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|  | **ASIA-PACIFIC TELECOMMUNITY** | |
| **The South Asian Telecommunication Regulator’s Council (SATRC)** |  |
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**SATRC REPORT ON**

**PROCESS OF ARRANGING THE AGREEMENT BETWEEN COUNTRIES IN CELLULAR NETWORKS**

**Prepared by**

**SATRC Working Group on Spectrum**

Adopted by

**14th Meeting of the South Asian Telecommunications Regulator’s Council**

14 – 16 May 2013, Bandos Island, Republic of Maldives

# Introduction

Mobile communication is a key technology in today’s information age. Despite the ongoing improvements in equipment design, interference remains a limiting factor for the use of radio communication. The motivation behind the consideration of this matter should be mentioned.

This document addresses the issue about finding the most suitable method and criteria for cross-border coordination in cellular networks located on different sides of a national border. The main objective of this document is to conduct a methodology for cross border coordination and provide some recommendations for SATRC countries. These agreements are based on the principles of use of preferential frequencies and certain pfd limits at the national border or close to the border.

# Background

Aims of Agreement are purposes of preventing mutual harmful interference to the services and optimize spectrum usage by accurate interference field strength calculations. In an Agreement Modification of general parameters, improvement and supplementation of technical provisions and Solid basis for bilateral and multilateral agreements are objects to consider.

Advantages of frequency coordination are as follow:

* to optimize spectrum usage
* Administrations obliged to co-ordinate frequencies before assigning them
* Administrations obliged to ensure harmonized application of technical provisions
* Quick assignment of preferential frequencies
* assessment of interference through data exchange

Disadvantages of frequency coordination are:

* Increase in administrative work and costs (complex procedures, longer turnaround times, topographical database)
* Detailed input data required from operators (geographical data, antenna parameters)
* Complex operational conditions
* Customers affected by changes in usage rights
* Limits also to preferential frequencies, limits may vary from case to case
* Use of other countries’ preferential frequencies currently not allowed (restrictions in frequency assignment)
* More work in application processing

In first meeting of SATRC working group on spectrum, we presented a document in which typical examples for mutual agreement related to fixed services (Annex2) and Land-Mobile services (Annex3) are existed [‎1]. This document provides some guidelines and recommendations for SATRC countries regarding cross border coordination. First of all, based on the ITU and ECC recommendations and also some famous coordination agreements, a comprehensive surveys presented. Then challenges which regulators faced are explained. Moreover, a methodology for cross border coordination in cellular mobile bands including some recommendations for SATRC countries is proposed. This report concluded in the last section.

In this regard, we propose step by step method for implementation of coordination protocol in the GSM band using preferential frequencies. That advantages of these frequencies are flexible planning of preferential frequencies, re-planning is possible and long-term security for preferential frequencies, even if networks not planned or set up until later, and disadvantages are smaller countries have same amount of spectrum as larger neighbouring countries (but not necessarily) , other countries’ preferential frequencies cannot normally be used in the defined frontier zones.

# Global trend and initiative

Coordination is discussion with concerned administrations. The frequency coordination need a void interference between stations internationally and to ensure implementation of new radiocommunication systems, while avoiding harmful interference with the other existing and planned users and dynamic planning of the spectrum resource, allowing more efficient use. Coordination may depend on: *Article 6 of the Radio Regulations*, mentioned the two or more member states may, under the provisions for special arrangements in the constitution conclude special agreements regarding the sub-allocation of bands of frequencies to the appropriate services of the participating countries [‎2], as it is mentioned in Recommendation *ITU-R SM.1049-1* describes a general method of spectrum management to be used for aiding frequency assignment for terrestrial services in border areas [‎3]. This Recommendation provides a guideline for administrations considering entering into a bilateral or multilateral agreement [‎3] and *Appendix 5* of Radio Regulation gives the thresholds and/or conditions for coordination, as well as calculation methods [‎4].

To mention more about history of such agreements it's relevant to point to several important agreements and protocol:

* Vienna agreement between the telecommunications authorities on the co-ordination of frequencies between 29.7 MHz and 43.5 GHz for the Fixed Service and the Land Mobile Service between 15 countries on 03 Dec .1993 [‎5]. Complemented agreement in Europe was Berlin agreement, this agreement between the Administrations on the co-ordination of frequencies 29.7 MHz and 39.5 GHz for the Fixed Service and the Land Mobile Service in 28 November 2003 between 17 countries [‎‎6]. Finalize agreement is HCM Agreement on 30 September 2010 between 17 counties on the co-ordination of frequencies between 29.7 MHz and 43.5 GHz for the Fixed Service and the Land Mobile Service [‎‎7].
* Also there is a bilateral coordination between USA and Canada. The mutual agreement between Canada and USA [‎‎8].
* Also there are some ECC Recommendations and decision, such as “*frequency planning and frequency coordination for the GSM 900, GSM 1800, E-GSM and GSM-R land mobile systems*” [‎9], “*frequency planning and frequency coordination for GSM / UMTS / LTE / WIMAX land mobile systems operating within the 900 and 1800 MHZ bands*”[‎‎10 ] this recommendation revised on 27 April 2012 [‎11],ECC decision (ECC/DEC/(08)08) of 31 October 2008 on the “*harmonised use of GSM system on board vessels in the frequency bands 880-915/925-960 MHz and 1710-1785/1805-1880 MHz*” [‎12] , ECC decision (ECC/DEC/(09)03) of 30 October 2009 on “*harmonised conditions for mobile/fixed communications networks (MFCN) operating in the band 790 – 862 MHz*”[‎13], CEPT report 29 of 26 June 2009 on “*technical considerations regarding harmonisation options for the digital dividend in the European Union*”, this report guideline on cross border coordination issues between mobile services in one country and broadcasting services in another country [‎14], anddraft technical arrangementbetween the national frequency management authorities ofalbania, bosnia and herzegovina, bulgaria, croatia, greece, hungary, fyro macedonia, moldova, montenegro, romania, serbia, slovenia, turkey and ukraine **, “***on border coordination for terrestrial systems capable of providing electronic communications services*” in the frequency band 790 - 862 MHz, 2012 [‎15].
* Also there is a bilateral agreement between the department of the treasury of the United States of America and the ministry of finance and public credit of the United Mexican States to improve international tax compliance including with respect to FATCA on nineteenth day of November, 2012 [‎16].
* Also there is Memorandum of Understanding (MoU) for describes the procedures coordination of civil radio services between France and the United Kingdom (UK) in the frequency bands 880-915 MHz paired with 925-960 MHz and 1710-1785 MHz paired with 1805-1880MHz [‎‎17].
* Some countries in Africa wrote coordination in cross-border penetration of mobile networks [‎‎18].
* Also there is bilateral protocol between I.R. of Iran and Azerbaijan in GSM frequency bands on 3rd of June 2009 [‎19].
* Also there is multilateral arrangement between I.R. of Iran and Saudi Arabia, Bahrain, United Arab Emirates, Kuwait, Oman, Qatar in GSM and UMTS frequency bands on 15 March 2013 [‎‎20].

1. **Lesson learnt from global initiative**

Berlin agreement is a regional agreement among European countries which manages and coordinates the frequency usage among big number of its members. Berlin agreement supposed to take experience of for the countries which are more dense together. It’s complex but good guideline for SATRC countries.

For those countries with extended border area of any kind of jungle, sea or mountains or complex of these, the mutual agreement between Canada and USA would be the subject to take experience of.

Africa coordination supposed for countries that have long borders.

ECC recommendation or agreement are good guideline for SATRC countries, because it’s intelligible, not complex and describe the details.

Bilateral protocol between I.R. of Iran and Azerbaijan is a good experience which can show a good framework and guideline for the SATRC members intend to make a mutual agreement in their border areas. But is better implementation of this protocol, step by step. In first time empty frequency bands belong to other side and in second time limited power.

Multilateral arrangement between I.R. of Iran and Saudi Arabia, Bahrain, United Arab Emirates, Kuwait, Oman, Qatar is a good experiment because in this arrangement separate spillover and harmful interference and cause eliminating spillover and harmful interference are rapidly.

1. **Current condition in SATRC countries**

Rapid growth of the telecommunication and ICT technology worldwide offer a variety of new telecom products services and technologies. Considering these issues, a questionnaire on cross border coordination (Annex 1) provided and sent to all member countries. Based on the responses from SATRC countries, this report presents the survey’s results of cross border coordination among the SATRC countries; conclusion and future work are also included.

At the time of this Report, working group on spectrum has received responses to this questionnaire from the following SATRC member countries:

1. Bangladesh
2. Bhutan
3. I.R. of Iran
4. Maldives
5. Nepal
6. Pakistan
7. Sri Lanka
8. India

The analysis according to question A is illustrated in Diagram 1.

The results of analysis on questions C.1- C.3 has been illustrated in Diagram 2.

The results of analysis on type of border are shown in Diagram 3.

Diagram 4 reveals the receiving responses on questions E-F.

Diagram 5, 6 illustrate the status of cellular mobile in SATRC countries.

Based on the above diagrams, mutual agreement is an important issue for most of the SATRC countries.

Considering the results of the questioner, this report has been conducted an analysis to reveal the status of the SATRC countries regarding cross border coordination. The gathered information consists of some facts such as; type of border in each country, geographical features and status of mobile technology.

According to this analysis, the following summary can be made with regard to the recent trends in the SATRC countries:

* Cross border coordination should be managed so as to ensure that harmful interference is avoided in borders.
* It is concluded that most of the SATRC countries need to arrange an agreement for borders. In this case, the experience of I. R. of Iran can be useful for SATRC countries.
* As clearly seen in the diagrams, several kinds of mobile communication networks, such as GSM/EDGE network, CDMA/CDMA 800 network, WCDMA network, UMTS network, IMT network and WiMAX network are developed in SATRC countries.
* Owing to the fact that, having agreement particularly in cellular mobile bands is very important issue for most of the SATRC countries, in the next document we will consider this issue.
* Since several countries have some problems in broadcasting bands we will present a lecture on GE06 plan and we will also investigate sharing problem between mobile and broadcasting services. Finally we will utilize this issue in our final document.

# Regulatory issues that need to be addressed

Considering the importance of the frequency coordination in border areas and also the necessity to establish guidelines for preferential frequency in these areas, there is necessity to technical and regulatory procedure(s) which is intended to remove or mitigate in mobile frequency band. It also contains some procedure(s) of determining the coordination parameters are based on technical and operational requirements for the concerned mobile services. For SATRC countries, it’s better to write a simply agreement till easier implementation. It's proposed to consider the following suggestions for implementation agreement:

1. Put a time schedule for deadlines of concepts of the agreement and implement them step by step
2. Release concerned frequency bands
3. Consider power limitations step by step
4. Monitoring unit in regulatory should be powerful
5. Mobile operators have a good cooperation with the regulatory and re planning network quickly and adjust the operational characteristics of their networks in the border area in accordance with the limits indicated in the Agreement.
6. For control cross border spillover and harmful interference, it is better, agreement divide two sections: **1) Eliminate spillover:** concerned regulator (administration) shall take all necessary actions to resolve any cross border spillover cases as soon as possible by direct coordination. Because spillover is government issue. **2) Eliminate harmful interference:** operators shall take all necessary actions to resolve any harmful interference cases as soon as possible by direct coordination. If harmful interference was not resolved between operators, the concerned administrations shall take necessary actions.
7. Countries have a joint group for monitoring in border area each [X] month.
8. Administrations and operators determine focal point for easier and available contact.
9. For better analysis of data, exchanged logfile between regulators.

# Recommendations and guidelines for SATRC countries

The definitions and frequency categories used in this agreement explain in reference [‎1].

All of Administration can use power limited, share frequency, and divide frequency bands (preferential frequency) or combination of these in border area. In this document we define the application of preferential frequencies in coordination zone.

In order to divide frequency channel between countries, We assign the channels X1-X2 for country A and X4-X5 for country B the next channel (X3) as the guard band , so all countries use the their own frequency channels in border area.

The process of arranging agreement A is illustrated in below chart.

It is necessary to implement an agreement step by step (Figure 1):

**First step** should specify the list of populated areas in coordination zone. (Because populated areas are very important for mobile service providers)

**Second step** will be implementation the Agreement in populated areas in coordination zone, in the other hand, re-planning cellular network in the border area in coordination zone considering agreed frequency channels for each country.

***Note 1:*** In order to optimize the usage of frequency bands for mobile operators in a country, it is not necessary to divide the frequency band equally for the both countries in all parts of the coordination zone. For example in areas there is not equal population congestion in both side we can define a sub-zone in which the country has the areas with more population can use some preferential frequencies belong to the other country. This additional usage can be compensated for the second side in some other areas where they prefer. It is worth to mention that the overall preferential frequency usage remain equal for both sides.

***Note 2:*** If each country need for using of frequency of other country (ies) see section three, item I.3.1 –I.3.6 Annex2.

**Third step** is limiting the power to the agreed threshold in the other side territory in populated areas in coordination zone.

**Forth step** is re-planning the mobile network in other parts of the border in coordination zone.

***Note 1:*** If each country need for using of frequency of other country (ies) see section three, item I.3.1 –I.3.6 Annex2.

**Fifth step**, limiting the power in other parts of the border in coordination zone.

**Sixth step** is limiting the power to the agreed threshold in outside coordination zone (beyond coordination zone, the countries have unrestricted use of these band).

Arranging a mutual/ bilateral agreement between countries in cellular network is described in Annex 2.

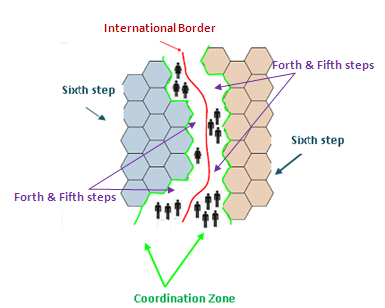




Fig.1 Illustration of step process for implementation agreement

# Conclusions

This document has focused on solution and arranging agreement for reducing interference in SATRC countries.

Implementation Agreement has increased in administrative work and cost. Such as: complex procedures, longer turnaround times. It is also necessary to implement an agreement step by step.

1. **Reference**
2. M.Espandar , A.Shayanfar and M. Abyaneh Nazari, “ *Fundamentals of mutual coordination between Administration*”, First meeting of SATRC working group on spectrum , SATRC-WG-SPEC-1/09, 07 July 2010.
3. Article 6 of the Radio Regulation.
4. Recommendation ITU-R SM.1049-1 of the Radio Regulation, “*a method of spectrum management to be used for aiding frequency assignment for terrestrial services in border areas*”, 1995
5. Appendix 5 of the Radio Regulation.
6. Vienna agreement between, 03 Dec .1993.
7. Berlin agreement, 28 November 2003.
8. HCM Agreement, 30 September 2010.
9. USA and Canada Agreement.
10. ECC recommendation (05)08, “*Frequency planning and frequency coordination for the GSM 900, GSM 1800, E-GSM and GSM-R Land Mobile systems*”, 2008.
11. ECC Recommendation (08)02, “ *Frequency planning and frequency coordination for GSM / UMTS / LTE / WiMAX Land Mobile systems operating within the 900 and 1800 MHz bands*”, 21 February 2008.
12. ECC Recommendation (08)02, “ *Frequency planning and frequency coordination for GSM / UMTS / LTE / WiMAX Land Mobile systems operating within the 900 and 1800 MHz bands*”, 27 April 2012.
13. ECC decision (ECC/DEC/(08)08), “*harmonised use of GSM system on board vessels in the frequency bands 880-915/925-960 MHz and 1710-1785/1805-1880 MHz*”, 31 October 2008 .
14. ECC decision (ECC/DEC/(09)03), “*harmonised conditions for mobile/fixed communications networks (MFCN) operating in the band 790 – 862 MHz*”, 30 October 2009.
15. CEPT report, “*technical considerations regarding harmonisation options for the digital dividend in the European Union*”, 29 of 26 June 2009 .
16. Draft technical arrangement between the national frequency management authorities of albania, bosnia and herzegovina, bulgaria, croatia, greece, hungary, fyro macedonia, moldova, montenegro, romania, serbia, slovenia, turkey and ukraine , “*on border coordination for terrestrial systems capable of providing electronic communications services”,* 2012 .
17. United States of America and the ministry of finance and public credit of the United Mexican States, 19 November, 2012.
18. Ofcom Agreement between France and the United Kingdom (UK).
19. Africa coordination in cross-border penetration of mobile networks.
20. I.R. of Iran and Azerbaijan Protocol, 3 June 2009 .
21. I.R. of Iran and Saudi Arabia, Bahrain, United Arab Emirates, Kuwait, Oman, Qatar arrangement, 15 March 2013 .

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**Annex 1**

|  |  |
| --- | --- |
| SATRC  **QUESTIONNAIRE OF WORKING GROUP ON SPECTRUM**  ***Name of country: ……………………………*** |  |

|  |  |  |
| --- | --- | --- |
| ANSWER | CHARACTERISTICS |  |
| Yes  No | Has your country/operator(s) ever had a mutual agreement? | **A** |
| ***If yes (Follow B.1-B.8)*** | | |
|  | Which year did it occur? | **B.1** |
|  | Which frequency band (s)? | **B.2** |
|  | Which country (ies) /operator(s) with? | **B.3** |
|  | Was this experience successful? | **B.4** |
|  | From Which agreement(s) do you have got idea(s)? | **B.5** |
|  | What noteworthy point(s) is (are) that you think has (have) made your agreement a special one in comparison with other ones? | **B.6** |
|  | If your agreement was not successful, what reasons do you have? | **B.7** |
|  | What obstacles and difficulties do you have face to make your agreement with another country (ies)? | **B.8** |
| ***If no(Follow C.1-C3)*** | | |
|  | Why? | **C.1** |
|  | Didn’t you need to arrange an agreement for your borders? | **C.2** |
|  | Haven’t you been able despite of your need? | **C.3** |
| More dense together and lower border  Extended border area  Long border  **Kind of:**  sea  jungle  mountain  complex of these | type of border | **D** |
|  | Which frequency bands does your country need to arrange an agreement for? | **E** |
|  | Which services does your country need to arrange an agreement for? | **F** |
|  | What objections do you suggest to discus for this working party group? | **G** |
| ***Mobile*** | | |
|  | Technology (GSM/EDGE/UMTS/WCDMA/..….) | **H.1** |
|  | Number of Mobile Operators of each Generation | **H.2** |
|  | Name of Mobile Operators of each Generation | **H.3** |
|  | Frequency band of each Generation | **H.4** |

**Annex 2**

**A mutual/bilateral agreement between country A, country B and ...on GSM,EGSM,UMTS and ... Frequencies bands**

This arrangement between the country A, country B and …, herein referred to as the Administrations, cover the establishment and operation of cellular networks operating in the GSM, EGSM,UMTS and … [X MHz] along the country A, country B and … borders.

**Section one**

**Scope and technical criteria**

1. **Scope**
2. This Agreement is subject to review at any time at the request of either Administration.
3. Special coordination Agreement may be initiated under this interim Agreement by either Administration and implemented subject to approval of both/ more Administrations.
4. This Agreement shall in no way affect the administrations’ rights and obligations of the two/multi sides arising from the constitution and convention of the ITU, the Administrative regulations and agreements concluded within the framework of the ITU as well as any other agreements.
5. Both/multi sides shall endeavor to reduce the cross border range of harmful interference caused by their stations and make all efforts for minimizing the extension of all their GSM, EGSM, UMTS networks’ service area into the territory of another side as quantified in this Agreement.
6. Both/multi sides shall take all appropriate actions to put into effect the provision of this Agreement after the signature of the Agreement. This Agreement remains in force for [X] years.
7. If each side wishes to terminate this Agreement, it shall inform through an official letter to the other(s) side(s). Any administration may withdraw from the Agreement by the end of a calendar month by giving notice of its intention at least [X] months before.
8. Both/multi sides may upon the expiration of this time period, its validity renewed for another [one] year.
9. Name of responsible for implementation of this Agreement and they shall take all appropriate action to ensure that their GSM, EGSM, UMTS networks completely comply with all contents of this Agreement.
10. Both/multi sides introduced their competent contact persons.
11. This Agreement was drawn up in English in [two] identical copies, one copy for [each Party].
12. This Agreement signed in [name of country] on [Date of signed].
13. **Technical criteria**

As following mentioned criteria cover the propagation by the BTSs in the coordination zone and all the BTSs far away from the border and behind the coordination zone.

1. This Agreement covers frequency bands of GSM, EGSM, UMTS and … networks based on the preferential frequency concern to how do the Administration to decide about dividing frequency band and channel number between two/ multi countries.
2. Coordination zone is defined as the area adjacent to the border area extending a distance of [X km] within each country.
3. Both/ multi sides agreed to use the GSM, EGSM, UMTS and … frequency bands with the equitable access in the border areas and coordination zone(s).
4. In the coordination zone, the usage of frequencies shall comply with the agreed classification tables of preferential frequencies that agreed between administrations concerned and its technical and regulatory criteria (schedule relating tables for GSM, EGSM, UMTS, … bands)

**Section Two**

**Agreement to eliminate spillover**

1. **Timing to eliminate spillover**
2. The acknowledgment of receipt of the spillover correspondence and report should be sent by the concerned administration within [X] working days from the date of receiving the Spillover correspondence and Report.
3. After [X] working days from the date of acknowledgment of receipt of the spillover correspondence and Report, except if a reasonable different delay is requested by the concerned administration for not more than [X] calendar days, if spillover still not resolved and there has been no major progress to resolve spillover, the affected administration could send a letter again and requesting to resolving the spillover, including the possibility of holding bilateral/multilateral meeting.
4. In case of no acknowledgement after [X] working days from the date of sending the spillover correspondence and Report, the affected administration may send a reminder to the concerned administration.
5. **Technical report to eliminate spillover**
6. Each side shall take all necessary technical actions for minimizing the coverage area in the other side territory. The received outdoor signal level shall be limited to [X] (dBm) referenced to 200KHz bandwidth of other side network at the height[[1]](#footnote-1) of [3(m)] above the ground level on [X(km)] distance from the border for 2G networks.[[X] (dBm) could you calculated [‎10-‎11]]
7. Each side shall take all necessary technical actions for minimizing the coverage area in the other side territory. The received outdoor signal level shall be limited to [X] (dBm) referenced to 5MHz bandwidth of other side network at the height[[2]](#footnote-2) of [3(m)] above the ground level on [X(km)] distance from the border for 3G networks. [[X] (dBm) could you calculated [‎20‎10-‎11]]
8. In populated areas which are located on the border the received power of other side network shall be limited to [X] power (dBm) referenced to 200KHz bandwidth at the height of [3(m)] above the ground level on [X(km)] distance from the border for 2G networks. [[X] (dBm) could you calculated [‎10-‎11]]
9. In populated areas which are located on the border the received power of other side network shall be limited to [X] power (dBm) referenced to 200KHz bandwidth at the height of [3(m)] above the ground level on [X(km)] distance from the border for 2G networks. [[X] (dBm) could you calculated [‎10-‎11]]
10. In case of spillover, technical reports and measurement actual logfiles indicating the technical specifications of the spillover coverage and stations causing this spillover are exchanged between Regulators in both sides. If each side discovers that the other side(s) GSM power is more than the above threshold, it should duly inform the other side(s) about the matter with providing technical information based on the following:
11. BTS Identification (CGI) (MCC,MNC,LAC,CI)
12. Cell ID and ARFCN for 2G networks
13. Scrambling Code (SC) for 3G networks
14. Channel No.
15. Geographical Coordinates of field measurements (latitude, longitude)
16. Rx level (dBm)
17. Date of measurement
18. distance from border(km)
19. Images for the routs showing the spillover coverage
20. Any other necessary details

**Section Three**

**Agreement to eliminating harmful interference**

1. In case of spillover resulting in harmful interference, and use frequency belong other side, technical reports and actual measurement logfiles indicating the details of the interference and network causing this harmful interference are exchanged between Operators with copy to the corresponding administration. The technical report shall include the following details:

**Interfering stations**

1. CGI causing the harmful interference.
2. Cell ID and ARFCN for GSM (2G) networks.
3. Scrambling Code (SC) for UMTS (3G) networks.
4. Received signal level.
5. S. Geographical coordinates of field measurements.
6. Images for the routes showing the interference.
7. Any other necessary details (dates and times, etc.).

**Affected stations**

1. KPI degradation report, as well as field test report if available.
2. CGI of affected stations.
3. Cell ID and ARFCN for GSM (2G) networks.
4. Scrambling Code (SC) for UMTS (3G) networks.
5. Geographical coordinates of field measurements.
6. Any other information related to the identification of the affected stations (dates and times, etc.).
7. To resolve any harmful interference case, the following action shall be taken:
   1. Operators shall take all necessary actions to resolve any harmful interference cases as soon as possible by direct coordination.
   2. The affected operator should send a correspondence including technical Report (as described in item 1) of this Section about the harmful interference case with a copy to the corresponding administration.
   3. Acknowledgment of receipt of the harmful interference correspondence and report should be sent by the operator causing the interference within [X] days from the date of sending the correspondence and Report.
   4. After [X] calendar days from the date of Acknowledgment of receipt of the Correspondence and Report, if harmful interference still not ceased, the affected operator shall raise the issue to his administration.
   5. After having been informed by its operator that the harmful interference was not resolved between operators, the affected administration shall contact the interfering administration requesting to cease the harmful interference within [X] working days. These [X] working days count as from the date of receipt of the Correspondence and Report by the affecting administration.
   6. In case of no acknowledgement after [X] working days from the date of sending the harmful interference correspondence and Report, the affected administration may send a reminder to the concerned administration. If no acknowledgement after [X] working day from the date of sending the reminder.
   7. If after all the process mentioned above, if harmful interference has not been ceased, the affected administration may call for a bilateral/multilateral meeting to find a suitable solution for the harmful interference.
8. Each country shall use its own frequencies of tables of section one ,sub section II ,item II.3 to this agreement in the coordination zone, but if there will be a need for using of other country's mentioned frequency bands in the coordination zone of its territory, the following procedures shall be taken:
9. Using the frequency bands of other side in the coordination zone is completely subject to the agreement of concerned side and the requesting side must coordinate this usage before its using.
10. For this purpose, the requesting side has to send its request providing the technical characteristics based on follow of the related GSM, EGSM, UMTS, … stations to the requested side by an official letter.
11. Frequency(MHz)
12. Name of transmitter station
13. country of location of transmitter station
14. geographical coordinates (W/E, N)
15. effective antenna height (m){above ground level and sea level}
16. antenna polarization
17. antenna azimuth (deg)
18. directivity in antenna systems or antenna gain (dBi)
19. effective radiated power (dBW){ERP}
20. expected coverage zone or radius (km)
21. date of entry into service (month, year).
22. Mechanical and electrical tilt of antenna
23. Allocated carriers per sector
24. Antenna Pattern
25. Effective antenna height in 10 degree interval
26. CGI (Cell Global Identity)
27. The requested side has to send back an acknowledge receipt within [X] days. If within the [X] days of sending the letter, the acknowledge receipt is not received by the proposing side, the matter should be officially followed up.
28. Within [X] days after receiving the initial letter, requested side shall also inform the other side about its decision in this regard whether or not they agree with this frequency using. The agreement for this purpose could be conditional or for a specific time period.
29. After [X] days of sending the initial letter, if no response is received, the requesting side may duly request the other side to announce its decision.
30. If after [X] days of sending the second letter (referred to in section three ,item I.3.5) no response is received by the requesting side, it is deemed that the other side agree with this frequency usage and the requesting side can use the frequencies mentioned in its related letter.

**Section Four**

**Drive test’s agreement**

When drive tests are carried out in the border areas between the two countries to measure the harmful interference or over spilling 2G/3G network signal, the following guidelines should be adhered to:

1. TEMS (Test Mobile System) and any other system should be used in the drive tests.
2. Idle mode shall be used in the survey operations.
3. Results of the drive tests shall be analyzed based on the technical criteria set out in section Two.
4. The measurements should be in such statistics and quantity to reflect an experience of permanent spillover or harmful interference at least 50 samples for each CGI.

**Section Five**

**Correspondence follow-up and point of contact**

1. All correspondences shall be sent between the focal points, from operators or administrations as the case maybe, via a fax and/or email including scanned copy of correspondence and reports.
2. Administrations shall notify immediately any change to the other administrations in the list of the focal points.

|  |  |
| --- | --- |
| **For country A** | **For country B** |
| **Name and surname**  Designation  **Address:**  **Tel:**  **Fax:**  **E-mail:** | **Name and surname**  Designation  **Address:**  **Tel:**  **Fax:**  **E-mail:** |
|  |  |

**Section Five**

**Signature**

|  |  |
| --- | --- |
| On Behalf of the Administration  of the Country A:  **Name and surname**  Designation  Occupation  *If needed signature two more person* | On Behalf of the Administration  of the Country B:  **Name and surname**  Designation  Occupation |

**Name and surname**

Designation

Occupation

1. ***Effective antenna height***

   The effective antenna height used to determine interfering field strength is defined as its height in meters over the average level of the ground between distances of 3 and 15 km from the base station/transmitting antenna in the direction of the mobile/receiving antenna. The evaluation of the average height of the terrain may be subject to agreement between administrations. [↑](#footnote-ref-1)
2. ***Effective antenna height***

   The effective antenna height used to determine interfering field strength is defined as its height in meters over the average level of the ground between distances of 3 and 15 km from the base station/transmitting antenna in the direction of the mobile/receiving antenna. The evaluation of the average height of the terrain may be subject to agreement between administrations. [↑](#footnote-ref-2)