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|  | Electronic Communications CommitteeWorking Group Spectrum Engineering | **Doc. SE(24)038** |

**Report from the 95th Meeting of**

**Working Group Spectrum Engineering**

**Hybrid Meeting, 29 January – 2 February 2024, in ECO - Copenhagen, Denmark**



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| **WG SE Chairman****Jérôme André**ANFR265 rue Pierre RIVOALONCS 1382929238 BREST CedexFranceEmail: jerome.andre@anfr.fr | **Vice Chairman****Ivica Stevanović**OFCOM CHZukunftstrasse 442501 Biel/BienneSwitzerlandEmail: ivica.stevanovic@bakom.admin.ch  | **Vice Chairman****Cristian Ungureanu**ANCOMStr. Delea Noua no.2, sector 3BucureştiRomaniaEmail: cristian.ungureanu@ancom.ro |

1. **Opening of the meeting**

The 95th meeting of WG SE was held both in presence and remotely from the 29th of January to the 2nd of February 2024.

The meeting started at 13:30 (CET) on Monday the 29th of January 2024.

The meeting tool MeetingHub2 was used in order to request the floor for all the participants.

Observers (MoU/LoU or invited by the Chairman) were welcome in order to provide technical assistance to the administrations as appropriate.

1. **Adoptions of the Agenda, Schedule of Work**

Final agenda and timetable are contained in the [Annex 01](https://api.cept.org/documents/wg-se/81678/se-24-038a01_agenda-of-the-95th-wg-se-meeting) and [Annex 02](https://api.cept.org/documents/wg-se/81706/se-24-038a02_final-time-schedule-of-the-95th-wg-se-meeting).

1. **Chairmanships**

ECO has provided an overview of chairmanships as contained in Doc. [SE(24)004](https://api.cept.org/documents/wg-se/81379/se-24-004_overview-of-chairmanships-_january24).

Switzerland nominated in Doc. [SE(24)NOM01A1](https://api.cept.org/documents/wg-se/79652/se-24-nom01a1-1_letter-of-nomination_ivica_stevanovic-chair-se45-reappointment), Dr. Ivica Stevanovic for a third term as SE45 Chair, in response to the call for nomination in Doc. [SE(24)NOM01](https://api.cept.org/documents/wg-se/79648/se-24-nom01_call-for-nomination-pt-se45-chair).

Romania nominated in Doc. [SE(24)NOM02A1](https://api.cept.org/documents/wg-se/79853/se-24-nom02a1-1_letter-cristian-ungureanu-wgse), Cristian Ungureanu as Vice-Chair of WG SE, in response to the call for nomination in Doc. [SE(24)NOM02](https://api.cept.org/documents/wg-se/79850/se-24-nom02_call-for-nomination-vice-chair-of-wg-se).

United Kingdom nominated in Doc. [SE(24)NOM03A1](https://api.cept.org/documents/wg-se/80678/se-24-nom03a1_uk-se21-drmichaelpaynter), Dr. Michael Paynter for a second term as SE21 Chair, in response to the call for nomination in Doc. [SE(24)NOM03](https://api.cept.org/documents/wg-se/80592/se-24-nom03_call-for-nomination-pt-se21-chair).

WG SE appointed by acclamation Cristian Ungureanu as Vice-Chair of WG SE, Dr. Michael Paynter as SE21 Chair and Dr. Ivica Stevanovic as SE45 Chair.

1. **Matters arising from meetings of:**
	1. **WG FM**

The minutes of the 105th WG FM meeting that was held both in presence at Brussels, Belgium, and remotely from 12th to the 16th of June 2023 are available in Document [FM(23)082](https://api.cept.org/documents/wg-fm/78598/fm-23-082_wg-fm-105-minutes). The minutes of the 105th bis WG FM meeting that was held remotely from 12th, 13th and 17th of October 2023 are available in Document [FM(23)093](https://api.cept.org/documents/wg-fm/80441/fm-23-093_wg-fm-105bis-minutes).

Extract of elements relevant for WG SE from these WG FM minutes is provided in Doc. [SE(24)005](https://www.cept.org/ecc/groups/ecc/wg-se/client/meeting-documents/file-history?fid=80951). Elements highlighted in yellow have been identified of the interest for WG SE.

* 1. **ECC PT1**

The minutes of the 76th ECC PT1 meeting that was held both in presence in Berlin, Germany, and remotely from the 6th to the 8th of September 2023 are available in Doc. [ECC PT1(23)221](https://www.cept.org/ecc/groups/ecc/ecc-pt1/client/meeting-documents/file-history?fid=80020).

Extract of elements relevant for WG SE from this ECC PT1 minutes is provided in Doc. [SE(24)006](https://api.cept.org/documents/wg-se/80952/se-24-006_extract-from-draft-minutes-ecc-pt1-76th-meeting). Elements highlighted in yellow have been identified of the interest for WG SE.

* 1. **CPG23**

The minutes of the CPG23-9 meeting that took place as a hybrid meeting, both in presence in Dublin, Ireland, and remotely from the 18th to 22nd of September 2023 are available in Doc. [CPG(23)060](https://api.cept.org/documents/cpg/80066/cpg-23-060_minutes-of-cpg23-9).

Extract of elements relevant for WG SE from this CPG23 minutes is provided in Document [SE(24)007](https://api.cept.org/documents/wg-se/80953/se-24-007_extract-from-minutes-of-cpg23-9). Elements highlighted in yellow have been identified of the interest for WG SE.

* 1. **ECC**

The minutes of the 62nd ECC meeting that was held both in presence in Budapest, Hungary, and remotely from the 4th to the 7th of July 2023 are available in Doc. [ECC(23)045](https://api.cept.org/documents/ecc/78724/ecc-23-045_minutes-of-62nd-ecc-plenary-meeting).

Extract of elements relevant for WG SE from this ECC minutes is provided in Document [SE(24)008](https://api.cept.org/documents/wg-se/80954/se-24-008_extract-from-the-minutes-of-62nd-ecc-plenary-meeting). Elements highlighted in yellow have been identified of the interest for WG SE.

* 1. **ETSI**

The ETSI liaison officer reported on the ETSI activities of the interest for WG SE available in Document [SE(24)009](https://api.cept.org/documents/wg-se/81581/se-24-009_etsi_lo_report). The status of SRdocs is available in the following: [Link to ETSI portal](https://portal.etsi.org/Portals/0/TBpages/ERM/Docs/2023_ERM%20SRdoc%20overview.doc).

1. **Documents for final approval after Public Consultation**

There was no deliverable sent to public consultation by the 94th WG SE meeting.

1. **Report from Project Team SE7 (Compatibility and sharing issues of mobile systems)**
	1. **Progress report of SE7**

No progress report was considered.

* 1. **Expected deliverables for public consultation or other deliverables**

No deliverables were considered for public consultation.

* 1. **WI in progress**

There was no other WI in progress.

* 1. **New WIs**

There was no new WI considered.

* 1. **Other issues**

Doc. [SE(24)023](https://api.cept.org/documents/wg-se/81452/se-24-023_proposal-to-change-table-11-of-ecc-report-313) from France proposed a correction received by FM56 from UIC, on Table 11 of ECC Report 313. ECO and SE7 chairs (new and former) have investigated the issue and concluded that the proposed correction is of editorial nature with the corresponding proposed modification contained in Doc. [SE(24)027](https://api.cept.org/documents/wg-se/81575/se-24-027_edit-of-ecc-report-313).

WG SE considered the proposed correction and agreed to approve the editorial revision of ECC Report 313, as contained in [Annex 11](https://api.cept.org/documents/wg-se/81684/se-24-038a11_editorial-revision-of-ecc-report-313-technical-study-for-co-existence-between-rmr-in-the-900-mhz-range-and-other-applications-in-adjacent-bands). ECO was tasked to publish the amended version of ECC Report 313 in the document database.

1. **Report from Project Team SE19 (Fixed Service)**
	1. **Progress report of SE19**

The progress report was contained in Doc. [SE(24)011](https://api.cept.org/documents/wg-se/81260/se-24-011_se19-progress-report).

* 1. **Expected deliverables for public consultation or other deliverables**
		1. **WI SE19\_48: ECC/ERC Recommendations on fixed service**

The scope of the WI is to review the ECC/ERC Recommendations related to FS, and to assess if a revision may be appropriate for each.

Based on the first review of the ECC/ERC Recommendations related to FS, SE19 proposed:

* to revise :

ECC/REC (05)07 on “Radio frequency channel arrangements for Fixed Service Systems operating in the bands 71-76 GHz and 81-86 GHz”, developed in 2005 and revised in 2013.

ERC/REC 12-08 E on “Harmonised radio frequency channel arrangements and block allocations for low, medium and high capacity systems in the band 3600 MHz to 4200 MHz“ by withdrawing part 1 of Annex A and part 2 of Annex 8.

* to withdraw:

ECC/REC (04)05 on “Guidelines for accommodation and assignment of Multipoint Fixed Wireless systems in frequency bands 3.4-3.6 GHz and 3.6-3.8 GHz”, developed in 2006;

ERC/REC 14-03 E on “harmonised radio frequency channel arrangements and block allocations for low and medium capacity systems in the band 3400 MHz to 3600 MHz” developed in 1997.

After review of the proposals, WG SE agreed to provisionally approve for public consultation the draft revisions of ECC Recommendation (05)07 as contained in [Annex 09](https://api.cept.org/documents/wg-se/81682/se-24-038a09_draft-revision-of-ecc-recommendation-05-07-%E2%80%9Cradio-frequency-channel-arrangements-for-fixed-service-systems-operating-in-the-bands-71%E2%88%9276-ghz-and-81%E2%88%9286-ghz), and ERC Recommendation 12-08 E as contained in [Annex 10](https://api.cept.org/documents/wg-se/81683/se-24-038a10_draft-revision-of-erc-recommendation-12-08e-%E2%80%9Charmonised-radio-frequency-channel-arrangements-and-block-allocations-for-low-medium-and-high-capacity-systems-in-the-band-3600).

WG SE also agreed to announce the withdrawal of ECC Recommendation (04)05 and ERC Recommendation 14-03 E, which would become effective at the next WG SE if no comments are received.

* 1. **WI in progress**

WG SE considered the SE19 progress on the following items:

* + 1. **WI SE19\_24: Coordinated inputs to ITU-R WP 5C**

No proposal was received by SE19 for the next WP5C meeting.

WG SE noted the current status.

* + 1. **WI SE19\_43: To derive a methodology for protection criteria for FS except long term**

This WI is dealing with the definition of a methodology for the protection criteria for the fixed service except long term.

The Recommendation ITU-R F.758, which is among the fixed service reference documents, does not provide details on the protection criteria of FS other than the long-term criterion based on availability objectives. The actual methodologies for FS protection criteria (including short-term) for specific band are subject to several ITU-R F-series recommendations, which provide the criteria without showing how to derive them. The aim of the WI is to elaborate a generic methodology for deriving protection criteria for any source of time-varying interference for the FS.

SE19 continued the discussion on the methodology and appropriate protection criteria. A general consensus on the methodology and a related set of formulas could be found, valid for FS links with and without automatic transmit power control (ATPC). The current methodology is not depending on the probability of time, but that is related to the 10% of availability for error performance objective (EPO) and availability performance objective (APO).

Provided measurements indicated that the type of interference (continuous or pulse/burst) does not have the same impact on the FS link, with pulse/burst interference being potentially more harmful than continuous at the same power levels, and especially on the adaptive coded modulation (ACM) mechanism and that this issue might need to be reflected in the methodology.

SE19 agreed that further evaluation to better understand the impact of ACM on the FS protection criteria and the basis of the modulation to consider would be required. Consequently, a draft new WI on ACM was provided.

There was a general agreement in SE19 that the interference distribution which is necessary as an input parameter for the methodology, can be derived for every type of interferer (fixed location/ mobile). Therefore, SE19 sent a LS to STG asking for views on feasibility of implementation of purely time dependent aspects in Monte Carlo simulations within SEAMCAT as its current implementation randomizes all time and location dependent variables for each sample.

The status of the deliverable was contained in Doc. [SE(24)011A05](https://api.cept.org/documents/wg-se/81265/se-24-011a05_wi_43-wd-on-methodologyfdp).

WG SE considered the progress of the activities and agreed on an extension of the target date to May 2025.

* + 1. **WI SE19\_47: FS parameters for the sharing and compatibility studies**

The scope of the WI is to collect up-to-date technical FS parameters from CEPT countries and compile thereof a set of representative technical FS parameters for each FS band to be used in sharing and compatibility studies. With respect to SE19\_47 questionnaires, the ECO received 17 responses including responses from 15 administrations.

The work was still ongoing within SE19 due to the huge amount of data received from the questionnaire which is dealing with the following parameters for each for Point to Point (PtP) and Point to MultiPoint (PMP):

* First set was related to “system parameters” and it is similar to the tables in Rec. ITU-R F.758. The aim of the data collection in CEPT was to narrow the ranges of the different values and provide data for frequency ranges which are not available in Rec. ITU-R 758.
* Second table was related to statistical data about several FS parameters according to Rec. ITU-R F.2086.
* The third set had the approach to collect “representative parameters” for each FS band and country and compile thereof a set of parameters representative for CEPT.

An overview of the data received from the questionnaire and a revision based on the feedback from administrations was provided to SE19 by the rapporteur.

SE19 expected to further discuss on the use of diversity, typically space diversity in the lower frequency bands by using dual antennas and receivers for a resulting combined signal, that may significantly improve FS radio system's effective fade margin in a multipath propagation environment.

The status of the deliverable was contained in Doc. [SE(24)011A06](https://api.cept.org/documents/wg-se/81266/se-24-011a06_wi_47-fs-parameters-statistical-ptp_rev1-94).

WG SE considered the progress of the activities and agreed on an extension of the target date to May 2025.

* + 1. **WI SE19\_48: ECC/ERC Recommendations on fixed service**

The scope of the WI is to review the ECC/ ERC Recommendations related to FS, and to assess if a revision may be appropriate for each.

The SE19 was still reviewing the overall list of ECC/ERC Recommendations on fixed service. SE19 Chair highlighted that there is a need to discuss at the next SE19 meeting, the revision of ECC/REC/(01)04 on “Recommended guidelines for the accommodation and assignment of multimedia wireless systems (MWS) and point-to-point (P-P) fixed wireless systems in the frequency band 40.5-43.5 GHz” noting that related decision ERC/DEC/(99)15 is already withdrawn.

The status of the deliverable was contained in Doc. [SE(24)011A07](https://api.cept.org/documents/wg-se/81267/se-24-011a07_wi_48-se19-revision-of-ecc-recommendations).

WG SE considered the progress of the activities.

* 1. **New WIs**

During the discussion at SE19 on WI SE19\_43 and WI SE19\_47, it was recognized the need to further consider the ACM and it was deemed more appropriate to have this activity in a separate WI. However, SE19 was not able to finalize an agreed scope.

At WG SE 95th meeting, the last draft version of the scope of the new WI was considered as contained in doc. [SE(24)011A08](https://www.cept.org/ecc/groups/ecc/wg-se/client/meeting-documents/file-history?fid=81268), but there were still some diverging views on the scope for this new WI, while recognizing that SE19 should progress the technical work on ACM.

WG SE agreed that the work on the technical aspects of ACM could continue within the current scope of WI SE19\_43. Consequently, SE19 might start drafting a separate new ECC Report on the ACM issue based on previous activities and future contributions.

SE19 is invited by WG SE to further consider the draft scope of a new WI on ACM.

* 1. **Other issues**
		1. **Harmonised standard list**

ECO and the Chairman of ETSI TM4 informed SE19 about TM4 and other activity on relevant standards affecting fixed radio systems.

* + 1. **Liaison statement to SE45**

In September 2022, SE19 replied to SE45 in a reply liaison statement (see Doc. [SE(22)085A07](https://www.cept.org/Documents/wg-se/73160/se-22-085a07_reply-ls-from-se19-to-se45-on-studies-in-6425-7125-mhz)) with guidance on protection requirements and technical characteristics of the Fixed Service operating in the band 6425–7125 MHz, recognizing that SE19 at that point in time was not in a position to provide any values related to the short-term protection criteria. After general agreement on the methodology (see section 7.3.2) and ranges of values for the requested protection criteria, SE19 agreed on a follow-up reply LS to SE45.

WG SE noted the exchange with SE45 (see also §11.3.1.2).

1. **Report from Project Team SE21 (Unwanted emissions and receiver characterisation)**
	1. **Progress report of SE21**

The progress report is contained in Doc. [SE(24)012](https://api.cept.org/documents/wg-se/81473/se-24-012_se21-progress-report-for-95th-wg-se).

* 1. **Expected deliverables for public consultation or other deliverables**
		1. **WI SE21\_24: Receiver resilience to transmission on adjacent frequency ranges**

The objective of this work item is to develop a recommendation on receivers to:

* Be used by CEPT / ECC in its sharing and compatibility work and to be considered by ETSI when developing Harmonised Standards, giving a CEPT/ECC framework for continuous improvement of receiver resilience for a wide range / categories of receivers.
* List existing receiver resilience limits from ETSI Standards, for information.
* Provide CEPT / ECC recommended levels for receiver resilience.
* Provide a separate annex with additional levels that can be considered by CEPT / ECC for use in sharing and compatibility studies.

Technical background of this new ECC Recommendation would be gathered in a supplementary ECC Report.

SE21 considered response to Doc. [SE(24)020](https://api.cept.org/documents/wg-se/80926/se-24-020_ls_to_ecc_pt_se21_and_wg_se_on_ecc_rx_rec) after the request from WG SE to ETSI in LS [SE(23)065A08](https://www.cept.org/Documents/wg-se/78298/se-23-065a08_reply-ls-to-etsi-from-94th-wg-se-meeting) to reformat and reorganise the comments in the earlier liaison statement from ETSI such that SE21 could more easily consider the requested modifications to the draft Recommendation and draft Report. SE21 has been able to consider all the comments received in the updated LS from ETSI TC ERM and provided responses in two separate LS (see Doc. [[SE(24)012A03,](https://api.cept.org/documents/wg-se/81503/se-24-012a03_first-response-from-se21-to-etsi-ls-erm-23-80b019)](https://api.cept.org/documents/wg-se/81503/se-24-012a03_first-response-from-se21-to-etsi-ls-erm-23-80b019) and [SE(24)012A04](https://api.cept.org/documents/wg-se/81504/se-24-012a04_second-response-from-se21-to-etsi-ls-erm-23-80b019)) noting that some comments from ETSI were identified by SE21 to be elevated at the WG SE level for further consideration.

SE21 considered and reviewed the various input contributions, and included the relevant elements to update the deliverables. SE21 agreed on the main parts of the draft ECC Recommendation and draft ECC Report. SE21 decided that the remaining topics that could not be finalized were to be elevated at the level of WG SE for further consideration.

EHIMA in Doc. [SE(24)028](https://api.cept.org/documents/wg-se/81505/se-24-028_ehima-position-wg-se-on-se21_24-rx-rec) gave its position on the cases of assistive listening devices and cochlear implants in regards with the draft new Recommendation developed under WI SE21\_24 and was of the view that receiver resilience was only one of many parameters contributing to spectrum efficiency and that intended use and other parameters are required for compatibility studies and efficient spectrum use.

Doc. [SE(24)030](https://api.cept.org/documents/wg-se/81572/se-24-030_receiver_recommendation_wi_se21_24_lpra) sets out concerns that the LPRA has notably about the proposal of removing Category 2 receivers from the draft ECC recommendation on receiver resilience, and its potential implication on the cost of devices.

Doc. [SE(24)033](https://api.cept.org/documents/wg-se/81597/se-24-033_bluetooth_sig_wgse-95_presentation) contained general information on market deployment of Bluetooth and indicated that Bluetooth SIG did not agree that any changes would be needed for receiver resilience in the 2.4 GHz band.

ETSI TC ERM in Doc. [SE(24)034](https://api.cept.org/documents/wg-se/81610/se-24-034_ls-to-wg-se-regarding-draft-ecc-receiver-recommendation) liaised to WG SE on topics that were not finalized at SE21 level and elevated to WG SE, notably to express concerns on the calendar date to delay the implementation for the future ECC Recommendation, the suppression of category 2 SRD, and the more stringent value for 2.4 GHz than in the current Harmonised Standard EN 300 328 (V2.2.2).

Switzerland and France in Doc. [SE(24)029](https://api.cept.org/documents/wg-se/81571/se-24-029_consideration-rlan-2_4_ghz_wi_se21_24_suisse_france) gave more details about why they consider it is necessary to have this draft ECC Recommendation. They explained that the blocking value for RLAN at 2.4 GHz was modified in the evolved version of EN 300 328, but that this modification was associated with a change of the corresponding desensitization which was not applied for RLAN in other frequency bands. They pointed out that, as a result of the modification of the desensitization, the improvement of the resilience that was requested by WG FM was not achieved, noting that the improvement of the resilience would only be obtained with an improvement of the Frequency Offset Selectivity.

Based on the inputs from SE21 and received contributions, WG SE identified the following topics as the remaining issues to be addressed with respect to the draft ECC Recommendation;

- whether blocking levels based on the Reference Interference (RI) should be included in the draft Recommendation alongside blocking levels based on a CW interferer,

- whether a footnote indicating that the blocking level for category 2 SRDs should not be used for compatibility studies is appropriate for the draft Recommendation;

- whether the draft Recommendation covers medical devices in several frequencies;

- how to consider RLAN blocking level at 2.4 GHz introduced in the draft ECC Recommendation;

- how to make distinction on the resilience levels from RLAN for Bluetooth, medical devices;

- how the draft Recommendation will apply to ETSI under the terms of the MoU and whether an implementation period is necessary

Additionally, it was expected by SE21 that WG SE would provide a clarification to the scope on whether Harmonised standards (HS) is the correct term to describe the ETSI deliverables for which the ECC Recommendation would apply to.

It was also noted by WG SE that the availability of “golden signal”, used to generate the reference interference signal as proposed by JRC during last SE21 meeting would be helpful.

After intensive discussions on the previous identified remaining issues, WG SE agreed on the provisional approval of the draft ECC Recommendation (24)01 accompanied by a cover page as contained in [Annex 07](https://api.cept.org/documents/wg-se/81707/se-24-038a07_draft-ecc-recommendation-24-01-receiver-resilience-to-transmission-on-adjacent-frequency-ranges) and draft ECC Report 356 as contained in [Annex 06](https://api.cept.org/documents/wg-se/81681/se-24-038a06_draft-ecc-report-356-technical-analysis-to-support-the-ecc-recommendation-on-receiver-resilience-to-transmission-on-adjacent-frequency-ranges).

* 1. **WI in progress**
		1. **WI SE21\_09: Coordinated inputs to ITU-R on unwanted emission issues.**

No proposal was received for the upcoming WP 1A meeting.

WG SE noted the current status.

* + 1. **WI SE21\_22: Unwanted emissions of common radio systems: measurements and use in sharing/compatibility studies**

This work item was on hold.

* + 1. **WI SE21\_25: Measurement of 5G active antenna system in the field - unwanted emissions**

This WI is to develop techniques and methodologies to determine or estimate Total Radiated Power (TRP) (with equivalent measurement metrics) by field measurements for unwanted emissions (out of band domain and spurious domain) of 5G AAS.

No contribution was received by SE21. In order to progress on the draft ECC Report on the AAS out-of-band measurement, a CG was created by SE21 in order to progress the work.

WG SE noted the progress of the activities and agreed to an extension of the target date to January 2025.

* 1. **New WIs**

There was no new WI considered.

* 1. **Other issues**

There were no other issues considered.

1. **Report from Project Team SE24 (Short Range Devices)**
	1. **Progress report of SE24**

The progress report was contained in [SE(24)013](https://api.cept.org/documents/wg-se/81433/se-24-013_progress-report-of-the-se24).

* 1. **Expected deliverables for public consultation or other deliverables**

No deliverables were considered for public consultation.

* 1. **WI in progress**
		1. **WI SE24\_60: WPT-EV applications**

This WI covers the WPT for electric vehicle charging (WPT-EV).

SE24 noted the report of the 18th meeting of the joint IMO/ITU Experts Group on maritime radiocommunication matters, where IMO expressed its view that the maritime systems NAVTEX, NAVDAT and MF DGPS beacons should be carefully considered regarding the usage of WPT systems.

At its January 2024 meeting, SE24 still did not receive results on the measurement campaign at JRC. SE24 chairman was requested to inform the WG SE chairman in order to raise this point at the EC-ECC meeting of January 2024.

JRC introduced Doc. [SE(24)036](https://api.cept.org/documents/wg-se/81671/se-24-036_presentation-on-pre-norm-research-on-wpt-at-jrc), which was also previously introduced at ECC-EC meeting of January 2024. It indicated the status of their measurement campaigns on several WPT-EV products, noting that some of them comply with EN IEC 61980 while other are still under an improvement process to respect this limit. A public report containing the result of these measurements is expected to be available by end of February 2024.

IARU Region 1 in Doc. [SE(24)037](https://www.cept.org/ecc/groups/ecc/wg-se/client/meeting-documents/file-history?fid=81676) provided their initial comments on JRC presentation, highlighting the view that the sole compliance with EN IEC 61980 cannot be considered sufficient to ensure coexistence with radiocommunication systems. This concern was shared by other participants.

WG SE Chairman thanked JRC for the information on the good progress on their measurement campaigns on WPT-EV and highlighted that the SE24 would welcome detailed information on the measurements to progress the work under this WI, noting the consideration of the compliance to EN IEC 62980 as a different aspect.

The status of the deliverable was contained in Doc. [SE(24)013A01](https://api.cept.org/documents/wg-se/81558/se-24-013a01_draft-addendum-to-ecc-report-289_outcome_se24-111).

WG SE considered the progress of the activities and agreed on an extension of the target date to January 2025.

* + 1. **WI SE24\_77: medium and high power generic WPT applications**

This WI covers the WPT for generic application with medium and high power.

Like for WI SE24\_60, the report of the 18th meeting of the joint IMO/ITU Experts Group on maritime radiocommunication matters was noted by SE24. SE24 reported to WG SE that due to lack of contributions, the coexistence with maritime systems was not addressed for low power WPT devices in ECC Report 333. SE24 considered received contributions on various devices, including measurements of unwanted emissions.

The status of the deliverable was contained in Doc. [SE(24)013A02](https://api.cept.org/documents/wg-se/81559/se-24-013a02_draft-ecc-report-on-wi77_outcome-of-se24-111).

WG SE noted the progress of the activities and agreed on an extension of the target date to January 2025.

* + 1. **WI SE24\_76: MicroWave Security Scanners (MWSSc) in 3.6-10.6 GHz using UWB**

This WI is dealing with studies on the use of MWSSc described in SRdoc ETSI TR 103 730 on a non-protected non-interference basis in the frequency range 3.6 GHz to 10.6 GHz.

SE24 received several contributions:

* on general information on the MWSSc
* on IMT as victim, on meteorological radars as victim
* on RAS as victim
* on an introductory text on studies with the Amateur Service as victim

SE24 initiated correspondence group activities until SE24#112 meeting.

The draft ECC report was updated accordingly.

The rapporteur of WI76, Ms Andreea-Maria Crăciun stepped down from her rapporteurship and she was thanked by SE24. Administrations were invited to nominate a new rapporteur.

The status of the deliverable was contained in Doc. [SE(24)013A03](https://api.cept.org/documents/wg-se/81560/se-24-013a03_draft-ecc-report-on-wi76).

WG SE considered the progress of the activities.

* 1. **New WIs**
		1. **WI SE24\_78: Security Scanners (SSc) in 76.5-80.5 GHz**

WG FM in Doc. [SE(24)021](https://api.cept.org/documents/wg-se/80930/se-24-021_ls-to-wg-se-se24-on-outdoor-security-scanners-in-76_5-80_5-ghz) is asking WG SE for studies on technical condition for coexistence for security scanners operated outdoor with an assumed Peak power of 19 dBm e.i.r.p. in the frequency range 76.5-80.5 GHz.

After having clarified the scope of the WI with SRD/MG on the intent to use security scanners operated outdoor by LS exchanges with SRD/MG, SE24 drafted a new work item as contained in doc. [SE(24)013A06](https://api.cept.org/documents/wg-se/81563/se-24-013a06_draft-new-wi-on-outdoor-security-scanners) proposing preferably an Addendum to the ECC Report 344.

After having reviewed and adjusted the input from SE24, WG SE agreed on the scope of a new WI SE24\_78 as triggered by WG FM as contained in [Annex 12](https://api.cept.org/documents/wg-se/81703/se-24-038a12_nwi-se24_78-outdoor-security-scanners-in-the-76_5-80_5-ghz-band).

* + 1. **WI SE24\_79: UWB extension 8.5 to 10.6 GHz**

WG FM in Doc. [SE(24)022](https://api.cept.org/documents/wg-se/80932/se-24-022_ls-to-wg-se-on-uwb-in-8_5-10_6-ghz) is asking WG SE to conduct sharing and compatibility studies as required with regard to this intended update of the UWB regulatory framework in the frequency ban 8.5-10.6 GHz.

SE24 drafted a new work item as contained in [SE(24)013A07](https://api.cept.org/documents/wg-se/81564/se-24-013a07_draft-new-wi-on-uwb-extension) and a structure of the draft ECC Report was initiated (see Doc. [SE(24)013A08](https://api.cept.org/documents/wg-se/81565/se-24-013a08_working-document-on-uwb-extension)). A measurement of an UWB device was presented by the JRC at SE24 meeting and more measurements of different devices are planned.

After having reviewed the input from SE24, WG SE agreed on the scope of a new WI SE24\_79 as triggered by WG FM as contained in [Annex 13](https://api.cept.org/documents/wg-se/81698/se-24-038a13_nwi-se24_79-uwb-band-extension-8_5-ghz-to-10_6-ghz).

* 1. **Other issues**
		1. **LS on feasibility of 100 mW SRD in data networks**

In accordance with the 94th WG SE meeting guidance, SE24 responded directly to SRD/MG in a reply liaison statement (see Doc. [SE(24)013A04](https://api.cept.org/documents/wg-se/81561/se-24-013a04_reply-ls-to-srdmg-on-feasibility-of-100mw-srd-in-data-networks)) on feasibility of 100 mW SRD in data networks for various configurations given by WG FM.

1. **Report from Project Team SE40 (Space service compatibility issues)**
	1. **Progress report of SE40 and general topics**
		1. **Progress report**

The progress report of SE40 is contained in Doc. [SE(24)014](https://api.cept.org/documents/wg-se/81455/se-24-014_progress-report-from-se40-chair).

* + 1. **WI SE\_12: Iridium interference measurement in the band 1610.6-1613.8 MHz in Leeheim as requested in ECC/DEC/(09)02**

During discussion within SE40, Iridium presented some preliminary analysis from measurements taken by Leeheim in late 2022, which are expected to be used by the group when working on the next report on out-of-band emissions from Iridium. It was noted that there were intentions expressed at SE40 level, confirmed during WG SE meeting, to carry out a new measurement campaign on Iridium out-of-band emissions, and to report the results to SE40. On this topic, SE40 recognised the importance of having a clear specification for any measurement campaign, and will consider developing further the specification created in 2019.

WG SE considered the progress of the activities.

* 1. **Expected deliverables for public consultation or other deliverables**

No deliverables were considered for public consultation.

* 1. **WI in progress**
		1. **WI SE40\_39: Compatibility between RNSS and amateur**

The WI is dealing with the development of possible scenarios with conditions or limitations that may be applied to the amateur service to ensure the future coexistence of both services and avoid cases of interference.

SE40 had a dedicated meeting to update the draft ECC Report on compatibility between RNSS and amateur in the frequency range 1240-1300 MHz.

Noting the progress made on the working document, and the conclusions of WRC-23 on the same topic, SE40 Chairman indicated that it may be possible to finish this report very soon.

France in Doc. [SE(24)024](https://api.cept.org/documents/wg-se/81478/se-24-024_input-to-wg-se-on-work-item-wi40_39_fr) proposed that WG SE would give guidance to SE40 on a way forward to take into account the decision of WRC-23, and to finish the draft ECC Report for the next WG SE meeting.

WG SE considered the progress of the activities (see Doc. [SE(24)014A01](https://api.cept.org/documents/wg-se/81456/se-24-014a01_draft-report-wi-se40_39)) and agreed that even if the studies of the WI should remain focused on Galileo system, the draft ECC Report developed by SE40 may have a dedicated section based on contribution(s) if any, to reflect the outcome from WRC-23.

* + 1. **WI SE40\_45: Aggregate interference from satellite systems into radioastronomy**

The WI is dealing with the methodology to be used to assess the aggregate data loss resulting from multiple NGSO satellite systems to RAS by means of epfd studies and analyse how the individual satellite systems contribute to the aggregate data loss, based on relevant ITU-R Recommendations and Reports such as Recommendation ITU-R M.1583 “Interference calculations between non-geostationary mobile-satellite service or radionavigation-satellite service systems and radioastronomy telescope sites” and Recommendation ITU-R S.1586-1 “Calculation of unwanted emission levels produced by a non-geostationary fixed-satellite service system at radio astronomy sites”.

SE40 updated the existing working document based on an input contribution, noting that a dedicated e-mail list is available for WI SE40\_45, the status of the working document was contained in Doc. [SE(24)014A02](https://api.cept.org/documents/wg-se/81457/se-24-014a02_draft-ecc-report-on-aggregated-inteference-from-satellite-systems-into-radioastronomy-service).

United Kingdom in Doc. [SE(24)031](https://api.cept.org/documents/wg-se/81573/se-24-031_future-of-work-item-se40_45-uk) proposed that this work be transferred to the relevant project team within CPG, considering that WRC-27 AI 1.16 overlaps completely with the scope of WI SE40\_45. Work would be duplicated if SE40 continued to progress on its report and methodology while a CPG project team discussed the same studies.

Within WG SE, the same view was expressed that duplication of work should be avoided, but that the results of the work done in the frame of WI SE40\_45 should not be lost. It was also mentioned that CPG has not started its work yet, and that it would be better to ensure continuity of the activities at the level of WG SE until the 97th WG SE meeting. At that time WG SE could decide to reconsider this question of transfer to CPG in case the draft ECC report is not sent for public consultation.

WG SE considered progress of the activities and agreed that the work should not be duplicated with activities under agenda items of WRC-27. Consequently, WG SE is expecting SE40 to submit for the 97th WG SE in September/October 2024, a draft ECC report mature enough for provisional approval to be sent for public consultation. WG SE agreed on an extension of the target date to January 2025.

Among the various WI having a target date in January 2025, SE40 is invited to give priority to the WI SE40\_45.

* + 1. **WI SE40\_46: Small IoT transmit-only satellite terminals for land and maritime applications transmitting in the 5850-5875 MHz band and the 14.0-14.5 GHz band**

This WI aims to study sharing and compatibility in the C and Ku bands in order to define acceptable characteristics for small IoT transmit-only satellite terminals in the 5850-5875 MHz band and 14.0-14.5 GHz band. It is related to satellite terminals with limited e.i.r.p., antenna with low directivity and that are not under the control of a satellite system. It is intended to support WG FM/FM44 activities on exemption from individual licensing for small IoT transmit-only satellite terminals for land and maritime applications transmitting in the 5850-5875 MHz band and 14.0-14.5 GHz band. Several ECC Reports could be produced (e.g. for the spectrum occupancy scenarios and for coexistence in each of the bands).

SE40 considered an input contribution summarizing the work carried out so far and asking for guidance on several points. SE40 invited the administrations to review the provided information that were considered for some of the next steps. This information would include collecting or validating deployment scenarios as well as other technical information about incumbent applications in the bands under consideration.

WG SE considered progress of the activities and agreed on an extension of the target date to January 2025.

* + 1. **WI SE40\_47: Update of ECC Report 271: further compatibility studies on Space X (Starlink) NGSO satellite systems operating in 10.7-12.75 GHz and in the 14 - 14.5 GHz FSS allocations**

This WI aims to update ECC Report 271 for radio astronomy coexistence studies based on updated technical parameters with respect to Space X (Starlink) NGSO satellite systems in the bands 10.7-12.75 GHz (space-to-Earth) and in the 14 - 14.5 GHz (Earth-to-space).

Noting the connections between ECC Report 271 and existing ECC Decisions, FM44 requested SE40 to consider publishing a new report instead of updating the existing one.

The proposal to update the scope of the work item was considered by SE40 without having found a consensus and was provided for consideration by WG SE with some square brackets as contained in doc. [SE(24)014A03](https://api.cept.org/documents/wg-se/81458/se-24-014a03_proposal-on-the-wi-se40_47).

During SE40 meeting, it was indicated that a value for minimum antenna elevation angle in the current version of the report may require update for the relevant annexes on OneWeb system. During WG SE meeting, France indicated that the minimum elevation angle indicated in the report is valid for the territories of CEPT administrations.

France in Doc. [SE(24)026](https://api.cept.org/documents/wg-se/81480/se-24-026_input-to-wg-se-on-wi-se40_47_fr) proposed to withdraw the WI SE40\_47 or to reduce its scope to the band 14 -14.5 GHz, recognizing that the WRC-23 approved a new Resolution, COM6/11 (see [provisional Final Acts of WRC-23](https://www.itu.int/dms_pub/itu-r/opb/act/R-ACT-WRC.15-2023-PDF-E.pdf)) on studies of technical and regulatory provisions necessary to protect radio astronomy operating in specific Radio Quiet Zones and, in radio astronomy service primary allocated frequency bands globally, from aggregate radio-frequency interference caused by systems in the non-geostationary-satellite orbit.

The meeting agreed that duplication of activities should be avoided, but that WI SE40\_47 should remain to address only the topics not covered in agenda item 1.16 of WRC-27.

WG SE considered progress of the activities and agreed on the following points:

- to avoid duplication of any activities with agenda items for WRC-27;

- to exclude reconsidering coexistence measures to be implemented by the radioastronomy service in frequency bands where it is allocated on a primary basis;

- to focus on the update of outdated information in the annexes of the ECC Report 271;

- to confirm the consideration of the measurements as described in the current scope;

- to postpone decision on developing a new draft ECC Report or revising the ECC Report 271 depending on the final nature of the modifications;

- to adjust editorially the annexes on OneWeb system to indicate applicability of minimum elevation angle to CEPT countries.

WG SE invited SE40 to consider if the scope of the WI needs to be updated or not, taking into account the guidance above.

* 1. **New WIs**

There was no new WI considered.

* 1. **Other issues**

There were no other issues considered.

1. **Report from Project Team SE45 (WAS/RLANs in the frequency band 5925 – 7125 MHz)**
	1. **Progress report of SE45**

The progress report was contained in Doc. [SE(24)015](https://api.cept.org/documents/wg-se/81309/se-24-015_progress-report-from-se45-chair).

* 1. **Expected deliverables for public consultation or other deliverables**
		1. **WI SE45\_03: OOBE Limits of 6 GHz VLP WAS/RLANs below 5935**

The WI aims to further investigate out-of-band emissions (OOBE) interference scenarios from Very Low Power (VLP) WAS/RLAN 6 GHz devices operating in the band 5945–6425 MHz to protect Communication Based Train Control systems (CBTC) that operate in the band 5915–5935 MHz, in order to comply with the ECC regulatory framework for WAS/RLAN at 6 GHz calling for a review of the OOB emission limit below 5935 MHz to be applied to Very Low Power (VLP) WAS/RLAN 6 GHz devices.

Two measurement campaigns were carried out in SE45, providing new technical elements for the compatibility studies: the on-site measurements of the coupling loss between a WAS/RLAN VLP transmitter and a CBTC receiver for an outdoor RER train and indoor metro lines; and the laboratory measurements to characterize a CBTC receiver and its protection ratio under WAS/RLAN interference.

SE45 conducted minimum coupling loss (MCL) compatibility studies for four different scenarios considering a potential impact of a WAS/RLAN VLP device on the platform or on board a train to a CBTC receiver access point or train unit. These studies addressed the impact on a single CBTC link. Additional statistical studies were carried out to assess the overall risk of interference to the CBTC system. SE45 also identified some mitigation techniques for both WAS/RLAN and CBTC that may be considered to minimize the risk of interference as much as possible.

SE45 agreed by consensus to submit the draft ECC Report to WG SE for public consultation with no outstanding issues as contained in Doc. [SE(24)015A01](https://api.cept.org/documents/wg-se/81310/se-24-015a01_draft-ecc-report-oobe-6-ghz-vlp-editorial-revision-eco-se45-chair).

After having reviewed the input from SE45 on this topic, WG SE approved provisionally for public consultation the draft ECC Report 355 as contained in [Annex 05](https://api.cept.org/documents/wg-se/81680/se-24-038a05_draft-ecc-report-355-vlp-wasrlan-operating-in-5945-6425-mhz-to-cbtc).

During the October 2023 meeting of SE45, the SE45 Chair reported to the WG FM Chair on the interim work progress of this WI (see Doc. [SE(24)015A03](https://api.cept.org/documents/wg-se/81312/se-24-015a03_report-from-se45-chair-to-wg-fm-chair-on-the-work-progress-under-wi-se45_03)). SE45 also submitted a Liaison Statement to FM61 informing them that technical studies under WI have been completed (see Doc. [SE(24)015A02](https://api.cept.org/documents/wg-se/81311/se-24-015a02_ls-from-se45-to-fm61)).

* 1. **WI in progress**
		1. **WI SE45\_04:** **Wireless Access Systems including Radio Local Area Networks (WAS/RLAN) in the 6425-7125 MHz**

The scope of this WI is to study possible technical conditions under which Wireless Access Systems including Radio Local Area Networks (WAS/RLAN) could operate and coexist with existing services in the 6425-7125MHz band.

* + - 1. **WAS/RLAN Parameters**

SE45 agreed on the values for the WAS/RLAN parameters to be used in the studies. For four WAS/RLAN parameters: Market Adoption Factor, RF Activity Factor, License Exempt Factor, and the Upper 6 GHz Factor, a parametric approach with two scenarios was adopted: Scenario A, based on ECC Report 302 and the methodology used therein, and Parametric Scenario B, which includes new proposed values to be used in the studies (see Doc. [SE(24)015A04](https://api.cept.org/documents/wg-se/81313/se-24-015a04_was-rlan-parameters-table-se45-20_1-)). For the remaining WAS/RLAN parameters, SE45 finalized an offline cross-validation of the WAS/RLAN e.i.r.p. and antenna gain distributions and the results are available on the SE45 Forum (see Doc. [SE(24)015A06](https://api.cept.org/documents/wg-se/81315/se-24-015a06_was-rlan-eirp-and-antenna-gain-distribution)).

SE45 provided ECC PT1 with an initial reply Liaison Statement containing the agreed set of the WAS/RLAN transmitter and deployment parameters (see Doc. [SE(24)015A05](https://api.cept.org/documents/wg-se/81314/se-24-015a05_reply-ls-to-ecc-pt1-on-was-rlan-parameters)), noting that additional information on WAS/RLAN e.i.r.p. and antenna gain distributions as well as WAS/RLAN receiver parameters would be provided to ECC PT1 as soon as they were finalized and agreed by SE45. A web meeting of SE45 has been scheduled for 8−9 February 2024 to complete the WAS/RLAN transmitter and receiver parameters and finalize the follow-up reply Liaison Statement to ECC PT1 (the current version of the draft follow-up reply LS to ECC PT1 is available in [SE(24)015A07)](https://api.cept.org/documents/wg-se/81316/se-24-015a07_draft-follow-up-reply-ls-to-ecc-pt1-on-was-rlan-parameters).

* + - 1. **FS Parameters and protection criteria and methodology**

SE45 received a LS from SE19 (see Doc. [SE45(23)078](https://cept.org/Documents/se-45/80220/se45-23-078_se19-23-042a03-reply-ls-from-se19-to-se45)), which provided further initial guidance on the methodology, protection requirements, and technical characteristics of the Fixed Service for the case of sharing between WAS/RLAN and FS in the upper 6 GHz band, noting that the discussions in SE19 on the generic methodology under WI [SE19\_43](https://eccwp.cept.org/WI_Detail.aspx?wiid=709) were still ongoing. SE45 would be kept informed of relevant further developments on this matter.

SE45 discussed in detail the guidance from SE19 and the input documents on FS parameters, protection criteria and methodology:

* + **FDP Methodology.** Some administrations noted that the FDP methodology developed by SE19 is a work in progress, that it has not been implemented and tested, and that it may be subject to change as the work in SE19 further progresses. They questioned whether SE45 should adopt this methodology, as it has not yet been finalized and published by WG SE. Some other administrations emphasised that the guidance provided by SE19 on the FDP methodology is agreed at SE19 level, that SE19 is the expert group for Fixed Service, and that this methodology should be used in SE45 sharing studies with Fixed Service (see also Doc. [SE(24)025](https://api.cept.org/documents/wg-se/81479/se-24-025_considerations-on-ls-between-wg-se-project-teams)).
* **Monte Carlo Analysis with Space-Time Considerations.**
* **Beacon Signals.** SE19 would keep SE45 informed of the relevant further developments on this matter.
* **Reply LS to SE19.** SE45 invited administrations (following SE19 and/or SE45) to provide the configurations for the Fixed Link(s) they would like to see considered in the studies.
	+ - 1. **Sharing studies with FS**

SE45 received three contributions on sharing studies with FS and agreed to include them as annexes to

the draft ECC Report [RLAN U6GHz], noting that all the studies would need to be updated to take account

of comments received during the discussions.

The status of the deliverable was contained in Doc. [SE(24)015A08](https://api.cept.org/documents/wg-se/81317/se-24-015a08_draft-ecc-report-rlan-u6ghz-).

WG SE considered the progress of the activities and agreed on extending the target date for WI SE45\_04 to January 2025.

* + 1. **WI SE45\_05: Higher power WAS/RLAN in 5945-6425 MHz**

The WI aims to study technical conditions to enable the possible implementation of a dynamic spectrum access coordination function for WAS/RLANs in the 5945-6425 MHz frequency band, beyond what is permitted under ECC Decision (20)01. The work should cover the possible use of WAS/RLAN equipment in a range of power levels up to 4 W e.i.r.p. and should consider the protection requirements of incumbent services in the 5945-6425 MHz frequency band (FS, FSS) and in adjacent bands (RAS, CBTC, Road ITS). The analysis should consider the aggregate effects of this additional terrestrial use along with the protection requirements of FSS uplink.

SE45 has received no input on this Work Item since the last WG SE meeting.

During WG SE, it was recalled that WI SE45\_05 also covers outdoor WAS/RLAN operation and that the WI was triggered by WG FM.

WG SE considered the progress of the activities (see Doc. [SE(24)015A09](https://api.cept.org/documents/wg-se/81318/se-24-015a09_draft-ecc-report-higher-power-rlan-l6ghz-)) and agreed on extending the target date for WI SE45\_05 to May 2025. Administrations and industry stakeholders were invited to contribute.

* 1. **New WIs**

There was no new WI considered.

* 1. **Other issues**

No other issues were considered.

1. **STG (SEAMCAT)**
	1. **Progress report of STG**

The progress report is contained in Doc. [SE(24)016](https://api.cept.org/documents/wg-se/81441/se-24-016_stg-progress-report).

* 1. **WI in Progress**

The WI STG\_01 is about the development of the CEPT simulation tool SEAMCAT including the supporting user manuals.

The current **official** version is [5.5.0](https://cept.org/eco/eco-tools-and-services/seamcat-spectrum-engineering-advanced-monte-carlo-analysis-tool), released on 24 November 2023. The main new features incorporated in SEAMCAT v.5.5.0 are listed below:

🌐 **Digital Terrain Data Integration**: Seamlessly incorporate digital terrain data into simulations, tools, and plugins.

🗺️ **Terrain Data Engines**: Extract terrain profiles from various terrain DEM data formats.

🔗 **Enhanced Propagation Models**: Introducing nine new or updated propagation models for accurate transmission loss calculations.

📡 **Antennas**: Explore new beamforming antennas, import patterns from external libraries, and experience improved 3D graphical representations.

🔌 **New Receiver Intermodulation Plugin**: Seamlessly calculate receiver intermodulation with the latest addition to our plugins.

🛠️ **Improved Workspace Checks and Tools**: Enhanced consistency checks, identifier tools for missing terrain tiles, superior workspace checks and comparison features.

🖥️ **CommandLine Functionality**: Simplified automation and result export capabilities for seamless usability.

📊 **Advanced Event Processing**: New Event Processing Plugins and improvement of the existing ones.

🗺️ **Workspace Settings:** Extending workspace settings and SEAMCAT model adjustments.

📍 **Scenario Relative Positioning**: New and extended options for precise positioning in the scenarios.

📉 **Additional Loss**: Including additional loss for generic and cellular systems.

🔁 **Multiple Propagation Models per Link**: Utilize up to four different models per link for advanced analysis.

🔧 **New and Updated Tools**: Discover new tools and enhancements to existing ones for enhanced user experience.

The current topics under discussion and development within STG:

* Implementation of digital terrain data in SEAMCAT come to phase 4 under WI STG\_07: additional features and enhancements:
	+ Including more terrain data readers and propagation model plugins
	+ Improving void filling algorithm for terrain tiles
	+ Extending GUI displays to allow implementation of some mapping functionalities e.g. in simulation outline map overlay view functionality
	+ Performance enhancements in calculation speed, memory management and handling bottlenecks.

Current state of the developments in SEAMCAT seems to be providing a lot of capabilities envisaged in STG\_07 but also there are some further works envisaged by STG in relation to Digital terrain data.

* Simulating location and time dependent random variables in SEAMCAT

STG has received the LS from SE19 ([SE19(23)042A04](https://api.cept.org/documents/se-19/79816/se19-23-042a04_ls-from-se19-to-stg)) on the topic of the implementation of time-dependent and space-dependent random variables in the SEAMCAT simulation. STG has thoroughly reviewed and discussed this topic raised in the SE 19 LS during STG#80 and STG#81 meeting and established a CG which discussed implementation possibilities and specification for tool modifications.

STG analysed how different cases of specific positioning considered by SE19 can be simulated in SEAMCAT, using some special settings, and concluded that three out of four of elaborated cases can easily be simulated with the current implementation of SEAMCAT. With respect to the Case 3, SEAMCAT requires modification of the existing Monte Carlo methodology implemented in the SEAMCAT.

STG discussed possible implementation options and agreed on an implementation path within the existing SEAMCAT framework. STG developed draft specification for tool modifications to address location and time dependent random variables in SEAMCAT (contained in [STG(24)007A01](https://api.cept.org/documents/stg/81438/stg-24-007a01_implementation-of-time-and-location-dependent-variables-in-seamcat-specifications-)). Based on the specification, the draft implementation of the modified SEAMCAT tool was developed and distributed as a test version v. 5.5.1 loctime1. The solution for the location related random variables which are not defined as distributions still have to be developed and implemented for each variable individually.

STG#81 agreed and sent the reply LS to SE19, also informing SE45 on the work done, on conclusions reached and invited them to test implemented features. It also informed on the work remaining to be done, and would keep SE19 & SE45 informed on the relevant developments on the issues mentioned above, whenever appropriate.

* Fractional Degradation of Performance (FDP) calculations in SEAMCAT

As an additional topic related to the LS from SE19 ([SE19(23)042A04](https://api.cept.org/documents/se-19/79816/se19-23-042a04_ls-from-se19-to-stg)), STG started discussion on possible implementation of the FDP methodology in SEAMCAT.

STG considered the draft implementation of Fractional Degradation of Performance developed by ECO as an external Event Processing Plugin (eEPP FDP). The implementation used SE19 working document doc. [SE19(23)042A05](https://api.cept.org/documents/se-19/79813/se19-23-042a05_wi_43-wd-on-methodologyfdp) for specification of the calculation.

STG proposed some extensions and improvement to be considered in the next steps for the development.

* Release check and unit test – Defining methodology and improvement of testing before each release

The activities related to improving the testing before each new release of SEAMCAT. This would ensure that new SEAMCAT releases have the expected behaviour, improve the robustness of the code and the user confidence in the tool. In Unit testing improvement, the work has focused on the testing of the all new implemented features and modifications in v.5.5.0. STG members are invited when proposing enhancements and new features to propose test data and encouraged to provide Unit tests for the source code.

* Antenna gain plugin:
	+ Antenna import functionality: new functionality to import antenna diagram files of most commonly used standard formats to the SEAMCAT library;
	+ Co and cross-polarised antenna AGP: a new AGP or extend the existing one, which would consider co- & and cross- polar antenna patterns in two orthogonal cuts. It also proposes using polarisation and co- & cross- polarisation gain in the calculation of iRSS Unwanted and Blocking for Interference links.
* Propagation model plugins (PMP):
	+ Multiple propagation model per link: simulation where a link between a receiver and a transmitter could require different propagation model depending on the link distance;
	+ Radio-climatic zones in PMPs P.452 and P.2001: STG agreed to include a note in the related PMP GUIs warning the users that currently only inland zones are considered. STG will continue discussing the best possible way forward regarding climatic zones in PMPs P.452 and P.2001.
	+ Implementation of the new versions of the ITU-R P series Recommendations that have been approved and published by ITU-R SG 3.

WG SE considered the progress of the activities and encouraged administrations and stakeholders to participate to STG meetings and to increase their involvement in SEAMCAT development, in particular related to the proposing and supporting enhancements and new features, testing of Alpha and Beta versions.

* 1. **New WIs**

There was no new WI considered.

* 1. **Other issues**

The planned SEAMCAT workshops for both beginners and intermediate/advanced users in first quarter 2024. Registration were available at the following links:

* [Beginner’s workshop – 19-20 February](https://www.cept.org/ecc/groups/ecc/wg-se/stg/client/meeting-calendar/event-details?meetingid=4340)
* [Advanced workshop – 18-19 March](https://www.cept.org/ecc/groups/ecc/wg-se/stg/client/meeting-calendar/event-details?meetingid=4341)

Each workshop was planned in a 2-day format with physical participation at the ECO’s premises in Copenhagen as well as the option to follow online. Participants were encouraged to attend in person if possible to gain the full benefits of the workshop including the opportunity for interactive training.

It has been highlighted that a large number of participants, from all around the world, had already registered to these workshops which is a positive sign about the growing interest to this tool.

It was mentioned that a revision of Report ITU-R SM.2028, detailing Monte Carlo methodology used in SEAMCAT, may be considered.

1. **EMC and PLT issues**

No report from CENELEC was received nor considered for this meeting.

WG SE will continue its cooperation with CENELEC on EMC and PLT issues.

1. **ECO assistance to WG SE**

The ECO representative informed about the latest developments in the Office that are of interest of WG SE (see Doc. [SE(24)018](https://api.cept.org/documents/wg-se/81380/se-24-018_eco-support-to-wgse)) and presented ECO Bulletin on other Regions (see Doc. [SE(24)INFO02](https://api.cept.org/documents/wg-se/81381/se-24-info02_eco-bulletin-on-other-regions-july-2023)). WG SE Chairman thanked ECO for their support to the activity of WG SE and WG SE project teams.

1. **WG SE Work Programme – SE PT Terms of reference**

ECO prepared a file (see Doc. [SE(24)019](https://api.cept.org/documents/wg-se/81477/se-24-019_wgse-95-work-programme)) reflecting the Work Programme associated to a Gantt chart to identify the deliverables to be sent for public consultation and those for final approval in order to ease its review.

The Work Programme was updated notably the target dates on a case-by-case basis as contained in [Annex 14](https://api.cept.org/documents/wg-se/81711/se-24-038a14_workprogram_update).

WG SE Chairman pointed out that the large number of deliverables having a target date in January 2025 and recognized that it may lead to delays for some activities, notably for some project teams. This aspect would require further discussion on the target dates at the WG SE in May 2024.

WG FM, ECC PT1 and ETSI TC ERM were informed of the progress of the activities within WG SE via a liaison statement as contained in [Annex 08](https://api.cept.org/documents/wg-se/81716/se-24-038a08_liaison-statement-to-wg-fm-ecc-pt1-and-etsi-tc-erm-on-the-results-of-the-95th-wg-se-meeting) of the 95th WG SE meeting minutes.

France in Doc. [SE(24)025](https://api.cept.org/documents/wg-se/81479/se-24-025_considerations-on-ls-between-wg-se-project-teams) pointed out the question on how the liaison statements between project teams are to be considered, based on the example of a request of guidance to a project team, which then spent a lot of time and made significant effort to reach a consensus, and for which some administrations expressed concerns during its consideration by the requesting project team. France proposed one possible way forward for future similar situation by mentioning the possibility of joint meetings between project teams.

WG SE recognized that LS received from another project teams should be duly considered without precluding questions that may require further exchanges between the concerned project teams. Additionally, in terms of efficiency when coordination between project teams within WG SE is expected, joint meetings may be considered as appropriate, recognizing that it has been already the case several times.

1. **Any other business**

WG SE agreed on the dates for the public consultation of WG SE deliverables:

- Notification period with administrations: from 5th to 19th of February 2024

- Public consultation: from 20th February to 2nd of April 2024

Hungary in Doc. [SE(24)035](https://api.cept.org/documents/wg-se/81637/se-24-035_art5-corr-by-wrc-23rev1) provided for information to WG SE, the identification of the agenda items in regards with the modifications of Article 5 of the RR from the [provisional Final Acts of WRC-23](https://www.itu.int/dms_pub/itu-r/opb/act/R-ACT-WRC.15-2023-PDF-E.pdf).

1. **Date and place of future meetings**

The dates for the following WG SE meetings in 2024:

96th WG SE: 6 - 10 May 2024, Hybrid, [TBD]

97th WG SE: 23 – 27 September or 30 September - 4 October 2024, Hybrid, [TBD]

*Administrations are kindly invited to consider hosting WG SE and PT of WG SE in 2024 and 2025.*

1. **Approval of the Report of the Meeting**

The minutes of the 95th WG SE meeting have been reviewed for approval by the participants. WG SE agreed that editorial corrections may be introduced by WG SE Chairmanship and ECO. The versions of the annexes and other references in the present minutes are not provided considering that the last version on the website prevails.

1. **Closure of the meeting**

The WG SE Chairman thanked ECO for hosting the meeting, and all the participants for the spirit of cooperation to reach compromise. He also highlighted the essential help and support of the project team chairs, WG SE Vice-Chairs with a special mention to former Vice Chair Aurelian Sorinel Calinciuc, the WG SE technical secretary and ECO in particular Zeljko Tabakovic.

Finally, he wished a safe journey to all physical participants.

The meeting was closed on Friday the 2nd of February 2024 at 11H00.