



**INFO-COMMUNICATIONS DEVELOPMENT AUTHORITY OF
SINGAPORE**

INFORMATION PAPER:

**FRAMEWORK FOR ASSIGNMENT OF FREQUENCIES ON NON-
INTERFERENCE AND UNPROTECTED BASIS**

8 March 2010

Important Notice

This Information Paper is for informational purposes only and should be read together with the Radio Spectrum Master Plan and the Singapore Spectrum Management Handbook. The Radio Spectrum Master Plan serves to inform the industry and interested parties on the availability of spectrum in the coming years, the technological trends in the use of spectrum and IDA's policy direction with regard to spectrum allocation and re-allocation for public communications networks. The Singapore Spectrum Management Handbook serves to provide information on Spectrum Management activities, assignment policies and the application procedures for the various radio-communication services including mobile, fixed, satellite, short-range devices and broadcasting services.

This Information Paper seeks to provide clarity in IDA's framework for assignment of frequencies under non-interference and unprotected conditions. All information contained in this Information Paper may be updated or amended at any time.

FREQUENCY COORDINATION AT BORDER AREAS

1 Radio waves propagate in space with no regard for national boundaries. In any border area between two countries, the allocation of frequency bands to new radio technologies requires close coordination between the two countries to pre-empt any harmful interference. This is particularly critical for high power and wide coverage systems. For Singapore, due to our small geographical area and close proximity to the neighbouring countries, frequency coordination is even more crucial, as it will ensure that the use of the available frequencies is optimised not just at the border areas but also the rest of the country, and that any harmful interference by foreign networks, and vice versa, is minimised.

2 In Singapore, frequency coordination with neighbouring countries is achieved via several fora, including the Frequency Assignment Committee of Singapore, Malaysia and Brunei (FACSMAB), and through border communication coordination meetings between Singapore and Indonesia as well as trilateral coordination meetings involving Singapore, Malaysia and Indonesia.

FREQUENCY ALLOCATION IN BORDER AREAS

3 Frequency coordination agreements with neighbouring countries may sometimes limit the amount of spectrum that is available for assignment by IDA in Singapore. This is because different countries have different needs and their own unique considerations. Therefore it may not always be possible to agree on the adoption of a common harmonised band plan. In such cases, the regulators will seek to achieve an effective and equitable allocation of frequencies by assigning parts of the frequency band for priority access by different countries in the border areas. This means that Singapore operators operating in the Singapore-assigned frequencies will have priority over the use of these frequencies and their networks operating in those frequencies would be protected from interference from foreign networks operating at the border areas. Correspondingly, those frequencies that have not been assigned for priority access by Singapore operators (“constrained” frequencies) would be susceptible to frequency interference to and from foreign networks at the border areas. This was the case with the 2.3 GHz and 2.5 GHz bands where half the band was assigned for Singapore’s priority access and subsequently made available by IDA for assignment at the 2005 Wireless Broadband Access (WBA) Spectrum Right Auction.

4 Notwithstanding that parts of the frequency bands may have been coordinated for priority access by neighbouring countries at the border areas, it is still within IDA’s prerogative to assign these frequency spectrum to interested operators. However, Singapore operators must be prepared to operate the networks on the understanding that their networks will not be protected from any interference from foreign networks. In addition, such frequency assignment will be accompanied with more stringent conditions to ensure that Singapore operators do not interfere with the networks of foreign operators at the border areas. In other words, the frequency assignment is permitted under a non-interference and unprotected basis. IDA frequently assigns use of these frequencies for short term trials and special events.

FRAMEWORK FOR FREQUENCY ASSIGNMENT ON NON-INTERFERENCE, UNPROTECTED BASIS FOR COMMERCIAL USE TO PROVIDE SERVICES

5 As the agency responsible for the allocation and management of radio frequency in Singapore, IDA has the responsibility to ensure that our scarce spectrum resource is utilised efficiently. As such, where there is industry demand for use of these “constrained” frequencies to provide services in Singapore on a commercial basis, IDA is prepared to consider making available some or all of them to Singapore operators for commercial use on an annual renewal basis subject to the following conditions which IDA may amend at any time:

- a) The use of the frequencies is on a non-interference and unprotected basis;
- b) The Operator acknowledges that it is fully aware that its network may be subject to frequency interference from border area networks;
- c) There will be no recourse from/to IDA in the event that the Operator’s network is being interfered with;
- d) The Operator shall not cause interference to other radio-communication networks and/or services;
- e) The Operator shall coordinate with border area network operators and take all appropriate measures to resolve interference problems if they occur;
- f) IDA reserves the right to require the Operator to suspend and/or cease operations in the event of interference and the Operator shall comply without delay;
- g) IDA reserves the right to allow the shared use of the frequency band with another operator for short term usage during major events and/or to require the Operator to suspend and/or cease operations during events;
- h) The use of the frequencies is on an annual renewal basis, and there is no commitment that IDA will renew the use of the frequencies;
- i) The Operator is responsible for managing its customers and ensuring the smooth migration of its service in the event IDA does not renew the use of the frequencies or withdraws the frequencies; and
- j) Any other conditions that IDA may impose in relation to the said frequencies.

6 Where IDA decides to make available the “constrained” frequencies on annual renewal basis to Singapore operators for commercial use to provide services in Singapore, IDA will inform the industry that the frequencies would be available with effect from a specific date. Thereafter, the frequencies will be assigned administratively on a first-come first-served basis.

7 Singapore operators interested in applying for use of the “constrained” frequencies to provide commercial service in Singapore should submit their proposal to IDA with the following information:

- a) Details of the applicant including its organisational structure and its financial capability and strength;
- b) Details of the applicant’s proposed use of the “constrained” frequencies including the services it intends to provide and the timing as well as its network rollout plan;

- c) Details of the applicant's track record and technical experience and capability in the relevant technical areas;
- d) Details of the applicant's plans to prevent interference to foreign networks in border areas and its ability to coordinate with foreign network operators to resolve interference problems if they occur; and
- e) Any other relevant information which IDA may require to assist IDA in coming to a decision.

8 In the event of competing demand for the frequencies, IDA will take into account, among other things, the following criteria in deciding who to assign the frequencies:

- a) rollout commitments of the applicant such as the scale and scope of the network rollout;
- b) credibility of the applicant including the financial and technical capability of the applicant to operate a telecommunication system for the provision of telecommunication services and to coordinate with foreign network operators in the border areas;
- c) public interest consideration; and
- d) all or any facts, circumstances or matters which IDA considers to be relevant.

9 Applicants who are granted use of the "constrained" frequencies will be required to apply for and obtain the relevant radio-communication network licence to install and operate the radio-communication equipment in relation to the use of the frequencies. For the avoidance of doubt, applicants shall also be required to comply with the licence conditions associated with such licence.