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**Information and Communication Technologies Authority
Decision of 12 January 2006 on Spectrum Allocation for
Broadband Wireless Access Services in Mauritius.**

12 January 2006

EXPLANATORY MEMORANDUM

INTRODUCTION

The Information and Communication Technologies Authority has as its function under section 18(p) of the Information and Communication Technologies Act 2001, to “*allocate frequencies and manage, review, and, where appropriate, reorganize the frequency spectrum.*” In this context the ICT Authority is issuing this Decision in order to designate the following frequency bands for the deployment of broadband wireless access systems:-

- a. 5.470 – 5.725 GHz;
- b. 5.725 – 5.850 GHz

Wireless Access systems are broadband radio systems which may be deployed either indoors or outdoors. These systems include:-

- Fixed wireless access which may be defined as “*Wireless access application in which the location of the end-user termination and the network access point to be connected to the end-user are fixed*”.
- *Mobile Wireless Access* which may be defined as “*Wireless access application in which the location of the end-user termination is mobile*”
- *Nomadic Wireless Access* which may be defined as “*Wireless access application in which the location of the end-user termination may be in different places but it must be stationary while in use*”

BACKGROUND

The ICT Authority has received several expressions of interest and requests for type approval for broadband wireless access equipment operating in different frequency bands. These requests have been received from:-

- Operators to offer broadband wireless access services to the public;
- Dealers to commercialise broadband wireless access equipment in Mauritius.

Frequency bands on which the said equipment operate include the 2.5 GHz, 3.5 GHz, and 5 GHz bands.

The ICT Authority has as one of its objects, under section 16(g) of the Information and Communication Technologies Act 2001, to “*further the advancement of technology, research and development relating to information and communication technologies through modern and effective infrastructure taking into account the convergence of information technology, media, telecommunications, and consumer electronics*”.

In this context the ICT Authority has conducted a Public Consultation exercise in order to gather the views of operators and industry stakeholders.

The Information and Communication Technologies Authority has issued a Decision on 19 May 2005 (Document Ref.: ICTA/DEC/01/2005) in order to designate the following frequency bands for the deployment of broadband wireless access systems:-

- a. 2.500 – 2.690GHz;
- b. 3.400 – 3.800 GHz;
- c. 5.150 – 5.250 GHz;
- d. 5.250 – 5.350 GHz;
- e. 40.5 – 43.5 GHz.

This decision also designated the 2.400 – 2.4835 GHz for short range Radio Local Area Networks.

Further studies were carried out by the ICT Authority to determine the technical limits for BWA systems in the 5.470 – 5.725 GHz and 5.725 – 5.850 GHz frequency band in order to share the said bands with Radiolocation services in the 5.4 – 5.9 GHz band.

The decisions presented in this document designates the 5.470 – 5.725 GHz and 5.725 – 5.850 GHz frequency bands for Broadband Wireless Access Services and specifies the technical limits for BWA systems in these bands.

**ICT Authority Decision
of 12 January 2006**

on Spectrum Allocation for Broadband Wireless Access Services in Mauritius.

(ICTA/DEC/01/2006)

The Information and Communication Technologies Authority in exercise of its statutory functions under the Information and Communication Technologies Act 2001 as amended issues the following Decision pursuant to section 17(3) combined with sections 18(p) and 16 (g) of the said Act. This decision shall come into force with immediate effect.

A. Decisions for operation in the 5.470-5.725 GHz band

The Information and Communication Technologies Authority,

considering,

- a. that the 5.470 – 5.650 GHz frequency band has been allocated in ITU Region 1 to MARITIME RADIONAVIGATION on a primary basis and radiolocation on a secondary basis;
- b. that the 5.650 – 5.725 GHz frequency band has been allocated in ITU Region 1 to RADIOLOCATION on a primary basis, to Amateur and Space research (deep space) on a secondary basis;
- c. that the 5.470-5.725 GHz frequency band has also been allocated to the mobile service except aeronautical mobile service on a primary basis for the implementation of Wireless Access Systems (WAS) including Radio Local Area Networks (RLANs) by WRC-03;
- d. that Radiolocation systems are operational in this band in Mauritius;
- e. that Wireless Access Systems may be deployed either inside or outside buildings, usually in geographically limited areas;
- f. that ITU has released Rec. ITU-R M.1652 on “*Dynamic frequency selection (DFS) in wireless access systems including radio local area networks for the purpose of protecting radiodetermination service in the 5GHz band*”;
- g. that the implementation of transmitter power control (TPC) in WAS/RLANs in the band 5.470-5.725 GHz significantly reduces the aggregate interference in this band;

DECIDES

1. that the 5.470 – 5.725 GHz frequency band shall be made available for broadband mobile Wireless Access Systems on a shared basis;

2. that the 5.470 - 5.725 GHz frequency band shall be opened for both indoor as well as outdoor use;
3. that in the band 5.470-5.725 GHz, stations shall be restricted to a maximum transmitter power of 250mW with a maximum mean e.i.r.p of 1W and a maximum mean e.i.r.p. density of 50mW/MHz in any 1 MHz band;
4. that the use of dynamic frequency selection (DFS) as well as transmitter power control (TPC) shall be required for the 5.470-5.725 GHz frequency band;
5. that in accordance with Rec. ITU-R M.1652, the DFS mechanism shall be able to detect interference signals above a minimum DFS detection threshold of -62 dBm for devices with a maximum e.i.r.p of less than 200 mW and -64 dBm for devices with a maximum e.i.r.p of 200 mW to 1 W averaged over 1 μ s. These thresholds represent the levels at the output of the antenna and are normalized to 0dBi antenna gain. For devices with a higher gain the threshold may be increased by 1 dB for each dB of antenna gain;
6. that in accordance with Resolution 229 of WRC-03, TPC employed shall provide, on average, a mitigation factor of at least 3dB on the maximum average output power of the systems;
7. that an apparatus licensing regime shall be applicable;
6. that the standards to which equipment operating in this band shall comply are detailed at Annex 1.

B. Decisions for operation in the 5.725 – 5.850 GHz band

The Information and Communication Technologies Authority,

considering,

- a. that the 5.725 – 5.830 GHz frequency band has been allocated in ITU Region 1 to FIXED-SATELLITE (Earth-to-space) and RADIOLOCATION on a primary basis and to Amateur service on a secondary basis;
- b. that the 5.830 – 5.850 frequency band has been allocated in ITU Region 1 to FIXED-SATELLITE (Earth-to-space) and RADIOLOCATION on a primary basis and Amateur and Amateur-satellite (space-to-Earth) on a secondary basis;
- c. that Radiolocation and Radio Amateur systems are operational in this band in Mauritius;
- d. that the 5.725 – 5.875 GHz frequency band has been designated for industrial, scientific and medical (ISM) applications by the International Telecommunications Union (ITU) ;

- e. that the Electronic Communications Committee (ECC) has released ECC Report 68 on “*Compatibility Studies in the band 5725 – 5875 MHz between Fixed Wireless Access (FWA) Systems and other Systems*” in June 2005;
- f. that radiocommunication services operating in this band must accept interference from these ISM applications;
- g. that this band is being considered for the operation of equipment which complies with IEEE 802.16 (WIMAX) standard;
- h. that satellite services operate in this band and adjacent bands;

DECIDES

- 1. that the 5.725 – 5.850 GHz frequency band shall be opened for both point-to-point and point-to-multipoint applications on a shared basis;
- 2. that the e.i.r.p for the 5.725 – 5.850 GHz frequency band shall be limited to 4W (36dBm) and Power Spectral density of 200mW/MHz for both point-to-point and point-to-multipoint operation;
- 3. that the channel bandwidths for the 5.725 – 5.850 GHz frequency band shall be of 5 MHz, 10 MHz and 20 MHz;
- 4. that systems operating in this band should employ both Dynamic frequency selection (DFS) and Transmit Power Control (TPC);
- 5. that, in accordance with recommendations of the ECC Report 68, the DFS Detection Threshold level (dBm) shall be calculated using the following equation, where *Max Tx e.i.r.p* is the FWA station e.i.r.p limit and *ChS* is the FWA channel bandwidths:-

$$DFS\ Detection\ Threshold\ (dBm) = -69 + 23 - (Max\ Tx\ e.i.r.p\ (dBm) - 10 * \log ChS(MHz))$$

- 6. that TPC employed shall give an average reduction in transmitted power of at least 5 dB as recommended in ECC Report 68;
- 7. that an apparatus licensing regime shall be applicable;

ANNEX 1

Frequency Band	Applicable Standards		
	RF Spectrum	Electromagnetic Compatibility	Safety
5.470 – 5.725 GHz	ETSI EN 300 893	EN 301 489-1 EN 301 489-17	ISO/IEC 60950 EN 60950