



## ICT Decision 2008-1

Grand Cayman, 6<sup>th</sup> March 2008

### **Decision and Further Process – Policy for the Management and Allocation of Spectrum in the Cayman Islands**

#### *Summary*

*Following a public consultation, the Authority had determined that:*

- a. a Class Licence is appropriate for the 5.8 GHz band under similar conditions as are contained in the United States Federal Communications Commission Rules s15.247.*
- b. exclusive assignment of spectrum for point-to-multipoint systems is often appropriate. Future applications for exclusive spectrum will be assessed case-by-case, the primary determining factor being the use to which the spectrum will be put. There is no reason to change current assignment policy with respect to point-to-point systems.*
- c. existing spectrum assigned on a shared basis and used for point-to-multipoint systems will be progressively migrated to exclusive assignment.*
- d. the Authority will publish a Spectrum Map that shows the allocation and assignment of all spectrum in the Cayman Islands.*
- e. the Authority will determine a standard terminology and content for Annex 4 to existing licences and, in conjunction with each licensee, amend licences accordingly.*
- f. the Authority will establish a Spectrum Management Working Group. All licensees will be invited to participate. This Working Group will be tasked with assisting the Authority with the determination of appropriate channelling plans for spectrum bands that are to be assigned exclusively, the mapping of existing assignments to those channels (as far as is possible) and advising the Authority on spectrum management issues on an ongoing basis.*

(Note: This summary is provided for the convenience of the reader and does not constitute part of the Decision. For details and reasons for the conclusions, the reader is referred to the various parts of the Decision.)

## Introduction

### *Legislative Framework*

2. The Information and Communications Technology Authority's ("the Authority's") responsibility for the management of the electromagnetic spectrum in the Cayman Islands stems from section 9 of the Information and Communications Technology Authority Law (2006 Revision) ("the Law") which states:
  - "9. (1) Subject to this Law, the Authority has power to do all things necessary or convenient to be done for or in connection with the performance of its functions under this Law.
  - (2) For the purposes of this section, the Authority shall -
    - (a) allocate the electromagnetic spectrum for facilities and specified services within the Islands, or between the Islands and elsewhere;
    - (b) determine methods for assigning the electromagnetic spectrum;
    - (c) issue licences authorising the use of specified portions of the electromagnetic spectrum, including those used on any ship, aircraft, vessel or other floating or airborne contrivance or spacecraft registered in the Islands; and
    - (d) institute procedures for ensuring the compliance by licensees with any obligations regarding the use of the electromagnetic spectrum, imposed by or under the licence, this Law or any regulations made hereunder."
3. Matters relating to interference and equipment standardisation are prescribed in the Information and Communication Technology Authority (Interference and Equipment Standardisation) Regulations, 2004.
4. The United Kingdom is a signatory to the ITU Telecommunications Convention, which gives international treaty status to the associated International Radio Regulations. These obligations have been extended to the Cayman Islands.

### *Current Allocation Policy*

5. The Authority currently allocates spectrum in the manner indicated in Table 1 below.

a.	Class Licence (Shared)	Short-range, low power approved devices (e.g. cordless telephone handsets, electronic car locks)
b.	Class Licence (Shared)	Approved devices operating in the 2.4 and 5.2 GHz bands (See also Note 1 below)
c.	Individual Licences (Shared)	Shared frequencies in accordance with International Radio Regulations: <ol style="list-style-type: none"><li>1. Aeronautical Radio Stations</li><li>2. Maritime Radio Stations</li><li>3. Amateur Radio</li></ol>

		4. Land Mobile Radio
d.	Exclusive Allocation	<ol style="list-style-type: none"> <li>1. FM Broadcasting Stations (87 to 108 MHz)</li> <li>2. Public Service Television (548 to 572 MHz)</li> <li>3. Mobile Telephony (800, 900, 1800 and 1900 MHz bands)</li> <li>4. Government Public Service and Public Safety Systems (Various)</li> </ol>
e.	Non-Exclusive (Shared) Allocation	All spectrum not included in (a) to (d) above

Note 1: It should be noted that in the Cayman Islands the 5.8 GHz band falls under Category (e) Non-exclusive. This is different from the position in the USA.

**Table 1: Spectrum Allocation Methods**

6. When allocating spectrum, the Authority attempts to balance the following, sometimes competing, requirements:
  - To encourage the provision of quality and innovative ICT services to consumers;
  - To satisfy Licensees' spectrum requirements;
  - To ensure the effective and efficient use of spectrum, a scarce national resource; and
  - To promote sustainable competition in the ICT sector.
7. Of these requirements, ensuring the effective and efficient use of spectrum has been considered the most important. Accordingly, wherever possible, spectrum has been allocated on a non-exclusive basis. This maximises spectrum efficiency by allowing, for example, one Licensee to operate a point-to-point back-haul system in one part of the country, with another Licensee operating a similar system at the same frequency at another location. A second example is the deployment of a "canopy" system that is designed to detect and operate on unused frequencies. Licensees have been encouraged to adopt a "good neighbour" policy, making each other aware of where each intends to operate within a particular spectrum band, and ensuring that interference does not occur. The Authority also consults with existing users of a particular spectrum band before authorising an additional user.

## Process

8. Following a request from a Licensee that spectrum, currently falling under category (e) of Table 1, be allocated on an exclusive basis, the Authority launched a public consultation (CD 2007-1) to obtain the views of the public in general and the industry in particular. The Authority stated that the policy for spectrum currently

falling under items (c) and (d) of Table 1 would not be changed and that these items therefore were excluded from the consultation.

9. The Authority sought comment in particular on the following questions:
  - a. Should the 5.8 GHz Band be covered by a Class Licence, making it available for use by anyone (subject to the normal interference and equipment standardization regulations)?
  - b. Should spectrum, currently allocated on a non-exclusive basis under (e) of Table 1, be allocated on an exclusive basis?
  - c. If so, should this apply only to selected bands or all bands?
  - d. Should the decision on whether to allocate spectrum on an exclusive or non-exclusive basis depend upon intended usage or technology rather than spectrum band?
  - e. If so, what type of usage or technology warrants an exclusive allocation?
  - f. Do you believe that the Authority should publish a “spectrum map”?
  - g. If so, what do you understand by the term “spectrum map”? Is it a list of uses to which spectrum band may be put, or is it a list of allocated and available spectrum? (It should be noted that details of allocated spectrum is already available from an examination of Licences which are published on the Authority’s web site.)
10. The public consultation was launched on 27<sup>th</sup> April 2007. Initially the closing date was 27<sup>th</sup> May 2007. However, as only one response had been received by that date, a further call for comments was issued with a revised closing date of 21 July 2007.

## **Comments Received**

### *Cable & Wireless*

11. Cable & Wireless (Cayman Islands) Ltd (“C&W”) supports the suggestion that the 5.8 GHz band be covered by a Class Licence. It notes however that as new technologies such as WiMax continue to develop, it may become necessary to assign part of this band for exclusive use.
12. It is of the view that whether spectrum should be allocated exclusively or non-exclusively will mainly depend on the type of application that is expected to be used. Of particular concern is the need to assign exclusive spectrum for point to multi-point applications such as WiMAX. Any such exclusive licensing arrangement should not be allowed to penalise existing licensees.
13. C&W also supports the publication of a “spectrum map” that shows the uses for specific spectrum bands, as well as information on allocated and available spectrum.

### ***Digicel***

14. Digicel (Cayman) Ltd (“Digicel”) agrees that the 5.8 GHz band should be covered by a Class licence as long as the equipment operating in this band complies with the technical and operational limits established by the Authority.
15. It generally supports the allocation of spectrum on an exclusive basis provided:
  - Arrangements fully respect the informal agreements which are currently in place.
  - The future allocation of spectrum is done on the basis of fair and non-discriminatory criteria.
  - Licensees must be able to respond to their users’ increased demand for services.
16. In particular, it believes that spectrum used for point to multipoint systems should be allocated exclusively.
17. Digicel points out that under the present “good neighbour” policy, some licensees use more than one block of spectrum within a particular spectrum band. It is of the view that such licensees should not automatically be granted this spectrum on an exclusive basis. The allocation criteria used should ensure that spectrum is allocated to those operators who will make best use of this scarce resource. It also recommends that a dedicated forum be established to work out the details of how a move to exclusive allocation of spectrum should best be implemented.
18. Finally Digicel believes that the telecommunications sector would benefit if the Authority were to publish a “spectrum map” highlighting the operating frequencies and technologies associated with each licensee.

### ***Infinity Broadband***

19. Infinity Broadband (“Infinity”) recommends that that the 5.8 GHz band either be allocated as a Class Licence or that it be designated "Unlicensed". It points out that the 902 to 928 MHz, 2.4 GHz and 5.8 GHz bands are all allocated by the ITU as Industrial, Scientific and Medical (ISM) bands. Communications devices operating in these bands must therefore tolerate interference from ISM equipment. These bands therefore are typically given over to uses intended for unlicensed operation since unlicensed devices tend to be tolerant of harmful interference. It recommends including the 902 to 928 MHz band in the unlicensed category as it is used for a wide variety of consumer electronics in the Cayman Islands.
20. Infinity does not consider that the present "good neighbour" policy is satisfactory and that a more proactive approach by the Authority is required. It requests that the Authority set out its spectrum policy as it is difficult to comment on spectrum allocation without knowing what the intended service is.
21. Infinity believes that the Authority should make available a Spectrum Map as well as other pertinent information related to spectrum allocation, including but not limited to policies, procedures, Table of Allocations, and a searchable database of licensees' technical details that can be accessed through the public Internet.

### ***TeleCayman Limited***

22. TeleCayman Limited (“TeleCayman”) is strongly of the opinion that spectrum within the 5.8 GHz band should be assigned only to ICT licensees and on an exclusive basis. It believes that the same approach should be taken to the 3.5, 7, 10.5 and 23 GHz bands. It states that exclusivity should be based not on intended use or technology, but on the spectrum band itself. Manufacturers have developed equipment that provide a multiplicity of services in all available bands, so it is impossible to assign exclusivity purely on intended use.
23. TeleCayman also believes that the ICTA should develop a spectrum database showing all users of spectrum whether they are licensed or unlicensed entities. This will allow licensed entities and the industry as a whole to better operate under the “good neighbour policy”. It is very important that all users of the spectrum band are aware of the spectrum that is in use as well as the entities using them. In addition to the spectrum map, the ICTA should regulate the power output of the equipment to ensure that the power levels are within an acceptable level so as not to create interference problems in adjacent bands.

### ***United Telecommunications Services Limited***

24. United Telecommunications Services Limited (“UNITEL”) supports covering the 5.8 GHz band with a Class Licence. It points out that equipment that is designed for unlicensed operation in that band is readily available and that licensing would be difficult to enforce. It believes that spectrum policy should promote:
  - More efficient and creative use of the spectrum
  - The enabling of cost effective and innovative technologies, and
  - Competition and the creation of new business opportunities in the delivery of wireless technologies and services.
25. It also proposes that the following conditions be imposed by the 5.8 GHz Class Licence:
  - Low powered radio communication devices may be operated in the band on a no interference, no-protection basis. They may not cause radio interference and cannot claim protection from interference.
  - No licence fee will be required for operation in licence-exempt spectrum.
  - Radio Systems may operate within the band 5.725- 5.850 GHz. with a maximum power level of 0.75 Watts and a minimum bandwidth of 1 MHz.
  - Radio Systems with design specifications which conform to the technical conditions as stated herein, will not be the subject of individual licences, but must satisfy the requirements for type approval as established by the ICTA.
26. With respect to other frequency bands, UNITEL does not believe that spectrum should be assigned on an exclusive basis unless warranted by the technology to be deployed and the use to which it is put. An example of where exclusivity might be appropriate would be the deployment of WiMax in the 3.5 GHz band.

27. UNITEL strongly supports the publication of a Spectrum Map which details both uses to which the spectrum band may be put and its current assignment.

### ***WestTel Limited***

28. WestTel Limited (“WestTel”) makes no comment on the 5.8 GHz band and limits its remarks to spectrum used for wireless broadband services. It believes that the present allocation policy is inappropriate for such services and it recommends that the Authority define a new exclusive allocation policy. The service definition should encompass all current and emerging broadband wireless technologies, and should not limit the frequency ranges to be used. Neither the industry nor foreign regulatory bodies have standardized on the frequencies to be allocated to these emerging technologies. WestTel believes that industry should be consulted prior to the final allocation of exclusive frequency bands, and that there should be provisions in place to ensure that allocated frequencies are in fact being used by the carrier.
29. The Authority should maintain a spectrum map to assist with the tracking and management of frequency allocations. Whether or not this map is made available publicly is of no concern to WestTel.

### ***Summary***

30. Licensees that submitted comments are almost all of the view that the present Spectrum Management Policy should be modified so that additional spectrum can be assigned exclusively. They believe that decision on whether or not exclusivity is granted should be based upon the use to which the spectrum is to be put. Licensees consider that point-to-multipoint systems, such as WiMax and Advanced Wireless Systems (AWS), warranted exclusivity. The exception is TeleCayman who advocate exclusivity being granted to all assignments made within the 3.5, 7, 10.5 and 23 GHz bands, irrespective of use.
31. Most licensees agree that the 5.8 GHz band, which is designated for Industrial, Scientific and Medical use by the ITU, should be subject to a class licence. TeleCayman disagrees.
32. All licensees would like the Authority to publish a spectrum map showing both the allocation and assignment of spectrum.

### **Licence Provisions**

33. Clause 2.2 of the C&W Licence states:  
*“In accordance with Section 23 of the ICTA Law, this Licence authorises the use by the Licensee of the Authorized Frequencies listed in Annex 4 for the Term listed in Annex 1, on an exclusive or non-exclusive basis as indicated in Annex 4. The Licensee shall pay an annual fee prescribed by the Authority for the use of the Authorized Frequencies.”*

34. All other Licences have an identical clause, except for the addition of the following sentence:
- “The Authority retains ownership of the Authorized Frequencies, and the spectrum inherent thereto, and the Licensee agrees that it will abide by any and all Authorized Frequency relocation or diminution as required by the Authority.”*
35. Clause 3.1 of Annex 2 to the C&W Licence states:
- “Notwithstanding Clause 2.2 (sic – should be 3.2), the Licensee shall pay an annual Authorised Frequency Fee not exceeding \$90 per radio transmitter per year for the first five years following the Licence Commencement Date.”*
36. This wording was subsequently improved and clarified in all other Licences which state:
- “The Licensee shall pay an annual Authorised Frequency Fee. For the five years following 10 July 2003 this fee shall not exceed Ninety Cayman Islands Dollars (CI\$90) per radio transmitter per year.”*
37. Section 3.2 of Annex 2 of all Licences states:
- “The Authorised Frequencies Fees are to be set on the following principles:*
- (a) The total amount collected each Regulated Financial Year for the Authorised Frequency Fees from all Licensees (including the Licensee) shall not exceed the Authority’s annual estimated cost of electromagnetic spectrum management and other related activities.*
  - (b) The Authorised Frequencies Fee shall be set to be the same from all transmitters, irrespective of the use of the transmitter or the type of spectrum used by the transmitter.”*
38. Annex 4 to each Licence details the frequencies assigned to that Licensee, together with the Type of Service for which it may be used and any relevant comments.
39. Finally, the Regulatory Principles contained in Schedule 1 to the Liberalisation Agreement between C&W, the C.I. Government and the Authority specify:
- “4. Electromagnetic spectrum shall be allocated in a fair, transparent and non-discriminatory manner.*
- 5. Where a Licensee is required by the Authority to relinquish or move spectrum assigned to it, and there is a substantial cost to the Licensee associated with this change, the Licensee will be entitled to recover such costs in a manner to be agreed with the Authority. Such costs are to be substantiated.”*

## **Authority Analysis**

### ***5.8 GHz Band***

40. The 5.8 GHz (5.725 to 5.875 GHz) band is designated for Industrial, Scientific and Medical use by the ITU. Radio communication services operating within this band must accept harmful interference which may be caused by these applications. As a consequence, most jurisdictions, including the USA, have designated this band as being either licence exempt or subject only to a class licence. As pointed out by UNITEL, equipment that is designed for unlicensed operation in this band is readily available and licensing would be difficult to enforce. Of the respondents, only TeleCayman objected to a class licence designation for this band. C&W noted that as new technologies such as WiMax continue to develop, it may become necessary to assign part of this band for exclusive use.
41. The Authority considers that a Class Licence is appropriate for the 5.8 GHz band under similar conditions as are contained in the United States Federal Communications Commission Rules s15.247. It may also be appropriate to require the registration with the Authority of devices operating at a maximum peak conducted output power in excess of 1 Watt. The Authority will work with the industry to finalise the terms of the class licence.

### ***Exclusive Assignment***

42. Until now, the Authority's policy was aimed at ensuring that spectrum management issues did not inhibit the implementation of innovative ICT services in the Cayman Islands. In addition it sought to follow ITU Zone 2 allocations (with a few local exceptions), and to ensure the effective and efficient use of spectrum. The Authority believes that this policy has been successful to date. However, it agrees with Licensees that with the imminent deployment of new point-to-multipoint technologies such as WiMax and AWS, exclusive assignment of spectrum for such systems is appropriate. The Authority is concerned not only about providing certainty for Licensees as they contemplate investment in these new technologies, but also with ensuring high quality of service for consumers. This proposed treatment of, for example, WiMax and AWS spectrum would be consistent with that for other spectrum bands used for the final, "local loop" delivery of services to consumers, such as mobile telephony in the 800, 900, 1800 and 1900 MHz bands, and MMDS television in the 2,500 and 2,600 MHz bands.
43. On the other hand, the Authority sees no need to change its basic policy with respect to point-to-point systems where exclusive assignment would not result in the efficient use of spectrum.

### ***Spectrum Map***

44. There is unanimous agreement amongst licensees that the publication of a spectrum map, showing both the allocation of spectrum to particular service type and the

assignment of spectrum to individual licensees would be helpful. The Authority concurs.

### ***Licensing Issues***

45. Spectrum in the Cayman Islands has never been auctioned or sold, but rather has been assigned on a first-come first-served basis, provided the applicant can demonstrate that:
  - a. The spectrum will be used to provide, directly or indirectly, new or enhanced ICT services which will be of benefit to the Cayman Islands.
  - b. The new or enhanced services will be commercially launched within a timescale acceptable to the Authority.
  - c. Efficient use will be made of the spectrum.
  - d. His use of the spectrum will not cause interference with the systems of other Licensees or third parties.
  - e. His use of the spectrum is consistent with the allocations recommended for ITU Zone 2.
  - f. The assignment will not adversely impact the development of competition in the ICT sector.
46. The Authority has no plans to change this procedure.
47. As part of this review, the Authority has noted that a number of anomalies exist in Annex 4 to most licences, for example:
  - a. The words used to describe the assigned frequency or frequency ranges are imprecise and inconsistent. For example, does “902-928 MHz” mean “from 902 to 928 MHz”, “902 and 928 MHz” or “transmit on 902 MHz and receive on 928 MHz”? There are many other examples. This imprecision must be removed and standard terminology used.
  - b. Assignments for point-to-point systems do not define the locations for which the spectrum is authorised.
  - c. Generally, maximum authorised transmission powers are not stated.
48. The explanation of the basis for the calculation of spectrum fees (i.e. “*The Licensee shall pay an annual Authorised Frequency Fee. For the five years following 10 July 2003 this fee shall not exceed Ninety Cayman Islands Dollars (CI\$90) per radio transmitter per year.*”) may require further clarification to remove any ambiguity.

### ***Implementation***

49. Implementation of these determinations, particularly with respect to spectrum that has already been assigned, is likely to be complex and time consuming. It will also require the input and cooperation of existing spectrum holders. The Authority will

invite spectrum holders to nominate representatives to a Spectrum Management Working Group, chaired by the Authority. In the first instance, this Working Group will be asked to assist the Authority with the determination of appropriate channelling plans for spectrum bands that are to be assigned exclusively and the mapping of existing assignments to those channels (as far as is possible). It is anticipated that a phased approach will be required. In the longer term, the Authority would welcome the ongoing advise of this Working Group on spectrum management issues.

## **Determinations**

50. The Authority determines that:
- a. a Class Licence is appropriate for the 5.8 GHz band under similar conditions as are contained in the United States Federal Communications Commission Rules s15.247.
  - b. exclusive assignment of spectrum for point-to-multipoint systems is often appropriate. Future applications for exclusive spectrum will be assessed case-by-case, the primary determining factor being the use to which the spectrum will be put. There is no reason to change current assignment policy with respect to point-to-point systems.
  - c. existing spectrum assigned on a shared basis and used for point-to-multipoint systems will be progressively migrated to exclusive assignment.
  - d. the Authority will publish a Spectrum Map that shows the allocation and assignment of all spectrum in the Cayman Islands.
  - e. the Authority will determine a standard terminology and content for Annex 4 to existing licences and, in conjunction with each licensee, amend licences accordingly.
  - f. the Authority will establish a Spectrum Management Working Group. All licensees will be invited to participate. This Working Group will be tasked with assisting the Authority with the determination of appropriate channelling plans for spectrum bands that are to be assigned exclusively, the mapping of existing assignments to those channels (as far as is possible) and advising the Authority on spectrum management issues on an ongoing basis.

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