INTERNATIONAL TELECOMMUNICATION UNION

Radiocommunication Bureau
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Administrative Circular
CA/158

28 March 2006

To Administrations of Member States of the ITU
and Radiocommunication Sector Members[1]

Subject: Report of the second meeting of the Intersessional Planning Group (IPG), Geneva, 20-24 February 2006, in respect of the second session of the Regional Radiocommunication Conference for the planning of the digital terrestrial broadcasting service in parts of Regions 1 and 3 in the frequency bands 174-230 MHz and 470–862 MHz (RRC-06)

Reference: Administrative Circular CA/152 of 6 October 2005

1 Please find attached the report of the second meeting of the Intersessional Planning Group (IPG), which was held in Geneva, from 20 to 24 February 2006. The report was prepared under the responsibility of the Chairman of the IPG, Mr. K. Arasteh, assisted by the IPG Vice-Chairmen, the Chairmen of the Working Groups established by the IPG-2 and the BR staff supporting the IPG-2.

2 In communicating this report, the Bureau wishes to emphasize the following points:

2.1 Due to an error in the planning software dealing with VHF (notably, with the frequency blocks 12A-12E and channels 11 or 12), which was discovered at the IPG-2 meeting, the Bureau repeated the calculations for the VHF band, with the corrected version of the planning software, and the new version of the draft Plan (first synthesis) was posted on the ITU web site on 7 March 2006 (see cases 1-4 referred to as "Corr.2" at http://www.itu.int/ITU-R/conferences/rrc/rrc-04/intersession/draft_plan/index.html). For the sake of completeness, the UHF results are also included in the consolidated web publication, although there was no change in this part of the results.

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[1] *This Administrative Circular is primarily addressed to the ITU Member States and ITU-R Sector Members of Region 1 (except Mongolia) and to the Islamic Republic of Iran. It is for information only for other ITU Member States and for the ITU-R Sector Members outside the planning area of RRC.*

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2.2 The results of the second synthesis of the draft Plan, which take into account the additional administrative declarations submitted by administrations by 20 March 2006, will be published on the web by 31 March 2006, and will be distributed to the Member States in the RRC planning area through a circular letter in the CR series.

3 You may wish to note that section 7.1 of the main body of the IPG Report contains recommendations of the IPG to the administrations of the Member States in the planning area regarding the actions to be taken prior to the second session of RRC.

Valery Timofeev
Director, Radiocommunication Bureau

Attachment: 1

Distribution:

- Administrations of Member States of the ITU
- Radiocommunication Sector Members
- Chairmen and Vice-Chairmen of Radiocommunication Study Groups and the Special Committee on Regulatory/Procedural Matters
- Chairman and Vice-Chairmen of the Radiocommunication Advisory Group
- Chairman and Vice-Chairmen of the Conference Preparatory Meeting
- Members of the Radio Regulations Board
- Secretary-General of the ITU, Director of the Telecommunication Standardization Bureau, Director of the Telecommunication Development Bureau

ATTACHMENT

Summary Record of the second meeting of the Intersessional Planning Group (IPG)

(Geneva, 20-24 February 2006)

Page

Introduction

The Intersessional Planning Group (IPG) held its second and last meeting at ITU headquarters in Geneva, from 20 to 24 February 2006, under the chairmanship of Mr Kavouss Arasteh (IRN). The meeting was attended by 331 participants representing 102 Member States in the planning area, 1 Member State outside the planning area, 1 regional telecommunication organization and 1 regional and other international organization.

The deliberations and conclusions reached with respect to the considered agenda items are summarized below.

1 Opening remarks

1.1 The Chairman, Mr Arasteh, opened the meeting and welcomed the participants to the second meeting of the Intersessional Planning Group.

1.2 The Director BR, Mr. Valery Timofeev, welcomed the delegates to the newly renovated CICG. After describing some of the difficulties encountered up to now in preparing the data and the draft Plan, he wished the delegates all the best for the IPG-2 and the upcoming RRC-06.

2 Approval of the agenda

2.1 The meeting approved the proposed draft agenda in Document IPG-2/ADM/1(Rev.1) as amended.

3 Review of the status of the intersessional activities (report from the Director, BR)

3.1 BR introduced Document IPG-2/8 noting, under section 2, the follow-up activities by the BR resulting from the specific decisions of the IPG-1. This was noted with thanks.

3.2 Section 3 of the document provides updates on the status of the intersessional work. This included modifications to the propagation zones, the report of the RPG meeting (6 to 9 December 2005), required changes to the software and the work required for establishment of the reference situation.

3.3 BR presented Document IPG-2/12 (+ Add.1 + Add.2) summarizing the statistics with respect to the input data for the draft Plan. The main document provides statistics on digital requirements, analogue broadcasting and other primary services. Addendum 1 provides a comparison of digital broadcasting requirements for the draft Plan with those for the first planning exercise. Finally Addendum 2 provides statistics on submitted administrative declarations.

3.4 IPG-2 noted the two documents, with thanks and assigned them to the relevant working groups.

4 Review of consideration of the IPG Steering Group activities (report from the Chairman, IPG)

4.1 In the capacity of Chairman of IPG Steering Group, Mr Arasteh presented Document IPG-2/18, the summary of the fourth meeting of the IPG Steering Group (IPG-STG) held in Geneva, 17-18 December 2005.

4.2 The document noted among other things the problem of implementation of the principle of equitable access in the planning software.

4.3 The need for complementary analyses was raised (a single final (complementary) analysis, versus one complementary analysis after each plan iteration).

4.4 The Chairman described section 7 of the report on the suggested arrangements at the second session of the conference and especially the need for subdivision of the planning area and establishment of the Coordination and Negotiation Groups (CNGs).

4.5 The status regarding the ongoing activities on the modifications procedures of the GE89 and ST61 Plans, and the Article 11 procedures (for analogue broadcasting assignments in areas not covered by ST61 and GE89 (RCC countries) and those relating assignments to other primary services) was noted.

4.6 The need for clarification of Mutually Incompatible Groups (MIGs) was also indicated.

4.7 The Chairman introduced the report of the meeting of the Working Party of the Intersessional Planning Group (WPIPG), (Geneva, 28-29 September 2005) (Document WPIPG/10(Rev.1)) indicating it had been available on the web since 10 October 2005.

4.8 The IPG instructed the IPG-STG to represent IPG between the IPG-2 and RRC-06 and to take the necessary follow up actions in order to ensure that the objectives and purposes of Resolution COM5/1 of RRC-04 are fully implemented, including the implementation of the tasks entrusted to PXT in the document, and report to RRC-06 accordingly.

The IPG Chairman was also requested to attend the PXT meetings, when necessary.

5 Working arrangements

5.1 Establishment of IPG working groups

5.1.1 The Chairman proposed the following subdivision of working groups as described in Document IPG-2/ADM/2:

Working Group	Group Name	Chairman
IPG-2-WG 1:	Results of the draft Plan	Mr N. Laflin
IPG-2-WG 2:	Administrative declarations	Mr M. Le Devendec
IPG-2-WG 3:	Planning assumptions	Mr J.-J. Guitot
IPG-2-WG 4:	Preparations for RRC-06	Mr D. S-Goichon
IPG-2-WG 5:	Verification of software	Mr D. Ratkaj

With respect to IPG-2-WG 4, the Chairman clarified that the Conference Core Processing Unit (CCPU) is part of the planning committee which is charged with making the Plan calculations.

5.2 Information meeting/workshop

5.2.1 After a short introduction by the IPG-2 Chairman, Mr Hai, the PXT Team Leader, made a presentation on the production of the draft Plan. He also indicated that training corners were available to delegates at lunchtime from 1300 to 1400 hours.

5.2.2 Mr Terry O'Leary of the EBU and Member of PXT made a presentation on Mutually Incompatible Groups (MIGs), followed by the introduction of Document IPG-2/28 of the EBU.

5.2.3 A final presentation by Mr Ken Hunt of the EBU and Member of PXT was made on Plan improvements, in which he indicated the most common type of errors in the input data. The problem of fulfilling requirements comprised of very large allotment areas was also discussed.

5.2.4 Several solutions were proposed to improve the percentage of satisfied requirements.

5.2.5 On request of the delegate of Syria, the PXT Team Leader was asked to clarify how the planning software dealt with the subject of equitable access. After some discussion, the Chairman indicated the subject was clarified in item 5 of section 4.1 of the summary report of the fourth meeting of the IPG-STG (Document IPG-2/18), and in section 3.7 on the progress report on the activities of the PXT (Document IPG-2/26).

6 Consideration of the contributions to IPG

All contributions from the membership, the Bureau, the PXT, ITU-R Study Groups and the RPG were considered in Plenary or in the respective Working Group. The documents are listed in the approved agenda (Document IPG-2/ADM/1(Rev.1)) under agenda items 6.1 to 6.5.

6.1 Reports of the Working Group Chairmen

6.1.1 Mr N. Laflin, Chairman of Working Group 1 dealing with the results of the draft Plan, submitted the report of the Working Group. The report contained in **Annex 1** was endorsed by IPG-2 as amended. The note appearing under section 4.2 of the report was added after the meeting.

6.1.2 Mr M. Le Devendec, Chairman of Working Group 2 dealing with administrative declarations, submitted the results of the deliberations within the Working Group. The relevant reports as contained in **Annexes 2A, 2B and 2C**, were endorsed by IPG-2 as amended.

6.1.3 Mr J.-J. Guitot, Chairman of Working Group 3 dealing with planning assumptions, submitted the report of the Working Group. The report contained in **Annex 3** was endorsed by IPG-2 as amended. The Bureau was requested to provide a consolidated document on assumptions for submission to RRC-06.

6.1.4 Mr D. Sauvet-Goichon, Chairman of Working Group 4 dealing with preparations for RRC 06, submitted the results of the deliberations within the Working Group. The relevant reports as contained in **Annexes 4A, 4B and 4C** were endorsed by IPG-2 as amended.

6.1.5 Mr D. Ratkaj, Chairman of Working Group 5 dealing with the verification of software, submitted the results of the deliberations within the Working Group. The relevant reports, as contained in **Annexes 5 A and 5B** were endorsed by IPG-2 as amended.

7 Actions to be taken prior to the second session of RRC

Actions to be taken prior to the second session of RRC are described in detail in Annexes 1-5 and are summarised below by the relevant section/paragraph number.

7.1 Actions to be taken by administrations

Administrations are invited to take the relevant action referred to in the following items:

- section 1.4 of Annex 1
- paragraph before last of section 3 of Annex 1
- Note after section 4.2 of Annex 1
- section 2, and paragraphs 2.5 and 2.6 of Appendix 1 to Annex 1
- paragraphs 5.1, 5.2, 5.3, 5.4 and 5.5 of Appendix 1 to Annex 1
- first paragraph of section 1, sections 2, 3.1 and 4.3 of Annex 2B
- section 5 of Annex 2C

- sections 2.2 and 3.1.1 of Annex 4A
- sections 2 b) 2 e), 2 f) and 2 h) of Annex 5A.

7.2 Actions to be taken by the PXT

These actions are indicated in the following items:

- Note after section 4.2 of Annex 1
- section 5.6 of Appendix 1 to Annex 1
- last paragraph of section 1 of Annex 3
- section 3.1 of Annex 3 and item 1 of Attachment 1 of Annex 3
- sections 2 a) and 2 j) of Annex 5A
- section 6.4 of Annex **5**B.

7.3 Actions to be taken by the Radiocommunication Bureau

These actions are indicated in the following items:

- section 1.3 of Annex 1
- section 4 of Appendix 1 to Annex 1
- section 3 of Annex 2A
- sections 2.2 and 3.1 of Annex 2B
- section 4 of Annex 2C (already implemented)
- section 3.2 of Annex 3
- section 2.2.1 of Annex 4A
- section 9 on Facilities of Annex 4B
- sections 2 a), 2 g), 2 i) and 2 j) of Annex 5A
- section 6.4 of Annex 5B.

7.4 Actions to be taken by the IPG Steering Group

This action is indicated in section 4.8 of this report.

8 Recommended actions to be considered by the second session of RRC

Actions to be considered by the second session of RRC are described in detail in the following item(s) of Annexes 1-5.

8.1 Subdivision of the planning area and establishment of Coordination and Negotiation Groups (CNGs)

See Table 1 of Annex 4B.

8.2 Processing of submissions received after 31 October 2005 relating to the ST61 Plan, the GE89 Plan and notification of assignments to analogue TV under Article 11 of the Radio Regulations submitted by countries not covered by the ST61 and GE89 Plans and notification of assignments to other primary services under AR11 of the Radio Regulations

See section 2.1 of Annex 4A.

8.3 Planning process, number of options, number of iterations and complementary Plan analysis if required

- for number of options: see "Recommended Options" section of Annex 4C
- for number of iterations: see paragraph 3.1.1 of Annex 4A
- for complementary Plan analysis: see paragraph 3.2.1 of Annex 4A.

8.4 Any other issues related to the second session of RRC if raised in the above-mentioned Annexes

Regarding the issues associated with administrative declarations, see section 5 and first paragraph of section 6 of Annex 2A.

9 Consideration and approval of the Report of the second IPG meeting

9.1 Mr Kisrawi, on behalf of the Arab Group, in addition to the reservations made with respect to two specific issues (lack of proper implementation of the principle of Equitable Access and doubt about the necessity of performing complementary analysis) expressed reservation on the rest of the Report of the IPG-2.

9.2 The summary report of the meeting together with the associated Annexes was adopted by IPG-2 as amended.

10 Any other business

10.1 In his closing remarks, the Chairman of IPG, looking forward to the forthcoming success of the RRC-06 conference, reiterated that the conference would be the most complex planning conference in the history of ITU. He indicated that it would be the first conference with enormous computing capacity (up to 100 high speed local computers and the possibility of using 200 more computers at CERN).

10.2 The Chairman thanked the Working Group Chairmen Mr N. Laflin, Mr M. Le Devendec, Mr J.-J. Guitot, Mr D. Sauvet-Goichon and Mr D. Ratkaj for their kind efforts and difficult tasks they performed in preparing Annexes 1-5 to the Report of IPG-2.

10.3 He thanked the Director, BR, for his continued support and advice to the intersessional activities. The IPG Chairman then expressed his gratitude to Mr Trajco Gavrilov, to all the PXT members and its Team Leader Mr Pham Hai and, in particular, to the two highly qualified EBU experts for their outstanding work.

10.4 He extended the IPG appreciation to all the other Bureau's staff involved in the IPG-2.

10.5 The Chairman expressed his gratitude to Mr Jean–Marc Paquet, the Technical Secretary of the IPG-2, for his hard work and kind efforts.

10.6 Finally he expressed his appreciation and gratitude to all the delegates attending the meeting and for their contributions and active participation in the Working Groups and the IPG-2.

10.7 The meeting was closed at 1730 hours.

Annexes: 10

Annex 1
Annex 2A
Annex 2B
Annex 2C
Annex 3
Annex 4A
Annex 4B
Annex 4C
Annex 5A
Annex 5B

ANNEX 1*

Results of the draft Plan

1 Input data

1.1 Data concerning digital requirements

Within the indicated deadline, the Bureau received requirements from 109 Member States from the planning area and one observer (the Palestinian Authority). In addition, the Bureau received guidance from three Member States on the course of action that should be followed in their regard, notably:

1.1.1 The Administration of Angola requested the Bureau to generate digital requirements for Angola, by converting the relevant analogue broadcasting assignments of Angola, as they appear in the updated version of the GE89 Plan.

1.1.2 IPG-2 took note of the requests received by the Bureau from the Administrations of Iceland and Seychelles, not to generate any digital broadcasting requirements for them in the production of the draft Plan.

IPG-2 endorsed the course of action taken by the PXT and requested the Bureau to convey the conclusions to these administrations accordingly. The Administration of Seychelles should also be informed that, with respect to the future use of Band III and Bands IV and V by that administration for digital broadcasting, the matter is outside the scope of IPG activities since all post-conference issues will be dealt with by RRC-06.

1.1.3 It was noted that the Bureau had received no digital requirements and no replies to the relevant reminders from the following Member States: GNE, LBR, MWI, RRW, SOM, SRL and STP. Given the fact that the Administration of Malawi submitted requirements for the first planning exercise, the Bureau followed the indications in § 6.2 of the Report from RRC-04, and the requirements of MWI submitted for the first planning exercise were also used for the production of the draft Plan.

In respect of both the administrations which have not submitted their digital broadcasting requirements and for their neighbouring countries, the approach consisted in converting the analogue television assignments (of the administrations which have not submitted digital requirements) as they are currently contained in the GE89 Plan, into digital television broadcasting requirements.[2] The conversion process is given in section 2.5 of Document IPG-2/12.

It is important to note that although the BR can generate digital requirements, the concerned administrations will have to coordinate their own requirements with the affected administrations. The BR should inform these administrations in this respect. Should these administrations fail to

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* Source: Document IPG-2/DT/9.

[2] The reference situation of the analogue television assignments was used for generating the digital broadcasting requirements. The conversion process will have to be repeated for the Conference, should the formal reference situation be modified. The impact of any new definition of the propagation zones in Western-Africa would also require the regeneration of the service areas for those administrations on which such a change will have an impact.

coordinate their requirements, the Conference is invited to propose relevant actions regarding these countries.

IPG-2 noted Addendum 1 to Document IGP-2/12. A clarification about linked requirements was requested, and the Leader of PXT explained that the figures in this column refer to the number of entries as input to the synthesis process where a set of linked requirements is considered as one single entry.

1.2 Input data concerning analogue television broadcasting

The input data concerning the existing and planned analogue broadcasting assignments have been prepared by the Bureau, in accordance with the indications in the RRC-04 Report. The Bureau excluded those frequency assignments for which the administrations concerned indicated that they should not be taken into account in the compatibility assessment associated with the preparation of the draft Plan.

The general statistics regarding the existing and planned analogue broadcasting assignments for the preparation of the draft Plan are in Table 3-1 of Document IPG-2/12.

1.3 Input data concerning existing and planned assignments in other primary services

The Bureau received requests from 14 Member States for inclusion of their existing and planned assignments in other primary services in the compatibility assessment process associated with the production of the draft Plan. After the examinations stipulated in the RRC-04 Report, including the compliance with the coordination requirements for the frequency assignments notified after 10 May 2004, the Bureau included some 8 222 assignments from 12 administrations. The summary information is included in Table 4-1 of Document IPG-2/12, as amended.

A number of administrations (listed in Table 4-1 of Document IPG-2/12) expressed concerns regarding the exclusion by the BR of some of their existing and planned assignments in other primary services. It was noted that these administrations held an informal meeting with the BR in order to clarify the reasons for the exclusion of these assignments. See also section 2.2 in Annex 3 to this report.

1.4 Information regarding administrative declarations

Addendum 2 to Document IPG-2/12 was considered. Some questions were raised concerning the reasons for the large number of missing and unusable declarations. In this regard, administrations are encouraged to check the information concerning their own and neighbouring declarations posted on the ITU website (http://www.itu.int/ITU-R/conferences/rrc/rrc-04/intersession/draft_plan/index.html) with the view to correcting or supplementing them prior to 20 March 2006 (deadline for submission of administrative declarations). Where further clarification is required, the administrations should consult with the BR.

A request was made for software to allow administrations to validate their administrative declarations. The BR offered to provide standalone validation software as soon as possible within 2 to 3 weeks, and informed the meeting that the currently available Display software includes the facility to generate administrative declarations in the correct format.

About 1 million administrative declarations received from 81 administrations were considered in the production of the draft Plan and additional study cases. About 400 000 declarations were not considered because of incorrect identification information, absence of reciprocal declarations from both administrations and duplicate internal declarations. Detailed information regarding the administrative declarations is given in Addendum 2 to Document IPG-2/12.

For the case of internal global declarations, “one-to-all” and “all-to-all” involving digital requirements, only declarations between digital requirements having one acceptable channel/frequency block are taken into consideration.

2 Excessive requirements

The PXT in its progress report has considered the need to provide an “excess requirement” document for each administration. IPG-2’s understanding of the definition of excessive requirements is when the input requirements exceed the available spectrum.

In respect to the above, Dr O’Leary from EBU and member of PXT presented Document IPG-2/28 (Rev.1) and the electronic Document EP/001. This was prepared following the directive from IPG-STG (Document IPG-2/26), requesting the production of a document for each administration indicating the requirements of that administration associated with the available spectrum, based on the results of the draft Plan, provided in Document IPG-2/28(Rev.1) and the electronic Document EP/001.

These documents explain, in detail, the principle of MIGs (Mutually Incompatible Group), RSDs (relative spectrum demand) as follows:

A MIG is a set of requirements, each of which is incompatible with every other requirement in the group. That is, no pair of requirements in the group can share a channel in a compatible manner. The size of a MIG (the number of the requirements contained in the group) is an indication of the number of channels/blocks (that is the amount of spectrum) needed to satisfy all the requirements in the MIG in a compatible manner.

If the size of the MIG is sufficiently large, the spectrum needed to satisfy all of these requirements in a compatible way would be larger than the spectrum available to the requirements in the MIG; in that case there is an “excess”. The ratio of the spectrum needed by the requirements in the MIG to the spectrum available to the requirements in the MIG, expressed as a per cent, is termed the Relative Spectrum Demand (RSD).

RSD larger than 100% means that more spectrum is required than is available (for example, 500% means five times as much spectrum would be needed to satisfy the requirements in the MIG), and this indicates that a planning problem exists.

A sub-working group, chaired by Dr Beutler from the Federal Republic of Germany, was established in order to prepare an outline of recommendations for the improvements of the planning results during the RRC-06. The resulting recommendations as amended by the IPG, are included in Appendix 1 to this Annex.

With respect to the submitted digital broadcasting requirements for the draft Plan (Annex 1 of Document IPG-2/12), one administration raised a question about possible means to limit excessive input digital requirements. The Chairman of IPG stated that this issue had been discussed at the previous intersessional meetings.

Based on these discussions, the meeting concluded that it is not realistic to impose restrictions on the input requirements of administrations.

3 Equitable access

It was noted that PXT (section 3.7 of Document IPG-2/26) has carried out the study of the planning aspect, as requested by WPIPG, and according to the content of section 5.1.2 of the RRC-04 Report and, in particular, the following criteria:

- coverage, in terms of area to be covered;

- quality of reception (*C*/*I*, *C*/*N*, protection ratio, power flux-density/minimum field strength to be protected;
- percentage of locations and percentage of the time for which a given quality of reception is to be achieved and for which the interference analysis is to be performed;
- type of reception: fixed, portable (indoor/outdoor), mobile;
- spectrum available for planning;
- any additional criteria they propose in order to improve the equitable access taking into consideration:
  a) the results of the first IPG meeting (see Document IPG-1/51);
  b) any possible relation and interdependence between the number of assignments of primary services other than broadcasting services to be protected and the establishment of the Plan (this might apply also to existing and planned broadcasting stations in ST61 and GE89 Plans;
  c) that the planning exercise could not exceed the available spectrum for planning.

It was also noted that the PXT is of the view that it is not possible to implement the above criteria in the planning software for the following reasons:

- For most of the criteria it is difficult to quantify the criteria and to establish the relation and interdependence between these criteria in a consistent, logical and mathematical manner so that these can be implemented in the planning software.
- On the criterion of coverage, it was difficult to resolve the questions of overlapped coverage and how they can be treated.
- On the criteria of quality of reception, type of reception and the bandwidth available for planning, it is difficult to establish a common basis to implement these criteria in the planning software, because of the significant different approaches used by administrations in the planning of their digital requirements e.g. allotments and assignments and mixture of the two, various reception modes: fixed, mobile and portable or indoor portable.

Furthermore, IPG-STG, based on the report of the PXT, has concluded that

" It seems to be very difficult to advance further in implementing the principle of equitable access due to the fact that there is no identical planning concept in a given sub-region, region or the entire planning area.

In view of the above, it is difficult to establish a common basis to be used for the implementation of the equitable access, however, the administrations are encouraged to discuss the question with neighbouring administrations in order to have a common understanding on the issue.

One possible option to consider, at this stage, would be for administrations to prepare a visual display of their requirements on a geographical map of their country to indicate their intention of the submitted requirements using the available software. This visual display would be useful to establish a basis for a common understanding of the matter and to resolve incompatibilities in a given CNG. The Steering Group noted that if the planning committee of the Conference so decides, administrations would be requested to provide this and/or any other relevant information to a given CNG." IPG-2 endorsed that conclusion. See Note at the end of section 4.2.

The Arab Administrations reserved their position concerning the above conclusions, and stated that they would come back to this issue with a proposal to the Conference.

4 Results regarding the production of the draft Plan

IPG-2 considered Documents IPG-2/19, Corrigendum 1 to IPG-2/19, Addendum 1 to IPG-2/19 and Corrigendum 1 to Addendum 1 to IPG-2/19, Addendum 2 to IPG-2/19 and Corrigendum 1 to Addendum 2 to IPG-2/19. See Note at the end of section 4.2.

In accordance with the schedule of the intersessional activities, indicated in Annex 2 to Resolution COM5/1, the Planning Exercise Team (PXT) produced the draft Plan, as well as three additional study cases, using the input data as mentioned in section 1 of this document.

4.1 The draft Plan and additional study cases

Based on the indications in the Report from the RRC-04 and the discussions at IPG-1 and WPIPG meetings, the PXT produced the "basic version of the draft Plan" (study case 1) as well as three additional study cases, which parallel the study cases carried out during the first planning exercise.

For all study cases, the PXT used the working assumptions agreed at IPG-1 and additional working assumptions presented to IPG-2. For ease of identification between the different set of results for the different study cases, the cases are numbered as follows:

4.1.1 Study case 1 – the draft Plan

This case represents the draft Plan as defined by the RRC-04. All analogue television assignments in the reference situation and all assignments to primary services other than broadcasting in the reference situation were taken into account during the planning process.

4.1.2 Study case 2 – AIOX (Analogue In, Other services eXcluded)

In this case all analogue television assignments in the reference situation were taken into account during the planning process, in accordance with the indications from the concerned administrations, and all assignments to primary services other than broadcasting in the reference situation were excluded from the planning process.

4.1.3 Study case 3 – AXOI (Analogue eXcluded, Other services In)

In this case all analogue television assignments in the reference situation were excluded from the planning process and all assignments to primary services other than broadcasting in the reference situation were taken into account during the planning process.

4.1.4 Study case 4 – AXOX (Analogue eXcluded, Other services eXcluded)

In this case all analogue television assignments in the reference situation and all assignments to primary services other than broadcasting in the reference situation were excluded from the planning process.

4.2 Synthesis configuration for the different study cases

In accordance with the instructions from IPG-1, the PXT investigated methods for applying a more equitable approach to plan synthesis (in terms of number of satisfied requirements per administration) and in particular methods that would avoid the situation where some administrations had none of their requirements satisfied. Such a method has been proposed and the relevant software was developed. In applying this software it is necessary to set a target of the maximum equal number of requirements that should be satisfied, where such requirements would be considered at the level where a linked set of requirements is considered as one requirement. The following table provides the target of maximum equal number of requirements that were set and those values that were achieved for the first synthesis of the draft Plan:

	Study case 1		Study case 2		Study case 3		Study case 4	
Band	VHF	UHF	VHF	UHF	VHF	UHF	VHF	UHF
Target	1	3	1	3	4	22	4	22
Achieved	0**	2	0**	2	3	21*	3	21*

* Post synthesis has optimised this value even further.

** After the analysis process no channels were available for the synthesis due to the constraints imposed by the existing and planned assignments (analogue television and/or other primary services assignments).

IPG-2 endorses the approach given above in the production of the Plan.

Note:*

Following the meeting some questions were raised concerning the validity of this approach. It is not currently clear what a realistic target number would be. This is a matter for trial and error. Consequently, the PXT is instructed to carry out a series of planning studies, based on the data used for the draft Plan, in order to:

– identify cases where the number of requirements from an administration intended to serve a given area is greatly in excess of the capacity of the spectrum;

– identify a range of 'minimum number of satisfied requirements for all administrations' (used by the synthesis as an initial target) which will result in an equitable distribution of assignments in the synthesis process.

The IPG-STG is instructed to review the additional studies carried out by the PXT and to report to RRC-06. Administrations are also recommended to review and, if necessary, revise the requirements that they submitted for the draft Plan in order to avoid cases where the number of requirements intended to serve a given area is greatly in excess of the capacity of the spectrum. In particular, situations where there are excessive requirements serving the same area should be avoided.

4.3 Results for Band III

	Study case 1				Study case 2			
	T-DAB	DVB-T	Total	%	T-DAB	DVB-T	Total	%
Yes	4888	3203	8091	46.6	4967	3231	8198	47.2
No	4942	4347	9289	53.4	4863	4319	9182	52.8
Total	9830	7550	17380	-	9830	7550	17380	-

* This note was added after the IPG-2 meeting.

	Study case 3				Study case 4			
	T-DAB	DVB-T	Total	%	T-DAB	DVB-T	Total	%
Yes	5955	3683	9638	55.5	5973	3715	9688	55.7
No	3875	3867	7742	44.5	3857	3835	7692	44.3
Total	9830	7550	17380	-	9830	7550	17380	-

Key: Yes = number of requirements with a channel or frequency block assigned

No = number of requirements without a channel or frequency block assigned

4.4 Results for Band IV and V

	Study case 1		Study case 2		Study case 3		Study case 4	
Yes	32651	58.5%	32933	59.0%	36818	65.9%	36997	66.2%
No	23198	41.5%	22916	41.0%	19031	34.1%	18852	33.8%
Total:	**55849**	-	**55849**	-	**55849**	-	**55849**	-

Key: Yes = number of requirements with a channel or frequency block assigned

No = number of requirements without a channel or frequency block assigned

Detailed results for each administration are provided in Annex 1 of Corrigendum 1 to Document IPG-2/19 for bands III, IV and V.

4.5 Comparison of results regarding the different study cases

The Chairman of WG 1 presented a set of graphs providing a comparison to assist administrations in their analysing the results. The study cases considered are as follows:

1. Band III T-DAB

   Attachment 1-a: study case 1

   Attachment 1-b: study case 4 and 1

   Attachment 1-c: study case 4 and 2

   Attachment 1-d: study case 4 and 3

2. Band III DVB-T

   Attachment 2-a: study case 1

   Attachment 2-b: study case 4 and 1

   Attachment 2-c: study case 4 and 2

   Attachment 2-d: study case 4 and 3

3. Bands V and IV

   Attachment 3-a: study case 1

   Attachment 3-b: study case 4 and 1

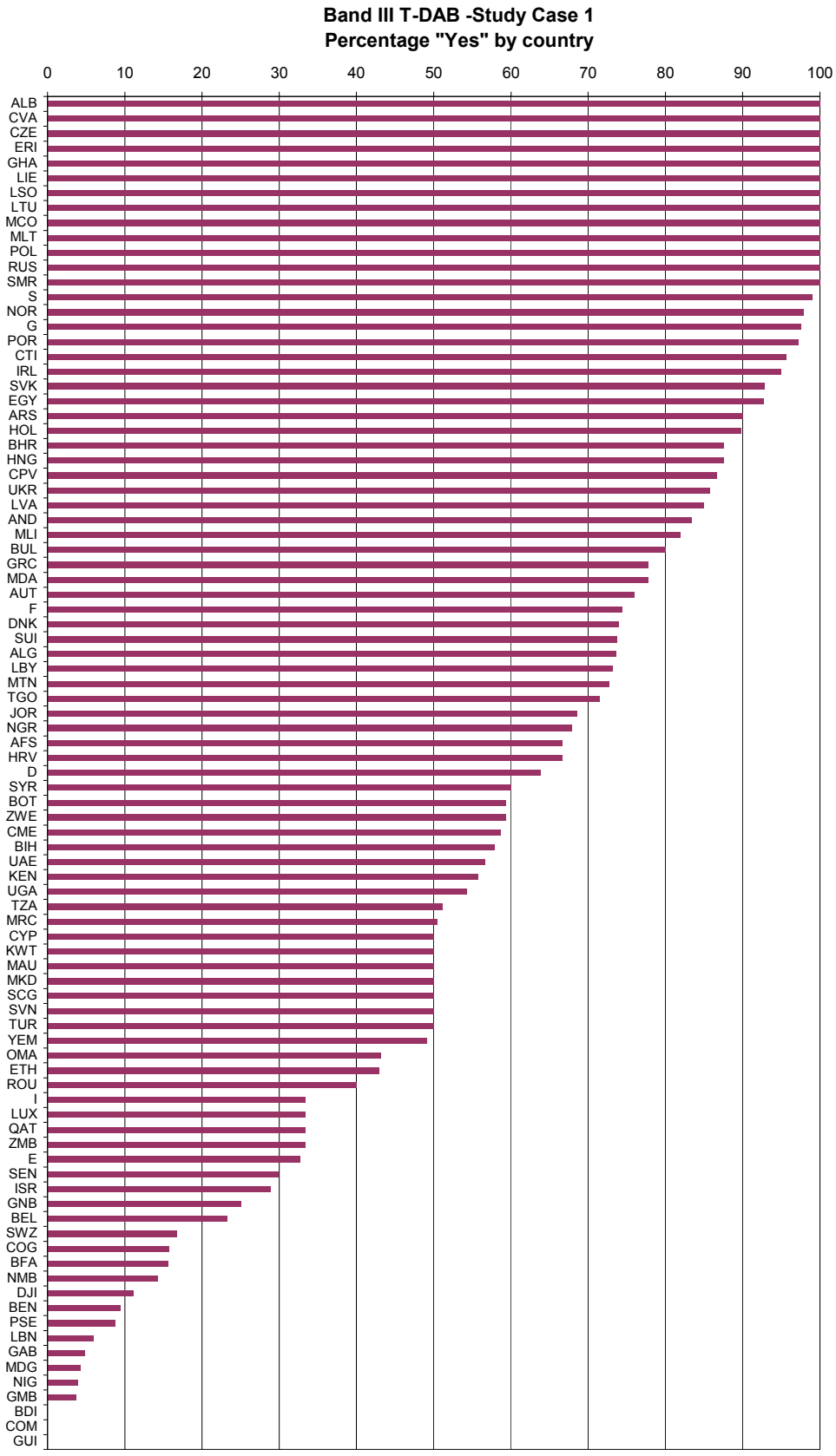
   Attachment 3-c: study case 4 and 2

   Attachment 3-d: study case 4 and 3

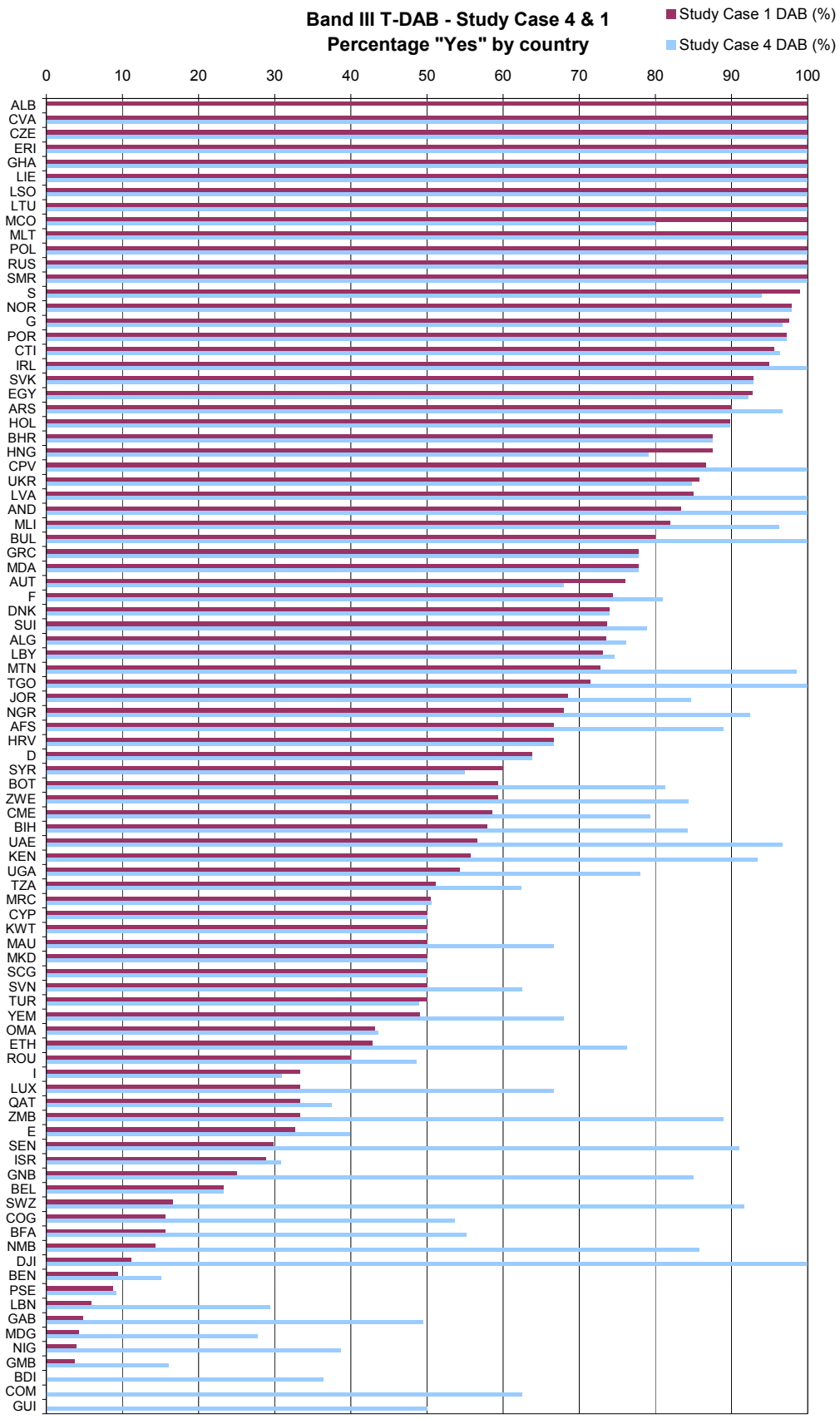
Attachments: 12 (1a to 1d; 2a to 2d; 3a to 3d)

Appendix: 1

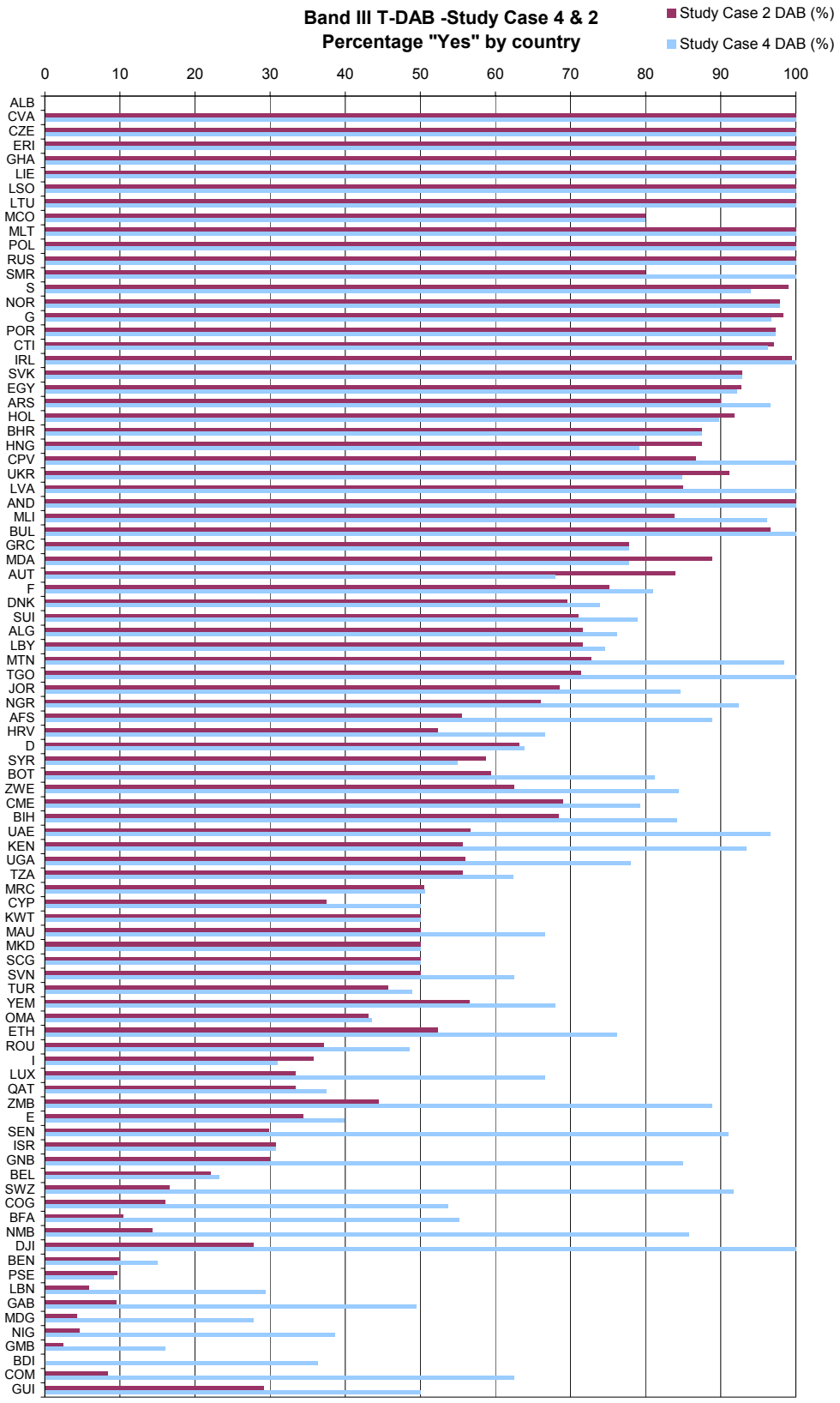
Attachment 1-a: study case 1



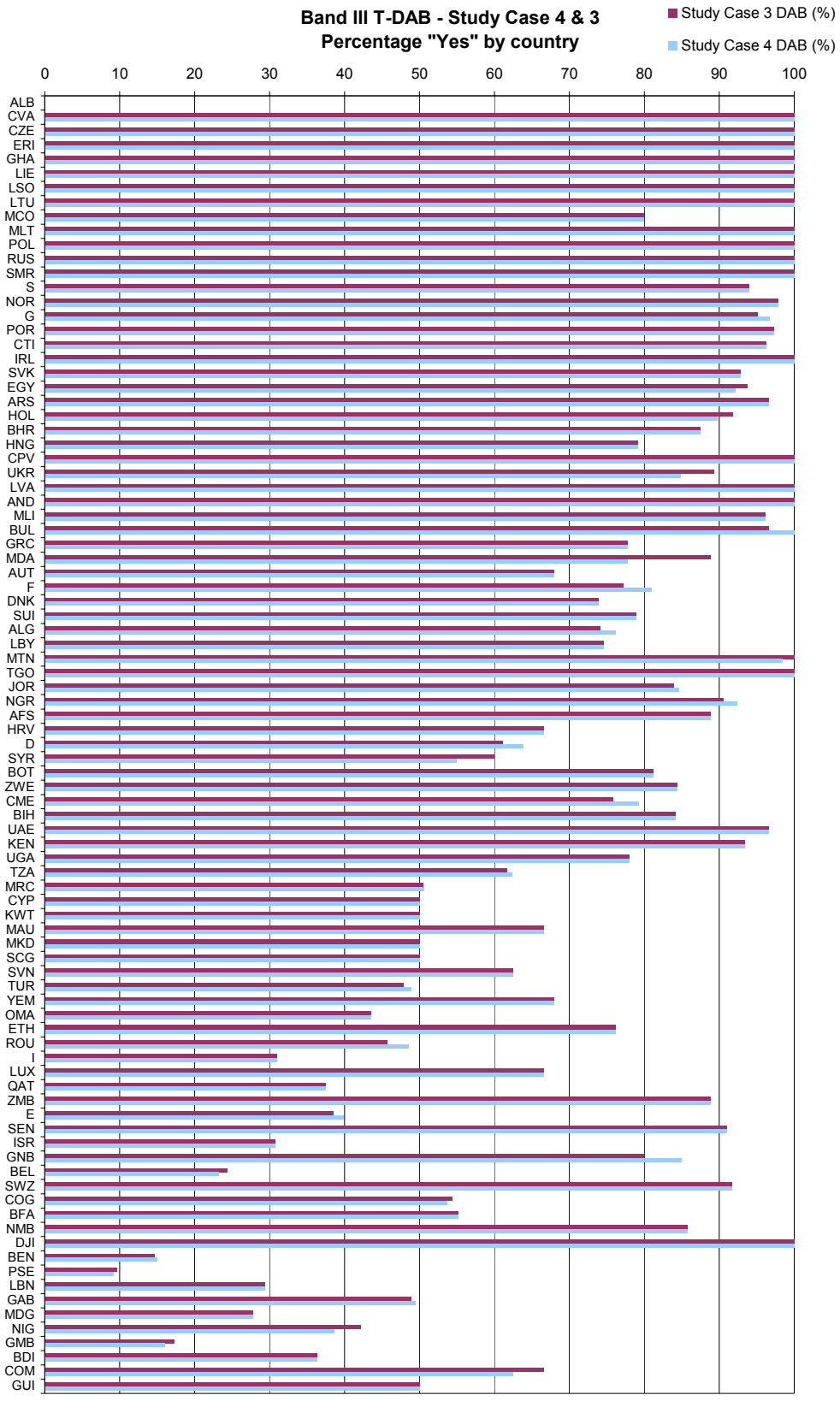
Attachment 1-b: study case 4 and 1



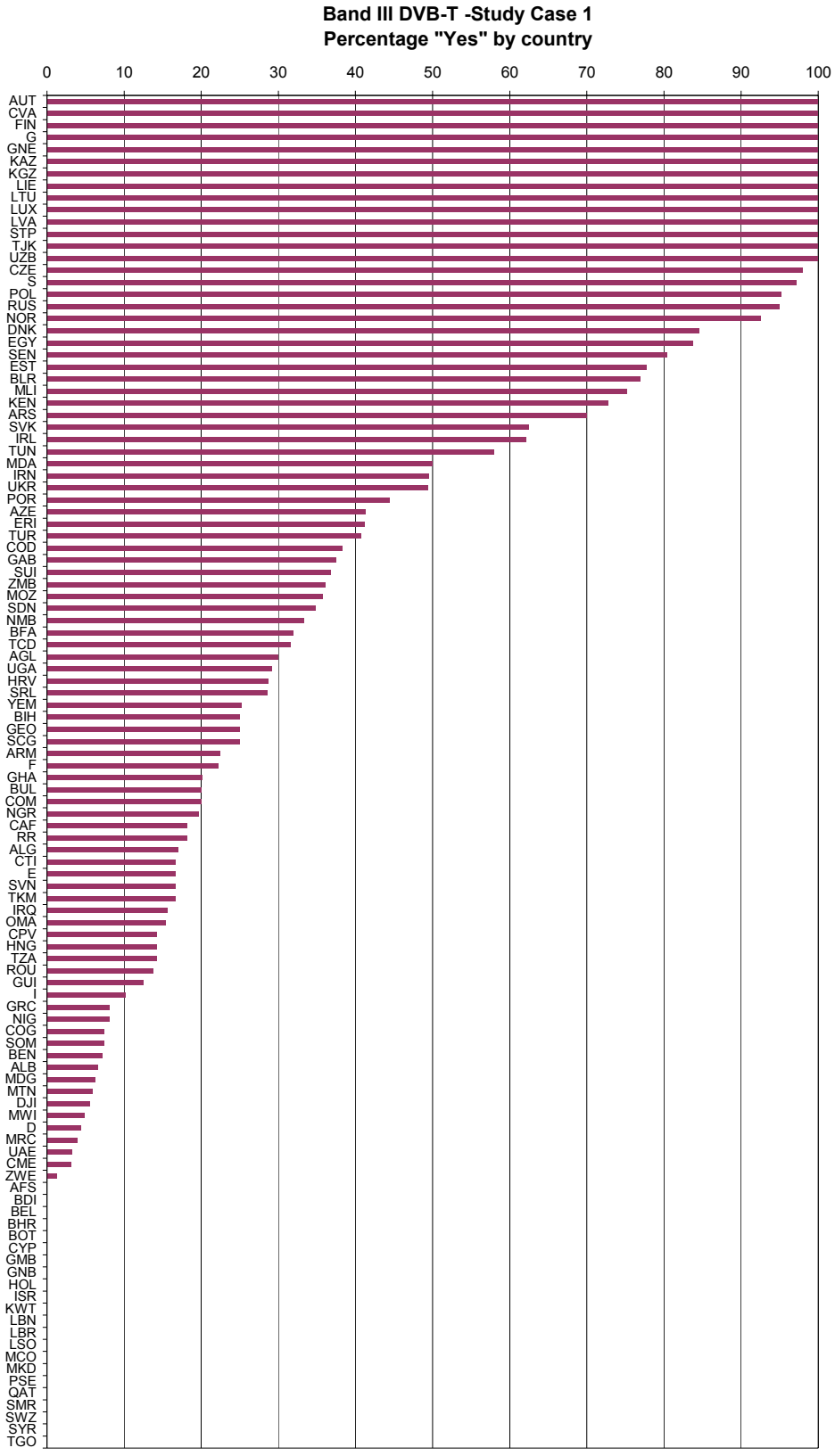
Attachment 1-c: study case 4 and 2



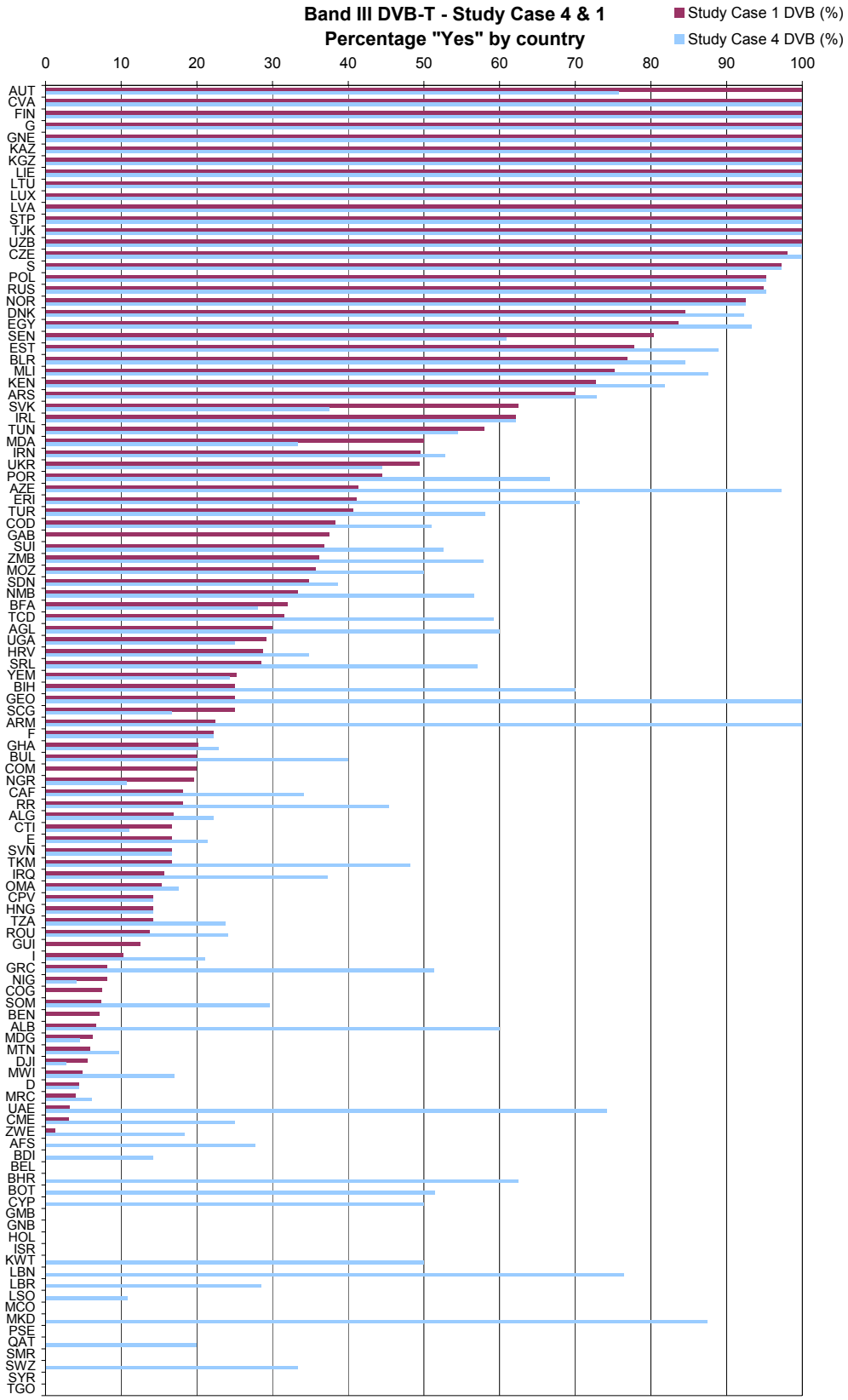
Attachment 1-d: study case 4 and 3



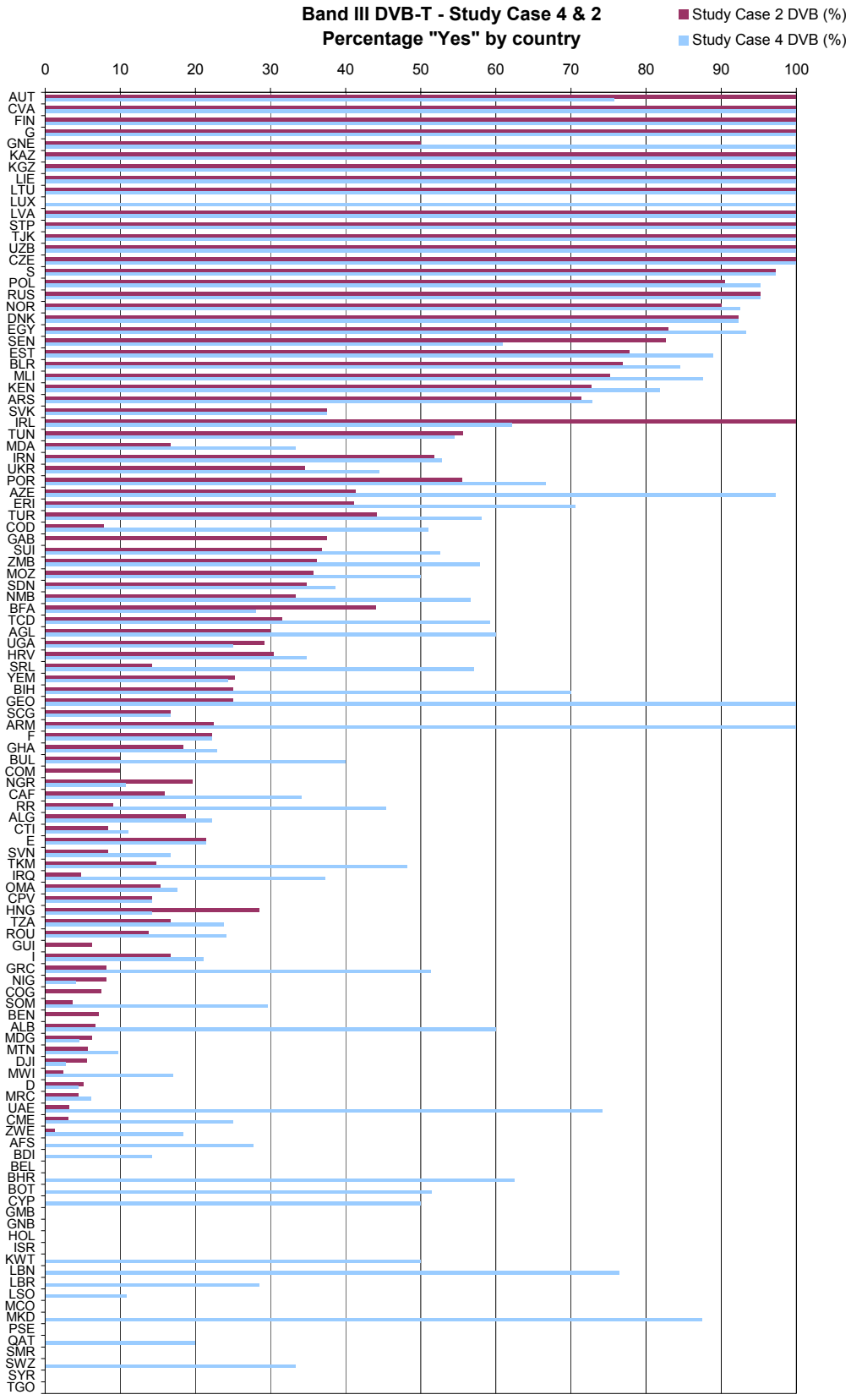
Attachment 2-a: study case 1



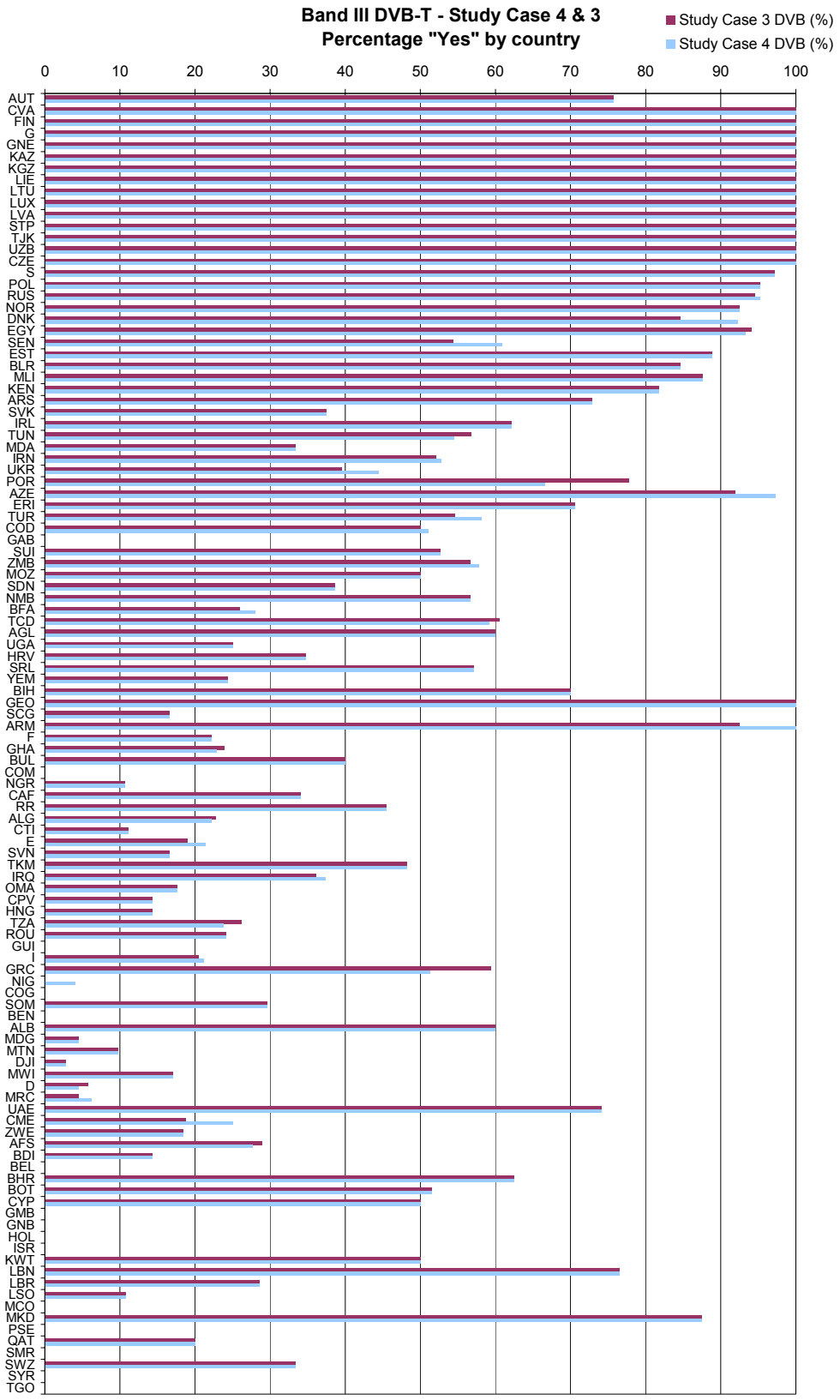
Attachment 2-b: study case 4 and 1



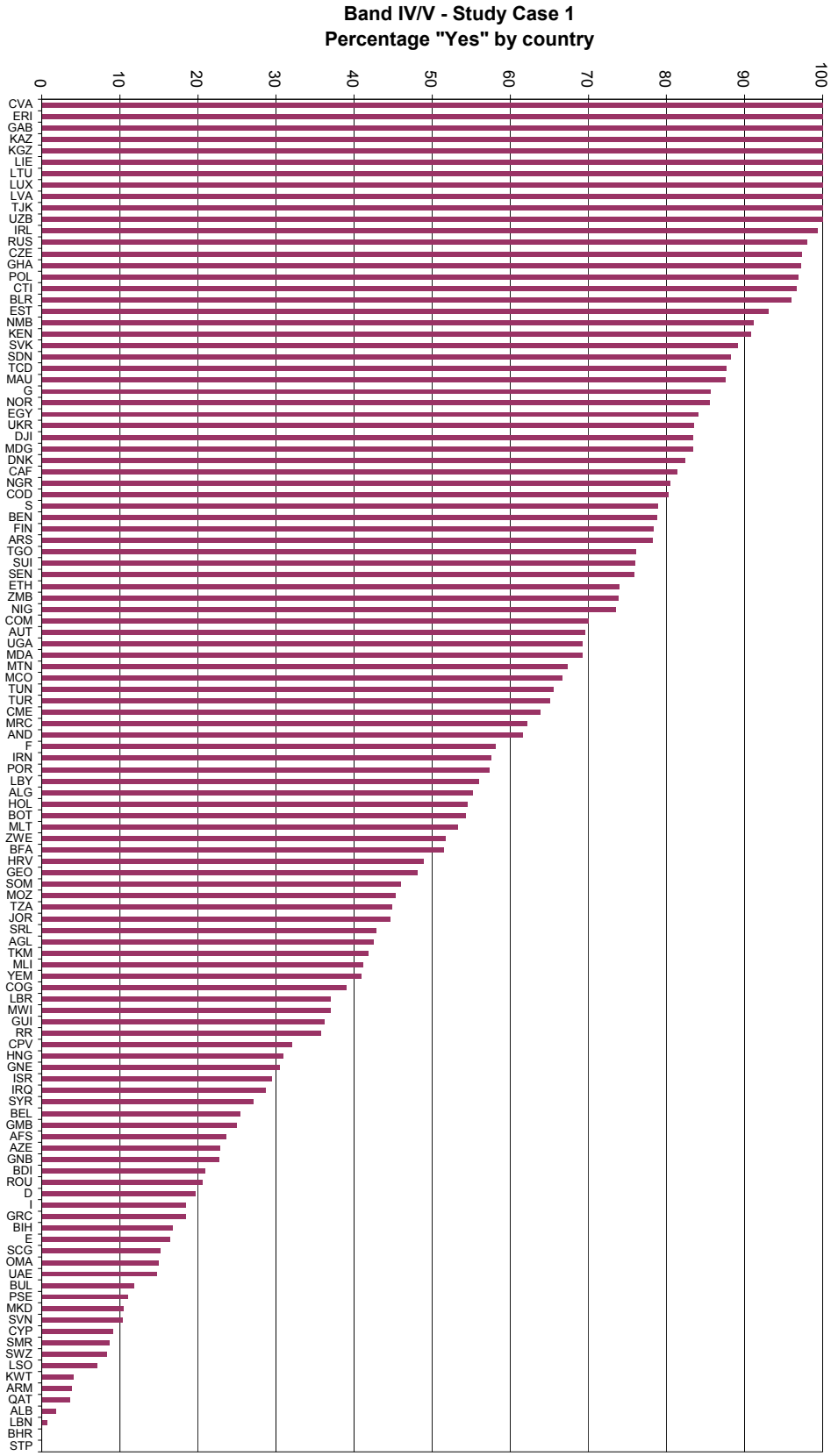
Attachment 2-c: study case 4 and 2



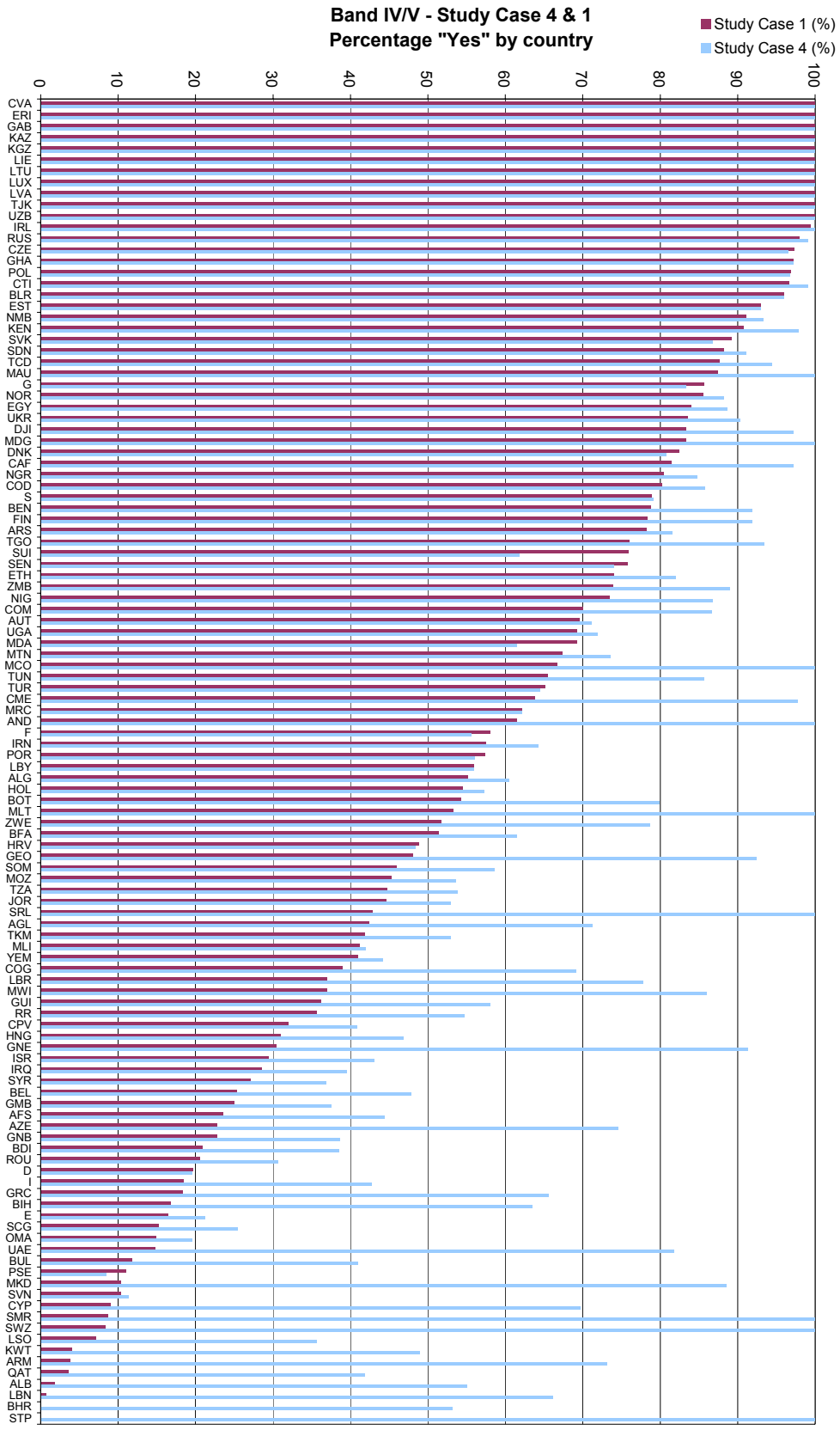
Attachment 2-d: study case 4 and 3



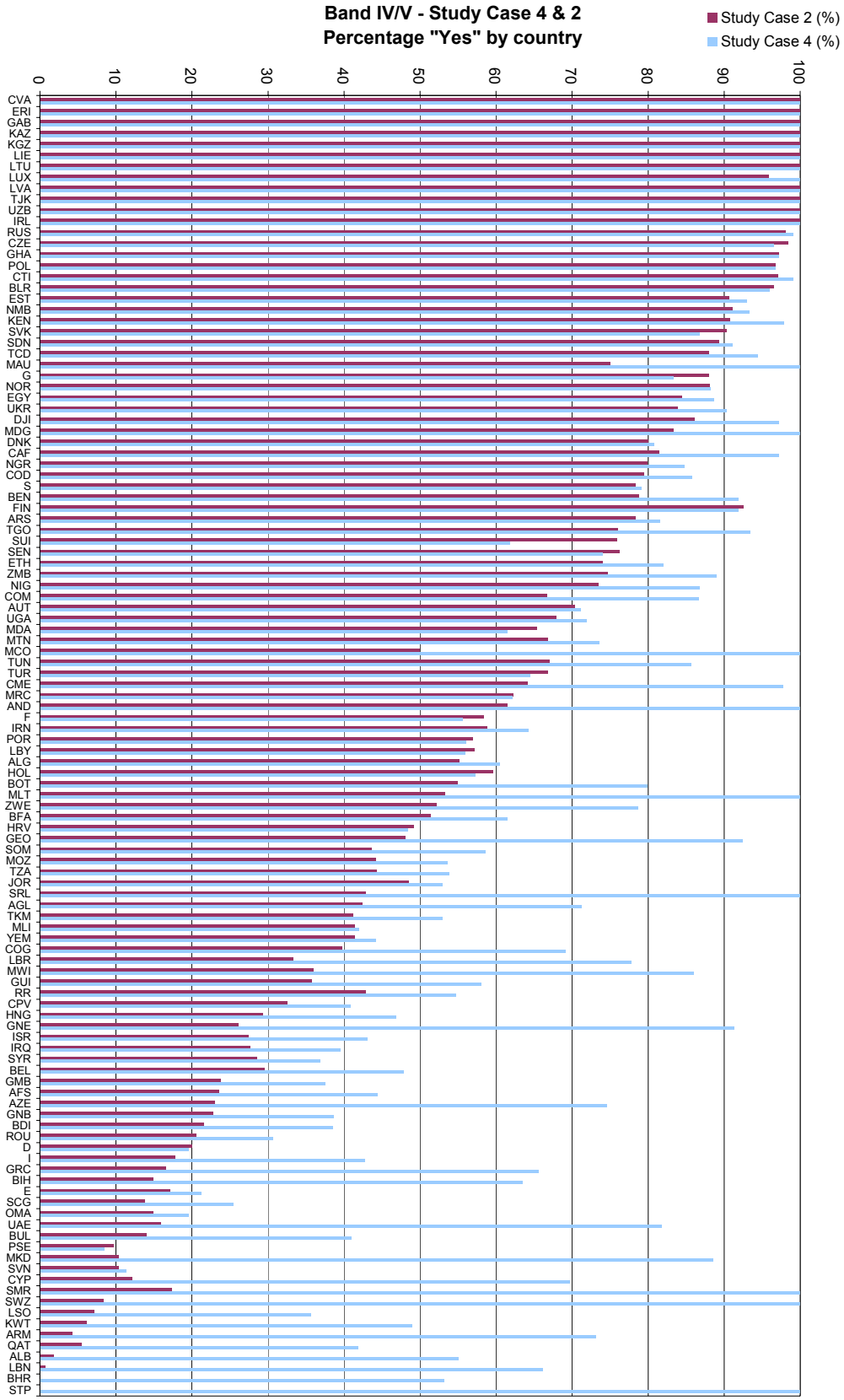
Attachment 3-a: study case 1



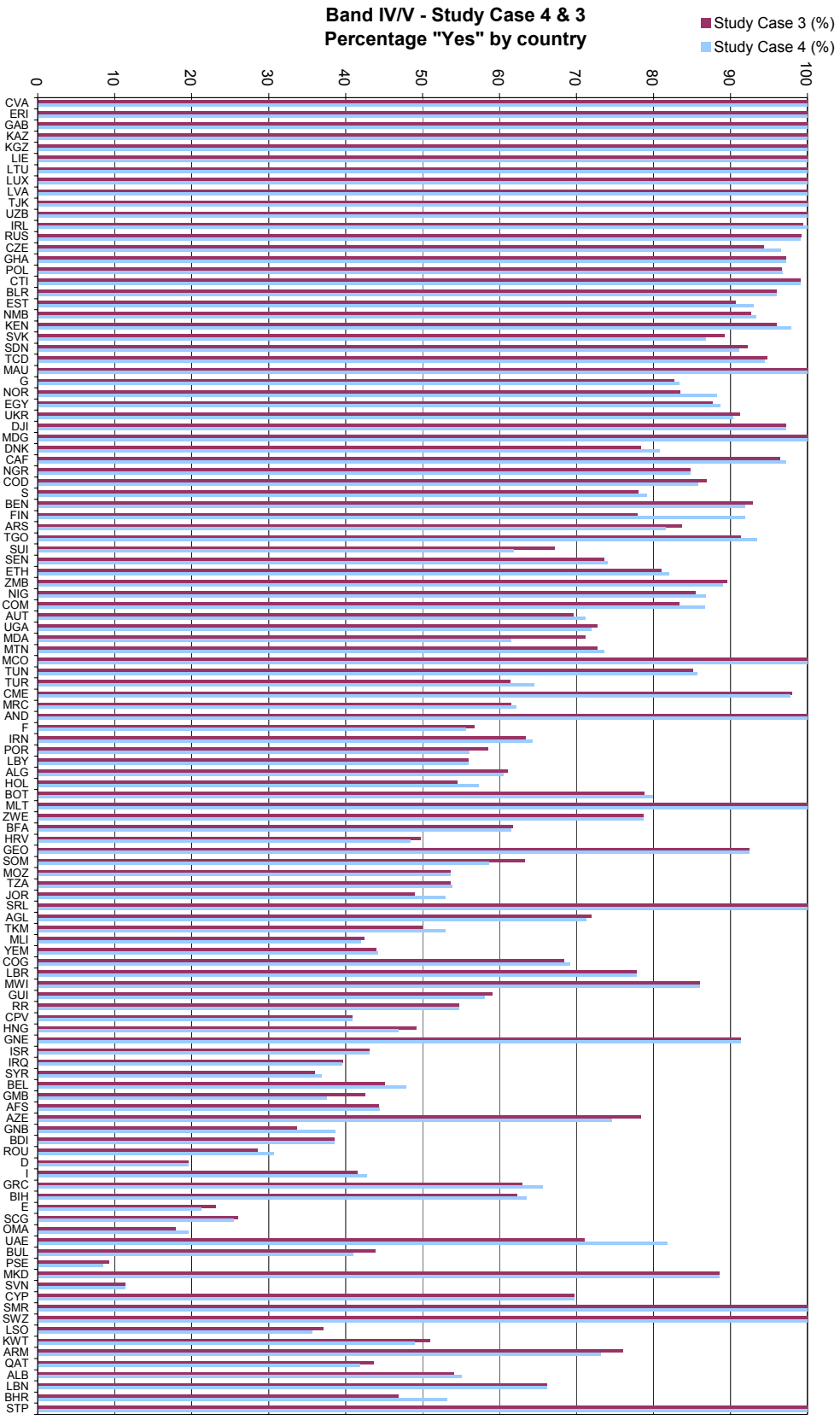
Attachment 3-b: study case 4 and 1



Attachment 3-c: study case 4 and 2



Attachment 3-d: study case 4 and 3



APPENDIX 1 TO ANNEX 1*

Recommendations for administrations in order to improve the plan

The analysis of the planning results revealed a huge amount of incompatibilities. As a consequence, only about 50% of requirements have been assigned a frequency. Several reasons thereto can be identified. This text gives some recommendations to administrations indicating how to overcome their problems.

The recommendations and actions given in this document need to be addressed individually and collectively by administrations before the Conference and through the assistance of CNGs during the Conference.

1 General remarks

The planning area extends a very large region which exhibits very different geographical and topographical conditions. There are mountainous regions, deserts and large portions of sea. Furthermore, the size and shape of countries varies enormously throughout the entire planning area. Moreover, very different propagation conditions are encountered.

Consequently, the exploitation of the available spectrum cannot be the same everywhere. There are regions in which more digital broadcasting services can be provided than in others without conflicting with neighbouring countries. These variances cannot be equalized and hence have to be accepted as given.

From that point of view all results circulated about coverage layers achievable for T-DAB or DVB-T have to be considered first of all as rough estimates.

Before the complementary analysis is carried out, it should be noted that any consideration of analogue or other primary services in the design of the plan will inherently result in a reduction of available spectrum for the new digital plan.

2 Analysis of the input to the draft Plan

In order to solve their problems in relation to the results of the draft Plan administrations are encouraged in the first place to critically review the information provided by BR. It is generally recommended that administrations start with their internal problems before turning to problems with regard to their neighbours. There are several items administrations should focus on:

2.1 The requirements should be critically reviewed individually and jointly by administrations. This includes the number of requirements and their technical parameters. Have the correct RPCs and RNs been chosen in relation to the required power budget of assignments?

2.2 Requirements of administrations should clearly reflect their proper service needs, i.e. they should not submit different variants of a potential plan entry. The presence of two or more requirements which basically have the same service objective may distort the planning process.

* Source: Document IPG-2/33.

2.3 Combination of small and large allotments in the same geographical area is likely to result in unbalanced distribution of channels, therefore administrations should try to establish a layout of their service areas which is as homogeneous as possible. This is also relevant in relation to requirements along national boundaries.

2.4 The size of an allotment area should generally be slightly greater than the relevant co-channel "reuse distances".

2.5 Administrations should assess the need for analogue stations to be taken into account during the generation of the Plan.

2.6 Administrations should assess the need for other primary services to be taken into account during the generation of the Plan. Furthermore, they should assess if any other primary services could be removed because they are likely to cease in near future. Moreover, the validity of the data in the MIFR has to be checked and corrected by the administrations responsible for the other service.

3 Analysis of administrative declarations

3.1 Are there any declarations missing? This refers in particular to requirements of other administrations where it was not expected to run into conflicts.

3.2 Administrations, if necessary, may agree on conditional declarations rather than on unconditional. Explicit knowledge of the technical characteristics of the Plan entries involved might lead to a clearer picture of the situation and hence a declaration might be given less reluctantly. In particular this means, administrations could agree on particular network implementations that are different from reference network configurations.

4 Analysis of the MIGs

MIGs are an objective means to visualize the problems of the draft Plan. They can help to doubtlessly identify sets of requirements which are the major source for not being able to assign a frequency to all requirements. In other words, MIGs are used to pinpoint difficult planning situations.

The number of members of MIGs can be reduced by:

- reducing the number of requirements
- reducing the number of other services
- increasing the number of acceptable channels
- providing appropriate administrative declarations
- accepting smaller coverage areas
- taking into account actual antenna patterns
- adjusting the service areas of requirements such that they represent real required service areas
- using the same SFN identifiers for all assignments within the same SFN, including linked requirements

Details about the MIGs can be found in the annexes to Document IPG-2/28(Rev.1) and EP/001(Rev.1). It should be noted that in the near future, BR will distribute software that provides a graphical and visualization of MIGs.

5 General recommendations

5.1 Administrations should start their analysis with their internal problems and try to solve these first. As long as the spectrum requested by an individual administration exceeds the available spectrum there is little scope to try to solve problems relating to neighbouring administrations. Administrations should attempt to make their internal plans workable.

5.2 Once the internal problems are solved administrations should start to analyse incompatibilities with respect to their neighbours.

5.3 In any case, it has to be borne in mind that the excess of the requirement number over spectrum capacity is not uniform over the planning area, very likely not even across individual countries. Administrations should start with those areas where the excess is greatest.

5.4 Administrations, individually and jointly, should concentrate their efforts on reducing the MIG numbers.

5.5 Administrations are encouraged to discuss the issues above with neighbouring administrations in order to have a common understanding. To this end, it would be advantageous for administrations to prepare a visual display of their requirements on a geographical map of their country to create an appropriate basis for negotiations between administrations.

5.6 PXT is requested to provide additional information on MIGs to the extent possible.

ANNEX 2A*

Administrative declarations and associated issues

Recommendations for the inclusion of administrative declarations in the Plan

1 Background information

Administrations may use administrative declarations in the preparation of the Plan, to indicate, irrespective of the results of the compatibility calculations, that (see CR/246):

- a given digital broadcasting requirement and another digital broadcasting requirement are compatible. This is equivalent to declaring that the two digital requirements can share a channel or a frequency block; or
- a given digital broadcasting requirement and an analogue TV assignment, or an assignment of other primary terrestrial services are compatible. This is equivalent to declaring that the requirement may use a particular channel or a frequency block.

An administrative declaration between two requirements or between a requirement and an assignment (analogue television or other services) means that both requirements were considered as being compatible or that the requirement and the assignment were considered as being compatible, during the preparation of the Plan, under certain conditions.

There are two fundamental types of administrative declarations: conditional and unconditional. All submitted administrative declarations are equally important because they can result in an entry in the Plan.

2 Identification of administrative declarations which are conditional

It is proposed to change the format of the administrative declarations in order to add a new field so that administrations may indicate if the administrative declarations are conditional. No crosscheck validation is needed for this field.

Administrations may indicate through a “Y” in this field that the corresponding administrative declarations are conditional. Other values will imply that the corresponding administrative declarations are unconditional.

3 Identification of administrative declarations which influence the preparation of the Plan

Among the administrative declarations submitted by the administrations some of them have no impact on the preparation of the definitive Plan. There will be an indication in some way in the Plan that a given administrative declaration was effectively used in the preparation of the definitive Plan (i.e. without this administrative declaration the corresponding assignment/allotment would not have been compatible).

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* Source: Document IPG-2/36(Rev.1).

BR is requested to provide a list of those that had an impact on the preparation of the definitive Plan as soon as possible after the last iteration of the RRC-06. It is concluded that internal administrative declarations should not be included in the list.

4 Information relating to the coordination agreements

In addition, it has to be noted that depending on the decision of RRC-06 there may be a need to record some of the information relating to the agreement between administrations within the Plan (see section 4.3.4 of Document IPG2/18). The administrations may make available the corresponding material by using the remark field in the administrative declarations. When doing so, they should also take into account the format of this field (see CR/246):

"Any information in the ISO 8859-1 (Latin-1) coded character set; this information is not validated by BR, limited to 250 characters".

It should be noted that no semi-colon character (i.e. ";") should appear in the remark field in the administrative declarations.

5 Further issues to be discussed

RRC-06 needs to make decisions on the way to refer to administrative declarations in the Plan.

6 Recommendations for RRC-06

RRC-06 is invited to review the above items and decide accordingly.

The details of the coordination agreements should not be published in the Plan.

Digital assignments in the plan successfully coordinated with analogue broadcasting assignments and/or assignments of other services shall not bear a remark requiring recoordination in relation to the analogue broadcasting assignments and/or assignments of other services in question.

Administrative declarations, which do not have any impact on the preparation of the definitive Plan, should not be reflected in the plan.

ANNEX 2B*

Administrative declarations and associated issues

Recommendations for the submission of administrative declarations

1 Issues relating to the non-usable administrative declarations

Document IPG-2/2 Addendum 12 from BR provided a list of reasons for which administrative declarations submitted before 27 January 2006 were not taken into account in the preparation of the draft Plan. Administrations are invited to review this list when preparing a file containing administrative declarations (to be submitted before 20 March 2006).

"2.2 When processing this information, the Bureau experienced the following difficulties:

2.2.1 Some administrations submitted a copy of the text of their agreement(s) with other administrations, instead of the formatted declarations files (xls or csv files); such information could not be included in the subsequent process of validation.

2.2.2 Some administrations notified multiple worksheets inside an MS Excel (xls) file. This required significant effort for converting input files into text files (csv format), with a risk of omitting declarations from some of these sheets.

2.2.3 Some administrations submitted several separate files instead of a single consolidated "replacement" file; such submissions resulted in additional workload, especially from the viewpoint of eliminating the duplicated declarations.

2.2.4 In some cases, there were unclear statements in the body of the messages. The Bureau did not try to interpret these unclear statements.

2.3 The following is a list of the most frequent errors detected in the validation process:

– Target Ids not found in reference databases (analogue television data, data related to other primary services);
– Target Ids not found in digital requirements database;
– No single assignment found in the reference database for the administration included in the global declaration concerning OPS or ATV;
– Indication of wrong fragments;
– Indication of fragments other than the permitted ones for global declarations (i.e. ATV, RC06 or OPS);
– Use of semicolons in remarks field;
– Duplicate and/or symmetrical internal declarations (e.g. submission of symmetrical declarations for two elements of the same administration);
– Errors in target Ids (i.e. no leading zeros like "061…", letter O instead of zero, etc.);
– Wrong order of fields."

In addition, to reduce the number of non-usable administrative declarations, administrations are invited to consider the recommendations provided in the following sections.

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* Source: Document IPG-2/35.

2 Recommendations for administrations for the preparation of administrative declarations

2.1 Submission of the file containing the administrative declarations

Administrations are strongly recommended to provide all the modifications to their administrative declarations in a single file.

It is recommended to use a simple file format instead of a complex one. In particular, administrations should avoid using notified multiple worksheets inside an MS Excel (xls) file. Taking into account the size limitation of MS Excel (xls), administrations are encouraged to use ".txt" ASCII files.

2.2 Tools to crosscheck the list of administrative declarations

BR was asked to provide a tool for checking that the symmetrical administrative declarations are effectively included in the relevant files that administrations intend to submit to BR.

2.3 Tools to validate administrative declarations in the proper format

BR was asked to provide a tool for validation of the format of administrative declarations (in two weeks).

Administrations are invited to use this validation tool before submitting the modifications to their administrative declarations for the preparation of the draft Plan.

2.4 Submission of additional administrative declarations for the draft Plan

Administrations may provide additional administrative declarations for the preparation of the draft Plan before 20 March 2006.

The administrative declarations that have been submitted within the time limit of 27 January 2006, will be used in the preparation of the draft Plan. This implies that all administrative declarations having successfully been through the validation process will be considered. In particular, those rejected at the crosscheck process due to "missing" symmetrical administrative declarations, do not need to be resubmitted. They will be used provided that the symmetrical administrative declarations are submitted before 20 March 2006.

Administrations are invited to consult the BR website (http://www.itu.int/ITU-R/terrestrial/pub-reg/rrc/admdecl/index.html) to check the list of "missing administrative declarations" and to take the appropriate action.

Any administrative declarations submitted twice will be considered only once in the preparation of the draft Plan and only the last one will be taken into account.

3 Administrative declarations during the conference

3.1 Submission of administrative declarations

For the first iteration during the second session of the conference, administrations are strongly recommended to provide all their administrative declarations in a single file, as far as practicable.

For the following iterations, administrations are strongly recommended to provide all modifications to their administrative declarations in a single file, as far as practicable. In addition, it would be necessary to indicate the appropriate action with regard to the administrative declarations submitted to BR:

- Deletion (when the corresponding administrative declarations should be deleted)

- Change (when the corresponding administrative declarations should be changed or updated)
- Addition (when the corresponding administrative declarations should be added)

This implies that the format of the administrative declarations needs to be modified to indicate the corresponding action. BR will provide this tool at least two weeks before the Conference.

The Bureau informed the IPG that it envisages to implement a mechanism of electronic submission of the administrative declarations, through the web, using certain security measures (e.g. submission by a certified source which would be identified by a password provided by the BR). Each delegation would be provided with a specific password and all transactions would be registered and would be traceable.

3.2 Follow-up of the administrative declarations during the conference

It has to be noted that each administrative declaration will be linked with a date indicating when it was submitted or modified.

If it found that the input requirements corresponding to a given administrative declaration were modified after the date where the administrative declaration was submitted or modified then the corresponding administrative declarations will no longer be valid.

The BR will publish for each iteration the results of the validations process for the administrative declaration. The administrations will have the possibility to review preferably prior to the next iteration the list of administrative declarations which are not any longer applicable.

Administrative declarations no longer valid will be made available for information purpose.

At each iteration, in order to ensure that global declarations are valid for the planning process, it will be necessary to re-submit global declarations in which one side of the declaration has as the fragment of “RRC-06” and the Id is “all”. If an administration does not wish that such a global declaration be used in the planning process, it may choose not to re-submit it.

4 Additional considerations

4.1 Case of global declarations

When an administration is submitting a global declaration (i.e. all to one), to make it usable the symmetrical declaration (one to all) has to be provided to BR.

It should be noted that the symmetrical declaration to a (all to all) global declaration has also to be a (all to all) global declaration, and not many (one to one) or (one to all) declarations.

4.2 Tool to generate administrative declarations in the proper format

Administrations may need to note that the RRC display tool* may also be used to generate administrative declarations in the appropriate format. If the format of the administrative declarations is updated to reflect the appropriate action with regard to the concerned administrative declarations (see section 3.1 above) then the RRC display tool will also need to be updated.

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* See ITU website: http://www.itu.int/ITU-R/conferences/rrc/rrc-04/intersession/progs/RRC_output_display/index.html.

4.3 Recommendation for the reduction of the requirements

Rather than multiplying the number of administrative declarations, which could be understood as additional difficulties for the use of a requirement, administrations are encouraged to review and possibly reduce their requirements.

ANNEX 2C*

Administrative declarations and associated issues

Preliminary course of action for "Coord_a" and "Coord_o" fields

1 Background information on "Coord_a" and "Coord_o" fields

IPG-2 considered Document IPG-2/16 from Sweden dealing with the fields "coord_a" and "coord_o". These fields allow for administrations to indicate administrations with which coordination was successfully completed.

Respectively, "coord_a" is used to indicate (see CR/242):

"Administration with which coordination in relation to analogue assignments to broadcasting services was successfully completed for the requirement with one specific channel/frequency block identified. The coordination sub-section contains multiple occurrences of administration codes. Administration codes shall correspond to ITU's administration symbols."

And "coord_o" is used to indicate (see CR/242):

"Administration with which coordination in relation with assignments to primary services "other than broadcasting" was successfully completed for the requirement with one specific channel/frequency block identified. The coordination sub-section contains multiple occurrences of administration codes. Administration codes shall correspond to ITU's administration symbols."

2 Discussion on the treatment of these fields

WPIPG already discussed the matter and was of the opinion that these fields should be used only for these cases, where administrations submit their digital requirements stemming from the successful applications of the procedures contained in ST61 and GE89. The BR indicated that the field "coord_a" was used by 17 administrations for 4 240 input requirements and that the field "coord_o" was used by 12 administrations for 1 721 input requirements.

Document IPG-2/16 raised the point that administrations may not have the time to review these "Coord" fields during the Conference for the cases of new or modified inputs. In addition, it was mentioned that these indications of successfully completed coordination could be done through the process of administrative declaration (one to all) and therefore the meeting was of the opinion that a single mechanism is preferable during the Conference.

3 Conclusion

3.1 Use of the fields "Coord_a" and "Coord_o"

3.1.1 It was concluded that for input requirements submitted or modified after 31 October 2005, the fields "Coord_a" and "Coord_o" should no longer be used in the planning process.

3.1.2 For the inputs submitted before 1 November 2005, the information provided in these fields will be taken into account in the planning process except if these inputs are modified after 1 November 2005.

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* Source: Document IPG-2/30.

4 Possible implementation

For the inputs submitted before 1 November 2005, BR needs to generate a file containing administrative declarations equivalent to the information contained in the "Coord_a" and "Coord_o" field (by generating the corresponding one to all declarations) and make this file available on the ITU website (http://www.itu.int/ITU-R/terrestrial/pub-neg/rrc/admdecl/index.html).

The relevant administrative declarations will be kept in a separate file and therefore, will not have to be provided again by administrations, except if one of the corresponding requirements is modified.

As requested by the IPG, the BR implemented this request during the IPG-2 meeting.

5 Recommendations for administrations

If administrations wish to modify input requirements, then it is recommended that they should only use administrative declarations to indicate administrations with which coordination was successfully completed.

Administrations may need to review this file generated by BR to make sure that the contained administrative declarations reflect the existing agreements.

ANNEX 3*

1 Planning Assumptions regarding the issues dealt with in Chapters 2, 3, 4 and 6 of the RRC-04 Report

Working Group 3 reviewed those planning assumptions which were related to Chapters 2, 3, 4 and 6 (propagation, protection ratio for broadcasting and for other services, and data for existing and planned assignments of other primary services) of the RRC-04 Report and which were used by the PXT (Document IPG-2/14(Rev.1)) during the production of the draft Plan in addition to those assumptions already approved by IPG-1.

The newly agreed assumptions relating to these Chapters of the RRC-04 Report are given in the Attachments 1 to 4 to this document.

WG 3 noted the Documents IPG-2/INFO/1 (Information document from WP 6S: Characteristics of BSS systems in the band 620-790 MHz), IPG-2/INFO/2 (Preliminary draft revision of Recommendation ITU-R BS.1660-1), liaison statements from the WPs and RPG (Documents IPG-2/1, IPG-2/2, IPG-2/7 and IPG-2/13), documents from WP 6E and WP 9D (Documents IPG-2/3, IPG-2/6 and IPG-2/10).

Comments have been made concerning working assumptions of section 2.2.2 (see Attachment 1, box 1). After discussions, it appeared that there was no formal justification to modify the working assumptions. Iran raised the question of the option to apply different percentage of time for interference calculations over propagation paths in propagation zones with extreme propagation conditions (zone C). Iran suggested to make exercises with a percentage of 2% of time. It could be useful, however, due to the workload of PXT, this could be done, if possible, only for the countries which formally agree to be involved in this exercise.

Document IPG-2/25 is a comment relating to section A.4.2.1.2 (see Attachment 4, box 6). The proposal refers more to a procedural aspect and not to missing criteria. As the matter is dealt with in the RRC-04 Report (i.e. use of notified data as they are recorded in the MIFR) this proposal cannot be taken into account in the consideration of working assumptions. However, WG 3 advised the Administration of Latvia to put the document forward to RRC-06 for consideration.

Regarding proposals from the Administration of Ukraine given in Document IPG-2/22 (Proposals regarding protection of fixed service and modification of T11 notice type), WG 3 was of the opinion that those proposals are not exactly under the terms of reference of IPG and that they could only be dealt with at a future competent conference. Therefore WG 3 advised the Administration of Ukraine to submit the proposal to RRC-06 which can decide on further necessary actions by forwarding its proposal to WRC-07.

Document IPG-2/17 was examined. PXT considered that there was no time to implement the proposal from this document. WG 3 concluded that planning exercises will be done on the bases of paired individual assignments and complementary exercises, if confirmed by RRC-06, will be done with cumulative interference. PXT will endeavour to provide results before RRC-06.

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* Source: Document IPG-2/38.

2 Additional issues related to the reference situation for other primary services

2.1 Maximum coordination distance for ground-based stations of other primary services

The working group, when discussing the issue of propagation and the applicability of Recommendation ITU-R P.1546-2, considered a proposal from the Administration of the United Kingdom to limit the coordination distances to a value of 1 000 km since Recommendation ITU-R P.1546-2 is not applicable to distances greater than 1 000 km, also bearing in mind that distances greater than 1 000 km would not be reasonable. This proposal was supported by the Administration of the Russian Federation since it would resolve some of the problems reported in Document IPG-2/23 with respect to the reference situation for other primary services. The Bureau indicated that, for the identification of the administrations potentially affected by ground-based stations of other services, the Bureau applied the ST61 software used for the relevant calculations during the application of ST61 plan modification procedure. In cases when no coordination distances were given in the tables of the ST61 Agreement, this programme uses a limiting distance of 1 600 km to identify the potentially affected administrations. The value of 1 600 km was selected on the basis of the fact that it was quoted as the largest coordination distance in the context of the GE89 Agreement and therefore it represents a conservative condition intended to cover "all" administrations as theoretically affected for the cases where no values appear in the tables of coordination distances in the ST61 Agreement.

Having considered the issue, the WG 3 suggested that IPG-2 should provide guidance to both administrations and BR on the maximum coordination distance that should be applied with respect to those cases where no value appears in the tables of coordination distances of the ST61 Agreement, bearing in mind that the maximum value for coordination distances listed currently in the tables of the ST61 Agreement amount to 1 060 km in Band III and to 1 000 km in Bands IV/V and that the maximum value for coordination distances listed currently in the tables of the GE89 Agreement amounts to 1 600 km.

WG 3 concluded that, for the purpose of the reference situation related to ground-based stations of other primary services to be used during RRC-06, in addition to the indications given in Chapter 1 of the Report of the first session, a maximum value of 1 060 km in Band III and of 1 000 km in Bands IV/V for the determination of coordination requirements should be used as a criterion for the inclusion of eligible assignments from administrations of the ST61 planning area as well as the administrations from the extended planning area, and that the Bureau should review those cases previously excluded due to larger distances with a view to including them if all other coordination requirements were fulfilled. IPG endorsed this conclusion.

It was also felt that further studies are required in the future for special cases like radioastronomy in extended propagation zones.

2.2 Consideration of cases previously excluded from the reference situation for other services

The working group considered Documents IPG-2/23 and IPG-2/24 with regard to the issue of application of the provisions of Resolution GT-PLEN/3 for the establishment of the reference situation for the assignments of other primary services.

Resolution GT-PLEN/3 (RRC-04) sets the requirement for the coordination of frequency assignments to other primary services notified after 10 May 2004 with the broadcasting service included in the relevant plan (ST61 or GE89), or for which the procedure for modification of the

relevant plan (ST61 or GE89) has been initiated before 31 October 2005, or which have been recorded in the Master International Frequency Register with a favourable finding and are included in the "RCC List" in Circular Letter CR/209.

As a result of discussions it was concluded that based on the processing of data submitted for other services before 31.10.2005, there was no way for administrations responsible for the assignment to other primary services to identify before 31.10.2005 all administrations which initiated the plan modification procedure before that date and whose analogue broadcasting assignments might be affected. IPG-2 instructs the Bureau to review the reference situation with respect to other primary services, taking into account additional information relating to coordination agreements concluded between administrations which are to be submitted to the BR by 13 March 2006.

3 Recommendations

3.1 Instructions to PXT: Apply assumptions in Attachments 1-4

3.2 Instructions to BR: Apply decisions in paragraphs 2.1 and 2.2

The BR was requested to prepare a consolidated document containing all assumptions for submission to RRC-06.

Attachments: 4

ATTACHMENT 1

Planning assumptions regarding the issues dealt with in Chapter 2 of the RRC-04 Report

No.	Section No, issue	Adopted working assumption, other indications	Views of SG/WP or other bodies	IPG-2 views
1	Section 2.2.2 and associated Figure 2.1: Geographical division of the planning area into propagation zones Working Party 3K noted that a large inland area in West Africa is identified as "coastal land" for which the propagation curves of propagation Zone 4 (warm sea) are used. Working Party 3K is of the opinion that "coastal land" cannot extend some 500 km inland, except, perhaps, for the very low lying areas. In addition, pure sea curves should not be used for land paths where terrain shielding effects will occur.	The following working assumptions have been adopted: – that the "coastal land" region of West Africa, designated as Zone 4 in Figure 2.1 of the RRC-04 Report, is too large; – that this region should consist of two parts. The more northerly part extends no more than 50 km inland from the Atlantic Ocean but is limited to the east by a line from 30 N 10 W to 20 N 13 W and to the west by the Atlantic Coast. The more southerly part is the land area west of two lines, one from 20 N 15 W to 15 N 10 W and the other from 15 N 10 W to 9 N 13 W, but not extending beyond the coastline; – that the land area thus defined should use the same propagation curves as Zone D because similar refractivity lapse rate values occur in this part of West Africa as in the land strip surrounding Zone C in the RRC-04 report; – that the regions of propagation Zones 1 and 2 located immediately to the east of the above defined area should be extended westwards to the eastern border of that area.	These changes have been proposed by the Working Party 3K (see Doc. IPG-2/2 and Corrigendum 1 to Doc. IPG-2/2)). The values proposed by WP 3K have been used for the calculations for the draft Plan.	IPG-2 endorses the working assumptions. An additional exercise with 2% of time (both for VHF and UHF bands) could be useful in cases of extreme propagations conditions. Only zone C is considered. IPG-2 asks PXT to provide results, if possible, for countries which formally agreed to be involved in this exercise. Countries concerned are: IRN, BHR, ARS, UAE, OMA, KWT, QAT.

ATTACHMENT 2

Planning assumptions regarding the issues dealt with in Chapter 3 of the RRC-04 Report

No.	Section No., issue	Adopted working assumption, other indications	Views of SG/WP or other bodies	IPG-2 views
1	**3.4.2 Protection ratios** The protection ratios for T-DAB in a mobile and portable receiving environment interfered with by DVB-T signal (7 and 8 MHz) are missing. Recommendation ITU-R BS.1660 (Technical basis for planning of terrestrial digital sound broadcasting in the VHF band) includes only the protection ratios for the fixed reception (Gaussian channel) case.	It is proposed that the protection ratios for T-DAB in a mobile and portable receiving environment interfered with by DVB-T signal are deduced from those for the fixed reception (Gaussian channel) case by adding a factor of 7 dB: – For DVB-T of 7 MHz the co-channel protection ratio is 9 dB; – For DVB-T of 8 MHz the co-channel protection ratio is 8 dB. – In both of the above cases, the variation of the protection ratio as a function of frequency separation is given in 3.3 of Recommendation ITU-R BS.1660-2 (11.05).	WP 6E agreed (October 2005 meeting)	IPG 2 endorses
2	**3.4.2 Protection ratios** There is difficulty in determining the appropriate protection ratio in case of analogue-to-analogue or digital-to-analogue image channel interference because for any given geographical area the intermediate frequency and the location of the local oscillator in receivers are not necessarily known.	Use the protection ratios for image channel interference (n+8, n+9, n+10), as appropriate. NOTE – In the compatibility analyses associated with the first planning exercise, the image channel interference was not taken into account. As agreed at IPG-1, a liaison statement was sent to WP 6E, with a view to validating this assumption. At its meeting in October 2005, WP 6E expressed the option that the disadvantage of not using the protection ratio for image channel was limited, given the improvement of the performance of TV receivers.	See the NOTE in the preceding column. It is assumed that the comments of WP 6E applied primarily to the case of interference to or from digital television. In the case of analogue to analogue calculations, image channel interference has been taken into account for the draft plan.	IPG 2 endorses. Exclude the case of digital.

No.	Section No., issue	Adopted working assumption, other indications	Views of SG/WP or other bodies	IPG-2 views
3	**3.4.2 Protection ratios** Protection Ratios for the cases when the television channels are not directly adjacent (i.e. channel edges separated by more than 0.25 MHz) are not available (for Band III).	In the compatibility analysis for the draft Plan, interference from the channels that are not directly adjacent is not taken into account. NOTE – In the compatibility analyses associated with the first planning exercise, interference from the channels that are not directly adjacent was not taken into account. As agreed at IPG-1, a liaison statement was sent to WP 6E, with a view to validating this assumption. At its meeting in October 2005, WP 6E proposed a definition for the adjacent channel situation and that the interference from non-overlapping channels shall be taken into account in the compatibility analysis. (Doc. 6E/296 (Annex 2), see also issue No. 3 in Doc. IPG-2/3). PXT encountered difficulties with this approach and maintained the assumption adopted for the first planning exercise.	See the NOTE in the preceding column.	IPG 2 endorses.

ATTACHMENT 3

Planning assumptions regarding the issues dealt with in Chapter 6 of the RRC-04 Report

No.	Section No., issue	Adopted working assumption, other indications	Views of SG/WP or other bodies	IPG-2 views
1	**6.4 Data for existing and planned assignments of other primary services** These data are to be retrieved from the existing files; however, for some MIFR assignments in the fixed services, the transmitting and receiving locations are separated by a large distance of more than 300 km.	Use the notified data for the first planning exercise and for the draft Plan. NOTE – The BR considers that the administrations confirmed the notified data when they requested inclusion of the concerned assignment in the compatibility assessment process associated with the preparation of the draft Plan.	IPG-1 endorses this working assumption for the first planning exercise. BR shall seek clarification from responsible administrations, for the assignments that are included in the reference situation.	IPG-2 endorses.
2[3]	**6.4 Data for existing and planned assignments of other primary services** These data are to be retrieved from the existing files; however, the MIFR assignments recorded in the form of typical transmitting stations (using T14 notice type) do not contain information on their associated receivers.	There was no need for developing any working assumption given the fact that the RPG concluded that the approach used for the first planning exercise (i.e. to consider the eligible frequency assignments to other services that are related to typical transmitting stations as transmitting stations only) was correct and concluded that the same approach should be used for the preparation of the draft Plan.	WP 9D (November 2005) agreed. RPG agreed (see Doc. IPG-2/13).	IPG-2 endorses

[3] Syria reserved its position with regard to the conclusions of WP 9D.

ATTACHMENT 4

Planning assumptions regarding the issues dealt with in Chapter 4 of the RRC-04 Report

No.	Section No., issue	Adopted working assumption, other indications	Views of SG/WP or other bodies	IPG-2 views
1	**A.4.2.1.2 Protection criteria for any cases where no system information is available** Generic protection criteria for the fixed service given in Section A.4.2.1.2 of RRC-04 Report may be incorrect since: – they do not necessarily take into account the case of partial overlap with interfering broadcasting signal; – the assumed noise figure and interference to noise ratio may need to be corrected. (They need to be corrected for any case where the mobile bandwidth is less than that of the broadcasting signal.)	The generic protection criteria in A.4.2.1.2 have been adjusted based on the approach adopted by IPG-1 (see Annex 12 to Doc. IPG-1/51), which suggested a new generic equation. The assumed values of ($F - G + L_F + Po$) to be used in this generic equation are given in item 2 below. The overlap correction factor should be calculated as described in Appendix 1 to Annex 6 to Doc. IPG-1/51.	The approach was adopted by WP 9D at its meeting in November 2005.	IPG-2 endorses.
2	**A.4.2.1.2 Protection criteria for the fixed service where no system information is available** For the calculation of the allowable interference field strength for the fixed service with the 'generic' formula, there are no indications regarding the values of the Receiver Noise Figure (F), the Receiver Antenna Gain (G_i), the Antenna Cable Feeder Loss (L_F), and the Man-Made Noise (Po).	Based on the considerations in Appendix 1 to Attachment 4 to this document, use the following values: ($F - G + L_F + Po$) = 1 dB in VHF band ($F - G + L_F + Po$) = -4 dB at 500 MHz ($F - G + L_F + Po$) = -6 dB at 800 MHz In the UHF band, the variation with frequency relative to the value at 500 MHz is given by using the formula: 10log(f/500)..		IPG-2 endorses.

No.	Section No., issue	Adopted working assumption, other indications	Views of SG/WP or other bodies	IPG-2 views
3	**A.4.2.3.3 Protection criteria for any VHF/UHF land mobile service system not covered previously and for which no system information is available** Generic protection criteria for the land mobile service may be incorrect since: – they do not necessarily take into account the case of partial overlap with interfering broadcasting signal; – the assumed noise figure and interference to noise ratio may need to be corrected. (They need to be corrected for any case where the other service bandwidth is less than that of the broadcasting signal.)	The generic protection criteria in A.4.2.3.3 have been adjusted based on the approach adopted by IPG-1 (see Appendix 12 to Document IPG-1/51), which suggested a new generic equation. The assumed values of ($F - G + L_F + Po$) to be used in this generic equation for base and mobile stations are given in Appendix 3 to Annex 6 to Doc. IPG-1/51. The overlap correction factor should be calculated as described in Appendix 1 to Annex 6 to Doc. IPG-1/51.	**WP 8A** confirmed the validity of these assumptions at its meeting in September 2005.	IPG-2 endorses.
4	**A.4.2.4 Protection criteria for aeronautical radionavigation service** Protection criteria for the aeronautical radionavigation service in the band 223-235 MHz are missing in the RRC-04 Report.	No assumption was adopted as there was no need (no notification for these systems from the administrations listed in RR 5.247 and IRN was received so far).	**WP 8B view**: further work is needed in WP 8B on this issue.	IPG-2 endorses.
5	**A.4.2.4.1.2 Protection criteria for aeronautical radionavigation service** Protection criteria for radars of Air Traffic Control used in the aeronautical radionavigation service in the bands 585-610 MHz (IRN) and 645 – 862 MHz (administrations in RR 5.312) are missing in the RRC-04.	For the 645-862 MHz band, use the revised the protection criteria as contained in Attachment 2 to Doc. IPG-2/1 (already approved by the WPIPG). The same criteria also apply for the 585-610 MHz band.	These criteria have been developed by WP 8B in September 2005 and subsequently approved by WPIPG.	IPG-2 endorses.

No.	Section No., issue	Adopted working assumption, other indications	Views of SG/WP or other bodies	IPG-2 views
6	**A.4.2.4.1.2 Protection criteria for aeronautical radionavigation service for partial overlap** Protection criteria for radars of Air Traffic Control used in the aeronautical radionavigation service in the bands 585-610 MHz (IRN) and 645-862 MHz (administrations in RR 5.312) in the case of partial overlap are missing in the RRC-04 and are not provided in the output from WP 8B.	1) For the 645-862 MHz band, use the revised protection criteria as contained in Attachment 2 to Doc. IPG-2/1 (already approved by the WPIPG). 2) Based on the indications from the Member States regarding the service type codes, assume that the RSBN protection criteria for ground reception also apply for RSBN aircraft reception.	The criteria related to the first set of assumptions have been developed by WP 8B in September 2005 and subsequently approved by WPIPG.	IPG-2 endorses.
7	**Annex 4.4 Protection criteria for digital terrestrial television broadcasting (DVB-T) interfered with by other primary services** Criteria for protection of digital television broadcasting from different systems in the radionavigation and aeronautical radionavigation services are missing in the RRC-04 Report.	The values given in Appendix 8 to Annex 6 to Doc. IPG-1/51, which have been developed by PXT for the purpose of the first planning exercise, are also used for the draft Plan.	**WP 6E (October 2005**) agrees on the values suggested by the PXT for the preparation of the draft Plan. However, the issue needs further study, and those administrations using ARNS systems are invited to supply protection ratio values.	IPG-2 endorses.

Appendix: 1

APPENDIX 1 TO ATTACHMENT 4

Considerations regarding generic protection criteria for the fixed service

The Report from RRC-04 provides a "generic" formula for calculation of the allowable interference field strength for the fixed service, but provides no indication on the values referred to in that formula, i.e., values of the Receiver Noise Figure (F), the Receiver Antenna Gain (G_i), the Antenna Cable Feeder Loss (L_F), and the Man-Made Noise (Po).

Based on the information in Recommendations ITU-R F.758, F.1670 and SM.851, the following values of F, G_i and L_F are proposed:

TABLE 1

Frequency (MHz)	**174-230**	**500**	**800**
F (dB)	5	5	5
G_i (dBi)	9	14	16
L_F (dB)	4	5	5
Po (dB)	1	0	0
$F - G + L_F + Po$	1	–4	–6

For other frequencies in the UHF band, the interpolation should be made using formula: 10log(f/500).

ANNEX 4A*

Recommendations of the intersessional planning group to the conference on the planning organization – calendar and number of iterations

1 Introduction

1.1 This document proposes to the conference the sequence, duration and deadlines of activities to be undertaken prior to beginning of the conference and during the conference, which are related to planning iterations.

2 Recommendations on pre-conference activities

2.1 Recommendations on activities relating to the reference situation

2.1.1 If the conference decides to have an updated version of the reference situation, it is recommended that all modifications relating to the establishment of the final version of reference situation for the analogue television and for other primary services shall reach the Bureau not later than Wednesday, 15 March 2006 at 2359 hours.

2.2 Recommendations on activities relating to input data for the first planning iteration

2.2.1 It is assumed that after evaluating the draft Plan of February 2006, administrations may wish to modify their requirements and the corresponding administrative declarations. Such modifications would be voluntary and are expected to be in the direction of improvement of the draft Plan. In order to reduce the workload at the beginning of the conference the IPG recommends to the conference the following course of action. BR shall make provisions for administrations to submit their modified requirements to the Bureau prior to the beginning of the second session. All requirements for the first planning iteration shall reach the Bureau not later than Friday, 21 April 2006 at 2359 hours Geneva time. Upon receipt of the above-mentioned modified requirements, BR would validate and publish the requirements to be used in the first planning iteration during the second session, pending the decision(s) of RRC-06 on the acceptance of these modified requirements, or otherwise.

2.2.2 All administrative declarations relating to the first planning iteration shall be submitted during the first week of the conference, prior to Friday, 19 May 2006 by 1800 hours.

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* Source: Document IPG-2/37.

3 Recommendations on conference activities

3.1 Recommendations on global iterations

3.1.1 IPG recommends the conference to perform three planning iterations followed by the final iteration to produce the new Plan during the second session. These iterations shall be global runs including the whole of the planning area and both Band III and Bands IV/V.

All "global" planning iterations will be carried out in the following steps:

	Activities	Responsible
1	*Submission, validation and publication of requirements.* Validation of the requirements requires time, which depends on the number of requirements and on the amount of the detected errors to be corrected. Upon submission of the requirements the submitting administrations should remain at the disposal of BR for possible clarifications and corrections. Administrations are urged to use the software provided by BR for validation of their files prior to submission to BR. The requirements will be published on the ITU web site as soon as they are validated.	*Submission:* Administrations *Validation* and *publication:* BR
2	*Submission, validation and publication of administrative declarations* Validation of the administrative declarations requires some time, which depends on the number of declarations, as well as on the amount of the detected errors to be corrected. Upon submission of the administrative declarations the submitting administrations shall remain at the disposal of BR for possible clarifications and corrections. Administrations are urged to use the software provided by BR for validation of their files prior to submission to BR. The administrative declarations will be published on the ITU web site as soon as they are validated.	*Submission:* Administrations *Validation* and *publication:* BR
3	*Compatibility analysis, plan synthesis, publication of the results.* This phase should be completed within maximum 2 days.	CCPU/BR
4	*Evaluation of the results of the iteration*	Administrations
5	*Coordination and negotiations* It is expected that coordination and negotiations will continue throughout the conference. A result of negotiations may be modifications to the requirements and to the administrative declarations aimed towards improving the draft Plan.	Administrations within CNGs

3.1.2 For each planning iteration the above mentioned activities in principle will take place in a sequential order.

3.1.3 After the final planning iteration there should be a final opportunity for submission (but not withdrawal) of additional administrative declarations (date to be defined by the conference) in order to generate the final Plan.[4]

3.2 Recommendations on complementary analyses, subject to the decision of RRC-06, including its scope and the periodicity of the analysis

3.2.1 Provisions need to be made for the complementary analyses to be carried out during the conference after each planning iteration and before the final Plan is approved by the Plenary.

[4] Syria reserved its position with regard to this paragraph.

3.3 Recommendations on elements necessary to start the first iteration

3.3.1 In order to begin with the first planning iteration by Friday, 19 May 2006, 1800 hours, IPG recommends to the conference that it decides on any and all necessary elements of that iteration by Wednesday, 17 May 2006, 1800 hours or at the latest by Thursday, 18 May 2006, 1200 hours.

Attachment: 1

Attachment 1

Draft time-schedule of the activities relating to planning iterations

ID	Task name	Start	Finish	Resource
1				
2	**Pre-conference preparation of iteration 1**			
3	Submission of modified requirements for iteration 1.		**Fri 21.04.06 23:59**	Administrations
4	Validation of modified requirements for iteration 1.	Fri 21.04.06	Fri 12.05.06 18:00	BR
5	Publication of validated modified requirements for iteration 1.		**Fri 12.05.06 18:00**	BR
6				
7	**Start of the conference RRC-06**	**Mon 15.05.06**		
8				
9	**Iteration 1**			
10	Submission of administrative declarations for iteration 1. Immediate publication by BR of the input files as received.		**Fri 19.05.06 18:00**	Administrations
11	Validation of administrative declarations, and its publication as soon as validated, compatibility analysis, Plan synthesis and preparation of results of iteration 1.	Fri 19.05.06 18:00	Mon 22.05.06 12:00	CCPU/BR
12	Publication of results of iteration 1.		**Mon 22.05.06 12:00**	BR
13				
14	**Iteration 2**			
15	Evaluation of the results of the first iteration . Coordination and negotiations.	Mon 22.05.06 12:00	Thu 25.05.06 18:00	Administrations, CNGs
16	Submission of modified requirements for iteration 2. Immediate publication by BR of the input files as received.		**Thu 25.05.06 18:00**	Administrations
17	Publication of modified requirements for iteration 2 as soon as validated.		**Fri 26.05.06 18:00**	BR
18	Submission of administrative declarations for iteration 2. Immediate publication by BR of the input files as received.		**Fri 26.05.06 18:00**	Administrations
19	Validation of administrative declarations, and its publication as soon as validated, compatibility analysis, Plan synthesis and preparation of results of iteration 2.	Fri 26.05.06 18:00	Mon 29.05.06 12:00	CCPU/BR
20	Publication of results of iteration 2.		**Mon 29.05.06 12:00**	BR
21				
22	**Iteration 3**			
23	Evaluation of the results of the second iteration. Coordination and negotiations.	Mon 29.05.06 12:00	Thu 01.06.06 18:00	Administrations, CNGs

24	Submission of modified requirements for iteration 3. Immediate publication by BR of the input files as received.		**Thu 01.06.06 18:00**	Administrations
25	Publication of modified requirements for iteration 3 as soon as validated.		**Fri 02.06.06 18:00**	BR
26	Submission of administrative declarations for iteration 3. Immediate publication by BR of the input files as received.		**Fri 02.06.06 18:00**	Administrations
27	Validation of administrative declarations, and its publication as soon as validated, compatibility analysis, Plan synthesis and preparation of results of iteration 3.	Fri 02.06.06 18:00	Mon 05.06.06 12:00	CCPU/BR
28	Publication of results of iteration 3.		**Mon 05.06.06 12:00**	BR
29				
30	**Iteration 4 (final)**			
31	Evaluation of the results of the third iteration. Coordination and negotiations.	Mon 05.06.06 12:00	Thu 08.06.06 16:00	Administrations, CNGs
32	Submission of modified requirements for iteration 4. Immediate publication by BR of the input files as received.		**Thu 08.06.06 16:00**	Administrations
33	Publication of modified requirements for iteration 4 as soon as validated.		**Fri 09.06.06 14:00**	BR
34	Submission of administrative declarations for iteration 4. Immediate publication by BR of the input files as received.		**Fri 09.06.06 20:00**	Administrations
35	Validation of administrative declarations, and its publication as soon as validated, compatibility analysis, Plan synthesis and preparation of results of iteration 4.	Fri 09.06.06 20:00	Mon 12.06.06 12:00	CCPU/BR
36	Publication of results of iteration 4.		**Mon 12.06.06 12:00**	BR
37				
38	**Complementary Plan analysis ***	Mon 12.06.06 12:00	Tue 13.06.06 12:00	CCPU/BR
39	**Publication of the results of complementary Plan analyses ***		**Tue 13.06.06 12:00**	BR
40	**Final lay-out and approval of the Plan**	**Tue 13.06.06 12:00**	**Fri 16.06.06 17:00**	Administrations, Plenary
41				
42	**End of RRC-06**		**Fri 16.06.06 17:00**	

* See § 3.2.

Note: Lines 38 to 42 are just an estimate of the time management for the last week.

ANNEX 4B*

Recommendations to the conference on the Coordination and Negotiation Groups (CNGs)

1 General

The planning area for RRC-06 is very large and diverse in terms of spectrum requirements. It is now generally accepted that a satisfactory plan will have to rely on the negotiation of requirements among its members. The subdivision of the planning area and the establishment of Coordination and Negotiation Groups (CNGs) appears crucial in order to manage the conference and solve practical planning issues in an efficient manner.

Each CNG will comprise administrations that have common interests such as similar propagation conditions and use of spectrum. In some parts of the planning area these groups are already operating informally to coordinate input requirements with very positive results.

Even if such a division eases the planning process, it must be clear that, in addition, complete preparation and evaluation of the plan requires cross CNG coordination.

2 Role

CNGs will be formally established under the Planning Committee (COM 4) and will conduct its activities under the supervision of that committee. CNGs will be responsible for conducting the necessary planning activities within its area of coverage including establishing possible sub-CNGs as appropriate. When meeting in plenary, the CNGs will operate in a similar fashion to working groups.

In order to avoid any overlapping and/or inconsistency in the submission of requirements each administration will be associated with only one CNG on a "primary basis". This means that administrations will need to submit their modified requirements and administrative declarations for the global iterations, exclusively through their primary CNGs[5]. Nevertheless, administrations will have the possibility to be members of one or several "Secondary CNGs" on account of the geographical situation of their territory (or part of) and as appropriate according to their needs and available resources. In addition, there may be a need for some CNGs to engage in cross-negotiation with other CNGs.

The conference needs to take appropriate measures to safeguard interests of administrations not present at the conference.

In each CNG primary member administrations will prepare input data based on negotiation and coordination with primary and secondary member administrations within the CNG and with the concerned administrations of the other CNGs, where they act as secondary members. These input data will be submitted for inclusion in the next planning iteration.

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* Source: Document IPG-2/39.

[5] The submission procedures need to be further developed.

3 Number

The composition and number of CNGs will be formally decided by the Planning Committee. The number of CNGs will have to be balanced against the need to use the available resources, both of administrations and the Bureau, in an efficient manner. It is generally accepted that five to six is the optimum number.

A preliminary composition of CNGs is given in **Table 1**.

4 Structure

Each CNG will be headed by a chairman who will be appointed by the Planning Committee from the membership of that CNG. In some cases a vice-chairman/men may also be appropriate.

The CNG chairmen will form part of the steering group of Committee 4, comprising also the chairman and vice-chairman of that committee as well as chairmen of working groups of Committee 4, if any.

The further division of CNGs into sub-CNGs and the designation of the respective sub-CNG chairmen will be under the responsibility of the CNG.

5 The role of the chairman

The chairman, with the assistance of staff of the Bureau and the planning expert(s), will:

– manage (chair) meetings of the CNG;

– facilitate the bilateral/multilateral negotiations among members (primary and secondary) and steer them in a satisfactory manner for the membership while ensuring that deadlines for submission of input data (requirements and joint administrative declarations) are met by the CNG[6];

– give advisory support in analysing/interpreting the results of the planning iterations and in identifying possible areas of planning difficulties as well as options to improve results within the CNG;

– liaise with other CNGs and set up joint meetings, as required, in particular to solve possible cross-border difficulties;

– consider, as appropriate, the interests of those administrations associated to the CNG which have not submitted input requirements;

– represent the CNGs, together with the CNGs vice chairmen, if any, in the meetings of the Committee 4 steering group.

6 Role of the Bureau staff

Each CNG will be assisted by a staff member(s) of the Bureau, who will provide support to the CNG in performing its responsibilities.

7 Role of the Planning Expert(s)

Dedicated planning expert(s) (from the PXT or the membership) will also be assigned to each CNG. The planning expert will:

– assist the membership in carrying out (limited) planning studies as recommended by the chairman of the CNG;

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6 See Document IPG-2/DT/5.

– provide assistance to the chairman and vice-chairman/men of the CNG in performing their tasks.

8 Conference Core Processing Unit (CCPU)

The CCPU will consist of BR staff as well as experts from PXT[7] and/or from Member States on secondment to CCPU on a full time basis for the duration of RRC-06.

The CCPU will:

– conduct the necessary global iterations during the conference in accordance with the schedule established by the Steering Committee of the RRC-06;

– perform calculations of limited scope (other than global iterations) in accordance with the time schedule established by the Steering Group of Committee 4.

9 Facilities

To facilitate the work of CNGs, in its preparation of the conference, the BR should take into account the following:

– It is recognized that CNGs will need to have a dedicated meeting room at their disposal during RRC-06.

– Equipment: ideally CNGs will have an adequate number of high speed computers at its disposal.

NOTE 1 – It might be useful to gather the chairmen of all CNGs in Geneva immediately prior to the conference to perform the necessary tests in order to ensure that all the mechanisms in place are workable and well understood by everyone involved.

NOTE 2 – The regional groups, through the IPG vice chairmen, need to inform the chairman of the IPG Steering Group of proposals for candidates to chair (and vice-chair) the CNGs before the end of April 2006.

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[7] Some PXT experts will need to assume the function of dedicated planning experts to support CNGs.

TABLE 1
Proposed Coordination and Negotiation Groups (CNGs)
for managing the work of RRC-06

Proposed subregions (CNGs) [8], [9], [10], [11]		**Composition of CNGs** **Primary (in Bold)/Secondary members of the CNG**
CNG 1	Europe except Eastern Europe and the Mediterranean	**ALB, AND, AUT, BEL, BIH, BLR, BUL, CVA, CZE, D, DNK, E, EST, F, FIN, G, GRC, HNG, HOL, HRV, I, IRL, LIE, LTU, LUX, LVA, MCO, MDA, MKD, MLT, NOR, POL, POR, ROU, S, SCG, SMR, SUI, SVK, SVN, TUR, UKR** RUS
CNG-2a	Western/Central Africa	**BEN, BFA, CAF, CME, COG, CPV, CTI, GAB, GHA, GMB, GNB, GNE, GUI, LBR, MLI, MTN, NGR, NIG, SEN, SRL, STP, TCD, TGO,** ALG, G, LBY, MRC(AOE), SDN, COD, AGL
CNG-2b	Eastern/Southern Africa	**AFS, AGL, BDI, BOT, COD, COM, ETH, KEN, LSO, MAU, MDG, MOZ, MWI, NMB, RRW, SDN, SWZ, TZA, UGA, ZMB, ZWE** COG, CAF, DJI, F, TCD, LBY, EGY
CNG-3	Area with extreme propagation condition (Zones C&D as defined in RRC-04 Report)	**ARS, BHR, IRN, IRQ, KWT, OMA, QAT, UAE** YEM
CNG-4	Eastern part of the planning area	**ARM, AZE, GEO, KAZ, KGZ, RUS, TJK, TKM, UZB** IRN
CNG-5	Red Sea area	**DJI, ERI, SOM, YEM,** ARS, EGY, JOR, SDN
CNG-6	Eastern Mediterranean	**CYP, EGY, ISR, JOR, LBN, LBY, SYR, PSE,** ARS, GRC, IRQ, MLT, TUR
CNG-7	Western Mediterranean and North-western Africa	**ALG, MRC, TUN,** ALB, BIH, CVA, E, F, HRV, I, LBY, MCO, MLT, POR, SCG, SMR, SVN, SYR

[8] It is proposed to merge CNG-4 with CNG-1.

[9] It is proposed to study further the possibility of associating CNG-5 and CNG-2b.

[10] It is proposed to merge CNG-6 and CNG-7.

[11] A possible merger of the Arab States into a single CNG is under discussion.

ANNEX 4C*

Number of options to be used during the conference

Considering the minimum time required to perform the calculations and processing of the requirements for each iteration (compatibility analysis, processing of corresponding administrative declarations, synthesis, production of the results), the time required to examine the results by the Conference (administrations and CNGs) during the interval between two iterations, it was unanimously recognized that it would be very difficult, inefficient and impracticable to use more than one option for the production of the Plan in each iteration. The Conference is therefore recommended to review the number of options submitted by IPG-2 and select only one of them during the first three days of RRC-06. This would enable the Conference Core Processing Unit "CCPU" to make final preparations of that single option to be used during RRC-06.

Recommended options

After a lengthy discussion, it was recommended to maintain the current four study cases (four options) and submit them to RRC-06 for review and selection of one single option as outlined above. The main reason that all four options to be carried forward is that administrations need time to review the results obtained by each of these options and indicate the advantage and disadvantage of each option. However, it was emphasized that due to the expected long life of the Plan(s) to be established in a flexible and forward-looking manner, and the relatively short transition period compared with the expected period of validity of the Plan, it would be advantageous to select the option which provides the optimal solution to the planning.

With respect to the issue of whether or not the complementary analysis (establishment of the relation between analogue assignments which were not taken into account in the design of the Plan and digital Plan) is to be carried out, the Arab Group stated that such analysis is not necessary since administrations asking not to take their analogue into account should have known that these analogue television assignments will not be protected.

Representatives of the African Group, RCC and CEPT did not share this view. The latter groups stated that the issue of protection of analogue television assignments during the transition period is clearly stated in the Report of RRC-04, e.g. Note 1 to Annex 2 of Resolution COM5/1 as well as in item 3 of Annex 4 to the IPG-1/5 (Report of the first IPG).

IPG-2 concluded that this issue needs to be decided by RRC-06.

* Source: Document IPG-2/40.

ANNEX 5A*

1 Review of software in support of the planning process

IPG-2 has reviewed the existing software that has been developed by BR and EBU Technical Department to support the planning process. Document IPG-1/51, Annex 16 was used as a basis for this review.

The purpose of the review was to provide updated information about the existing software and to identify software that still needs to be developed.

Annex 5B contains, for each of the existing software packages, a reference to the latest version, a brief description of functionality, and information as to where to find the current version of the software.

Regarding additional software, it was agreed that BR would provide, within two weeks, software for the validation of administrative declarations. In addition, the following requests for additional features of the display software were proposed by the:

Administration of Iran:

- A possibility to select a specific geographic area to be displayed, based on latitude and longitude of the boundaries of this geographic area.

Administration of Israel:

- Description of the need: The display presents well the appropriate service and coverage area around stations. As countries are also interested in the unwanted signals, propagating from other countries, there is a need to provide the coverage area of the interfering signals.
- Specifications: to display the calculated field strength, selected by the operator.

The Bureau has noted the above-mentioned requests and indicated that they will be taken into account, subject to the available time and resources.

With regard to the software for complementary analyses of the Plan, the working group realizes that:

– in order to allow for RRC-06 to have flexibility in taking decisions on the content of the complementary analyses, and

– since there will be virtually no possibility for software development during RRC-06,

any software that may be needed for that purpose will need to be developed prior to RRC-06.

The working group concluded that software requirements for complementary analyses will be known once the IPG reaches conclusions on this issue.

Subsequent to the working group meeting and in agreement with the Chairman of Working Group 4 the text in § 6.3 of Annex 5B is proposed.

Finally, Annex 5B contains proposed IPG conclusions regarding software in support of the planning process. The IPG endorsed these conclusions.

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* Source: Document IPG-2/31.

2 Verification of the planning software

The Group agreed that verification of the planning software is of the highest importance for the normal work of RRC-06. BR and PXT have the primary responsibility for testing of the software. However, it is essential that administrations take an active part in the testing, in particular to verify that the planning software works correctly for their own planning situations.

In order to carry out testing in a structured and controlled fashion until the beginning of RRC-06, the following course of action is proposed:

a) PXT and BR will continue testing of the planning software in the context of the preparations for RRC-06.

b) Administrations are urged to carry out their own testing taking account of their own and their neighbours' actual planning situations. In conducting the testing, administrations should examine various compatibility situations, including:

- interaction between digital broadcasting requirements in various combinations (DVB-T vs. DVB-T, DVB-T vs. T-DAB, T-DAB vs. T-DAB, allotments vs. allotments, allotments vs. assignments, assignments vs. assignments, various combinations of system variants and reception conditions, RPCs and RNs etc.)
- interaction between digital broadcasting requirements and assignments of analogue television
- interaction between digital broadcasting requirements and assignments of other primary services (e.g. choosing various representative OS categories (FXTX, ALTX, etc.)
- various propagation conditions.

c) It is recommended that the results obtained using compatibility analysis software should be verified by manual calculations rather than by comparison with the results given by other software, because the latter would not necessarily provide much information if there were differences in the results.

d) Synthesis may be validated by examining consistency of the draft Plan, i.e. by verifying that in the draft Plan the same channel has not been assigned to incompatible requirements.

e) In conducting the tests, administrations shall use the same version of the planning software which was used to produce the draft Plan. It is available for download from the ITU website:
www.itu.int/ITU-R/conferences/rrc/rrc-04/intersession/progs/planning/index.html

f) Any error detected in the planning software should be immediately reported to BR (RRC06.software@itu.int). In their error reports administrations shall include the following information:

- description of a test case where the error was detected
- input data used for that particular test case
- description of verification method
- results obtained by the planning software and the control results
- description of error
- details of operating system version and hardware configuration used.

g) BR will examine each error report in cooperation with the EBU and take the necessary action to eliminate errors from the planning software. A list of errors should be maintained on the ITU website.

h) Administrations should send their final test reports to BR (brmail@itu.int) not later than 15 April 2006.

- a brief description of each test case, including input data, verification method and results
- list of all detected and reported errors in the software, if any
- conclusion on planning software validation.

i) BR will carry out further testing of large-scale planning calculations in a simulated conference situation and using real input data. It is considered that some further optimization of the process may be possible.

j) BR and PXT will also conduct testing of any modifications to the planning software that may be needed as a result of IPG-2 decisions.

BR will submit to RRC-06 a report on testing of the planning software which should include, as a minimum:

- description of tests carried out by the BR and PXT
- description of tests reported by administrations
- list of detected errors, if any
- verification that all known errors are corrected
- conclusions on validation of the planning software.

Administrations of Croatia, France, Israel, Russian Federation and the United Kingdom have indicated that they are willing to participate in the testing. Several other administrations indicated that they will contribute according to their abilities.

The IPG-2 endorsed the above proposed course of action regarding verification of the planning software until the beginning of RRC-06.

ANNEX 5B*

IPG conclusions on software to support the planning process

1 Introduction

1.1 A planning method adopted by RRC-04/06 is largely based on electronic data processing, including preparation and submission of requirements and administrative declarations, compatibility analysis, plan synthesis, distribution and presentation of the results of analysis and synthesis as well as complementary analyses of the Plan. A considerable amount of software is needed to carry out these tasks.

1.2 Software programs have been developed by the Bureau as well as the EBU Technical Department (EBU TD) to support the RRC planning process. Various software programs are designed to cover particular phases of the planning process. In that respect, the planning process can be understood as consisting of the following main phases:

- preparation and submission of input data, including digital broadcasting requirements (allotments and assignments), existing and planned assignments to analogue television, existing and planned assignments to other services and administrative declarations. Input data can reflect results of bi- and multilateral coordination
- review of input data
- compatibility analysis
- plan synthesis
- review of the results of compatibility analysis and synthesis calculations
- complementary analyses of the Plan(s).

1.3 The IPG has reviewed the available software. The finding and conclusions are presented in the following sections.

2 RRC – Data processing system for digital requirements

The RRC Requirements is a consolidated software package that includes facilities to capture, validate, correct, query, extract and assemble digital requirements notices. It replaces all previous versions of Data Capture (Dcap), Data Validation (Dval), Data Correction (Dcor) and Data Query (DQry) software issued by the BR for the planning exercise.

The main changes with respect to previous software versions for processing of digital requirements are related to the database structure, and specifically the coordination section(s) (as decided by the IPG-1 meeting (Geneva, 4-8 July 2005). Two new tables have been added, rrc_coord_analog_BCBT and rrc_coord_other_service relative to coordination with other administrations with respect to analog broadcasting and other services. The field rrc_coord_self has also been added to table rrc_elements to allow for the notification of coordination within the notifying administration. The new option "Final assembling of requirements" allows administrations to combine together their input requirements files in order to create a single, fully validated file for submission to the BR.

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* Source: Document IPG-2/31.

The software is available in English, French and Spanish and can be downloaded from the ITU-R website: http://web/ITU-R/conferences/rrc/rrc-04/intersession/index.asp

The functionality of DCap, DCor, DVal and Dqry tools is the following:

Data Capture tool (Dcap)

The purpose of the RRC Data Capture tool is to allow an operator to capture data, then to perform a partial validation of each notice, and subsequently to create an output text file in the format defined in Circular Letter CR/242 + Corrigendum 1.

Data Validation tool (Dval)

The purpose of the RRC data validation tool is to allow an operator to validate prepared requirements for digital broadcasting to ensure their receivable status. If all the notices contained in the input text file are receivable then the text file is time-stamped and the status is indicated at the end of the input text file. The format of the input text file is defined in Circular Letter CR/242 + Corrigendum 1.

Data Correction tool (Dcor)

The purpose of the RRC Data Correction tool is to allow an operator to perform either basic validation or validation that ensures the receivable status of prepared requirements for digital broadcasting. The operator can then perform the correction of each notice, and subsequently create an output text file in the format defined in Circular Letter CR/242 + Corrigendum 1.

Data Query tool (DQry)

The RRC Data Query tool allows an operator to perform query operations on digital broadcasting requirements files (mdb format). The results of the query can then be viewed including a basic graphical representation of sub-areas. Additionally, the software offers the functionality of exporting the query results to a database and also of combining digital broadcasting requirements contained in two or more databases. Administrations may wish to use this functionality to facilitate the consultation and exchange of information during their coordination efforts.

2.1 Administrative declarations

Section 5.1.5.1 of the Report from the first session of the conference to the second session recognizes that bilateral and multilateral discussions will aid the planning process and that administrations are encouraged, as part of the planning process, to agree, on a bilateral and multilateral basis, the mutual compatibility between the input requirements of digital terrestrial broadcasting services and the compatibility between those input requirements and other assignments and services. Such agreements need to be notified to the Bureau in order to assist the planning process.

Also in § 5.3.1.1.1.5 it is possible for two administrations to declare that two requirements, one for each administration, are compatible, without adversely affecting other administrations, even though the calculations using the methods of § 5.3.1.1.1.2 indicate that the requirements are incompatible. The same approach can be applied if limited to cases belonging to the same administration.

The Bureau has developed a data format and the guidelines for submission of administrative declarations (see Circular Letter CR/246 and its Addendum 1), which can be found at the ITU web site at the following addresses:

Data format: http://www.itu.int/ITU-R/conferences/rrc/rrc-04/intersession/docs/rrc06_draft_plan_declarations.xls.

Guidelines: http://www.itu.int/ITU-R/conferences/rrc/rrc-04/intersession/draft_plan/index.html

Circular Letter CR/246: http://www.itu.int/md/meetingdoc.asp?type=sitems&lang=e&parent=R00-CR-CIR-0246. Functionality for generating administrative declarations is included in the RRCDisplay2 software (see section 3).

2.2 IPG conclusion regarding software for preparation and submission of input data

The IPG has concluded that the above-mentioned software programs and subsequent updates should be used for preparation and submission of digital requirements for the RRC-06. The software will enable the administrations to validate their requirements.

3 RRC Display software

IPG-1 endorsed a proposal from the PXT that describes the general requirements and associated software specifications for the presentation of output results as provided in Document IPG-1/20. In addition IPG-1 also requested a number of additional features such as:

- channel distribution within a country;
- information about allotments with associated assignments;
- information on the number of coverage layers for any given location within a country.

Based on these considerations, the Bureau in consultation with the PXT has developed the output display tools in accordance with the specifications adopted by IPG-1.

The existing RRC Input Data Display software and the output display tools have been incorporated into consolidated RRCDisplay2 software.

The requirements for the output display tools now are implemented in the latest version of the software – version 1.4.7. In addition, a number of features resulting from subsequent suggestions and comments received from administrations and the PXT have also been implemented.

The updated version together with the information on new features, corrected errors, etc. is available from the ITU-R website: http://www.itu.int/ITU-R/conferences/rrc/rrc-04/intersession/progs/RRC_output_display/index.html

Several additional important features for the output display tools that have been implemented are:

- Functionality allowing carrying out limited planning exercises using the RRC planning software.
- Functionality for generation of administrative declarations.
- Functionality for selecting one of the five (5) languages of the RRC.

The RRC Data Display software now allows an operator to consult the RRC-06 input data sets and calculated results The operator can perform basic queries on the input data and results for specific investigation purposes and additionally export the selected data in a number of predetermined data formats.

The software also incorporates a tool, which assists in the generation of administrative declarations. Furthermore, it is possible to perform planning calculations on selected data.

The RRC Data Display software enables access to a local database located on the users computers, as well as to the on-line database, which is available on the ITU website.

4 Planning software, including programs for compatibility analysis and plan synthesis

The planning software was developed and provided to the Bureau by the EBU TD. The EBU TD has incorporated into the software, as applicable, the working assumptions for missing criteria and parameters adopted for the purpose of producing the first planning exercise and the draft Plan according to the RRC-04 Report, decisions of IPG-1, WPIPG and PXT proposals.

The EBU TD provided to date, 49 programs that are used in combination for the various calculations required to conduct the planning activities. The **Appendix** provides an overview of the status of the planning software.

4.1 Propagation prediction module

An inherent part of any compatibility analysis is the ability to make field-strength predictions. The routines needed, in the case of terrestrial paths, for this purpose were prepared by the EBU TD on the basis of the RRC-04 Report and the subsequent corrections to the mixed path calculation process proposed by Study Group 3. A complete calculation package based on these routines has already been published separately and thus this aspect will not be referred to in any detailed comments made below. In the case of some other primary services, it has been necessary to take free space propagation into account and this has been done separately as it does not form part of the package mentioned above.

4.2 Data preparation

Input requirements are validated by the Bureau and converted from the XML format into the MS Access database. The same database also contains data related to existing and planned analogue television assignments as well as existing and planned assignments to other services.

The Bureau has developed a set of program routines for export of data from the MS access database into the text format to be used by the EBU TD programs. It is the output from these export routines which forms the input to the EBU TD programs.

The functionality for performing calculations, and therefore the preparation of the data for calculation has been integrated in the current version of the RRC display software (see section 3).

4.3 Compatibility analysis

A detailed description of the programs for compatibility analysis is provided in Document IPG-1/EP/4.

The programs produced by the EBU TD for the purpose of compatibility analysis in the context of RRC-04/06 consist of a set of individual modules with each one dedicated to a specific task or tasks. This approach was followed in order to provide for flexibility in the use of the programs as it is then possible to run individual programs several times with different input conditions in order to investigate specific aspects of the planning process. It is also possible to run different programs on different computers in order to get some measure of parallel processing.

In most cases, there are separate programs for the VHF and UHF bands. This was also done in order to provide for increased flexibility. However, the internal working of these programs is essentially the same, the primary differences result only from the need to take frequency differences into account.

Programs for interference calculations between analogue television assignments are included in the planning software package and can be used by administrations in preparation of their input data.

4.4 Plan synthesis

The plan synthesis process is a separate distinct part of the entire planning procedure. The methodology of the synthesis software is described in detail in Document IPG-1/EP/2. The synthesis software has subsequently been improved to avoid the situation where none of the digital requirements of an administration is assigned with a channel/frequency block except the case where such requirements have no available channel/frequency block due to incompatibility with analogue broadcasting assignments or OS assignments.

4.4.1 Input data to the synthesis

Two data files are used as **input** to the synthesis programs:

- Data File 1: the acceptable channel file.

  This input file, Data File 1, will have been produced prior to the start of the synthesis process as a result of the compatibility analysis programs. The contents of Data File 1 are derived from administrations' input list of available channels, taking into account (or not) the protection of existing or planned other services and/or analogue television, including (or not) the administrative declarations, according to the option chosen[12].

- Data file 2: the incompatibility file.

  This input file, Data File 2, will have been produced prior to the start of the synthesis process as a result of the compatibility analysis programs. The contents of Data File 2 indicate the mutual incompatibilities between pairs of digital requirements[13], including (or not) the administrative agreements, according to the option chosen.

The contents of these two files are ordered in such a way that the requirements have a completely anonymous character and treatment within the synthesis programs. In order to ensure that an administration will have at least one requirement with a frequency assigned, it was necessary to modify the input data to the synthesis to anonymously identify requirements belonging to a single administration with the use of a random number.

4.4.2 Synthesis process

There are two sets of synthesis software, one for Band III to assign appropriate channels to T-DAB and DVB-T requirements, and one for Band IV/V to assign appropriate channels to DVB-T requirements.

In each case a set of synthesis algorithms treat the two input files, Data File 1 and Data File 2, stepwise in the following manner:

a) a sequential list of the requirements is established.

b) an algorithm is followed to identify the maximum equal number of requirements that can be assigned a frequency.

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[12] This ensures that, as a result of the synthesis of the plan (i.e. the assignment of a channel to a digital requirement), no harmful interference will be caused to the existing and planned stations by the new digital requirements entering the digital plan, and that no harmful interference will be caused to those digital requirements due to the existing and planned stations.

[13] This ensures that, as a result of the synthesis of the plan (i.e. the assignment of a channel to a digital requirement), no harmful interference will be produced between any of the digital requirements assigned the same (or overlapping) channel during synthesis.

c) the remaining requirements are treated in turn in an effort to assign a channel from its set of acceptable channels.

d) if the requirement is assigned a channel, the channel acceptability data for the remaining requirements in the list is updated on the basis of the preceding assignment (to avoid potential incompatibility of future assignments); if the requirement is not assigned a channel, it is no longer considered.

e) the procedure detailed in C) and D) continues step by step, until all requirements have been treated, and assigned a channel or not.

The step A) is governed by a particular algorithm of a large set of *requirement ordering algorithms*; the step C) is governed by a particular algorithm of a large set of *channel selection algorithms*. There is a large set of *synthesis algorithms*, each of which consists of a specific A) type requirement ordering algorithm and a specific C) type channel selection algorithm. After the run of each of the set of synthesis algorithms, the total number of requirements assigned is recorded. At the end the results of the synthesis algorithm yielding the largest number of satisfied requirements are produced for further processing.

4.5 Testing of the planning software

The overall objective of the testing is to verify and ensure that the planning software is implemented correctly, in accordance with the requirements to the planning process, which are contained in the relevant parts of the RRC-04 Report.

The planning software was tested and verified as far as possible within the time-limits available for such testing. A certain number of cases have been verified, though many combinations of interaction between different transmitting and receiving systems, both between broadcasting service mutually and broadcasting and other primary services have not been covered. It should be noted that in practice not all combinations occur.

In order to facilitate testing the EBU TD has provided additional software routines that make available optional intermediate calculation information that will not normally be required in terms of the conference planning.

Document IPG-1/36 contains only the general findings of the tested cases. Results of the different cases that have been verified are presented in Document IPG-1/EP/3 which exists as an electronically published document only and is available at http://web.itu.int/ITU-R/conferences/rrc/rrc-04/intersession/ipg/elec_pub_IPG-1/docs/ipg-1-ep3e.doc

4.5.1 Verification of the software implementation of the propagation prediction model

The software implementation of the propagation prediction model was made available by the EBU TD in October 2004. This software has been subsequently tested by several administrations, organizations and the Bureau. In all cases the propagation prediction software was deemed to provide accurate results. It has been implemented and used during the first planning exercise.

4.5.2 Verification of the compatibility assessment between different types of the broadcasting service (intraservice sharing)

Some verification of the results of the various interactions between different types of the broadcasting service has been performed and a number of issues have been reported to the EBU TD. The EBU TD subsequently provided modified versions of the relevant software. This software has been implemented and used during the first planning exercise.

4.5.3 Verification of the compatibility assessment between digital broadcasting and other primary services

Some verification of the results of the various interactions between the digital broadcasting service and assignments to primary services other than broadcasting has been performed and a number of issues have been reported to the EBU TD. The EBU TD subsequently provided modified versions of the relevant software. This software has been implemented and used during the first planning exercise.

4.5.4 Verification of the plan synthesis

The plan synthesis software has been tested for some specific cases. For simple artificial cases the software provided correct and expected results. The synthesis software was found to be successful in achieving the set objective of trying to satisfy the maximum number of requirements on an anonymous basis.

However, sometimes in cases of excessive demands on the available spectrum this objective may result in certain areas being under-served while other areas achieve a higher number of requirements satisfied. The resulting irregular distribution can be, to a large extent, "levelled out" by reducing the number of requirements to reflect the actual spectrum capacity.

It must be stressed that results from this software for any partial dataset from the planning area, hold no relevance to results for the full data set for the entire planning area. It was found that evaluating the results from the synthesis is complex and it may be misleading to look at certain situations and specific results in isolation.

The synthesis software has been implemented and used during the first planning exercise.

4.6 Implementation of the planning software

The BR indicated that in the production of the draft Plan it was possible to realise the target time of 2 days for performing the calculations with the available resources.

4.7 Availability of the planning software for use by administrations

All the executable modules of the planning software (without the corresponding source code) were made available to the administrations for download in March 2005, in order to allow for administrations to perform a partial analysis of requirements, and subsequently to perform a partial synthesis. The software has been updated regularly with indications concerning the modifications and subsequently the planning software has been integrated in the RRC display software.

The software is compiled using the same source code as that used by the Bureau. Therefore the results calculated with this software package and the variant of the planning software used by the Bureau will be the same for any given set of input data.

However, administrations shall use this software with care. If compatibility analysis is carried out on a limited set of data (i.e. not including all the relevant input data, such as other services, or not including requirements from surrounding areas) the results may be misleading. Any conclusion derived from such results may potentially be wrong.

Users should also note that a synthesis based on a partial database of digital broadcasting requirements will not necessarily produce the same results as during the planning exercises when all requirements will be taken into account.

The software is available in English only. The latest complete version of the planning software can be downloaded from the ITU-R website: www.itu.int/ITU-R/conferences/rrc/rrc-04/intersession/progs/planning/index.html. The interface to the planning software is available in five languages, however the output files from the planning software itself remains in English only.

The Bureau has also provided a set of export routines that are necessary to extract input data for calculations from the MS Access database in the correct format. These routines are provided together with the planning software. It is the output from these export routines which forms the input to the EBU programs. In the RRC display software the process of preparing the input text files and executing the planning software have been fully integrated in the display software.

User instructions have been developed by some of the PXT members and can be downloaded from the ITU-R website together with the latest version of the software. The user instructions will be updated as necessary, in order to reflect future modification to the planning software. User instructions for performing calculations using the RRC display forms part of the display software.

4.8 IPG conclusions regarding the planning software

Upon review of the planning software the IPG has concluded that:

- the planning software, developed by the EBU TD and provided to the Bureau, was successfully implemented and used to carry out the planning exercise and produce the draft Plan.
- the process of development of some of the planning modules requires continued testing
- any further modification to the existing software or any proposed additional software shall be based on the IPG decisions and will also need to undergo thorough testing.

Regarding implementation of the planning software the BR has achieved the objective to complete the compatibility calculations followed by synthesis for one planning iteration within 2 days. The IPG requests the Bureau and invites the EBU TD to continue their cooperation in further optimising the calculation process.

The IPG acknowledges with appreciation the efforts put into development, testing and implementation of the planning software by the Bureau, EBU TD and the PXT members.

5 Software for review of the results of compatibility analysis and synthesis

This functionality has been included in the RRCDisplay2 package (see section 3).

6 Additional software

6.1 Interference assessment to other primary services from analogue television assignments

In terms of footnote 7 of § 1.7.2 of the Report from the first session of the conference to the second session, existing and planned assignments to primary services other than broadcasting should not claim more protection from digital assignments/allotments in the new plans than they already have from the relevant existing and planned assignments. During the deliberations of the PXT-7 meeting, the PXT concluded that the need for verifying footnote 7 of § 1.7.2 is the responsibility of the administrations and that there will not be any need for performing these calculations during the conference.

6.2 Validation of the administrative declarations

There is a need to develop and provide software for the validation of administrative declarations. This software should enable administrations to fully validate their declarations before submitting them to the BR. The BR indicated that a period of two weeks will be required to develop this software.

6.3 Complementary analyses of the plan(s) as required

Subject to decisions of the RRC-06 the complementary analyses of the proposed final plans will determine the interference situation between the digital assignments/allotments and:

- other digital assignments/allotments
- existing and planned analogue television assignments
- existing and planned assignments to other primary services.

The complementary analyses will thus provide information to determine:

- restrictions on implementation of digital broadcasting assignments and allotments due to incompatibility with the existing and planned analogue television assignments
- list of administrative declarations that remain relevant for the implementation of the new digital plan.

6.4 IPG conclusions regarding additional software

The Bureau and the PXT should develop requirements for the above-mentioned additional software. The IPG instructs the Director of the Bureau to make appropriate arrangements for the corresponding software referred to in sections 6.2 and 6.3 to be developed.

Appendix: 1

APPENDIX TO ANNEX 5B

Status of the planning software[14]

Item	Module name	Purpose	Status
1	common	Common propagation routines	Implemented and used to produce the draft Plan
2	newblock1546	Data (propagation values, zones etc.) for the propagation model	Implemented and used to produce the draft Plan Implement WP 3K proposals
3	rec1546_rrc	Propagation model adopted by RRC-04	Implemented and used to produce the draft Plan
4	a2duhf, a2dvhf	Compatibility assessment (interference from analogue television assignments to digital broadcasting requirements, assignments and allotments) in the UHF and VHF bands respectively	Implemented and used to produce the draft Plan Implement IPG-1 and WPIPG decisions
5	d2auhf, d2avhf	Compatibility assessment (interference from digital broadcasting requirements, assignments and allotments to analogue television assignments) in the UHF and VHF bands respectively	Implemented and used to produce the draft Plan Implement IPG-1 and WPIPG decisions
6	d2duhf, d2dvhf	Compatibility assessment (mutual interference between digital broadcasting requirements, assignments and allotments) in the UHF and VHF bands respectively	Implemented and used to produce the draft Plan Implemented IPG-1 and WPIPG decisions
7	d2ouhf, d2ovhf	Compatibility assessment (interference from digital broadcasting requirements, assignments and allotments to assignments of other primary services) in the UHF and VHF bands respectively	Implemented and used to produce the draft Plan Implemented IPG-1 and WPIPG decisions
8	o2duhf, o2dvhf	Compatibility assessment (interference from assignments of other primary services to digital broadcasting requirements, assignments and allotments) in the UHF and VHF bands respectively	Implemented and used to produce the draft Plan Implement IPG-1 and WPIPG decisions

[14] The process of development of some of the planning modules requires continued testing.

Item	Module name	Purpose	Status
9	os2bin	Conversion of assignments of other primary services into proprietary binary format	Implemented and used to produce the draft Plan Implement IPG-1 and WPIPG decisions
10	req2bin	Conversion of digital broadcasting requirements into proprietary binary format	Implemented and used to produce the draft Plan Implement IPG-1 and WPIPG decisions
11	digconuhf digconvhf	Converts calculated requirement coverage/service areas and provided allotment areas to a suitable format for displaying	Implemented and used to produce the draft Plan
12	read74uhf, read74vhf	Conversion routines that combine compatibility assessment results into a format suitable for synthesis processing in the UHF and VHF bands respectively	Implemented IPG-1 and WPIPG decisions
13	serv2tva	Preprocessing of analogue television assignments	Implemented and used to produce the draft Plan Implemented IPG-1 and WPIPG decisions
14	tvanoisuhf, tvanoisvhf	Conversion of analogue television assignments into proprietary binary format in the UHF and VHF bands respectively	Implemented and used to produce the draft Plan Implemented IPG-1 and WPIPG decisions
15	tvacovuhf, tvacovvhf	Compatibility assessment and coverage prediction of analogue television assignments in the UHF and VHF bands respectively	Implemented and used to produce the draft Plan Implemented IPG-1 and WPIPG decisions
16	tvaconvhf tvaconuhf	Converts calculated analogue television coverage/service area calculations to a suitable format for displaying	Implemented and used to produce the draft Plan Implemented IPG-1 and WPIPG decisions
17	setppp	Sets the status for taking into account/excluding indicated analogue television assignments from the compatibility assessment process	Implemented and used to produce the draft Plan
18	dfduhf, dfdvhf**	Indicates the interference caused by requirements of a particular administration	Updated versions required: Consequence of IPG-1 and WPIPG decisions

Item	Module name	Purpose	Status
19	osconvhf, osconuhf	Converts calculated service areas of assignments of other primary services into a format suitable for display purposes in the VHF and UHF bands	Implemented and used to produce the draft Plan
20	RRCprelimIVV RRCprelimIII	Preprocessing of calculated compatibility results in preparation for synthesis in the UHF and VHF bands respectively	Implemented and used in the first planning exercise Update for Band IV/V (IPG1: 'Iso-#') see 25 and 28 below
21	RRCcheckIII RRCcheckIVV	Validating the compatibility of a plan generated by the synthesis software Used only for testing purposes and will not necessarily be used during the conference	Implemented and used to produce the draft Plan for the VHF band, an update is required for the UHF band.
22	RRCsynthIVV RRCsynthIII	Synthesis of digital broadcasting requirements in the UHF and VHF bands respectively	Implemented and used in the first planning exercise Update for Band IV/V (IPG1: 'Iso-#') see 26 and 29 below
23	RRCpostsynthIVV RRCpostsynthIII	Improves the results of the synthesis by trying to satisfy more digital broadcasting requirements in the UHF and VHF bands respectively	Implemented and used in the first planning exercise Update for Band IV/V (IPG1: 'Iso-#') see 27 and 30 below
24	readsynthvhf; readsynthuhf	Programmes that are used to relate synthesis results to the individual requirements in the VHF and UHF bands	Implemented and used to produce the draft Plan
25	RRCprelimIVV_no_0	Preprocessing of calculated compatibility results in preparation for synthesis in the UHF band for the case of satisfying a 'guaranteed' number of linked requirements	Implemented and used to produce the draft Plan Consequence of IPG-1 and WPIPG decisions
26	RRCsynthIVV_no_0	Synthesis of digital broadcasting requirements in the UHF band for the case of satisfying a 'guaranteed' number of linked requirements	Implemented and used to produce the draft Plan Consequence of IPG-1 and WPIPG decisions
27	RRCsynthIVVpost_no_0	Improves the results of the synthesis by trying to satisfy more digital broadcasting requirements in the UHF band for the case of satisfying a 'guaranteed' number of linked requirements	Implemented and used to produce the draft Plan Consequence of IPG-1 and WPIPG decisions

Item	Module name	Purpose	Status
28	RRCprelimIII_no_0	Preprocessing of calculated compatibility results in preparation for synthesis in the VHF band for the case of satisfying a 'guaranteed' number of linked requirements	Implemented and used to produce the draft Plan Consequence of IPG-1 and WPIPG decisions
29	RRCsynthIII_no_0	Synthesis of digital broadcasting requirements in the VHF band for the case of satisfying a 'guaranteed' number of linked requirements	Implemented and used to produce the draft Plan Consequence of IPG-1 and WPIPG decisions
30	RRCsynthIIIpost_no_0	Preprocessing of calculated compatibility results in preparation for synthesis in the VHF band for the case of satisfying a 'guaranteed' number of linked requirements	Implemented and used to produce the draft Plan Consequence of IPG-1 and WPIPG decisions

** Programs not normally used for conference planning.