference call discussions**

At end of Day 1 there was a conference call for those who could not attend the meeting in person. Unfortunately only **RB** joined the call (see Annex 1).

During the call the Chairman reviewed liaisons and earlier discussions. There were no concerns raised with previous agreements.

During the call it was decided to held the next meeting in Japan in April CW 15, preferably at the end of the week (April 12 & 13) in Kyoto. **YN** kindly offered to host the meeting and will provide further information by the end of the year/beginning of next year.

The next but one meeting than is planned at Chrysler in Michigan where **RB** kindly offered to host the meeting July 16 & 17.

**4.3 Day 2 discussions**

The day 2 discussions started with the introduction and discussion of **C-23**. Findings and agreements are found in section 3.

After that the new chapters for the audio subsystem were discussed. Quite some time was spent of the discussion on delay and frequency response characteristics requirements. The result is found in the tables of the latest draft of FG VSSR.

Finally the new SNR measurements in the unidirectional and bidirectional transport were introduced. The additions were agreed however, the limits still are to be discussed.

The meeting was then closed.

**5.0 Work plan**

Below is the current work plan for FG CarCOM:

* April 12 – 13, 2012 Kyoto meeting of FG CarCOM:
  + Work on 14th version of FG.VSSR
* July 16 – 17, 2012 Detroit meeting of FG CarCOM:
  + Work on 16th version of FG.VSSR

**Action items:**

**Remaining work from last meeting:**

1. **PN** to work on annex/appendix containing wind buffet test procedure
2. **SP** to work on Signal Enhancement Layer section of FG.VSSR

**New work:**

1. **TF** to provide input on signal enhancement based on procedures from P.1100/P.1110 (to be coordinated with **SP**)
2. **TF** to provide text for the noise distortion method as describe in section 3
3. **YI** to provide annex on delay and buffering
4. **MF** to provide new figs. by end of week 50 to be integrated in FG.VSSR draft 14
5. **HG** to provide updated draft to the group when received the figs. from **MF** and updated text from **TF**
6. **HG** to further work on audio subsystem
7. **ALL: To provide input on measurements!**

Annex 1

**List of participants**

**Attended meeting in person:**

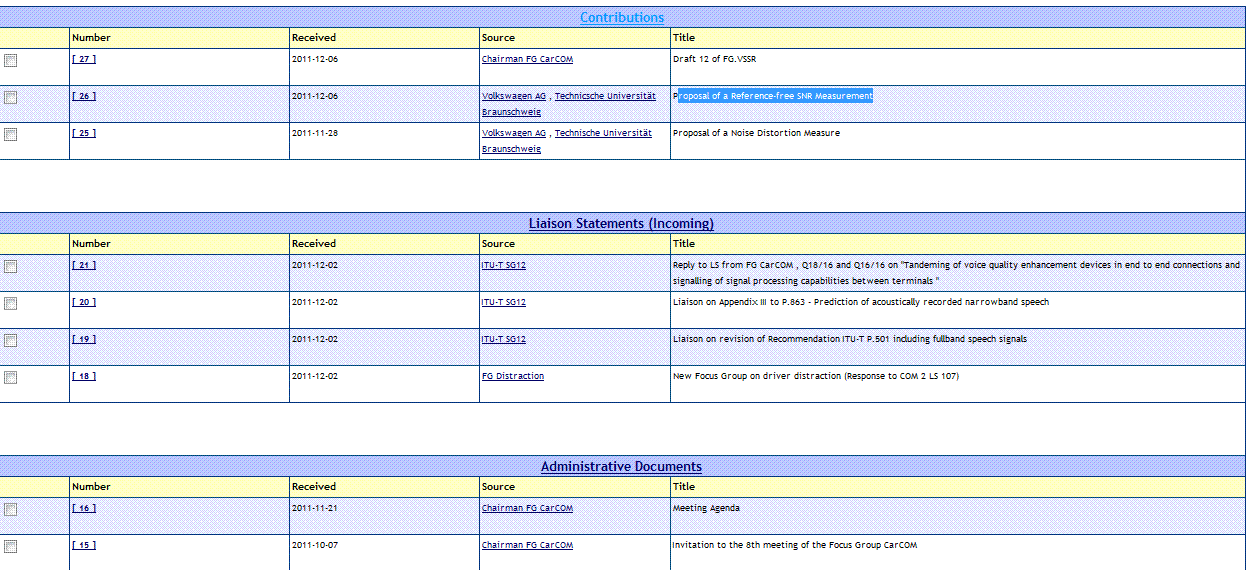
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| Hans Gierlich | **HG** | HEAD acoustics – FG CarCOM Chair- Germany |
| Tim Fingscheidt | **TF** | Braunschweig Technical University - Germany |
| Mats Forsen | **MF** | Mats Forsen Data AB- Sweden |
| Gerhard Schmidt | **GS** | CAU- Germany |
| Yoji Ishikawa | **YI** | Asahi Kasai Cooperation - Japan |
| Markus Lieb | **ML** | Volkswagen AG |
| Yushi Naito | **YN** | Mitsubishi Electric Corporation, SG16 Chair – Japan |
| Huajun Yu | **HY** | Braunschweig Technical University - Germany |

**Conference call participants:**

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| Rajko Bjelica | **RB** | Chrysler Group LLC - USA |

Annex 2

List of documents



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