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| APTlogogreen3 | ASIA-PACIFIC TELECOMMUNITY | **Document:** |
| **Meeting of the SATRC Working Group on Spectrum** | **SAPVII-SPEC1/OUT-02** |
| 11 – 12 June 2019, Tehran, Islamic Republic of Iran | 12 June 2019 |

SATRC Working Group on Spectrum

**QUESTIONNAIRE FOR THE WORK ITEM ON SPECTRUM RE-FARMING**

**Section 1: Elementary Part**

**1.1 Introduction:**

With the advancement in mobile communication technologies, latest mobile broadband networks offer much higher spectrum efficiency compared with traditional GSM and CDMA (2G) systems. There is a global trend of switching off 2G Networks gradually with the increase in mobile broadband networks. Some Regulators have adopted technology neutral principles in those bands.

While implementing technology neutral approach in traditional technology specific frequency bands, refarming technology specific legacy bands, like GSM, CDMA, WiMAX etc. is a natural solution for more efficient mobile broadband coverage.

Refarming is a strategy where telecom service providers reuse their frequency resources to introduce latest radio communication technologies to improve the spectral efficiency and data throughput. For example, in 900 MHz refarming solution, the service providers free up about 5 MHz of GSM in 900 MHz band and deploy UMTS or LTE in that 5 MHz of 900 MHz Band.

Spectrum refarming requires careful planning and management to guarantee a smooth transition to mobile broadband networks. To solve this issue, this study will investigate following areas:

* Spectrum Migration Strategy
* Technical Methods to re-arrange existing traditional spectrum bands

**1.2 Objectives**

In order to seek information from SATRC Member countries, a questionnaire has been prepared to get the information about refarming and study the status in each country.

**1.3 About Your Administration**

Name of Administration :

Name of Contact Person :

Telephone Number :

Postal Address :

Email Address :

**Section 2: Questionnaire Part**

**Question 1:**

Have the bands identified by ITU for IMT services as mentioned in the Table below been adopted for IMT services in your country? If assignment is for services other than IMT services, please specify the purpose.

|  |  |  |  |
| --- | --- | --- | --- |
| **Uplink** | **Downlink** | **Duplex Mode** | **Purpose** |
| 824 MHz – 849 MHz | 869 MHz – 894 MHz | FDD |  |
| 880 MHz – 915 MHz | 925 MHz – 960 MHz | FDD |  |
| 832 MHz – 862 MHz | 791 MHz – 821 MHz | FDD |  |
| 703 MHz – 748 MHz | 758 MHz – 803 MHz | FDD |  |
| 663 MHz – 698 MHz | 617 MHz – 652 MHz | FDD |  |
| 1920 MHz – 1980 MHz | 2110 MHz – 2170 MHz | FDD |  |
| 1850 MHz – 1910 MHz | 1930 MHz – 1990 MHz | FDD |  |
| 1710 MHz – 1785 MHz | 1805 MHz – 1880 MHz | FDD |  |
| 2500 MHz – 2570 MHz | 2620 MHz – 2690 MHz | FDD |  |
| 2570 MHz – 2620 MHz | | TDD |  |
| 2496 MHz – 2690 MHz | | TDD |  |
| 1432 MHz – 1517 MHz | | TDD |  |
| 1427 MHz – 1432 MHz | | TDD |  |
| 1710 MHz – 1780 MHz | 2110 MHz – 2200 MHz | FDD |  |
| 1695 MHz – 1710 MHz | 1995 MHz – 2020 MHz | FDD |  |
| 1427 MHz – 1470 MHz | 1475 MHz – 1518 MHz | FDD |  |
| N/A | 1432 MHz – 1517 MHz | SDL |  |
| N/A | 1427 MHz – 1432 MHz | SDL |  |
| 3300 MHz – 4200 MHz | | TDD |  |
| 3300 MHz – 3800 MHz | | TDD |  |
| 4400 MHz – 5000 MHz | | TDD |  |
| 1710 MHz – 1785 MHz | N/A | SUL |  |
| 1920 MHz – 1980 MHz | N/A | SUL |  |
| 26.5 GHz – 29.5 GHz | | TDD |  |
| 24.25 GHz – 27.5 GHz | | TDD |  |
| 37 GHz – 40 GHz | | TDD |  |

**Question 2:**

Details of the bands allocated for IMT services in your country.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Band | Uplink Frequency | Downlink frequency | Band Plan | Which technology is currently deployed using this band |
|  |  |  |  |  |
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**Question 3:**

(a) Has the spectrum assignment linked with service/ technology restrictions in mobile spectrum usage rights? If yes, please answer as per the Table below

|  |  |  |  |
| --- | --- | --- | --- |
| Band | Service/technology restricted | Is restriction still there? If no, provide the year till which restriction existed. | What regulatory procedure was adopted to remove this restriction, including any financial obligations on the licensed operators? |
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(b) If the country is already following a technology neutral regime and operators are following the natural up-gradation paths to provide Mobile Broadband in their own assigned spectrum, what regulatory procedures were adopted like QoS Enhancements, Monitoring compliance, Interference related issues OR any other major or monetary obligations?

(c) If operators are awarded spectrum through Open auction, are they permitted to adopt any technology, which becomes available during the tenure of their license?

**Question 4:**

In the next 5 years, are there any plans for allocating new bands for IMT services (including 5G) in your country? Please specify, if any.

**Question 5:**

Is currently 3.5 GHz spectrum awarded in your country for BWA services?

**Question 6:**

Is spectrum assignment and service license bundled in your country?

**Question 7:**

With the auction of more cellular spectrum in recent years, the existing operators are issued with a new license every time OR only spectrum with some additional Terms and Conditions like QoS and Roll out (coverage) are added in the license?

**Question 8:**

What is the method of Spectrum Assignment in your country? Please explain. (administratively/ auction/ any other method)

**Question 9:**

What is the duration of Spectrum Assignment to the mobile operators?

**Question 10:**

Is spectrum sharing and trading allowed in your country?

1. If yes, provide the guidelines.
2. If no, are there any plans in the near future?
3. Is active infrastructure sharing allowed (with or without access spectrum sharing )?

**Question 11:**

Is spectrum allocated on PAN-country basis or regional basis to the mobile operators?

1. If PAN-country basis, how many TSPs are there and how much spectrum each TSP holds.
2. If regional basis, please complete the table below:

|  |  |  |
| --- | --- | --- |
| Region | No. of mobile operators in the Region | Spectrum holding (in MHz) operator-wise |
|  |  |  |
|  |  |  |
|  |  |  |

**Question 12:**

Do you have any policy/regulation regarding spectrum re-farming? If yes, please describe.

**Question 13:**

Has the spectrum re-farming been undertaken in your country? If yes,

1. Please specify the bands and methodology of re-farming?
2. Please specify how your country has benefitted from spectrum re-farming (within own assigned spectrum) for transitioning to Mobile Broadband?
3. How has your country benefitted from spectrum re-farming? Please specify.

**Question 14:**

Please provide any additional information on the topic, if not covered above.