MALAYSIAN COMMUNICATIONS AND MULTIMEDIA COMMISSION

MANDATORY STANDARD ON THE INTERNATIONAL MOBILE TELECOMMUNICATIONS 2000 (IMT-2000) SYSTEM IN MALAYSIA

CONSULTATION PAPER

May 2, 2002

Preface

On 11 December 2001, the Minister of Energy, Communications and Multimedia ("the Minister") directed the Commission to determine the mandatory standards on International Mobile Telecommunications 2000 ("IMT2000") Terrestrial Component.

According to the Minister's direction, the mandatory standard for IMT 2000 should be:

(a) Based on IMT 2000 Code Division Multiple Access Direct Spread and IMT 2000 Code Division Multiple Access Time Division Duplex;

(b) On specifications of the mandatory standards, reference to be made to 3GPP documents from 1 series, 3 series, 4 series, 5 series, 8 series and 21 series until 35 series

The Commission is hereby holding a Public Inquiry to determine the standards on IMT 2000 Terrestrial Component and invites members of the public to participate in this inquiry by making written submissions on any matter they consider relevant to the inquiry.

Written submissions should be provided to the Commission by **15 June 2002** and addressed to:

The Chairman
Malaysian Communications and Multimedia Commission
Level 11, Menara Dato 'Onn
Putra World Trade Centre
45, Jalan Tun Ismail
50480 Kuala Lumpur
Attention: IMT 2000
(Encik Mohd Ali Hanafiah)
Tel. 03-4047 7000 Ext. 7147
Fax:03-2694 0908
Email: ali@cmc.gov.my

As this is a public inquiry, the Commission may make extracts or entire submissions available for others to read. Commercially sensitive material, will not be made publicly available, should be provided under separate cover and clearly marked "**COMMERCIAL IN CONFIDENCE**".

The Commission envisages preparing its report setting out the Commissions 'findings by **15 July 2002** and the period of the inquiry will therefore be up to the time when the report is prepared.

The participants are invited to comment on any matter they consider relevant to the inquiry, including proposing or suggesting amendments or variations to the standard proposed in this paper.

Participants are encouraged to support their comments with reasons and where appropriate provide or refer to evidence or other relevant information in support of the comments.

For further information regarding this inquiry, please direct your inquiries to:

The Chairman
Malaysian Communications and Multimedia Commission
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GLOSSARY

Act	The Communications and Multimedia Act 1998
AMPS	Advanced Mobile Phone System
CDMA	Code Division Multiplexing Access
Commission	The Malaysian Communications and Multimedia Commission
ETACS	Enhanced Total Access Communications System
GGSN	Gateway GPRS Support Node
GPRS	General Packet Radio Services
GSM	Global System for Mobile Communications
IMT 2000	International Mobile Telecommunications 2000
ITU	International Telecommunication Union
NMT	Nordic Mobile Telephone
PCU	Packet Control Unit
SGSN	Serving GPRS Support Node
TDMA	Time Division Multiplexing Access
WG6	Working Group 6

SECTION ONE : INTRODUCTION

1 On 11 December 2001, the Minister directed the Commission to determine the standards on IMT 2000 terrestrial component (Direction No. 5 of 2001, Ministerial Direction on the Standards on International Mobile Telecommunications 2000 Terrestrial Component, ' or *"the Direction"*)

2 According to the Minister's direction, the mandatory standard for IMT 2000 terrestrial component should be:

(i) Based on IMT 2000 Code Division Multiple Access Direct Spread and IMT 2000 Code Division Multiple Access Time Division Duplex;

(ii) On specifications of the mandatory standards, reference to be made to 3GPP documents from 1 series, 3 series, 4 series, 5 series, 8 series and 21 series until 35 series

3 Please refer to **Appendix 1** for a copy of the Direction.

4 The Commission is of the opinion that Malaysia needs to adopt a standard to enable nation-wide rollout of IMT-2000 services, taking into consideration of the industry experience in adopting different standards.

5 In this regard, the Commission has put significant interest in the prospects of IMT-2000 as being in the forefront in the future mobile communications technology.

6 For the purposes of determining a standard for IMT-2000 terrestrial component, the Commission, in collaboration with Working Group 6, has developed proposed mandatory standards for IMT 2000.

7 This consultation paper is structured in the following manner:

SECTION TWO sets out the legal context for a determination by the Commission the standards on IMT 2000 under the Communications and Multimedia Act 1998.

SECTION THREE provides the background to this Consultation Paper.

SECTION FOUR sets out the IMT-2000 system and standards available.

SECTION FIVE sets out the proposal and study of the Working Group 6 (WG6)

SECTION SIX sets out the basis of recommendations

SECTION SEVEN sets out the public inquiry process

SECTION EIGHT details out the Specifications of the Malaysian Standard on IMT-2000 for Terrestrial Component

SECTION TWO: LEGAL CONTEXT FOR A DETERMINATION BY THE COMMISSION THE STANDARDS ON IMT-2000 UNDER THE COMMUNICATIONS AND MULTIMEDIA ACT 1998

8 On December 11, 2001, the Minister of Energy, Communications and Multimedia had, under Sections 7 of the Act, directed the Commission to determine the standards on IMT 2000 Terrestrial Component. Section 7(1) of the Act states that:

> *"The Minister may, from time to time, issue directions to the Commission on the exercise of the Commission's powers and the performance of the Commission's functions and duties under this Act, whether of a general character or otherwise."*

9 With regard to determining a standard, the Commission is acting under the Direction specified above, to carry out its duties to determine such standard under Section 104(2) of the Act, which states that:

> *"The Commission shall determine a mandatory standard if it is subject to a direction from the Minister to determine a mandatory standard in place of a voluntary industry code".*

10 As such, the matter of mandating the standard for IMT2000 terrestrial component falls under the Commission's power to determine, as provided for in Section 55(1). Section 55(1) states that "[t] he Commission may, from time to time, determine any matter specified in this Act as being subject to the Commission's determination."

11 In carrying out its powers to determine, Section 55(3) further states that, "[n] ot withstanding subsection (1), the Commission shall not conduct an inquiry unless it is satisfied that the matter is of significant interest to either the public or to current or prospective licensees under this Act."

12 Under the powers and functions provided for by the Act, the Commission is hereby holding a public inquiry to determine a mandatory standards for IMT-2000 Terrestrial Component in Malaysia and hereby invites members of the public to participate in this inquiry by making written submissions on this matter.

13 As this is a Public Inquiry, the Commission reserves its rights to make extracts or entire submissions available for others to read. Commercially sensitive material

will not be made available, and should be provided under a separate cover and clearly marked "COMMERCIAL IN CONFIDENCE".

SECTION THREE : BACKGROUND ON MOBILE COMMUNICATIONS STANDARDS IN MALAYSIA

14 The First Generation mobile phone services started its commercial service in Malaysia with the introduction of the ATUR 450 (Automatic Telephone Using Radio) to the general public. This analog service is based on the NMT 450 (Nordic Mobile Telephone) technology and has been designed to cater for voice only. In the late eighties, the ART 900 mobile phone service was introduced, which also uses analog technology, namely the ETACS (Enhanced Total Access Communications System). Thereafter another analog mobile service, which was the Mobifon800, based on the AMPS (Advanced Mobile Phone Service) technology was introduced. The First Generation mobile phone services were based on analog system that could cater to only (limited) voice service.

15 The introduction of GSM (Global System for Mobile Communication) in the early nineties marked the migration from analog system to the digital system. The GSM system was designed to cater for voice and data services at a rate of 9.6kbps. Another digital telephony service that was also introduced within the same time frame was the DAMPS (Digital AMPS) system. Both these technologies were considered as the 2nd Generation of Mobile Telephony Services.

16 With the immense demand for Internet services, a more enhanced mobile telephony service utilizing the latest technology is required. GPRS (General Packet Radio Services) was introduced to overcome this situation. GPRS is seen to be as an overlay network on top of the GSM network with added components such as the PCU (Packet Control Unit), SGSN (Serving GPRS Support Node) and the GGSN (Gateway GPRS Support Node). The GPRS is capable of handling data transmission up to 115kbps.

17 The Internet development and demand towards multimedia services through the Internet as well as the mobile system is causing international communication society to think of a technology that can provide solution to this demand. The 3rd generation mobile system is preferred as the key solution to these requirements. The basic criteria for the 3rd Generation technology was determined through working group meetings which was set up by a consortium of standard institutes in the USA, Europe, Asia, ITU as well as equipment manufacturers. Based on standard criteria, technology producers are put forward to design and develop the 3rd generation system technology. This initial design for the 3rd Generation

technology becomes the benchmark to evaluate, develop and refine the standard. The capability of the technology is further refined such that it can be accepted and appropriate to be commercialized.

18 Among the important criteria of the 3rd Generation system is the ability to handle data delivering at a maximum speed of 384 Kbps while moving and 2 Mbps stationary. The emphasis given towards designing the 3rd Generation technology is that its will become the 'evolutionary technology' from the current existing system such as GSM-MAP, TDMA (ANSI-136) and CDMA (IS-95). The design is hoped to become the 3rd Generation technology that capable to exploit the core network of the existing 2nd Generation system by doing minimum modification to the radio interface components.

19 Consideration towards the design technology is done based on the stipulated standard criteria that has been refined and determined earlier. As a result, the international community through ITU has mutually agreed on five technologies that can be used and adapted to appropriate the need of the current network. Following this effort, the 3rd Generation mobile telephone system has been formally named by the ITU as the IMT-2000 system by using the above standard that has been determined.

SECTION FOUR : THE IMT-2000 SYSTEM AND STANDARDS AVAILABLE

20 Five technologies have been developed for the 3rd Generation mobile telephone system. The technologies are: -

(i) IMT-2000 CDMA Direct Spread;
(ii) IMT-2000 CDMA Multi Carrier;
(iii) IMT-2000 CDMA TDD;
(iv) IMT-2000 CDMA Single Carrier; and
(v) IMT-2000 FDMA/TDMA.

21 Both CDMA Direct Spread and CDMA TDD are identified as Wideband CDMA or W-CDMA, and these two standards were developed by 3GPP (3rd Generation Partnership Program), a consortium consisting of organizations developing standards. Member countries that play active role in 3GPP among others are European countries, Japan and China. This technology was designed based on GSM-MAP (Mobile Application Part) system as the core network. Any company that currently offers mobile telephone services using the 2nd Generation GSM system upgraded to GPRS is capable of migrating to 3rd Generation service through the GSM-MAP path.

22 On the other hand, CDMA Multi Carrier ,also known as CDMA 2000 was developed by 3GPP2 (3rd Generation Partnership Program 2). 3GPP2 is also a consortium consisting of organizations that develop standards similar to 3GPP. Member countries that play an important role in 3GPP2 are such as the USA, Japan and Korea. This technology is developed based on CDMA IS-95 system, which is the advancement of AMPS system. This IS-95 and AMPS systems are widely used in the USA and Korea.

23 CDMA single carrier is a standard that was developed by UWCC (United Wireless Communication Consortium) and ETSI (European Telecommunications Standards Institution). This technology is based on UWC-136 and GSM.

SECTION FIVE : WORKING GROUP 6 STUDY AND PROPOSAL

24 In the absence of a Technical Forum, the Commission has appointed Working Group 6 (WG6) in 1999 to study and propose the standard for IMT-2000 to the Commission. WG6, which is chaired by Prof. Dr. Tharek Abdul Rahman from Universiti Teknologi Malaysia, is represented by industry players such as telecommunications service providers, manufacturers, a standards body (SIRIM), researchers from higher institutes of learning, as well as authorities such as the Royal Malaysian Police, Ministry of Defense and the Commission.

25 Since 1999, the WG has been in discussions to adopt a standards based on the following scope:

25.1 The Malaysian standard identifies the Malaysian IMT-2000 terrestrial specifications, based on the key characteristics identified in Recommendation ITU-R and output of activities outside ITU; and

25.2 These specifications comply with all the 3GPP documents (Release 1999) to form the Malaysian Standard.

26 After thorough study and consideration, the Working Group had recently proposed to the Commission to adopt CDMA Direct Spread (FDD) and CDMA TDD to be the Malaysian standard for IMT-2000 Terrestrial service.

SECTION SIX : BASIS OF RECOMMENDATION

27 The recommendation made to the Commission is based on the following principles:

27.1 CDMA Direct Spread and CDMA TDD standard are chosen due to its compatibility to the GSM system widely used in Malaysia. In addition to this, it is expected that the standard offers interoperability and low cost impact in upgrading both the hardware and the software of the system, taking into consideration the overlay network approach to maximize the ability on reuse of the current 2nd Generation system components. While the current 2G systems is now can be upgraded to 2.5G systems the upgrading of 2G systems will be continuously used concurrently with the emerging of the 3rd Generation system.

28 Based on the prescribed principles, the Working Group has agreed that the following standard be recommended to the Commission to be determined as the Malaysian Standard for IMT-2000 Terrestrial System in Malaysia:

28.1 CDMA Direct Spread;

28.2 CDMA TDD

SECTION SEVEN : THE PUBLIC INQUIRY PROCESS

29 Section 60 of the CMA provides that Public Inquiry is to be conducted as and when the CMC thinks fits. The CMA also acknowledges that a Public Inquiry may be conducted in private or public.

30 The Commission has decided that the Public Inquiry will be carried out through the publication of this consultation paper.

31 The consultation paper will be subject for public inquiry for a period of not less than 45 days, within which the members of the public are invited to make submissions to the Commissions about the matter.

32 Pursuant to Section 65, the CMC is thereafter obliged to publish a report of its findings as a result of the Public Inquiry within 30 days of the conclusion of the Public Inquiry. The report will then be registered and made available to the public.

33 Finally, within 45 days from the conclusion of the Public Inquiry, the Commission shall determine the standards based on report published.

Time Frame for the Process

34 The time frame for the process is as follows:

No.	Action	Date
1.	Ministerial Direction on Standard	December 11, 2001
2.	Publication of Public Inquiry via Consultation Paper	May 2, 2002
3.	Close of feedback on Public Inquiry (45 days)	At 1200 hrs, June 15, 2002
4.	Report on Public Inquiry (report to be published Within 30 days of the conclusion of the PI)	By July 15, 2002
5.	Determination of Standard by the Commission (within 45 days of the conclusion of PI)	15 days after Publish of Report on Public Inquiry.

SECTION EIGHT : DETAILED SPECIFICATIONS OF THE MALAYSIAN STANDARD ON IMT-2000 FOR TERRESTRIAL COMPONENT

APPENDIX 1 : DIRECTION 5/2001

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