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| INTERNATIONAL TELECOMMUNICATION UNION | | **Focus Group On Car Communication** |
| **TELECOMMUNICATION STANDARDIZATION SECTOR**  STUDY PERIOD 2009-2012 | | **FG CarCOM-R-7rev1** |
| **English only**  **Original: English** |
|  |  | Holland, 29-30 August 2011 |
| **REPORT** | | |
| **Source:** | Chairman and Vice-Chairman | |
| **Title:** | Report of FG CarCOM meeting held in Holland, Michigan, USA on August 29-30 2011 | |

***Abstract***

*ITU-T FG CarCOM held its 7th meeting in Holland, Michigan, USA on 29-30 August 2011. Incoming liaisons from ITU-T Study Group 2 and ITU-T Q18/16 were reviewed. An output liaison for ITU-T Q18/16 was drafted and approved. New contributions were received on the latest draft of FG.VSSR (Subsystem requirements for automotive speech services), a noise distortion metric that can be used to tune noise reduction systems, and proposed modifications intended to address frame processing and delay. Most of the meeting was spent discussing, and progressing, the microphone subsystem requirements section of FG.VSSR. New figures were discussed and agreed on. The next FG Distraction meeting will be held in Braunscheig, Germany on 8-9 December 2011.*

**1.0 Introduction**

This document is a meeting report from the 7th meeting of ITU-T FG CarCOM which was hosted by Johnson Controls in Holland, Michigan, USA on 29-30 August 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 12-LS 90)” from ITU-T SG 2 (IL-16)**

This LS, from ITU-T Study Group 2 to ITU-T FG Distraction, was copied to FG CarCOM for information only. It points out that ITU-T FG Distraction will address many human factors issues and offers the help of ITU-T Study Group 2 in these matters. It mentions that there are drivers with a wide range of abilities, and that often improvements intended to help those with accessibility issues also helps the more general population.

The liaison also requests that a liaison officer from FG Distraction be appointed to facilitate interaction between their groups.

**SP**, who also happens to be the Chairman of FG Distraction, presented this liaison and also summarized events from the FG Distraction meeting held in Kyoto, Japan the previous week.

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

**2.2 LS “Reply LS on tandeming of voice quality enhancement devices in end to end connections and signalling signal processing capabilities” from ITU-T Q18/16 (IL-17)**

In this response liaison to FG CarCOM, ITU-T Q18/16 acknowledges that, in general, the best place to perform signal enhancement (e.g., AEC, Noise Reduction, etc.) is in the terminal equipment. However, they also point out that there are situations where network-based signal enhancement can be beneficial (e.g., poor performance of algorithms in terminals, economic reasons). They conclude that there is value in coordinating signal processing functions between terminals and network elements. They also note that they will be closely collaborating with ITU-T Q11/12 which has a related work item titled “G.tandem-QOE”.

The group drafted a reply liaison thanking Q18/16 for their response and requesting that FG CarCOM be kept informed on this effort. This response was approved and can be found in **OL-9**.

**2.3 Outgoing LS “Reply to LS on tandeming of voice quality enhancement devices in end to end connections and signalling signal processing capabilities” to ITU-T Q18/16 (OL-9)**

This outgoing liaison to ITU-T Q18/16 thanks them for their response (see Section 2.2) and requests that FG CarCOM be kept informed of their progress. The approved liaison can be found in **OL-9**.

**3.0 New Contributions**

**3.1 “Draft 10 of FG.VSSR” from FG CarCOM Chairman (C-21)**

This contribution contains the 10th draft of a new ITU-T recommendation on subsystem requirements for automotive speakerphones. This document reflects the output from the last meeting.

**3.2 “Proposal of a Noise Distortion Measure” from Volkswagen AG, Technische Universität Braunschweig (C-22)**

This contribution proposes an objective measure of noise distortion that is intended to be used to automatically optimize performance of a noise reduction system.

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

This contribution proposes some modifications to FG.VSSR. It was received too late to be considered at the current meeting so it will be addressed at the next FG Distraction meeting.

**3.4 “Draft 11 of FG.VSSR” from FG CarCOM Chairman (C-24)**

This contribution contains the 11th draft of a new ITU-T recommendation on subsystem requirements for automotive speakerphones. It reflects discussions that occurred during the current meeting. It was submitted a few days after the meeting closed.

**4.0 Meeting discussions**

**4.1 Day 1 discussions**

The Chairmanwelcomed participants and thanked Johnson Controls for hosting the meeting. Participants introduced themselves. The agenda was reviewed and approved.

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

Figures produced by **MF** were reviewed. The group agreed to the use the figures. It was suggested to add text to make it more clear that subsystem requirements are an abstraction and that measurement points can move up and down the transmission path.

The group spent most of the day discussing measurement parameters for the microphone subsystem. The outputs of discussions were capture in the revised FG.VSSR (**C-24**) in the form of modifications to the text or comments.

There was agreement to delete sensitivity requirements because it is dependent on the implementation. It was suggested that this information can be moved to the design guidance section.

An editorial error was found in FG.VSSR and ITU-T P.1110 for the Lombard level adjustment. The figure shows a maximum adjustment of “8.1” dB of gain when in fact is should be “8.0” dB.

**BS** agreed to generate some frequency response masks based on QoS levels for consideration the next day.

**SP** agreed to solicit proposals for SNR measurement parameters from Speech Recognition suppliers and others.

The group agreed to adopt the Early Energy Balance (EEB) described in ITU-T P.340 as the basis for a measure of reverberation.

**4.2 Conference call discussions**

At the beginning of Day 2 there was a conference call for those who could not attend the meeting in person. A list of conference call participants can be found in Annex 1.

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

There was a discussion about testing for the send overload point and whether the send test signal, background noise, and receive test signal should be played in sequence or simultaneously. This issue was not resolved.

The frequency response masks generated by **BS** were reviewed and it was decided to switch the masks associated with QoS levels 2 and 3; so that QoS level 2 became 3 and QoS level 3 became 2. **HG** agreed to incorporate these in to FG.VSSR after the meeting.

There was agreement to make the Idle Channel Noise measurements with no acoustic input; and change the requirement from an absolute level to a relative level tied to the speech level observed with a nominal input speech level.

**GS** suggested measuring SNR at the MRP for reference. It was agreed to put this in the design guidance section. Furthermore a reference-free SNR method is needed to be incorporated in the main body of the draft. **TF** agreed to work on that and make a proposal for the next meeting.

**GS** suggested performing the EEB measurements by frequency because it is expected that the lower frequencies will show a bigger difference. He also suggested coherence as a possible measure.

**MF** suggested adding distortion tests at different input levels.

**TF** presented his contribution. Please see Section 3.2 for related discussion.

It was agreed to have the next FG CarCOM meeting 8-9 December 2011, assuming extension of the group is approved by ITU-T Study Group 12 at their next meeting (which starts 31 October 2011). The FG CarCOM meeting will be held in Braunscheig, Germany, hosted by the Institute for Communications Technology, Technische Universität Braunschweig.

**4.3 Day 2 discussions**

After the conference call, discussions continued on the microphone subsystem requirements section of FG.VSSR.

A decision was made to add “Microphone Send Speech Quality” and “Microphone Send Speech Quality with Background Noise” measurement parameters to the microphone subsystem requirements.

Wind buffeting was discussed and it was decided not to add a specific measurement parameter for wind buffeting since the artifacts produced by wind buffeting should be caught by existing measurement parameters. However, a test condition was added to Annex D which directs airflow towards the microphone. It is hoped this will help catch a wind buffeting problem with the microphone.

It was agreed that the topic of wind buffeting should be covered in design guidance. It was also agreed to create an annex with a wind buffeting procedure, and reference this annex from the design guidance section(s) of one or more microphone subsystem measurement parameters.

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

The meeting was then closed.

**5.0 Work plan**

Below is the current work plan for FG CarCOM:

* 8-9 December 2011 meeting of FG CarCOM:
  + Work on 12th version of FG.VSSR

**Action items:**

1. **PN** to work on annex/appendix containing wind buffet test procedure
2. **HG** to work on Microphone section of FG.VSSR
3. **SP** to work on Signal Enhancement Layer section of FG.VSSR
4. **TF** to work on annex/appendix containing noise distortion metric
5. **SP** to solicit input on SNR metrics

Annex 1

**List of participants**

**Attended meeting in person:**

|  |  |  |
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| Hans Gierlich | **HG** | HEAD acoustics – FG CarCOM Chair- Germany |
| Scott Pennock | **SP** | Research in Motion- FG CarCOM Vice-Chair- Canada |
| Daniel Brasier | **DB** | Johnson Controls- USA |
| Toby Eadelman | **TE** | Johnson Controls- USA |
| Scott Groendyke | **SG** | Johnson Controls- USA |
| Yushi Naito | **YN** | Mitsubishi Electric Corporation, SG16 Chair - Japan |
| Paul Nicastri | **PN** | Ford Motor Company |
| Brian Servis | **BS** | Johnson Controls- USA |

**Conference call participants:**

|  |  |  |
| --- | --- | --- |
| Tim Fingscheidt | **TF** | Braunschweig Technical University - Germany |
| Mats Forsen | **MF** | Volvo/Forsen Data- Sweden |
| Gerhard Schmidt | **GS** | CAU- Germany |

Annex 2

List of documents



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