STG(13)08

EXTRACT Report from the

Working Group Spectrum Engineering

Lübeck, 28 January – 01 February 2013

[...]

# APPOINTMENT OF VICE CHAIRMEN

WG SE received two applications for the two vacant vice chairmen, one from Portugal and one from France. Therefore the meeting appointed both by acclamation. The new WG SE Vice Chairmen are Mr João Duque (Portugal) and Mr Alexandre Guérin (France).

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# Report from Project Team SE24 (Short Range Devices)

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### Improvements for SRD in 863-870 MHz (SE24\_42)

SE24 is preparing SEAMCAT simulations in order to show the real potential of interference from LTE UEs into SRD applications. SE24 could not provide final results as there is not yet reached agreement about input parameters for the analysis. However the following preliminary conclusion indicates that

* there is a high risk of interference for a permanent co-location of SRDs and LTE UEs (LTE UE is randomly distributed in a radius of 10m around the SRD), especially for the more sensitive SRD victims such as Wireless Audio devices;
* a much lower risk of interference for a non- permanent co-location of SRDs and LTE UEs (LTE UE randomly distributed in a radius of 350m around the SRD).
* improving SRD receiver selectivity does not help much to reduce the probability of interference.

*Sweden, Finland, Norway, Denmark, Ireland pointed out the disagreement on this last bullet point. On the contrary, these administrations are of the opinion that improved selectivity is one of several SRD-mitigation techniques required to operate.*

*Sweden, Finland, Ireland, Norway, Denmark pointed out the need of mitigation for the SRDs in order to meet the requirement to operate on Non-interference, Non-protected basis. This requirement of efficient mitigation is valid for most SRD-bands shared or adjacent with/to applications under primary services.*

Further studies are required taking into account the clarifications on the LTE UE transmission mask as provided by PT1 (SE(13)036) and implementation of some specific OFDM features by STG. SE24 suggested a shift of the deadline in the work programme to January 2014.

In addition, SE24 received many measurement reports on the impact of LTE on SRDs, and it is planned to summaries those results in the compatibility report.

WG SE noted the progress and the open issues and, supported the shift of the deadline in the work programme to January 2014.

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## New work items

### SEAMCAT issues

SEAMCAT was developed for transmission and reception of signals including mitigation techniques described in the frequency domain. There is currently only limited consideration of mitigation techniques used in the time domain in SEAMCAT. Modelling of system dynamics and system interrelations in the time domain are growing in importance for SRDs. Adaptive interference mitigation mechanisms (LBT, AFH, etc.) and low Duty Cycle random access systems are becoming increasingly common and are considered a vital part of spectrum access regulations for SRDs.

SE24 considers that time domain dynamics could be implemented in SEAMCAT. But before a clear guidance can be given to STG, more work has to be done in SE24 to define its needs and possible solutions. Close cooperation with STG would be expected and highly appreciated.

To formalize the work on this subject and to create wider visibility and transparency, SE24 proposes the creation of a new Work Item. Deliverable of this Work Item would be a guidance document for STG defining new required SEAMCAT simulation functionalities expressed through:

* Description of methodology for analysis;
* Algorithms and technical specifications for new module or post-processing plug-in(s);
* Examples of application, e.g. based on results of experiments.

The new work item is supported by the following Administrations: Austria, Germany, Italy, The Netherlands, Portugal, Romania, Slovenia and United Kingdom.

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# Report from Project Team SE40 (Space service compatibility issues)

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## Deliverables for approval

### Draft ECC Report 197: Compatibility between ECN and MSS terminals at 2 GHz (WI SE40\_18)

SE40 has finalized the draft ECC Report 197 on “Compatibility studies - MSS terminals transmitting to a satellite in the band 1980 – 2010 MHz and adjacent channel UMTS services” (SE(13)032 Annex 2). The aim of this Report is to verify whether the conclusions of the ERC Report 065 are still valid when taking into account the characteristics of MSS terminals operating in the 1980 – 2010 MHz band contained in EN 302 574-2 and EN 302 574-3, considering also MSS terminals operating in a Complementary Ground Component (CGC). It was concluded in the Report presented to WG SE that a guard band of 300 kHz at the 1980 MHz edge and a guard band of 500 kHz at the 2010 MHz edge, respectively, are adequate to protect ECN.

Major discussions in SE40 were about the statistics related to the “Worst Cell” derived by the SEAMCAT simulations for each scenario. Within a simulation, the Worst Cell is identified as the most impacted cell at each snapshot and, depending on the location of the MSS UT transmitting to the satellite, can be a different cell at each snapshot. Some members and administrations expressed the view that the focus on the statistics relative to the “Worst Cell” lead, in practice, to a deterministic analysis of the interference scenario. However, this view was not accepted by some members who expressed the view that those statistics should be instead taken into account.

SE40 decided to consider the results of the worst cell as deterministic results. Therefore the worst cell results were not used for drawing the conclusions from the statistical analysis..

Sweden expressed concerns in SE(13)041R1, e.g., that criteria suggested by PT1 regarding acceptable degradation in an affected UMTS cell are not used properly or the results for the “worst cell” are not analysed. This input proposed to rewrite and amend the Executive Summary, Conclusions and other sections before this draft ECC Report could be adopted for public consultation. More detailed comments related to a number of proposals, suggestions to correct some of the simulations which require further studies were suggested to be handled during public consultation.

Some other administrations supported to send this document without changes to public consultation.

Therefore, the WG SE chairman established a drafting group, chaired by Mr Alexandre Guérin, and invited to review the Conclusion and Executive Summary of this report taking into account the concerns raised. Other more detailed could be addressed during public consultation.

WG SE agreed to approve the draft ECC Report 197 as modified by the drafting group for public consultation (see **Annex 13)**.

*Sweden expressed the view that there is no reference to the acceptance criteria of the 5% capacity loss used on network level and reference cell simulation results.*

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# Report from Project Team SE43 (White spaces – cognitive radio systems)

Mr João Duque (Portugal) introduced the SE43 progress report (SE(13)021) on behalf of the SE43 chairman Mr Alexandre Kholod, Switzerland.

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## FUTURE WORK OF SE43

WG SE considered that the tasks mandated to SE43 were completed, and no requests were received for further studies. Three comprehensive ECC Reports (159, 185 and 186) were developed; the results of the technical study were presented in CEPT workshops and other fora to a wide audience.

WG SE chairman thanked both chairmen, Mr Bruno Espinosa (former chairman of SE43) and Mr Alexandre Kholod, and all participants of SE43 for their excellent work. SE43 was formally closed.

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# SEAMCAT Technical Group (STG)

Mr Jean-Philippe Kermoal, ECO introduced the STG progress report available in Document SE(13)025.

WG SE noted the

* planned activities for 2013
* close cooperation with SE7, SE24, SE40 and PT1
* The SEAMCAT workshop organised by the ECO
* The proposal from ECO to generate a Spectrum Engineer Reference Document

## Issues where guidance is invited

### PT1 issues

* Use of voice activity factor in CDMA uplink simulations

The implementation of the voice activity factor in Version 4.0.0 in CDMA uplink is not correct. In order to work around this problem, ECC PT1 recommended to set the activity factor to 100% and to therefore remove inactive users from the algorithm to reduce computer power for both UL and DL. Other views in STG have been that further study is needed to assess the right interpretation and implementation of the voice activity factor in the CDMA UL algorithm in SEAMCAT. Meanwhile it was agreed that the input parameter is set to 100% by default.

France (SE(13)039) proposes to update the actual algorithm or to develop a new algorithm taking into account the voice activity factor. Before this new/updated algorithm is available, the voice activity factor shall be blocked at 100%.

WG SE recommends setting the voice activity factor in the CDMA uplink to 100% for the time being. WG SE invites the administration to provide expertise to develop an improved algorithm for the voice activity factor in the CDMA uplink. To assist STG, a new work item (STG\_3) supported by the following Administrations: France, Germany, Switzerland and United Kingdom was created (see **Annex 05**).

* Target cell noise rise of the enhanced CDMA uplink algorithm

ECC PT1 recommended changing the default input value from 0.8 to 0.01 dB, still leaving to the user the freedom of choosing a different value.

France (SE(13)039) recommends to change the target cell noise rise of the enhanced CDMA uplink algorithm default input value from 0.8 to 0.1 dB.

WG SE supports the flexible choice of the cell noise rise. The default value should be set to 0.1 dB. WG SE highlights that it is the responsibility of the concerned Project Team to choose the proper value relevant for the scenario.

* Manhattan Microcell configuration

ECC PT1 informed STG that currently there is no Manhattan microcell model source code available for STG. Hexagonal cell structures, typically used in studies applied for mobile radio, are implemented. Manhattan cell structures are an alternative structure used in various, recently published contributions from industry.

WG SE recommends considering an update of the offered cell structures with low priority.

### SE7 issues

* Blocking calculation

In SEAMCAT, three different modes of blocking (user defined, protection ratio, and sensitivity) as used in the various standards are implemented. However, STG recognises that “blocking response” is not clearly defined and that could give rise for discrepancies. STG agrees that the hard coded assumption of 3 dB desensitisation could be modified so that the user can directly use a different desensitisation value, to allow a more friendly use of the tool.

WG SE supports the implementation of the “blocking response”, a clear definition to avoid misuse of the parameter and further the implementation of a flexible desensitization (other than 3 dB).

## Spectrum Engineering Reference Document

ERC Report 68 on the first SEAMCAT algorithms and ERC Report 101 comparing MCL and Monte Carlo based methodology are not up-to-date anymore. They need urgently to be revised. ECO suggests developing a Spectrum Engineering Reference Document, which could improve the consistency and transparency in the development of technical sharing studies. Rationale:

* SEAMCAT is being used more and more within the CEPT.
* The Project Teams start to develop calculation guidance independently from each other (SE7, SE24, SE40, SE43, SE44 and ECC PT1) thus potentially creating inconsistencies. As an example, the Annex 7 of Draft ECC report on PMSE developed by SE7 on the considerations on receiver blocking response and receiver blocking level.
* There is a renewal of a lot of spectrum engineers within spectrum engineering groups.
* The ERC Report 68 and ERC Report 101 are 10 and 13 year old respectively

The ECO recommendations are the following:

* The elaboration of a new ECC Report to serve the purpose of a spectrum engineering reference document, taking into account ERC Reports 68 and 101.
* The reference document is to consider MCL approach as well as statistical as implemented in SEAMCAT (MCL description should include excel sheet examples)
* All spectrum engineering PT’s of the CEPT to be involved in this activity. STG acts as coordinator.
* Close cooperation with ETSI on the issue of definitions of technical parameters and terminology.

WG SE supported the proposal of the ECO. WG SE decided to create a Forum Group with Mr Jean-Philippe Kermoal (ECO) as convener. It was decided to elaborate a new ECC Report to serve the purpose of a spectrum engineering reference document, taking into account ERC Reports 68 and 101 and providing guidance on methodologies for modelling different radio services/systems and their interrelation with respect to compatibility and sharing of radio services/systems. A new work item was created for WG SE supported by the following Administration: Finland, France, Germany, Italy, Ireland, Poland, Portugal, The Netherlands, Romania, Slovenia, Sweden, Switzerland and United Kingdom. The ToR are available in **Annex 04**.

## AOB

WG SE encourages PTs to seriously consider the implementation request to STG since resources and budget are being allocated to answer the request of the PTs.

## Next meetings

STG has reserved the following date for the next meeting:

* STG 06-08 February 2013 ECO, Copenhagen

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# ECO assistance to WG SE

The ECO representative informed about the latest developments in the Office (SE(13)026).

WG SE noted:

* The ECO bulletin resulting as outcome from the ECC Vilnius, Lithuania (see §4.1).
* The Cooperation with R&TTE CA. and ADCO R&TTE (see §14)
* The latest updates implemented in the ECC/CEPT portal.
* The update of Electronic Working Arrangements
* The latest EFIS update.
* The latest improvement of the Working Program Data Base
* The updated list of the research activity

The ECC also endorsed the proposal from the Office that the subordinate groups should review their work programs in order to identify areas for suitable activities regarding research projects.

WG SE is invited to review the document and in parallel to review the current WG SE Work Programme and to inform the ECO any areas suitable to involve research projects and academia. PT’s chairmen are invited to take part in the review process.

WG SE invites the PTs to review the list with research activity and provide the information directly to ECO. WG SE will address the research activity by a separate agenda item under ECO support to increase the visibility of this activity.

* New ECC Templates to be used in future deliverables, e.g. for ECC Reports and Recommendations.
* ECO work programme

# Date and place of future meeting

64th WG SE: 13-17 May 2013, Lugano, Switzerland.

65th WG SE: 16-20 September 2013, Russian Federation.

66th WG SE: [January-February] 2014, [Portugal]

67th WG SE: [May] 2014, tbd

68th WG SE: [September-October] 2014, Ireland

Administrations were invited to consider the possibility to host WG SE meetings 2014.