

Draft

United States of America

PROPOSALS FOR THE WORK OF THE CONFERENCE

AGENDA ITEM 1.1

Introduction

In this document the United States of America makes some proposals under WRC-15 Agenda Item 1.1. It is anticipated that the United States of America will submit at a later date additional proposals including proposals for future Conferences.

Background

The largest growth in Fixed Service (FS) assignments over the past two decades was seen in the area of infrastructure support for public mobile networks, i.e. mobile backhaul, where the reported number of Point to Point (P-P) links increased by more than 24.5% per year in average between 1997 and 2010. This demand is expected to increase further with the expected growth in capacity and number of cell sites (base stations) with the introduction of 4G and future services.

Whilst new access spectrum for cellular usage will link the consumer to the cell tower all of the data needs to be “backhauled” to the core network and with the amounts of data envisaged there are only two technologies that can provide this level of capacity, fibre-optic cable and microwave. The restriction with fibre is that over some terrain, mountains ranges etc and/or dense urban areas fibre is effectively ruled out because of the cost and difficulty of laying the fibre from the cell tower to the main switching centre, thus leaving microwave as the only viable option.

Agenda item 1.1

1.1 to consider additional spectrum allocations to the mobile service on a primary basis and identification of additional frequency bands for International Mobile Telecommunications (IMT) and related regulatory provisions, to facilitate the development of terrestrial mobile broadband applications, in accordance with Resolution **233 (WRC-12)**;

ARTICLE 5**Frequency allocations**

Section IV – Table of Frequency Allocations
(See No. 2.1)

NOC USA/1/1

5 570-7 250 MHz

Allocation to services		
Region 1	Region 2	Region 3
5 925-6 700	FIXED 5.457 FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B MOBILE 5.457C 5.149 5.440 5.458	

Reasons: The fixed service bands in this frequency range are key to providing long haul infrastructure links. These links are used in addition to and/or in place of fibre to connect cell sites back to the main switching centres. In many locations these bands are becoming increasingly congested and thus sharing with other services would only increase this congestion.

Mobile backhaul is of course only one application of microwave in these bands. Many infrastructure services such as power or other utilities use long range microwave links to carry telemetry data in order to efficiently manage these networks that are critical to a nations economy.

NOC USA/1/2

15.4-18.4 GHz

Allocation to services		
Region 1	Region 2	Region 3

18.1-18.4	FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B (Earth-to-space) 5.520 MOBILE 5.519 5.521
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15.4-18.4 GHz

Allocation to services		
Region 1	Region 2	Region 3
18.4-18.6	FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B MOBILE	

Reasons: The fixed service bands in this frequency range are increasingly regarded as the “core” bands for mobile backhaul as the drive to shorter higher capacity links is being seen together with congestion in the lower frequency bands. The propagation characteristics of these higher frequencies mean shorter ranges and thus the potential for greater spectrum re-use. This makes them suitable for backhauling the ever increasing amounts of data being seen on the mobile networks.

NOC USA/1/3

34.2-40 GHz

Allocation to services		
Region 1	Region 2	Region 3
38-39.5	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Earth exploration-satellite (space-to-Earth) 5.547	

Reasons: The fixed service bands in this frequency range are becoming increasingly important in providing high capacity back haul links that will be needed to support 4G and future cellular services. These frequencies are ideally suited to the dense deployment of short range link, typically and few miles or less. This increasingly common trend in short range links is being driven by the ever increasing demand for more and more data to be delivered wirelessly to the end user, e.g. smartphones tablet computers etc.

At these frequencies the natural propagation characteristic work with the backhaul designer in that the smaller antennas and the inherent short range give rise to good spectrum reuse with visually less obtrusive antennas. In addition the bandwidth available at these higher frequencies enable the backhaul network to carry the large amounts of data needed to support new and future service offerings.